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(54) **An insulating frame for a roof window**

Dämmrahmen für ein Dachfenster

Châssis isolant pour une lucarne

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Description

[0001] The present invention relates to an insulating frame for insulating a roof window, said insulating frame comprising two side insulating frame pieces intended for being located at the sides of the window in the mounted state, a top insulating frame piece intended for being located uppermost in the mounted state, and a bottom insulating frame piece intended for being located lowermost in the mounted state, said insulating frame pieces surrounding an opening, the shape of which corresponds substantially to the shape of the roof window and the dimensions of which are larger than or corresponding to the outer dimensions of the roof window, each insulating frame piece having an inner side surface facing the opening, a bottom surface and at least one outer side surface facing away from the opening, where each of the insulating frame pieces comprises a lower section and an upper section, where the upper section has a first side facing the opening and a second side facing away from the opening, a bottom portion of the upper section having a predetermined maximum width, the width between the first side and the second side decreasing from said maximum width in the height direction of the upper section such that the second side forms a predetermined angle other than perpendicular with the bottom portion, wherein the two side insulating frame pieces have upper sections with substantially identical cross sections and the upper section of the bottom insulating frame piece has a cross section that differs from that of the side insulating frame pieces. The invention further relates to a kit for mounting and insulation of a roof window, and to an inclined roof structure including an insulating frame.

[0002] Such insulating frames are known from the applicant's own prior applications EP-A1-1 061 199 and WO 98/31896 as well as from EP-B1-0 679 773 and EP-B1-0 744 512. However, the former two of these do not address the problem of achieving an insulation of the part of the window projecting above the supporting structure and the solution proposed in latter two results in a dissatisfactory result, primarily due to a non-aesthetic appearance of the mounted window.

[0003] It is therefore the object of the invention to provide an insulating frame, which insulates the part of the roof window projecting above the supporting roof structure and which may be used without jeopardizing the aesthetic appearance of the window when mounted.

[0004] This object is achieved by an insulating frame, where the first sides of the top and side insulating frame pieces have the same height, this height being such that a relatively large portion of corresponding window frame pieces is overlapped by the upper section of the top and side insulating frame piece in the mounted state and such that a larger portion of corresponding window frame pieces is overlapped by the upper section of the top and side insulating frame pieces in the mounted state than the portion of a corresponding window frame piece overlapped by the upper section of the bottom insulating

frame piece in the mounted state, where the upper sections of the top and side insulating frame pieces have the cross-sectional shape of a right-angled triangle with an apex angle of 20-45 degrees, where the upper section of the bottom insulating frame piece has the general shape of an isosceles triangle, but where the hypotenuse forming the second side is replaced by a curved and concave surface, where ledges or projections are provided on the inner side surfaces of all of the insulating frame pieces, these ledges or projections being intended to serve as a bearing for the window, and where the insulating frame pieces are provided with one or more stiffening members.

[0005] The combination of a frame, which insulates the transition between the window and the supporting roof structure, and an upper section with a decreasing width and which insulates the part of the window projecting above the supporting structure, has been discovered to lead to a particularly effective insulation. Not only is the entire window frame insulated by a single frame unit, the decreasing width of the upper section both makes the installed window appear less voluminous seen from the outside and reduces the quantity of insulating material needed without influencing the general insulating properties of the construction.

[0006] The upper section of the top and side insulating frame piece(s) is substantially wedge shaped with an apex angle of 20-45 degrees. As the insulating frame does then not add any extra width at the top surface of the roof window, prior art cover and flashing members may be used by simply changing their bending angles or the position of the bend.

[0007] For the sake of simplicity of manufacture and installation it is preferred that the insulating frame consists of four frame pieces corresponding to the four sides of a rectangular roof window. These frame pieces may be manufactured separately, e.g. by extrusion or moulding, and subsequently joined together by means of suitable brackets or by welding or gluing, either at the factory or at the installation site. Alternatively some or all of the frame pieces may be moulded as one.

[0008] To allow a further optimization of the balance between the aesthetic appearance of the window, which demands a slim design, and the need for insulation, which demands a relatively bulky design, the two side frame pieces being located at the sides of the window in the mounted state have upper sections with substantially identical cross sections and the frame piece being located uppermost and/or the frame piece being located lowermost in the mounted state have upper sections with cross sections that differ from that of the side insulating frame pieces. Particularly the upper section of the bottom frame piece has a smaller cross section than the others, as the connecting of the bottom flashing and cover members to the roof construction below the window is traditionally performed in a quite distinct way compared to the connecting of the top and side flashing and cover mem-

bers. However, it may also be advantageous with a special design of the top frame piece e.g. when insulating a top-hung window where space is needed for the downwards turning of the cover member used on the top member of the window sash.

[0009] As mentioned above, the need for insulation decreases towards the outer surface of the construction. A further optimization of the use of the insulating material may therefore be reached by shaping the insulating frame so that the width of the lower section of one or more frame pieces decreases continuously or stepwise in the height direction towards the upper section.

[0010] It is to be noted, that the distinction between an upper and a lower section is not to be considered as implying the need for any kind of physical boundaries, but only a difference in geometry and/or function.

[0011] The insulating frame may in principle be made from any material having insulating properties, but it is preferred that it is made from moulded or extruded foam plastic, such as polyurethane foam.

[0012] The insulating frame is provided with ledges on the sides of the insulating frame pieces that face the opening, so that the roof window may bear on the ledges, and the frame must therefore be able to transfer the load to the supporting roof structure. This may be achieved by making the insulating frame from a sufficiently strong and rigid material, but the insulating frame pieces may also be provided with one or more stiffening members such as lists or strips. The stiffening members may advantageously be used for supporting and attachment of mounting brackets for connecting the insulating frame to the supporting roof structure.

[0013] During installation of the roof window an under-roof or underroof collar is normally connected to the insulating frame to ensure a watertight construction. An extremely tight construction may, however, lead to the formation of condensation and it is therefore preferred that the second side of one or more of the insulating frame pieces are provided with projections and/or recesses allowing air passage between and/or through them in a direction perpendicular to the length of the insulating frame piece.

[0014] The object of the invention is further achieved with a kit for mounting and insulation of a roof window, comprising an insulating frame, an underroof collar, at least one flashing member and at least one cover member, said insulating frame including two side insulating frame pieces intended for being located at the sides of the window in the mounted state, a top insulating frame piece intended for being located uppermost in the mounted state, and a bottom insulating frame piece intended for being located lowermost in the mounted state, and said insulating frame surrounding an opening larger than or corresponding to the outer dimensions of the roof window to be mounted, so that the window may be placed within the opening, each insulating frame piece having an inner side surface facing the opening, where the insulating frame includes a plurality of insulating frame

pieces each having an upper section with a first side facing the opening and a second side facing a flashing and/or cover member when mounted, a bottom portion of the upper section having a predetermined maximum width, the width between the first side and the second side decreasing from said maximum width in the height direction of the upper section such that the second side forms a predetermined angle other than perpendicular with the bottom portion, and the first side of the top and side insulating frame pieces having the same height, said height being such that a relatively large portion of the distance existing between an lowermost level of the flashing member and an uppermost level of the cover member in the mounted state is overlapped by the upper section of the top and side insulating frame pieces and such that a larger portion of this distance is overlapped by the upper section of the top and side insulating frame pieces in the mounted state than the portion of the corresponding distance overlapped by the upper section of the bottom insulating frame piece in the mounted state, where that the underroof collar may be brought into contact with the insulating frame at or above the bottom portion of the upper section of the insulating frame, and where one or more of the flashing and/or cover members are shaped with angles corresponding to the angle determined by the decreasing width of the upper section of the insulating frame piece,

where the two side insulating frame pieces have upper sections with substantially identical cross sections and that the upper section of the bottom insulating frame piece has a cross section that differs from that of the side insulating frame pieces,

where the upper sections of the top and side insulating frame pieces have the cross-sectional shape of a right-angled triangle with an apex angle of 20-45 degrees, and where the upper section of the bottom insulating frame piece has the general shape of an isosceles triangle, but where the hypotenuse forming the second side is replaced by a curved and concave surface,

that ledges or projections are provided on the inner side surfaces of all of the insulating frame pieces, these ledges or projections being intended to serve as a bearing for the window, and

that the insulating frame pieces are provided with one or more stiffening members.

