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(54) **A ROOF DEVICE FOR A TERRACE COVERING**

DACHVORRICHTUNG FÜR EINE TERRASSENABDECKUNG

DISPOSITIF DE TOIT POUR UN TOIT DE TERRASSE

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EP 4 041 964 B1

Description

TECHNICAL FIELD

[0001] The invention relates to the field of roof panels. In particular, the invention provides a roof device comprising at least one, preferably a plurality of roof panels, which are suitable in particular as a roof device for a terrace covering. The invention also relates to a roof construction comprising said roof device.

TECHNOLOGICAL BACKGROUND OF THE INVENTION

[0002] A terrace covering is a structure typically consisting of posts and beams and is freestanding or mounted against a facade. A roof is then placed on the beams. This may be a fixed roof, but nowadays there is an increasing demand for opening roofs, that is to say roofs which can repeatedly switch between a closed and an open position of the roof.

[0003] The roof filling of an openable roof may consist, for example, of a roll-up canvas, lamellae which rotate around their axis, or slidable segments. The segments are typically panels which are made from (laminated) glass or plastic, such as PC or PMMA. Depending on the choice of material, the translucency and robustness of the roof may be matched to the desired application.

[0004] However, existing roof fillings typically suffer from the following problems:

- a roll-up canvas at an incline suffers from a risk of water pockets forming and is unable to deal with heavy loads of snow. A large angle of inclination is required for the water to run off (+- min 8°). In addition, there are only limited options with regard to the filling and there is no flexibility with regard to changing the aesthetics of the filling. Moreover, the canvas becomes soiled easily.
- Pivotable and sliding lamellae are not translucent (with regard to glass lamellae, which are translucent, a covering can only accommodate a limited number thereof). In addition, there are only limited options with regard to the filling and there is no flexibility with regard to changing the aesthetics of the filling. Typically, the underside gives a clinical impression.
- a sliding panel roof typically suffers from problems related to the incline and curvature and is usually not translucent. In addition, there is usually only 1 limited option with regard to the filling and there is no flexibility with regard to changing of the aesthetics of the filling. Typically, the underside gives a clinical impression.
- a sliding panel roof with canvasses is not water-tight and unable to withstand snow loads. There is a risk of puddles forming and of the canvas becoming soiled.
- a sliding glass roof has a visible incline and is not heat-absorbing. In addition, there is usually only 1 limited option with regard to the filling and there is no flexibility with regard to changing of the aesthetics of the filling.
- a fixed roof of taut canvas is no movable roof filling and is not translucent.

[0005] A general shortcoming of existing roof fillings is a limited (splash) watertightness and water drainage. Good water drainage is difficult to achieve, in particular for roofs where water cannot flow away in a natural manner. Standing water can exert pressure on the roof surface with the risk of damage, local sagging or leaking. A similar problem may occur during snowfall, during which the roof may be subjected to heavy loads for long periods followed by a local collection of melting snow water.

[0006] Finally, the existing roof fillings do not allow further finishing of the underside as desired by the user, or only to a very limited degree. As a result thereof, the undersides typically give a clinical, unpleasant or impersonal impression. There is therefore a need for a roof filling which offers a solution to one or more of the abovementioned problems.

[0007] Examples of roof devices of the prior art are known inter alia from FR 2 595 109 A1, FR 3 049 973 A1, US 4 762 160, EP 3 453 810 A1 and FR 2 501 756 A1.

SUMMARY

[0008] It is an object of the present invention and the preferred embodiments thereof to offer a solution to one or more of the abovementioned drawbacks of flat roofs. To this end, the present invention relates to a roof device according to claim 1. The invention also relates to a roof construction comprising said roof device. The roof panel of the roof device according to the present invention can improve the (splash) watertightness and/or water drainage, strength and/or resistance to (snow) loads, finishing options, translucency and/or solar control. The roof panel of the roof device according to the present invention can also prevent the formation of water pockets.

[0009] Various aspects of the invention are described below. Embodiments of one aspect are also embodiments of the other aspects. Preferred embodiments of one aspect are also preferred embodiments of the other aspects.

[0010] In a first aspect, the invention relates to a roof device for a terrace covering according to claim 1 comprising a roof frame and at least one, preferably a plurality of roof panels, wherein at least one roof panel is configured so as to be slidable in the roof frame, and wherein the at least one roof panel comprises a panel frame and at least two panel fillings attached to both sides of the panel frame, and wherein: the at least one roof panel (100) is configured so that a first panel filling forms a water-tight cover on top of a second panel filling, wherein, the first panel filling is translucent or transparent, and

wherein, the second panel filling is sun-screening or reflective. According to a next aspect, the invention relates to a roof construction, preferably a terrace covering, comprising a roof device according to the first aspect of the invention.

[0011] In a preferred embodiment, the first panel filling is attached to the panel frame by means of a leakproof sealing.

[0012] In a preferred embodiment, the roof device contains at least one roof panel, the sun-screening or reflective property of the second panel filling of which can be removed, controlled and/or switched on or off individually. Preferably, the second panel filling contains a screen or canvas which can be rolled up individually or lamellae which are tiltable or slidable. Here, individually thus means for each roof panel separately. Such an aspect of the sun-screening part which can be removed, detached, switched on or off, controlled, rolled-up, etc., and can be individually determined for each roof panel is advantageous in order to adjust the sun-screening and/or reflective characteristics of the roof panels. According to a preferred embodiment, the second panel filling is temporarily removable, movable, slidable, tiltable and/or rollable. Preferably, the second panel filling does not contain glass or a glass panel.

[0013] In a preferred embodiment, the first panel filling is inclined; preferably, the first panel filling forms a saddle roof; preferably a symmetrical saddle roof.

[0014] In a preferred embodiment, the inclined first panel filling has an inclination of at least 0.5° to at most 5.0° from a ridge to an end of the first panel filling; more preferably 1.0° to 3.0°; more preferably 1.0° to 2.5°; more preferably 1.0° to 2.0°; more preferably approximately 1.5°; for example 1.3°.

[0015] In a preferred embodiment, the ridge of the inclined first panel filling is at least 10 mm to at most 50 mm higher than an end of the first panel filling; preferably at least 10 mm to at most 45 mm higher; more preferably 10 mm to 40 mm; more preferably 15 mm to 35 mm; more preferably 20 mm to 30 mm; for example 25 mm.

[0016] In a preferred embodiment, the first panel filling is curved; preferably convexly curved; preferably arcuate or spherical.

[0017] In a preferred embodiment, the curved first panel filling has a radius of curvature (R) of 10 m to at most 120 m; preferably 20 m to at most 110 m; more preferably 30 m to at most 100 m; for example 50 m; for example 70 m.

[0018] In a preferred embodiment, the top of the curved first panel filling is at least 10 mm to at most 50 mm higher than an end of the first panel filling; preferably at least 10 mm to at most 45 mm higher; more preferably 10 mm to 40 mm; more preferably 15 mm to 35 mm; more preferably 20 mm to 30 mm; for example 25 mm.

[0019] In a preferred embodiment, the first panel filling is a rigid panel filling which is clamped by at least two opposite main profiles of the panel frame.

[0020] In a preferred embodiment, the first panel filling is a rigid panel filling which is clamped by a clamping profile, preferably at least two clamping profiles, which are coupled to a main profile.

[0021] In a preferred embodiment, the second panel filling is a flexible panel filling which is attached to at least two opposite main profiles of the panel frame. This has the advantage that the underside can be made completely flat and horizontal. In addition, the underside of the roof filling will become soiled much less easily. In addition, the underside of the roof filling may produce and maintain a degree of cosiness. As a result thereof, the second panel filling may also be exchangeable and replaceable.

[0022] Preferably, the first panel filling is rigid and the second panel filling is flexible. Alternatively, the first panel filling is rigid and the second panel filling is rigid.

[0023] In a preferred embodiment, the second panel filling comprises a tensionable canvas.

[0024] In a preferred embodiment, the second panel filling is sun-screening; preferably a sun-screening canvas.

[0025] In a preferred embodiment, the panel frame comprises a tensioning system to tension the flexible second panel filling.

[0026] In a preferred embodiment, the tensioning system comprises a bolt attached to a main profile and a tensioning slat attached to the flexible second panel filling, which is configured in such a way that a rotation of the bolt tensions the flexible second panel filling.

[0027] In a preferred embodiment, the second panel filling is a rigid panel filling which is attached to at least one, preferably two, opposite main profiles of the panel frame.

[0028] In a preferred embodiment, the second panel filling comprises lamellae, a perforated screen, or a lattice which optionally comprises flowers or plants.

[0029] In a preferred embodiment, the panel frame comprises a drainage groove for downward water drainage.

[0030] In a preferred embodiment, the drainage groove is formed between a side profile of the panel frame and the first panel filling; preferably a side of the first panel filling.

[0031] In a preferred embodiment, the drainage groove is formed between a side profile of the panel frame and a dripping nose profile attached to the first panel filling.

[0032] In a preferred embodiment, the dripping nose profile securely clamps the first panel filling; preferably a side of the first panel filling.

[0033] In a preferred embodiment, the second panel filling is attached to the dripping nose profile.

[0034] In a preferred embodiment, the second panel filling is securely clamped by a thickening profile coupled to the dripping nose profile; preferably coupled in a click-fitted manner. In a preferred embodiment, the panel frame comprises a gutter for lateral water drainage.

[0035] In a preferred embodiment, the gutter is formed at an end of at least one main profile of the panel frame.

[0036] In a preferred embodiment, the panel frame comprises a reinforcing element configured to support an adjoining roof panel.

[0037] In a preferred embodiment, the reinforcing element comprises an upwardly directed body which extends laterally from a main profile; preferably a top side of the main profile.

[0038] As mentioned, the invention relates to a roof device according to claim 1 for a terrace covering comprising a roof frame and at least one, preferably a plurality of, roof panels arranged in the roof frame.

[0039] The at least one roof panel, preferably the plurality of roof panels, is slidably arranged in the roof device in order to form a slidable roof device.

[0040] In a preferred embodiment, the roof frame comprises a roof frame gutter for lateral water drainage.

[0041] In a preferred embodiment, the roof frame gutter is arranged under a dripping nose profile of an overhead roof panel.

[0042] In a further aspect, the invention relates to a roof construction, such as a terrace covering, comprising a support structure on which, to which or in which a roof device according to one or more embodiments as described herein can be fitted.

[0043] In a further aspect which is not part of the claimed invention, a method for assembling a roof panel is described herein; the roof panel comprising at least two main profiles and at least two side profiles, and preferably at least two dripping nose profiles. The method preferably comprises the following steps:

(a1) securely clamping a first panel filling between the at least two opposite two main profiles;
(a2) optionally, securely clamping the first panel filling between the at least two opposite two side profiles and/or dripping nose profiles;
(b1) attaching a second panel filling to the at least two opposite two main profiles; and,
(b2) optionally, attaching the second panel filling to the at least two opposite side profiles and/or dripping nose profiles.

[0044] In a preferred embodiment, the second panel filling is tensioned by means of a tensioning system.

DESCRIPTION OF THE FIGURES

[0045] In order to better explain the features of the invention, some preferred embodiments of the present invention are described in the attached figures which are not intended to be limiting in any respect. The figures are discussed in more detail in the examples.

[0046] Throughout the figures, claims and examples, the following numbering is used: 100 - roof panel; 110 - main profile (111 - front main profile; 112 - rear main profile); 120 - side profile; 130 - dripping nose profile; 140 - clamping profile; 150 - point of attachment; 160 - thickening profile; 170 - tensioning system; 175 - tensioning slat; 180 - reinforcing element; 190 - drainage groove; 195 - roof panel gutter; 200 - first panel filling; 205 - ridge; 210 - sealing; 240 - clamping space; 300 - second panel filling; 301 - canvas; 360 - thickening; 400 - roof device; 410 -roof frame; 490 - roof frame gutter.

