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(54) **INSTALLATION SYSTEM COMPRISING A PLURALITY OF BRACKET MEMBERS AND METHOD FOR INSTALLATION OF A LINING PANEL IN A ROOF WINDOW**

(57) With the invention, an installation system comprising bracket members is provided to facilitate the connection between a roof window and a lining panel. The bracket member is formed as a substantially plane bracket base member (10) with a width (WB) and height (HB) and has one or more sets of longitudinal weakened portions (31, 41) to provide a first longitudinal folding line (31B) and at least one set of transverse weakened portions (30) to provide a transverse folding line (30B) extending at right angles to the first longitudinal folding line (31B) and dividing the bracket base member (10) into at least two sections to form a first bracket part (101) and

a second bracket part (102). The main portion (11A; 21A) of the respective section is formed on one side of the first longitudinal folding line (31B) and the border portion (12A, 22A) on the other side of the first longitudinal folding line (31B). A second set of longitudinal weakened portions (32, 42) to provide a second longitudinal folding line (32B) is formed substantially in parallel with and at a distance from the first longitudinal folding line (31B), and a flap portion (13A, 23A) is provided on the other side of the second longitudinal folding line (32B) relative to the main portion (11A, 21A).

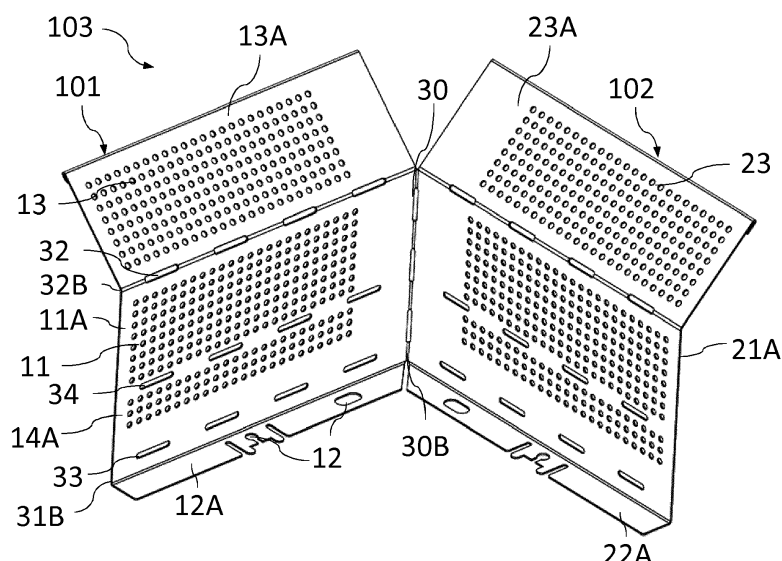


Fig. 6

## Description

### Technical Field

**[0001]** The present invention relates to an installation system comprising a roof window, a lining panel and a plurality of bracket members configured for providing a connection between the roof window and the lining panel, in which each bracket member includes at least a main portion having a first fastening zone configured to be connected to the lining panel and a border portion having a second fastening zone configured to be connected to the roof window. The invention furthermore relates to a method for installation of a lining panel in a roof window.

### Background Art

**[0002]** 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 side of the window frame to the inner wall or the loft of the room. In windows installed in a facade, i.e. substantially vertically, the lining is constituted basically of a box-shaped element having two side members, a top member, and a bottom member, all being of a substantially rectangular shape and 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 or foamed PVC.

**[0003]** In windows mounted in an inclined roof, the geometry of the lining is more complicated. Basically, the side members are positioned at right angles to the window frame, as in facade windows, but the top member is most often substantially horizontal and the bottom member substantially vertical, or the top member and bottom member assume other angles with the window frame. A number of grounds for this particular design exist, one being that the horizontal top member allows for an increased influx of light, another that the vertical bottom member makes it possible to access the bottom of the window and optimise the space of the room. Thus, the top member and the bottom member form an angle other than 90° with the window frame, and the side members have a trapezoidal shape.

**[0004]** The connection between the frame of the window and the window lining typically requires specially adapted fittings which need to be manufactured, stored, supplied and mounted, all of this contributing to logistic challenges.

**[0005]** In the prior art, a number of solutions have been proposed to facilitate the installation and reduce the amount of manual adjustment needed and the risk of incorrect installation. Examples are shown for instance in EP 17 399 B1, EP 287 362 B1, EP 2 615 219 A1 and EP 2 860 487 A1.

**[0006]** Even though the devices disclosed in these documents facilitate the mounting to some extent, there is still a need for simplified and flexible manufacture and installation of lining panels in roof windows.

### Summary of Invention

**[0007]** It is therefore the object of the invention to provide an installation system by which the manufacture and installation of a lining panel in a roof window is facilitated.

**[0008]** In a first aspect, this and further objects are achieved with an installation system of the kind mentioned in the introduction, which is furthermore characterised by the features of the characterising portion of claim 1.

**[0009]** By forming the installation system in this way, a number of advantages are achieved. The installation system comprises a roof window, a lining panel and a plurality of bracket members for assisting in the installation. The bracket members include a first plurality of bracket members, which are formed as corner brackets in which a second section of each bracket base member has been bent substantially 90° about the transverse folding line relative to a first section, and each section of the respective bracket base member has been bent substantially 90° about the first longitudinal folding line to form the border portion to extend substantially perpendicularly to the respective main portion of the bracket section, said corner brackets being connected to corners of the roof window and of the lining panel. Alternatively or additionally, a second plurality of bracket members are formed by separation of a first section from a second section of each bracket base member along the transverse folding line, to form at least two bracket parts of a single bracket base member, and each bracket part has been bent substantially 90° about the first longitudinal folding line to form the border portion extending substantially perpendicularly to the respective main portion of the bracket part, said bracket parts being connected to sides, top and bottom of the roof window and the lining panel. The installation is rendered more flexible and facilitated in that bracket base members provided with the installation system form the basis of the desired combination of bracket members that the specific installation situation requires. Installation requirements typically depend on the size of the roof window and lining panel. In principle, an installer is free to choose the position and configuration of the bracket members of the first and/or second plurality; for instance, corner brackets only at some corners, more than one bracket part on any one of the top, bottom or sides of the roof window, only brackets at the corners, only brackets at the sides, top or bottom of the roof window etc. One and the same bracket base member may thus be used to provide two or more bracket parts which may either be detached from each other and utilised as two or more separate parts, or shaped into an angled bracket member fitting for instance a corner of a roof window. In turn, this reduces the number of parts that

need to be manufactured, stored and supplied. The border portion is easily provided by bending the bracket base member about the first longitudinal folding line, to form a perpendicular flange to fit into for instance the circumferential groove present in the interior side of the frame of most roof windows. Alternatively, the border portion may be shaped into another angle or left as is for other forms of connections to the roof window. Last but not least, in the supply condition, the bracket base member is easily fit into existing packaging of other parts of an installation system rather than requiring individual packaging. For instance, the required number of bracket base members may be laid flat in the roof window packaging.

**[0010]** It is noted in this regard that the term "folding line" is intended to encompass any longitudinal marking or indication, suitable for providing instructions to a user, of a pre-defined section along which the bracket base member is configured to be bent to a desired angle or be separated into parts.

**[0011]** In a presently preferred embodiment, the installation system comprises a predefined number of bracket base members in a supply condition, in the range of two to 20, to form at least the first plurality of at least two corner brackets. Since the bracket base members are provided as standard parts which are substantially flat in the supply condition, particular advantages arise during handling and transportation, since there is no need to accommodate corner brackets with a complex geometry in the packaging. In a preferred development of this preferred embodiment, three to 20 bracket base members are included in the supply condition of the installation system, comprising also bracket parts of the second plurality, in a mounted condition of the installation system.

**[0012]** It is particularly preferred that five to 12 bracket base members are provided and the installation system comprises a first plurality of four corner brackets and a second plurality of two to 16 bracket parts. This combination provides for a particularly stable connection of the lining panel to the roof window, in that each corner is provided with a corner bracket of the first plurality and at least one bracket part of the second plurality is provided on opposing sides, top or bottom of the roof window. Depending on the size of the window, more bracket parts of the second plurality may be added to the sides, top and/or bottom of the roof window as prescribed or deemed necessary by the installer.

**[0013]** In a presently preferred embodiment at least one second set of longitudinal weakened portions to provide a second longitudinal folding line is formed substantially in parallel with and at a distance from the first longitudinal folding line, and wherein a flap portion is provided on the other side of the second longitudinal folding line relative to the main portion. In this way, the bracket member may be shaped to fit also the top and the bottom of the lining panel, which typically extends non-perpendicularly to the respective frame member of the roof window, but also in cases in which the lining panel has a general shape of a truncated pyramid.

**[0014]** The sets of weakened portions are advantageously provided as a respective series of embossings or openings, preferably in the form of oblong through-going holes, which provides for an immediately recognisable indication to the installer and which is furthermore easy to handle.

**[0015]** In order to ease the installation even further, the fastening zones may include a plurality of openings including perforations, holes, slits, or any combinations thereof.

**[0016]** In a second aspect, a method for installation of a lining panel in a roof window is provided.

**[0017]** Other presently preferred embodiments and further advantages will be apparent from the subsequent detailed description and drawings.

### Brief Description of Drawings

**[0018]** In the following description embodiments of the invention will be described with reference to the schematic drawings, in which

Fig. 1 is a perspective view of an installation system comprising a roof window and a lining panel with prior art fittings;

Fig. 2 is an enlarged cut-out of the installation system of Fig. 1, including also a vapour barrier collar;

Fig. 3 is a schematic cross-sectional view of the installation system of Figs 1 and 2;

Fig. 4 is a schematic plan view of a bracket base member forming part of the bracket member of the installation system in an embodiment of the invention;

Fig. 5 is a view corresponding to Fig. 4 of a bracket base member forming part of the bracket member of the installation system in an embodiment of the invention;

Fig. 6 is a perspective view of a bracket member in an embodiment of the installation system according to the invention;

Figs 7 to 9 are schematic side views of bracket members in embodiments of the installation system according to the invention;

Fig. 10 is a perspective view of an alternative embodiment of the bracket member of the installation system according to the invention;

Fig. 11 is a view corresponding to Fig. 1, showing the installation of a lining panel in a roof window by means of the installation system according to the invention;

Fig. 12 is a view corresponding to Fig. 11, indicating fitting positions in an alternative embodiment of the installation system according to the invention;

Figs 13a and 13b are a plan view and a side view, respectively, of a corner anchor bracket forming part of an alternative embodiment of the installation system;

Figs 14a and 14b are a plan view and a side view,

respectively, of a top and bottom anchor bracket of an alternative embodiment of the installation system; Figs 15a, 15b and 15c are an end view, a plan view and a side view, respectively, of an extension profile of an alternative embodiment of the installation system;

Figs 16a and 16b are a plan view and a side view, respectively, of an inner wall anchor bracket of an alternative embodiment of the installation system; Figs 17 and 18 are perspective views of one and another alternative embodiments of the installation system according to the invention;

Fig. 19 is a plan view of a sill profile of the other alternative embodiment shown in Fig. 18; and

Fig. 20 is an end view of an angle profile of the alternative embodiments shown in Figs 17 and 18.

