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(54) **Double-sash roof window with side barriers**

Doppel-Aufziehdachfenster mit seitlicher Abgrenzung

Fenêtre de toit à double vantaux avec barrières latérales

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Description

[0001] The subject of the invention is a double-sash roof window, designed for assembly on a sloping roof surface, in which the lower sash is opened as a tilting one, and together with it are unfolding the side barriers. In open condition, the lower sash and the barriers play the role of a balcony, with the lower sash being its front wall.

[0002] It follows from the description patent applications WO 90/09493 and WO91/14068, that there is a known solution of a double-sash roof window, in which the lower sash is opened together with the unfolding side barriers, so that in open condition that sash and the side barriers constitute together a small balcony. The guiding element of the side barrier is the lower sash of the window, with which the hand-rail of that barrier is connected by a clamp fixed in articulating mode right at the top of the sash, to the side surface of its frame. The length of the hand-rail is being adjusted to the slope of the roof surface so, that it is being supplied by the manufacturer in maximum length, corresponding to roofs with minimum slope, and then, during assembly, the superfluous end of the handrail protruding out of the clamp is being cut-off.

[0003] The indicated patent specifications do not determine the relative locations of the side barriers to the sash flashing. However, in the actual production of windows, the barriers are placed on the roof, outside the side members of the window frame. The hand-rail of the barrier in folded position is namely reaching too high on the window, to be placed under the window covers, within the extent of the side member of the window frame, avoiding collision with other window elements.

[0004] The roof window according the invention, having two sashes mounted in a common window frame, with flashings overlapping the window frame and protecting the building interior from the weather, having the lower sash with the side barriers playing the role of a balcony, is specific by the feature of locating each side barrier assembly within the extent of the flashings of both sashes, viz. the upper and the lower ones, which flashings cover, when the window is closed, the gap between the sash frames and the window frame, including at least part of the width of the side member of the window frame.

[0005] One end of the barrier is connected with the lower sash, and the other one with the window frame guide, which is fixed to the side member of the window frame. The lower sash is a tilting one, being opened by turning it about an instantaneous axis of rotation, which is being translocated close to the bottom, transversal member of the window frame. In open state, the lower sash constitutes the front wall of the balcony.

[0006] The roof window has two barrier assemblies, located at both sides of the lower sash, but in special cases, e.g. when the window is placed directly at the wall of an attic, it has only one barrier. Each side barrier assembly has a movable hand-rail, the end of which is hinged at the slide of the window frame, moving in a guide placed on the side member of the window frame. The barrier has also safety bars, standing in open condition nearly upright, which are connected by their ends with the hand-rail and the guide, at one end in hinged and at the other in hinged-and-sliding mode.

[0007] In the closed position of the window, the barrier hand-rail is placed along the window frame, under the flashing of the upper and lower sash, and is being extended to its operating condition when the lower sash is opened.

[0008] The window according the invention is featured also by providing the side barrier assembly with a guiding link, the ends of which are hinging at the hand-rail and a fixture set in the lower part of the side member of the window frame, while the end of the hand-rail is connected on the side of the lower sash with the sash frame by means of a hand-rail slide, moving along the side member of the lower sash frame. This makes it possible to store easily the folded barrier on the extent of the side member of the window frame, because, when the lower sash is being closed, the hand-rail slide moves down that sash, due to which a part of the length of the hand-rail comes into the space of the window frame, which mates with the lower sash.

[0009] The double-sash roof window according the invention is designed for application on slanting roof surfaces, usually within the range of 35 to 55 degrees versus the horizontal. This affects the dimensions of the hand-rail and the safety bars in the side barriers. In order to adjust the barriers to the angle of the roof surface, the hand-rail length is adjustable in such a way, that the hand-rail consists of at least a hand-rail section, preferably open at the bottom, and of a core telescoping out of that section. The hand-rail section and its core are provided with a series of transversal holes made with regular spacing, the parts being adjustably connected by means of shape fasteners inserted into the selected holes in the hand-rail section and the core.

[0010] The end of the hand-rail at the side of the lower sash of the window and the hand-rail slide moving on the guide fixed to the side member of the lower sash are connected in hinging mode by means of a pivot, which is set in one of these parts, advantageously in the hand-rail, and a pocket located in the other part, i.e. in the hand-rail slide. The pivot is secured in the pocket by a latch.

[0011] The safety bars placed in the barrier assembly below the hand-rail connect that hand-rail with the window frame guide and have at one end a hole for a pin and on the other one an attachment placed on the cut-off end of the safety bar.

[0012] Advantageously, the pin hole is made in the upper part of the safety bar, and the pin inserted into that hole passes through both walls of the hand-rail section open on the underside. The bottom end of the safety bar is to be cut-off to a length corresponding to the slope of the roofing with the assembled roof window, and inserted into the attachment. The end of bar is to be clenched, e.g. by a screw pulling together two parts of the attach-

ment gripping that end of the bar. The attachment is hinging on the sliding grip of the safety bar, moving in the window frame guide. The sliding grip of the safety bar is provided with a slide or a roller - in both cases moving in a T-slot of the window frame guide, open on the inner side of the window frame.

[0013] The window frame slide connecting the hand-rail with window frame guide moves in the same T-slot. The downward movement of that slide is limited by a stop set in the window frame guide, preventing any shifting of the hand-rail below a safe height above the floor of the room communicating with the roof window. This height amounts to 900 millimeters above the floor of an apartment, or 1100 millimeters in the case of public usage spaces.

[0014] The window frame slide has also a mechanism, advantageously a locking pawl, preventing any unwanted self-acting shutting of the lower sash, e.g. due to wind pressure. In order to close the lower sash it is necessary to unlock the pawls stopping the window frame slide in the window frame guide.

[0015] The upper sash of the window with side barriers is mounted in the same window frame as the lower sash. The upper sash in closed state overlaps the upper member of the lower sash directly, there being no cross member in the window frame to support the upper sash. Owing to that, upon opening both sashes, there exists a free usable space within the contour of the window frame, which can serve as a balcony. The upper sash is being opened preferably upwards, independently of the lower sash. So, one can content oneself with opening that sash only.

[0016] The upper sash is preferably a double-function one, opened by tilting it about a rotation axis located close to the upper part of that sash, or by turning it about a rotation axis located at the central zone of that sash. This permits turning the upper sash by a nearly straight angle, following which the external surface of the panel is moved into the interior of the room, which eases its washing.

[0017] The double function of the upper sash can be achieved, e.g. by applying a mechanism according to the patent application PL-P-383664, including two intermediate arms, connected both with the window frame and the sash by means of hinges consisting of an arched slide moving in an arched guide way, with their theoretical axis of rotation above the pane surface. It is advantageous when the subassemblies fixing the upper sash in the window frame are firmly set in the upper part of the window frame guide extending on the full length of the side member of the window frame. The places on the window frame guide, where the subassemblies fixing the upper sash are set, are outside the maximum stroke of the window frame slide - that section of the window frame guide is used only for fastening the upper sash.

