(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 859 093 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
04.08.2021 Bulletin 2021/31

(51) Int Cl.:
E04D 13/03 *(2006.01)*

(21) Application number: **20155245.2**

(22) Date of filing: **03.02.2020**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) **AN ADAPTER FRAME FOR INSTALLING A SKYLIGHT WINDOW, A SYSTEM COMPRISING A SKY-LIGHT WINDOW AND A METHOD OF INSTALLING A SKYLIGHT WINDOW USING AN ADAPTER FRAME**

(57) An adapter frame for installing a skylight window, a system comprising a skylight window and a method of installing a skylight window using an adapter frame.

An adapter frame for installing a skylight window having a window frame in or on a roof of a building, wherein an inner flange surface is configured for abutting at least part of an outer surface of the window frame and an exterior support surface is configured for supporting the window frame by engaging with an interior side of the window frame, a system for being installed in or on a roof of a building comprising, an adapter frame and a skylight window, the skylight window comprising a window frame, an insulating glazing unit IGU, a weather shield and possibly a window sash, and a method for installing a skylight window in or on a roof of a building.

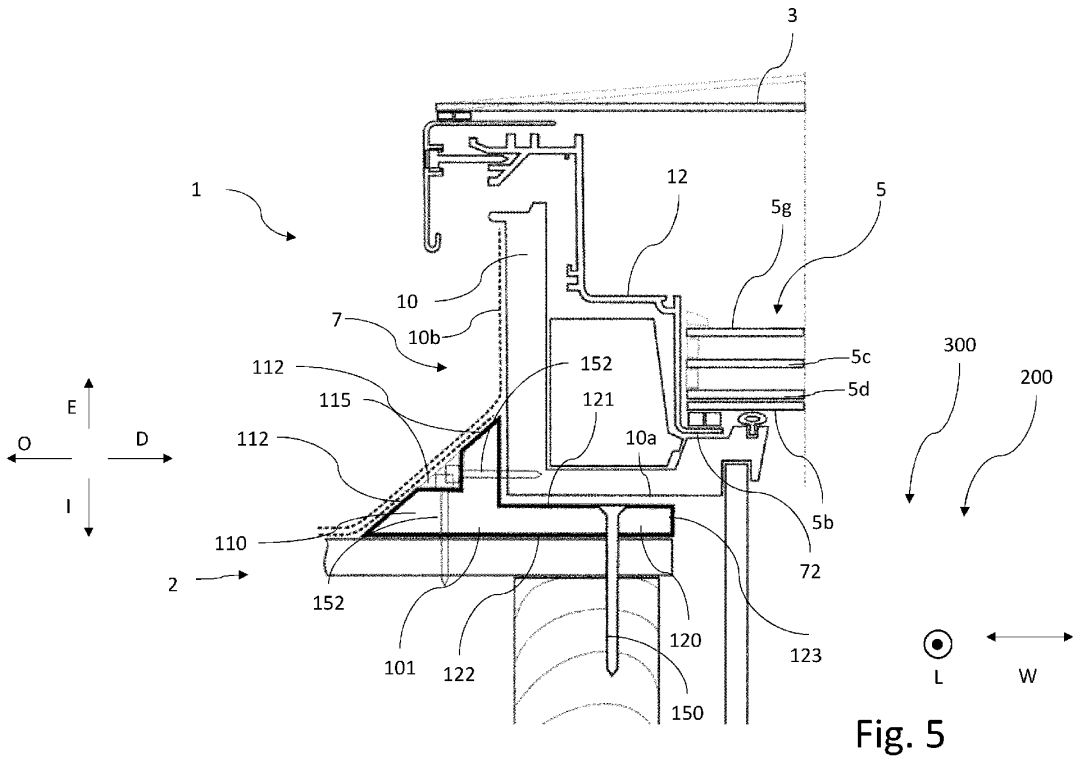

Fig. 5

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Description

[0001] The present invention relates to an adapter frame for installing a skylight window having a window frame in or on a roof of a building, said adapter frame comprising a plurality of adapter frame side members, the plurality of adapter frame side members delimiting an adapter frame opening and defining an adapter frame plane, the adapter frame plane extending in a longitudinal and a lateral direction, a first of the adapter frame side members extending along a first peripheral side of the adapter frame opening in the longitudinal direction, the first adapter frame side member having a flange section extending in an exterior direction perpendicular to the adapter frame plane, the flange section having an inner flange surface, the inner flange surface extending in the exterior direction, the flange section having an outer flange surface opposite the inner flange surface, the first adapter frame side member having a support section extending from the flange section in an inward direction toward the adapter frame opening and perpendicular to the longitudinal direction, the support section having an exterior support surface facing in the exterior direction, an interior support surface located opposite the exterior support surface, the interior support surface facing in an interior direction, and an inner side surface of the support section opposite the flange section, the inner side surface connecting the interior and exterior support surfaces.

[0002] The invention also relates to a system comprising a skylight window, and a method of installing a skylight window through such an adapter frame.

Background Art

[0003] There is often a desire to position one or more skylight windows in a roof of a building in order to allow daylight to reach the interior of the building. This, however, may give rise to a variety of challenges.

[0004] Inclined skylight windows are typically built into an opening in an inclined roof structure, the roof having an angle above 15 degrees with a substantial part of the inclined skylight window being positioned within the inclined roof structure in an installed position. Flat-roof skylight windows are generally installed on top of the exterior side of flat roofs of buildings, where the inclination of the roof is less than 5 degrees with respect to a horizontal plane of the roof. In general, flat-roof skylight windows are installed to cover an opening in the roof, i.e. a substantial part of the flat-roof skylight window extends above an exterior side of the flat roof structure in an installed position.

[0005] Skylight windows of these types often comprise a window frame, an insulating glazing unit (IGU), a weather shield, and potentially a window sash, if the skylight window is openable.

[0006] The installation of a skylight window generally comprises transporting the skylight window to the roof, positioning the skylight window in or on the roof at a desired position wherein the skylight window covers an opening in the roof and fastening the skylight window to the roof. The installation may further comprise the mounting of a roofing felt for weather-proofing the window. Such a skylight window may be hard to handle and install, due to being heavy weight and fragile.

[0007] On this background it may be an object of the present invention to facilitate the installation of skylight windows in or on a roof of a building.

Summary of the invention

[0008] With this background, it is an object of the invention to provide an adapter frame for installing a skylight window, facilitating the installation of the skylight window. Moreover, it is a secondary object of the invention to provide a skylight window that is easier and safer to install.

[0009] This and further objects are achieved with an adapter frame of the kind mentioned in the introduction which is furthermore characterised in that the inner flange surface adjoins the exterior support surface in an assembled state of the first adapter frame side member forming a receiving section, wherein the inner flange surface is configured for abutting at least part of an outer surface of the window frame and the exterior support surface is configured for supporting the window frame by engaging with an interior side of the window frame in an installed position.

[0010] One non-limiting advantage that is gained by such an adapter frame is facilitating the installation of a skylight window in or on roof.

[0011] By the provision of the flange section and the support section of the first adapter frame side member, the receiving section is formed. The receiving section may provide a guidance for the positioning of the skylight window on the adapter frame, further facilitating the installation of the skylight window as the inner flange surface may ensure correct placement of the skylight window, reducing installation time and preventing errors in installation.

[0012] The receiving section may be adapted to receive a part of the window frame, having a receiving section angle formed by the inner flange surface and exterior support surface being configured to match an angle of the window frame between the interior side and outer surface of the window frame, whereby the inner flange surface and exterior support surface may engage the outer and inner sides of the window frame respectively.

[0013] This may have the effect of facilitating the installation of the skylight window, as the skylight window may be positioned directly on the adapter frame guided by the receiving section or receiving sections of the adapter frame, thus reducing the handling of the skylight window, which may be both heavy and fragile making it troublesome to handle. This also provides a skylight window which in the installed position may be structurally supported by the adapter frame.

[0014] The adapter frame may be installed at a desired position on the roof after which the skylight window may be positioned on the adapter frame such that the receiving section receives a part of the window frame. A desired position of the adapter frame may be selected such that the adapter frame surrounds an opening in a roof for the skylight window, whereby the skylight window, once positioned on the adapter frame spans the opening in the roof. The adapter frame thus allows for reduced handling of the skylight window, which may be heavy and/or fragile, as it may be positioned directly at the desired position on the adapter frame. The adapter frame may have a lower weight than the skylight window thus allowing for easier handling when positioning the adapter frame compared to positioning the skylight window as a whole. Hence the adapter frame may provide an easier, faster and safer installation of the skylight window.

[0015] A further advantage of the invention may be the adapter frame providing structural support to the skylight window, when the skylight window is in an installed position of the skylight window. Thus, the adapter frame, in particular the receiving section, may hold the window in place.

[0016] A further advantage of the invention may be that the adapter frame may offer secure and flexible fastening of the adapter frame and skylight window to the roof or load-bearing structure of the roof such as a rafter. Typically, skylight windows are fastened with a fastener, such as a screw, through a pre-formed hole in the frame of the skylight window, thus limiting the fastening position which may not align with a load-bearing structure of the roof. Providing an adapter frame according to the invention may offer flexibility in fastening as it may be fastened with a fastener, such as a screw, at a plurality of fastening positions, increasing the likelihood of the fastener to be reaching a load-bearing structure of the roof such as a rafter. Referring to the first adapter frame side member, such fastening positions may be located along substantially the entire longitudinal extent and along the substantially entire support section or the flange section. The fastening positions are not necessarily fixed; they may be positioned at any place on the frame.