### Description of Embodiments

**[0019]** Referring initially to Figs 1 to 3, the general configuration of an installation system is shown. A roof window generally designated 1 is shown installed in an aperture 4 in an inclined inner wall 3. A lining panel generally designated 2 is shown in an assembled but not yet mounted condition. The construction and assembly of the lining panel 2 is described in more detail in Applicant's EP 2 860 487 A1, EP 2 700 780 B1 and 2 700 781 B1. A vapour barrier collar 5 is mounted in a groove 6 in the frame of the roof window, for instance as described and shown in Applicant's EP 2 2463 893 B1.

**[0020]** As indicated in Figs 1 to 3, prior art snap fitting parts 8' and 9' are mounted on the lining panel 2 and in the groove 6 of the frame of the roof window 1 respectively. Referring in particular to Fig. 3, the lining panel 2 is moved in the direction of arrow U, during mounting, until the snap fitting part 8' clicks into snap fitting part 9', thereby attaining the mounted condition of the installation system.

**[0021]** In the following, embodiments of bracket members to replace the snap fitting parts of the prior art will be described. Reference will be made to the roof window 1 including groove 6, extending circumferentially in the frame of the roof window 1, to the lining panel 2 and to the vapour barrier collar 5 of the installation system shown in Figs 1 to 3. It is apparent that these units may form part of an installation system according to the present invention as well, either as they are shown or described, or with modifications readily accessible to the person skilled in the art.

**[0022]** Referring initially to Figs 4 and 5, the general configuration of a bracket member to provide connection between the roof window 1 and the lining panel 2 will be described.

**[0023]** From the outset, each bracket member is formed as a substantially plane bracket base member 10 with a predefined width WB and height HB. The dimensions of the bracket base member 10 may in principle be chosen according to specific installation conditions. Typ-

ically, the width WB is in the range of 1.5 to 2.5 of the height HB, here about 2. The height HB will most often be chosen in the range 50 to 200 mm, preferably 100 to 150 mm, and here about 120 mm. In turn, this gives a width WB of about 240 mm.

**[0024]** The material of the bracket base member 10 may in principle be any material fulfilling the requirements to strength, durability and handling properties. Metal materials are one example, but the bracket base member could also be made from a plastic or composite material, possibly reinforced by for instance glass fibres or metal threads. It is preferred though that the bracket base member 10 is made from a metal material such as steel, preferably having a thickness of 0.5 to 1.5 mm. A thickness of about 1 mm has proven to function well and give a suitable balance between ease of mounting conditions, adaptation to the desired shape, and strength.

**[0025]** At the centre in the width dimension, in the embodiment shown, one set of transverse weakened portions 30 is provided, resulting in one transverse folding line 30B located substantially centrally in the width dimension, such that the bracket base member 10 is here divided into two sections 10A, 20A of substantially equal width.

**[0026]** As will be described in further detail below, the respective sections 10A, 20A may form either two separate bracket parts, namely a first bracket part 101 and a second bracket part 102, or constitute sections of a corner bracket 103.

**[0027]** In the height dimension, one first set of longitudinal weakened portions 31, 41 is provided, thus defining a first longitudinal folding line 31B. The transverse folding line 30B extends at right angles to the first longitudinal folding line 31B such that in each of the two sections 10A, 20A, a main portion 11A, 21A and a border portion 12A, 22A are formed. It is understood that the main portion 11A, 21A of the respective section 10A, 20A is formed on one side of the first longitudinal folding line 31B and the border portion 12A, 22A on the other side of the first longitudinal folding line 31B.

**[0028]** The main portion 11A, 21A of the respective sections 10A, 20A has a first fastening zone 11 configured to be connected to the lining panel 2, and the border portion 12A, 22A has a second fastening zone 12 configured to be connected to the roof window 1.

**[0029]** Referring briefly also to Figs 6 to 9, it is clear that the border portion 12A, 22A in each bracket member, or bracket part, has been bent through substantially 90° to extend substantially perpendicularly to the main portion 12A, 22A. In a preferred variant of the invention, the border portion 12A, 22A is accommodated in the recess 6 of the frame of the roof window 1. To this end, the first set of longitudinal weakened portions 31, 41 defining the first longitudinal folding line 31B is located such that the height of the border portion 12A, 22A on the other side of the first longitudinal folding line 31B relative to the main portion 11A, 21A is in the range 10 to 15 mm, preferably 12 to 13 mm, here about 12.5 mm.

**[0030]** In the embodiments shown, the bracket base member 10 furthermore comprises a second set of longitudinal weakened portions 32, 42 to provide a second longitudinal folding line 32B formed substantially in parallel with and at a distance from the first longitudinal folding line 31B. In turn, this provides a flap portion 13A, 23A on the other side of the second longitudinal folding line 32B relative to the main portion 11A, 21A.

**[0031]** With particular reference to the corner bracket 103 shown in Fig. 6, it is shown how a third and a fourth set of longitudinal weakened portions 33, 34 are present to provide third and fourth longitudinal folding lines 33B, 34B, respectively. The third and fourth longitudinal folding lines 33B, 34B extend substantially in parallel with and at a distance from the first longitudinal folding line 31B. In turn, this makes it possible to provide an offsetting portion 14A between the third and fourth folding lines 33B, 34B.

**[0032]** Utilisation of the offsetting portion 14A is shown in the embodiment of Fig. 9, whereas the third and fourth longitudinal folding lines 33B, 34B are indicated also in the embodiments of Figs 7 and 8, in which the offsetting portion 14A simply transitions into the main portion 11A. The difference between Figs 7 and 8 is that the flap portion 13A is present in Fig. 7, whereas it is not present in the embodiment of Fig. 8, either because it has been detached along the second longitudinal folding line 32B, or if the bracket base member 10 has been formed without such a portion.

**[0033]** In the alternative embodiment shown in Fig. 10, in which only differences to the embodiments of Figs 4 to 9 will be described, the bracket member is an extended corner bracket 110 comprising a central section 110A surrounded by a wing section 120A to the side of one transverse folding line 130B relative to the central section 110A and another wing section 140A to the opposite side of another transverse folding line 135B relative to the central section 110A. In this way, the extended corner bracket 110 may cover an entire top, bottom or side of the roof window 1 and lining panel 2.

**[0034]** The sets of weakened portions 30, 31, 32, 33, 34, 41, 42 may in principle be provided in any suitable way, as long as they make it possible to bend and/or separate the individual portions of the bracket base member 10 according to the specific application. For instance, the weakened portions may be provided as a respective series of embossings or openings, here in the form of oblong through-going holes 30, 31, 32, 33, 34, 41, 42.

**[0035]** In a corresponding manner, the fastening zones 11, 12, 13, 21, 22, 23 may be provided in any suitable manner allowing easy connection to the roof window 1 and the lining panel 2, respectively. In its simplest configuration, the fastening zones are provided of plate material through which fastening means such as screws are driven. In the presently preferred embodiments though, the fastening zones include a plurality of openings including perforations, holes, slits, or combinations thereof, as illustrated for instance in the main section 11A and the

border section 12A.

**[0036]** In the following, embodiments of the installation system comprising a roof window 1, a lining panel 2 and a plurality of bracket members as described in the above.

**[0037]** In the supply condition, the installation system, the roof window 1 and the lining panel 2 are provided together with a plurality of bracket base members 10. The exact number of such bracket base members 10 depends on several factors, including the installation situation, the size of the window, the material and weight of the lining panel 2 etc. In most applications, four bracket base members 10 are supplied though to provide one corner bracket 103 at each corner of the roof window 1 and lining panel 2. Another two bracket base members 10 are supplied to provide four bracket parts 101 for mounting to each of the top, bottom and sides of the roof window 1 and the lining panel 2, thus totalling six bracket base members 10 in one preferred embodiment of the installation system according to the invention.

**[0038]** A first plurality of bracket members are thus formed as corner brackets 103 in which a second section 20A of each bracket base member 10 has been bent substantially 90° about the transverse folding line 30B relative to a first section 10A, and each section 10A, 20A of the respective bracket member 10 has been bent substantially 90° about the first longitudinal folding line 31B to form the border portion 12A, 22A to extend substantially perpendicularly to the respective main portion 11A, 21A of the bracket section 10A, 20A.

**[0039]** A second plurality of bracket members are thus formed by separation of a first section 10A from a second section 20A of each bracket base member 10 along the transverse folding line 30B to form at least two bracket parts 101, 102, 104 of a single bracket base member 10, and each bracket part 101, 102, 104 has been bent substantially 90° about the first longitudinal folding line 31B to form the border portion 12A, 22A extending substantially perpendicularly to the respective main portion 11A, 21A of the bracket part 101.

**[0040]** The installer is free to choose between the first and second pluralities of bracket members when installing the lining panel to the roof window. A typical configuration will be four corner brackets, one at a respective corner, and four bracket parts, one at each of the top, bottom and sides of the roof window and lining panel.

**[0041]** In the preferred embodiment of the installation system, in which each corner bracket 103 is provided with a flap portion 13A, 23A as shown in a folded condition in Fig. 6, one of the flap portions 13A, 23A, namely the one facing the top and bottom of the roof window 1 and the lining panel 2 of each corner bracket 103, is positioned at an angle relative to the respective main portion 11A, 21A. The other flap portion, 23A or 13A, whichever appropriate, remains unfolded such that the flap portions 13A and 23A are parallel with a respective top/bottom and side of the lining panel 2, cf. the configuration shown in Fig. 1.

