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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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EP-A- 0 744 512 **WO-A-98/31896**

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Description

[0001] The present invention relates to an insulating frame for insulating a roof window, said insulating frame comprising a plurality of insulating frame pieces surrounding an opening, the shape of which corresponds substantially to the shape of the roof window and the dimensions of which is 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.

[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. EP-B1-0 744 512 discloses an insulating frame according to the preamble of claim 1.

[0003] During installation of the roof window an underroof 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.

[0004] 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, while at the same time preventing harms resulting from the formation of condensation.

[0005] This object is achieved by an insulating frame according to claim 1.

[0006] 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.

[0007] The provision of a surface profile as defined in claim 1 allows an airflow between the surface of the insulating frame and an underroof or underroof collar, whereby providing ventilation.

[0008] In a preferred embodiment the upper section of the 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.

[0009] 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.

[0010] 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, it is preferred that 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 that 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. It may particularly be advantageous if 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 members. 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. In some embodiments it may even be advantageous that the top and/or bottom frame piece have no upper section at all.

[0011] 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.

[0012] It is to be noted, that the distinction between an upper and a lower section is not be considered as implying the need for any kind of physical boundaries, but only a difference in geometry and/or function.

[0013] 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.

[0014] In some embodiments, the roof window may bear on ledges on the sides of the insulating frame pieces that face the opening 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 sup-

porting and attachment of mounting brackets for connecting the insulating frame to the supporting roof structure.

[0015] The object of the invention is further achieved with a kit according to claim 11.

[0016] 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.

[0017] Likewise, the object of the invention is achieved by a roof structure according to claim 14.

[0018] 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.

[0019] 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.

[0020] In this embodiment 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 cashing 29, i.e. between the cashing 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.

[0021] 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.

[0022] 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 the 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.

[0023] 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.

[0024] 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.

[0025] If the insulating frame serves as a support for the window, a frame material with sufficient strength must of cause be chosen, but in other cases any material with suitable insulating properties may be used. The joining of the frame may however be facilitated by choosing a relatively stiff material.

[0026] 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.

[0027] 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.

[0028] 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.

[0029] 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 watertight transition between the lowermost part of the window and the roofing below it, is avoided. If, however, such considerations are less important than the improvement of the insulation of the window, a more voluminous upper section may be used at the bottom frame piece as well.

[0030] 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 cashing 29. Such an adaptation has no influence on the design of the upper section of the insulating frame piece an thus does not necessitate an adaptation of the flashing member 30 and cover member 31 used at the top of the window 19.

[0031] 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. For example the height of some of the insulating frame pieces may be relatively smaller, such that only a smaller part of the window frame is covered, or the triangular cross section may be modified to comprise a curved outer surface. This may e.g. be the case with the top frame piece, when the insulating frame is used for mounting a top-hung window. 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.

[0032] 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.

[0033] 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.

[0034] 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.

[0035] 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.

[0036] 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 the one shown in Fig. 6 or to the window frame 20 without the need for an underroof collar 26.

[0037] Finally it is noted, that the person skilled in the art will be able to realise a number of different ways, in which the shapes of the upper and lower sections of the insulating frame pieces, the type of ledges, the use of ventilation aids etc. may be varied and combined without thereby departing from the Scope of the invention as defined by the claims.

Claims

1. An insulating frame (1) for insulating a roof window (19), said insulating frame comprising a plurality of 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 is 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 at least one 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, **characterized in that** the first side has such a height that a relatively large portion of the window frame piece (20) is overlapped by the upper section of the insulating frame piece in the mounted state, and that
the second side (9) of one or more of the insulating frame pieces (2a, 2b, 3, 4) is provided with a surface profile, so that in use an air gap is created between said second side and an underroof collar (26), which is in use installed on the surface profile of said second side (9), said air gap allowing in use a ventilation

of the space between said second side (9) and said underroof collar (26), said ventilation being in a direction perpendicular to the length of said insulating frame piece.

2. An insulating frame according to claim 1, **characterised in that** the surface profile is a series of projections and/or recesses allowing air passage between and/or through them in a direction perpendicular to the length of the insulating frame piece.