[0015] The underroof or underroof collar may be attached to the insulating frame by any suitable means such as welding, gluing, mechanical fastening means, such as clamps, or friction between the material of the underroof or underroof collar and the insulating frame.

[0016] Likewise, the object of the invention is achieved by an inclined roof structure with a roof window mounted in an insulating frame, said roof structure including a roofing, a supporting structure and an underroof comprising at least an external waterproof membrane and an insulating layer, said underroof being located between the roofing and the supporting structure and comprising an opening for mounting of the window, said insulating frame

including two side insulating frame pieces located at the sides of the window, a top insulating frame piece located uppermost, and a bottom insulating frame piece located lowermost, and said insulating frame comprising a lower surface intended for resting against the upper surface of the underroof and with an opening, which corresponds to the opening in the underroof and which is larger than or corresponding to the outer dimensions of the roof window, so that the window may be placed within the opening in the insulating frame, where the insulating frame includes a plurality of insulating frame pieces each of which have an upper section with a first side intended to face a corresponding window frame piece and a second side intended to face a flashing and/or cover member, a bottom portion of the upper section having a predetermined maximum width, the width between the first side and the second side decreasing from said maximum width in the height direction of the upper section such that the second side forms a predetermined angle other than perpendicular with the bottom portion, and the first sides of the top and side insulating frame pieces having the same height, said height being such that a relatively large portion of corresponding window frame pieces is overlapped by the upper sections thereof and such that a larger portion of corresponding window frame pieces is overlapped by the upper section of the top and side insulating frame pieces than the portion of a corresponding window frame piece overlapped by the upper section of the bottom insulating frame piece,

where the two side insulating frame pieces have upper sections with substantially identical cross sections and that the upper section of the bottom insulating frame piece has a cross section that differs from that of the side insulating frame pieces,

where the upper sections of the top and side insulating frame pieces have the cross-sectional shape of a right-angled triangle with an apex angle of 20-45 degrees, and where the upper section of the bottom insulating frame piece has the general shape of an isosceles triangle, but where the hypotenuse forming the second side is replaced by a curved and concave surface,

where ledges or projections are provided on all of the insulating frame pieces, these ledges or projections serving as a bearing for the window, and

where the insulating frame pieces are provided with one or more stiffening members.

[0017] In the following, the invention will be described in further detail by reference to the accompanying drawing showing two embodiments of the invention.

Fig. 1 shows an insulating frame according to the invention seen in a perspective view,

Fig. 2 a section of a side piece of the frame in Fig. 1,

Fig. 3 a section of the bottom piece of the frame in Fig. 1,

Fig. 4 a roof window mounted in the insulating frame of Fig. 1 in a sectional view along the line IV-IV,

Fig. 5 a roof window mounted in the insulating frame

of Fig. 1 in a sectional view along the line V-V, and Fig. 6 a section of a side piece corresponding to Fig. 2 with an underroof collar connected thereto.

[0018] An embodiment of the insulating frame 1 according to the invention is shown in Fig. 1. The frame consists of two side frame pieces 2a, 2b, a top frame piece 3 and a bottom frame piece 4, where the designations side, top and bottom refer to the orientation, when the frame has been mounted in an inclined roof. The frame encloses an opening 5, the shape and dimensions of which correspond to those of the window (not shown) to be insulated.

[0019] All of the frame pieces have a ledge 6 on the side surface facing the opening. This ledge is intended to fill the space underneath the part of the window frame 20 projection over the window casing 29, i.e. between the casing and the circumference of the window, and it may further function as a bearing for the window. The dimensions of the opening below these ledges are therefore somewhat smaller than those of the window, while the dimensions of the opening above are slightly larger. Typically, the ledges have a width of 5-15 millimetres and the oversize of the uppermost part of the opening in relation to the window amounts to 1-2 millimetres on each side.

[0020] It is preferred that the dimensions of the opening receiving the window correspond as closely as possible to the dimensions of the window to thereby achieve the tightest possible transition between the window and the insulating frame. The insulating frame may e.g. be attached to the window frame by gluing or the insulating frame may be made from an elastic material, allowing an expansion of the insulating frame during mounting and a subsequent contraction thereof to a close fit with the window frame. The latter may be achieved by forming the insulating frame from a soft foamed plastic.

[0021] Figs. 2 and 3 shows the lower part 7 of the frame below the ledges as rectangular and massive, but it is to be understood, that it may also shaped as e.g. a trapezoid and that the ledges may be replaced by continuous or local projections (not shown). In the embodiment shown, the ledges are capable of supporting the entire weight of the window, but it is to be understood that the window may also be supported wholly or partly by mounting brackets. Likewise, it is to be understood that ledges or projections need not be present on any of or on all four frame pieces 2a, 2b, 3, 4 and that they need not be arranged symmetrically or evenly. Further, the ledges may be provided as or strengthened by separate members (not shown), which are embedded in or attached to the frame pieces.

[0022] The frame itself, which is preferably made of a foamed polymer, may for example be manufactured by moulding in one piece or by joining of four bevelled pieces. When using separate pieces these may be manufactured by extrusion of a continuous profile, which is subsequently cut to size in the appropriate lengths. This way

of making the frame is particularly preferred, as the same profile may be used for frames of several different sizes by merely adjusting the length of each piece. In addition, the need for a number of different moulds is avoided.

[0023] The joining of separate frame pieces may be achieved by means of brackets, mechanical fastening means, welding, gluing etc. or a combination of such methods and separate corner sections may be employed.

[0024] Since the insulating frame serves as a support for the window, a frame material with sufficient strength must of course be chosen. The joining of the frame may be facilitated by choosing a relatively stiff material.

[0025] As may be seen from Fig. 1 and in particular Figs. 2 and 3, the cross section of the bottom frame piece 4 differs from that of the side and top frame pieces 2a,2b,3.

[0026] The upper sections of the side and top pieces have the cross sectional shape of a right-angled triangle with an apex angle of approximately 20 degrees. The distance from the ledge 6 on the inner surface to the top of the upper- section 8 corresponds approximately to the height of the window frame 20, as may also be seen from Fig. 4. The window frame height is typically approximately 10 cm for standard type roof windows, but vary depending on the type, design and overall size of the window.

[0027] When using an insulating frame 1, which overlaps almost the entire height of the window frame 20, the apex of the triangle will be located just below the cover member 21 covering the upper surface of the window frame. However, a distance corresponding to e.g. three quarters of the window frame height may be adequate to provide a satisfactory insulation and such a reduction may ease the mounting of the flashing members 22 and cover members 21.

[0028] Fig. 3 shows the bottom frame piece 4 in detail. This frame piece has an upper section 8 with the general shape of an isosceles triangle, but where the hypotenuse is replaced by a curved surface. This shape corresponds closely to the room available underneath a traditional lower flashing 23 as used with standard type roof window 19 as may be seen from Fig. 5. By choosing this shape the need for adaptation of the well-tried system of flashing member 23, cover member 24 and skirt member 25 for ensuring a water-tight transition between the lowermost part of the window and the roofing below it, is avoided.

[0029] As may also be seen from Fig. 5, the shape of the lower section of the top insulating frame piece 3 may vary from the one shown in Fig. 1. Thereby the insulating properties may be improved and the insulating frame may be adapted to correspond to the shape of the side casing 29. Such an adaptation has no influence on the design of the upper section of the insulating frame piece and thus does not necessitate an adaptation of the flashing member 30 and cover member 31 used at the top of the window 19.