**[0042]** In case the lining panel 2 comprises double pan-

els, or panels of double thickness, it is possible to accommodate the larger thickness of the lining panel 2 by utilising the offsetting portion 14A as shown in the embodiment of Fig. 9 to provide an inclined surface between the third and fourth folding lines 33B, 34B.

**[0043]** In its preferred embodiment, the installation system further comprises a vapour barrier collar 5.

**[0044]** Installation of the lining panel 2 in the roof window 1 will now be described in some detail, referring also to Fig. 11:

In a first step, a predefined number of bracket base members 10 are provided, according to the above description. This step will typically be carried at a production site, and the prescribed number of bracket base members 10 are packaged either separately, with the roof window 1, with the lining panel, or together with both of them.

**[0045]** Thus, the roof window 1, the lining panel 2 and the predefined number of bracket base members 10 are now provided in a supply condition of an installation system,

**[0046]** Subsequently, a first plurality and/or a second plurality of bracket members are formed as described in the above. That is, the desired number of corner brackets 103, or extended corner brackets 110, are formed to constitute the first plurality by a number of bending or folding operations. Alternatively, or additionally, the bracket members of the second plurality of bracket members are formed by separating the first section 10A from the second section 20A of each bracket base member 10, and then bending each bracket part 101, 102, 104 substantially 90° about the first longitudinal folding line 31B to form the border portion 12A, 22A.

**[0047]** Once all the bracket members, and bracket parts, have been folded as described in the above, they are connected to the roof window 1, for instance by screwing the respective border portions 12A, 22A into the circumferential groove 6 in the frame of the roof window, either before or after the vapour barrier collar 5 has been installed.

**[0048]** Referring now to Fig. 11, one exemplary configuration of an installation system is shown, in which a corner bracket 103 is to be connected to the roof window 1 at corner positions A. Only two corner positions A are shown, at the right-hand side of the roof window 1; the other two are at the opposite side.

**[0049]** Bracket parts 101, 102 are connected at side positions B; here, two side positions at the right-hand side are shown, and two counterpart side positions may be present at the opposite side. Alternatively, only one bracket part 101 or 102 is connected to the roof window 1 at a single side position B on each side, and the other 102 or 101 is connected at the opposite side position on the other side.

**[0050]** Installation is only described relating to corner bracket 103 and bracket parts 101 and 102. The skilled person will appreciate that corresponding installation principles apply to the extended corner bracket 110 and the offsetting bracket part 104.

**[0051]** Referring briefly to Fig. 12, also a top/bottom position C may be applicable as well for placing one or more bracket parts 101, 102.

**[0052]** The lining panel 2 is secured to the roof window 1 by driving screws (or other fastening means) through the respective fastening zones in the main portions 11A, 21A and/or flap portions 13A, 23A and into the material of the lining panel 2. As an additional measure to provide stability in the fastening of the bracket members to lining panel 2, the installer may provide for instance wooden blocks to support the bracket members. In this way, the mounted condition of the installation system has been attained.

**[0053]** Dismounting of the lining panel 2 is easily carried out by simply unscrewing the fastening means and lifting the lining panel 2 out of engagement with the roof window 1.

**[0054]** Referring now to Figs 12 to 20, alternative embodiments of the installation system according to the invention will be described.

**[0055]** The fundamental principle underlying these alternative embodiments is to ensure proper anchoring of the lining panel 2 not only to the roof window 1, but also to the inner wall 3. This is particularly advantageous to tailor the lining panel to specific measures of the thickness of the inner wall and the shape and inclination of the elements of the lining panel. To this end, a set of extension profiles 304 is provided and configured to extend substantially between the roof window 1 and the inner wall 3. A number of bracket members of the first or the second plurality of bracket members are connected to one or the other end of the respective extension profiles 304 and to the roof window and to the roof window 1 or the inner wall 3 in the mounted condition of the installation system.

**[0056]** Suitable anchoring positions at the roof window 1 here include the corner positions A as before and top/bottom positions C. At the inner wall 3, anchoring positions include inner wall top/bottom positions F and inner wall side edge positions H. At each of these positions, one or more bracket members, or bracket parts, of the first or second pluralities of the installation system described in the above may be fastened, after having been suitably handled by folding, bending, separation etc.

**[0057]** To extend between the anchoring positions, a corresponding number of extension profiles 304 are provided and placed at lining top/bottom positions D and lining corner edge positions E.

**[0058]** As an alternative to the first and second plurality brackets described in the above, a corner anchor bracket 301 as shown in Figs 13a and 13b, and a top and bottom anchor bracket 303 as shown in Figs 14a and 14b may be utilised for the anchoring at the roof window 1. At the inner wall, an alternative inner wall anchor bracket 306 as shown in Figs 16a and 16b may be applied. As indicated, the inner wall anchor bracket 306 has a folding line 306A to conform to the inner wall 3 in the mounted

condition.

**[0059]** Edge brackets 308 provided at the inner wall side edge positions H may be formed from a number of bracket base members 10 as described in the above, having suitable dimensions.

**[0060]** Angle profiles 307 are alternatively or additionally provided as well, refer also to Fig. 20.

**[0061]** One embodiment of the extension profile 304 is shown in Figs 15a to 15c. The extension profiles 304 are adjusted to the suitable length and connected to the respective anchor brackets by inserting the extension profiles 304 into the anchor brackets.

**[0062]** Subsequently, the elements of the lining panel is connected to the fittings including the brackets and extension profiles as described in the above.

**[0063]** Finally, the alternative installation situation shown in Fig. 18 has a number of sill profiles 309 which as shown in Fig. 19 are provided with a folding line 309A to adapt with a bend as shown in Fig. 18. Here, also alternative lining corner edge position G.

**[0064]** The invention is not limited to the embodiments shown and described in the above, but various modifications and combinations may be carried out.

#### List of reference numerals

##### [0065]

1	roof window
2	lining panel
3	inner wall
4	aperture in inner wall
5	vapour barrier collar
6	groove in frame
7'	prior art fastening means
8'	prior art snap fitting part
9'	prior art snap fitting part
10	bracket base member
11	first fastening zone
12	second fastening zone
13	third fastening zone
21	first fastening zone, second part
22	second fastening zone, second part
23	third fastening zone, second part
30	set of transverse weakened portions
31	first set of longitudinal weakened portions
32	second set of longitudinal weakened portions
33	third set of longitudinal weakened portions
34	fourth set of longitudinal weakened portions
41	first set of longitudinal weakened portions, second part
42	second set of longitudinal weakened portions, second part
10A	first section
11A	main portion
12A	border portion
13A	flap portion
14A	offsetting portion

	20A	second section
	21A	main portion, second part
	22A	border portion, second part
	23A	flap portion, second part
5	30B	transverse folding line
	31B	first longitudinal folding line
	32B	second longitudinal folding line
	33B	third longitudinal folding line
	34B	fourth longitudinal folding line
10	101	first bracket part
	102	second bracket part
	103	corner bracket
	104	offsetting bracket part
	110	extended corner bracket
15	110A	central section
	111A	main portion, central part
	112A	border portion, central part
	113A	flap portion, central part
	120A	wing section
20	121A	main portion, wing section
	122A	border portion, wing section
	123A	flap portion, wing section
	140A	wing section
	141A	main portion, wing section
25	142A	border portion, wing section
	143A	flap portion, wing section
	130B	transverse folding line
	135B	transverse folding line
	HB	height of bracket base member
30	WB	width of bracket base member
	U	arrow
	301	corner anchor bracket
	303	top and bottom anchor bracket
	304	extension profile
35	306	inner wall anchor bracket
	306A	folding line
	307	angle profile
	308	edge brackets
	309	sill profile
40	309A	folding line
	A	corner position
	B	side position
	C	top/bottom position
	D	lining top/bottom position
45	E	lining corner edge position
	F	inner wall top/bottom position
	G	alternative lining corner edge position
	H	inner wall side edge position

#### Claims

1. An installation system comprising a roof window (1), a lining panel (2) and a plurality of bracket members configured to provide connection between the roof window (1) and the lining panel (2), in which each bracket member includes at least a main portion (11A) having a first fastening zone (11) configured

to be connected to the lining panel (2) and a border portion (12A) having a second fastening zone (12) configured to be connected to the roof window (1), **characterised in that**

each bracket member is formed as a substantially plane bracket base member (10) with a predefined width (WB) and height (HB) comprising at least one first set of longitudinal weakened portions (31, 41) to provide a first longitudinal folding line (31B) and at least one set of transverse weakened portions (30) to provide a transverse folding line (30B) extending at right angles to the first longitudinal folding line (31B) and dividing the bracket base member (10) into at least two sections (10A, 20A), at least a first bracket part (101) and a second bracket part (102) being configured to be formed by the respective sections (10A, 20A), and the main portion (11A; 21A) of the respective section (10A, 20A) being formed on one side of the first longitudinal folding line (31B) and the border portion (12A, 22A) on the other side of the first longitudinal folding line (31B),

that a first plurality of bracket members are formed as corner brackets (103; 110) in which a second section (20A) of each bracket base member (10) has been bent substantially 90° about the transverse folding line (30B) relative to a first section (10A), and each section (10A, 20A) of the respective bracket base member (10) has been bent substantially 90° about the first longitudinal folding line (31B) to form the border portion (12A, 22A) to extend substantially perpendicularly to the respective main portion (11A, 21A) of the bracket section (10A, 20A), said corner brackets (103) being connected to corners of the roof window (1) and of the lining panel (2), and/or

that a second plurality of bracket members are formed by separation of a first section (10A) from a second section (20A) of each bracket base member (10) along the transverse folding line (30B) to form at least two bracket parts (101, 102, 104) of a single bracket base member (10), and each bracket part (101, 102, 104) has been bent substantially 90° about the first longitudinal folding line (31B) to form the border portion (12A, 22A) extending substantially perpendicularly to the respective main portion (11A, 21A) of the bracket part (101, 102, 104), said bracket parts (101, 102, 104) being connected to sides, top and bottom of the roof window (1) and of the lining panel (2).

2. An installation system according to claim 1, wherein the installation system comprises a predefined number of bracket base members (10) in a supply condition, in the range of two to 20, to form at least the first plurality of at least two corner brackets (103; 110), preferably three to 20 comprising also bracket parts (101, 102, 104) of the second plurality, in a mounted condition of the installation system.

