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(54) Benævnelse: **A flashing assembly and a method for weather proofing a roof window mounted in an inclined roof surface**

(56) Fremdragne publikationer:
EP 1550777 B1
PL 205441 B1
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US 6966157 B1
US 5018333 A
DE 2142733 A1
EP 3012381 A1
JP S6279027 U

(57) Sammendrag:
A roof window installed in an inclined roof structure with a flashing assembly covering a joint between the roof window and the roof surface, where at least the top flashing member and the side flashing member each has a first leg lying substantially in plane with the roof surface and a second leg extending at an angle with respect to the first leg, said angle being larger than 90 degrees on the exterior side of the flashing member. At least the second leg of the side flashing member is adapted for extending above the outer side of the top frame member in the mounted state so that it covers at least a part of the distance between the outer side of the top frame member and interior side of the top flashing member. The end edge of the side flashing member may be oblique with an angle so that the end edge is substantially parallel to the interior side of the second leg of the top flashing member in the mounted state.
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Fortsættes ...

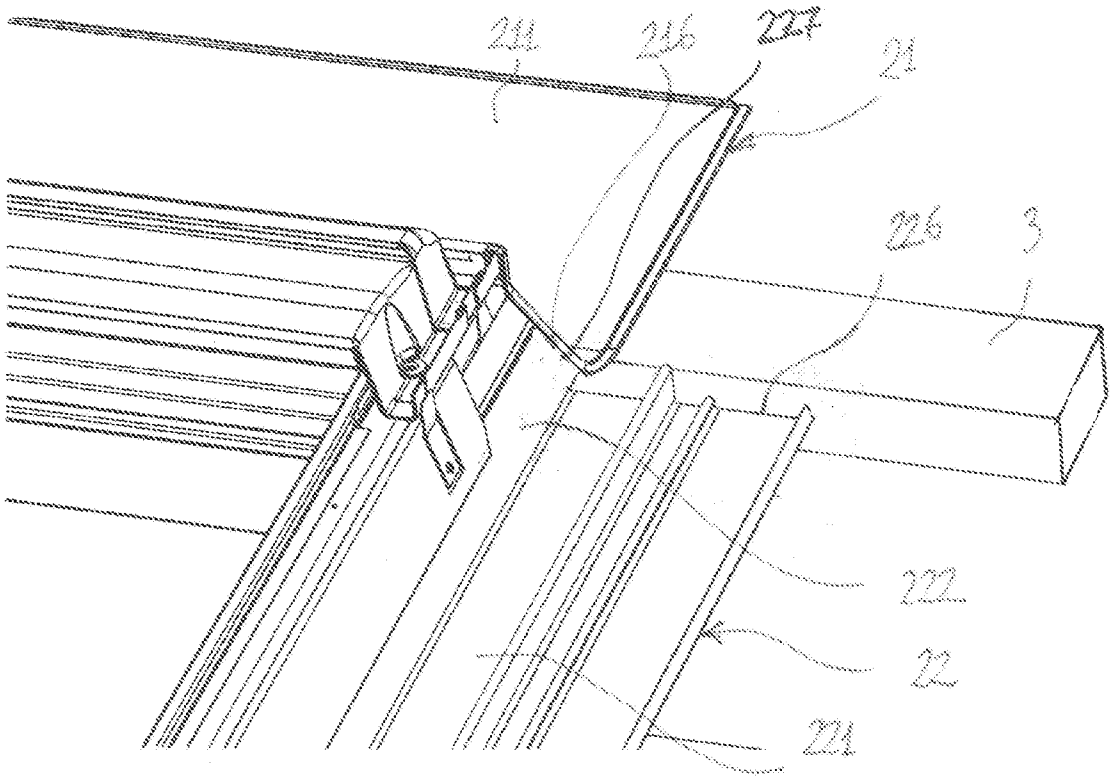


Fig 7

The present invention relates to a flashing assembly for a roof window adapted for being installed in an inclined roof surface and having a frame comprising a plurality of frame members delimiting a frame opening, said flashing assembly including a top flashing member adapted for being arranged above the roof window in the mounted state extending along a top frame member of the roof window, a bottom flashing member adapted for being arranged below the roof window in the mounted state extending along a bottom frame member of the roof window, and at least one side flashing member adapted for extending between the top flashing member and the bottom flashing member in the mounted state extending along a side frame member of the roof window, where each flashing member has an interior side and an exterior side, said exterior side being adapted to face the exterior in the mounted state, and where at least the top flashing member and the side flashing member each has a first leg and a second leg, said first leg being adapted for lying substantially in plane with the roof surface and extending away from the roof window, and said second leg extending at an angle with respect to the first leg and being adapted for extending up along an outer side of an adjacent frame member, said outer side facing away from the frame opening, and a joint between the first leg and the second leg extending substantially in parallel with the adjacent frame member in the mounted state and defining a length direction of the flashing member, and where said angle of the second leg with respect to the first leg is non-perpendicular so that the exterior angle between the first leg and the second leg on the exterior side of the flashing member is larger than 90 degrees, and so that the joint between the first leg and the second leg is located at a distance from the outer side of the adjacent frame member in the mounted state thereby giving room for insulating material between the frame of the roof window and the interior side of the flashing member. The invention further relates to a kit comprising a roof window and a flashing assembly and a method for weather proofing a roof window mounted in an inclined roof surface.

A flashing assembly of this kind is known from EP1550777B1. This patent, however, is primarily concerned with the advantages of providing a wedge shaped space between the outer side of the roof window frame and the

interior side of the flashing members for housing insulating material. It does not provide much information on how the flashing members should be interconnected. At that time the flashing assembly was simply provided with corner flashing members, which were in some instances integrated in the top, bottom or side flashing members, so that water would run from one onto the other and eventually pass onto the roof surface below the roof window as it was already known from traditional flashing assemblies.