[0017] A further advantage of the invention is that the adapter frame may allow for installation of the skylight window by an installer from a position being further away from the roof opening.

[0018] The skylight window may generally comprise a window frame having four frame side members, the frame side members supporting an insulating glazing unit (IGU) having multiple layers of glazing, said IGU having an exposed interior major surface for facing an interior of said building the interior pane comprising a side surface extending substantially along the first frame side member, said IGU further having an exterior major surface facing towards an exterior of the skylight window, wherein a first of the frame side members has a frame height extending in a height direction, the height direction being substantially perpendicular to at least one of the major surfaces of the IGU, the first of the frame side members extending in a longitudinal direction along the side surface of the interior pane. The window frame has an interior side, the interior facing in the interior direction in an installed position of the skylight window and an outer side facing away from the IGU.

[0019] The plurality of adapter frame side members delimits the adapter frame opening such that the adapter frame side members border the adapter frame opening. The adapter frame opening may be rectangular in shape, the adapter frame side members being four, each of the four adapter frame side member positioned at a respective side of the rectangular frame opening.

[0020] A second adapter frame side member extends in a lateral direction along a second peripheral side of the adapter frame opening, the lateral direction being perpendicular to the longitudinal direction.

[0021] The adapter frame plane is the plane in which the adapter frame opening extends. In the installed position of the adapter frame in or on the roof, the adapter frame plane is parallel to a plane of the roof.

[0022] The interior direction is perpendicular to the adapter frame plane and opposite the exterior direction. In the installed position of the adapter frame, the interior direction is pointing towards an interior of the building and the exterior direction is pointing towards an exterior of the building. An inward direction is defined toward the adapter frame opening and perpendicular to the longitudinal direction. An outward direction is defined as being opposite the inward direction.

[0023] Throughout this text the term "interior" is used to indicate that something is intended to face the interior of the building in or on which the adapter frame is installed, in an installed position of the adapter frame. The term "exterior" is used to indicate that something is intended to face in a direction opposite to the interior of the building in or on which the adapter frame is installed, in an installed position of the skylight window. The terms "inner" and "outer" are used to indicate that something is intended for facing towards or away, respectively, from the adapter frame opening.

[0024] The plurality of the adapter frame side members delimits the adapter frame opening. The flange section of the first adapter frame side member may delimit part of an outer perimeter of the adapter frame. The support section of the first adapter frame side member may delimit part of an inner perimeter of the adapter frame.

[0025] In an installed position of the adapter frame, the interior support surface may be positioned in abutment with an exterior roof surface. Alternatively, the interior support surface may be positioned in abutment with a supporting element, the supporting element abutting on the roof. Such a support element could a vapor-barrier, roofing-felt or any other intermediate layers.

[0026] The inner flange surface may be perpendicular to the adapter frame plane and extend in the exterior and longitudinal directions.

[0027] The support section may be planar and parallel

to the adapter frame plane extending in the longitudinal direction.

[0028] The dimensions of the receiving section may be configured to receive at least part of the interior side and at least part of the outer surface of the window frame. A part of the exterior support surface may engage a part of the interior side of the window frame, or substantially the entire exterior support surface may engage part of the interior side of the window frame.

[0029] The interior side and outer side of the window frame are an interior side and outer side of a first frame side member of the window frame.

[0030] The exterior support surface of the first adapter frame side member may have a support section width in the inward direction, the support width being approximately 10 % to 200% of the width of the interior side of the window frame, such as approximately 25 % to 150 % or 50 % to 125 %. The width of the support section may be approximately 5 to 20 cm, such as 5 cm 7.5 cm, 10 cm, 12.5 cm or 15 cm.

[0031] The flange section may be configured have a flange height in the exterior direction, the flange height may be approximately from 10 % to 75 % of a height of the window frame in the exterior direction, such as approximately ½, 1/3, 1/4, 1/5 of the height of the window frame. The flange height may be approximately from 1 cm to 10 cm, preferably 3 to 7 cm, such as 3 cm, 4 cm, 5 cm, 6 cm or 7 cm.

[0032] The support section may have a support section height in the exterior direction, the support section height being may be approximately 5 % to 75% of the flange section height, such as approximately ½, 1/3, 1/4, 1/5 of the flange height. The support section height may be approximately 0.5 cm to 5 cm, such as approximately 0.5, 1, 2, 3, 4 or 5 cm.

[0033] The plurality of adapter frame side members may be provided separately from each other in a non-assembled state of the adapter frame, where the adapter frame may be provided by assembling the plurality of the adapter frame side member. The adapter frame side members may comprise guiding elements for guiding the assembly of the adapter frame from the plurality of adapter frame side members. Such guiding elements may be sets of protrusions or recess positioned at joining interfaces of the adapter frame side members, the joining interfaces being the interfaces at which two adapter frame side members adjoin in the assembled state of the adapter frame. Such guiding elements may a groove formed in each adapter frame side member, the groove being configured for receiving a joining element such as a corner fitting whereby two adapter frame side members may be joined.

[0034] The flange section may comprise a preformed hole, recess, groove or track configured for receiving a fastener, such as a screw or nail, for fastening the first adapter frame side member to the window frame or fastening the first adapter frame side member to the roof.

[0035] The support section of the first adapter frame side member may comprise pre-formed holes, recesses, grooves or tracks for receiving a fastener.

[0036] In an embodiment, the support section and the flange section of the first adapter frame side member are formed in one piece.

[0037] This may offer a strong and stiff adapter frame for structurally supporting the skylight window when the skylight window is installed on the adapter frame. Such an embodiment may be advantageous for installing skylight windows on inclined roofs.

[0038] In such an embodiment, the first adapter frame side member may be moulded or extruded as one piece. The first adapter frame side member may also be formed in one piece by a milling process.

[0039] In an embodiment, the flange section -provided separately from the support section- comprises a recess for receiving a part of the support section opposite the inner side surface of the support section, such that the flange section and the support section may engage tightly in the assembled state of the first adapter frame side member.

[0040] Such an embodiment may allow the adapter frame to be constructed of simple multiple parts which may reduce production costs of the adapter frame.

[0041] In such an embodiment, the first adapter frame side member may comprise a flange section separate from the support section as mentioned above. The first adapter frame side member may be assembled from the separate flange and support sections. Such separate flange and support sections may be provided in an unassembled or assembled state. The recess for receiving part of the support section may be a rectangular recess adapted to receive a rectangular part of the support section opposite the inner support section. Such a rectangular recess may preferably be adapted such that the interior support surface adjoins an interior flange surface of the flange section in the assembled state of the first adapter frame side member, the interior flange surface facing in the interior direction. The recess may alternatively comprise a reduced width section to receive a part of the support section.

[0042] Such separate flange and support sections may be fastened to each other by a fastener, such as a screw, a nail, an adhesive or glue.

[0043] In an embodiment, the outer flange surface is inclined in relation to the adapter frame plane, whereby the outer flange surface functions as a roofing felt mounting surface.

[0044] The inclined outer flange surface may prevent the roofing felt from being mounted with a 90° bend, when the roofing felt is mounted to cover a joint between the window and the roof, which may destroy the roofing felt and/or its sealing abilities. The inclined surface thus provides a surface which may facilitate the mounting of a roofing felt covering the first adapter frame side member and the part of the window frame in the installed position of the skylight window. In addition, the inclined outer flange surface may facilitate any water running off the

adapter frame.

[0045] The inclined outer flange surface may form an angle of approximately 45° with the adapter frame plane. In an embodiment where the adapter frame has a substantially triangular cross-section, the inclined flange surface connects the inner flange surface with an interior flange surface of the flange section, whereby the inclined outer flange surface may adjoin an exterior roof surface and the outer surface of the window frame in an installed position of the skylight window.

[0046] In an embodiment, the flange section and support section of the first adapter frame side member are provided as separate elements, wherein the flange section may be attached to the support section in an assembled state of the first adapter frame side member. The flange section may be attached to the exterior support section at a position opposite the inner side surface of the support section. In such an embodiment, the support section may comprise an outer side surface opposite the inner side surface, wherein the outer side surface may adjoin the outer flange surface in the assembled state of the first adapter frame side member. The outer side surface may be inclined in relation to the adapter frame plane, whereby the outer side surface may function as a roofing felt mounting surface. An angle formed by the inclined outer side surface with the adapter frame plane may be substantially equal to an angle formed by the inclined outer flange surface with the adapter frame plane, whereby the outer side surface and outer flange surface may together function as roofing felt mounting surfaces.

[0047] In an embodiment, the first adapter frame side member comprises wood, and/or metal, potentially encapsulated in a polymer material, such as polyurethane (PUR).

[0048] This may provide a more secure or flexible installation of the skylight window.

[0049] The first adapter frame side member has a cross-section perpendicular to the longitudinal direction, and possibly having four adapter frame side members all having cross-sections corresponding to the cross-section of the first adapter frame side member.

[0050] Possibly the cross-sections of one, two or three of the adapter frame side members in addition to the first adapter frame side member correspond to the first adapter frame side member, preferably the cross-sections of all four frame side members correspond to the first frame side member.

[0051] By providing an adapter frame wherein two, three or four of the adapter frame side members have identical cross-sections, the adapter frame may further facilitate the installation of the skylight window. In such an embodiment the plurality of receiving sections may further aid in guiding the positioning of the skylight window on the adapter frame. A further advantage of such an embodiment where all adapter frame side members have identical cross-section may be better structural support of the skylight window, since the loads of the skylight window are equally and uniformly carried by the adapter frame side members. A further advantage of such an embodiment is that the adapter frame may offer a more secure and more flexible fastening of the adapter frame and skylight window to the roof or load-bearing structure of the roof such as a rafter.