[0018] The advantage of using the invention consists in protecting the barrier assembly from weather, due to which the barriers and especially their hand-rails do not get soiled. It also improves the sight of the building, on the roof of which one can see only the roof window without parts of the barriers. Advantageous is also the compactness of the barriers and their easy assembly together with the lower sash. Locating the barriers within the width of the flashing of the sashes, and not outside them, permits application of thermal insulation around the insulating flange.

[0019] The double-sash roof window with side barriers is presented in an example of execution, in a drawing in which the separate figures represent:

- Fig. 1 - The window open in its balcony function - axonometric view,
- Fig. 2 - A cross section through the window frame, the lower sash frame and the barrier in closed position,
- Fig. 3 - The lower sash and the barrier in intermediate position, between the open and closed ones - in axonometric view,
- Fig. 4 - The hand rail and the hand-rail slide before connecting them - in axonometric view, seen from the lower sash side,
- Fig. 5 - The barrier assembly - in exploded, axonometric view of the components,
- Fig. 6 - The subassemblies connecting the barrier with the window frame guide - in axonometric view, seen from the side of the lower sash.

[0020] The double-sash roof window being the subject of the invention has a window frame 1, in which is mounted the lower sash 2, which is opened by tilting about a geometric instantaneous axis of rotation being translocated near the bottom, transversal member of the window frame, and has also an upper sash opened upwards. At both sides of the lower sash 2 are mounted the assemblies of side barriers (shown in the drawing on one side only), comprising, among other items, the hand-rail 3, the guiding link 4, and the safety bars 5. On the side member 11 of the window 1 frame there is mounted the window frame guide 12 in form of a metal section fixed by its flange 13 to the upper surface of the side member 11 of the window frame, the guide having a T-slot 14, which is open on the inner side of the window frame.

[0021] In order to adjust the side barrier assembly to the incline of the roof surface in which the window is mounted, the hand rail 3 has a stepwise adjustable length. The hand-rail consists of a hand-rail section 31 and a hand-rail core 32 telescoping in it, having two rows of regularly spaced holes. Upon adjusting the proper length, the hand-rail section is being connected with the core 32 by means of two shape fasteners, e.g. bolts with threaded end, which are set into the holes 33 in the hand-rail section 31 and the selected holes of the hand-rail core 32.

[0022] One end of the hand-rail 3 is connected in a hinged-and-sliding manner with the lower sash 2 by means of the hand-rail slide 6, which moves in the sash guide 22, along the side member 21 of the lower sash

frame. The opposite end of the hand-rail 3, i.e. its core 32, is hinging at the window frame slide 7, moving in the window frame guide 12. When closing the lower sash 2, the hand-rail slide 6 moves down the sash member (see Fig. 3), due to what a part of the hand-rail enters into the space of the window frame 1, mating with the lower sash, and the window frame slide 7 does not reach as high, as in the case of a turning only connection of the hand-rail with the lower sash.

[0023] The hand-rail slide 6 has an inner plate 61 placed at the sash guide 22, and an external plate 62 with a pocket 63 for the pivot 34, which is integral with the hand-rail section 31. The inlet to the pocket 63 is convergent along the side member 21 of the lower sash, and is open at the upper side of that sash, while the operating part of the pocket has a width mating with the diameter of the grove on the pin 34. Between the inner 61 and the outer plate 62 is placed the latch 64 with a spring (not shown), which snatches the head of the pivot 34 upon inserting it into the pocket 63. The inner plate 61 is connected with the sash guide 22 by the lower slide 65 and the upper slide 66, which are made with groves grasping on both sides the edges of the sash guide. The inner plate 61 and the outer plate 62 are connected together by spacing pins 67, which are expanded on the external faces of these plates in the chamfered bores 68. The sash guide 22 is connected with the side member 21 of the lower sash frame by the screws 23.

[0024] The hand-rail section 31 is open on the underside, which makes it possible to insert into it the upper end of the guiding link 4 and the ends of the safety bars 5. The guiding link 4 is connected with the hand-rail section 31 by means of a pin set in the hole 35, while the safety bars 5 are connected with it by pins set in the holes 36 in the section. At its bottom, the guiding link 4 is fitted with the attachment 41 connected in hinged mode with a fixed grip 15 set in the bottom part of the side member 11 of the window frame, which grip is a part of the hinge mechanism in the bottom part of the sash. The safety bars 5 are provided at their bottom ends with attachments 52, which move in the T-slot 14 of the window frame guide 12. The attachments 52 shown in the drawing are fitted with slides placed in the T-slot 14, but to reduce friction the slides can be replaced by rollers guided in that slot.

[0025] The guiding link 4 and the safety bars 5 are to be adjusted to the incline of the roof surface by suitable cutting-of their ends, which are to be inserted into the attachments 41 and 51, so as have the guiding link and the safety bars standing upright when the sash 2 is in open position. Upon adjusting their length, they are to be fixed in the attachments by pressing down with the screws 42, and 53. The casing 37 laid on the hand-rail section 31 is also to be trimmed to proper length. That casing has on one end a factory-made cut 38 for the pivot 34 of the hand-rail, while its opposite end has to be trimmed. The end of the casing 37 is shielded by an end cover 39 made of plastics, which is being fitted on the element of the core 3 of the hand-rail connected with the window frame slide 7.

[0026] The safety bar 5 most distant from the lower sash has at its top a bend 54, due to which, when the lower sash is closed and the barrier folded, that safety bar lies flatly on the flange 13 of the window frame guide, and the following safety bars coming to rest on it, lie also flatly. Therefore, that bar is invisible in the cross-section shown in Fig. 2, because it is masked by its attachment 51; two other safety bars 5, however, laying on it, are visible.

[0027] The cross-section - Fig. 2 - shows also the arrangement of the window frame guide 12 and of the components of the barrier, including the hand-rail 3, which all are contained in the space under the flashing 24 of the lower sash 2 (and of the flashing of the upper sash, hidden in Fig. 2). The flashing 24 of the sash overlaps the flashing 16 of the window frame and the window frame 1. Both flashings together shield the interior of the room with the roof window against weather effects, like rain, snow, wind.

[0028] The window frame slide 7 moves in the T-slot 14 in the window frame guide 12; the parts of that slide mating with the T-slot are rollers, considerably reducing the resistance to slide motion. The task of the window frame slide 7 is keeping the position of the hand-rail 3 close to horizontal, and before all, protecting, jointly with the stopping-and-catching assembly 8, against excessive opening of the lower sash 2, and lowering of the hand-rail below a safe distance from the floor of the room provided with the roof window.

[0029] The stopping-and-catching assembly 8 consists of the stop 81 resting on the flange 13 of the window frame guide 12, which is fixed to the side member 11 of the window frame by screws passing through the flange 13. The second part of the stopping-and-catching assembly 8 is the catch 82, fixed above the stop 81 to the vertical wall of the window frame guide 12. The window frame slide 7 has a bottom hook 71, which upon attaining the stop 81, stops the downward movement of the slide 7, and so stops the hand-rail 3 of the barrier, by the same fixing the lower sash 2 in open position.