Later experiments, however, has showed that the non-perpendicular angling of the second leg of the flashing members in relation to the first leg results in different flow patterns on the roof, not only for water but also for wind. This in some case has been seen to result in small amounts of water entering underneath the flashing assembly.

It is therefore the object of the invention to provide improved water proofing properties to a flashing assembly of the type mentioned above.

According to a first aspect of the invention this is achieved with a flashing assembly where at least the second leg of the side flashing member is adapted for extending above the outer side of the top frame member in the mounted state so that it covers at least a part of the distance between the outer side of the top frame member and interior side of the top flashing member.

By extending above the outer surface of the top frame member the second leg of the side flashing member at least partially closes the space extending underneath the top flashing member along the outer surface of the top frame member, thus affecting the air flow pattern underneath the flashing assembly. In some situations, this reduces the risk of water being forced in underneath the flashing members the top corners of the roof window.

Whenever reference is made to the top, bottom or sides in this text it is intended as a reference to the positon in the mounted state, i.e. the top corners of the roof window are the corners intended to be facing upwards on the inclined roof in the mounted state. The same applies to the flashing assembly, flashing members and any other items mentioned herein, and to other indications of orientation such as above, below, upper or lower. Accordingly, the reference to the side flashing member being adapted for extending above the

outer side of the top frame member means that in the mounted state a part of the side flashing member is arranged above the roof window when seen in the direction of inclination of the roof surface.

Another advantage of the side flashing member extending up towards the top flashing member is that it reduces the risk of the top flashing member becoming displaced. This particularly applies if there is a direct contact between the side flashing member and top flashing member, but simply altering the air flow pattern may be enough.

Similar effects may be achieved at the bottom of the roof window, but as the water pressure is different at the bottom due to the influence of gravity the problems relating to water tightness are not entirely the same. In the following description reference will be made primarily to the top of the roof window and of the flashing assembly, but it is to be understood that unless otherwise stated similar considerations and advantages apply at the bottom of the roof window and of the flashing assembly.

In one embodiment, at least the end edge of the side flashing member adapted for facing the top flashing member in the mounted state is oblique so that the length of the second leg is longer at the joint between the first leg and the second leg than at a free edge of the second leg facing away from this joint. An oblique end edge allows the side flashing member to follow the shape of the interior side of the top flashing member more closely, and it is presently preferred that the angle of the oblique end edge of the side flashing member in a vertical plane extending in parallel with the outer side of the side frame member corresponds to the angle of the second leg of the top flashing member with respect to the first leg of the top flashing member such that the end edge of the side flashing member is substantially parallel to the interior side of the second leg of the top flashing member in the mounted state.

Making the first leg of the side flashing member also extend above the outer side of the top flashing member will provide strength and stability to the end part of the side flashing member. The first leg may be oblique, being cut at the same angle as the second leg before bending the flashing member to create the angle between the first and second legs, or may have any other suitable

end design.