[0030] The insulating frame shown in Fig. 1-3 is intended

for use with a centre-hung window. It is to be understood, that some factors may need adaptation if the frame is to be used with other types of windows. Likewise, an insulating frame for mounting of a centre-hung window may be provided with depressions (not shown) in the side frame pieces 2a,2b below the hinge axis to thereby give room for the side cover members during opening of the window. This may e.g. be achieved by providing two side frame pieces at each side, one above and one below the hinge axis.

[0031] In Figs. 1 and 2 the outer surface 9 of the upper section 8 of the side frame piece are shown to have projecting buds 10 arranged in a continuous pattern. The purpose thereof is to create an air gap between the surface of the insulating frame 1 and an underroof collar 26, which, as shown in Fig. 6, is attached to the insulating frame to provide a watertight transition to the underroof. The air gap 27 ensures a ventilation of the space between the underroof and the insulating frame, which reduces condensation. In Fig. 6 arrows indicate the airflow.

[0032] The buds may be replaced by any other surface profile, which will ensure the ventilation, e.g. a series of recesses or grooves extending perpendicularly to the length of the frame piece.

[0033] Advantageously, all of the frame pieces are provided with such ventilation aids 10, but the aids may be different on the different frame pieces and may be distributed unevenly over the surface thereof. It is, however, to be understood that the ventilation aids may be completely omitted if using an underroof or underroof collar of a material, which allows diffusion of vapour towards the outside.

[0034] In fig. 6 the attachment of the underroof collar 26 to the insulating frame 1 is achieved by means of clamps 28 but any suitable attachment means may be used as long as the air gap is ensured. In addition, the underroof collar may be attached to the window frame 20 (not shown in Fig. 6) above the insulating frame.

[0035] If the underroof is itself made from a relatively flexible sheet material, it may be attached directly to the insulating frame in a manner corresponding to the one shown in Fig. 6 or to the window frame 20 without the need for an underroof collar 26.

Claims

1. An insulating frame (1) for insulating a roof window (19), said insulating frame comprising two side insulating frame pieces (2a,2b) intended for being located at the sides of the window in the mounted state, a top insulating frame piece (3) intended for being located uppermost in the mounted state, and a bottom insulating frame piece (4) intended for being located lowermost in the mounted state, said insulating frame pieces (2a,2b,3,4) surrounding an opening (5), the shape of which corresponds substantially to the shape of the roof window and the dimensions of

which are larger than or corresponding to the outer dimensions of the roof window, each insulating frame piece having an inner side surface facing the opening, a bottom surface and at least one outer side surface facing away from the opening, **characterized in that** each of the insulating frame pieces comprises a lower section (7) and an upper section (8), where the upper section has a first side facing the opening and a second side (9) facing away from the opening, a bottom portion of the upper section having a predetermined maximum width, the width between the first side and the second side decreasing from said maximum width in the height direction of the upper section such that the second side forms a predetermined angle other than perpendicular with the bottom portion, wherein the two side insulating frame pieces (2a,2b) have upper sections (8) with substantially identical cross sections and the upper section (8) of the bottom insulating frame piece (4) has a cross section that differs from that of the side insulating frame pieces,

where the first sides of the top and side insulating frame pieces (2a,2b,3) have the same height, this height being such that a relatively large portion of corresponding window frame pieces (20) is overlapped by the upper section of the top and side insulating frame pieces in the mounted state and such that a larger portion of corresponding window frame pieces (20) is overlapped by the upper section of the top and side insulating frame pieces in the mounted state than the portion of a corresponding window frame piece (20) overlapped by the upper section of the bottom insulating frame piece (4) in the mounted state,

where the upper sections (8) of the top and side insulating frame pieces (2a,2b,3) have the cross-sectional shape of a right-angled triangle with an apex angle of 20-45 degrees, and

where the upper section (8) of the bottom insulating frame piece (4) has the general shape of an isosceles triangle, but where the hypotenuse forming the second side is replaced by a curved and concave surface,

that ledges or projections are provided on the inner side surfaces of all of the insulating frame pieces, these ledges or projections being intended to serve as a bearing for the window, and

that the insulating frame pieces (2a,2b,3,4) are provided with one or more stiffening members.

2. An insulating frame according to claim 1, **characterized in that** the stiffening member(s) is/are lists or strips.
3. An insulating frame according to claim 1 or 2, **characterized in that** the stiffening member may be used for supporting and attachment of mounting brackets

for the roof window (19).

4. An insulating frame according to any of claims 1-3, **characterized in that** the width of the lower section (7) of one or more frame pieces (2a,2b,3,4) decreases continuously or stepwise in the height direction towards the upper section (8).
5. An insulating frame according to any of claims 1-4, **characterized in that** it is made from moulded or extruded foam plastic, such as polyurethane foam, or any other suitable material.
6. An insulating frame according to any of claims 1-5, **characterized in that** the second side (9) of one or more of the insulating frame pieces (2a,2b,3,4) are provided with projections (10) and/or recesses allowing air passage between and/or through them in a direction perpendicular to the length of the insulating frame piece.
7. A kit for mounting and insulation of a roof window (19), comprising an insulating frame (1), an under-roof collar (26), at least one flashing member (22,23,30) and at least one cover member (21,24,31), said insulating frame including two side insulating frame pieces (2a,2b) intended for being located at the sides of the window in the mounted state, a top insulating frame piece (3) intended for being located uppermost in the mounted state, and a bottom insulating frame piece (4) intended for being located lowermost in the mounted state, and said insulating frame surrounding an opening (5) larger than or corresponding to the outer dimensions of the roof window to be mounted, so that the window may be placed within the opening, each insulating frame piece having an inner side surface facing the opening, **characterized in that** each of the insulating frame pieces (2a,2b,3,4) comprises a lower section and an upper section, said upper section (8) having a first side facing the opening and a second side (9) facing a flashing and/or cover member (21,22,23,24,30,31) when mounted, a bottom portion of the upper section having a predetermined maximum width, the width between the first side and the second side decreasing from said maximum width in the height direction of the upper section such that the second side forms a predetermined angle other than perpendicular with the bottom portion, and the first side of the top and side insulating frame pieces having the same height, said height being such that a relatively large portion of the distance existing between a lowermost level of the flashing member and an uppermost level of the cover member in the mounted state is overlapped by the upper section of the top and side insulating frame pieces and such that a larger portion of this

- distance is overlapped by the upper section of the top and side insulating frame pieces in the mounted state than the portion of the corresponding distance overlapped by the upper section of the bottom insulating frame piece (4) in the mounted state, that the underroof collar (26) may be brought into contact with the insulating frame at or above the bottom portion of the upper section of the insulating frame, that one or more of the flashing and/or cover members (21,22,23,24,30,31) are shaped with angles corresponding to the angle determined by the decreasing width of the insulating frame piece, that the two side insulating frame pieces (2a,2b) have upper sections (8) with substantially identical cross sections and that the upper section (8) of the bottom insulating frame piece (4) has a cross section that differs from that of the side insulating frame pieces, where the upper sections (8) of the top and side insulating frame pieces (2a,2b,3) have the cross-sectional shape of a right-angled triangle with an apex angle of 20-45 degrees, and where the upper section (8) of the bottom insulating frame piece (4) has the general shape of an isosceles triangle, but where the hypotenuse forming the second side is replaced by a curved and concave surface, that ledges or projections are provided on the inner side surfaces of all of the insulating frame pieces, these ledges or projections being intended to serve as a bearing for the window, and that the insulating frame pieces (2a,2b,3,4) are provided with one or more stiffening members.
8. A kit according to claim 7, **characterized** in that upper section (8) of the insulating frame piece is substantially wedge shaped with an apex angle of 10-45 degrees and that the corresponding flashing and cover members (21,22,23,24,30,31) have interior bending angles approximately 90 degrees larger than said apex angle.
 9. A kit according to claim 7 or 8, **characterized** in that the second side of one or more of the insulating frame pieces are provided with projections and/or recesses allowing ventilation of the space between the insulating frame piece (2a,2b,3,4) and the underroof collar (26).
 10. A kit according to any of the claims 7-9, **characterized in that** the underroof collar (26) is attached to the insulating frame (1) by any suitable means such as welding, gluing, mechanical fastening means, such as clamps, or friction between the material of the underroof collar and the insulating frame.
 11. An inclined roof structure with a roof window (19)