[0030] The window frame slide 7 has also a pawl 72 with a spring lifting that pawl, due to which the catching tooth 73 of the pawl falls behind the rest surface 83 of the catch 82 in the window frame guide. The relative positions of the stop 81 and the catch 82 are designed so, that the pawl 72 falls-in a little earlier than the bottom hook 71 comes to rest on the stop 81. The pawl 72 hooked on the catch 82 blocks the upward movement of the window frame slide 7, and so, it protects against uncontrolled closing of the lower sash 2, e.g. due to wind pressure.

[0031] In its part placed inside the window frame guide 7, the pawl 72 has an oblong hole (not seen in the drawing), through which passes the pin 74 connecting that pawl with the body of the window frame slide. Upon pressing the pawl 72 along the window frame slide 12, up on the window frame, the pawl is moved so that the pawl tooth 72 comes under the catch 82, due to which the

movement of the window frame slide 7 up on the window frame guide is possible. Unlocking of both pawls from both sides of the window enables closing of the lower sash.

[0032] The upper sash 9 of the roof window can be opened in double manner, using the mechanism following the patent application No P-383664. In the tilting mode, the sash together with its intermediate arms 91 turns in the hinges 92 about a rotation axis situated close to the upper edge of that sash. In the turning mode, the intermediate arms lie along the side members 11 of the window frame, and only the sash 9 is being turned about the hinges 93, which are located in the central zone of that sash. The holders of the mechanism opening the upper sash 9 are set in the window frame guide, at its upper section. When the upper sash 9 is closed, it rests, overlapping the upper member of the frame of the lower sash 2.

Claims

1. Double-sash roof window with side barriers designed for assembly in a sloping roof surface and additionally playing the role of an opening balcony, having two sashes (2,9) mounted in a common window frame (1), of which the lower sash (2) is a tilting one, opened by turning about an instantaneous axis of rotation being translocated close to the lower zone of the window frame, constituting in open position the front wall of the balcony, while the upper sash (9) of the window, in closed position of the double-sashed roof window, overlaps directly the upper member of the frame (1) of the lower sash (2) and is opened preferably upward,
with both sashes (2, 9) being provided with a flashing (24) overlapping the window frame to protect the interior of the building against weather effects, the double-sash roof window having also assemblies of side barriers, especially two ones,
in which the hand-rails (3) in closed position of the lower sash (2) are situated along the window frame (1), and the assemblies of side barriers are expanding to the operating position jointly with opening the lower sash (2), where one end of the hand-rail (3) is connected in hinged and sliding manner with a guide placed along the sides of the window frame (1), and also the assemblies of side barrier is fitted with safety bars (5) connected by their ends with the hand-rail (3) and the guide, on one end in hinged mode and on the other in hinged-and-sliding mode, **characterized in that** each side barrier assembly is placed in the space of the width of the flashings **(24)** of the bottom sash, which flashings, when the window is closed, cover the gap between the sashes **(2, 9)** and the window frame **(1),** and cover at least a part of the width of the side member **(11)** of the window frame, and the window frame guide **(12)** of the barrier is fixed to the side member of the window frame.

2. Roof window according to claim **1, characterized in that** the side barrier assembly has a guiding link **(4)** connected by its ends in hinged mode with the hand-rail **(3)** and a fixed grip **(15)** set in the lower part of the side member **(11)** of the window frame, and the hand-rail **(3)** is by its end on the side of the lower sash connected with the frame of that sash by a hand-rail slide **(6)** moving along the side member **(21)** of the lower sash frame.

3. Roof window according to claim **1,** or **2, characterized in that** the handrail **(3)** with adjustable length, consists of a hand-rail section **(31),** advantageously open on the bottom, and of a core **(32)** telescoping out of that section.

4. Roof window according to claim **3, characterized in that** the hand-rail section **(31)** and the core **(32)** of the hand-rail have a set of transversal holes, and are adjustably connected together by shape fasteners, which are being placed in selected holes of the hand-rail section and the core.

5. Roof window according to claim **1,** or **2,** or **3,** or **4, characterized in that** the end of the hand-rail **(3)** and the hand-rail slide **(6)** on the side member **(21)** of the lower sash **(2)** frame are connected in hinged mode by means of a pivot **(34)** set in one of these assemblies, advantageously in the hand-rail **(3),** and a pocket **(63)** placed in the second assembly.

6. Roof window according to claim **5, characterized in that** the pivot **(34)** is secured in the pocket **(63)** by a latch **(64).**

7. Roof window according to claim **1,** or **2,** or **3,** or **4,** or **5,** or **6, characterized in that** the safety bars **(5)** in the barrier, connected with the hand-rail **(3)** and the window frame guide **(12),** are provided on one end with a hole for a pin and on the other end with an attachment **(51)** fitted on to the cut-off end of the safety bar.

8. Roof window according to claim **7, characterized in that** the attachment **(51)** is connected in hinged mode with a sliding attachment **(52)** of the safety bar, moving in the window frame guide **(12).**

9. Roof window according to claim **1,** or **2,** or **3**, or **4,** or **5,** or **6,** or **7,** or **8, characterized in that** the window frame guide **(12)** contains inside a stop **(81)** limiting the downward movement of the window frame slide **(7)** connecting the hand-rail **(3)** with the window frame guide **(12),** hindering any shifting of the hand-rail **(3)** below a safe height above the floor of the room equipped with the roof window.

10. Roof window according to claim **1,** or **2,** or **3,** or **4,** or **5,** or **6,** or **7,** or **8,** or **9, characterized in that** the window frame slide **(7)** has a mechanism, advantageously a latch-type one, protecting against uncontrolled movement of that slide up the window frame guide **(12).**

11. Roof window according to claim **1,** or **2,** or **3,** or **4,** or **5,** or **6,** or **7,** or **8,** or **9,** or **10**, **characterized in that** the upper sash (**9**) is a double-function one, opened by tilting about an axis situated close to the upper zone of that sash, and as a turning one about a horizontal axis of rotation located in the central zone of that sash.

12. Roof window according to claim **11**, **characterized in that** the window frame guide (**12**) is arranged on the whole length of the side member (**11**) of the window frame (**1**), and in the upper part of that guide are immovably set the subassemblies fixing the upper sash (**9**) in the window frame.

