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(54) **WINDOW INCLUDING A SUPPORT ARRANGEMENT FOR A WINDOW LINING**

(57) The window (1) has a supply condition and a mounted condition in a roof construction. To form a transition between the window (1) to the interior, a first transition assembly is provided in the form of a lining support arrangement (5) connected to the frame (3) of the window (1) in its supply condition. The lining support arrangement (5) has a number of longitudinally extending lining support members (51-54) to form a frame-shaped structure connected to the frame (3) in the supply condition and the support means of the lining support arrangement (5) is provided by a lining engagement portion (535) of each lining support member (51-54), formed as longitudinal bead having a part-cylindrical cross-sectional shape.

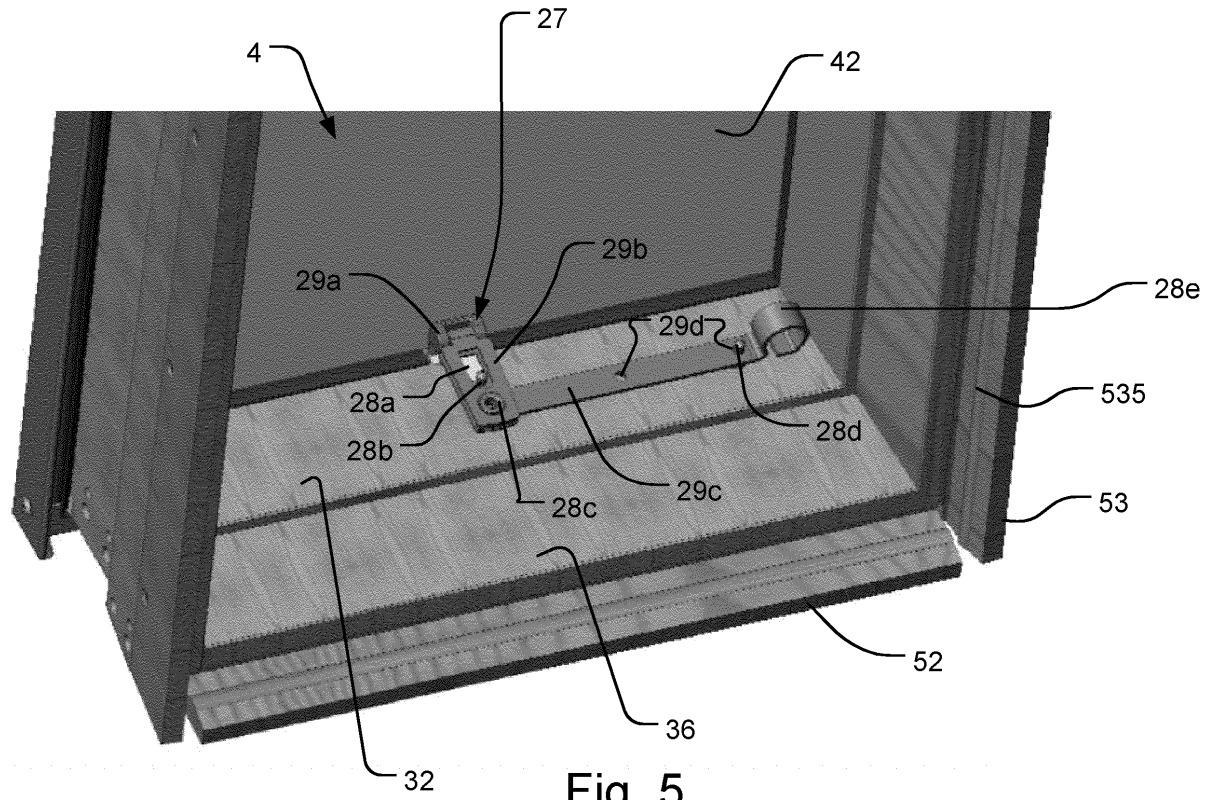

Fig. 5

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Description

[0001] The present invention relates to a window having a supply condition and a mounted condition in a roof construction, comprising a frame adapted to cooperate with a set of transition assemblies in the mounted condition.

[0002] Such transition assemblies make it possible to achieve satisfactory connections between the window and the surroundings, namely typically with the interior, the roof construction and the surrounding roofing, from an installation point of view, including constructional, aesthetic and climate-proofing, and weather-tightening considerations.

[0003] When installing windows in a façade or a roof, it is desirable to make the transition between the window frame and the inner wall of the room of the building smooth and of a pleasant appearance. The transition is most often made up of a so-called window lining having dimensions to span the distance between the inner sides of the window frame to the inner wall. In windows installed in a facade, the lining is constituted basically of a box-shaped element composed of a set of rectangular lining panels positioned at right angles to the window frame. The members are traditionally formed of panels or plates of such materials as plywood, gypsum or chipboard. In windows mounted in an inclined roof, the installation conditions are more complicated. This is applicable, whether the window and the window lining are intended for installation in a newly erected building, during complete refurbishing including several parts of the roof construction and/or the interior, or for renovation purposes involving replacement of as few components as possible.

[0004] Furthermore, the location of the window in the roof entails that special precautions need to be taken in order to ensure a climate-proof transition to the roof construction such that suitable comfort in the building room is achieved, and that a weather-tight transition to the roof surface is provided.

[0005] When replacing a roof window, there are instances where it is not possible or desirable to remove the existing lining. In other circumstances, the entire window lining is replaced.

[0006] During the installation process, that is when bringing the window from its supply condition to its mounted condition, several components need to be handled, and various sizes and positions of the individual components need to be accommodated. In combination with the requirements to satisfactory transitions as regards tightness and accurate positioning, the installation of a window and the connection to the window lining, and also to other parts of the building, present great challenges.

[0007] With this background it is an object of the invention to provide a window and window lining, by which the installation is facilitated and made more flexible.

[0008] This and further objects are met by a window of the kind mentioned in the introduction, which is furthermore characterized in that a first transition assembly is provided in the form of a lining support arrangement connected to the frame of the window in its supply condition and adapted to support a window lining in the mounted condition, and that said lining support arrangement includes support means allowing variation of the angle between the window lining and the frame.

[0009] In this manner, a secure and flexible installation is facilitated to meet the demands of a variety of different installation situations. By supplying the window with the lining support arrangement already in place, while at the same time providing for the possibility of accommodating window linings located within a range of angles, the window lining is easily positioned correctly while at the same time being supported by the lining support arrangement in a single operational step.

[0010] Further embodiments and advantages are set forth in the dependent claims, and will be apparent from the accompanying description of preferred embodiments.

[0011] In the following the invention will be described in further detail by means of examples of embodiments with reference to the schematic drawings, in which

Figs 1A and 1B are perspective views of a window in an embodiment of the invention;

Fig. 2 is a view of the window of Figs 1A and 1B, with two tiles indicated schematically;

Figs 3, 4 and 5 are schematic, fragmentary perspective views, on a larger scale, of a window in one embodiment of the invention;

Fig. 6 is a perspective view of details of the window in the embodiment of Figs 3, 4 and 5;

Fig. 7 is a perspective view, on a larger scale, of a detail of Fig. 6;

Figs 8A and 8B are end views, on a larger scale, of the detail of Fig. 7 cooperating with a lining panel in two different installation situations;

Figs 9A to 9B and 10 are schematic perspective views of a window in a further embodiment of the invention;

Fig. 9c is a cross-sectional fragmentary view along the line IX-IX in Fig. 9A;

Fig. 11 is a schematic perspective view of an alternative window;

Fig. 12A is a perspective view of an underfelt collar of the window of Figs 9A-9B, 10 and 11;

Fig. 12B is a perspective view of a prior art underfelt collar;

Fig. 13 is a perspective view of a flashing arrangement of a still further embodiment of the window according to the invention;

Fig. 14 is an exploded perspective view of the flashing arrangement shown in Fig. 13;

Figs 15 and 16 are further exploded perspective views of details the flashing arrangement of Fig. 14; and

Figs 17 and 18 are perspective views, on a larger scale, of a detail of the flashing arrangement of Fig.

13.

[0012] In Figs 1A, 1B and 2, a window generally designated 1 is shown, in a position representing a mounted condition in an inclined roof with an undulated roofing material such as tiles represented by two tiles 10 in Fig. 2 in an array below and an array above the window 1, respectively, as seen in the direction of inclination of the roof. The supporting roof construction is not shown but typically includes rafters, battens and counter-battens. The frame 3 of the window 1 is connected to the supporting roof construc-tion in any suitable manner, typically by means of a plurality of mounting brackets as is well-known in the art.

[0013] The window 1 comprises a sash 2 hingedly connected to a frame generally designated 3. The sash 2 carries a pane 4.

[0014] The frame 3 is adapted to cooperate with a set of transition assemblies to form a transition to the interior, to the roof construction and to the surrounding roofing, respectively.

[0015] According to the present invention, the transition towards the interior of the building below the window is provided in that the set of transition assemblies comprises a first transition assembly in the form of a lining support arrangement 5 connected to the frame 3 and adapted to cooperate with a window lining including a set of lining panels 9 (cf. Figs 8A and 8B) to be described in further detail below with particular reference to Figs 3 to 8B.

[0016] In the embodiment shown in Figs 1A-1B and 2, the window 1 furthermore comprises a second transition assembly in the supply condition to form a climate-proofing transition between the window 1 and the roof construction in the mounted condition. In the specific embodiments shown in Figs 9A-9C, 10, 11 and 12A, the second transition assembly comprises an underfelt collar 7 connected to the frame 3 of the window 1 in the supply condition. Optionally, the second transition assembly also includes an insulation element 6.