3. An installation system according to claim 1 or 2, wherein five to 12 bracket base members (10) are provided and the installation system comprises a first plurality of four corner brackets (103) and a second plurality of two to 16 bracket parts (101, 102, 104), one corner bracket (103) being preferably mounted to each of four corners of the roof window (1) and the lining panel (2) and one bracket part (101, 102, 104) is mounted to each of the top, bottom and sides of the roof window (1) and the lining panel (2), totalling six bracket base members (10) in the mounted condition of the installation system.

4. An installation system according to claim 1 or 2, wherein a flap portion (13A, 23A) is provided on at least the corner brackets (103), and wherein the flap portion (13A, 23A) facing the top and/or bottom of the roof window (1) and the lining panel (2) is positioned at an angle relative to the respective main portion (11A, 21A).

5. An installation system according to any one of claims 1 to 4, wherein the lining panel (2) comprises double panels, or panels of double thickness, and wherein each bracket member (101, 102, 103, 104) comprises an offsetting portion (14A) providing an inclined surface between the third and fourth folding lines (33B, 34B).

6. An installation system according to any of claims 1 to 5, wherein the installation system further comprises a vapour barrier collar (5).

7. An installation system according to any one of the preceding claims, wherein at least one second set of longitudinal weakened portions (32, 42) to provide a second longitudinal folding line (32B) is formed substantially in parallel with and at a distance from the first longitudinal folding line (31B), and wherein a flap portion (13A, 23A) is provided on the other side of the second longitudinal folding line (32B) relative to the main portion (11A, 21A).

8. An installation system according to any one of the preceding claims, wherein a third and a fourth set of longitudinal weakened portions (33, 34) to provide third and fourth longitudinal folding lines (33B, 34B), respectively, are formed substantially in parallel with and at a distance from the first longitudinal folding line (31B), and wherein an offsetting portion (14A) is provided between the third and fourth folding lines (33B, 34B).

9. An installation system according to any one of the preceding claims, wherein the bracket member is an extended corner bracket (110) comprising a central section (110A) surrounded by a wing section (120A) to the side of one transverse folding line (130B) rel-



ative to the central section (110A) and another wing section (140A) to the opposite side of another transverse folding line (135B) relative to the central section (110A).

10. An installation system according to any one of the preceding claims, wherein the sets of weakened portions (30, 31, 32, 33, 34, 41, 42) are provided as a respective series of embossings or openings, preferably in the form of oblong through-going holes. 5
11. An installation system according to any one of the preceding claims, wherein the fastening zones (11, 12, 13, 21, 22, 23) include a plurality of openings including perforations, holes, slits, or any combinations thereof. 10
12. An installation system according to any one of the preceding claims, wherein the dimensions of the substantially plane bracket base member (10) are chosen such that the width (WB) is in the range of 1.5 to 2.5 of the height (HB), preferably about 2, and wherein the height (HB) is in the range 50 to 200 mm, preferably 100 to 150 mm, more preferably about 120 mm. 20
13. An installation system according to claim 12, wherein one set of transverse weakened portions (30) providing one transverse folding line (30B) is located substantially centrally in the width dimension such that the bracket base member (10) is divided into two sections (10A, 20A) of substantially equal width, one first set of longitudinal weakened portions (31, 41) providing the first longitudinal folding line (31B) preferably being located such that the height of the border portion (12A, 22A) on the other side of the first longitudinal folding line (31B) relative to the main portion (11A, 21A) is in the range 10 to 15 mm, preferably 12 to 13 mm. 30
14. An installation system according to any one of the preceding claims, wherein a set of extension profiles (304) configured to extend substantially between the roof window (1) and an inner wall are provided, and wherein at least a number of bracket members of the first or the second plurality of bracket members are connected to one or the other end of the respective extension profiles (304) and to the roof window and to the roof window (1) or the inner wall in the mounted condition of the installation system. 35
15. An installation system according to any one of the preceding claims, wherein the bracket base member (10) is made from a metal material such as steel, preferably having a thickness of 0.5 to 1.5 mm. 40
16. A method for installation of a lining panel (2) in a roof window (1), comprising the steps of: 45

a predefined number of bracket base members (10) are provided, each bracket member being formed as a substantially plane bracket base member (10) with a predefined width (WB) and height (HB) comprising at least one first set of longitudinal weakened portions (31, 41) to provide a first longitudinal folding line (31B) and at least one set of transverse weakened portions (30) to provide a transverse folding line (30B) extending at right angles to the first longitudinal folding line (31B) and dividing the bracket base member (10) into at least two sections (10A, 20A), at least a first bracket part (101) and a second bracket part (102) being configured to be formed by the respective sections (10A, 20A), and the main portion (11A; 21A) of the respective section (10A, 20A) being formed on one side of the first longitudinal folding line (31B) and the border portion (12A, 22A) on the other side of the first longitudinal folding line (31B), the roof window (1), the lining panel (2) and the predefined number of bracket base members (10) are provided to form a supply condition of an installation system, a first plurality and/or a second plurality of bracket members are formed, of which

the first plurality of bracket members are formed as corner brackets (103; 110) by bending a second section (20A) of each bracket base member (10) substantially 90° about the transverse folding line (30B) relative to a first section (10A), and each section (10A, 20A) of the respective bracket base member (10) is bent substantially 90° about the first longitudinal folding line (31B) to form the border portion (12A, 22A) to extend substantially perpendicularly to the respective main portion (11A, 21A) of the bracket section (10A, 20A),

and the second plurality of bracket members are formed by separating a first section (10A) from a second section (20A) of each bracket base member (10) along the transverse folding line (30B) to form at least two bracket parts (101, 102, 104) of a single bracket base member (10), and bending each bracket part (101, 102, 104) substantially 90° about the first longitudinal folding line (31B) to form the border portion (12A, 22A) extending substantially perpendicularly to the respective main portion (11A, 21A) of the bracket part (101, 102, 104),

connecting the corner brackets (103; 110) to corners of the roof window (1), and/or connecting the bracket parts (101, 102, 103) to

sides, top or bottom of the roof window (1), positioning the lining panel (2) to abut the corner brackets (103; 110) and the bracket parts (101, 102, 103), securing the lining panel (2) to the corner brackets (103; 110) and/or to the bracket parts (101, 102, 103) to attain a mounted condition of the installation system.

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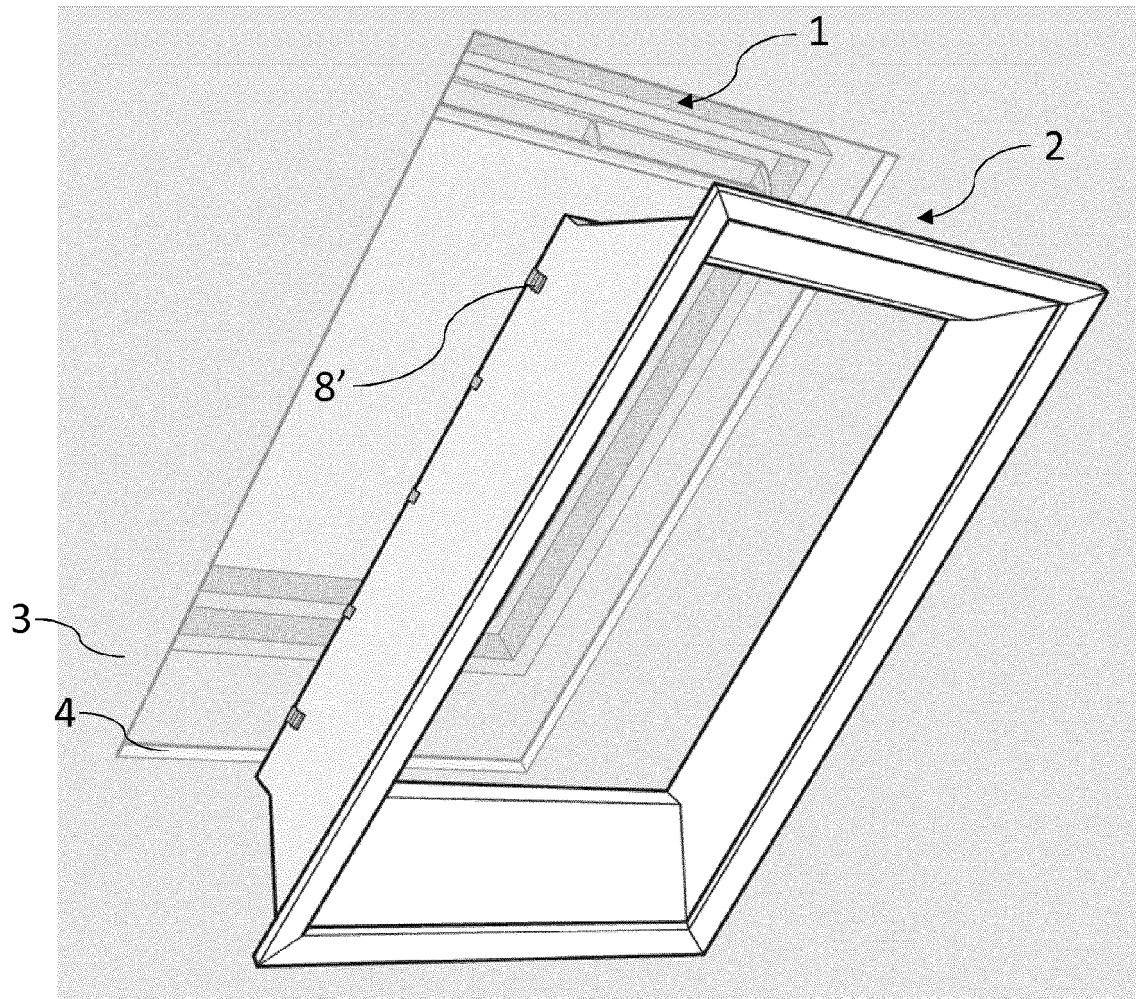


Fig. 1 (PRIOR ART)