[0052] In an embodiment, the adapter frame may comprise four frame adapter side members, the four adapter frame side members delimiting the adapter frame opening and defining the adapter frame plane, the first adapter frame side member having a cross-section perpendicular to the longitudinal direction and all four adapter frame side member may have a cross-section corresponding to the cross-section of the first adapter frame side member.

[0053] The bottom or top of the adapter frame side members may be different for draining purposes.

[0054] In an embodiment, the inner side surfaces of the plurality of adapter frame side members delimit the adapter frame opening, the inner side surfaces being configured for use as a guide for making an opening in the roof for the skylight window.

[0055] The inner side surfaces may be perpendicular to the adapter frame plane, whereby a cutting tool, such as a saw, may be positioned to cut the roof along the inner side surfaces to make the opening in the roof for the skylight window. The support sections of the adapter frame may be used for supporting the cutting tool, such a saw, when cutting the opening in the roof for the skylight window. The inner side surfaces may comprise a sign such as an arrow for indicating the position or the direction to make the opening.

[0056] In a second aspect of the invention, a system is provided, the system comprising: an adapter frame and a skylight window comprising a window frame, an insulating glazing unit IGU having multiple layers of glazing, a weather shield and possibly a window sash, the window frame having four frame side members and the window sash, if any, having four sash side members, the frame side members or sash side members, if any, supporting the IGU, a first of the frame side members and a first sash side member, if any, extending in a longitudinal direction along a first peripheral side of the IGU, the weather shield being attached to the window frame or to the potential sash so as to protect a window portion of the skylight window, the window portion comprising the window frame, IGU and the potential sash, wherein the interior support surface is configured for abutting an exterior surface of the roof in an installed position of the adapter frame, the inner flange surface is configured for abutting at least part of an outer surface of the first frame side member, and the exterior support surface is configured for supporting the first frame side member by engaging with an interior side of the first frame side member in an installed position of the skylight window.

[0057] Such a system may provide ease of installation of the skylight window.

[0058] The adapter frame of the system may be pro-

vided in a non-assembled state wherein the plurality of adapter frame side members may be assembled to provide the adapter frame, thus constituting a kit.

[0059] The adapter frame may comprise a curb element, the curb element being configured to extend along the first adapter frame side member. The curb element may be configured to be positioned in abutment with the outer flange surface of the first adapter frame side member and possibly part of the outer surface of the first frame side member in an installed position of the curb element. The curb element may have an outer surface, the outer surface being inclined in relation to the adapter frame plane in the installed position of the curb element, such that the outer surface of the curb element may function as a roofing felt mounting surface, as described with reference to the inclined outer flange above. The curb element may have a substantially triangular cross-section. The curb element may have a recess, the recess being configured for receiving an outer part of the first adapter frame side member. The outer part of the first adapter frame side member may be part of the flange section and/or support section opposite the adapter frame opening.

[0060] The outer surface of the first frame side member may be substantially flat.

[0061] The IGU (Insulated Glazing Unit) may have multiple layers of glass which define a volume comprising an inert gas or aerogels or vacuum. The IGU may in a conventional manner comprise one or, preferably two, three or more layers of glazing positioned at a distance from each other to form one or more sealed spacings or cavities between them. This spacing may be filled with an inertgas or may hold a vacuum to improve insulation. One or more of the layers of glazing may have a low emissivity coating or coating stack. One or more of the layers of glazing may be laminated e.g. the interior layer of glazing. One or more of the layers of glazing may be tempered. Similarly, the weather shield pane may be tempered. The IGU may be see-through transparent to provide a view out. The exposed interior major surface of the IGU may in that case be a lower major surface of a lowermost of the layers of glazing. Sealing and/or supporting members may be provided at one or more of four peripheral sides of the IGU between the layers of glazing. The sealing and/or supporting members may distance adjacent layers of glazing from each other and may together with lateral edges of the window glazing layers form respective side or lateral surfaces of the IGU. These side surfaces may be substantially plane and extend substantially in the height dimension as defined herein.

[0062] The weather shield may be provided as a unitary structure, which is detachably attached to the to the sash. The weather shield may be attached detachably to the sash, providing for access to clean the IGU; this may also be of advantage during mounting of the skylight window, e.g. when positioning or attaching the window portion or when attaching roofing felt to cover a potential gap between the frame and the roof structure.

[0063] The weather shield may be mounted on the window portion to protect it from the elements and preventing rain and other downfall from entering into gaps or slots in the roof or the window portion.

[0064] The weather shield may comprise a weather shield pane positioned on an exterior side of the IGU.

[0065] The weather shield may comprise a weather shield pane that may be surrounded by a weather shield skirt that may extend on an outer side of all four sides of the frame, i.e. of the respective frame side members. The skirt may be manufactured from or include metal. The weather shield pane may curve upwardly in relation to the window portion or the IGU to allow for rain and snow to slide or flow off of the weather shield pane. Alternatively or additionally, the weather shield pane may be a transparent window pane that may be of glass or hardened glass. The weather shield pane may comprise only one single layer of glazing.

[0066] A weather shield may comprise a transparent or translucent weather shield pane or cover member, e.g. a dome of glass or a clear polymer

[0067] The weather shield may be provided without a sealed gas-filled spacing between the weather shield pane and the IGU.

[0068] The sash may be made movable in relation to the window frame by the sash being outwardly hung, i.e. being rotatable about an axis extending along one of the sash side members. Generally, by "outwardly hung" it is to be understood that the sash moves outwards from the frame during opening. The sash being outwardly hung may be achieved by using a rotary hinge positioned at a sash side member and connecting this sash side member with an associated, adjacent frame side member. Alternatively or additionally, the sash may be parallel-displaceable so that all four sash side members shift upwardly or downwardly between the open and closed positions of the window in which case further or other hinges or the like connect the sash with the frame. The skylight window may be openable by a combination of a rotary movement and a shifting movement or other movement paths of the sash in relation to the frame.

[0069] In an embodiment, the first frame side member further comprises a lining panel protrusion located lower than the exposed interior major surface of the IGU in the height direction, wherein the interior pane comprises a side surface extending substantially along the first frame and sash side members, wherein the lining panel protrusion protrudes away from the IGU, the lining panel protrusion comprising a first surface for abutting a surface of reveal panel or lining panel so as to position the reveal panel or lining panel, and wherein, in the closed position of the skylight window, the first surface of the lining panel protrusion in a lateral direction extending along the exposed interior major surface of the IGU is positioned farther away from the side surface of the interior pane than the supporting leg.

[0070] Such protrusion can help an installer install a lining panel at the skylight window by guiding an upper

end of the lining panel into contact with a first side of the protrusion, and may further ease the installation by hiding the upper end of said lining panel e.g. if the upper end is not flush with the interior side of the skylight window. The lining panel can be used to hide the skylight frame, for viewers, including insulation elements such as an insulting block and can thus, allow for improving the insulating properties of the skylight window as a whole.

[0071] The skylight window may further comprise a second protrusion next to the first protrusion to create a lining panel recess for receiving a lining panel to be installed. Said lining panel recess would add to the guidance and ease of installation of the lining panel.

[0072] In an embodiment, where the skylight window is openable and comrpsies as sash, may further comprise a motor-driven actuator comprising an elongated lifting element connecting the frame and the sash for moving the sash between the open position and the closed position, said elongated lifting element having a top end and a first position in which the skylight window is in the closed position and a second position in which the skylight window is in the open position. The top end of the elongated lifting element may abut or be attached to the sash. The motor-driven actuator may be positioned between the IGU and the frame in a direction parallel with the exposed interior major surface of the IGU in the closed position of the skylight window. The motor-driven actuator may be a chain actuator, the elongated lifting element may be a chain, and the top end may be a top end of a top joint of the chain. The lifting element in the closed position may be collapsed, rolled-up, folded-up, telescopically retracted or in another way compacted. The lifting element may be unrolled, unfolded, telescopically extended, or in another way extended in the open position.

[0073] The chain actuator may comprise a push-pull chain which can extend and retract to open and close the skylight window. Such a chain may be referred to as a trust chain as it may transmit a push force. The chain may be driven by an electric motor. A reduction gear may be provided. The reduction gear may comprise a worm and/or multiple gear drive. A final sprocket gear may engage the chain. A spindle may be used to drive the chain. The chain actuator may fold the chain when the chain is retracted and stored. The chain may be stored to substantially extend in a storing direction or such that one or more lengths of the chain extend substantially in a storing direction. The chain extending to open the skylight window may extend substantially perpendicularly to the storing direction. The storing direction may be the same as the longitudinal direction, in which case the chain may be stored to substantially extend in the longitudinal direction along a frame side member. This may provide a compact solution.

[0074] The chain actuator may be hidden inside a window frame or sash or otherwise arranged out of sight, e.g. outside a periphery of the skylight window. The chain actuator may be arranged in a spacing defined between the sash and the frame in the closed position of the skylight window. Preferably the chain actuator may be arranged inside a frame profile or inside a sash profile. The chain actuator may comprise an actuator housing. The chain may extend and retract through an opening in the actuator housing. The actuator housing may be an elongated actuator housing. The actuator housing may extend substantially extend in parallel with the storing direction. The chain extending to open the skylight window may extend substantially perpendicularly to the actuator housing. The chain actuator housing may be hinged to the skylight window so the chain can tilt during movement such as extending and/ or retracting to open and/or close the skylight window. The chain actuator may be self-locking and support and/or hold the weight of sash and IGU. The chain actuator may also be assisted by a spring to carry some of the weight of sash and IGU. The chain actuator may comprise a locking mechanism and/or brake to lock-up the chain. Besides the compact design a chain actuator may have other advantages. The chain actuator may provide a stable opening force from the very beginning of the opening movement.