Fig. 1A shows an illustration of a roof panel (100) viewed from a top side of the roof panel (100).
Fig. 1B shows an illustration of a roof panel (100) viewed from a bottom side of the roof panel (100).
Fig. 2 shows a cross section of a roof panel (100) viewed along a side of the roof panel (100).
Fig. 3 shows an illustration of a roof panel (100) viewed along a top side of the roof panel (100).
Fig. 4 shows an illustration of a dripping nose profile (130) according to a preferred embodiment.
Fig. 5 shows an illustration of a dripping nose profile (130) according to a preferred embodiment.
Fig. 6 shows a cross section of a first panel filling (200), to which the same dripping nose profile (130) as in **Fig. 4** is attached; and to which a canvas (301) is attached as a second panel filling.
Fig. 7 shows a cross section of a roof panel (100) viewed from a bottom side of the roof panel (100).
Fig. 8 shows a cross section of a roof panel (100) viewed from a top side of the roof panel (100).
Fig. 9 shows a cross section of a roof panel (100) viewed from a top side of the roof panel (100).
Fig. 10 shows a cross section of a roof panel (100) viewed from a side of the roof panel (100).
Fig. 11a shows an illustration of a roof device (400) according to a preferred embodiment, while **Fig. 11b** shows a cross section of the same embodiment.
Fig. 12 shows an illustration of a roof device (400) according to a preferred embodiment.

DETAILED DESCRIPTION

[0047] Before describing the present devices and constructions according to the invention, it should be understood that the present invention is not limited to the described specific devices or constructions or combinations, since such devices and constructions and combinations can obviously vary. It will also be clear that the terminology used in this document is not intended to be limiting, since the scope of the present invention is only limited by the attached claims.

[0048] As used below in this text, the singular forms "a", "an", "the" include both the singular and the plural, unless the context clearly indicates otherwise. The terms "comprise", "comprises" as used below are synonymous with "including", "include" or "contain", "contains" and are inclusive or open and do not exclude additional unmentioned parts, elements or method steps. The terms "comprise", "comprises" include the term "consist of", "consisting of".

[0049] The enumeration of numeric values by means of a range of figures comprises all values and fractions

in these ranges, as well as the cited end points. The term "approximately" as used when referring to a measurable value, such as a parameter, an amount, a time period and the like, is intended to include variations of +/- 10% or less, preferably +/-5% or less, more preferably +/-1% or less, and still more preferably +/-0.1% or less, of and from the specified value, in so far as the variations apply to the invention disclosed herein. It should be understood that the value to which the term "approximately" refers per se has also been disclosed.

[0050] In the following passages, different aspects of the invention are defined in more detail. Each aspect so defined may be combined with any other aspect or aspects unless clearly indicated to the contrary. In particular, any feature indicated as being "preferred" or "advantageous" may be combined with any other feature or property indicated as being "preferred" and/or "advantageous". Reference throughout this specification to "one embodiment" or "an embodiment" means that a particular feature, structure or characteristic described in connection with the embodiment is applicable in at least one embodiment of the present invention. Appearances of the phrases "in one embodiment" or "an embodiment" in various places throughout this specification do not necessarily refer to the same embodiment, although this is not excluded. Furthermore, the particular features, structures or characteristics may be combined in any suitable manner, as would be apparent to a person skilled in the art on the basis of this description, provided they fall within the scope of the claims.

[0051] The embodiments described and defined in the claims may be used in any combination. Reference is made in the present description of the invention to the attached drawings which form part thereof and which illustrate specific embodiments of the invention. Parenthesized or emboldened reference numerals linked to specific elements illustrate the elements in question by way of example, without thereby limiting the elements. It is to be understood that other embodiments may be utilised and structural or logical changes may be made without departing from the scope of the claims. The following detailed description is not to be taken in a limiting sense, and the scope of the present invention is defined by the appended claims.

[0052] Unless defined otherwise, all terms disclosed in the invention, including technical and scientific terms, have the meaning which a person skilled in the art usually gives them. For further guidance, definitions are included to further explain terms which are used in the description of the invention.

[0053] An aspect of the invention relates to a roof device according to claim 1 comprising a roof frame and at least one, preferably a plurality of, roof panels arranged in the roof frame (as roof filling). A further aspect of the invention relates to a roof construction comprising a support structure on which, to which or in which said roof device can be fitted.

[0054] A roof panel - or, as used herein, panel - is a rigid structure which can form part or be a segment of a roof filling in a roof frame. A panel will typically have a beam-shaped or block-shaped structure, consisting of six virtually rectangular surfaces; namely a top surface, a bottom surface (or base), and four sides. The periphery of the bottom surface is preferably virtually the same size as the periphery of the top surface. The term virtually should be interpreted as meaning that the aforementioned body or structure comes significantly close to the aforementioned size or geometric shape; that is to say apart from some roundings, curves, projections, connecting elements, grooves, slots, ridges, openings, connecting pieces, reinforcing means and the like; reference is made to the figures for further clarification.

[0055] Every reference to a surface or side of a panel will be interpreted in relation to the position of the panel after fitting in the roof frame of the roof device: the underside is the side which is or will be directed towards the base of the roof device (the ground, e.g. the terrace floor), while the upper panel wall or top wall is the panel wall which is or will be directed towards the top surface of the roof device (the sky, e.g. the open air).

[0056] There may be countless variations in the dimensions of the panels. The dimensions may be adapted, inter alia, to the size of the roof device, the number of panels, the material from which the panels are made, etc. By way of example, a panel may have a length of at least 0.50 m to at most 5.00 m; such as 2.00 m, 2.50 m, 3.00 m, 3.50 m, 4.00 m, 4.50 m, etc. By way of example, a panel may have a width of at least 0.50 m to at most 3.00 m; such as 1.00 m, 1.50 m, 2.00 m, 2.50 m, etc. By way of example, a panel may have a height of at least 1 cm to at most 50 cm; such as 5 cm, 10 cm, 15 cm, 20 cm, 25 cm, 30 cm, etc. The person skilled in the art is expected to have sufficient knowledge to be able to adapt the dimensions of the roof panel to the desired embodiment.

[0057] The panel frame - or, as used herein, frame - refers to a rigid structure which is suitable for supporting, and preferably framing, the at least two panel fillings. The frame comprises at least one frame profile. A frame profile - or, as used herein, profile - refers to a rigid and preferably elongate body, typically used as a border of a frame. Depending on the desired embodiment, a profile may be rounded or flat, may have a wide or narrow wall, may be hollow or filled with filling material on the inside, may be ridged or smooth, and/or may comprise decorative finishes. The desired dimensions of the frame and, by extension, those of the profiles will typically correspond to the desired dimensions of the panel. The person skilled in the art is expected to have sufficient knowledge to be able to adapt the panel frame to the desired embodiment. The profiles are typically made of a rigid material. This may be, for example, aluminium. Aluminium has many advantages as a material for profiles, as it is strong while also being light, readily able to withstand adverse weather conditions and requiring little maintenance. However, other materials are also suitable and

the person skilled in the art is expected to know their advantages and drawbacks. Depending on the material, a profile may be produced by means of different techniques, including extrusion, milling, folding, casting, welding, etc. The person skilled in the art is expected to know the suitable manufacturing technique.

[0058] Typically, the frame has a virtually quadrangular, preferably rectangular, shape. The frame may be formed by a single frame profile which is bent several times. However, it is easier and more efficient to produce several frame profiles and to then couple these together in order to form the frame. The panel frame will typically comprise four profiles; in particular two main profiles which are typically arranged at the front side and rear side of the roof panel and consequently form the front wall and rear wall, and two side profiles which are typically arranged at the end side of the roof panel and consequently form the side walls. The front side and rear side of the roof panel will typically be formed by the long sides of the roof panel and the end side by the short sides. The person skilled in the art will understand that, depending on the desired embodiment of the roof panel, this may also be reversed, in particular that the front side and rear side of the roof panel will be formed by the long sides of the roof panel and the end side by the short sides. The main profiles and side profiles will be discussed in more detail below.

[0059] During fitting in the roof panel, the first panel filling will typically be the upper panel filling; that is to say that the first panel filling forms the top side of the roof panel and, if fitted in a roof device, also the top side of the roof. The first panel filling will ensure the water-tight protection of the roof. The first panel filling is made from a water-tight material which is preferably fitted orfittable in the panel frame at an incline and/or with a specific convex curvature in a water-tight manner. As a result thereof, the water which lands on the roof panel will be able to run off via the sides of the roof frame, without landing on the second panel filling, which could possibly lead to markings, damage or permanent marks. In addition, the first panel filling can be structurally reinforced in order to be better able to carry loads, such as snow, with limited and/or non-permanent sagging. As a result thereof, no load is applied to the second panel filling, thus preventing deformation, such as pocket formation.

[0060] The first panel filling will typically be a plate which fills the space of the panel frame; preferably the entire space between the main profiles of the panel frame. The first panel filling may be made of different materials or even combinations of materials. The choice of material may be tailored, inter alia, to the size of the roof (rigidity), the use of the roof device (translucent or opaque), the climate in which the structure is fitted (mainly sunny, rainy or snowy), etc.. By way of example, the first panel filling may be made of metal (*e.g.* aluminium), plastic (*e.g.* PC, PMMA, PVC), (laminated) glass, etc., and/or combinations of different types of materials, provided the first panel filling is translucent or transparent. Optionally, the first panel filling may be coated, for example with a water-repellent coating. The person skilled in the art is expected to know the advantages and drawbacks of the different types of material and coatings.

[0061] The first panel filling is translucent or optically transparent. The term opaque is understood to mean that the panel filling blocks visible light virtually completely; for example allows at most 5% of the visible light to permeate; preferably at most 3%; more preferably at most 1%. The term translucent is understood to mean that the panel filling partially allows visible light to permeate, but also partially blocks and/or diffuses it; for example allows at least 10% of the visible light to permeate or diffuses for example at least 90% of the visible light; for example allows at most 90% of the visible light to permeate or diffuses for example at least 10% of the visible light. The term optically transparent is understood to mean that the panel filling allows visible light to permeate virtually completely; for example allows at least 90% of the visible light to permeate or diffuses at most 10% of the visible light; preferably allows at least 95% of the visible light to permeate or diffuses at most 5% of the visible light; more preferably allows at least 98% of the visible light to permeate or diffuses at most 2% of the visible light; even more preferably allows at least 99% of the visible light to permeate or diffuses at most 1% of the visible light.

[0062] A surface of the first panel filling may be curved. Preferably, the surface of the first panel filling will be convex. As used in this document, convex means that the surface is curved towards the exterior. The convex surface will typically form the top side of the roof panel. The convex shape has the advantage that the rainwater and/or snow water will run off in the direction of the side profiles of the panel for improved water drainage.

[0063] The convex surface may be arcuate. As used in this document, arcuate means that the surface of the first panel filling is curved to the exterior, as is the case with the circumference of a circle. The convex surface may be circular or spherical. As used in this document, spherical means that the surface of the first panel filling is curved to the exterior, as is the case with the circumference of a sphere. An arcuate or spherical surface will result in improved water drainage. The curve of the convex surface may optionally deviate partly or completely; for example in order to form an elliptical or oval surface.

[0064] The radius of curvature (R) of the curved surface is at least 10 m to at most 150 m. The radius of curvature is preferably 50 m to 130 m; more preferably 60 m to 120 m; more preferably 80 m to 100 m; more preferably 85 m to 95 m; for example 85 m; for example 86 m; for example 87 m; for example 88 m; for example 89 m; for example 90 m; for example 91 m; for example 92 m; for example 93 m; for example 94 m; for example 95 m. The person skilled in the art will understand that the radius of curvature is calculated as a radius of curvature interval on the basis of the R test, wherein the length corresponds to the chord of the curved panel filling and the height is measured from the highest (centre) point

to the chord. Optionally, the top may be supported or reinforced internally.

[0065] The top of the curved panel filling may be at least 10 mm to at most 50 mm higher than an end of the first panel filling on the end sides of the roof panel. The top is preferably at least 10 mm to at most 45 mm higher; more preferably 10 mm to 40 mm; more preferably 15 mm to 35 mm; more preferably 20 mm to 30 mm; for example 25 mm.

[0066] A surface of the first panel filling may be inclined. The incline has the advantage that the rainwater and/or snow water will run off in the direction of the side profiles of the panel for improved water drainage. Preferably, the surface of the first panel filling will form a saddle roof. As used in this document, the term "saddle roof" means that the first panel filling consists of at least two inclined panel filling components which are placed against each other which intersect in a ridge. The components are preferably coupled to each other in the ridge in order to achieve a stable construction. The inclined panel filling components are preferably of equal length; in other words the first panel filling forms a symmetrical saddle roof. Alternatively, a single panel filling may form a saddle roof by being bent in at least one point; the bending point will form the ridge. Optionally, the top of the ridge may be supported or reinforced internally. The saddle roof shape has the advantage that the rainwater and/or snow water will run off in the direction of the side profiles of the panel for improved water drainage.