mounted in an insulating frame (1), said roof structure including a roofing, a supporting, structure and an underroof (26) comprising at least an external waterproof membrane and an insulating layer, said underroof being located between the roofing and the supporting structure and comprising an opening for mounting of the window, said insulating frame including two side insulating frame pieces (2a,2b) located at the sides of the window, a top insulating frame piece (3) located uppermost, and a bottom insulating frame piece (4) located lowermost, and said insulating frame comprising a lower surface intended for resting against the upper surface of the underroof and with an opening (5), which corresponds to the opening in the underroof and which is larger than or corresponding to the outer dimensions of the roof window, so that the window may be placed within the opening in the insulating frame,

characterized in that

the insulating frame pieces (2a,2b,3,4) have a lower section and an upper section, said upper section having a first side facing a corresponding window frame piece and a second side (9) facing a flashing and/or cover member, a bottom portion of the upper section having a predetermined maximum width, the width between the first side and the second side decreasing from said maximum width in the height direction of the upper section such that the second side forms a predetermined angle other than perpendicular with the bottom portion, and the first sides of the top and side insulating frame pieces having the same height, said height being such that a relatively large portion of corresponding window frame pieces is overlapped by the upper sections thereof and such that a larger portion of corresponding window frame pieces (20) is overlapped by the upper section of the top and side insulating frame pieces than the portion of a corresponding window frame piece (20) overlapped by the upper section of the bottom insulating frame piece (4), that the two side insulating frame pieces (2a,2b) have upper sections (8) with substantially identical cross sections and that the upper section (8) of the bottom insulating frame piece (4) has a cross section that differs from that of the side insulating frame pieces, where the upper sections (8) of the top and side insulating frame pieces (2a,2b,3) have the cross-sectional shape of a right-angled triangle with an apex angle of 20-45 degrees, and where the upper section (8) of the bottom insulating frame piece (4) has the general shape of an isosceles triangle, but where the hypotenuse forming the second side is replaced by a curved and concave surface, that ledges or projections are provided on all of the insulating frame pieces, these ledges or projections

serving as a bearing for the window, and that the insulating frame pieces (2a;2b,3,4) are provided with one or more stiffening members.

Patentansprüche

1. Dämmrahmen (1) zum Isolieren eines Dachfensters (19), wobei der Dämmrahmen zwei seitliche Dämmrahmenteile (2a, 2b), die vorgesehen sind, im montierten Zustand an den Seiten des Fensters angeordnet zu werden, ein oberes Dämmrahmenteil (3), das vorgesehen ist, im montierten Zustand oberhalb angeordnet zu werden, und ein unteres Dämmrahmenteil (4), das vorgesehen ist, im montierten Zustand unterhalb angeordnet zu werden, aufweist, wobei die Dämmrahmenteile (2a, 2b, 3, 4) eine Öffnung (5) umgeben, deren Form im Wesentlichen der Form des Dachfensters entspricht und deren Abmessungen größer als die äußeren Abmessungen des Dachfensters sind oder diesen entsprechen, wobei jedes Dämmrahmenteil eine innere Seitenfläche, die zu der Öffnung weist, eine untere Fläche und wenigstens eine äußere Seitenfläche aufweist, die weg von der Öffnung weist,
dadurch gekennzeichnet, dass jedes der Dämmrahmenteile einen unteren Abschnitt (7) und einen oberen Abschnitt (8) aufweist, wobei der obere Abschnitt eine erste Seite, die zu der Öffnung weist, und eine zweite Seite (9) hat, die weg von der Öffnung weist, wobei ein unterer Bereich des oberen Abschnitts eine vorgegebene maximale Breite hat, wobei die Breite zwischen der ersten Seite und der zweiten Seite von der maximalen Breite in der Höhenrichtung des oberen Abschnitts abnimmt, so dass die zweite Seite einen vorgegebenen Winkel abweichend von einem rechten Winkel mit dem unteren Bereich bildet, wobei die zwei seitlichen Dämmrahmenteile (2a, 2b) obere Abschnitte (8) mit im Wesentlichen identischen Querschnitten haben und der obere Abschnitt (8) des unteren Dämmrahmentails (4) einen Querschnitt hat, der von dem der seitlichen Dämmrahmenteile abweicht, wobei die ersten Seiten des oberen und der seitlichen Dämmrahmenteile (2a, 2b, 3) dieselbe Höhe haben, wobei diese Höhe so ist, dass ein relativ großer Teil der entsprechenden Fensterrahmenteile (20) von dem oberen Abschnitt des oberen und der seitlichen Dämmrahmenteile im montierten Zustand überlappt wird und dass ein größerer Teil von entsprechenden Fensterrahmenteilen (20) von dem oberen Abschnitt des oberen und der seitlichen Dämmrahmenteile im montierten Zustand überlappt wird als der Teil eines entsprechenden Fensterrahmentails (20), der durch den oberen Abschnitt des unteren Dämmrahmentails (4) im montierten Zustand überlappt wird,

wobei die oberen Abschnitte (8) des oberen und der seitlichen Dämmrahmenteile (2a, 2b, 3) die Querschnittsform eines rechtwinkligen Dreiecks haben mit einem Winkel an der Spitze von 20 bis 45 Grad und

wobei der obere Abschnitt (8) des unteren Dämmrahmentails (4) die allgemeine Form eines gleichschenkligen Dreiecks hat, wobei aber die Hypotenuse, die die zweite Seite bildet, durch eine gekrümmte und konkave Fläche ersetzt ist, dass Absätze oder Vorsprünge an den inneren Seitenflächen von allen der Dämmrahmenteile vorgesehen sind, wobei diese Absätze oder Vorsprünge vorgesehen sind, als Lager für das Fenster zu dienen, und dass die Dämmrahmenteile (2a, 2b, 3, 4) mit einem oder mehreren Versteifungselementen versehen sind.

2. Dämmrahmen nach Anspruch 1, **dadurch gekennzeichnet, dass** das/die Versteifungselement(e) Leisten und/oder Bänder umfasst(en).
3. Dämmrahmen nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das Versteifungselement zum Halten und zur Befestigung von Befestigungsbügeln für das Dachfenster (19) verwendet werden kann.
4. Dämmrahmen nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Breite des unteren Abschnitts (7) von einem oder mehreren Rahmenteilen (2a, 2b, 3, 4) kontinuierlich oder stufenweise in der Höhenrichtung zum oberen Abschnitt (8) abnimmt.
5. Dämmrahmen nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** er aus Spritzguss- oder extrudiertem geschäumtem Kunststoff hergestellt ist, wie beispielsweise Polyurethan-Schaum, oder anderem geeignetem Material.
6. Dämmrahmen nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die zweite Seite (9) von einem oder mehreren der Dämmrahmenteile (2a, 2b, 3, 4) mit Vorsprüngen (10) und/oder Aussparungen versehen ist, um einen Luftdurchgang dazwischen und/oder durch sie hindurch in einer Richtung senkrecht zu der Länge des Dämmrahmentails zu ermöglichen.
7. Bausatz zum Montieren und Isolieren eines Dachfensters (19) umfassend einen Dämmrahmen (1), einen Unterdachkragen (26), wenigstens ein Verkleidungselement (22, 23, 30) und wenigstens ein Abdeckungselement (21, 24, 31), wobei der Dämmrahmen zwei seitliche Dämmrahmenteile (2a, 2b), die vorgesehen sind, im montierten Zustand an den Seiten des Fensters angeordnet zu werden, ein obe-