In a presently preferred embodiment the flashing assembly includes two side flashing members adapted for being arranged on opposite sides of the frame of the roof window extending along each of the side frame members of the roof window, thus providing weather protection at both sides of the roof window. In the simplest embodiment these two side flashing members are embodied identically except for being mirror-inverted, but in other embodiments they may have differently angled end edges, for example in order to be adapted for use in side-by-side installations where two roof windows are mounted next to each other and sharing one or more flashing or cover members. It is also envisaged to provide a flashing assembly specially adapted for side-by-side installation including a right-hand side flashing member for use on the right-hand side of the group of roof windows, a left-hand side flashing member for use on the left-hand side of the group of roof windows, and at least one centre side flashing member for use between the roof windows.

Each side flashing member does not have to extend along the entire side of the roof window frame. It is within the scope of the invention to arrange two or more side flashing members in continuation of each other so that they together cover the distance from the top flashing member or a top corner flashing member to the bottom flashing member.

The top flashing member may be provided with one or two corner sections each adapted to embrace an upper corner of the roof window and to overlap with a side flashing member in the mounted state, but in one embodiment the flashing assembly instead includes one or two top corner flashing members. Each top corner flashing member is adapted for overlapping the top flashing member and a side flashing member in the mounted state so that a substantially water tight connection is established between the top flashing member and the side flashing member. This makes the flashing assembly more versatile, allowing for example to replace one corner member with a bridge member adapted for establishing a connection between two top flashing members when two roof windows are mounted side-by-side. Providing separate top corner flashing members may also make the manufacture of the flashing assembly

easier, thus reducing costs.

When using separate top corner flashing members, the joints between the top flashing member and the top corners flashing members may be positioned above the outer side of the top frame member in the mounted state. In that case the end edges of the side flashing members may be adapted to the shape of these joints and/or to the shape of the interior side of the top corner flashing members rather than to the shape of the interior side of the top flashing member.

Even though reference has here been made to top corner flashing members is it to be understood that the flashing assembly may also include bottom corner flashing members and that such bottom corner flashing members may have the same features and advantageous as described with reference to the top corner flashing members.

One or more flashing members may be provided with insulating material on the interior side, or insulating members may be provided separately to be arranged along the outer sides of the frame members before installation of the flashing assembly.

In addition, or alternatively, one or more flashing members may be provided with sealing strips or other weather proofing members. Sealing strip may for example be provided where flashing members are intended to overlap in the mounted state, and they will typically be made from elastic materials, such as butyl rubber, ethylene propylene diene monomer (EPDM) rubber, ethylene-vinyl acetate (EVA) foam or the like.

According to a second aspect of the invention a flashing assembly with improved water proofing properties is achieved with a method for mounting the flashing assembly including the following steps:

arranging a bottom flashing member below the roof window along a bottom frame member,

arranging at least one side flashing member along a side frame member,

arranging a top flashing member above the roof window along a top frame member,

where each flashing member has an interior side and an exterior side, said exterior side being arranged to face the exterior,

where at least the top flashing member and the side flashing member are arranged with a first leg substantially in plane with the roof surface and with a second leg extending up along an outer side of an adjacent frame member, said outer side facing away from the frame opening,

where the second leg of each flashing member extends at an angle with respect to the first leg, said angle of the second leg with respect to the first leg being non-perpendicular so that the exterior angle between the first leg and the second leg on the exterior side of the flashing member is larger than 90 degrees, and so that the joint between the first leg and the second leg is located at a distance from the outer side of the adjacent frame member in the mounted state thereby giving room for insulating material between the frame of the roof window and the interior side of the flashing member,

and where the side flashing member is positioned so that it extends above the outer side of the top frame member and covers at least a part of the distance between the outer side of the top frame member and the interior side of the top flashing member.

Arranging the flashing members in this way means that the side flashing member at least partially closes the space extending underneath the top flashing member along the outer surface of the top frame member, thus affecting the air flow pattern underneath the flashing assembly as also described above with reference to the first aspect of the invention.

Unless otherwise stated the advantages described with reference to the flashing assembly also applies to the method.

In one embodiment the method further includes the step of arranging an installation batten above the window in parallel with the top frame member, said installation batten serving to support the top flashing member, and where the side flashing member is arranged so that an end part of the side flashing members located at the top flashing member comes to rest on the installation batten. By supporting the upper end part of the side flashing member the risk

of water being forced up between the upper end part of the side flashing member and the top corner flashing member / corner section of the top flashing member is reduced, and so is the risk of an unintentional gap between the end edge of the side flashing member and the interior side of the top flashing member.

An additional aspect of the invention is a kit comprising a roof window and a flashing assembly according to the invention, said roof window being adapted for being installed in an inclined roof surface and having a frame comprising a plurality of frame members delimiting a frame opening.