[0067] The incline of the first panel filling may have an inclination of at least 0.5° to at most 5.0° from the ridge to one end of the first panel filling at the end sides of the roof panel. The inclination is preferably at least 1.0° to at most 3.0°; more preferably 1.0° to 2.5°; more preferably 1.0° to 2.0°; more preferably approximately 1.5°; for example 1.3°.

[0068] The ridge of the curved panel filling may be at least 10 mm to at most 50 mm higher than one end of the first panel filling at the end sides of the roof panel. The top is preferably at least 10 mm to at most 45 mm higher; more preferably 10 mm to 40 mm; more preferably 15 mm to 35 mm; more preferably 20 mm to 30 mm; for example 25 mm.

[0069] The first panel filling is preferably attached to the panel frame by the frame profiles clamping the body of the first panel filling. In this case, the frame may form a space which is suitable for accommodating the first panel filling. Preferably, the first panel filling will be clamped along at least a top side and an underside. An edge, preferably all edges, of a top surface and/or bottom surface of the first panel filling may be partly, preferably entirely, covered by the frame profiles. Alternatively or additionally, the first panel filling can be clamped along the sides. Preferably, the sides of the first panel filling will be covered entirely by the frame profiles.

[0070] Clamping of the first panel filling may be achieved by providing the main profiles and/or side profiles with a U-shaped profile (also referred to as a C-shaped profile), wherein the distance between the upright walls of the U-shaped profile (also known as the height) virtually corresponds to the thickness of the panel filling. By sliding the first panel filling between the upright walls, it will remain clamped after adjacent profiles have been coupled thereto.

[0071] Clamping of the first panel filling may be achieved by providing the main profiles and/or side profiles with two clamping profiles, wherein a first clamping profile will make contact with a top side of the first panel filling and a second clamping profile will make contact with a bottom side of the first panel filling. The clamping profiles may then be coupled to an upright side wall of the main profiles and/or side profiles in order to clamp the first panel filling.

[0072] The first panel filling may be attached to the panel frame by means of a leakproof sealing. Preferably, when securely clamping the panel filling, the sealing will close all clear spaces and thus prevent potential leaks of rainwater and snow water. The sealing can also be fitted between the frame and the first panel filling. The sealing can also be fitted between individual frame profiles. The sealing is typically made of a compressible material. This may be, for example, plastic or rubber. Alternatively, the sealing may be produced by means of curable materials, such as silicones.

[0073] The panel frame may furthermore comprise a drainage groove for downward drainage of rainwater or snow water which preferably runs off laterally from the top side of a first panel filling. A drainage groove may be formed by making the length of the first panel filling less long than the corresponding length of the main profiles of the panel frame to which the first panel filling will be attached. This results in an elongate opening during assembling between a side of the first panel filling and a side profile of the panel frame from which the water can run off. On the side of the first panel filling, a downwardly pointed dripping nose profile may be attached which protects the second panel filling situated below it against the water which is running off in a downward direction. In a preferred embodiment, both lateral profiles will form a drainage groove on both sides of the roof panel, with a dripping nose profile preferably being attached to both sides of the first panel filling.

[0074] Optionally, it is possible, when mounting the roof panel in a roof device, to fit the drainage groove above a roof frame gutter of the roof device or roof construction to improve water drainage and to prevent leaks on the base of the roof device, such as the terrace. By keeping the width of the drainage groove smaller than the gutter width of the roof frame gutter, the water sealing can be hidden from view.

[0075] The panel frame may furthermore comprise a roof panel gutter for laterally draining off rainwater or snow water which preferably runs off laterally from the top side of a main profile. A roof panel gutter can be formed by providing a main profile with an inclined structure at one end of the main profile. As a result thereof, a

roof panel gutter is created between two adjoining roof panels during fitting of the roof panels in a roof device, in particular between two adjoining main profiles of two adjoining roof panels, that is to say between a front main profile of a first roof panel and a rear main profile of a second roof panel. The water which runs off laterally can then run off via the above-described dripping nose in a downward direction, preferably along the above-described drainage groove, or a separate drainage opening may be provided on the side of the main profile. The second panel filling will typically be the lower panel filling when fitting the roof panel; that is to say that, during fitting in a roof device, the second panel filling forms the underside of the roof panel and also the underside of the roof. The second panel filling will form the finish of the roof. The second panel filling is typically at least attached to the panel frame at two points of attachment, so that the second panel filling may be just below the underside of the roof panel. The second panel filling may be partly attached to the panel frame or in an entirely continuous manner. Since the second panel filling does not have a water-draining function, it does not have to be fitted at an incline and may therefore also be fitted completely flat. This not only improves the visual appearance, but also offers the possibility of using (non-waterproof or non-coated) materials which were previously deemed unsuitable for use in finishing the bottom side of roof panels. In addition, this makes it possible to use materials with sun-screening and/or reflective properties which were previously deemed unsuitable due to limited soil-proofness or waterproofness. The second panel filling also offers the possibility of incorporating all kinds of decorations or embellishments on or under the roof panel.

[0076] The second panel filling may be made of different materials or even combinations of materials. The choice of material may be adapted to the use of the roof device and the desired finish. The second panel filling may be a flexible or a rigid panel filling or a combination of both. Some preferred embodiments are described in more detail below. It will be clear that the second panel filling is not limited to one of the described embodiments and alternative embodiments or combinations of embodiments also exit, provided they fall within the scope of the claims.

[0077] The second panel filling is either sun-screening or reflective.

[0078] The second panel filling may be sun-screening or have a sun-screening surface. The term sun-screening is understood to mean that the second panel filling partly allows the visible light to pass, but also partly blocks and/or diffuses it; for example allows at least 20% of the visible light to pass or, for example, diffuses at least 80% of the visible light; for example allows at most 80% of the visible light to pass or, for example, diffuses at least 20% of the visible light.

[0079] The second panel filling may be opaque or have an opaque surface. The term opaque is understood to mean that the second panel filling almost completely blocks out the visible light; for example blocks out at least 90% of the visible light; for example blocks out at least 95% of the visible light; for example blocks out at least 99% of the visible light.

[0080] The second panel filling may be reflective or have a reflective surface. The term reflective is understood to mean that the second panel filling partly or completely reflects the visible light; for example reflects at least 50% of the visible light; for example reflects at least 75% of the visible light; for example reflects at least 99% of the visible light.

[0081] The second panel filling may comprise a canvas. Here, a canvas refers to a flexible medium which has been pretensioned, referred to in this document as pretensioned canvas, or is tensionable, referred to in this document as tensionable canvas. Examples of suitable types of canvas material for the present invention are coarse or woven fabric or a plastic film, such as polyester, glass fibre, (fine) metal gauze or other types of canvas material. The canvas may be a sun-screening or reflective canvas. The canvas may consist of several layers, for example in order to achieve better sun-screening or reflective properties. The canvas may be tensionable or pretensioned. The canvas may be rollable. The canvas may optionally be provided with a print or decoration.

[0082] The second panel filling may comprise lamellae. Here, lamellae refer to a plurality of relatively thin and/or narrow pieces of material which are arranged parallel to each other. Examples of suitable types of lamellae material for the present invention are wood, plastic, metal, etc. Optionally, the lamellae may be rotated and/or arranged at a certain angle.

[0083] It will be clear that such embodiments in which the canvas is, for example, rollable, the lamellae are rotatable or can be arranged at a certain angle, but also in which such second panel fillings can be switched on or off, are removable, detachable, etc., make it possible to determine the sun-screening and/or reflective properties of the second panel filling and more particularly, determine them individually, that is to say per roof panel.

[0084] The second panel filling may comprise a perforated screen. In this case, the term screen refers to a covering structure having a plurality of small openings. An example of a suitable screen for the present invention is a perforated plate, produced by creating patterns in a metal or wooden plate. An example of a suitable screen for the present invention is expanded metal, produced by stretching out slits provided in a metal plate to form diamond-shaped meshes.

[0085] The second panel filling may comprise a lattice or grate. Here, a lattice refers to a frame of bars which have been fitted on top of each other and which are parallel to each other or intersect. Examples of suitable lattice material for the present invention are wood, plastic, metal, fabric, etc. The lattice material may be provided in the form of a rope, string, band and the like; for example a fabric string. Optionally, the lamellae may be covered with flowers or plants, such as climbing plants.

[0086] The second panel filling may be movably or slidably arranged in or on the panel frame. The movable arrangement of the second panel filling may make it possible to move the second panel filling (temporarily) out of view. This may make it possible to adjust the incidence of light of the roof device, as the first panel filling is transparent or translucent and the second panel filling is sunscreening or reflective. This may furthermore also facilitate maintenance or cleaning of a bottom side of the first panel filling due to improved access. A roll-up canvas which can be unrolled or rolled up by means of a winding mechanism is an example of a movable panel filling. Sliding lamellae which can be pushed onto or against each other by means of a sliding mechanism are an example of a movable panel filling.

[0087] Depending on the embodiment of the second panel filling, the way in which the second panel filling is attached to the panel frame will differ. Below, some preferred embodiments are described in more detail. It will be clear that the attachment of the second panel filling is not limited to one of the described embodiments and that the different techniques can, if desired, be combined.

[0088] The second panel filling is attached to both sides of the panel frame.

[0089] In a flexible embodiment of the second panel filling, for example in the form of canvas, the second flexible panel filling will be attached to the panel frame along at least two sides, so that the panel filling can run along the underside in a tensioned way. Preferably, at least two sides are attached to the main profiles of the frame. Preferably, the second panel filling may be attached to the frame in a repeatable manner - it can be mounted and unmounted repeatedly. This may make it possible to replace the second panel filling in case of damage, wear or for decorative reasons.

[0090] The main profiles may comprise one or more points of attachment. A point of attachment is preferably partly or entirely incorporated in the frame profile in order to hide the attachment means from view. A point of attachment may be a projecting body which extends laterally on one side of a frame profile. The point of attachment may be a hook onto which the panel filling is hooked, for example at an opening in the panel filling which is provided for the purpose. The point of attachment may be a (click-fittable) coupling element to which the panel filling can be coupled, for example by effecting coupling with a complementary coupling element which is incorporated in the panel filling. The point of attachment may be a clamping element which can securely clamp the panel filling in one or more locations.

[0091] The second flexible panel filling may also be incorporated in the main profile along the entire edge. The main profile may, for example, comprise a clamping profile which will securely clamp an entire edge of the flexible panel filling. This may be achieved, for example, by providing a thickening on the edge of the flexible panel filling which can be clamped by the clamping profile, for example a canvas string or zip.

[0092] The frame may comprise a tensioning system in order to tension the second flexible panel filling if it is tensionable. Preferably, at least one main profile comprises a tensioning system; the second main profile can then anchor the flexible panel filling or, alternatively, tension the flexible panel filling in two directions by means of a second tensioning system.

[0093] By way of example, the tensioning system may comprise a tensioning slat and bolt which are attached to one end of a main profile. By clamping the second flexible panel filling behind the tensioning slat, it is possible to apply tension to the panel filling by rotating the bolt. The bolt and associated tensioning slat may be incorporated in the frame profile to hide the tensioning system from view; tensioning may then be achieved, for example, by means of a ratchet spanner or Allan key. Optionally, one end of a main profile may serve as tensioning point, with the second flexible panel filling being curved and tensioned over the tensioning point. However, alternative tensioning systems are also possible, such as tensioning of the second flexible panel filling by means of a rope, chain, tensioning strap, springs and the like.

[0094] Just like the main profiles, the side profiles may also comprise one or more points of attachment for attaching the second flexible panel filling. Alternatively, the second flexible panel filling may be attached to a side profile along the entire edge. A thickening profile of the side profile may be pushed over a thickening on the edge of the flexible panel filling. The thickening profile is preferably a zip guide or string. The thickening profile may be removable in order to make simpler fitting possible; for example by attaching the flexible panel filling beforehand and subsequently coupling it to the side profile (in a click-fitted manner). The coupling will ensure that the flexible panel filling is put under tension. If, for example, the flexible panel filling expands due to an increase in temperature, it will always be kept under tension by the side profiles to which the panel filling is attached as these will also expand due to the increase in temperature.