res Dämmrahmenteil (3), das vorgesehen ist, im montierten Zustand oberhalb angeordnet zu werden, und ein unteres Dämmrahmenteil (4), das vorgesehen ist, im montierten Zustand unterhalb angeordnet zu werden, umfasst, und wobei der Dämmrahmen eine Öffnung (5) umgibt, die größer als die äußeren Abmessungen des Dachfensters, das montiert werden soll, ist oder diesen entspricht, so dass das Fenster in der Öffnung angeordnet werden kann, wobei jedes Dämmrahmenteil eine innere Seitenfläche hat, die zu der Öffnung weist, **dadurch gekennzeichnet, dass**

jedes der Dämmrahmentile (2a, 2b, 3, 4) einen unteren Abschnitt und einen oberen Abschnitt aufweist, wobei der obere Abschnitt (8) eine erste Seite, die zu der Öffnung weist, und eine zweite Seite (9) hat, die zu einem Verkleidungs- und/oder einem Abdeckungselement (21, 22, 23, 24, 30, 31) weist, wenn sie montiert sind, wobei ein unterer Bereich des oberen Abschnitts eine vorgegebene maximale Breite hat, wobei die Breite zwischen der ersten Seite und der zweiten Seite von der maximalen Breite in der Höhenrichtung des oberen Abschnitts abnimmt, so dass die zweite Seite einen vorgegebenen Winkel abweichend von einem rechten Winkel mit dem unteren Bereich bildet, und wobei die erste Seite des oberen und der seitlichen Dämmrahmentile dieselbe Höhe haben, wobei die Höhe so ist, dass ein relativ großer Teil des Abstands, der zwischen einem unteren Niveau des Verkleidungselements und einem oberen Niveau des Abdeckungselements im montierten Zustand vorliegt, durch den oberen Abschnitt des oberen und der seitlichen Dämmrahmentile überlappt wird und dass ein größerer Teil dieses Abstands durch den oberen Abschnitt des oberen und der seitlichen Dämmrahmentile im montierten Zustand überlappt wird als der Teil des entsprechenden Abstands, der durch den oberen Abschnitt des unteren Dämmrahmentils (4) im montierten Zustand überlappt wird,

dass der Unterdachkragen (26) in Kontakt mit dem Dämmrahmen am oder über dem unteren Bereich des oberen Abschnitts des Dämmrahmens gebracht werden kann,

dass eines oder mehrere der Verkleidungs- und/oder Abdeckungselemente (21, 22, 23, 24, 30, 31) mit Winkeln geformt sind, die dem Winkel entsprechen, der durch die abnehmende Breite des Dämmrahmentils bestimmt wird,

dass die zwei seitlichen Dämmrahmentile (2a, 2b) obere Abschnitte (8) mit im Wesentlichen identischen Querschnitten haben und dass der obere Abschnitt (8) des unteren Dämmrahmentils (4) einen Querschnitt hat, der sich von dem der seitlichen Dämmrahmentile unterscheidet,

wobei die oberen Abschnitte (8) des oberen und der seitlichen Dämmrahmentile (2a, 2b, 3) die Querschnittsform eines rechtwinkligen Dreiecks mit ei-

nem Winkel an der Spitze von 20 bis 45 Grad haben und

wobei der obere Abschnitt (8) des unteren Dämmrahmentils (4) die allgemeine Form eines gleichschenkligen Dreiecks hat, wobei aber die Hypotenuse, die die zweite Seite bildet, durch eine gekrümmte und konkave Fläche ersetzt ist, dass Absätze oder Vorsprünge an den inneren Seitenflächen von allen der Dämmrahmentile vorgesehen sind, wobei diese Absätze oder Vorsprünge vorgesehen sind, als Lager für das Fenster zu dienen, und dass die Dämmrahmentile (2a, 2b, 3, 4) mit einem oder mehreren Versteifungselementen versehen sind.

8. Bausatz nach Anspruch 7, **dadurch gekennzeichnet, dass** der obere Abschnitt (8) des Dämmrahmentils im Wesentlichen keilförmig mit einem Winkel an der Spitze von 10 bis 45 Grad ist und dass die entsprechenden Verkleidungs- und Abdeckungselemente (21, 22, 23, 24, 30, 31) innere Biegewinkel haben, die um etwa 90 Grad größer als der Winkel an der Spitze sind.
9. Bausatz z nach Anspruch 7 oder 8, **dadurch gekennzeichnet, dass** die zweite Seite von einem oder mehreren der Dämmrahmentile mit Vorsprüngen und/oder Aussparungen versehen ist, die eine Belüftung des Raums zwischen den Dämmrahmentilen (2a, 2b, 3, 4) und dem Unterdachkragen (26) ermöglichen.
10. Bausatz nach einem der Ansprüche 7 bis 9, **dadurch gekennzeichnet, dass** der Unterdachkragen (26) an dem Dämmrahmen (1) durch ein geeignetes Mittel, wie Schweißen, Kleben, mechanische Befestigungsmittel, beispielsweise Klemmen, oder durch Reibschluss zwischen dem Material des Unterdachkragens und des Dämmrahmens, befestigt ist.
11. Geneigter Dachaufbau mit einem Dachfenster (19), das in einem Dämmrahmen (1) montiert ist, wobei der Dachaufbau eine Dacheindeckung, eine Stützstruktur und ein Unterdach (26) mit wenigstens einer äußeren wasserdichten Membran und einer Dämmschicht umfasst, wobei das Unterdach zwischen der Dacheindeckung und der Stützstruktur angeordnet ist und eine Öffnung zum Montieren des Fensters aufweist, wobei der Dämmrahmen zwei seitliche Dämmrahmentile (2a, 2b), die an den Seiten des Fensters angeordnet sind, ein oberes Dämmrahmenteil (3), das oberhalb angeordnet ist, und ein unteres Dämmrahmenteil (4) umfasst, das unterhalb angeordnet ist, und wobei der Dämmrahmen eine untere Fläche aufweist, die vorgesehen ist, auf der oberen Fläche des Unterdachs aufzuliegen, und mit einer Öffnung (5), die der Öffnung in dem Unterdach entspricht und

die größer als die äußeren Abmessungen des Dachfensters ist oder diesen entspricht, so dass das Fenster in der Öffnung in dem Dämmrahmen angeordnet werden kann, **dadurch gekennzeichnet, dass**

die Dämmrahmenteile (2a, 2b, 3, 4) einen unteren Abschnitt und einen oberen Abschnitt aufweisen, wobei der obere Abschnitt eine erste Seite, die zu einem entsprechenden Fensterrahmenteil weist, und eine zweite Seite (9) hat, die zu einem Verkleidungs- und/oder Abdeckungselement weist, wobei ein unterer Bereich des oberen Abschnitts eine vorgegebene maximale Breite hat, wobei die Breite zwischen der ersten Seite und der zweiten Seite von der maximalen Breite in der Höhenrichtung des oberen Abschnitts abnimmt, so dass die zweite Seite einen vorgegebenen Winkel abweichend von einem rechten Winkel mit dem unteren Bereich bildet, und wobei die ersten Seiten des oberen und der seitlichen Dämmrahmenteile dieselbe Höhe haben, wobei die Höhe so ist, dass ein relativ großer Teil der entsprechenden Fensterrahmenteile durch die oberen Abschnitte davon überlappt wird und dass ein größerer Teil der entsprechenden Fensterrahmenteile (20) durch den oberen Abschnitt des oberen und der seitlichen Dämmrahmenteile überlappt wird als der Teil eines entsprechenden Fensterrahmentails (20), der von dem oberen Abschnitt des unteren Dämmrahmentails (4) überlappt wird, dass die zwei seitlichen Dämmrahmenteile (2a, 2b) obere Abschnitte (8) mit im Wesentlichen identischem Querschnitt haben und dass der obere Abschnitt (8) des unteren Dämmrahmentails (4) einen Querschnitt hat, der sich von dem der seitlichen Dämmrahmenteile unterscheidet, wobei die oberen Abschnitte (8) des oberen und der seitlichen Dämmrahmenteile (2a, 2b, 3) die Querschnittsform eines rechtwinkligen Dreiecks mit einem Winkel an der Spitze von 20 bis 45 Grad haben und wobei der obere Abschnitt (8) des unteren Dämmrahmentails (4) die allgemeine Form eines gleichschenkligen Dreiecks hat, wobei aber die Hypotenuse, die die zweite Seite bildet, durch eine gekrümmte und konkave Fläche ersetzt ist, dass Absätze oder Vorsprünge an allen der Dämmrahmenteile vorgesehen sind, wobei diese Absätze oder Vorsprünge als ein Lager für das Fenster dienen und dass die Dämmrahmenteile (2a, 2b, 3, 4) mit einem oder mehreren Versteifungselementen versehen sind.