3. An insulating frame according to claim 1 or 2, **characterized in that** the upper section (8) of the insulating frame piece(s) (2a,2b,3,4) is substantially wedge shaped with an apex angle of 20-45 degrees.

4. An insulating frame according to any of claims 1-3, **characterized in that** it consists of four frame pieces (2a,2b,3,4) corresponding to the four sides of a rectangular roof window (19).

5. An insulating frame according to claim 4, **characterized in that** the two side frame pieces (2a,2b) being located at the sides of the window (19) in the mounted state have upper sections (8) with substantially identical cross sections and that the top frame piece (3) being located uppermost and/or the bottom frame piece (4) being located lowermost in the mounted state have upper sections (8) with cross sections that differ from that of the side frame pieces.

6. An insulating frame according to claim 5, **characterized in that** the top and/or bottom frame piece (3,4) have no upper section (8).

7. An insulating frame according to any of claims 1-4, **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).

8. An insulating frame according to any of claims 1-7, **characterized in that** it is made from moulded or extruded foam plastic, such as polyurethane foam, or any other suitable material.

9. An insulating frame according to any of claims 1-8, **characterized in that** the insulating frame pieces (2a,2b,3,4) are provided with one or more stiffening members such as lists or strips.

10. An insulating frame according to claim 9, **characterized in that** the stiffening member may be used for supporting and attachment of mounting brackets for the roof window (19).

11. A kit for mounting and insulation of a roof window (19), comprising an insulating frame (1) according to any of claims 1-10, an underroof collar (26), at least one flashing member (22,23,30) and at least one cover member (21,24,31),
where the second side (9) of the upper section (8) of said at least one insulating frame piece faces a flashing and/or cover member (21, 22, 23, 24, 30, 31) when mounted,
characterized in that the first side of the upper section (8) of said at least one insulating frame piece has such a height 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 insulating frame piece,
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.

12. A kit according to claim 11, **charac - terized** 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.

13. A kit according to claim 11 or 12, **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.

14. A roof structure with a roof window (19) mounted in an insulating frame (1) according to any of claims 1-10,
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 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 external dimensions of the roof window, so that the window may be placed within the opening,
where the second side (9) of the upper section (8) of said at least one insulating frame piece is intended to face a flashing and/or cover member, **characterized in that** the first side of the upper section of said

at least one insulating piece has such a height that a relatively large portion of the window frame is overlapped by the upper section of the insulating frame.

Patentansprüche

1. Dämmrahmen (1) zum Dämmen eines Dachfensters (19), wobei der Dämmrahmen eine Vielzahl von Dämmrahmenteilen (2a, 2b, 3, 4) umfasst, die eine Öffnung (5) umgeben, deren Form im Wesentlichen der Form des Dachfensters entspricht und deren Abmessungen größer sind als die äußeren Abmessungen des Dachfensters oder diesen entsprechen, wobei jedes Dämmrahmenteil eine innere seitliche Oberfläche, die zu der Öffnung weist, eine untere Oberfläche und wenigstens eine äußere seitliche Oberfläche hat, die weg von der Öffnung weist, wobei wenigstens eines 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), die von der Öffnung weg weist, hat, 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, der vom rechten Winkel abweicht, mit dem unteren Bereich bildet, **dadurch gekennzeichnet, dass** die erste Seite eine solche Höhe hat, dass ein verhältnismäßig großer Bereich des Fensterrahmenteils (20) vom oberen Abschnitt des Dämmrahmenteils im montierten Zustand überlappt wird, und dass die zweite Seite (9) eines oder mehrerer Dämmrahmenteile (2a,2b,3,4) mit einem Oberflächenprofil versehen ist, so dass im Gebrauch ein Luftspalt zwischen der zweiten Seite und einem Unterdachanschlusskragen (26) gebildet wird, der im Gebrauch auf dem Oberflächenprofil der zweiten Seite (9) installiert ist, wobei der Luftspalt im Gebrauch eine Ventilation des Raums zwischen der zweiten Seite (9) und dem Unterdachanschlusskragen (26) ermöglicht, wobei die Ventilation in einer Richtung ist, die zur Länge des Dämmrahmenteils rechtwinklig ist.