Patentansprüche

1. Zweiflügeliges Dachflächenfenster mit seitlichen Geländern, geeignet für die Montage in geneigten Dachflächen, das zusätzlich einen Dachbalkon mit der Öffnungsfunktion bilden kann, bestehend aus zwei, in einem gemeinsamen Zargenrahmen (1) montierten Flügeln (2, 9), wobei der untere kippbar ist und durch die Drehung um die momentane geometrische Drehachse, die in der Nähe des unteren, horizontalen Rahmenelements verschiebbar ist, geöffnet wird und im geöffneten Zustand die vordere Balkonwand bildet, und der obere Flügel (9) dieses Fensters, der im geschlossenen Zustand direkt den oberen Rahmenabschnitt (1) des unteren Flügels (2) überlappt und nach oben geöffnet wird; beide Flügel (2, 9) sind ausgestattet mit Verblechungen (24), die zwecks Schutz des Innenraums vor Witterungseinflüssen den Zargenrahmen überlappen, und mit Gruppen von seitlichen Geländern, insbesondere zwei Geländern; beim geschlossenen unteren Flügel (2) liegen die Geländer (3) entlang des Zargenrahmens (1), die Gruppen der seitlichen Geländer werden in die Arbeitsstellung durch das Öffnen des unteren Flügels (2) aufgeklappt, wobei ein Ende des Geländers (3) gelenkig und verschiebbar mit der entlang der Seiten des Zargenrahmens liegenden Führung (1) verbunden ist, darüber hinaus verfügen die Gruppen der seitlichen Geländer über Sicherheitsstäbe (5), deren Enden mit dem Geländer (3) und der Führung verbunden sind - und zwar an einem Ende gelenkig und am anderen Ende gelenkig und verschiebbar -, **dadurch gekennzeichnet, dass** jede Gruppe der seitlichen Geländer sich im Breitenbereich der Verblechungen (24) beider Flügel befindet, welche beim geschlossenen Fenster den Spalt zwischen den Flügeln (2, 9) und dem Zargenrahmen (1) sowie einen Teil des seitlichen Elements des Zargenrahmens in der Breite (11) bedecken, und dass die Zargenrahmenführung (12) des Geländers am seitlichen Element des Zargenrahmens befestigt ist.

2. Das Dachflächenfenster nach Anspruch 1 **dadurch gekennzeichnet, dass** die Gruppe der seitlichen Geländer mit einem Führungsverbinder (4) ausgestattet ist, dessen Enden gelenkig mit dem Geländer (3) und dem fest angebrachten Griff (15) verbunden sind, der im unteren Teil des seitlichen Elements (11) des Zargenrahmens angesetzt ist, und dass das in Richtung zum unteren Flügelfenster (2) liegende Ende des Geländers (3) mit dem Rahmen dieses Flügels mittels eines Geländerschiebers (6) verbunden ist, der entlang des seitlichen Teils (21) des Rahmens des unteren Flügels verschiebbar ist.

3. Das Dachflächenfenster nach Anspruch 1 oder 2 **dadurch gekennzeichnet, dass** das in der Länge einstellbare Geländer (3) aus einem Geländerprofil (31), das vorzugsweise nach unten geöffnet wird, und einem aus diesem Profil teleskopisch ausfahrbaren Kern (32) besteht.

4. Das Dachflächenfenster nach Anspruch 3 **dadurch gekennzeichnet, dass** das Geländerprofil (31) und der Geländerkern (32) über horizontale Öffnungen verfügen und einstellbar mit Profilverbindungsstücken, die in ausgewählte Öffnungen des Geländerprofils und des Kerns zu stellen sind, verbunden sind.

5. Das Dachflächenfenster nach Anspruch 1, oder 2, oder 3, oder 4 **dadurch gekennzeichnet, dass** das Ende des Geländers (3) und der Geländerschieber (6) am seitlichen Teil (21) des Rahmens des unteren Flügels (2) gelenkig mittels eines Zapfens (34) verbunden sind, der auf einer von diesen Gruppen angesetzt ist, vorzugsweise im Geländer (3), sowie mittels einer sich in anderer Gruppe befindenden Aussparrung (63).

6. Das Dachflächenfenster nach Anspruch 5 **dadurch gekennzeichnet, dass** der Zapfen (34) mittels einer Schnappsperre (64) in der Aussparrung (63) abgesichert ist.

7. Das Dachflächenfenster nach Anspruch 1, oder 2, oder 3, oder 4, oder, 5 oder 6 **dadurch gekennzeichnet, dass** die Sicherheitsstäbe (5) im Geländer, die mit dem Geländer (3) und der Zargenrahmenführung (12) verbunden sind, am einen Ende eine Öffnung für einen Bolzen und am anderen Ende ein Ansatzstück (51) aufweisen, das an das durchgeschnittene Ende des Sicherheitsstabes aufge-

setzt wird.

8. Das Dachflächenfenster nach Anspruch 7 **dadurch gekennzeichnet, dass** das Ansatzstück (51) gelenkig mit dem verschiebbaren Griff (52) des Sicherheitsstabs, der in der Zangenrahmenführung (12) verschoben wird, verbunden ist.

9. Das Dachflächenfenster nach Anspruch 1, oder 2, oder 3, oder 4, oder 5, oder 6, oder 7 oder 8 **dadurch gekennzeichnet, dass** sich in der Zangenrahmenführung (12) ein Anschlag (81) befindet, der die Bewegung nach unten des am Zangenrahmen liegenden Schiebers (7) begrenzt, der das Geländer (3) mit der Zangenrahmenführung (12) verbindet und der die Verschiebung des Geländers (3) unterhalb einer sicheren Höhe über dem Fußboden des Raumes, in welchem das Dachflächenfenster montiert ist, verhindert.

10. Das Dachflächenfester nach Anspruch 1 oder 2, oder 3, oder 4, oder 5, oder 6, oder 7 oder 8, oder 9 **dadurch gekennzeichnet, dass** der am Zangenrahmen liegende Schieber (7) mit einem Mechanismus ausgestattet ist, vorzugsweise einer Klinkensperre, die vor einer unbeabsichtigten Verschiebung dieses Schiebers nach oben, entlang der Zangenrahmenführung (12) schützt.

11. Das Dachflächenfenster nach Anspruch 1 oder 2, oder 3, oder 4, oder 5, oder 6, oder 7 oder 8, oder 9, oder 10 **dadurch gekennzeichnet, dass** der obere Flügel (9) zwei Funktionen erfüllt, d.h. es lässt sich um die sich in der Nähe des oberen Bereichs dieses Flügels befindende Drehachse kippen sowie sich um die horizontale, sich im mittleren Bereich dieses Flügels befindende Drehachse drehen.

12. Das Dachflächenfenster nach Anspruch 11 **dadurch gekennzeichnet, dass** die Zangenrahmenführung (12) auf der gesamten Länge des seitlichen Elements (11) des Zangenrahmens (1) angebracht ist und dass im oberen Teil dieser Zangenrahmenführung Untergruppen starr aufgesetzt sind, die den oberen Flügel (9) des Fensters im Zangenrahmen verankern.

Revendications

1. Fenêtre de toit à deux battants avec des garde-corps latéraux, destinée pour le montage dans le versant de la toiture et remplissante une fonction auxiliaire de balcon ouvrant, possédant deux battants (2, 9) montés sur un dormant commun (1), desquels le battant inférieur (2) est basculant, ouvrant pivotant autour d'un axe géométrique momentané de pivotement se déplaçant à proximité de l'élément inférieur, transversal du dormant, formant en état ouvert la paroi frontale du balcon, et le battant supérieur (9) de cette fenêtre, en état de fenêtre à deux battants fermée, empiète directement par recouvrement le segment supérieur du châssis (1) de battant inférieur (2), et est ouvert favorablement vers le haut, où les deux battants (2, 9) ont des ferrures (24) chevauchant le dormant pour protéger l'intérieur du bâtiment contre les effets des conditions atmosphériques, équipée aussi d'ensembles de garde-corps latéraux, notamment deux, dans lesquels les barres d'appui (3), en état fermé du battant inférieur (2) sont situées le long du dormant (1), et les ensembles rabattables des garde-corps latéraux, sont pour la position de service avec l'ouverture du battant inférieur (2), où une extrémité de la barre d'appui (3) est connectée par articulation et coulissement avec la glissière située le long des flancs du dormant (1), et en plus les ensembles des garde-corps latéraux ont des barres de protection (5) unies par leurs extrémités avec la barre d'appui (3) et la glissière, sur une de ses extrémités par articulation et sur l'autre par articulation et coulissement, **caractérisée par le fait, que** chaque ensemble du garde-corps latéral est placé dans la zone de la largeur des ferrures (24) des deux battants, ces ferrures recouvrant, en état fermé de la fenêtre, le joint entre ces battants (2, 9) et le dormant (1) et recouvrant au moins une partie da la largeur de l'élément latéral du dormant (11), et la glissière de dormant (12) du garde-corps est fixée sur l'élément latéral du dormant..