Revendications

1. Châssis isolant (1) pour isoler une lucarne de toit (19), ledit châssis isolant comportant deux pièces latérales de châssis isolant (2a, 2b) conçues pour

être placées au niveau des côtés de la lucarne à l'état monté, une pièce supérieure de châssis isolant (3) conçue pour être placée, à l'état monté, dans la position la plus élevée et une pièce inférieure de châssis isolant (4) conçue pour être placée, à l'état monté, dans la position la plus basse, lesdites pièces de châssis isolant (2a, 2b, 3, 4) entourant une ouverture (5) dont la forme correspond essentiellement à la forme de la lucarne de toit et dont les dimensions sont supérieures ou correspondantes aux dimensions extérieures de la lucarne de toit, chaque pièce de châssis isolant présentant une surface latérale intérieure tournée vers l'ouverture, une surface inférieure et au moins une surface latérale extérieure faisant face à l'opposé de l'ouverture, **caractérisé en ce que** chacune des pièces de châssis isolant comporte une section inférieure (7) et une section supérieure (8), dans lequel la section supérieure présente un premier côté faisant face à l'ouverture et un deuxième côté (9) faisant face à l'opposé de l'ouverture, une partie inférieure de la section supérieure présentant une largeur maximale prédéterminée, la largeur entre le premier côté et le deuxième côté décroissant depuis ladite largeur maximale dans la direction de la hauteur de la section supérieure de manière que le deuxième côté forme un angle prédéterminé autre que perpendiculaire avec la partie inférieure,

dans lequel les deux pièces latérales de châssis isolant (2a, 2b) comportent des sections supérieures (8) dotées de sections transversales essentiellement identiques et la section supérieure (8) de la pièce inférieure de châssis isolant (4) présente une section transversale qui diffère de celle des pièces latérales de châssis isolant, où les premiers côtés des pièces latérales et supérieure de châssis isolant (2a, 2b, 3) présente la même hauteur, cette hauteur étant telle qu'une partie relativement grande des pièces correspondantes (20) du châssis de lucarne est recouverte par la section supérieure des pièces supérieure et latérales de châssis isolant, à l'état monté, et de telle sorte qu'à l'état monté, une partie plus grande des pièces correspondantes (20) du châssis de lucarne est recouverte par la section supérieure des pièces supérieure et latérales de châssis isolant que la partie de la pièce correspondante du châssis de lucarne (20) recouverte par la section supérieure de la pièce inférieure de châssis isolant (4) à l'état monté,

où les sections supérieures (8) des pièces latérales et supérieure de châssis isolant (2a, 2b, 3) présentent la configuration en coupe transversale d'un triangle rectangle présentant un angle au sommet de 20 à 45 degrés, et

où la section supérieure (8) de la pièce inférieure de châssis isolant (4) présente la configuration générale d'un triangle isocèle, mais où l'hypoténuse formant le deuxième côté est remplacé par une surface cour-

be et concave,

en ce que des rebords ou des parties en saillie sont prévues sur les surfaces latérales intérieures de la totalité des pièces de châssis isolant, ces rebords ou ces parties en saillie étant conçu(e)s pour servir de support pour la lucarne, et

en ce que les pièces de châssis isolant (2a, 2b, 3, 4) sont dotées d'un ou de plusieurs éléments de renforcement.

2. Châssis isolant selon la revendication 1, **caractérisé en ce que** l'élément (les éléments) de renforcement est (sont) des barres d'appui ou des bandes.
3. Châssis isolant selon la revendication 1 ou 2, **caractérisé en ce que** l'élément de renforcement peut être utilisé pour le support et la fixation de pattes de montage destinées à la lucarne de toit (19).
4. Châssis isolant selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** la largeur de la section inférieure (7) d'une ou de plusieurs pièces de châssis (2a, 2b, 3, 4) diminue de manière continue ou par paliers dans la direction de la hauteur vers la section supérieure (8).
5. Châssis isolant selon l'une quelconque des revendications 1 à 4, **caractérisé en ce qu'il** est fabriqué à partir de mousse plastique moulée ou extrudée, ou d'un quelconque autre matériau approprié.
6. Châssis isolant selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** le deuxième côté (9) d'une ou de plusieurs des pièces de châssis isolant (2a, 2b, 3, 4) est doté de parties en saillie (10) et/ou d'évidements permettant le passage de l'air entre et/ou à travers eux (elles) dans une direction perpendiculaire à la longueur de la pièce de châssis isolant.
7. Kit destiné au montage et à l'isolation d'une lucarne de toit (19), comportant un châssis isolant (1), un collier de sous-toiture (26), au moins un élément de solin (22, 23, 30) et au moins un élément de couverture (21, 24, 31), ledit châssis isolant comportant deux pièces latérales de châssis isolant (2a, 2b) conçues pour être placées au niveau des côtés de la lucarne, à l'état monté, une pièce supérieure de châssis isolant (3) conçue pour être placée, à l'état monté, dans la position la plus élevée et une pièce inférieure de châssis isolant (4) conçue pour être placée, à l'état monté, dans la position la plus basse, et ledit châssis isolant entourant une ouverture (5) plus grande que les , ou correspondant aux, dimensions extérieures de la lucarne de toit à monter, de sorte que la lucarne peut être placée à l'intérieur de l'ouverture, chaque pièce de châssis isolant présentant une surface latérale intérieure faisant face à

l'ouverture,

caractérisé en ce que

chacune des pièces de châssis isolant (2a, 2b, 3, 4) comporte une section inférieure et une section supérieure, ladite section supérieure (8) présentant un premier côté faisant face à l'ouverture et un deuxième côté (9) faisant face à un élément de solin et/ou de couverture (21, 22, 23, 24, 30, 31) lorsqu'il est monté, une partie inférieure de la section supérieure présentant une largeur maximale prédéterminée, la largeur entre le premier côté et le deuxième côté décroissant à partir de ladite largeur maximale dans la direction de la hauteur de la section supérieure de manière que le deuxième côté forme un angle prédéterminé autre que perpendiculaire avec la partie inférieure, et le premier côté des pièces latérales et supérieure de châssis isolant présentant la même hauteur, ladite hauteur étant telle qu'une partie relativement grande de la distance existant entre le niveau le plus bas de l'élément de solin et le niveau le plus élevé de l'élément de couverture, à l'état monté, est recouverte par la section supérieure des pièces supérieure et latérales du châssis isolant et de telle sorte qu'une partie plus grande de cette distance soit recouverte par la section supérieure des pièces supérieure et latérales de châssis isolant, à l'état monté, que la partie de la distance correspondante recouverte par la section supérieure de la pièce inférieure de châssis isolant (4), à l'état monté,

en ce que le collier de sous-toiture (26) peut être amené en contact avec le châssis isolant au niveau, ou au-dessus, de la partie inférieure de la section supérieure du châssis isolant,

en ce qu'un ou plusieurs élément(s) de solin et/ou de couverture (21, 22, 23, 24, 30, 31) (est) sont configuré(s) avec des angles correspondant à l'angle déterminé par la largeur décroissante de la pièce de châssis isolant,

en ce que les deux pièces latérales de châssis isolant (2a, 2b) comportent des sections supérieures (8) dotées de sections transversales essentiellement identiques et **en ce que** la section supérieure (8) de la pièce inférieure de châssis isolant (4) présente une section transversale qui diffère de celle des pièces latérales de châssis isolant,

où les sections supérieures (8) des pièces latérales et supérieure du châssis isolant (2a, 2b, 3) présentent la configuration en coupe transversale d'un triangle rectangle doté d'un angle au sommet de 20 à 45 degrés, et

où la section supérieure (8) de la pièce inférieure de châssis isolant (4) présente la configuration générale d'un triangle isocèle, mais où l'hypoténuse formant le deuxième côté est remplacée par une surface courbe et concave,

en ce que des rebords ou des parties en saillie sont prévu(e)s sur les surfaces latérales intérieures de la totalité des pièces de châssis isolant, ces rebords

ou ces parties en saillie étant conçu(e)s pour servir de support pour la lucarne, et
en ce que les pièces de châssis isolant (2a, 2b, 3, 4) sont pourvues d'un ou de plusieurs élément(s) de renforcement.