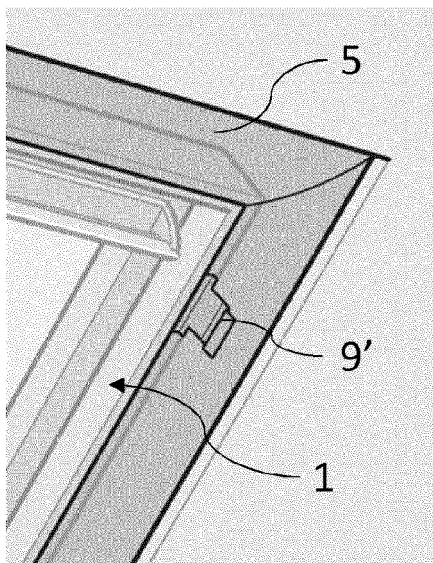


Fig. 2 (PRIOR ART)

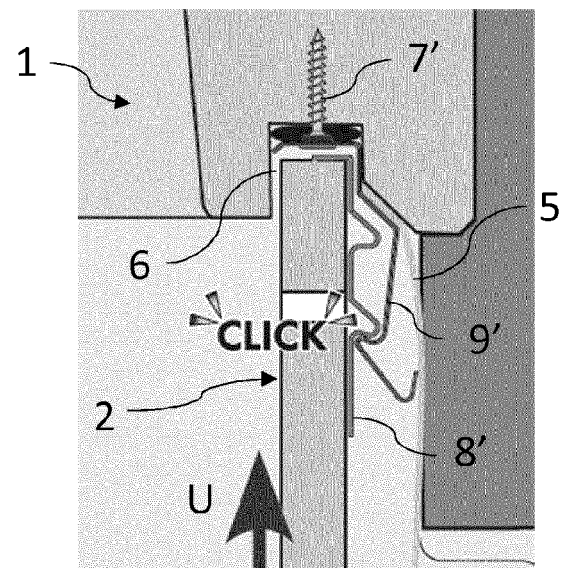


Fig. 3 (PRIOR ART)