2. Fenêtre de toit selon la revendication 1, **caractérisée en ce que** l'ensemble du garde-corps latéral possède un raccord de guidage (4), connecté avec ses extrémités par articulation avec la barre d'appui (3) et le manchon fixe (15), encastré dans la partie inférieure de l'élément latéral (11) du dormant, et la barre d'appui (3) par son extrémité du coté du battant inférieur (2) de la fenêtre, est assemblée avec le châssis de ce battant à l'aide du coulisseau de barre d'appui (6) se déplaçant le long du segment latéral (21) de châssis du battant latéral.

3. Fenêtre de toit selon les revendications 1 ou 2, **caractérisée en ce que** la barre d'appui (3) à longueur réglable, est composée d'une main courante (31), favorablement ouverte d'en bas et d'une âme (32) coulissant télescopiquement de cette main courante.

4. Fenêtre de toit selon la revendication 3, **caractérisée en ce que** la main courante (31) et l'âme (32) de la barre d'appui ont un jeu d'ouvertures transversales, et sont unies en réglage par des connecteurs profilés, qui sont placés dans les ouvertures choisies de la main courante et de l'âme.

5. Fenêtre de toit selon les revendications 1 ou 2 ou 3 ou 4, **caractérisée en ce que** l'extrémité de la barre d'appui (3) et le coulisseau de barre d'appui (6) sur le segment latéral (21) du châssis de battant inférieur (2), sont assemblés par articulation à l'aide du pivot (34) encastré dans l'un de ces ensembles, favorablement dans la barre d'appui (3) et du siège (63) situé dans le second de ces sous-ensembles.

6. Fenêtre de toit selon la revendication 5, **caractérisée en ce que** le pivot (34) est sécurisé dans le siège à l'aide d'un verrous (64).

7. Fenêtre de toit selon la revendication 1 ou 2 ou 3 ou 4 ou 5 ou 6, **caractérisée en ce que** les barreaux de protection (5) dans le garde-corps, assemblés avec la barre d'appui (3) et la glissière de dormant (12), sont terminés d'un côté par un orifice pour axe, et de l'autre côté ont un manchon (51) superposé sur l'extrémité coupée du barreau de protection.

8. Fenêtre de toit selon la revendication 7, **caractérisée en ce que** le manchon (51) est assemblé par articulation avec le manchon coulissant (52) du barreau de protection, se déplaçant dans la glissière de dormant (12).

9. Fenêtre de toit selon la revendication 1 ou 2 ou 3 ou 4 ou 5 ou 6 ou 7 ou 8, **caractérisée en ce que** dans la glissière de dormant (12) se trouve une butée (81) de limitation du mouvement vers le bas du coulisseau sur le dormant (7), d'assemblage de la barre d'appui (3) avec la glissière de dormant (12), empêchante le déplacement de la barre d'appui (3) au-dessous de la hauteur de sécurité au-dessus du sol du local équipé de lucarne.

10. Fenêtre de toit selon la revendication 1 ou 2 ou 3 ou 4 ou 5 ou 6 ou 7 ou 8 ou 9, **caractérisée en ce que** le coulisseau sur le dormant (7), possède un mécanisme, favorablement d'encliquetage, protégeant contre un déplacement non contrôlé de ce coulisseau vers le haut de la glissière de dormant (12).

11. Fenêtre de toit selon la revendication 1 ou 2 ou 3 ou 4 ou 5 ou 6 ou 7 ou 8 ou 9 ou 10, **caractérisée en ce que** le battant supérieur (9) est bifonctionnel, ouvrant comme rabattable autour d'un axe de rotation situé auprès de la zone supérieure de ce battant et comme rotatif autour de l'axe de rotation horizontal situé dans la zone médiane de ce battant.

12. Fenêtre de toit selon la revendication 11, **caractérisée en ce que** la glissière de dormant (12) est agencée sur toute la longueur de l'élément latéral (11) du dormant (1), et dans la partie supérieure de cette glissière sont encastrés fixement des sous-ensembles de fixation dans le dormant du battant supérieur (9) de la fenêtre.