8. Kit selon la revendication 7, **caractérisé en ce que** la section supérieure (8) de la pièce de châssis isolant est essentiellement configurée en forme de cale dotée d'un angle au sommet de 10 à 45 degrés et **en ce que** les éléments correspondants de solin et de couverture (21, 22, 23, 24, 30, 31) présentent des angles de courbure intérieure de 90 degrés environ plus grands que ledit angle au sommet.
9. Kit selon la revendication 7 ou 8, **caractérisé en ce que** le deuxième côté de l'une ou de plusieurs des pièces de châssis isolant est pourvu de parties en saillie et/ou d'évidements permettant la ventilation de l'espace compris entre la pièce de châssis isolant (2a, 2b, 3, 4) et le collier de sous-toiture (26).
10. Kit selon l'une quelconque des revendications 7 à 9, **caractérisé en ce que** le collier de sous-toiture (26) est fixé sur le châssis isolant (1) par de quelconques moyens appropriés tels que soudure, collage, moyens de fixation mécaniques, comme des brides de fixation, ou par friction entre le matériau du collier de sous-toiture et le châssis isolant.
11. Structure inclinée de toit dotée d'une lucarne de toit (19) montée dans un châssis isolant (1), ladite structure de toit comportant une couverture de toit, une structure de support et une sous-toiture (26) comprenant au moins une membrane externe imperméable et une couche isolante, ladite sous-toiture étant placée entre la couverture de toit et la structure de support et comprenant une ouverture destinée au montage de la lucarne, ledit châssis isolant comportant deux pièces latérales de châssis isolant (2a, 2b) placées au niveau des côtés de la lucarne, une pièce de châssis isolant supérieure (3) placée à la position la plus élevée, et une pièce inférieure de châssis isolant (4) placée à la position la plus basse, et ledit châssis isolant comprenant une surface inférieure conçue pour reposer contre la surface supérieure de la sous-toiture et avec une ouverture qui (5) qui correspond à l'ouverture dans la sous-toiture et qui est plus grande que les, ou qui correspond aux, dimensions extérieures de la lucarne de toit, de sorte que la lucarne peut être placée à l'intérieur de l'ouverture dans le châssis isolant,
caractérisée en ce que les pièces de châssis isolant (2a, 2b, 3, 4) comportent une section inférieure et une section supérieure, ladite section supérieure ayant un premier côté faisant face à une pièce de châssis de lucarne corres-

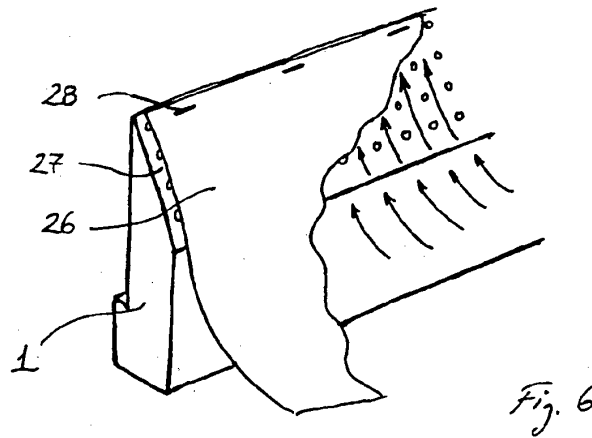
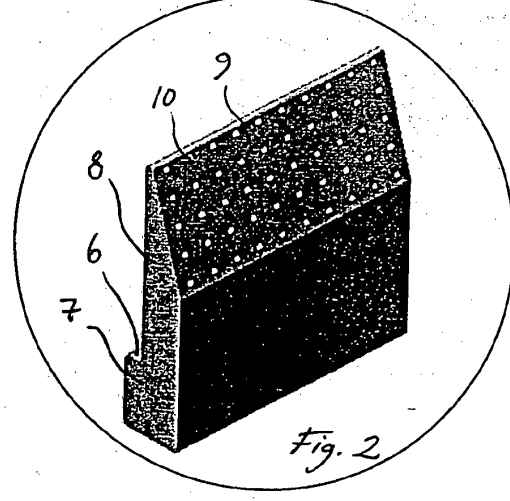
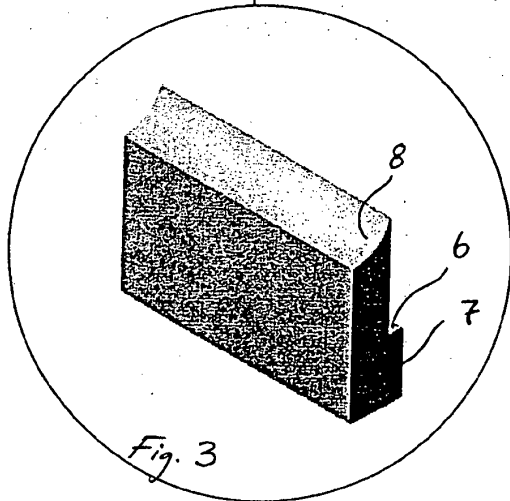
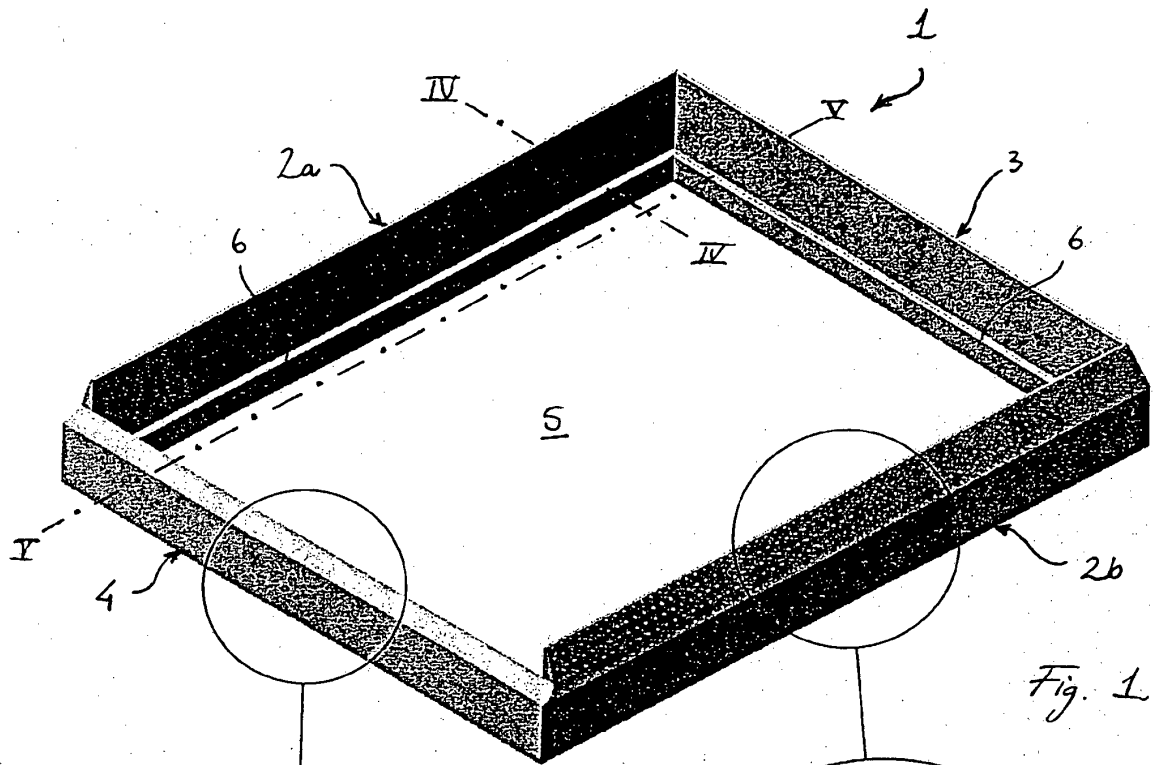
pondante et un deuxième côté (9) faisant face à un élément de couverture et/ou de solin, une partie inférieure de la section supérieure présentant une largeur maximale prédéterminée, la largeur entre le premier côté et le deuxième côté décroissant à partir de ladite largeur maximale dans la direction de la hauteur de la section supérieure de manière que le deuxième côté forme un angle prédéterminé autre que perpendiculaire avec la partie inférieure, et les premiers côtés des pièces supérieure et latérales de châssis isolant présentant la même hauteur, ladite hauteur étant telle qu'une partie relativement grande des pièces de châssis de lucarne correspondantes est recouverte par les sections supérieures de celles-ci et de manière qu'une partie plus grande des pièces de châssis de lucarne correspondantes (20) est recouverte par la section supérieure des pièces supérieure et latérales de châssis isolant que la partie d'une pièce de châssis de lucarne correspondante (20) recouverte par la section supérieure de la pièce inférieure de châssis isolant (4),