2. Dämmrahmen nach Anspruch 1, **dadurch gekennzeichnet, dass** das Oberflächenprofil eine Reihe von Vorsprüngen und/oder Aussparungen ist, die einen Luftdurchgang zwischen und/oder durch sie in einer Richtung senkrecht zu der Länge des Dämmrahmenteils ermöglichen

3. Dämmrahmen nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der obere Abschnitt (8) des/der Dämmrahmenteils/-teile (2a,2b,3,4) im Wesentlichen keilförmig mit einem Scheitelwinkel von 20-45 Grad ist.

4. Dämmrahmen nach irgendeinem der Ansprüche 1-3, **dadurch gekennzeichnet, dass** er aus vier Rahmenteilen (2a,2b,3,4) besteht, die den vier Seiten eines rechtwinkligen Dachfensters (19) entsprechen.

5. Dämmrahmen nach Anspruch 4, **dadurch gekennzeichnet, dass** die zwei Seitenrahmenteile (2a,2b), die im montierten Zustand an den Seiten des Fensters (19) angeordnet sind, obere Abschnitte (8) mit im Wesentlichen identischen Querschnitten haben und dass das obere Rahmenteil (3), das oberhalb angeordnet ist, und/oder das untere Rahmenteil (4), das im montierten Zustand unterhalb angeordnet ist, obere Abschnitte (8) mit Querschnitten haben, die von denen der seitlichen Rahmenteile abweichen.

6. Dämmrahmen nach Anspruch 5, **dadurch gekennzeichnet, dass** das obere und/oder untere Rahmenteil (3,4) keinen oberen Abschnitt (8) hat.

7. Dämmrahmen nach irgendeinem der Ansprüche 1-4, **dadurch gekennzeichnet, dass** die Breite des unteren Abschnitts (7) von einem oder mehreren Rahmenteilen (2a,2b,3,4) kontinuierlich oder stufenweise in der Höhenrichtung hin zu dem oberen Abschnitt (8) abnimmt.

8. Dämmrahmen nach irgendeinem der Ansprüche 1-7, **dadurch gekennzeichnet, dass** er aus gegossenem oder extrudiertem geschäumtem Kunststoff gebildet ist, wie beispielsweise Polyurethanschaum oder einem anderen geeigneten Material.

9. Dämmrahmen nach irgendeinem der Ansprüche 1-8, **dadurch gekennzeichnet, dass** die Dämmrahmenteile (2a,2b,3,4) mit einem oder mehreren Versteifungselementen versehen sind, wie beispielsweise Leisten oder Streifen.

10. Dämmrahmen nach Anspruch 9, **dadurch gekennzeichnet, dass** das Versteifungselement zum Halten und Befestigen von Befestigungsbügeln für das Dachfenster (19) verwendet werden kann.

11. Bausatz zum Montieren und Dämmen eines Dachfensters (19), wobei der Bausatz einen Dämmrahmen (1) nach irgendeinem der Ansprüche 1-10, einen Unterdachanschlusskragen (26), wenigstens ein Eindeckungselement (22,23,30) und wenigstens ein Abdekkungselement (21,24,31) umfasst, wobei die zweite Seite (9) des oberen Abschnitts (8) des wenigstens einen Dämmrahmenteils zu einem Eindeckungs- und/oder einen Abdeckungselement (21,22,23,24,30,31) weist, wenn sie montiert sind, **dadurch gekennzeichnet, dass** die erste Seite des

oberen Abschnitts (8) des wenigstens einen Dämmrahmenteils eine solche Höhe hat, dass ein verhältnismäßig großes Teil des Abstands, der zwischen einer untersten Höhe des Eindeckungselements und einer obersten Höhe des Abdeckungselements im montierten Zustand existiert, von dem oberen Abschnitt des Dämmrahmenteils überlappt wird,
dass der Unterdachanschlusskragen (26) in Kontakt mit dem Dämmrahmen bei oder über dem unteren Bereich des oberen Abschnitts des Dämmrahmens gebracht werden kann und
dass eines oder mehrere der Eindeckungselements und/oder eines oder mehrere der Abdeckungselemente (21,22,23,24,30,31) mit Winkeln ausgebildet sind, die dem Winkel, der durch die abnehmende Breite des Dämmrahmenteils bestimmt ist, entspricht.