[0017] Eventually, a weather-tight transition between the window 1 and the surrounding roofing 10 in the mounted condition is provided by means of a third transition assembly comprising a flashing arrangement 8. This will be described in further detail with particular reference to Figs 13 to 18.

[0018] Turning now to Figs 3 to 5 showing a window of one embodiment of the invention in a supply condition, the features of the window 1 will be described in some detail.

[0019] The sash 2 is shown with sash members 21, 22, 23 and 24. The hinge connection with the frame 3 is provided at the top of the window 1 and is constituted by sash hinge part 25a cooperating with frame hinge part 25b and interconnected by hinge pin 25c.

[0020] In the embodiments shown in the drawing, the frame 3 is provided as a two-part frame including a first frame adjacent the sash 2 and including four first frame members 31, 32, 33, 34, and a second frame including four second frame members 35, 36, 37, 38. Such embodiments are presently considered advantageous as they allow different features of the frame to be associated with either the first or the second frame as will be described in detail below, but it is entirely within the scope of the invention to use a single one-part frame housing all of the features described with reference to the first and second frames.

[0021] To operate the window 1 and to position the sash 2 in a ventilating position relative to the frame 3, an opening device 27 is provided. The opening device 27 comprises a guiding console 28a, a first tap 28b, pivot bushing 28c, and a second tap 28d connected to the bottom frame member 32 of the first frame. Connecting member 29a with link 29b is via pivot bushing 28c connected to stay arm 29c. Stay arm 29c is provided with a series of apertures, here two apertures 29d, to cooperate with first tap 28b or second tap 28d in a ventilating position. The sash 2 is opened by handling stay arm 29c, for instance by gripping handle portion 28e, and lifting the stay arm 29c out of engagement with second tap 28d through right-hand aperture 29d, lifting link 29b out of engagement with first tap 28b, swining sash 2 outwards. A desired ventilating position is provided by re-positioning one of apertures 29d over first tap 28b.

[0022] The pane 4 is formed as a two-sheet stepped pane comprising outer pane sheet 41 and inner pane sheet 42. In the embodiment shown, fittings 26 at the bottom sash member 22 are positioned in close proximity to the lower edge of the outer pane sheet 41.

[0023] Other components not described in detail form part of the weather-shield of the roof and include frame and sash claddings and covers, flashings, roofing felt, insulation and underroof, of which side frame covering 34a is shown.

[0024] According to the present invention, bringing the window 1 from a supply condition to a mounted condition in a roof construction, for instance as indicated in Fig. 2, involves connecting the window lining 9 to the frame 3 of the window 1.

[0025] To that end, the first transition assembly in the form of lining support arrangement 5 will be described in some detail. The lining support arrangement 5 is connected to the frame 3 of the window 1 in its supply condition and supports the window lining 9 in the mounted condition, cf. Figs 8A and 8B. The lining support arrangement 5 includes support means allowing variation of the angle α between the window lining 9 and the frame 3.

[0026] In the one embodiment, the lining support arrangement 5 comprises a number of longitudinally extending lining support members 51, 52, 53 and 54 to form a frame-shaped structure connected to the frame 3 in the supply condition. The support means of the lining support arrangement 5 is provided by a lining engagement portion 535 of each lining support member, here represented by lining support member 53, formed as longitudinal bead having a part-cylindrical cross-sectional shape.

[0027] In addition, the lining support member 53 comprises a first frame engaging face 531 forming a top surface, a second frame engaging face 532 forming a side surface and with apertures 532a for receiving fastening means such as screws, a back side 533, a first stepped portion 534 extending between the second frame engaging surface 532 and the lining engaging portion 535, and a second stepped portion 536 extending between the lining engagement portion 535 and a bottom surface 537, the transverse dimension between the second engaging face 532 and the back side 533 being larger than the transverse dimension between the first stepped portion 534 and the back side 533 and between the second stepped portion 536 and the back side 533. The second stepped portion 536 is here inclined such that the transverse dimension between the second stepped portion 536 and the back side 533 is larger at the lining engagement portion 535 than at the bottom surface 537.

[0028] In the two-part configuration of the window frame 3 of the embodiment, the lining support arrangement 5 cooperates with the second frame 35-38. To that end, the second frame member, here shown as second frame member 38, is provided with a rabbet 380 forming a bottom face 381 and a side face 382 to abut the first and second frame engaging faces 531, 532, respectively, of the lining support members 51-54.

[0029] The lining support arrangement 5 may in principle be formed by any suitable material but preferably comprises profiles manufactured by wood or a wooden material such as plywood. As suitable materials for the lining support arrangement 5 are considered all materials having a durability and resistance towards bending, tension, pressure, and torsion. Furthermore, the material of the lining support should be easy to connect to the parts of the window. Typically, suitable materials are necessarily of a solid, compact structure of reduced resilience in order to ensure proper functioning.

[0030] Referring now to Figs 9A-9B and 10, it is shown how the window of this further embodiment is provided with a second transition assembly to form a climate-proofing transition between the window and the roof construction in the mounted condition in addition to the first transition assembly. The second transition assembly comprises an underfelt collar 7 connected to the frame 3 of the window 1 in the supply condition, and also includes, in the specific embodiment, an insulation element 6.

[0031] The underfelt collar 7 is provided with a frame engagement section in the form of rim 71 fastened to the frame 3, namely to the first frame members 31-34, by suitable means, for instance double-adhesive tape. Schematically indicated is roof structure engagement section 72. Section 72 is provided with area increasing means such as for instance pleats or folds in a manner known *per se* and as indicated in the prior art collar 7' of Fig. 8B.

[0032] In the alternative window shown in Fig. 11, no lining support arrangement 5 is present, just as no insulation element 6 is present.

[0033] Eventually, the window is in the embodiment shown provided with a third transition assembly to form a weather-tight transition between the window and the roof construction in the mounted condition, comprising a flashing assembly 8.

[0034] The window 1 according to the invention may be supplied with only the first transition assembly, viz. the lining support arrangement 5, and optionally with the second and/or third transition assemblies.

[0035] The flashing assembly 8 is the subject-matter of Applicant's copending patent application filed on the same date as the present application. The contents thereof are incorporated by specific reference, and the flashing assembly 8 will not be described in further detail than the below listing of elements:

8 flashing arrangement
- 81 gutter element
- 811 middle gutter piece
- 812 roofing-supporting piece
- 813 deflector piece
- 814 left-hand gutter side piece
- 815 right-hand gutter side piece

82 apron element
- 820 apron foam
- 821 apron piece
- 822 middle piece
- 823 left-hand side piece
- 824 right-hand side piece

83 left-hand water raiser

84 right-hand water raiser

85 left-hand connecting piece

86 right-hand connecting piece

87 roll element
- 871 first side edge
- 872 second side edge
- 873 bent portion
- 874 flange
- 875 dimples

[0036] The invention should not be regarded as being limited to the embodiments shown in the drawings and described in the above. Several modifications and combinations may be carried out within the scope of the appended claims.

[0037] The different features of the embodiments may be combined.

Claims

1. A window (1) having a supply condition and a mounted condition in a roof construction, comprising a frame (3) adapted to cooperate with a set of transition assemblies in the mounted condition, **characterized in that** a first transition assembly is provided in the form of a lining support arrangement (5) connected

to the frame (3) of the window (1) in its supply condition and adapted to support a window lining (9) in the mounted condition, and that said lining support arrangement (5) includes support means allowing variation of the angle between the window lining (9) and the frame (3).

2. A window according to claim 1, wherein the lining support arrangement (5) comprises a number of longitudinally extending lining support members (51-54) to form a frame-shaped structure connected to the frame (3) in the supply condition and the support means of the lining support arrangement (5) is provided by a lining engagement portion (535) of each lining support member (51-54), formed as longitudinal bead having a part-cylindrical cross-sectional shape.

3. A window according to claim 2, wherein each lining support member (51-54) comprises a first frame engaging face (531) forming a top surface, a second frame engaging face (532) forming a side surface, a back side (533), a first stepped portion (534) extending between the second frame engaging surface (532) and the lining engaging portion (535), and a second stepped portion (536) extending between the lining engagement portion (535) and a bottom surface (537), the transverse dimension between the second engaging face (532) and the back side (533) being larger than the transverse dimension between the first stepped portion (534) and the back side (533) and between the second stepped portion (536) and the back side (533).

4. A window according to claim 3, wherein the second stepped portion (536) is inclined such that the transverse dimension between the second stepped portion (536) and the back side (533) is larger at the lining engagement portion (535) than at the bottom surface (537).

5. A window according to any one of the preceding claims, wherein the frame (3) is a two-part frame including a first frame adjacent a sash (2) and including four first frame members (31-34) and a second frame including four second frame members (35-38), the lining support arrangement (5) cooperating with the second frame (35-38).

6. A window according to claim 5 when dependent on claim 3 or 4, wherein each second frame member (35-38) is provided with a rabbet (380) forming a bottom face (381) and a side face (382) to abut the first and second frame engaging faces (531, 532), respectively, of the lining support members (51-54).

7. A window according to any one of the preceding claims, wherein the lining support arrangement (5) comprises profiles manufactured by wood or a wooden material such as plywood.