en ce que les deux pièces latérales de châssis isolant (2a, 2b) comportent des sections supérieures (8) dotées de sections transversales essentiellement identiques et **en ce que** la section supérieure (8) de la pièce inférieure de châssis isolant (4) présente une section transversale qui est différente de celle des pièces latérales de châssis isolant, où les sections supérieures (8) des pièces latérales et supérieure de châssis isolant (2a, 2b, 3) présentent la configuration en section transversale d'un triangle rectangle avec un angle au sommet de 20 à 45 degrés, et

où la section supérieure (8) de la pièce inférieure de châssis isolant (4) présente la configuration générale d'un triangle isocèle, mais où l'hypoténuse formant le deuxième côté est remplacée par une surface courbe et concave,

en ce que des rebords ou des parties en saillie sont prévues sur la totalité des pièces de châssis isolant, ces rebords ou ces parties en saillie servant de support pour la lucarne, et

en ce que les pièces de châssis isolant (2a, 2b, 3, 4) sont pourvues d'un ou de plusieurs élément(s) de renforcement.



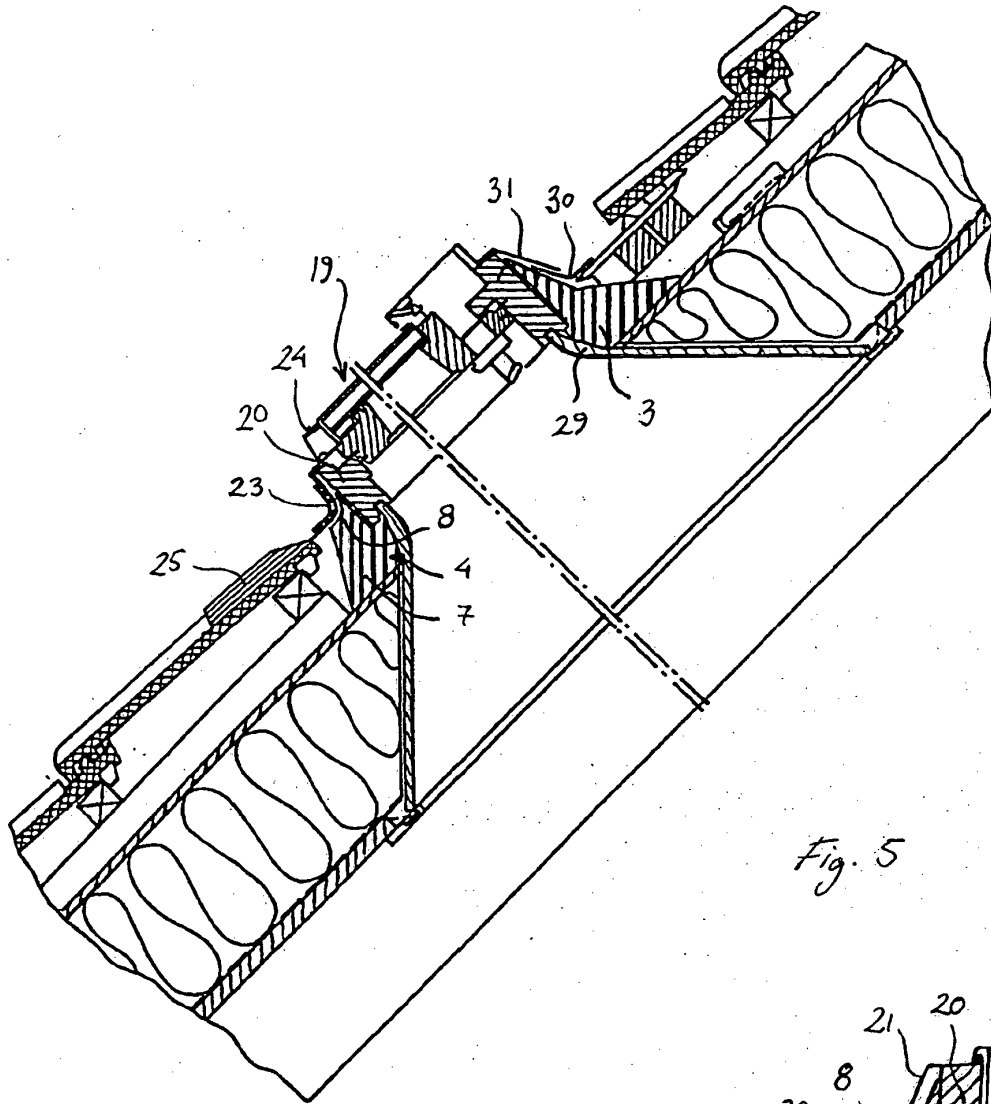


Fig. 5

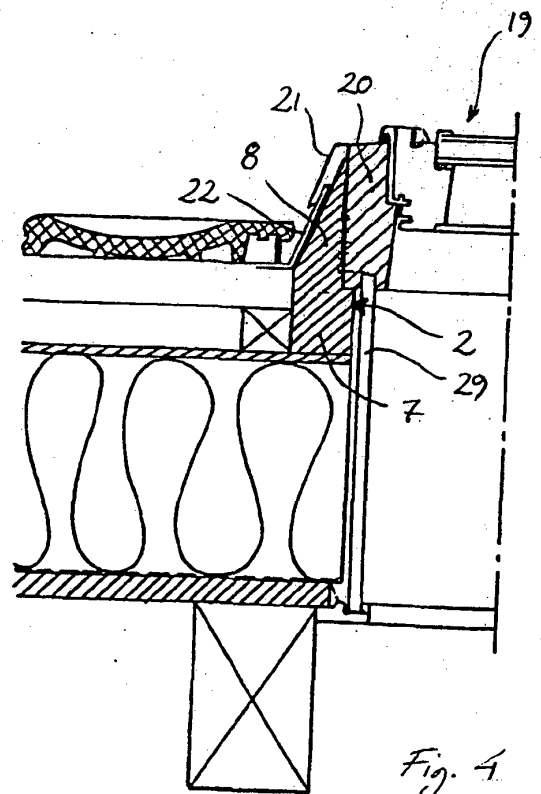


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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