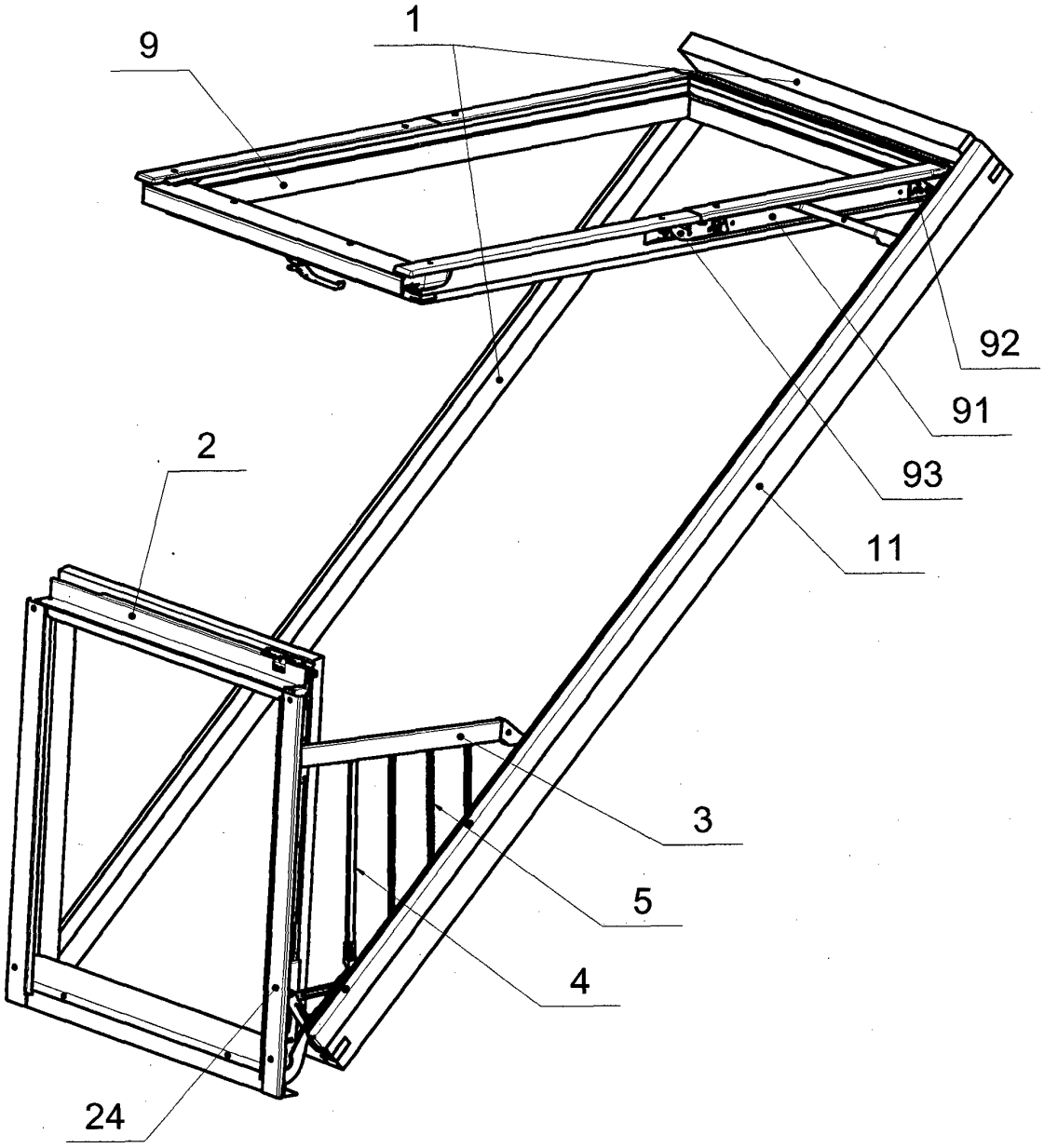


Fig. 1

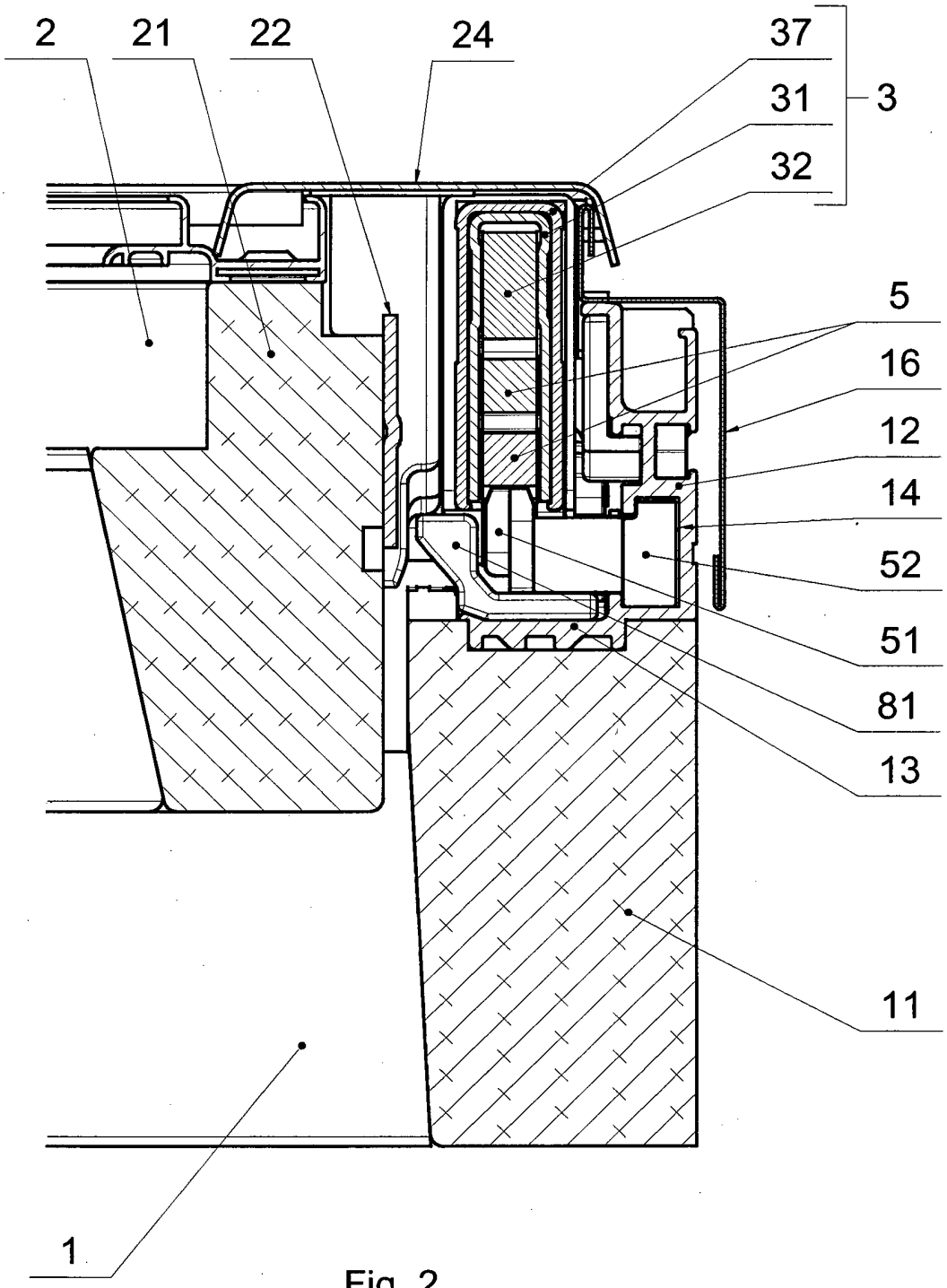


Fig. 2

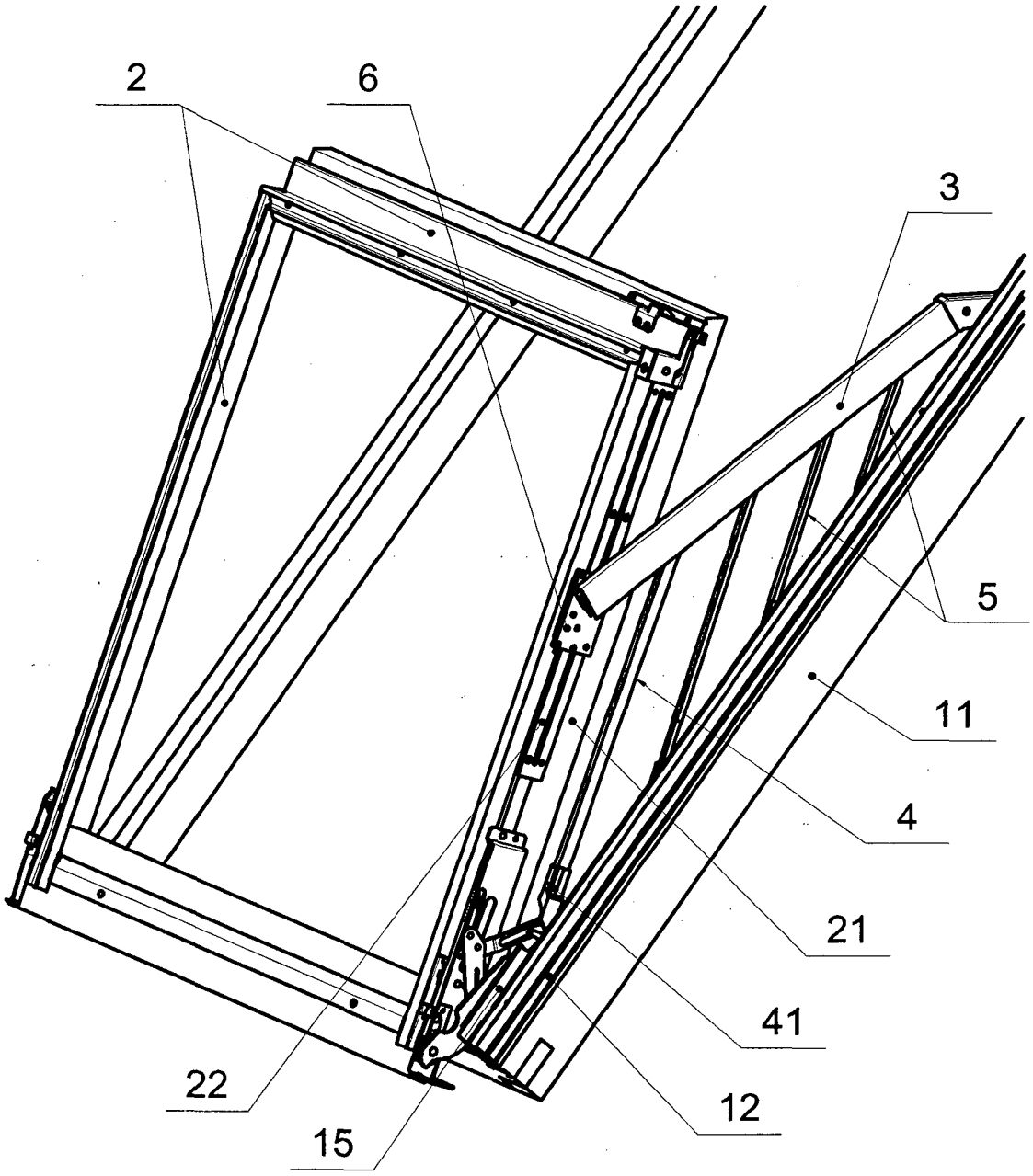