8. A window according to any one of the preceding claims, wherein the window is provided with a second transition assembly to form a climate-proofing transition between the window and the roof construction in the mounted condition, comprising an underfelt collar (7) connected to the frame (3) of the window (1) in the supply condition, preferably also including an insulation element (6).

9. A window according to any one of the preceding claims, wherein the window is provided with a third transition assembly to form a weather-tight transition between the window and the roof construction in the mounted condition, comprising a flashing assembly (8).

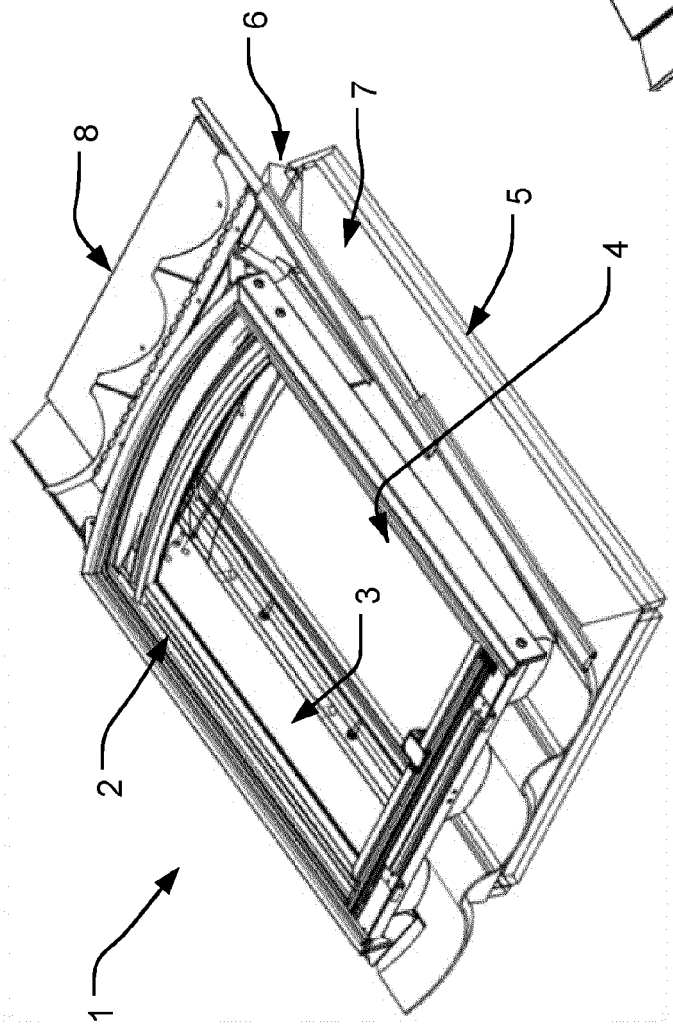


Fig. 1A

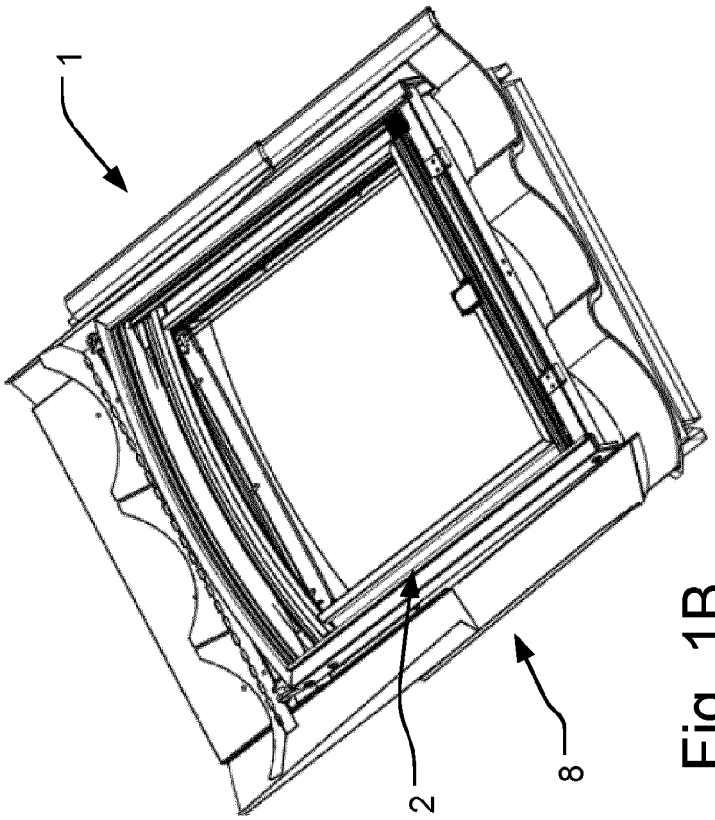


Fig. 1B

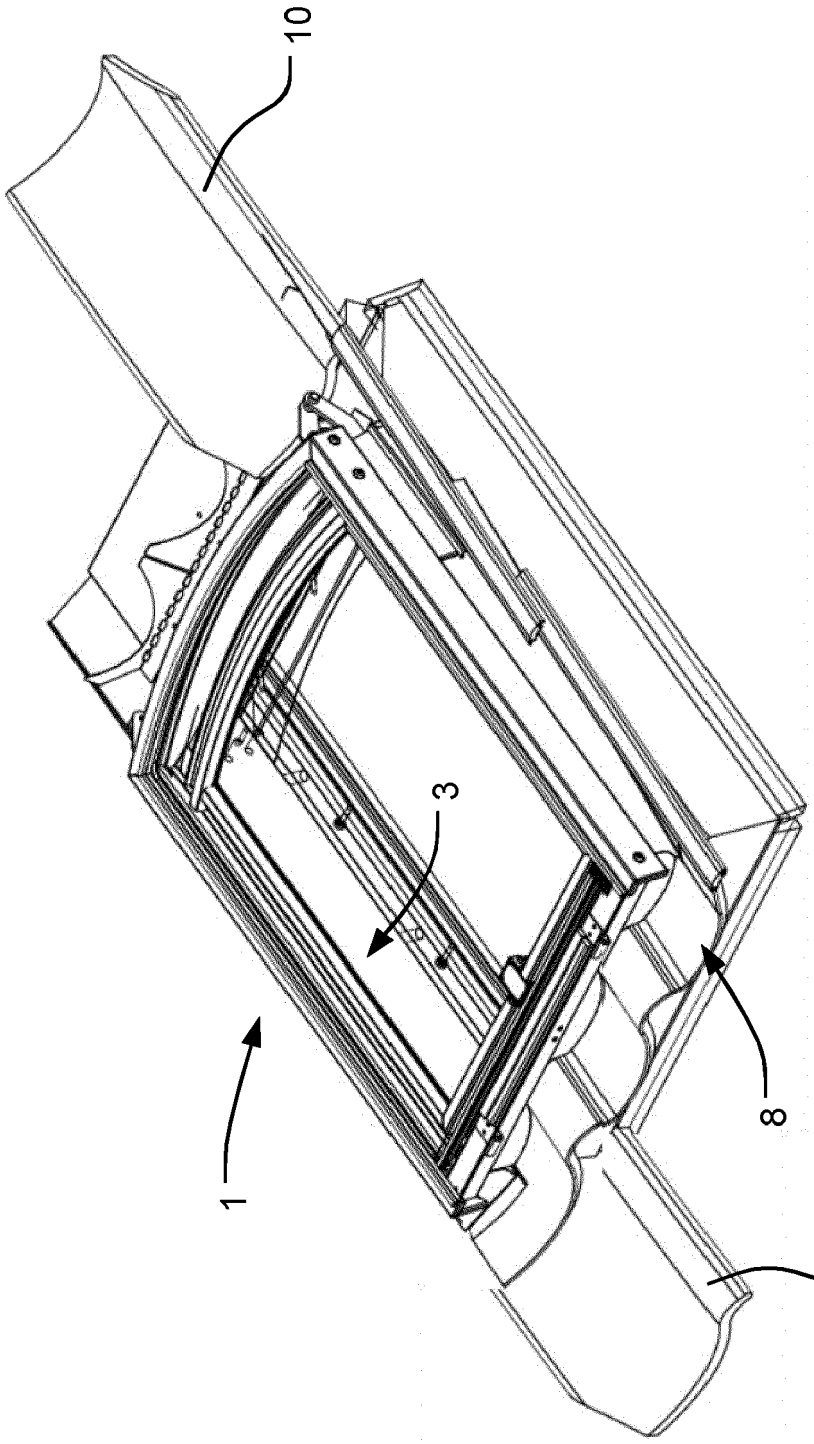


Fig. 2

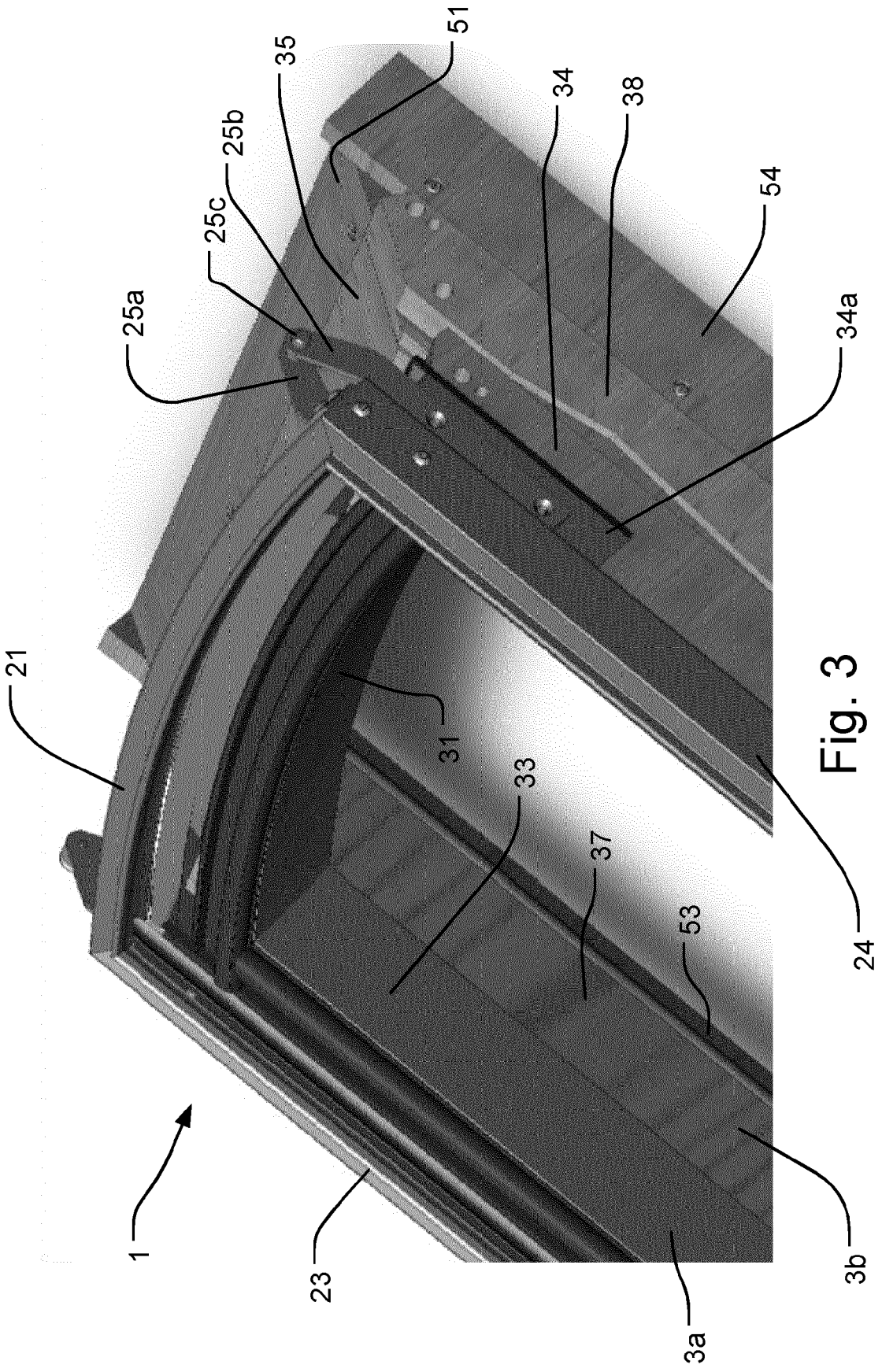


Fig. 3

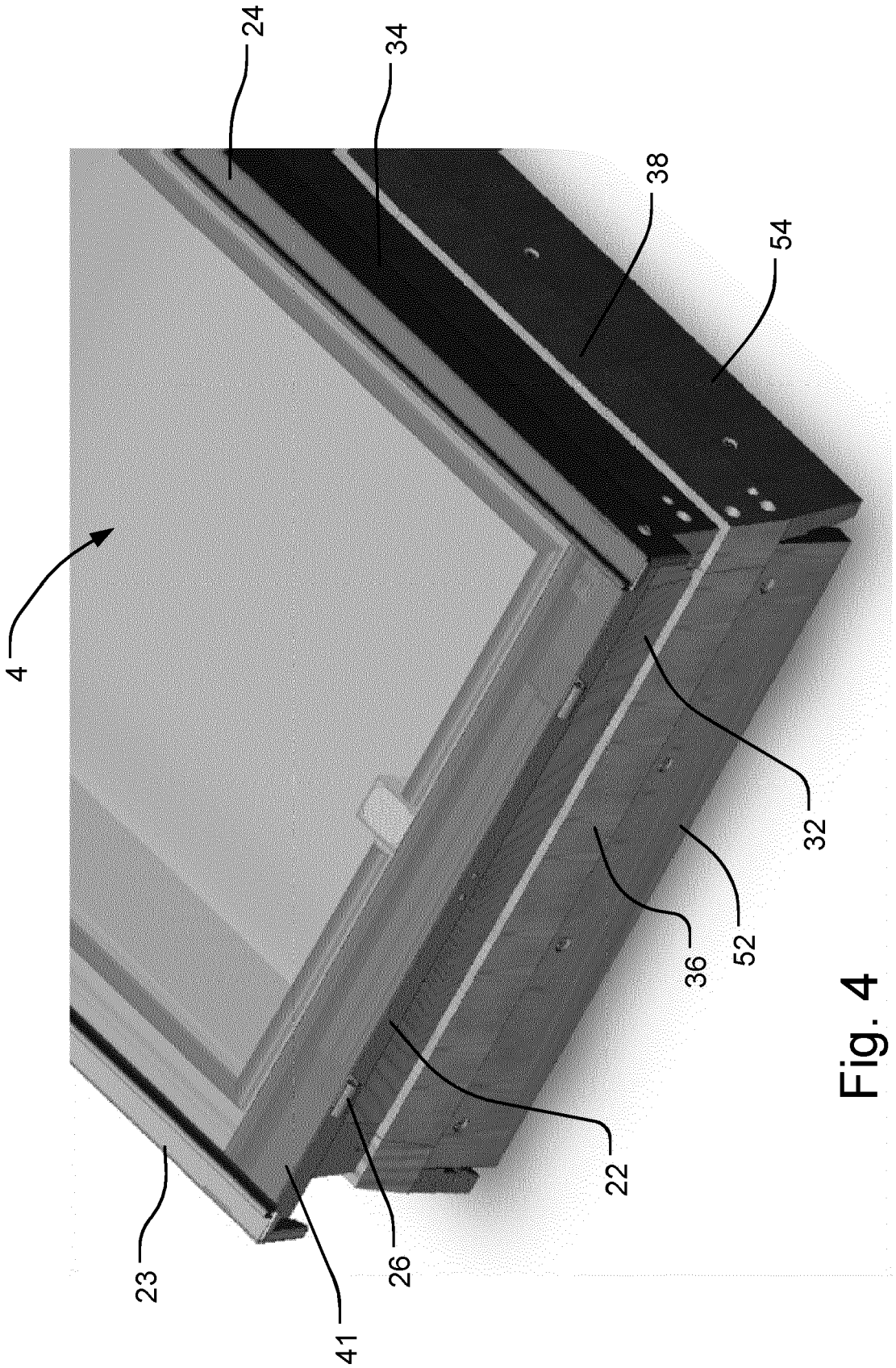


Fig. 4