12. Bausatz nach Anspruch 11, **dadurch gekennzeichnet, dass** der obere Abschnitt (8) des Dämmrahmenteils im Wesentlichen keilförmig mit einem Scheitelwinkel von 10-45 Grad ist, und dass die entsprechenden Eindekkungs- und Abdeckungselemente (21,22,23,24,30,31) innere Biegewinkel haben, die um etwa 90 Grad größer als der Scheitelwinkel sind..

13. Bausatz nach Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** der Unterdachanschlusskragen (26) an dem Dämmrahmen (1) durch ein geeignetes Mittel wie Schweißen, Kleben, mechanische Befestigungselemente wie Klemmen, oder Reibung zwischen dem Material des Unterdachanschlusskragens und des Dämmrahmens befestigt ist.

14. Dachaufbau mit einem Dachfenster (19), das in einem Dämmrahmen (1) montiert ist, nach irgendeinem der Ansprüche 1-10, wobei der Dachaufbau eine Bedachung, einen Stützaufbau und ein Unterdachanschlusskragen (26) mit wenigstens einer äußeren wasserdichten Membran und einer Isolierschicht umfasst, wobei das Unterdach zwischen der Bedachung und dem Stützaufbau angeordnet ist und eine Öffnung zum Montieren des Fensters aufweist, wobei der Dämmrahmen eine untere Oberfläche, die an der oberen Oberfläche des Unterdachs anliegt, und eine Öffnung (5) aufweist, 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 angeordnet werden kann, wobei die zweite Seite (9) des oberen Abschnitts (8) des wenigstens einen Dämmrahmenteils vorgesehen ist, zu einem Eindeckungs- und/oder Abdekkungselement zu weisen, **dadurch gekennzeichnet, dass** die erste Seite des oberen Abschnitts des wenigstens einen Dämmrahmenteils eine solche Höhe hat, dass ein verhältnismäßig großer Bereich des Fensterrahmens vom oberen Abschnitt des Dämmrahmens überlappt wird.

Revendications

1. Cadre isolant (1) pour l'isolation d'une fenêtre de toit (19), ledit cadre isolant comprenant une pluralité de pièces de cadre isolant (2a, 2b, 3, 4) entourant une ouverture (5), dont la forme correspond substantiellement à la forme de la fenêtre de toit et dont les dimensions sont supérieures aux dimensions extérieures de la fenêtre de toit ou correspondent à celles-ci, chaque pièce de cadre isolant possédant une surface de côté intérieur tournée vers l'ouverture, une surface de fond et au moins une surface de côté extérieur détournée de l'ouverture, dans lequel au moins l'une des pièces de cadre extérieur comprend une section inférieure (7) et une section supérieure (8), la section supérieure possédant un premier côté tourné vers l'ouverture et un deuxième côté (9) détourné de l'ouverture, une portion de fond de la section supérieure présentant une largeur maximale prédéterminée, la largeur entre le premier côté et le deuxième côté diminuant à partir de ladite largeur maximale dans le sens de la hauteur de la section supérieure, de sorte que le deuxième côté forme un angle prédéterminé autre que perpendiculaire avec la portion de fond, **caractérisé en ce que** le premier côté a une hauteur telle qu'une portion relativement grande de la pièce de cadre de fenêtre (20) est chevauchée par la section supérieure de la pièce de cadre isolant à l'état monté, et **en ce que**
le deuxième côté (9) d'une ou plusieurs pièces de cadre isolant (2a, 2b, 3, 4) est pourvu d'un profilé de surface, de sorte que pendant l'utilisation, un entrefer est créé entre ledit deuxième côté et un collet de sous-toiture (26), qui pendant l'utilisation est installé sur le profilé de surface dudit deuxième côté (9), ledit entrefer permettant de ventiler l'espace entre ledit deuxième côté (9) et ledit collet de sous-toiture (26) pendant l'utilisation, ladite ventilation se faisant dans une direction perpendiculaire à la longueur de ladite pièce de cadre isolant.