[0075] Generally, one or more of the frame and/or potential sash side members may comprise or be made substantially of polymer materials, such as plastic, specifically PVC (polyvinyl chloride), chlorinated PVC, PUR (polyurethane), fibre reinforced PUR such as glassfibre reinforced PUR, and/or wood and/or metal such as aluminum or composites or combinations thereof.

[0076] In an embodiment, the first frame side member comprises a preformed hole adapted for receiving a fastener, such as a screw or nail, wherein the pre-formed hole extends from the outer surface of the first leg towards the interior side of the second leg in a direction which is inclined in relation to the frame plane.

[0077] By providing such an inclined pre-formed hole, the skylight window may be fastened to the adapter frame in the installed position of the skylight window. This may be particularly advantageous in non-wooden materials, which are hard to penetrate. In the installed position, the first frame side member may be received in by the receiving section of the first adapter frame side member, the exterior support surface engaging or abutting the interior surface of the first frame side member. Hence, a fastener inserted in the preformed hole may engage the support section of the first adapter frame side member, thereby fastening the skylight window to the adapter frame. The fastener may further engage the roof and possibly a load-bearing structure of the roof.

[0078] The outer surface of the first leg may be the outer surface of the first frame side member. The interior side of the second leg may be the interior side of the first frame side member.

[0079] Examples of fasteners are nails, brackets or clips.

[0080] The IGU has an exposed interior major surface for facing an interior of said building in an installed position of the skylight window, said IGU further has an ex-

posed exterior major surface facing in an opposite direction towards an exterior in said installed position of the skylight window, the first sash side member includes a supporting section which is adhered to the exposed exterior major surface of the IGU.

[0081] This removes the need for the first sash side member to be adhered to the exposed interior major surface of the IGU or a peripheral side of the IGU resulting in less material at these locations. Less material along the exposed interior major surface and a peripheral side of the IGU may allow the IGU to be positioned deeper or lower in the window structure, as well as closer to the window frame, which may improve the insulating properties of the skylight as the relative area of the IGU may be increased. An increase in relative area of the IGU may further improve light inflow and view through the skylight. This also reduces the area of sash, and so the likelihood of thermal bridges through which heat energy can escape (or enter) from the interior of the building.

[0082] In an embodiment, the first sash side member has a first leg connected to a supporting section of the first sash side member supporting the IGU, the first leg extending in the longitudinal direction and extending substantially in a height direction substantially perpendicularly to at least one of the major surfaces of the IGU, the first leg having a thickness in a width direction extending perpendicularly to said length and height directions. At least a portion of the first leg of the first sash side member is generally plate-shaped, consisting of one single section of substantially solid material having a said thickness less than 1 cm. The first leg having a thickness less than 1 cm may have the advantage of allowing the IGU to extend closer to the frame side members as the thickness of material extending along the peripheral sides of the IGU is reduced. This may have the effect of improving the insulation properties of the skylight as the relative area of the superior insulating IGU is increased compared to other parts of the skylight. Moreover, this will lead to a more light-weight structure that can potentially be easier to manufacture and lead to cost savings with regards to the material use.

[0083] The term "plate-shaped" may be understood as the first sash side member being generally flat.

[0084] The term "substantially solid material" may be understood as no cavities and/or hollow spacings are comprised in the material structure.

[0085] The portion of said first leg having a thickness less than 1 cm of the first leg may correspond to any estimable part that comprises the first leg.

[0086] The term "thickness" of said first leg refers to the extent that the first leg extends in the direction of the width dimension, being perpendicular to the height and length dimensions, as defined previously.

[0087] In a third aspect, a method for installing a skylight window in or on a roof of a building is provided, comprising the steps of: providing the skylight window, the skylight window comprising a window frame having four frame side members and potentially a window sash having four sash side members, providing an adapter frame, positioning the adapter frame in or on the roof such that the adapter frame surrounds an opening in the roof, fastening the first adapter frame side member to the roof and/or a load bearing structure of the roof, positioning the skylight window such that the first adapter frame side member extends along a longitudinal extent of the first frame side member, and the exterior surface and the inner flange surface of the first adapter frame side member receive part of the first frame side member.

[0088] This may have the effect of facilitating the installation of the skylight window, as the skylight window may be positioned directly on the adapter frame guided by the receiving section or receiving sections of the adapter frame, thus reducing the handling of the skylight window, which may be both heavy and fragile making it troublesome to handle. This also provides a skylight window which in the installed position may be structurally supported by the adapter frame.

[0089] The positioning of the adapter frame surrounding the opening in the roof is done so the adapter frame opening is substantially aligned with the pre-existing opening in the roof. The fastening of the first adapter frame side member may be done by inserting a fastener, such as a screw or nail, at a fastening position whereby the adapter frame may be fastened to the roof and/or a load-bearing structure of the roof, such as a rafter. Referring to the first adapter frame side member, such fastening positions may be along substantially the entire longitudinal extent and substantially the entire lateral extent of the support section or the flange section.

[0090] The method according to the invention may further comprise the step of assembling the adapter frame from the plurality of adapter frame side members and/or the step of assembling at least one of the adapter frame side members from the separate flange section and the separate support section.

[0091] The method may comprise mounting a roofing felt on an outer surface of the flange section which may be inclined in relation to the adapter frame plane, such that roofing felt may cover the outer surface of the flange section and at least part of an outer surface of the first frame side member, as well as a joint between the roof and the frame.

[0092] The method may comprise mounting an initial layer of roofing felt on an outer surface of the flange section, positioning the skylight window on the adapter frame, and mounting a final layer of roofing felt on the initial layer of roofing felt, the final layer of roofing felt covering the outer flange surface and at least part of an outer surface of the first frame side member, as well as a joint between the roof and the frame.

[0093] In an embodiment, the method further comprises the steps of: positioning the adapter frame on the roof such that the frame opening is in alignment with an opening to be made in the roof for the skylight window and making the opening in the roof using the inner side surface as a guide.

[0094] This may have the advantage of further facilitating the installation of the skylight window in a situation where there is no pre-existing opening in the roof for the skylight window.

[0095] In such an embodiment, the dimensions of the adapter frame side members may be configured such that the adapter frame opening substantially matches the dimensions of the opening to be made in the roof the skylight window, whereby the adapter frame may act as a guide or a template for making the opening in the roof.

[0096] The opening in the roof may be made using a cutting tool, such as a saw, to cut along an inner side surface of the adapter frame.

[0097] The step of fastening the first adapter frame side member to the roof and/or load-bearing structure of the roof may be performed prior to or after the step of making the opening in the roof using the inner sider surface as a guide.

[0098] In an embodiment the step of fastening of the adapter frame, comprises mounting a fastener, such as a screw or nail, through the support section of the first adapter frame side member.

[0099] Mounting a fastener through the support section may provide secure fastening to the roof and/or load-bearing structure of the roof, such as a rafter. The fastener may be mounted at a fastening position which, referring to the first adapter frame side member, may be at substantially any position on the exterior support surface.

[0100] The fastening of the adapter frame in this way may be advantageous for the durability of the skylight window, since less wear and tear on the roofing felt may be caused.

[0101] In an embodiment, the method further comprises the step of: fastening the first window frame side member to the first adapter frame side member using a fastener, such as a screw or nail, mounted in the first window frame side member and first adapter frame side member, optionally inserting the fastener through a pre-formed hole in the first adapter frame side member.

[0102] Mounting a fastener in the first window frame side member and the first adapter frame side member may provide secure fastening of the skylight window.

[0103] The fastener may be mounted or inserted in a direction which is inclined to the adapter frame opening, preferably in an inclined direction from an outer surface of the first window frame side member toward an interior surface of the first window frame side member.

[0104] The fastener may be mounted through the first adapter frame side member and into the roof or a load-bearing structure of the roof.

[0105] The fastener may be mounted such that it extends through the flange section into the first frame side member. The fasteners may be mounted onto a recess or a weakened section.

[0106] In an embodiment, the adapter frame and/skylight window is installed in a flat roof, which may have an inclination equal to or less than 5 degrees relative to horizontal.

[0107] In an alternative embodiment the adapter frame and/skylight window is installed in an inclined roof, with an inclination equal to or more than 15 degrees relative to horizontal.

[0108] In another embodiment the the adapter frame and/skylight window is to be installed in a roof with an inclination between 5 and 15 degrees relative to horizontal.

[0109] Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one instance of the element, device, component, means, step, etc., unless explicitly stated otherwise.

[0110] Embodiments and advantages described with reference to one aspect of the invention may also apply to the other aspect(s) unless otherwise stated.

Brief description of drawings

[0111]

Figure 1 shows a perspective view of an embodiment of an adapter frame for installing a skylight window in a roof.

Figure 2 shows a cross section of an embodiment of a first adapter frame side member of an adapter frame positioned on a roof of a building.

Figure 3 shows the cross section of figure 2 in an installed position of the adapter frame where the first adapter frame side member has been positioned at an opening in the roof for a skylight window and fastened to the roof.