[0095] In a specific embodiment in which the frame comprises a drainage groove as described above, a dripping nose profile may be attached along the edge of the flexible panel filling, preferably the entire edge of the flexible panel filling. The dripping nose profile will not only provide protection against drained-off water, but may also support and/or keep the second flexible panel filling under tension.

[0096] In a rigid embodiment of the second panel filling, for example as a hard screen or lattice, the second rigid panel filling will be attached to at least one, preferably a plurality of points of attachment. Attaching may be effected, inter alia, by means of attachment means, such as screws, bolts, nuts, nails and the like. The frame may comprise an attachment element for attaching the second panel filling to the frame, such as a hook, ring, (screw) eyelet, bracket and the like. Attachment may be permanent, for example by nailing or screwing the panel filling to the frame. Attachment may be non-permanent, for ex-

ample by hooking the panel filling onto the frame or by hanging it therefrom. The second rigid panel filling may also be attached to the first panel filling, for example by providing points of attachment at the bottom surface of the first panel filling.

[0097] In a specific embodiment in which the frame comprises a drainage groove as described above, a dripping nose profile may be attached to the side of the rigid panel filling, preferably along the entire side of the rigid panel filling. The dripping nose profile will not only provide protection against downwardly drained-off water, but will also be able to support the second flexible panel filling.

[0098] The main profiles of the panels may comprise a reinforcing element which can support an adjoining panel. As a result thereof, the reinforcing element may improve the strength of an adjoining panel, resulting in a reduced risk of sagging due to water or snow loads. The reinforcing element may comprise an upwardly directed body which extends laterally from a main profile, preferably a top side of a main profile. The upwardly directed body may be at right angles to the top side of the roof panel or main profile, preferably by making a perpendicular angle with a tangent over the top surface of the roof panel (if the upper panel wall is curved). The reinforcing element may be an L-shaped angle profile which is attached to or forms part of a main profile.

[0099] If a plurality of roof panels comprising a reinforcing element are fitted next to each other in a roof device, a ribbed structure will be created on the top surface of the roof device. This ribbed structure may improve the strength and resistance of the entire roof device and consequently reduce or prevent the risk of giving way or sagging of the roof; for example due to snowfall or accumulation of branches and leaves.

[0100] A roof device or roof for short may comprise a roof frame in which at least one, preferably a plurality of roof panels are or may be fitted. A plurality of panels indicates that two or more panels are present in the roof device. The roof is preferably a flat roof with a roof surface which is virtually level; that is to say having an incline of less than 10° and preferably less than 5°, for example less than 2° or 1°. The inclination is determined by the difference in height between adjoining panels; the individual panels may, for example, have a curved surface without any a difference in height with respect to each other.

[0101] The roof device may be a slidable roof or sliding roof; the term sliding is understood to mean that the roof can slide to an open and to a closed position in a repeatable manner. A sliding roof will typically comprise a sliding system which is configured to slide the panels along the length of the roof, such as a rail system. The panels may, for example, slide over the rail system in a direction which makes it possible to open and close the roof by sliding. A rail system will typically comprise one or more guide rails which are fitted or fittable to a side of the roof frame. The panels may comprise movement elements which are coupled to the rail system, such as a roller bearing which can roll or slide across the surface of a guide rail. A panel may also be attached in a non-slidable manner. Such a fixed panel may serve, for example, as a support, delimitation or as a coupling point. The person skilled in the art is expected to have sufficient knowledge of sliding systems for sliding roofs to be able to produce such an embodiment. Suitable or preferred embodiments of the roof device are also suitable or preferred embodiments of the sliding roof.

[0102] The roof device may furthermore comprise a roof frame gutter for lateral drainage of rainwater or snow water which preferably runs off laterally from the top side of a roof panel. The roof frame gutter may comprise an elongate beam-shaped or semi-circular construction which is typically connected to a vertical drainpipe. In this case, the roof frame gutter prevents the discharged water from flowing directly from the roof and hitting the terrace or ground situated below.

[0103] The roof frame gutter may be a separate structure which is attached or connected to a panel frame. Alternatively, the roof frame gutter may be incorporated in the panel frame. The roof frame gutter will be arranged to collect the water running off from a roof panel. The roof frame gutter may be arranged along the roof panel, with the roof frame gutter preferably adjoining one end of the roof panel. The roof frame gutter may be arranged under a roof panel, with the roof frame gutter preferably being arranged under one end of the overhead roof panel. The roof frame gutter may be arranged under a drainage groove of an overhead roof panel. The roof frame gutter may be attached under the overhead roof panel.

[0104] The roof frame gutter may be arranged under a dripping nose profile of an overhead roof panel. The roof frame gutter may comprise an upright wall to guide the water. The upright wall may have a raised top edge to prevent drained-off water from spilling over. The top edge may be raised to be higher than or at least at the same height as the bottom edge of a dripping nose profile of an overhead roof panel. This has the advantage that splashes of drained-off water are caught, preferably via the drainage groove. In addition, this will also prevent a gap from being created on the side of the roof device due to the presence of a drainage groove.

[0105] Alternatively, in a use which is not according to the invention, said roof panel may also serve as a filling for a wall arrangement; the roof panels will form functional wall panels. Use of the wall panels in a (vertical) wall may result in an improvement with regard to a wind-proof and/or water-tight wall filling with an improved finish on the inside; for example by the combination of a wind-proof and/or water-tight first panel filling on the outside and a desired type of material on the inside. This combination may make new kinds of wall arrangements possible, for example by providing a translucent and/or transparent first panel filling and a sun-screening and/or reflective second panel filling. The wall panels may also lead to an improvement in insulating properties, both in terms of improved heat retention and of improved cooling

(by sun-screening). The wall arrangement may comprise a sliding system, as is the case with a sliding wall. It will be clear that the embodiments of one structure described below may also be applied to other, similar structures; that is to say that suitable or preferred embodiments of the roof device or sliding roof are also suitable of preferred embodiments of the wall arrangement or sliding wall and vice versa.

[0106] In a further aspect, the invention relates to a roof construction comprising a support structure on which, to which or in which a roof device according to one or more embodiments as described herein can be fitted. The support structure may comprise walls which are configured to form a, preferably rectangular, space in which the roof device can be fitted. Suitable or preferred embodiments of the roof device are also suitable or preferred embodiments of the roof structure.

[0107] In a further aspect, which is not part of the claimed invention, there is a wall construction comprising a support structure on which, to which or in which a wall arrangement according to one or more embodiments as described herein and which are not part of the invention can be fitted. The support structure may comprise walls which are configured to form a, preferably rectangular, space in which the wall arrangement can be fitted. Suitable or preferred embodiments of the wall arrangement are also suitable or preferred embodiments of the wall structure.

[0108] The support structure of the roof construction or the wall construction may comprise upright support elements, such as posts and beams to which the roof device can be fitted. The roof construction or the wall construction may be, for example, a terrace covering, pergola, carport, vault and the like.

[0109] In a further aspect, which is not part of the claimed invention, there is a method for assembling a roof panel; the roof panel preferably comprising at least two main profiles and at least two side profiles, and optionally at least two dripping nose profiles; the method preferably comprising the following steps:

(a1) attaching a first panel filling to the at least two opposite two main profiles;
(a2) optionally, attaching the first panel filling to the at least two opposite two side profiles and/or dripping nose profiles;
(b1) attaching a second panel filling to the at least two opposite two main profiles; and,
(b2) optionally, attaching the second panel filling to the at least two opposite side profiles and/or dripping nose profiles.

[0110] Attaching the first panel filling to the main profiles in step (a1) may comprise securely clamping the first panel filling between the at least two opposite two main profiles.

[0111] Attaching the first panel filling to the side profiles and/or dripping nose profiles in step (a2) may comprise securely clamping the first panel filling between the at least two opposite side profiles and/or dripping nose profiles.

[0112] The method may comprise steps in order to form a, preferably convex, curved first panel filling; preferably wherein the roof panel furthermore comprises at least two clamping profiles. The method preferably comprising the following steps:

(i) attaching a first, lower, clamping profile at the highest possible point of, on the one hand, a first main profile and, on the other hand, a second, opposite main profile; preferably attaching it approximately in the centre of the length of the first clamping profile;
(ii) pulling or pushing of both ends of the first clamping profile in order to bend the first clamping profile;
(iii) attaching the downwardly pulled or pushed ends of the first clamping profile to the (first and second) main profiles;
(iv) attaching a first panel filling to the curved clamping profile in order to curve the first panel filling;
(v) providing and attaching a second, upper, clamping profile to the curved first panel filling; and,
(vi) optionally, supporting a top of the curved first panel filling.

[0113] The clamping profiles may optionally be attached with the usual intermediate distances. Attachment may be achieved, for example, by means of screwing.

[0114] The method may comprise a step in which the second panel filling is tensioned by a tensioning system. Tensioning the second panel filling may be performed before, after or during steps (b1) and/or (b2), or before, after or during step (v). The second panel filling is preferably a flexible medium, such as a tensionable canvas.

EXAMPLES

[0115] By way of example, reference is made to the figures. The embodiments illustrated in the figures and their reference numerals relate to preferred embodiments of the present invention and should by no means be interpreted as being limiting.

Example 1: Roof panel

[0116] **Fig. 1A** shows an illustration of a roof panel (100) viewed along a top side of the panel. The roof panel (100) comprises a panel frame comprising four profiles: two main profiles (110), in particular a front main profile (111) which is arranged at the front of the roof panel (100) and consequently forms the front wall and a rear main profile (112) which is arranged at the back of the roof panel (100) and consequently forms the rear wall, and two side profiles (120) which are arranged on the sides of the roof panel (100) and consequently form the side walls.

[0117] The roof panel (100) furthermore comprises a first panel filling (200) attached to the frame. The first panel filling (200) is entirely contained in the opening formed by the four profiles (110, 120). In this specific example, the first panel filling is securely clamped to a main profile (110) by a clamping profile (140); this clamping arrangement is explained in more detail in further figures. The rear main profile (112) furthermore comprises an upwardly directed reinforcing element (180) which extends laterally from the rear main profile (112).

[0118] **Fig. 1B** shows an illustration of the same roof panel (100) viewed along a bottom side of the panel. The roof panel (100) comprises the same components as mentioned for **Fig. 1A;** only the second panel filling (300) is visible in **Fig. 1B.** In this specific example, the first panel filling (200) forms the top side of the roof panel (100) and the second panel filling (300) forms the bottom side of the roof panel (100).

[0119] **Fig. 2** shows a cross section of a roof panel (100) viewed along a side of the panel. In this illustration, only the two main profiles (110) are visible.

[0120] The first panel filling (200) is clamped between the front main profile (111) and the rear main profile (112) by means of a plurality of clamping profiles (140), in particular an upper clamping profile (140a) and a lower clamping profile (140b). The clamping profiles (140) are coupled to the main profiles (110) in order to secure the first panel filling (200). The first panel filling (200) is attached to the panel frame by means of a leakproof sealing (210); the leakproof sealing comprises a plurality of sealings (210), which are inter alia fitted between the first panel filling (200) and the clamping profiles (140), and between the clamping profiles (140) and the main profiles (110). This ensures that the first panel filling (200) forms a water-tight cover.

[0121] In this specific example, the second panel filling (300) is a tensionable canvas (301) which is provided with a thickening (360) at a first and a second end of the canvas. The second panel filling (301) is attached to the front main profile (111) and the rear main profile (112) by arranging the thickening (360) in a point of attachment (150). The point of attachment (150) may, for example, securely clamp the thickening (360) by providing an opening which is smaller than the size of the thickening (360). By attaching the canvas (301) at at least two points of attachment (150), the second panel filling (301) will hang from the underside of the roof panel. The canvas (301) will preferably be attached in a continuous manner. The canvas (301) is tensioned by means of a tensioning system (170) which is incorporated in the front main profile (111). The tensioned second panel filling (300) will be protected against water which ends up on the top side of the roof panel (100) and possibly runs off over a top side of the first panel filling (200).

[0122] **Fig. 2** furthermore shows the presence of a roof panel gutter (195) formed at an end of the front main profile (111) of the panel frame. The roof panel gutter (195) will provide lateral water drainage for water which ends up on the main profile.

[0123] **Fig. 3** shows a specific embodiment of a roof panel (100) wherein the first panel filling (200) has a symmetrical saddle roof shape. The first panel filling (200) comprises two inclined panel filling components (200a, 200b) which are coupled to each other in the ridge (205). This embodiment will ensure that water which ends up on the top side of the first panel filling (200) will run off in the direction of the side of the roof panel (100).