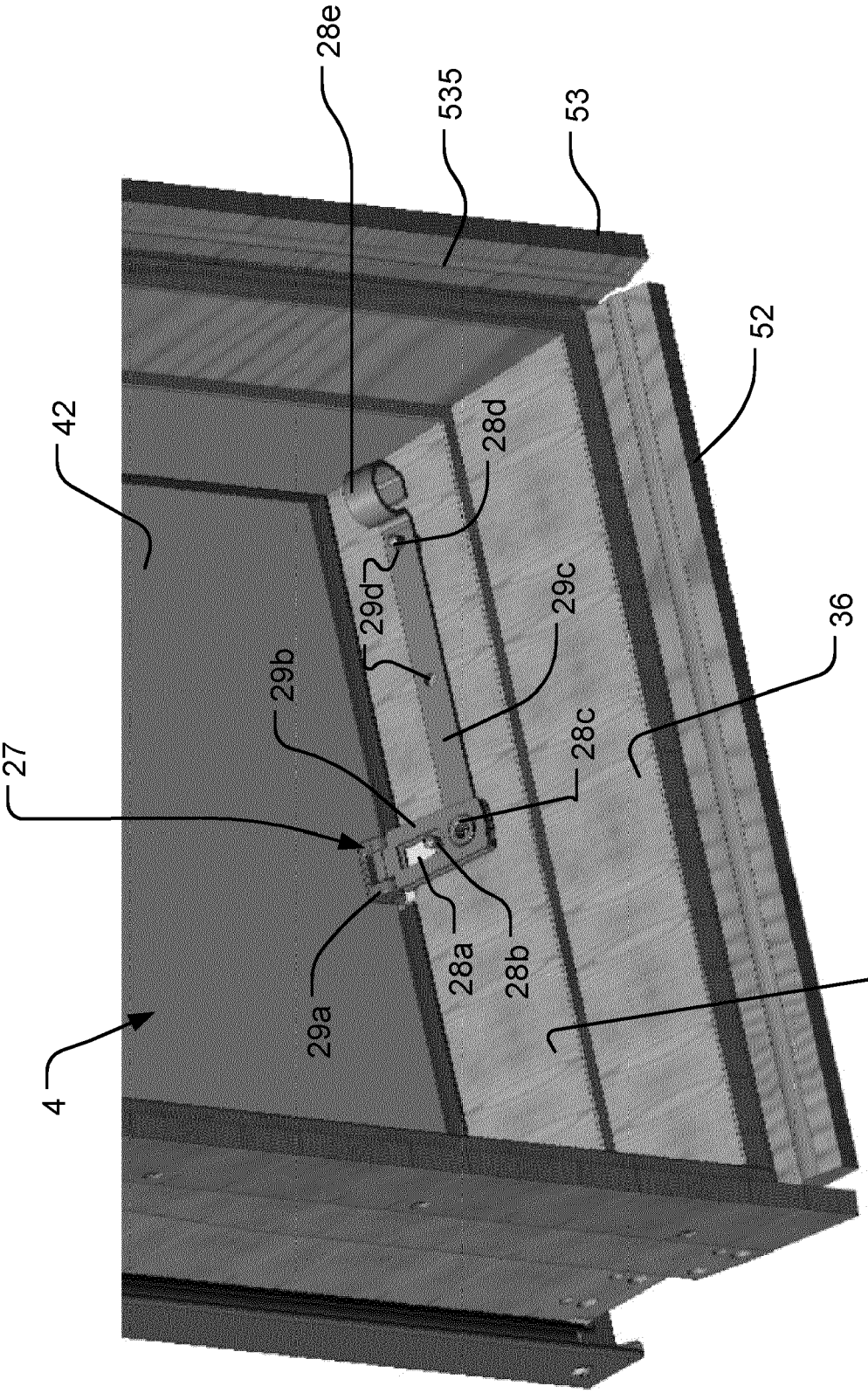


Fig. 5

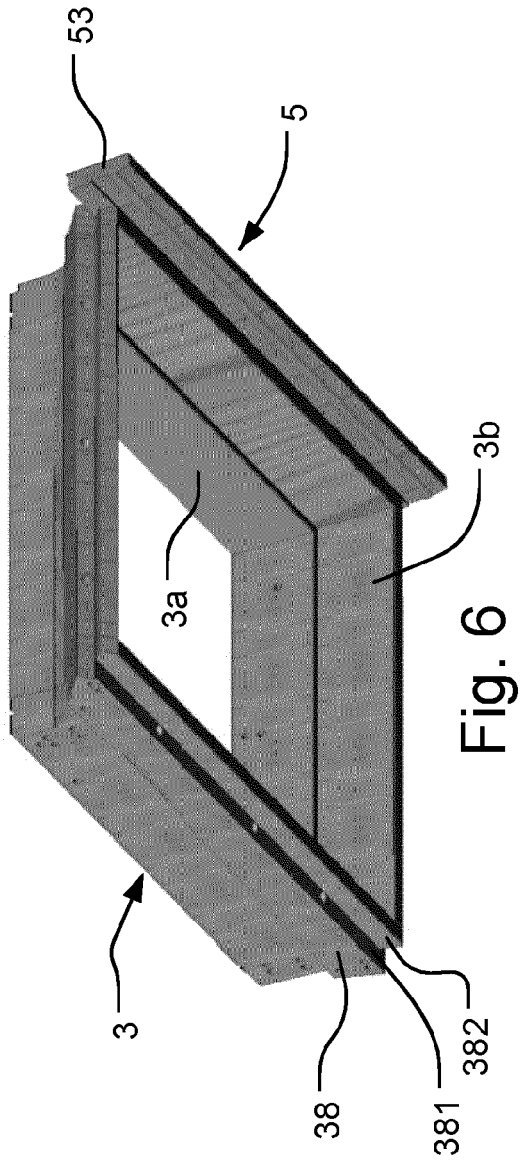


Fig. 6

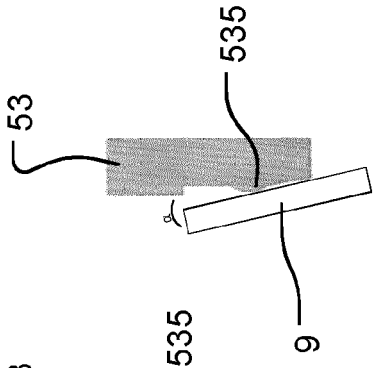


Fig. 8B

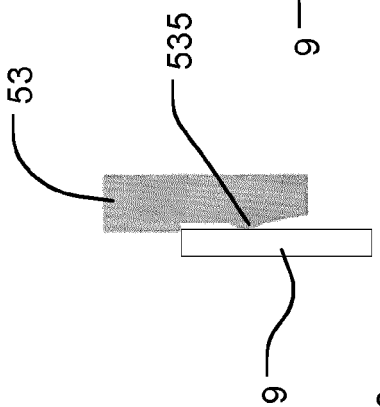


Fig. 8A

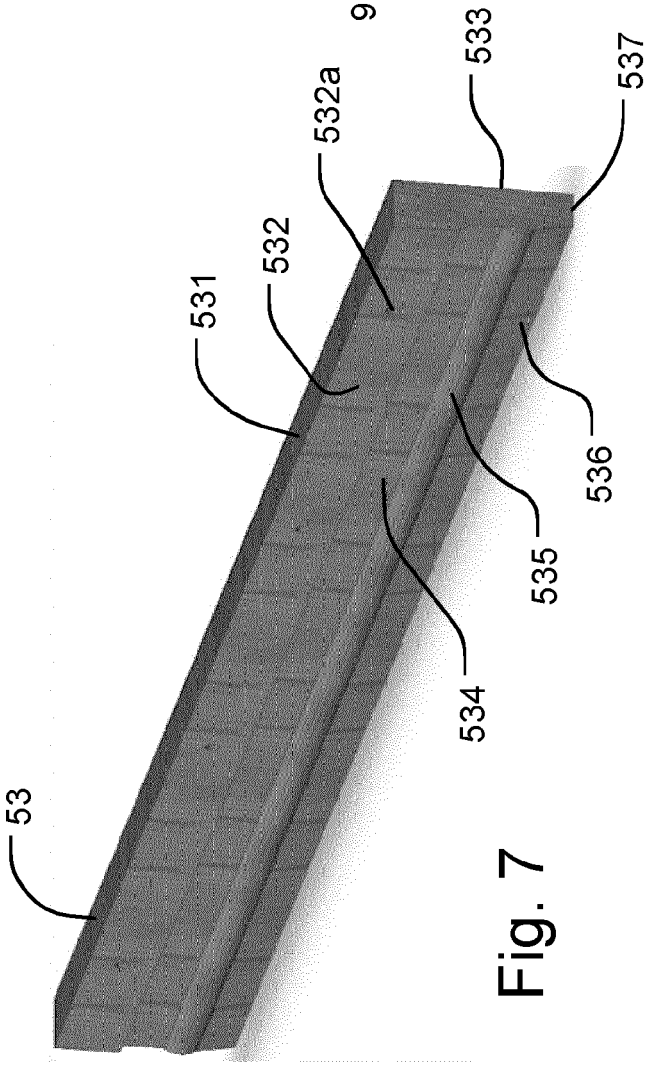


Fig. 7

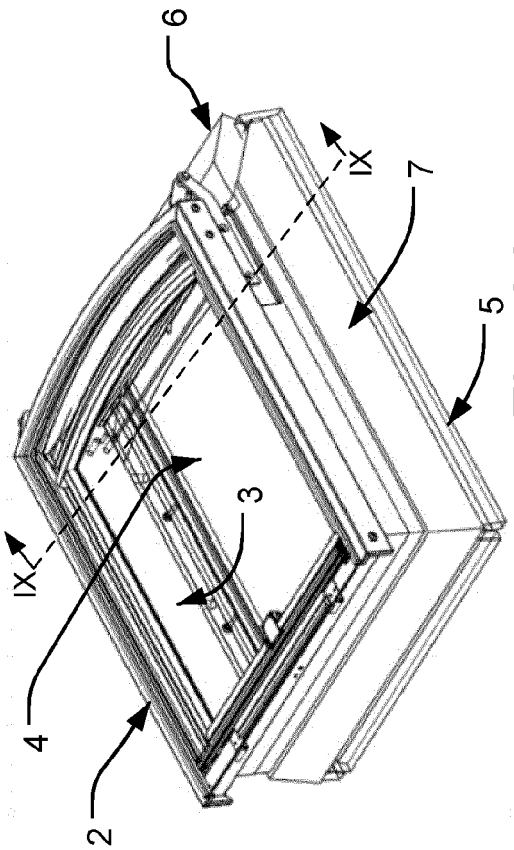


Fig. 9A

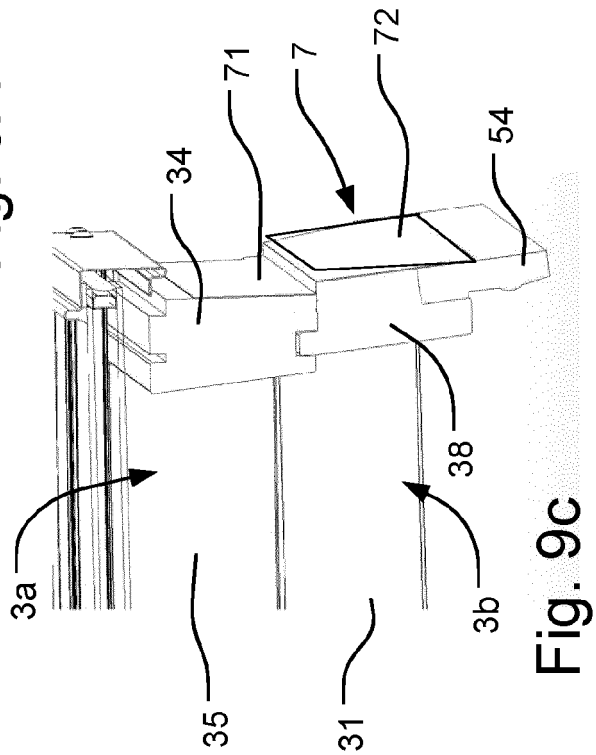


Fig. 9c

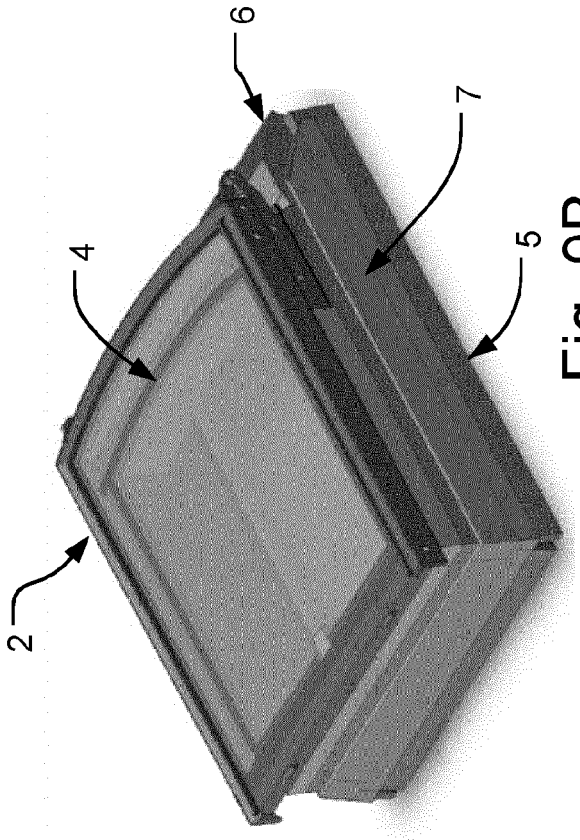
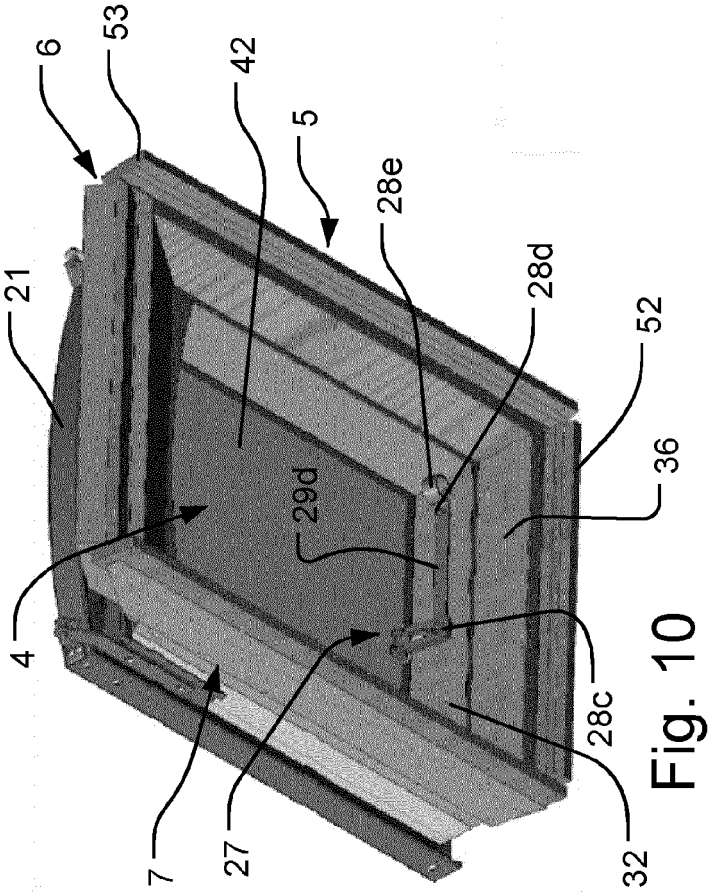