2. Cadre isolant selon la revendication 1, **caractérisé en ce que** le profilé de surface est une série de projections et/ou d'évidements permettant à l'air de passer entre et/ou à travers celles-ci/ceux-ci, dans une direction perpendiculaire à la longueur de la pièce de cadre isolant.

3. Cadre isolant selon la revendication 1 ou 2, **caractérisé en ce que** la section supérieure (8) de la/des pièce(s) de cadre isolant (2a, 2b, 3, 4) présente substantiellement une forme en coin, avec un angle de sommet de 20-45 degrés.

4. Cadre isolant selon l'une quelconque des revendications 1 à 3, **caractérisé en ce qu'**il consiste en quatre pièces de cadre (2a, 2b, 3, 4) correspondant aux quatre côtés d'une fenêtre de toit rectangulaire (19).

5. Cadre isolant selon la revendication 4, **caractérisé en ce que** les deux pièces de cadre latérales (2a, 2b) situées sur les côtés de la fenêtre (19) à l'état monté possèdent des sections supérieures (8) avec des sections transversales substantiellement identiques, et **en ce que** la pièce de cadre supérieure (3) située le plus en haut et/ou la pièce de cadre inférieure (4) située le plus en bas à l'état monté possèdent des sections supérieures (8) avec des sections transversales différentes de celles des pièces de cadre latérales.

6. Cadre isolant selon la revendication 5, **caractérisé en ce que** la pièce de cadre supérieure et/ou inférieure (3, 4) ne possède pas de section supérieure (8).

7. Cadre isolant selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** la largeur de la section inférieure (7) d'une ou de plusieurs pièces de cadre (2a, 2b, 3, 4) décroît continuellement ou graduellement dans le sens de la hauteur en direction de la section supérieure (8).

8. Cadre isolant selon l'une quelconque des revendications 1 à 7, **caractérisé en ce qu'**il est constitué d'un plastique moulé ou extrudé, tel que la mousse polyuréthane ou tout autre matériau approprié.

9. Cadre isolant selon l'une quelconque des revendications 1 à 8, **caractérisé en ce que** les pièces de cadre isolant (2a, 2b, 3, 4) sont pourvues d'un ou de plusieurs éléments raidisseurs, tels que des liserés ou des bandes.

10. Cadre isolant selon la revendication 9, **caractérisé en ce que** l'élément raidisseur peut être utilisé pour supporter et attacher des supports de montage pour la fenêtre de toit (19).

11. Kit pour le montage et l'isolation d'une fenêtre de toit (19) comprenant un cadre isolant (1) selon l'une des revendications 1 à 10, un collet de sous-toiture (26), au moins un élément de solin (22, 23, 30) et au moins un élément de couverture (21, 24, 31), où le deuxième côté (9) de la section supérieure (8) de ladite au moins une pièce de cadre isolant est tournée vers un élément de solin et/ou de couverture (21, 22, 23, 24, 30, 31) à l'état monté,
caractérisé en ce que
le premier côté de la section supérieure (8) de ladite au moins une pièce de cadre isolant présente une hauteur telle qu'une portion relativement grande de la distance existant entre un niveau le plus bas de l'élément de solin et un niveau le plus élevé de l'élément de couverture à l'état monté est chevauchée par la section supérieure de la pièce de cadre isolant, le collet de sous-toiture (26) peut être mis en contact avec le cadre isolant au niveau ou au-dessus de la portion de fond de la section supérieure du cadre isolant,
un ou plusieurs éléments de solin et/ou de couverture (21, 22, 23, 24, 30, 31) sont formés avec des angles correspondant à l'angle déterminé par la largeur décroissante de la pièce de cadre isolant.