Example 2: Drainage groove

[0124] In a preferred embodiment, the roof panel (100) may comprise a drainage groove (190). The drainage groove (190) is formed between the dripping nose profile (130) attached to one end of the first panel filling (200), the end side of the roof panel (100), and a side profile (120). This drainage groove (190) will provide downward water drainage for water which ends up on the roof panel (100). In order to protect the second panel filling (300) from water which runs off along the drainage groove (190) of the roof panel (100), a dripping nose profile (130) may be provided.

[0125] **Fig. 4** shows a first embodiment of a dripping nose profile (130) comprising a downwardly pointed body along which the water can run off, a clamping space (240) for clamping the first panel filling (200) and a securing means for securing the second panel filling (300). In the first embodiment, the securing means is a thickening profile (160) which can be coupled in a click-fitted manner to the dripping nose profile (130). Upon coupling, the thickening profile (160) will be arranged under the clamping space (240) and thus also under an edge of the first panel filling (200). The dripping nose profile (130) comprises a point of attachment (150) in which a thickening - typically present on the edge the second panel filling (300) - can be clamped.

[0126] **Fig. 5** shows a second embodiment of a dripping nose profile (130) comprising the same components as the above-described first embodiment; except that upon coupling of the thickening profile (160) to the dripping nose profile (130), the thickening profile (160) will be arranged next to the clamping space (240) and thus also next to an edge of the first panel filling (200). This second embodiment may make it possible to tension the second panel filling (300) more laterally.

[0127] **Fig. 6** shows the first embodiment of the dripping nose profile (130) described in **Fig. 4** after having been attached to the first panel filling (200) in the clamping space (240) provided and of the second panel filling (300) in the point of attachment (150) provided. Here, the second panel filling (300) is a tensionable canvas (301) with a clampable thickening (360) at one end.

[0128] The further figures then show the placement of the dripping nose profile (130) after the first (200) and the second (300) panel fillings have been secured in a panel frame. The opening between, on the one hand, the dripping nose profile (130) and, on the other hand, a side

profile (120) of the panel frame will form a drainage groove (190).

[0129] **Fig. 7** shows a cross section of the roof panel (100) viewed from a front side of the roof panel (100). **Fig. 8** shows a cross section of the roof panel (100) viewed from a top side of the roof panel (100). **Fig. 9** shows a cross section of the roof panel (100) viewed from a second angle from the top side of the roof panel (100).

[0130] **Fig. 10** shows a cross section of the roof panel (100) viewed along a rear main profile (110) and a side profile (130). This view also shows the device for attaching the first panel filling (200) to a main profile (110), as described in Example 1. In particular, **Fig. 10** shows that the first panel filling (200) is clamped to a main profile (110) by an upper (140a) and a lower (140b) clamping profile. The ends of the first panel filling (200) are sealed in a leakproof manner by a plurality of sealings (210). The second panel filling (300) is attached to the same main profile (110) by clamping a thickening (360) in a point of attachment (150).

[0131] **Fig. 11** shows a roof frame gutter (490) of the roof device (400). The roof frame gutter (490) is arranged under an overhead roof panel (100), in which case it is attached to a side of the roof frame (410). The opening of the roof frame gutter (490) is positioned under the drainage groove (190), formed between a side profile (120) and a dripping nose profile (130) of the roof panel (100), so that all of the water running off can be collected. In this case, the top edge of the upright side wall of the roof frame gutter (490) can catch the splashing water because the intermediate space between this top edge and the roof panel (100) is limited to the minimum.

[0132] **Fig. 12** shows a roof device comprising 6 roof panels (2x3, stacked in 2 stacks, each of 3 panels in height), arranged so as to be movable along a side of the roof frame (410). In this way, a slidable roof is formed.

Claims

1. Roof device (400) for a terrace covering comprising a roof frame (410) and at least one, preferably a plurality of roof panels (100), wherein at least one roof panel (100) is configured so as to be slidable in the roof frame (410), and wherein the at least one roof panel (100) comprises a panel frame and at least two panel fillings (200, 300) attached to both sides of the panel frame, and wherein:

   - the at least one roof panel (100) is configured so that a first panel filling (200) forms a watertight cover on top of a second panel filling (300);
   - the first panel filling (200) is translucent or transparent; and
   - the second panel filling (300) is sun-screening or reflective.

2. Roof device (400) according to Claim 1, wherein the first panel filling (200) is attached to the panel frame by means of a leakproof sealing (210).

3. Roof device (400) according to Claim 1 or 2, wherein the sun-screening or reflective property of the second panel filling (300) can be removed, controlled and/or switched on or off individually, preferably wherein the second panel filling (300) is temporarily removable, movable, slidable, tiltable and/or rollable.

4. Roof device (400) according to one of Claims 1 to 3, wherein a surface of the first panel filling (200) is convexly curved; preferably is arcuate and/or spherical; more preferably has a radius of curvature (R) of 10 m to at most 120 m; preferably 20 m to at most 110 m; more preferably 30 m to at most 100 m; for example 50 m; for example 70 m.

5. Roof device (400) according to one of Claims 1 to 4, wherein a surface of the first panel filling (200) is inclined; preferably forms a saddle roof; more preferably has an inclination of at least 0.5° to at most 5.0° from a ridge (205) to an end of the first panel filling (200); more preferably 1.0° to 3.0°; more preferably 1.0° to 2.5°; more preferably 1.0° to 2.0°; more preferably approximately 1.5°; for example 1.3°.

6. Roof device (400) according to one of Claims 1 to 5, wherein a top and/or a ridge (205) of the first panel filling (200) is at least 10 mm to at most 50 mm higher than an end of the first panel filling (200); preferably at least 10 mm to at most 45 mm higher; more preferably 10 mm to 40 mm; more preferably 15 mm to 35 mm; more preferably 20 mm to 30 mm; for example 25 mm.

7. Roof device (400) according to one of Claims 1 to 6, wherein the first panel filling (200) is a rigid panel filling which is clamped by at least two opposite main profiles (110) of the panel frame; preferably is clamped by a clamping profile (140) coupled to the at least two main profiles (110).

8. Roof device (400) according to one of Claims 1 to 7, wherein the second panel filling (300) is a flexible panel filling which preferably comprises a tensionable and/or sun-screening canvas (301) which is attached to at least two opposite main profiles (110) of the panel frame.

9. Roof device (400) according to Claim 8, wherein the panel frame comprises a tensioning system (170) to tension the flexible second panel filling (300); preferably wherein the tensioning system (170) comprises a bolt attached to a main profile (110) and a tensioning slat (175) attached to the flexible second panel filling (300), configured in such a way that a

rotation of the bolt tensions the flexible second panel filling (300).

10. Roof device (400) according to one of Claims 1 to 9, wherein the second panel filling (300) is a rigid panel filling which is attached to at least one, preferably two, main profiles (110) of the panel frame; preferably lamellae, a perforated screen, or a lattice which optionally comprises flowers or plants.

11. Roof device (400) according to one of Claims 1 to 10, wherein the panel frame comprises a drainage groove (190) for downward water drainage; preferably wherein the drainage groove (190) is formed between a side profile (120) of the panel frame and the first panel filling (200).

12. Roof device (400) according to Claim 11, wherein the drainage groove (190) is formed between a side profile (120) of the panel frame and a dripping nose profile (130) attached to the first panel filling (200); preferably wherein the dripping nose profile (130) securely clamps the side of the first panel filling (200).

13. Roof device (400) according to Claim 12, wherein the second panel filling (300) is attached to the dripping nose profile (130); preferably wherein the second panel filling (300) is clamped by a thickening profile (160) coupled to the dripping nose profile (130); preferably coupled in a click-fitted manner.

14. Roof device (400) according to one of Claims 1 to 13, wherein the panel frame comprises a roof panel gutter (195) for lateral water drainage; preferably wherein the roof panel gutter (195) is formed at an end of a main profile (110) of the panel frame, and

wherein, optionally, the roof frame (410) comprises a roof frame gutter (490) for lateral water drainage; preferably wherein the roof frame gutter (490) is arranged under a drainage groove (190) of at least one overhead roof panel (100); preferably under a dripping nose profile (130) of the overhead roof panel (100), and
wherein, optionally, a top edge of the roof frame gutter (490) extends upwards up to or over a bottom edge of a dripping nose profile (130) of the overhead roof panel (100).

15. Roof construction, preferably a terrace covering, comprising a support structure on which, to which or in which a roof device (400) according to one of Claims 1 to 14 is fitted.

Patentansprüche

1. Dachvorrichtung (400) für eine Terrassenabdeckung, die einen Dachrahmen (410) und mindestens einen, vorzugsweise eine Vielzahl von Dachplatten (100) aufweist, wobei mindestens ein Dachplatte (100) in dem Dachrahmen (410) verschiebbar ausgebildet ist und wobei die mindestens eine Dachplatte (100) einen Plattenrahmen und mindestens zwei beidseitig an dem Plattenrahmen angebrachte Plattenfüllungen (200, 300) aufweist und wobei:

- die mindestens eine Dachplatte (100) so ausgebildet ist, dass eine erste Plattenfüllung (200) eine wasserdichte Abdeckung über einer zweiten Plattenfüllung (300) bildet;
- die erste Plattenfüllung (200) lichtdurchlässig oder transparent ist; und
- die zweite Plattenfüllung (300) sonnenschützend oder reflektierend ist.

2. Dachvorrichtung (400) gemäß Anspruch 1, wobei die erste Plattenfüllung (200) mittels einer leckdichten Versieggelung (210) an dem Plattenrahmen befestigt ist.

3. Dachvorrichtung (400) gemäß Anspruch 1 oder 2, wobei die Sonnenschutz- bzw. Reflexionseigenschaft der zweiten Plattenfüllung (300) individuell entfernbar, steuerbar und/oder ein- und ausschaltbar ist, vorzugsweise wobei die zweite Plattenfüllung (300) temporär entfernbar, bewegbar, verschiebbar, kippbar und/oder rollbar ist.

4. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 3, wobei eine Oberfläche der ersten Plattenfüllung (200) konvex gekrümmt ist, vorzugsweise bogenförmig und/oder kugelförmig ist, noch bevorzugter einen Krümmungsradius (R) von 10 m bis höchstens 120 m, vorzugsweise von 20 m bis höchstens 110 m, noch bevorzugter von 30 m bis höchstens 100 m, beispielsweise von 50 m, beispielsweise von 70 m aufweist.

5. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 4, wobei eine Oberfläche der ersten Plattenfüllung (200) geneigt ist, vorzugsweise ein Satteldach bildet, noch bevorzugter eine Neigung von einem First (205) zu einem Ende der ersten Plattenfüllung (200) von mindestens 0,5° bis höchstens 5,0°, noch bevorzugter von 1,0° bis 3,0°, noch bevorzugter von 1,0° bis 2,5°, noch bevorzugter von 1,0° bis 2,0°, noch bevorzugter von ca. 1,5°, beispielsweise von 1,3° aufweist.

6. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 5, wobei eine Oberseite und/oder ein First (205) der ersten Plattenfüllung (200) mindestens 10 mm bis höchstens 50 mm höher als ein Ende der ersten Plattenfüllung (200), vorzugsweise mindestens 10 mm bis höchstens 45 mm, noch bevorzugter 10 mm

bis 40 mm, noch bevorzugter 15 mm bis 35 mm, noch bevorzugter 20 mm bis 30 mm, beispielsweise 25 mm höher ist.

7. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 6, wobei die erste Plattenfüllung (200) eine starre Plattenfüllung ist, die durch mindestens zwei gegenüberliegende Hauptprofile (110) des Plattenrahmens eingespannt wird, vorzugsweise durch ein mit den mindestens zwei Hauptprofilen (110) gekoppeltes Klemmprofil (140) eingespannt wird.

8. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 7, wobei die zweite Plattenfüllung (300) eine flexible Plattenfüllung ist, die vorzugsweise eine spannbare und/oder sonnenschützende Plane (301) umfasst, die an mindestens zwei gegenüberliegenden Hauptprofilen (110) des Plattenrahmens befestigt ist.