Fig. 9B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42
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28e
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28d
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29d
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Fig. 10

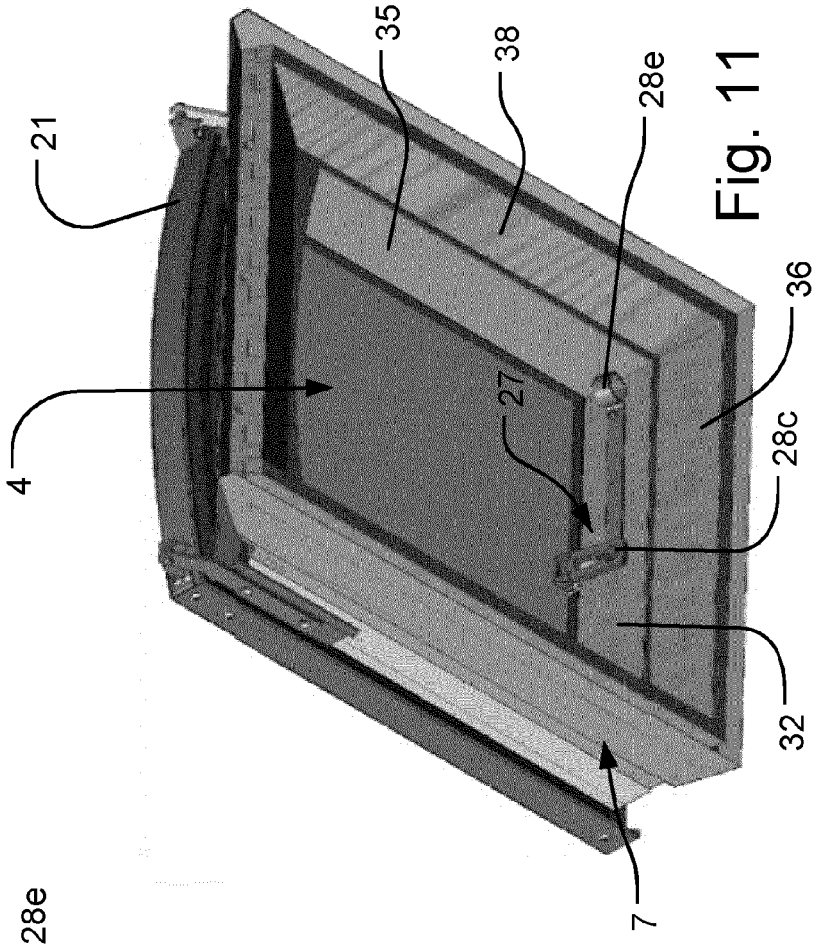
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Fig. 11

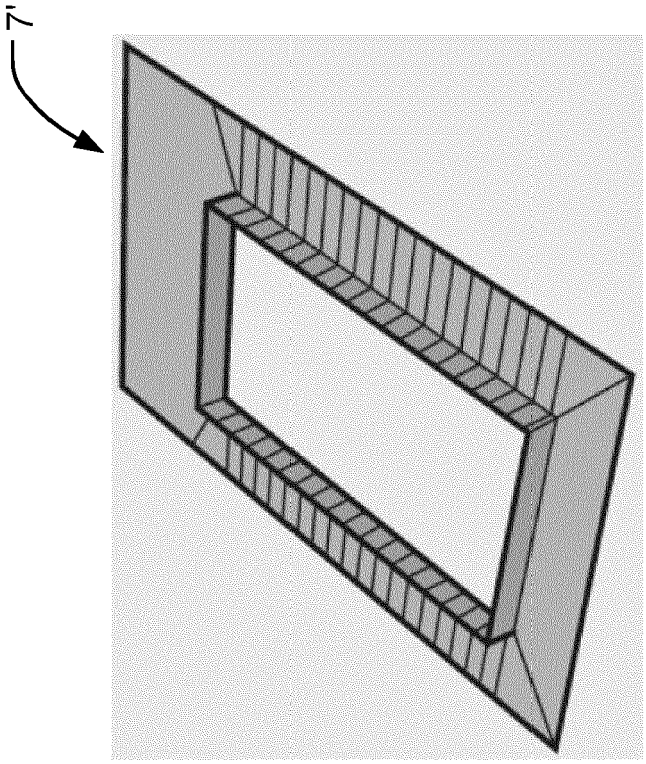

Fig. 12B (Prior Art)