12. Kit selon la revendication 11, **caractérisé en ce que** la section supérieure (8) de la pièce de cadre isolant présente substantiellement une forme en coin, avec un angle de sommet de 10-45 degrés, et **en ce que** les éléments de solin ou de couverture correspondants (21, 22, 23, 24, 30, 31) possèdent des angles de cintrage intérieurs supérieurs d'environ 90 degrés audit angle de sommet.

13. Kit selon la revendication 11 ou 12, **caractérisé en ce que** le collet de sous-toiture (26) est fixé au cadre isolant (1) par n'importe quel moyen approprié, tel que par soudage, collage, fixation mécanique, par exemple avec des agrafes, ou par friction entre le matériau du collet de sous-toiture et celui du cadre isolant.

14. Structure de toit avec une fenêtre de toit (19) montée dans un cadre isolant (1) selon l'une quelconque des revendications 1 à 10,
ladite structure de toit comprenant une toiture, une structure de support et une sous-toiture (26) comprenant au moins une membrane étanche extérieure et une couche isolante, ladite sous-toiture étant située entre la toiture et la structure de support et comprenant une ouverture pour le montage de la fenêtre, ledit cadre isolant comprenant une surface inférieure prévue pour reposer contre la surface supérieure de la sous-toiture, et une ouverture (5) correspondant à l'ouverture dans la sous-toiture, tout en étant supérieure aux dimensions extérieures de la fenêtre de toit ou en correspondant à celles-ci, de manière à ce que la fenêtre puisse être placée dans l'ouverture,
dans laquelle le deuxième côté (9) de la section supérieure (8) de ladite au moins une pièce de cadre isolant est destiné à être tourné vers un élément de solin et/ou de couverture, **caractérisé en ce que** le premier côté de la section supérieure de ladite au moins une pièce isolante a une hauteur telle qu'une portion relativement grande du cadre de fenêtre est chevauchée par la section supérieure du cadre isolant.