Fig. 3

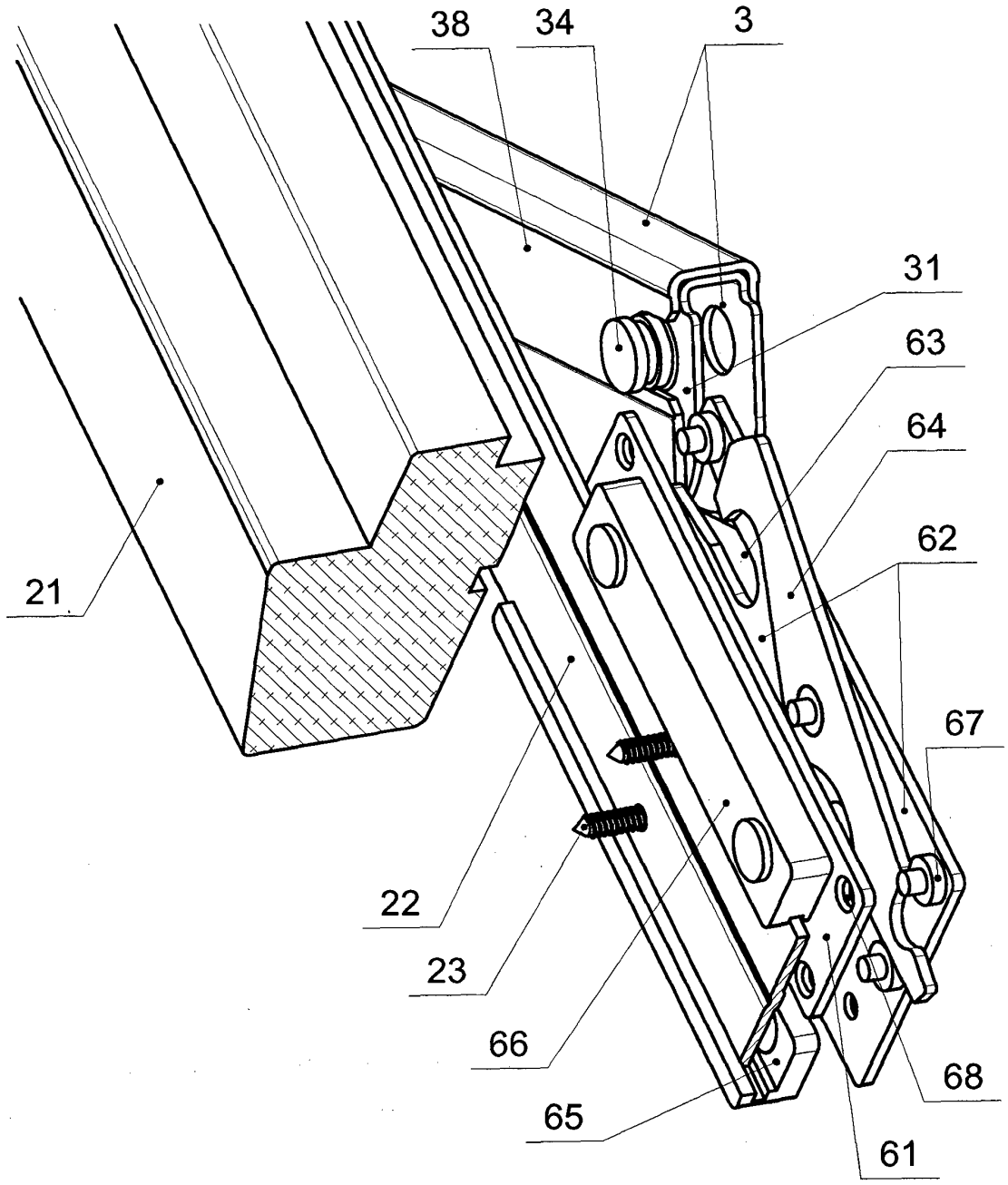


Fig. 4

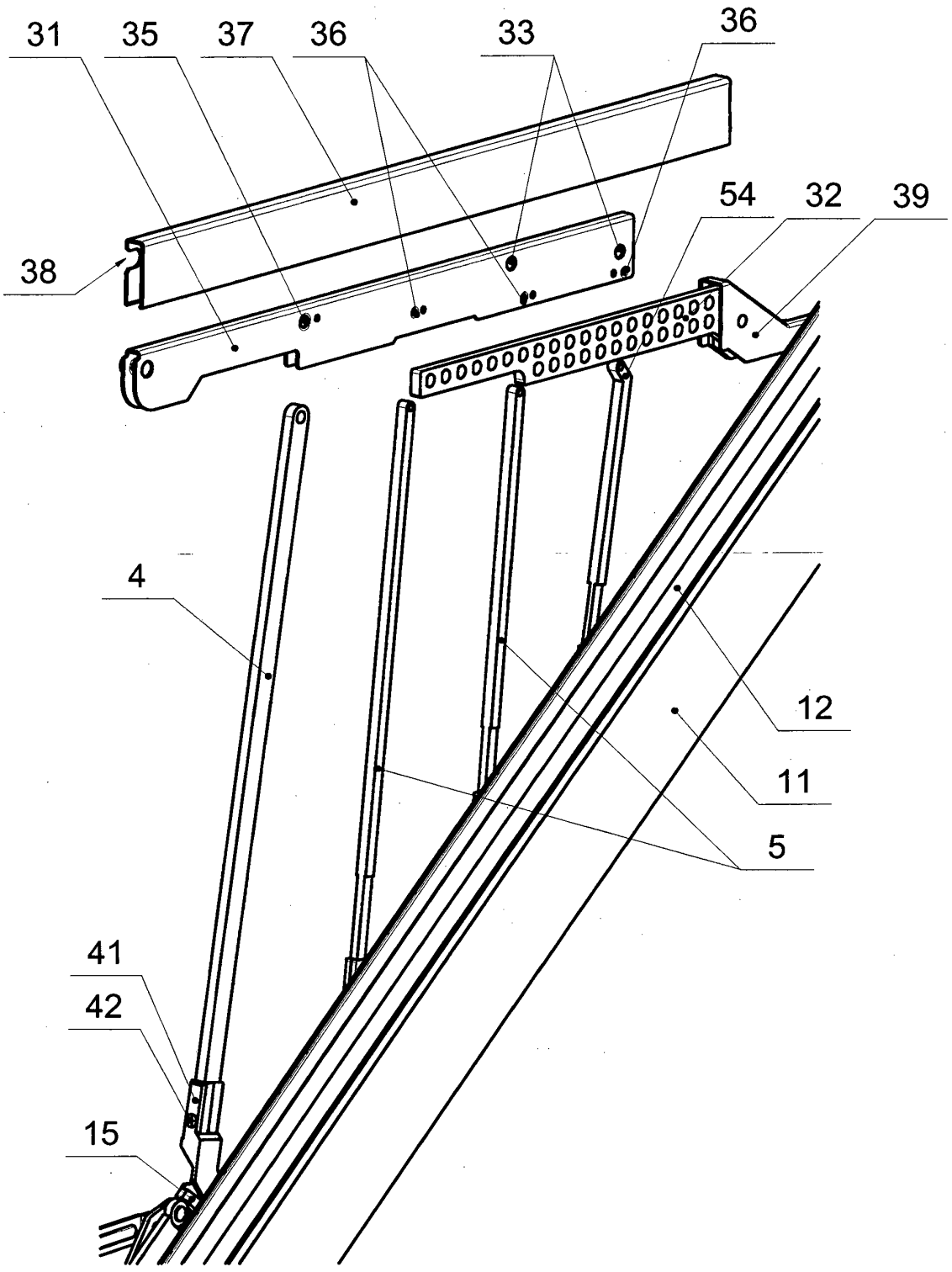


Fig. 5