Figure 4 shows the cross section of figure 3 where a skylight window has been positioned on and attached to the adapter frame.

Figure 5 shows a cross section of an adapter frame and a skylight window in an installed position of the adapter frame and an installed position of the skylight window.

Figure 6 shows a perspective view of a skylight window where a part of the window has been removed.

Detailed description of the invention

[0112] Fig. 1 shows an embodiment of an adapter frame 100 according to the invention. The adapter frame 100 has four adapter frame side members 101, 102, 103, 104 delimiting an adapter frame opening 200 and defining an adapter frame plane P. The adapter frame opening 200 is rectangular and is bordered by the adapter frame side members 101. A first of the adapter frame side members 101 extends in a longitudinal direction L along a first peripheral side 201 of the adapter frame opening 200. A second adapter frame side member 102 extends in a

lateral direction W. The first adapter frame side member 101 and second adapter frame side member 102 adjoin at a joining interface 104 forming a right-angled corner of the adapter frame opening. The first adapter frame side member 101 has a flange section 110 and a support section 120, the flange section 110 extending in an exterior direction E perpendicular to the adapter frame plane P. The support section has an inner side surface 123 bordering the first peripheral side 201 of the adapter frame opening 200.

[0113] As can be seen from Fig.1, the four adapter frame side members 101, 102, 103, 104 have similar cross-sections corresponding to the cross-section of the first adapter frame side member 101.

[0114] Fig. 2 shows an embodiment of the invention positioned on a roof 2 of a building as a cross-sectional view of the first adapter frame side member 101 as indicated by II in Fig. 1.

[0115] The first adapter frame side member has a flange section 110 pointing in the exterior direction E. The flange section 110 has an inner flange surface 111, the inner flange surface 111 extending in the exterior direction and facing the adapter frame opening 200 in an inward direction D, the inward direction being perpendicular to the longitudinal direction L. The inner flange surface 111 is perpendicular to the adapter frame plane P.

[0116] The flange section 110 further has an outer flange surface 112 opposite the inner flange surface 111. The outer flange surface 112 is inclined with respect to the adapter frame plane P such that the outer flange surface slopes toward an exterior roof surface 20 from the inner flange surface 111. The flange section 110 further has an interior flange surface 113 facing toward an interior of the building and the exterior roof surface.

[0117] The first adapter frame side member has a support section 120 extending from the flange section 110 in the inward direction toward the adapter frame opening 200. The support section has an exterior support surface 121 facing in the exterior direction E, an interior support surface 122 located parallel and opposite the exterior support surface 121, the interior support surface facing in an interior direction I toward the interior of the building and an inner side surface 123 opposite the flange section 110. The inner side surface 123 connects the exterior and interior support surfaces 121, 122, in this embodiment being perpendicular to them.

[0118] The inner flange surface 111 adjoins the exterior support surface 121 forming a receiving section 130 of the first adapter frame side member 101. The receiving section 130 has a substantially right angle between the inner flange surface 111 and exterior support surface 121, the inner flange surface and the exterior support surface being perpendicular to each other in this embodiment.

[0119] The interior support surface 122 is in abutment with the exterior roof surface 20.

[0120] The support section 120 here has a rectangular cross-section and a planar shape.

[0121] The flange section 110 has a recess 114 accommodating an insertion part 124 of the support section 120. In Fig. 2, the recess 114 engages the insertion part 124 of the support section 120 and the first adapter frame side member 101 is thus in an assembled state.

[0122] The roof 2 comprises a load-bearing structure 2a, here in the form of a rafter.

[0123] In this embodiment, the cross-sections of the remaining adapter frame side members correspond to the cross-section shown in Fig. 2, while they may also be different to that.

[0124] According to this embodiment, a method for installing a skylight window 1 on a roof 20 of a building is provided, comprising the steps of providing and positioning an adapter frame 100 on the roof 2, such that the adapter frame 100 surrounds an opening in the roof 300 and fastening the first adapter frame side member 101 to the roof 20. This method is better suited for a skylight window 1 and/or adapter frame 100 that comprises wood or other fibrous material, such as plywood, or a combination of different materials.

[0125] Fig. 3 shows the first adapter frame side member 101, in the cross-sectional view of Fig. 2, in the installed position of the adapter frame on the roof. The inner side surface 123 is positioned to adjoin an opening 300 in the roof made for a skylight window 1.

[0126] The first adapter frame side member is fastened to the roof by a fastener 150 mounted in the support section 120 and into a load-bearing structure 2a of the roof.

[0127] An initial layer 2b of roofing felt has been mounted on the outer flange surface 112, covering the outer flange surface 112 and a part of the exterior roof surface 20.

[0128] Fig. 4 shows the cross-sectional view of Fig. 3 where a skylight window 1 is positioned on the adapter frame.

[0129] The skylight window 1 has a first frame side member 10 representing a frame and a first sash side member 12 representing a sash. The first frame side member 10 and first sash side member 12 form part of the window frame and the window sash respectively.

[0130] The sash is movable in relation to the frame, supporting an insulating glazing unit (IGU) 5 having multiple layers of glazing 5d, 5c, and a weather shield 3. The IGU 5 has an exposed interior major surface 5b facing the interior of the building, and an exposed exterior major surface 5g facing in an opposite direction towards an exterior.

[0131] The skylight window 1 is shown in an openable version comprising a window sash. It is to be understood, however, that the invention is not limited to an openable version or to windows including both moveable sash and a stationary frame.

[0132] The first sash side member 12 is supporting the IGU 5. The weather shield 3 is attached to the first sash side member 12 so as to protect a window portion 4 of the skylight window 1, the window portion 4 comprising the frame, IGU and the sash. The weather shield com-

prises a weather shield pane, which is in this embodiment curved, surrounded by a weather shield skirt extending on an outer side of all four sides of the frame (not shown).

[0133] The first frame side member 10 has an interior side 10a and an outer surface 10b. Part of the first frame side member 10 is received by the receiving section 130 such that part of the interior side 10a and part of the outer surface 10b of the first frame side member 10 engages/abuts the exterior support surface 121 and inner flange surface 111 respectively. Thereby the first adapter frame side member 101 structurally supports the first frame side member 10.

[0134] The receiving section 130 is adapted to receive a part of the window frame 7, having a receiving section angle formed by the inner flange surface 111 and exterior support surface 121 being configured to match an angle of the window frame 7 between the interior side 10a and outer surface of the window frame 10b.

[0135] The substantially right angle of the receiving section 130 formed by the inner flange surface 111 and the exterior support surface 112 matches an angle formed by the interior side 10a and outer surface 10b of the first frame side member.

[0136] The first frame side member 10 is fastened to the first adapter frame side member 101 using a fastener 151. The fastener 151 extends from the outer surface 10b to the interior surface 10a of the first frame side member 10 and into the support section 120 of the first adapter frame side member 101. The fastener extends in a direction which is inclined to the adapter frame plane P.

[0137] A final layer of roofing felt 2c is mounted on the initial layer of roofing felt 2b, the final layer 2c covering the outer flange surface 112 and at least part of the outer surface of the first frame side member 101. As can be seen, the final layer 2c of roofing felt covers the fastener 151 mounted in the first frame side member 10.

[0138] It may also be understood that the adapter frame plane P, a frame opening plane defined by the window frame and a roof surface plane may be substantially parallel in an installed position of the adapter frame and skylight window, the invention is not limited to that.

[0139] Fig. 5 shows a cross-sectional view of an embodiment of the invention displaying a cross-section of a first adapter frame side member 101 and cross-section of a side of a skylight window 1 in the installed position of the adapter frame 100) and of the skylight window 1. In the following, only the features that are different to the ones disclosed in Figs 2-4 will be described.

[0140] The first adapter frame side member 101 has a flange section 110 extending in the exterior direction E and a support section 120 extending from the flange section 110 in an inward direction D towards the adapter frame opening 200. The flange section 110 and support section 120 of the first adapter frame are formed in one piece.

[0141] In this embodiment, the flange section has a recess 115 for mounting a fastener 152. The fastener 152 may be used for fastening the first adapter frame side member 101 to the roof 2 and/or for fastening the first adapter frame side member 101 to the skylight window 1.

[0142] The inner flange surface 111 abuts a part of an outer surface 10b of the window frame member 10 and the exterior support surface 121 is configured for supporting the window frame 7 by engaging with an interior side 10a of the window frame.

[0143] As shown in Fig. 5, the weather shield 3 here comprises a flat weather shield pane. The first sash side member has a first leg 15 connected to a supporting section 72 of the first sash side member supporting the IGU 5, the first leg 15 extending in the longitudinal direction and extending substantially in a height direction substantially perpendicularly to at least one of the major surfaces of the IGU, the first leg having a thickness in a width direction extending perpendicularly to said length and height directions, the first leg 15 of the first sash side member plate-shaped, consisting of one single section of substantially solid material.

[0144] According to this embodiment, a method for installing a skylight window 1 on a roof 20 of a building is provided, comprising the steps of providing and positioning the adapter frame 100 on the roof 2, such that the adapter frame 100 surrounds an opening in the roof 300, fastening the first adapter frame side member 101 to the roof 20, positioning the skylight window 1 such that the first adapter frame side member 101 extends along a longitudinal extent of the first frame side member 10, and the exterior surface 121 and the inner flange surface 111 of the first adapter frame side member 101 receive part of the first frame side member 10. The method may further comprise positioning the adapter frame 101 on the roof 20 such that the frame opening 200 is in alignment with an opening to be made 300 in the roof 20 for the skylight window 1, and making the opening 300 in the roof 20 using the inner side surface 123 as a guide. This method is better suited for a skylight window 1 and/or adapter frame 100 that comprises extruded materials.