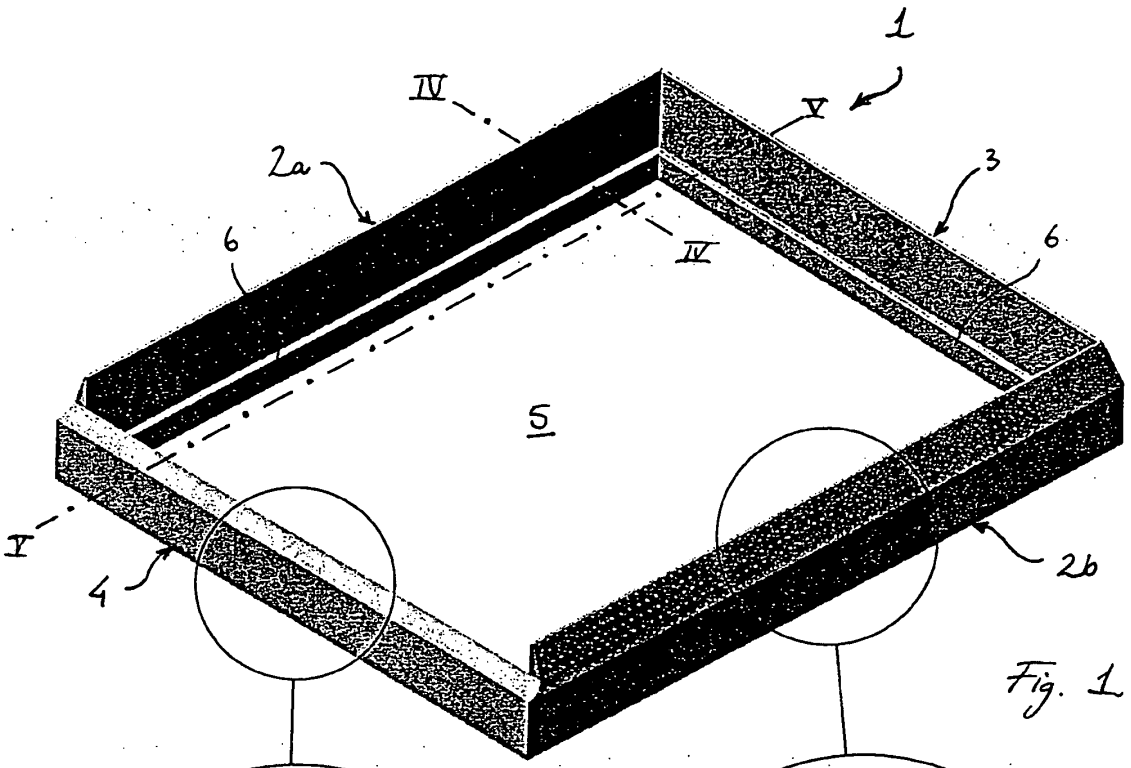


Fig. 1

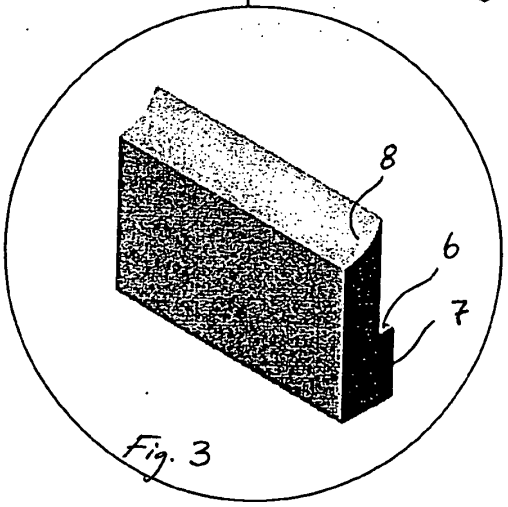


Fig. 3

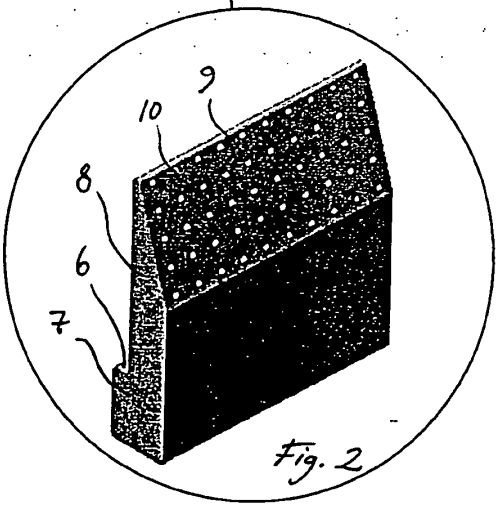


Fig. 2

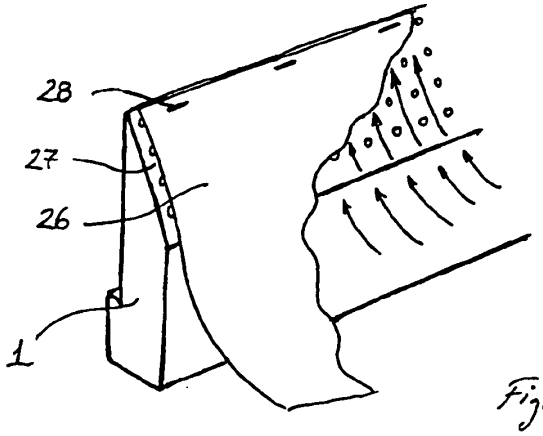


Fig. 6