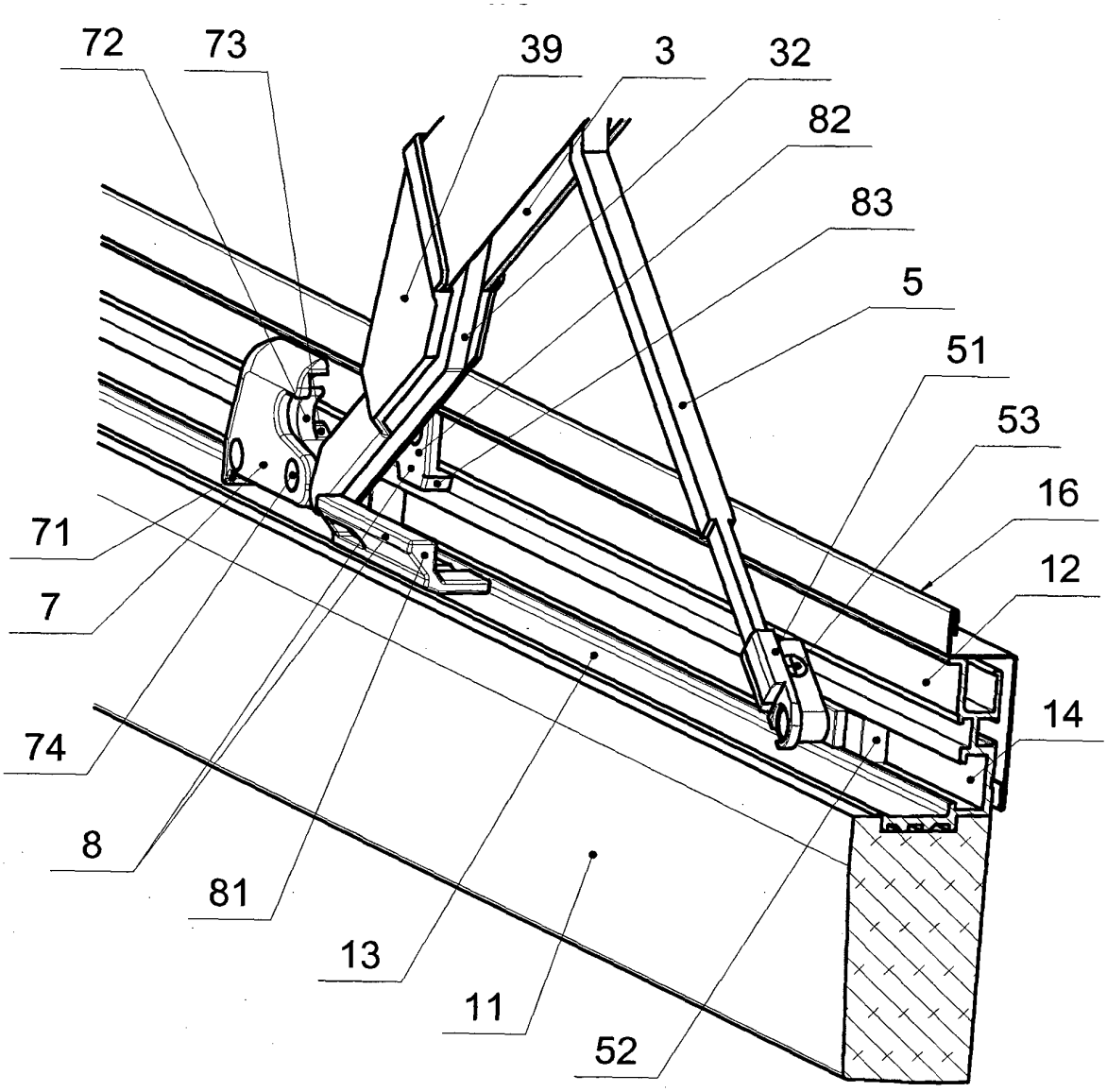


Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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