[0145] Fig. 6 shows a perspective view from above of an embodiment of the skylight window 1 according to the present invention on a roof 2, where a part of the window has been removed for illustration purpose. The skylight window 1 shown in Fig. 6 is may be installed on an adapter frame accordig to the invention (not shown). The window frame 7 and the window sash 6 correspond to the ones shown in Fig 5. The weather shield pane 8 here has been removed for clarity. Fig. 6 also shows a screening device 34, which is mounted in a spacing delimited in the width direction W by the first 14 and second sash side members. It is to be understood that the second sash member is substantially identical to the first sash side member 14 so that the exterior sides of the sash side members together define an exterior side of the sash 6 which extends substantially in parallel to the exterior major surface 5g of the IGU 5.

[0146] Towards the interior, the spacing is delimited in Fig. 6 by the step surface 17c formed by the third leg 17

of the sash side member 14. The step surface 17c thus serves as a screening device support section extending from the first leg 15. The screening device 34 is here depicted as a roller curtain in which the screening body 36 is a covering cloth, which at least partially rolled up on a collection device 35 in the form of a collection roller in the first non-screening, end position, but which is here shown in a second, screening end position, where it is extended towards second sash side members for covering the IGU 5. The screening device 34 might, however, also be another type of blind or a shutter. In Fig. 10, also a fixation member 39 is attached to the first sash side member 14 and extending towards the second sash side member. The fixation member 39 contributes to retaining a top casing of the screening device 34 by preventing it from moving upwards, away from the exterior major surface 5g of the IGU.

[0147] The person skilled in the art realizes that the present invention by no means is limited to the preferred embodiments described above. On the contrary, many modifications and variations are possible within the scope of the appended claims.

List of reference numerals

[0148]

1 Skylight window
2 Roof
2a Load-bearing structure
2b Initial layer of roofing felt
2c Final layer of roofing felt
3 Weather shield
5 Insulating glazing unit IGU
5a First peripheral side of the IGU
5b Interior major surface
5c Layer of glazing
5d Layer of glazing
5g Exterior major surface
7 Window frame
10 First frame side member
10a Interior side of the first frame side member or window frame
10b Outer surface of the first frame side member or window frame
12 First sash side member
20 Roof
25 First leg of first frame side member
26 Second leg of first frame side member
72 Supporting section of first sash side member
100 Adapter frame
101 First adapter frame side member
102 Second adapter frame side member
103 Third adapter frame side member
104 Fourth adapter frame side member
110 Flange section
111 Inner flange surface
112 Outer flange surface
113 Interior flange surface
114 Recess in flange section
120 Support Section
121 Exterior support surface
122 Interior support surface
123 Inner side surface
124 Insertion part of support section
130 Receiving section
150 Fastener
151 Fastener
200 Adapter frame opening
201 First peripheral side of the adapter frame opening
300 Opening in roof for a skylight window

Claims

1. An adapter frame (100) for installing a skylight window (1) having a window frame (7) in or on a roof (2) of a building comprising
a plurality of adapter frame side members (101-104), the plurality of adapter frame side members (101-104) delimiting an adapter frame opening (200) and defining an adapter frame plane (P), the adapter frame plane (P) extending in a longitudinal direction (L) and lateral direction (W),
a first of the adapter frame side members (101) extending along a first peripheral side (201) of the adapter frame opening (200) in the longitudinal direction,
the first adapter frame side member (101) having a flange section (110) extending in an exterior direction (E) perpendicular to the adapter frame plane (P), the flange section (110) having an inner flange surface (111), the inner flange surface (111) extending in the exterior direction (E), the flange section (110) having an outer flange surface (112) opposite the inner flange surface (111),
the first adapter frame side member (101) having a support section (120) extending from the flange section (110) in an inward direction (D) toward the adapter frame opening (200) and perpendicular to the longitudinal direction (L), the support section having an exterior support surface (121) facing in the exterior direction (E), an interior support surface (122) located opposite the exterior support surface, the interior support surface facing in an interior direction (I), and an inner side surface (123) of the support section (120) opposite the flange section (110), the inner side surface (123) connecting the interior and exterior support surfaces (122, 121),
wherein the inner flange surface (111) adjoins the exterior support surface (121) in an assembled state of the first adapter frame side member (102) forming a receiving section (130),
wherein the inner flange surface (111) is configured for abutting at least part of an outer surface (10b) of

the window frame (7) and the exterior support surface (121) is configured for supporting the window frame (7) by engaging with an interior side (10a) of the window frame (7).

2. An adapter frame (100) according to claim 1, wherein the support section (120) and the flange section (110) of the first adapter frame side member (101) are formed in one piece.

3. An adapter frame (100) according to claim 1, wherein the flange section (110) comprises a recess (114) for receiving an insertion part (124) of the support section opposite the inner side surface (123) of the support section (120), such that the flange section (110) and the support section (120) engages tightly in the assembled state of the first adapter frame side member (101).

4. An adapter frame (100) according to any one of the previous claims wherein, the outer flange surface (112) is inclined in relation to the adapter frame plane (P), whereby the outer flange surface (112) functions as a roofing felt mounting surface.

5. An adapter frame (100) according to any one of the previous claims, wherein the first adapter frame side member (101) comprises wood, and/or metal, potentially encapsulated in a plastic material, such as polyurethane PUR.

6. An adapter frame (100) according to any one of the previous claims, wherein the first adapter frame side member (101) has a cross-section perpendicular to the longitudinal direction (L), and possibly having four adapter frame side members (101-104) all having cross-sections corresponding to the cross-section of the first adapter frame side member (101).

7. An adapter frame according to claim 6, wherein the inner side surfaces (123) of the plurality of adapter frame side members (101-104) delimit the adapter frame opening (200), the inner side surfaces (123) being configured for use as a guide for making an opening in the roof (300) for the skylight window (1).

8. A system for being installed in or on a roof (2) of a building, the system comprising:

an adapter frame (100) according to any one of the previous claims, and
a skylight window (1) comprising a window frame (7), an insulating glazing unit IGU (5) having multiple layers of glazing (5c, 5d), a weather shield (3) and possibly a window sash (6),
the window frame (7) having four frame side members and the window sash (6), if any, having four sash side members, the frame side members or the sash side members, if any, supporting the IGU (5), a first of the frame side members (10) and a first sash side member (12), if any, extending in a longitudinal direction along a first peripheral side of the IGU (5a),
the weather shield (3) being attached to the window frame (7) or to the potential sash (6) so as to protect a window portion (4) of the skylight window, the window portion (4) comprising the window frame (7), IGU (5) and the potential sash (6),
wherein the interior support surface (122) is configured for abutting an exterior surface of the roof (2) in an installed position of the adapter frame,
the inner flange surface (111) is configured for abutting at least part of an outer surface (10b) of the first frame side member (10), and the exterior support surface (121) is configured for supporting the first frame side member (10) by engaging with an interior side (10a) of the first frame side member (10) in an installed position of the skylight window (1).

9. A system according to claim 8, wherein the frame side members delimit a frame opening and define a frame plane extending in the longitudinal direction (L) and the lateral direction (W),
the first frame side member (10) extending along a first peripheral side of the frame opening in the longitudinal direction (L), a second of the frame side members extending along a second peripheral side of the frame opening in the lateral direction (W), each frame side member having a frame height extending in a height direction, the height direction being perpendicular to the frame plane,
the first frame side member (10) comprising a first leg (25), the first leg (25) extending substantially in the height direction, and a second leg (26), extending substantially in the lateral direction (W),
wherein the first leg (25) has an outer side, the outer side facing away from the frame opening,
wherein the second leg (26) has an interior side (10a) configured to face an interior of the building in an installed position of the window frame (1),
the outer side having an outer surface (10b),
the first frame side member (10) comprising a pre-formed hole adapted for receiving a fastener (151), such as a screw or nail,
wherein the pre-formed hole extends from the outer surface (10b) of the first leg towards the interior side (10a) of the second leg (26) in a direction which is inclined in relation to the frame plane.

10. A system according to any one of claims 8 to 9, wherein the IGU (5) has an exposed interior major surface (5b) for facing an interior of said building in an installed position of the skylight window (1), the IGU (5) further has an exposed exterior major sur-

face (5g) facing in an opposite direction towards an exterior in said installed position of the skylight window, the first sash side member (12) includes a supporting section (72) which is adhered to the exposed exterior major surface (5g) of the IGU (5).

11. A system according to any one of claims 8 to 9, wherein the first sash side member has a first leg (15) connected to a supporting section (72) of the first sash side member supporting the IGU, the first leg (15) extending in the longitudinal direction (L) and extending substantially in a height direction substantially perpendicularly to at least one of the major surfaces of the IGU, the first leg (15) having a thickness in a width direction extending perpendicularly to said length and height directions, at least a portion of said first leg (15) of the first sash side member is generally plate-shaped, consisting of one single section of substantially solid material having a said thickness less than 1 cm.

12. A method for installing a skylight window in or on a roof of a building, comprising the steps of:

providing the skylight window (1), the skylight window comprising a window frame (7)
providing an adapter frame according to any of the claims 1 to 7,
positioning the adapter frame in or on the roof such that the adapter frame surrounds an opening (300) in the roof,
fastening the first adapter frame side member (101) to the roof (20) and/or a load bearing structure of the roof (20),
positioning the skylight window (1) such that the first adapter frame side member (101) extends along a longitudinal extent of the first frame side member (10), and the exterior surface (121) and the inner flange surface (111) of the first adapter frame side member (101) receive part of the first frame side member (10).