9. Dachvorrichtung (400) gemäß Anspruch 8, wobei der Plattenrahmen ein Spannsystem (170) zum Spannen der flexiblen zweiten Plattenfüllung (300) umfasst; vorzugsweise wobei das Spannsystem (170) eine an einem Hauptprofil (110) befestigte Schraube und eine an der flexiblen zweiten Plattenfüllung (300) befestigte Spannlatte (175) umfasst, die so ausgebildet ist, dass eine Drehung der Schraube die flexible zweite Plattenfüllung (300) spannt.

10. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 9, wobei die zweite Plattenfüllung (300) eine starre Plattenfüllung ist, die an mindestens einem, vorzugsweise zwei, Hauptprofilen (110) des Plattenrahmens angebracht ist, und vorzugsweise Lamellen, ein Lochgitter oder ein Gitter, gegebenenfalls Blumen oder Pflanzen aufweist.

11. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 10, wobei der Plattenrahmen eine Drainagerinne (190) zur Wasserdrainage nach unten aufweist, wobei die Drainagerinne (190) vorzugsweise zwischen einem Seitenprofil (120) des Plattenrahmens und der ersten Plattenfüllung (200) ausgebildet ist.

12. Dachvorrichtung (400) gemäß Anspruch 11, wobei die Drainagerinne (190) zwischen einem Seitenprofil (120) des Plattenrahmens und einem an der ersten Plattenfüllung (200) angebrachten Tropfnasenprofil (130) ausgebildet ist; vorzugsweise wobei das Tropfnasenprofil (130) die Seite der ersten Plattenfüllung (200) festklemmt.

13. Dachvorrichtung (400) gemäß Anspruch 12, wobei die zweite Plattenfüllung (300) an dem Tropfnasenprofil (130) angebracht ist; vorzugsweise, wobei die zweite Plattenfüllung (300) durch ein mit dem Tropfnasenprofil (130) gekoppeltes Verdickungsprofil (160) festgeklemmt, vorzugsweise einrastend gekoppelt wird.

14. Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 13, wobei der Plattenrahmen eine Dachplattenrinne (195) zur seitlichen Wasserdrainage aufweist; vorzugsweise wobei die Dachplattenrinne (195) an einem Ende eines Hauptprofils (110) des Plattenrahmens ausgebildet ist, und wobei gegebenenfalls der Dachrahmen (410) eine Dachrahmenrinne (490) zur seitlichen Wasserdrainage aufweist; wobei die Dachrahmenrinne (490) vorzugsweise unter einer Drainagerinne (190) mindestens einer Überkopfdachplatte (100), vorzugsweise unter einem Tropfnasenprofil (130) der Überkopfdachplatte (100) angeordnet ist, und
wobei sich gegebenenfalls eine Oberkante der Dachrahmenrinne (490) nach oben bis zu oder über eine untere Kante eines Tropfnasenprofils (130) der Überkopfdachplatte (100) erstreckt.

15. Dachkonstruktion, vorzugsweise Terrassenabdeckung, mit einer Trägerstruktur, auf, an oder in der eine Dachvorrichtung (400) gemäß einem der Ansprüche 1 bis 14 angebracht ist.

Revendications

1. Dispositif de toit (400) pour un toit de terrasse comprenant un cadre de toit (410) et au moins un, de préférence plusieurs panneaux de toit (100), au moins un panneau de toit (100) étant conçu de sorte à pouvoir coulisser dans le cadre de toit (410), et l'au moins un panneau de toit (100) comprend un cadre de panneau et au moins deux remplissages de panneau (200, 300) fixés des deux côtés du cadre de panneau, et :

l'au moins un panneau de toit (100) étant conçu de sorte qu'un premier remplissage de panneau (200) forme une couverture étanche au-dessus d'un second remplissage de panneau (300) ;
le premier remplissage de panneau (200) étant translucide ou transparent ; et
le second remplissage de panneau (300) étant un pare-soleil ou réfléchissant.

2. Dispositif de toit (400) selon la revendication 1, le premier remplissage de panneau (200) étant fixé au cadre de panneau au moyen d'un joint étanche (210).

3. Dispositif de toit (400) selon la revendication 1 ou 2, la propriété pare-soleil ou réfléchissante du second remplissage de panneau (300) pouvant être enle-

vée, contrôlée et/ou activée ou désactivée individuellement, de préférence le second remplissage de panneau (300) pouvant être temporairement enlevé, déplacé, coulissé, incliné et/ou enroulé.

4. Dispositif de toit (400) selon l'une des revendications 1 à 3, une surface du premier remplissage de panneau (200) étant courbé de manière convexe ; de préférence, étant arquée et/ou sphérique ; plus préférablement ayant un rayon de courbure (R) de 10 m à 120 m au maximum ; de préférence, de 20 m à 110 m au maximum ; plus préférablement de 30 m à 100 m au maximum ; par exemple de 50 m ; par exemple de 70 m.

5. Dispositif de toit (400) selon l'une des revendications 1 à 4, une surface du premier remplissage de panneau (200) étant inclinée ; formant de préférence un toit en selle ; plus préférablement ayant une inclinaison de 0,5° minimum à 5,0° maximum d'une arête (205) à une extrémité du premier remplissage de panneau (200) ; plus préférablement de 1,0° à 3,0° ; plus préférablement de 1,0° à 2,5° ; plus préférablement de 1,0° à 2,0° ; plus préférablement d'environ 1,5° ; par exemple de 1,3°.

6. Dispositif de toit (400) selon l'une des revendications 1 à 5, un sommet et/ou une arête (205) du premier remplissage de panneau (200) étant de 10 mm minimum à 50 mm maximum plus haut qu'une extrémité du premier remplissage de panneau (200) ; de préférence de 10 mm minimum à 45 mm maximum plus haut ; plus préférablement de 10 mm à 40 mm ; plus préférablement de 15 mm à 35 mm ; plus préférablement de 20 mm à 30 mm ; par exemple de 25 mm.

7. Dispositif de toit (400) selon l'une des revendications 1 à 6, le premier remplissage de panneau (200) étant un remplissage de panneau rigide qui est serré par au moins deux profilés principaux (110) opposés du cadre de panneau ; de préférence, étant serré par un profilé de serrage (140) accouplé aux au moins deux profilés principaux (110).

8. Dispositif de toit (400) selon l'une des revendications 1 à 7, le second remplissage de panneau (300) étant un remplissage de panneau flexible qui comprend de préférence une toile pouvant être tendue et/ou pare-soleil (301) qui est fixée à au moins deux profilés principaux (110) opposés du cadre de panneau.

9. Dispositif de toit (400) selon la revendication 8, le cadre de panneau comprenant un système de tension (170) pour tendre le second remplissage de panneau flexible (300) ; de préférence, le système de tension (170) comprenant un boulon fixé à un profilé principal (110) et une latte de tension (175) fixée au second remplissage de panneau flexible (300), conçu de sorte qu'une rotation du boulon tende le second remplissage de panneau flexible (300).

10. Dispositif de toit (400) selon l'une des revendications 1 à 9, le second remplissage de panneau (300) étant un remplissage de panneau rigide qui est fixé à au moins un, de préférence deux, profilés principaux (110) du cadre de panneau ; de préférence des lamelles, un écran perforé, ou un treillis qui comprend éventuellement des fleurs ou des plantes.

11. Dispositif de toit (400) selon l'une des revendications 1 à 10, le cadre de panneau comprenant une rainure de drainage (190) pour le drainage de l'eau vers le bas ; de préférence, la rainure de drainage (190) étant formée entre un profilé latéral (120) du cadre de panneau et le premier remplissage de panneau (200).

12. Dispositif de toit (400) selon la revendication 11, la rainure de drainage (190) étant formée entre un profilé latéral (120) du cadre de panneau et un profilé de nez d'égouttage (130) fixé au premier remplissage de panneau (200) ; de préférence, le profilé de nez d'égouttage (130) serrant solidement le côté du premier remplissage de panneau (200).

13. Dispositif de toit (400) selon la revendication 12, le second remplissage de panneau (300) étant fixé au profilé de nez d'égouttage (130) ; de préférence le second remplissage de panneau (300) étant serré par un profilé d'épaississement (160) accouplé au profilé de nez d'égouttage (130) ; de préférence accouplé de manière à s'encliqueter.

14. Dispositif de toit (400) selon l'une des revendications 1 à 13, le cadre de panneau comprenant une gouttière de panneau de toit (195) pour le drainage latérale de l'eau ; de préférence, la gouttière de panneau de toit (195) étant formée au niveau d'une extrémité d'un profilé principal (110) du cadre de panneau, et

éventuellement, le cadre de toit (410) comprenant une gouttière de cadre de toit (490) pour le drainage latérale de l'eau ; de préférence la gouttière de cadre de toit (490) étant disposée sous une rainure de drainage (190) d'au moins un panneau de toit supérieur (100) ; de préférence sous un profilé de nez d'égouttage (130) du panneau de toit supérieur (100), et
éventuellement, un bord supérieur de la gouttière de cadre de toit (490) s'étendant vers le haut jusqu'à ou au-dessus d'un bord inférieur d'un profilé de nez d'égouttage (130) du panneau de toit supérieur (100).

15. Construction de toit, de préférence toit de terrasse,

comprenant une structure de support sur laquelle, à laquelle ou dans laquelle un dispositif de toit (400) selon l'une des revendications 1 à 14 est monté.