In the following the invention will be described in more detail with reference to an embodiment of the invention shown in the drawing, where:

Fig. 1 is a perspective view of a frame for a roof window mounted with a flashing assembly,

Fig. 2 is a cross sectional view along the line II-II in Fig. 1,

Fig. 3 is a cross sectional view along the line III-III in Fig. 1,

Fig. 4 shows the detail marked II in Fig. 1,

Fig. 5 corresponds to Fig. 4 but with the corner flashing assembly removed,

Fig. 6 corresponds to Fig. 5 but seen from the direction shown by the arrow VI in Fig. 1,

Fig. 7 corresponds to Fig. 5 but showing a different embodiment, and

Fig. 8 corresponds to Fig. 6 but showing the embodiment in Fig. 7.

A frame 1 for a roof window is shown in Fig. 1 with a flashing assembly 2 according to the invention including a top flashing member 21, a side flashing member 22, two top corner flashing members 23, a bottom flashing member 24 and two bottom corner flashing members 25. The top flashing member 21 is arranged so that it extends along a top frame member 11 of the frame 1 and the side flashing member 22 extends along substantially the entire length of the right-hand side frame member 12 spanning from a top corner flashing member 23 to a bottom corner flashing member 25.

Each of the flashing members comprise a first leg 211,221,231,241,251 and a second leg 212,222,232,242,252 joined at a bend

215,225,235,245,255, which extends substantially in parallel with the respective frame member and defines a length direction of the flashing member.

As is also seen from the cross-sectional views of the side and top in Figs 2 and 3, the first leg 211,221,231,241,251 is extending away from the opening 13 defined by the frame members 11, 12, 14 and adapted for lying substantially in plane with the roof surface in which the roof window and flashing assembly are mounted. For the sake of simplicity, the roof structure is here represented only by a single batten 3 and an installation batten 4 arranged at level with the battens of the roof structure.

The second leg 212,222,232,242,252 extends up along the outer sides of the adjacent frame members facing away from the frame opening 13 and is angled with an angle A with respect to a vertical plane. This means that the exterior angle B between the first leg and the second leg on the exterior side of the flashing member is larger than 90 degrees, and so that the joint 225 between the first leg and the second leg is located at a distance D from the outer side 111,121 of the adjacent frame member.

It is noted that even though the references A, B and D are used both in Fig. 2 and Fig. 3 the angles and hence also the distance may be different at the side and at the top.

The distance D is gives room for insulating material 51,52 between the frame 1 and the interior side of the flashing members. Here the insulating material is shown only along the top and one side of the frame, but it will be understood that it may be present along all four sides of the frame 1. The exact amount and shape of the insulating material may vary depending on several factors such as the construction of the roof window, the roof structure and how the window is installed, and in some case it may be advantageous to leave it out at the bottom of the window. For the same reason, the bottom flashing member may be embodied with first and second legs that are perpendicular to each other or arranged so that the exterior angle B is less than 90 degrees.

In the embodiment shown in the drawing the side flashing member 22 is provided with two parallel folds 223,224 extending perpendicularly to and over the length of the first leg. These folds are intended to guide water in the

length direction L of the side flashing member in a manner well known to the skilled person and further serves to position the side flashing member 22 in relation to the top corner flashing member 23 and the bottom corner flashing members 25 by mating with corresponding folds 233,234,253 in these.

The connection between the top flashing member 21, the side flashing member 22 and the top corner flashing member 23 is shown in an enlarged view in Fig. 4. Here the joint 235 between top corner flashing member 23 and the top flashing member 21 extends substantially in continuation of and in parallel with the bend 225 forming the joint between the first leg 221 and second leg 222 of the side flashing member 22. In other embodiments the joint between the top corner flashing member and the top flashing member is located elsewhere or the top corner flashing member is integrated in the top flashing member. In order to achieve even further water tightness, the top flashing member 21 and/or the top corner flashing member 23 may be provided with sealing strips at the joint between them.

The top corner flashing member 23 overlaps the side flashing member 22 as illustrated by the line 226' indicating the position of the upper end edge of the first leg 221 of the side flashing member. A similar overlap is found at the second legs 222, 232 of the top corner flashing member and the side flashing member. Sealing strips or other weather proofing members may be provided at the overlap to enhance water tightness.