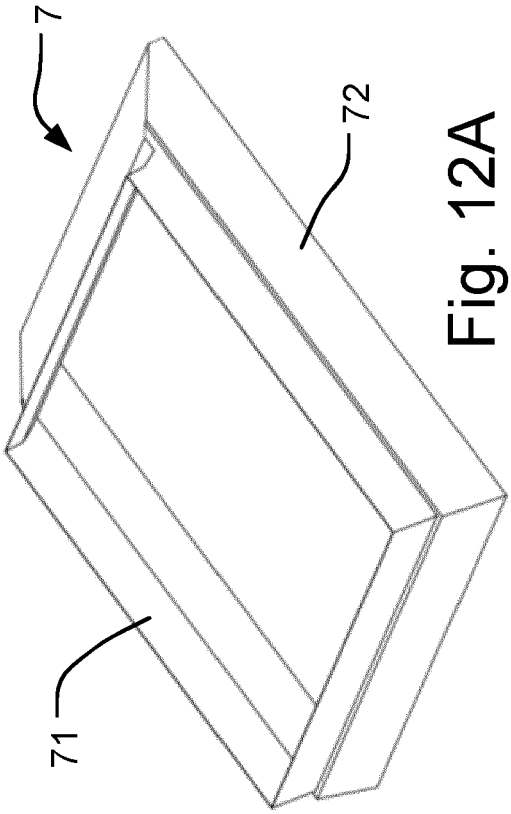

Fig. 12A

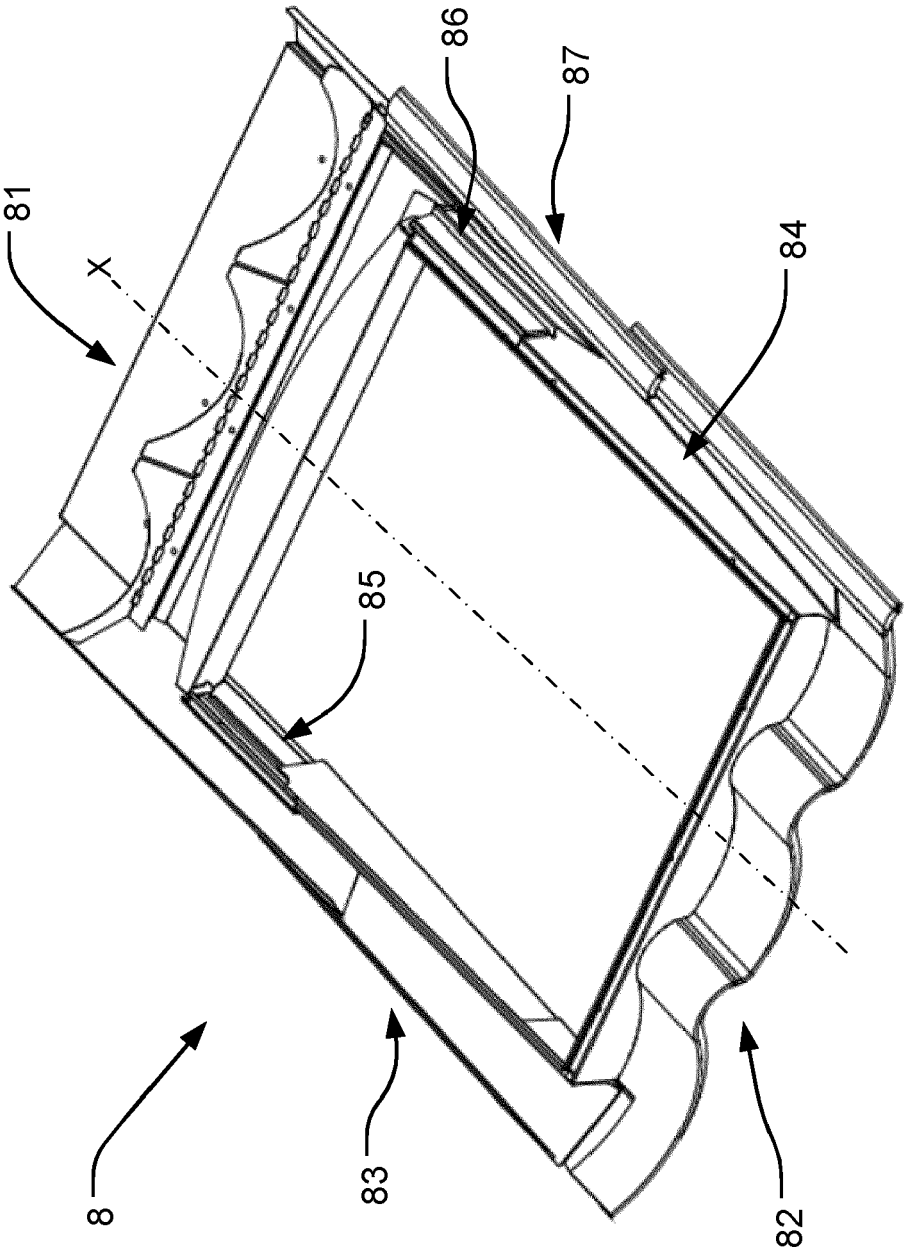

Fig. 13

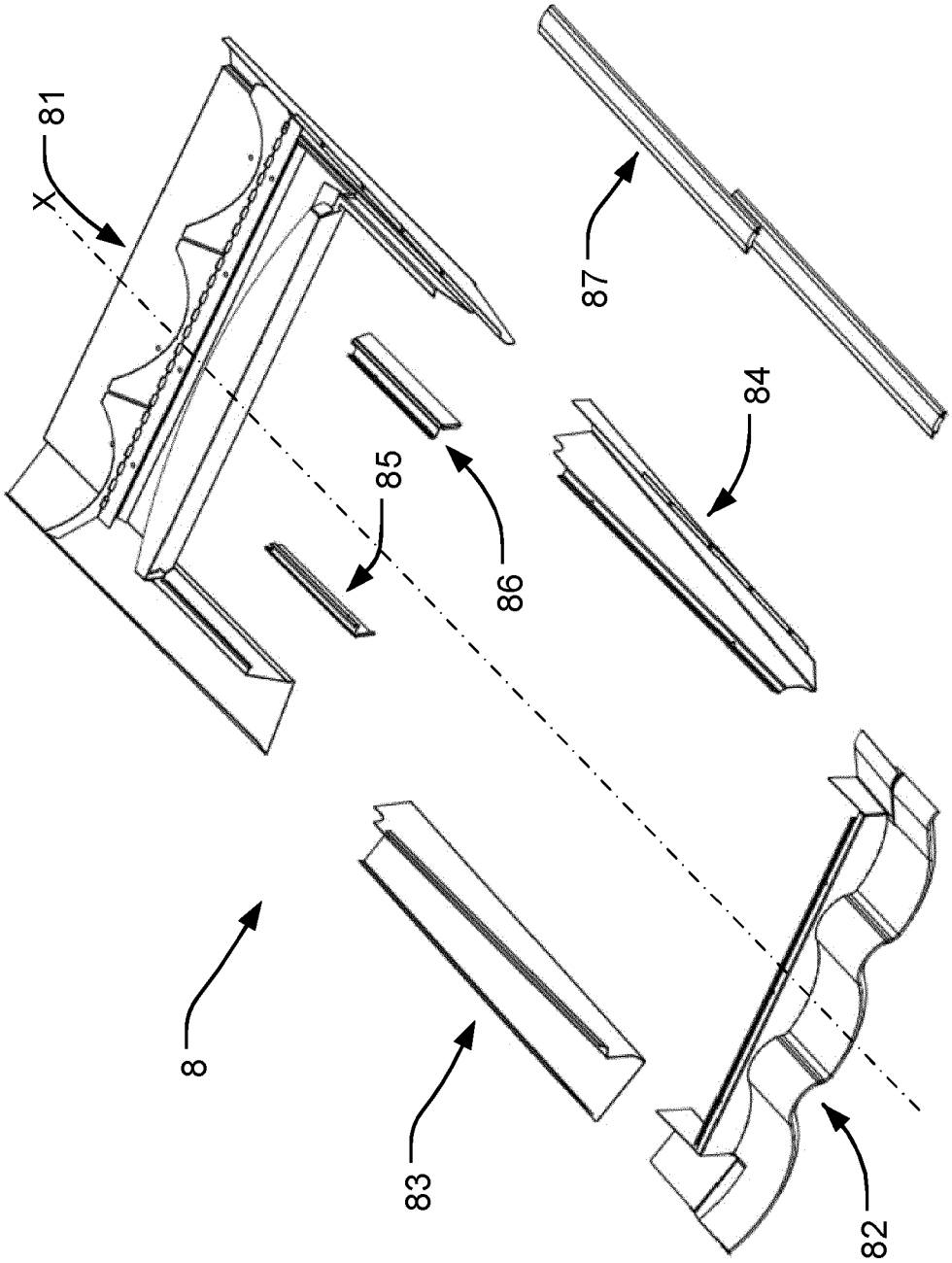

Fig. 14

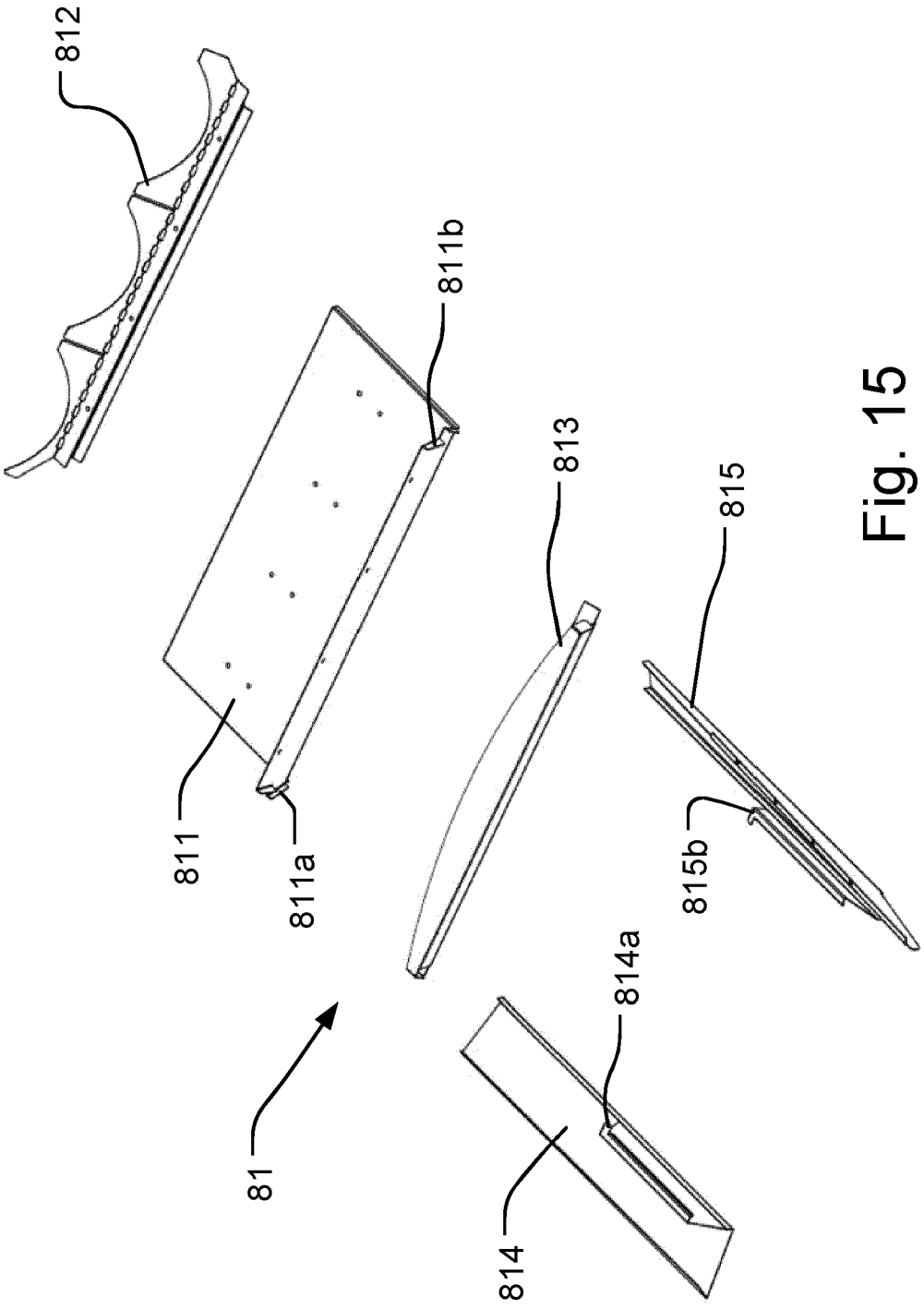

Fig. 15

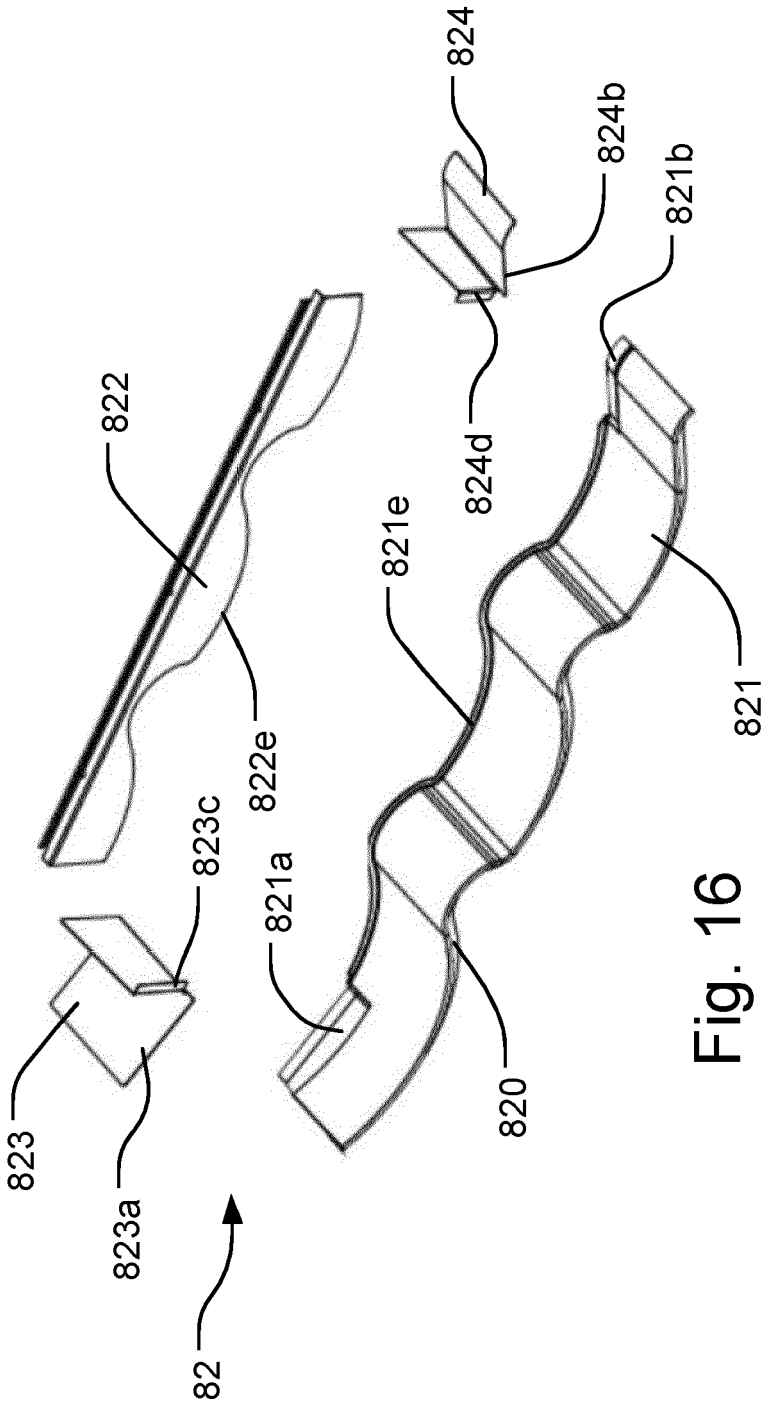

Fig. 16

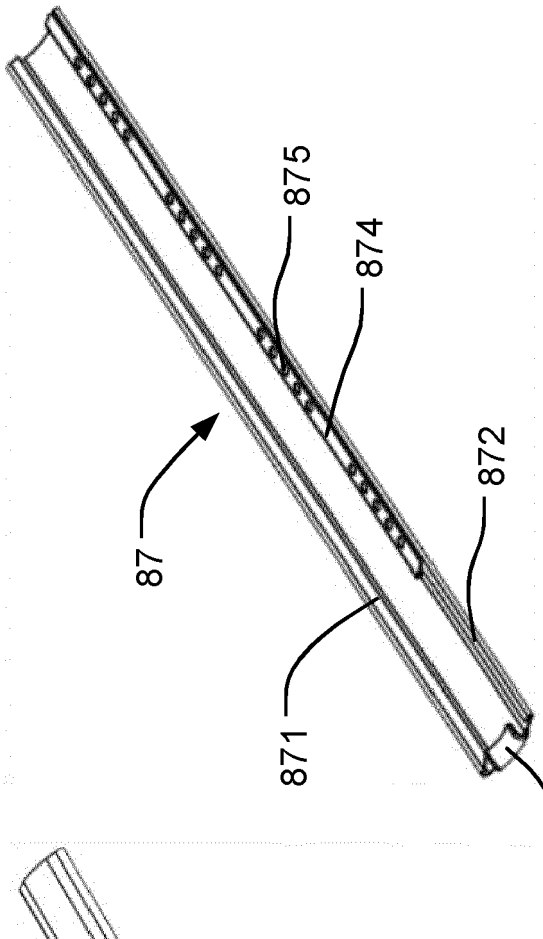

Fig. 18

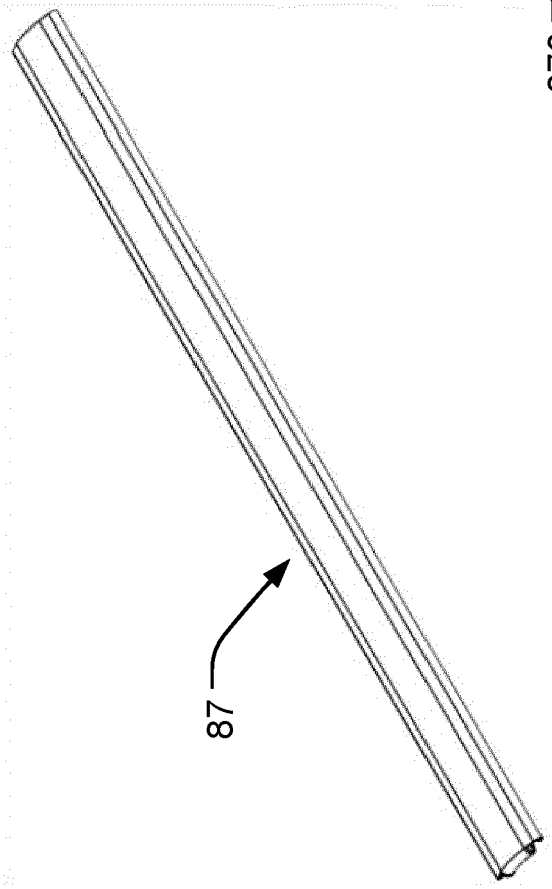

Fig. 17

Europäisches Patentamt
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EUROPEAN SEARCH REPORT

Application Number
EP 15 20 3046

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Place of search	Date of completion of the search	Examiner
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X : particularly relevant if taken alone
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