FIG. 1A

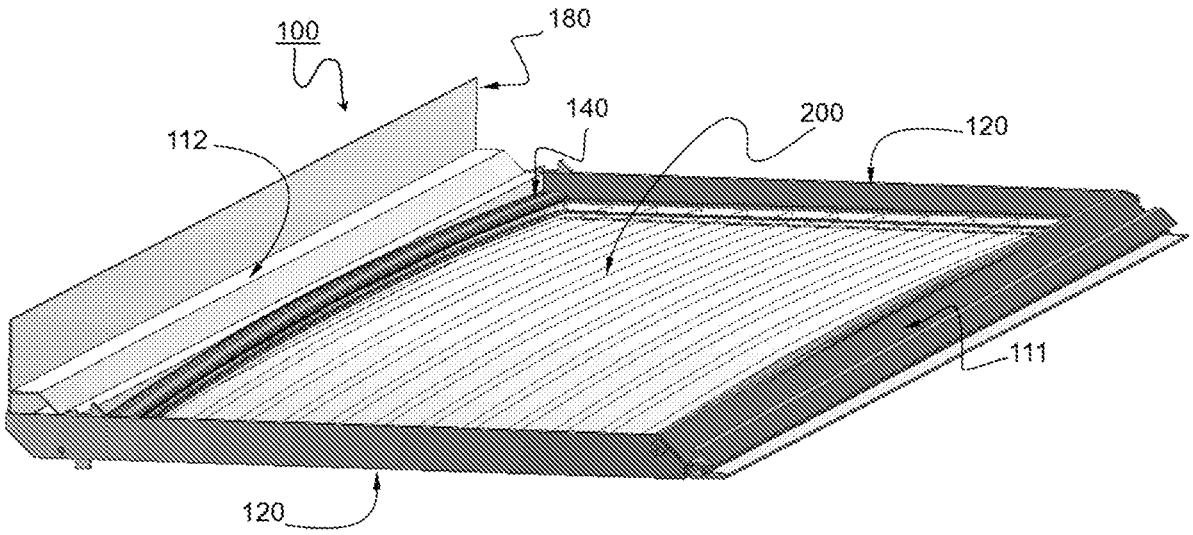


FIG. 1B

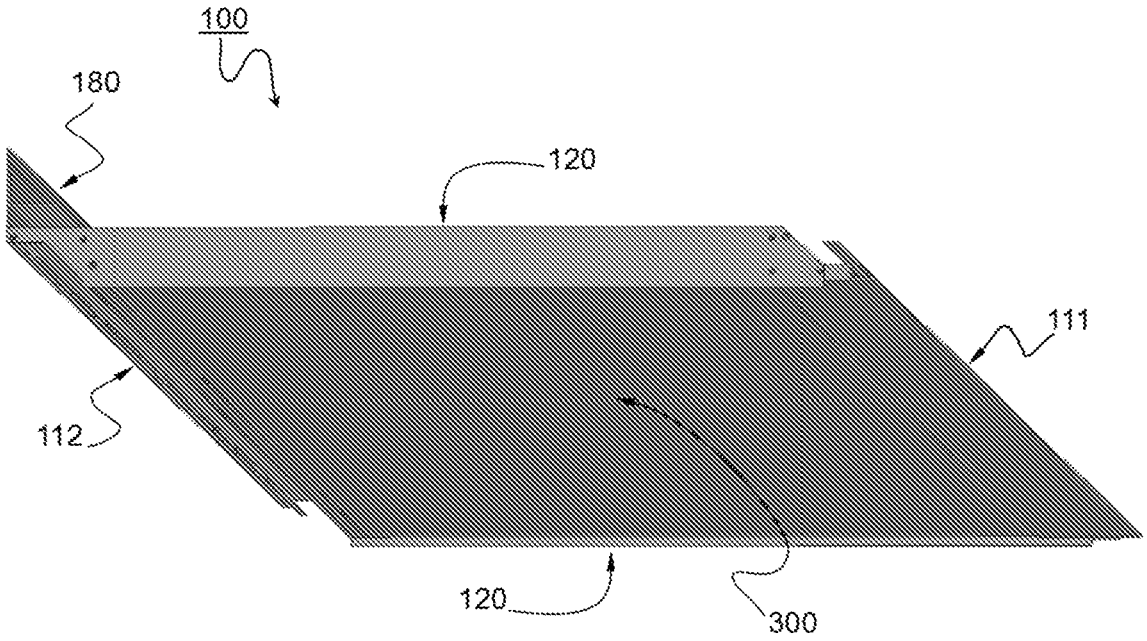
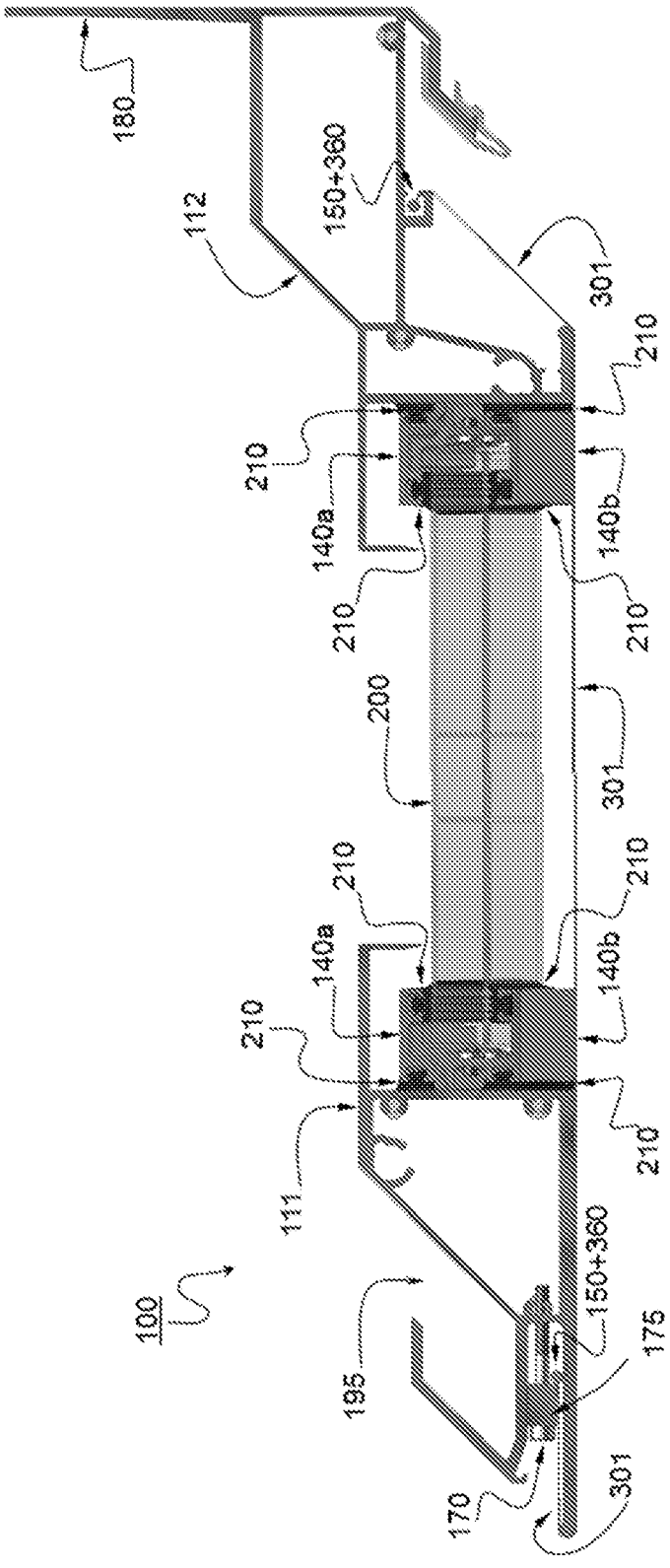


FIG. 2


180
112
150+360
301
210
210
140a
140b
210
210
200
301
210
210
140a
140b
210
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111
150+360
175
100
195
170
301