13. A method according to claim 12, wherein the method further comprising the steps of:

positioning the adapter frame (100) on the roof (20), such that the frame opening is in alignment with an opening (300) to be made in the roof (20) for the skylight window (1), and
making the opening in the roof (300) using the inner side surface (123) as a guide.

14. A method according to any one of claims 12 to 13, wherein the step of fastening of the adapter frame (100), comprises mounting a fastener, such as a screw or nail, through the support section (120) of the first adapter frame side member (101).

15. A method according to any one of claims 12 to 14, further comprising the step of:
fastening the first frame side member (10) to the first adapter frame side member (101) using a fastener, such as a screw or nail, mounted in the first frame side member (10) and first adapter frame side member (101), optionally inserting the fastener through a pre-formed hole in the first adapter frame side member (101).

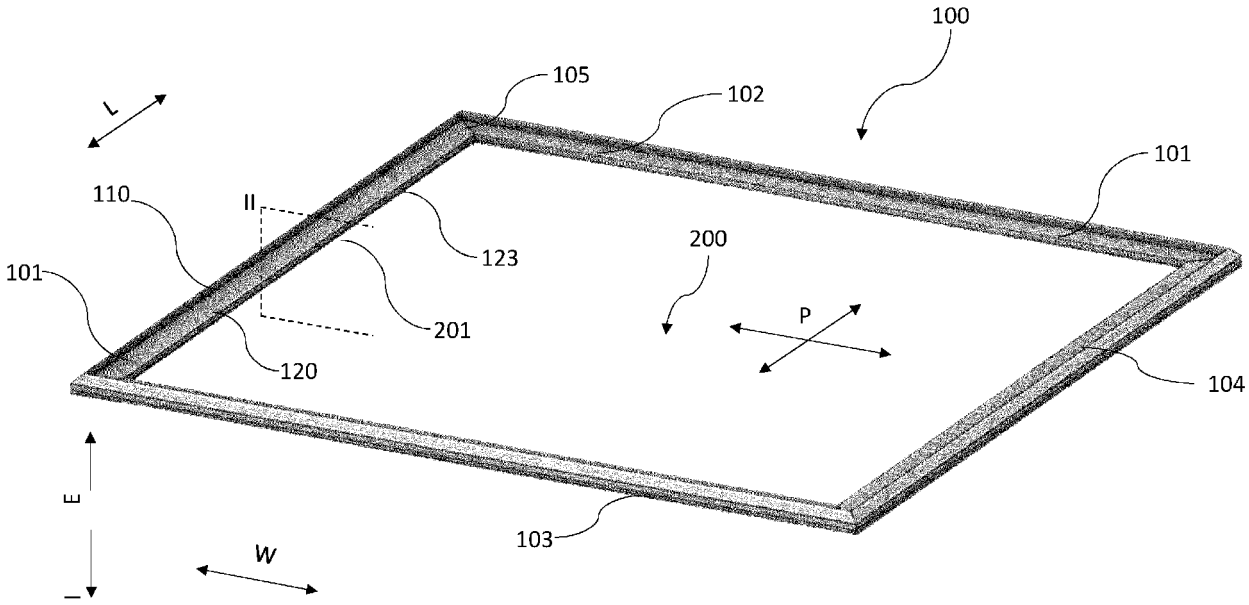

Fig. 1

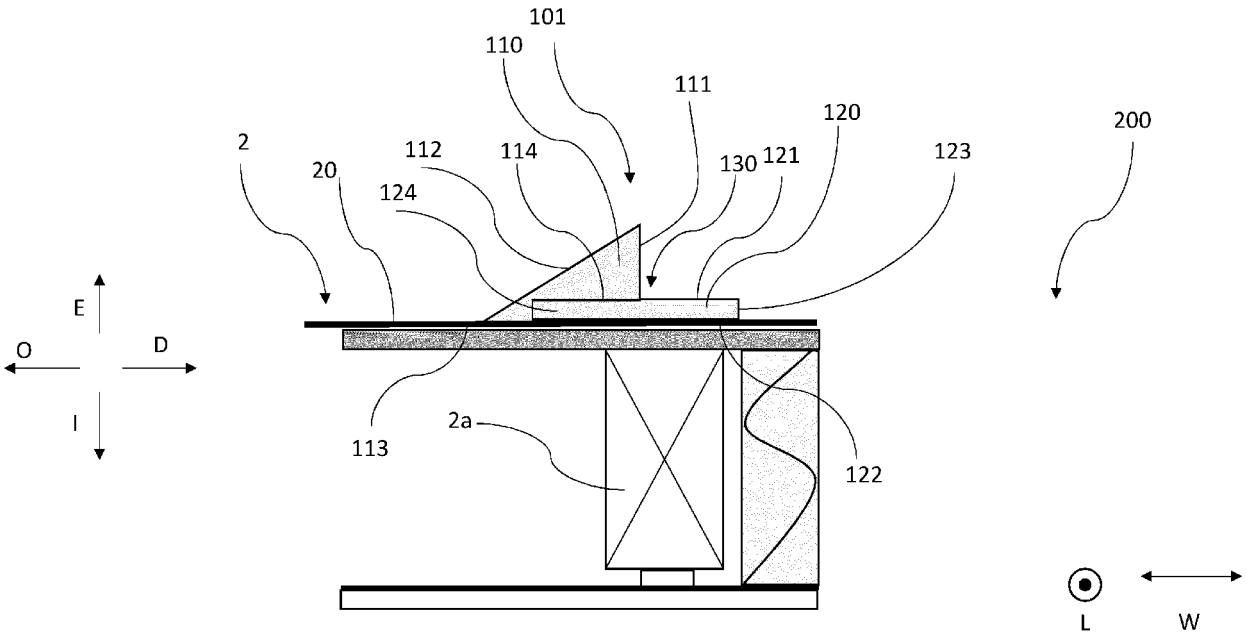
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Fig. 2