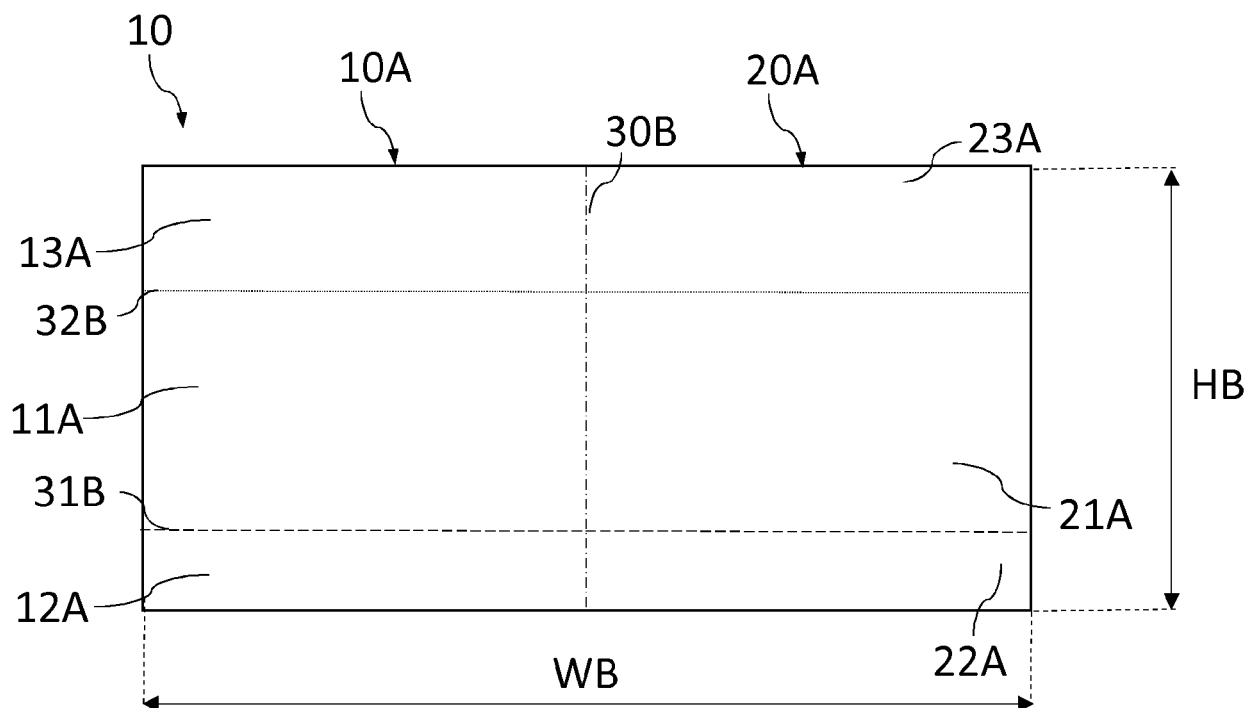


Fig. 4

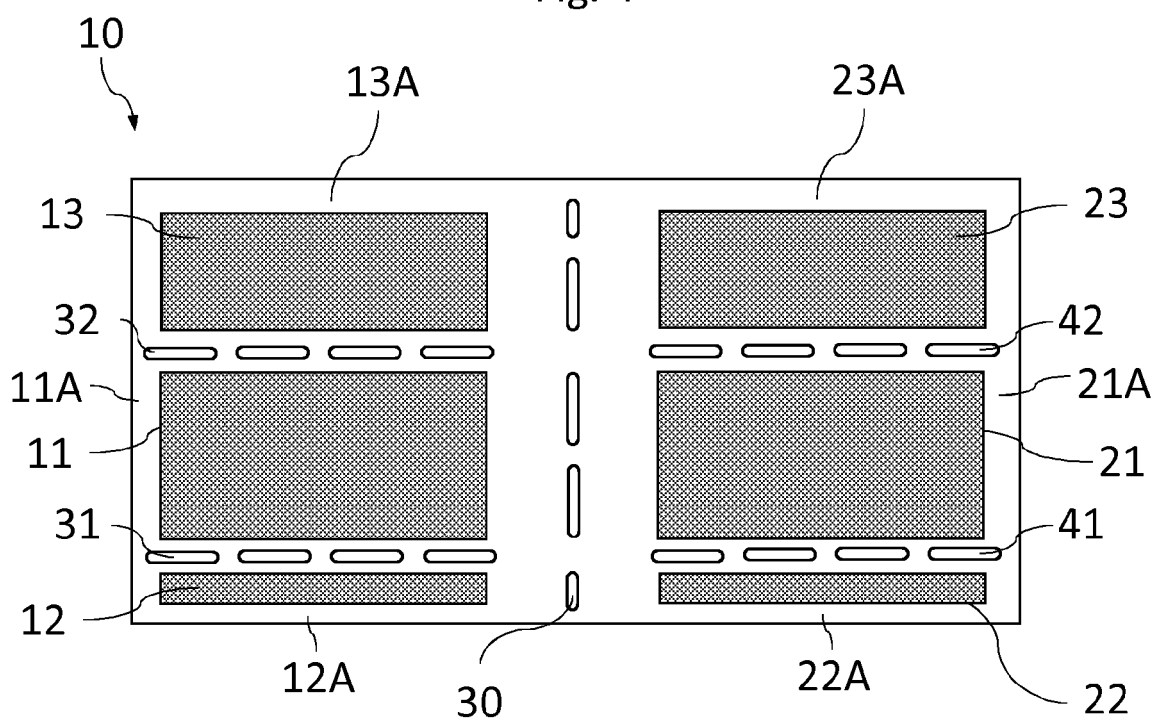


Fig. 5

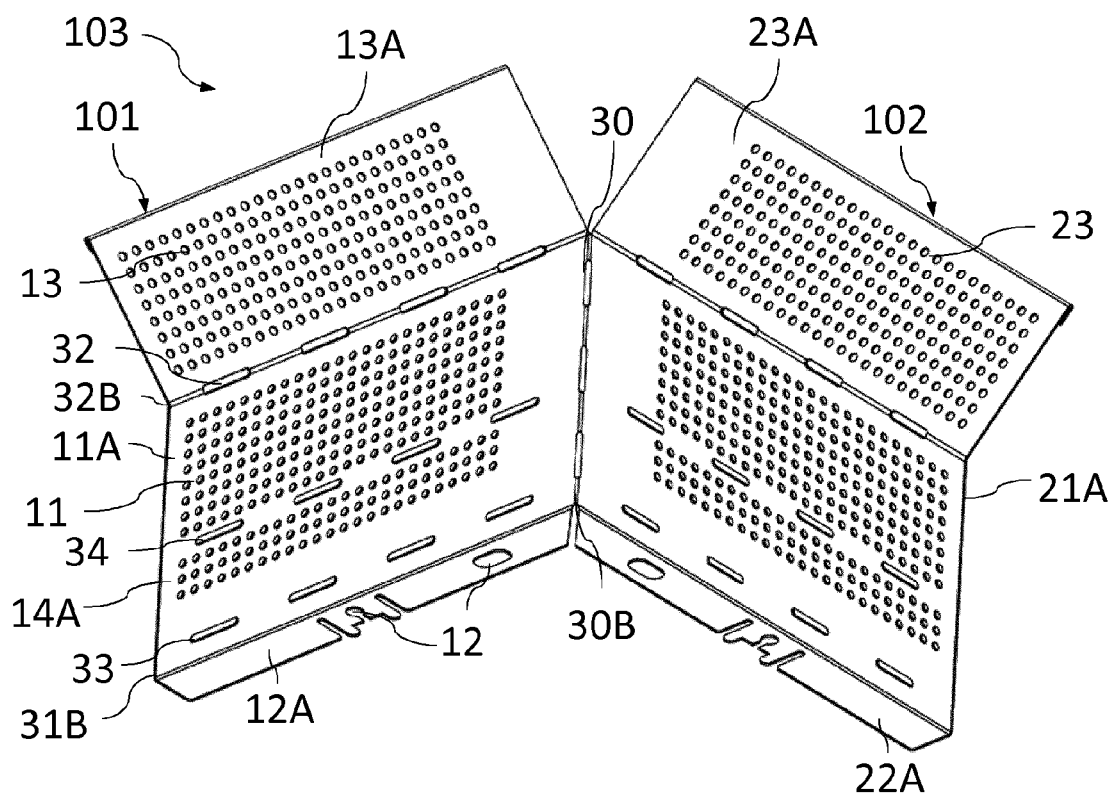


Fig. 6

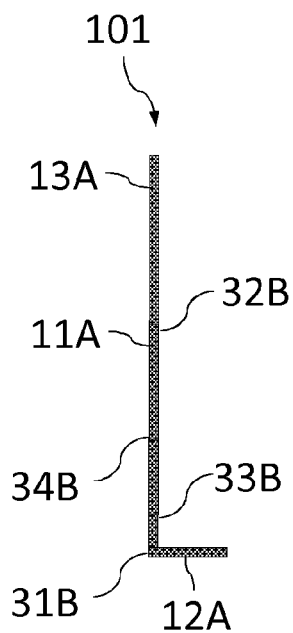


Fig. 7

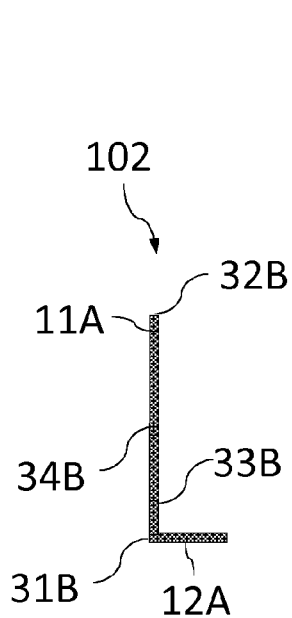


Fig. 8

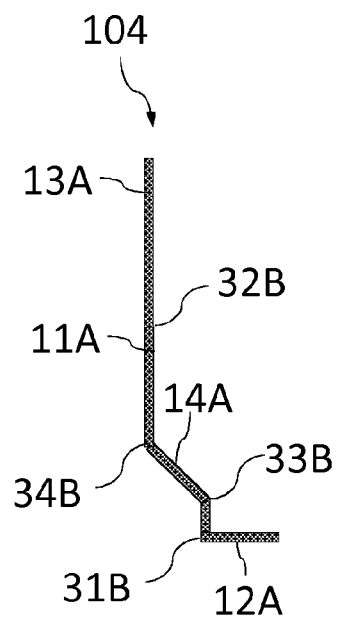


Fig. 9

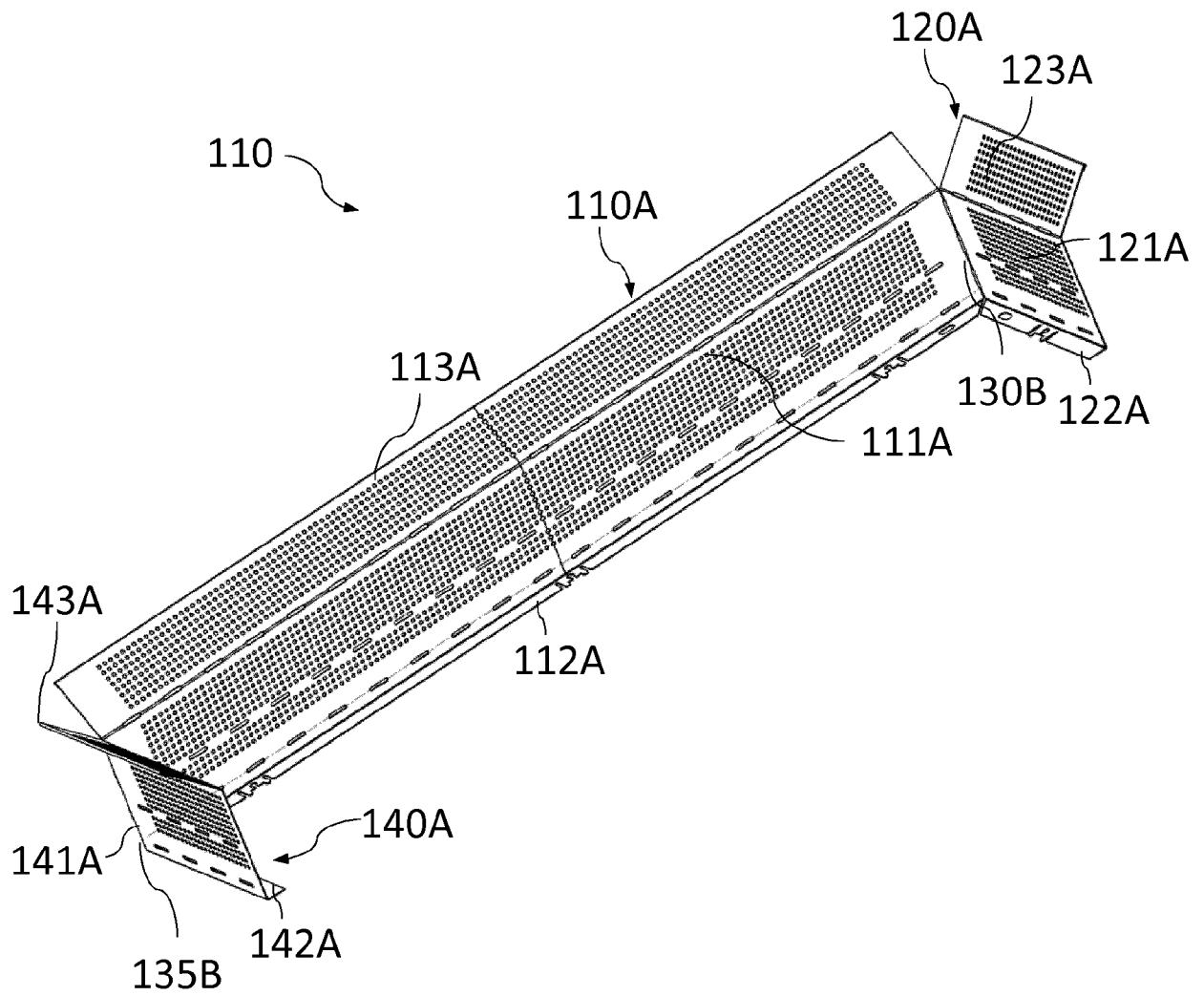


Fig. 10

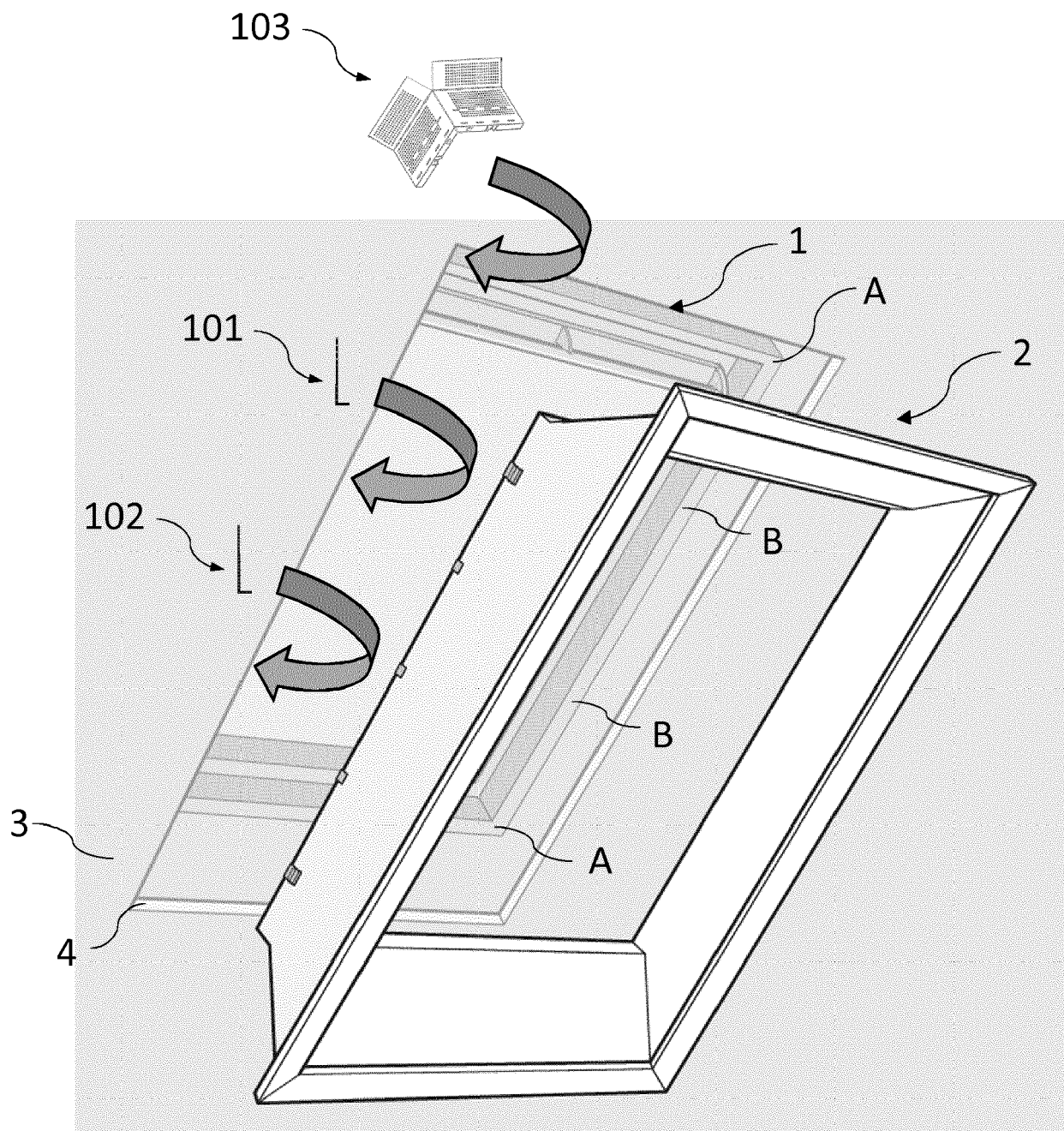


Fig. 11

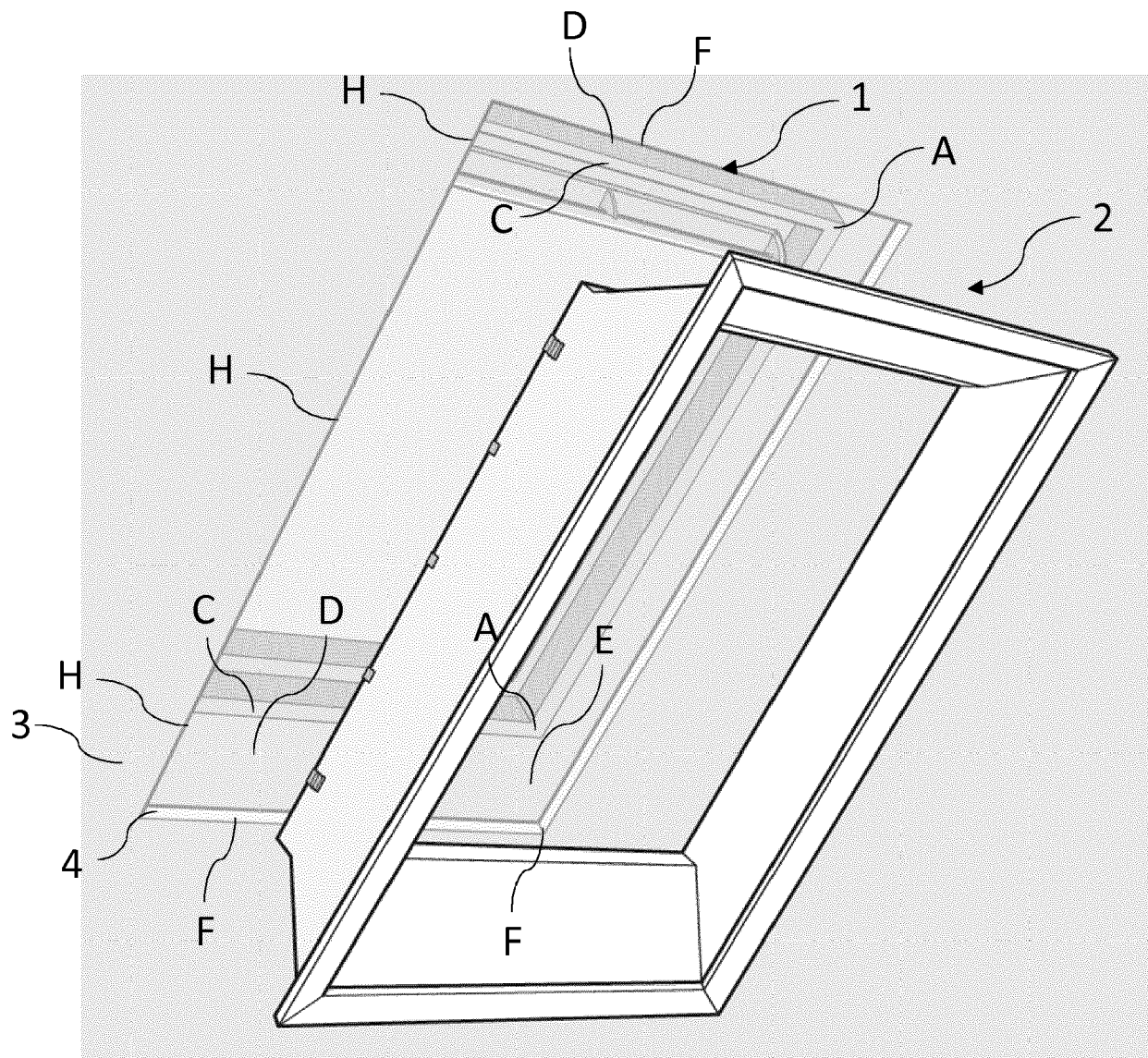


Fig. 12



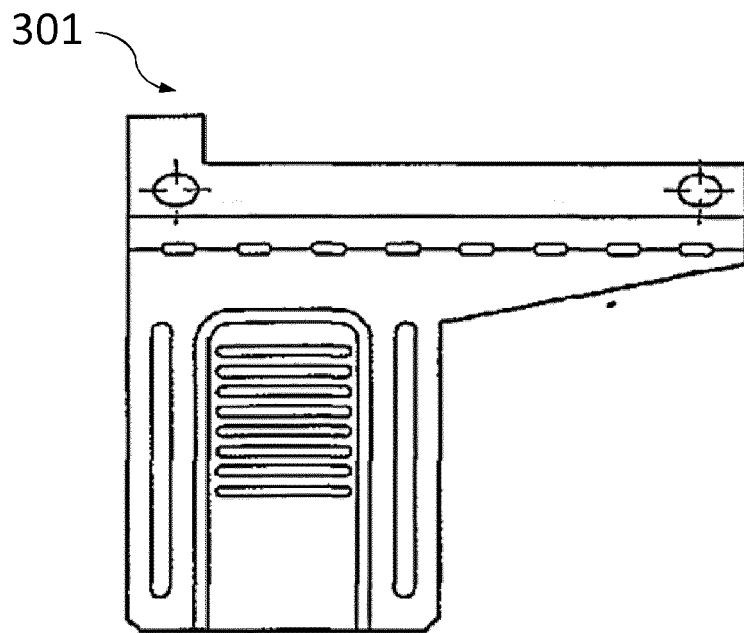


Fig. 13a

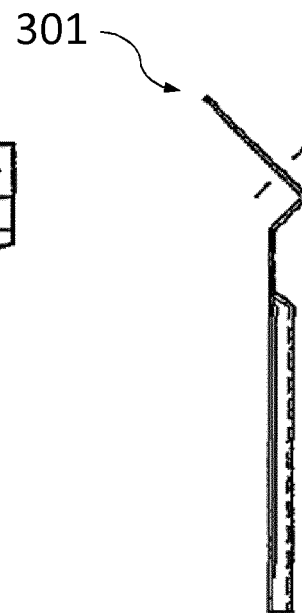


Fig. 13b

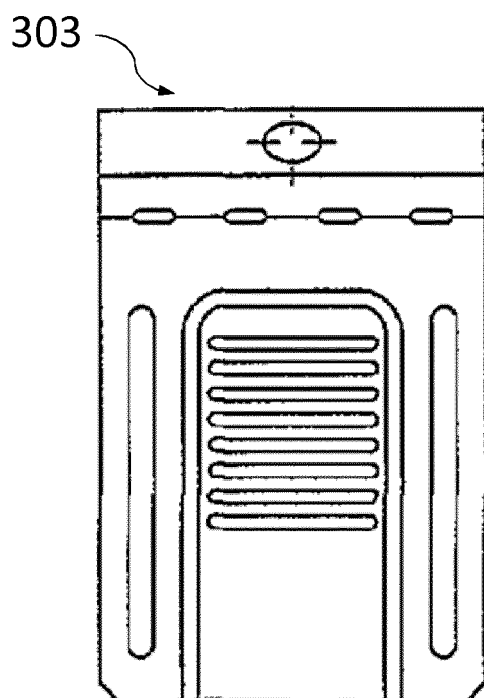