FIG. 3

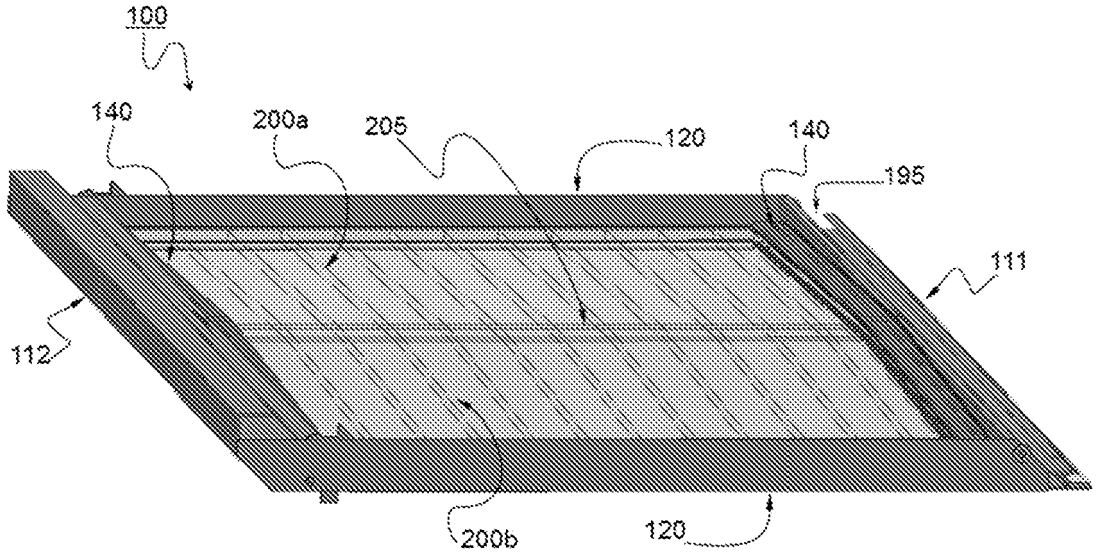


FIG. 4

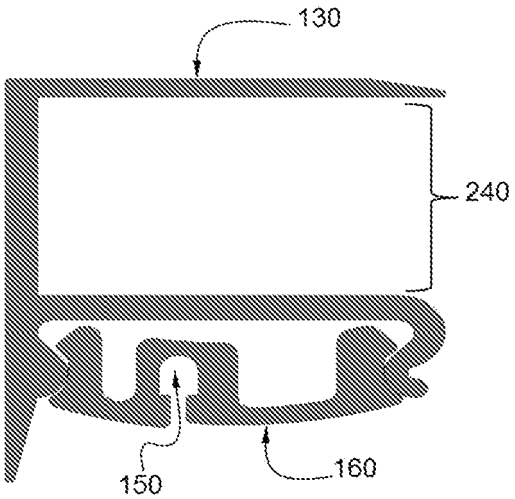


FIG. 5

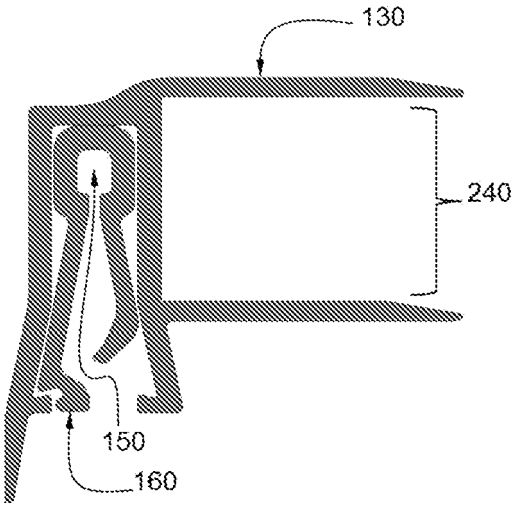


FIG. 6

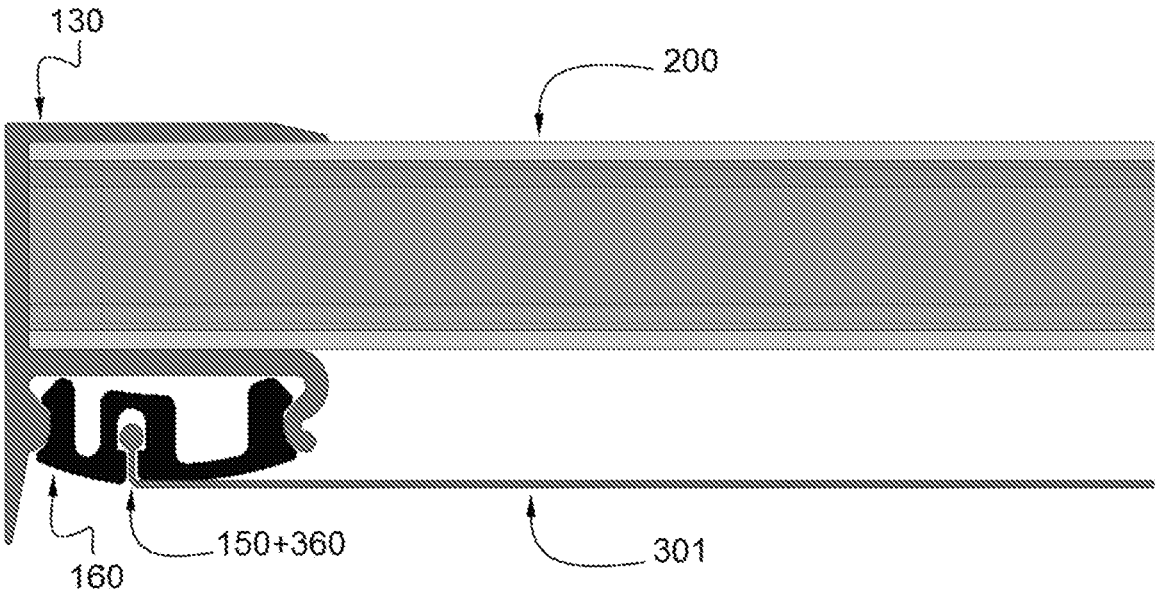


FIG. 7

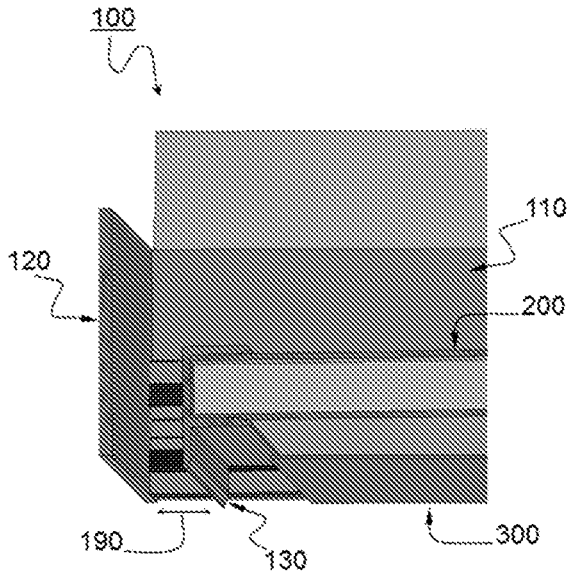


FIG. 8

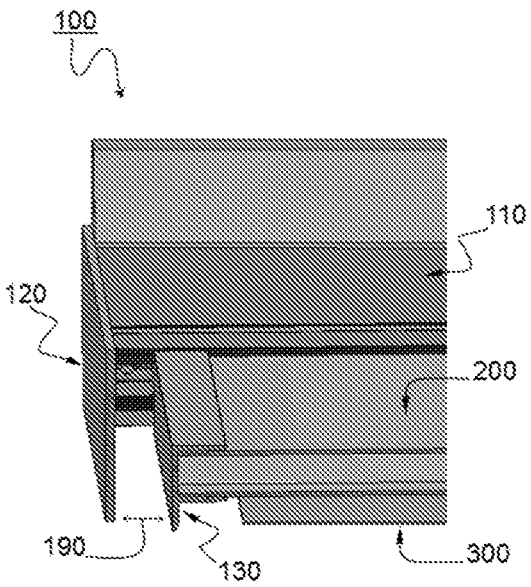


FIG. 9

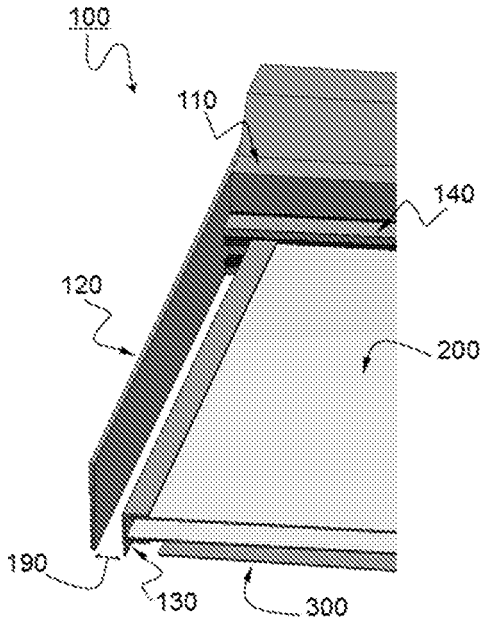

100
110
140
120
200
190
130
300

FIG. 10

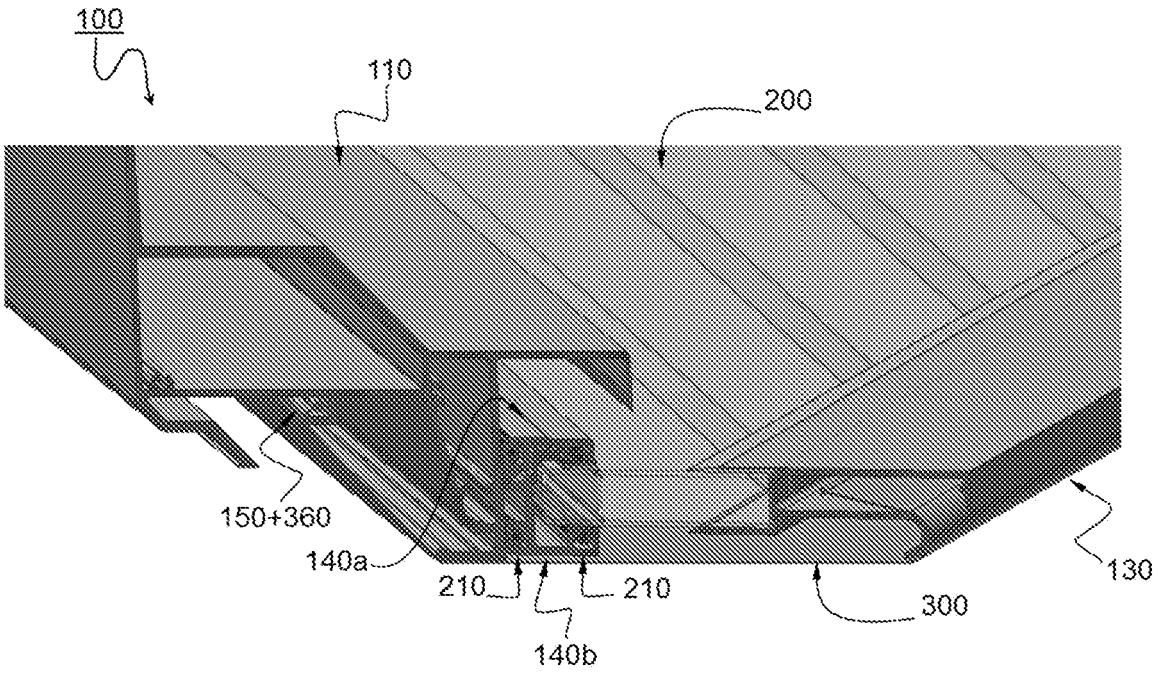

100
110
200
150+360
140a
210
210
140b
300
130

FIG. 11a

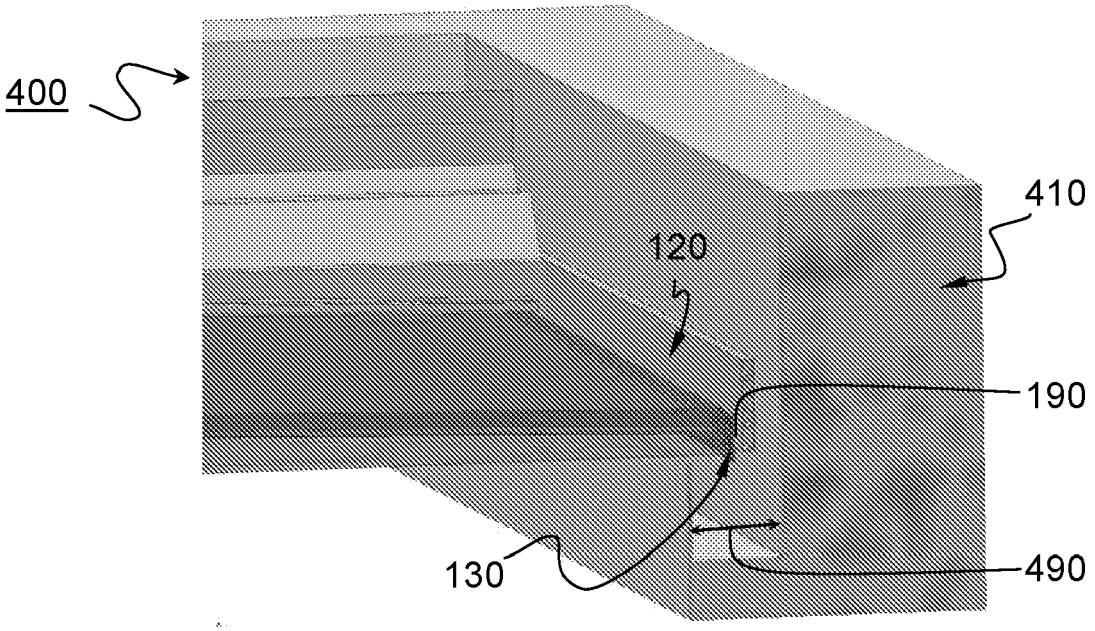


FIG. 11b

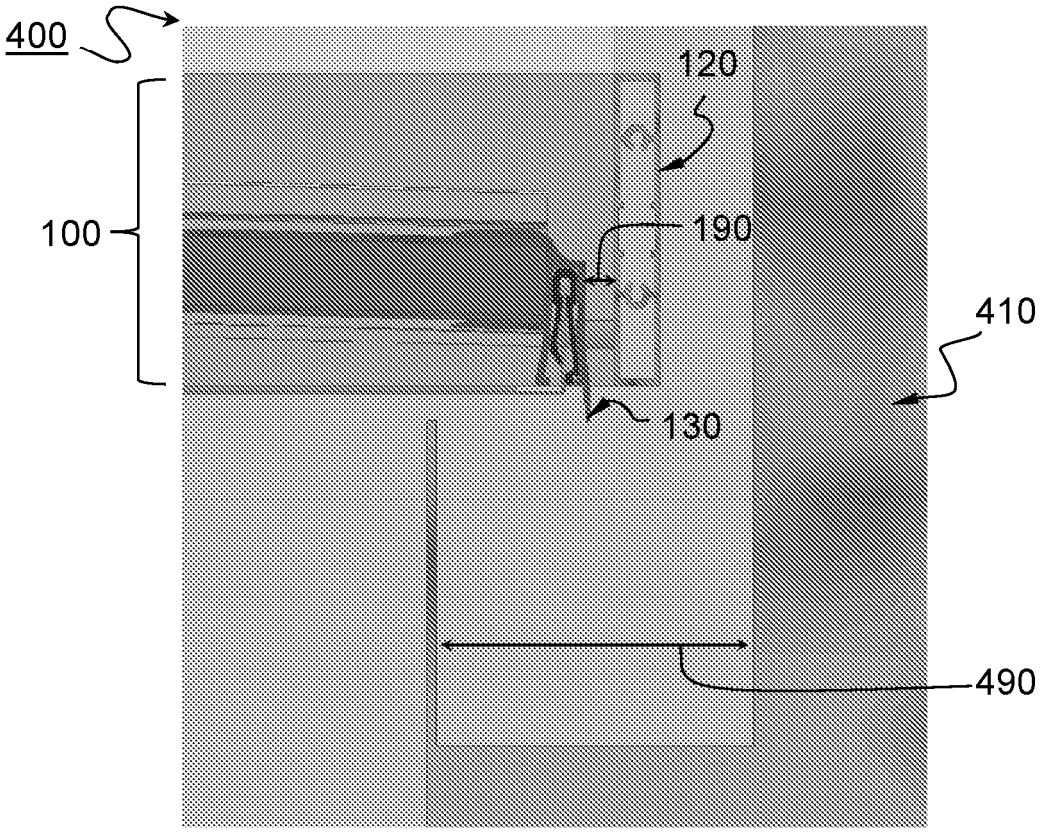
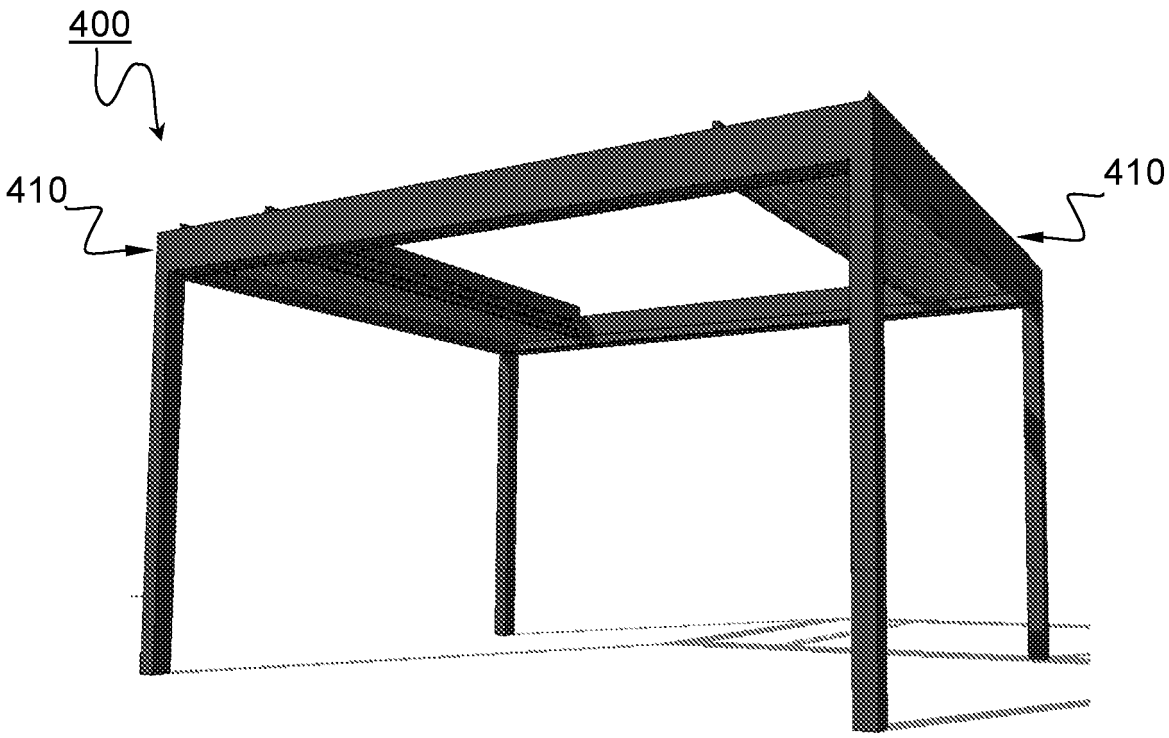


FIG. 12



REFERENCES CITED IN THE DESCRIPTION

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