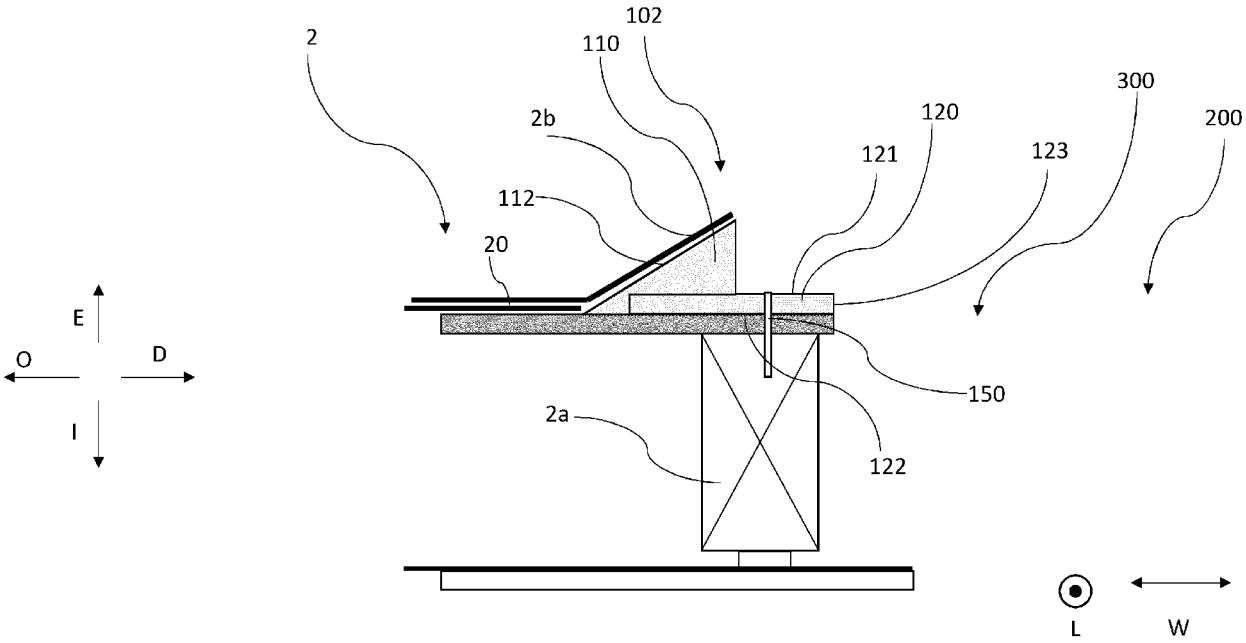

Fig. 3

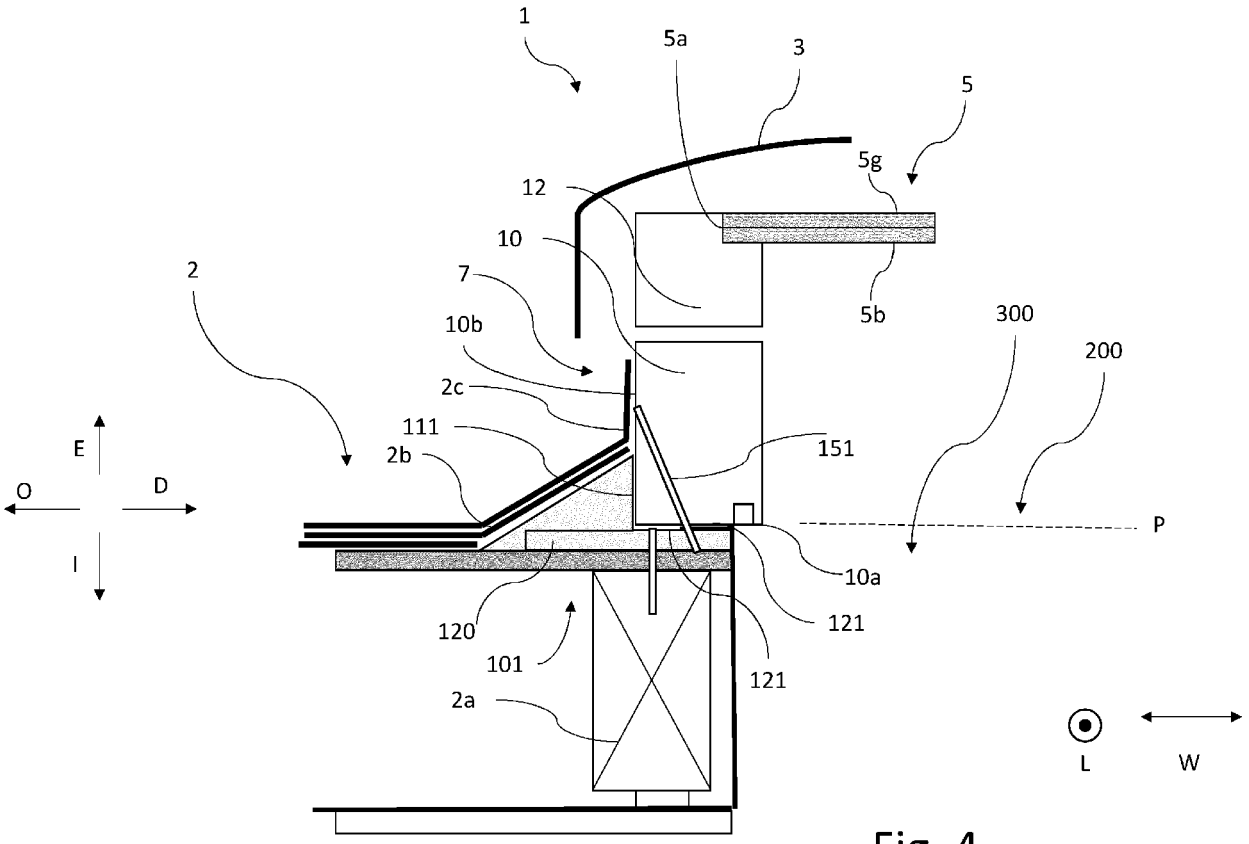
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Fig. 4

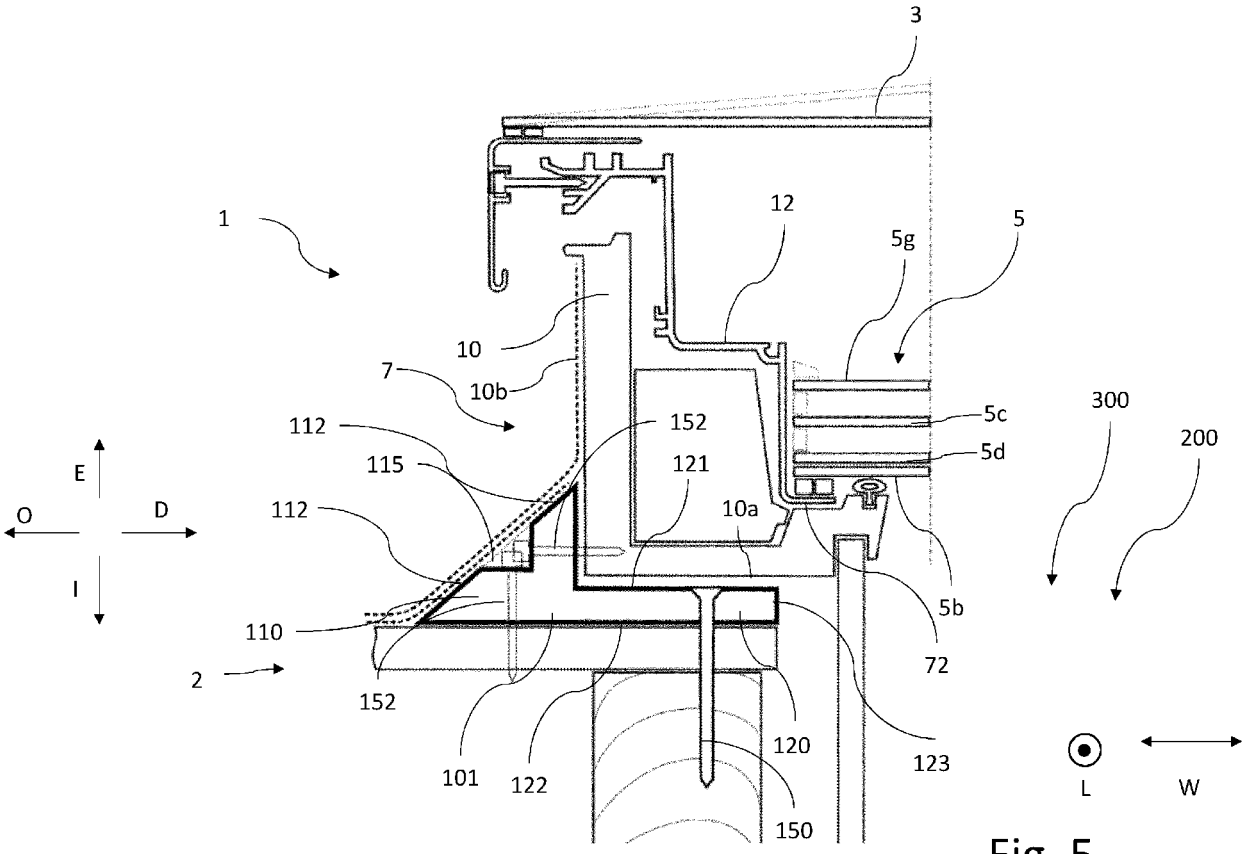
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Fig. 5

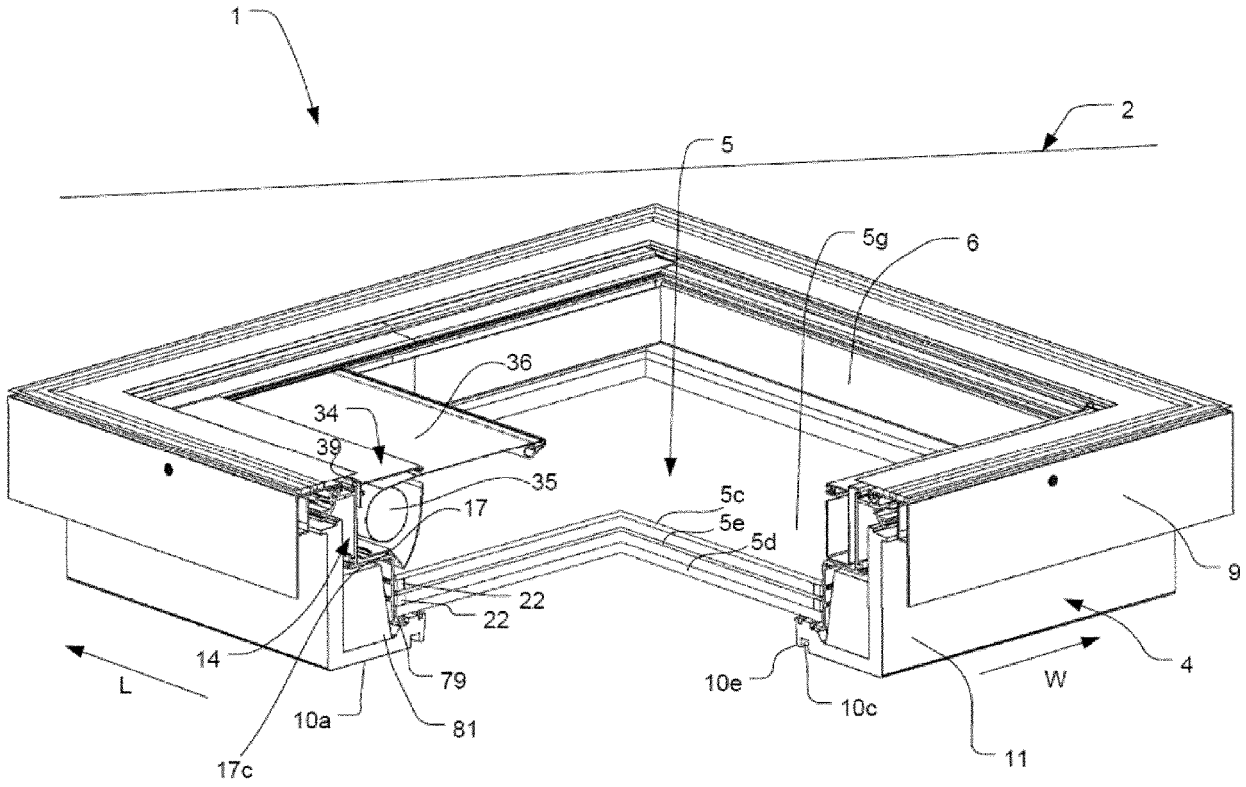
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Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 July 2020	Tran, Kim Lien

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