Fig. 14a

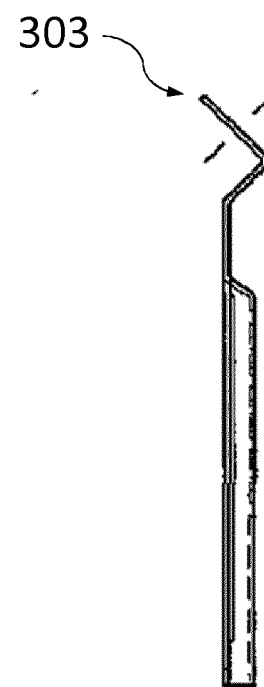


Fig. 14b

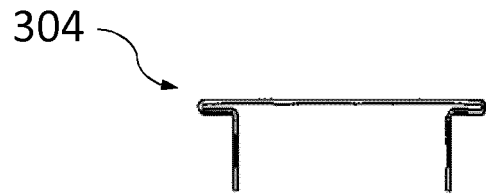


Fig. 15a

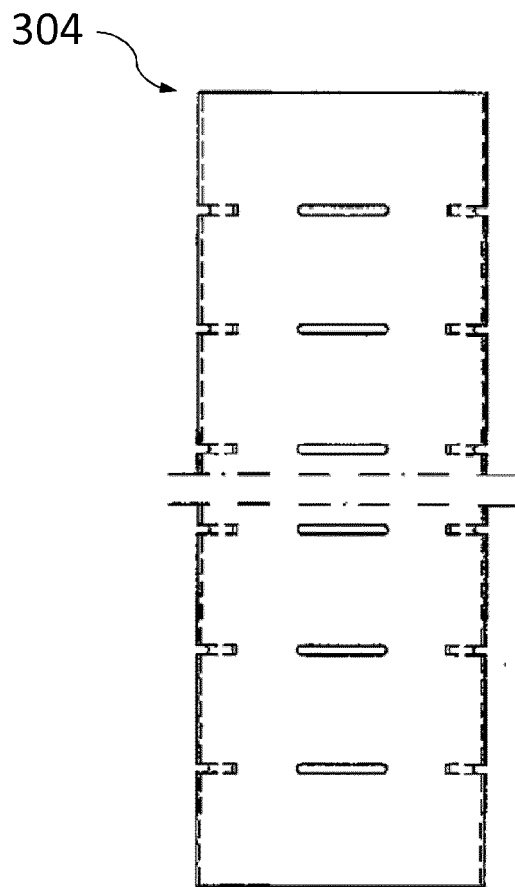


Fig. 15b

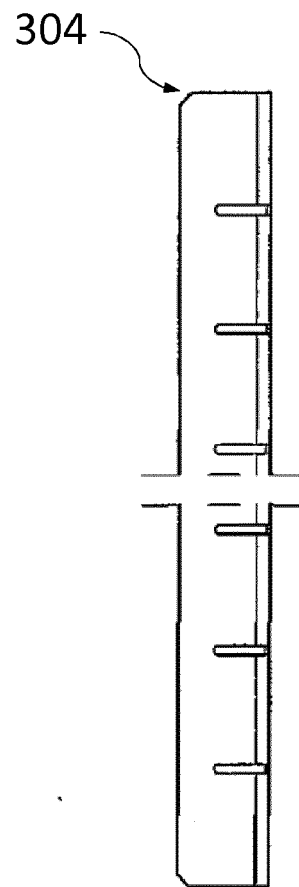


Fig. 15c

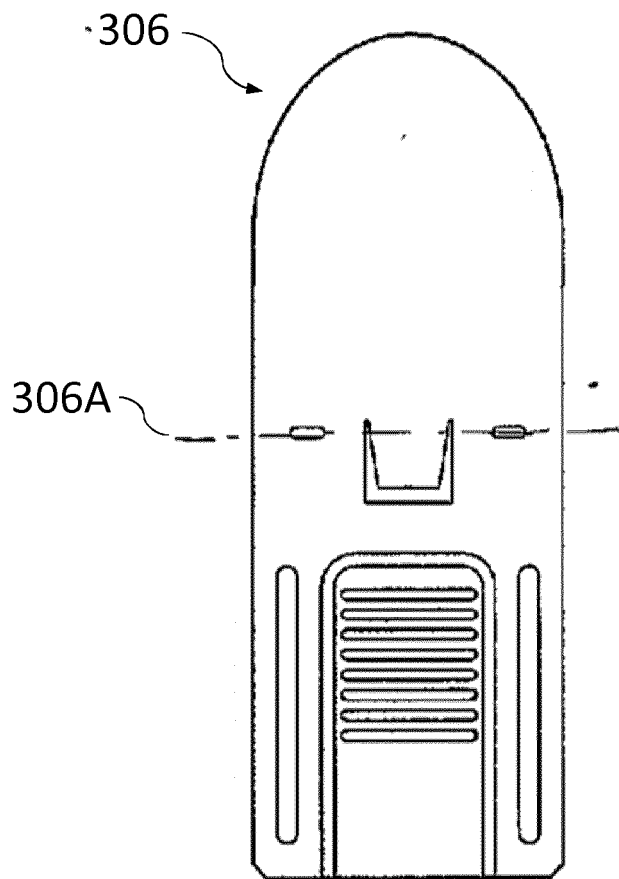


Fig. 16a

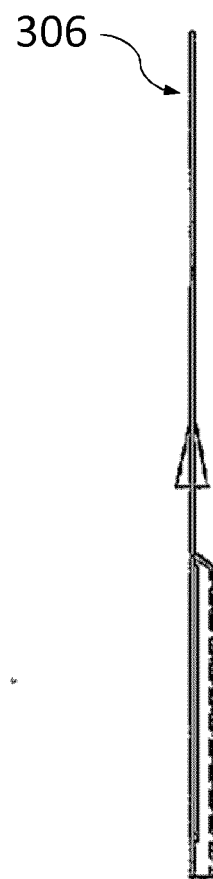


Fig. 16b

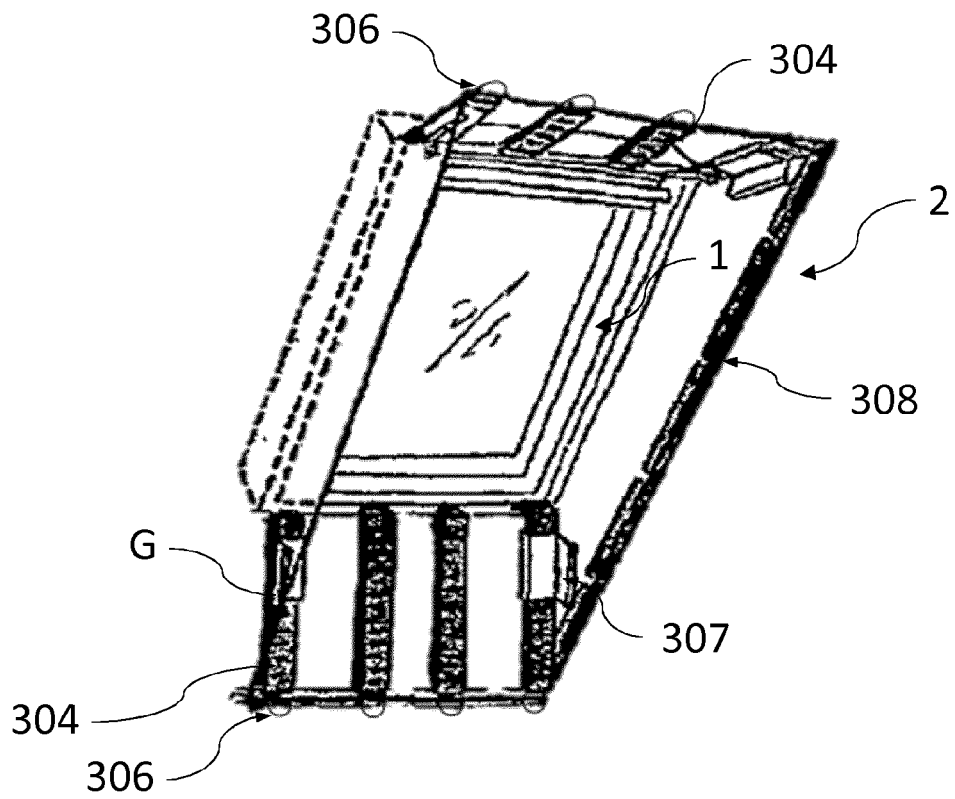


Fig. 17

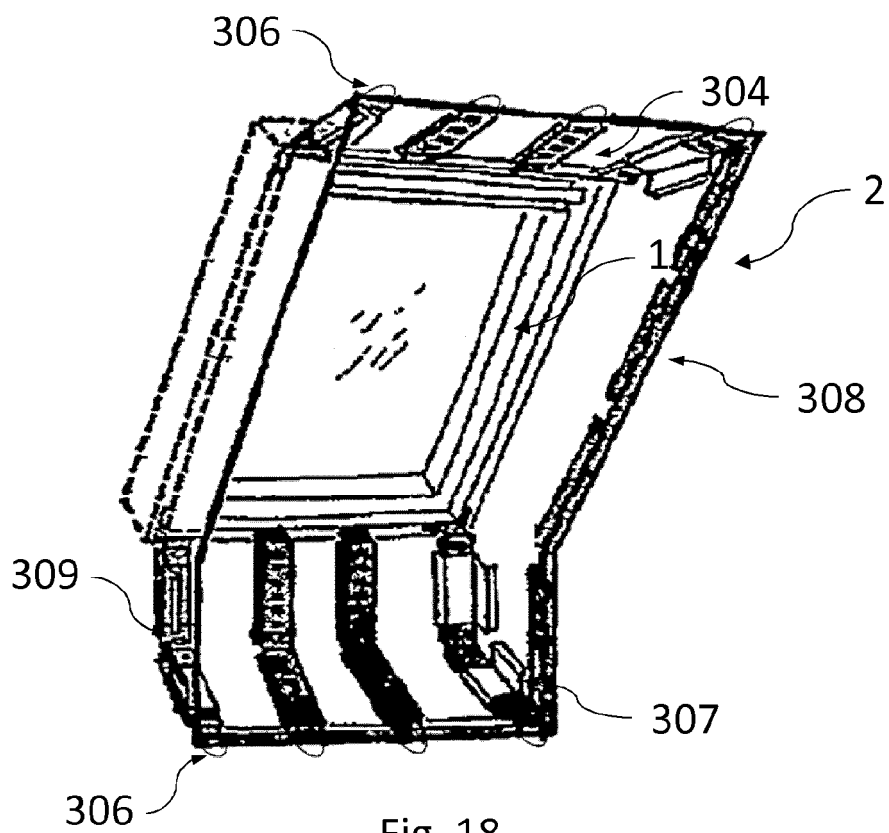


Fig. 18

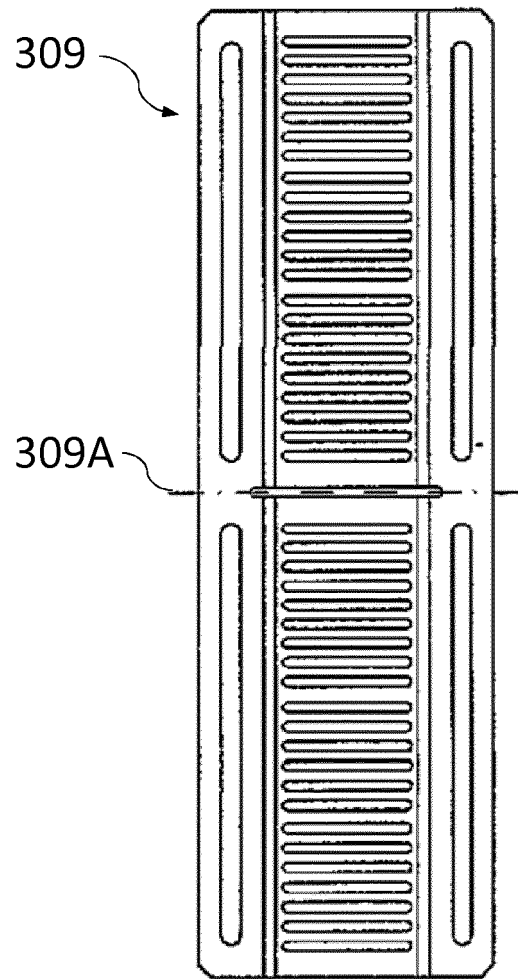


Fig. 19

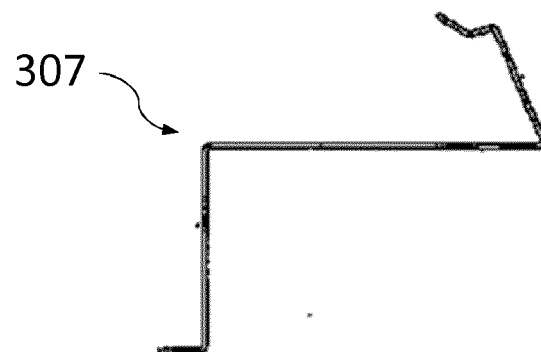


Fig. 20



## EUROPEAN SEARCH REPORT

 Application Number  
 EP 19 18 3446

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Y	US 2 638 643 A (OLSON RAYMOND G) 19 May 1953 (1953-05-19) * column 2, line 32 - column 4, lines 44-48; figure 1 *	1,16	
Y	US 6 481 727 B1 (STALLBAUMER JOHN J [US]) 19 November 2002 (2002-11-19) * figure 1 *	16	
Y	US 5 186 571 A (HENTZSCHEL WALTER G [US]) 16 February 1993 (1993-02-16) * figures 2-3 *	16	
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 October 2019	Examiner Leroux, Corentine
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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18-10-2019

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