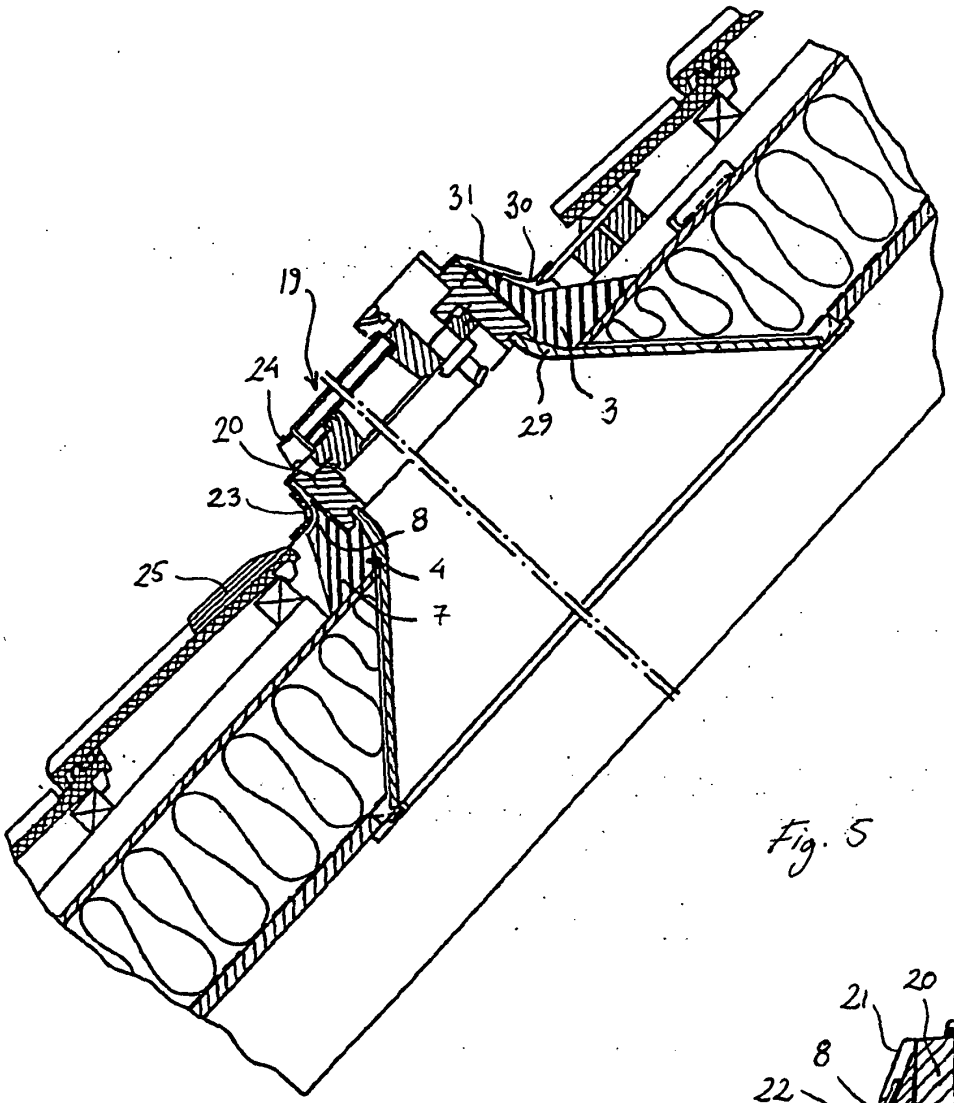


Fig. 5

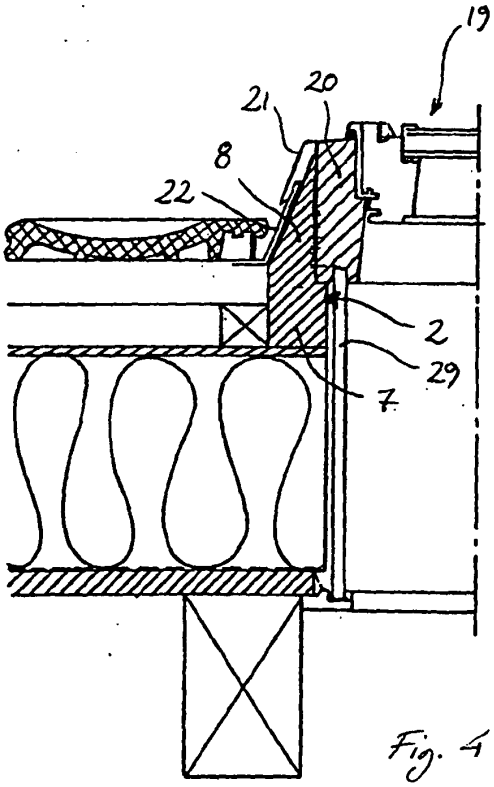


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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