Turning now to Figs 5 and 6, where the right-hand top corner flashing member has been removed, it is seen that the upper end part of the side flashing member 22 extends over the installation batten 4, which is provided in order to support the top flashing member 21 in a manner well known to the skilled person. This prevents any substantial downwards movement at the end edge 226 of the side flashing member, which might result in the flashing assembly becoming untight, particularly as the first leg 221 is here also extended. The not only provides strength and stiffness to the side flashing member compared to if only the second leg 222 had been extended, but also a better support on the installation batten.

As is also seen from Figs 5 and 6 the side flashing member 22 has an

oblique end edge 227 at the second leg 222 with an angle in the plane of the drawing corresponding to the angle A of the second leg 212 of the top flashing member 21 such that it is substantially parallel to the interior side of the second leg of the top flashing member, whereas the end edge 226 of the first leg is perpendicularly to the length direction of the side flashing member. This means that the space formed underneath the top flashing member 21 to make room for the insulating material 52 as seen in Fig. 3 is closed off at the ends of the top flashing member. Moreover, the end edge 227 of the second leg of the side flashing member is possibly kept from sideways movement by being kept under a bend edge 216 on the top flashing member.

An embodiment with a different side flashing member 22 and a different position of the batten 3 is shown in Figs 7 and 8. In this embodiment only the second leg 222 of the side flashing member extends above the outer side of the top frame member, while the first leg 221 of the side flashing member is shorter and does not reach the batten.

The installation of a flashing assembly 2 of this type can advantageously be done in the following way:

arranging a bottom flashing member 24 below the roof window along a bottom frame member 14,

arranging at least one side flashing member 22 along a side frame member 12 and positioning it so that it extends above the outer side of the top frame member,

arranging a top flashing member 21 above the roof window along a top frame member 11 so that at least a part of the distance D between the outer side of the top frame member and interior side of the top flashing member is covered by the side flashing member 22.

At least the top flashing member 21 and the side flashing member 22 are arranged with a first leg 211,221,231,241,251 substantially in plane with the roof surface and with a second leg 212,222,232,242,252 extending up along an outer side of the adjacent frame member 11,12,14, said outer side facing away from the frame opening 13. Unless the roof window is mounted

close to another window or like roof penetrating structure, a side flashing member 22 will usually be arranged at both sides of the roof window.

Insulating material 51,52 may be arranged at the outer side of one or more frame members before arranging the flashing members, but it is also possible to provide flashing members with insulating material on the interior side before arranging them at the roof window.

In order to help in the installation of the flashing assembly, particularly the top flashing member 21 and the side flashing member(s) 22, an installation batten 4 may be arranged above the window in parallel with the top frame member 11. This installation batten 4 will serve to support the top flashing member 21 and the end part of the side flashing member 22 located at the top flashing member.

Even though the flashing assembly and the installation thereof has only been illustrated by a single embodiment in the drawing, the skilled person will understand that different features of this embodiment are not necessarily functionally linked and depending on each other unless explicitly stated above.

P A T E N T K R A V

1. Inddækningssæt (2) til et tagvindue, som er indrettet til at blive indbygget i en skrå tagoverflade, og som har en karm (1) omfattende en flerhed af karmelementer (11,12,14), der afgrænser en karmåbning (13), hvilket inddækningssæt indbefatter et topinddækningselement (21), som er indrettet til at blive anbragt over tagvinduet i den monterede tilstand, strækkende sig langs et topkarmelement (11) af tagvinduet, et bundinddækningselement (24), der er indrettet til at blive anbragt under tagvinduet i den monterede tilstand, strækkende sig langs et bundkarmelement (14) af tagvinduet, og mindst et sideinddækningselement (22), som er indrettet til at strække sig imellem topinddækningselementet og bundinddækningselementet i den monterede tilstand, strækkende sig langs et sidekarmelement (12) af tagvinduet,

hvor hvert inddækningselement (21,22,23,24,25) har en indvendig side og en udvendig side, hvor nævnte udvendige side er indrettet til at vende imod det udvendige i den monterede tilstand,

hvor i det mindste topinddækningselementet (21) og sideinddækningselementet (22) hver har et første ben (211,221,231,241,251) og et andet ben (212,222,232,242,252), hvor nævnte første ben er indrettet til at ligge i det væsentlige i plan med tagoverfladen og strækkende sig væk fra tagvinduet, og nævnte andet ben strækker sig i en vinkel i forhold til det første ben og er indrettet til at strække sig op langs en ydre side (111,121) af et hosliggende karmelement, hvor nævnte ydre side vender væk fra karmåbningen, og en samling (215,225,235,245,255) imellem det første ben og det andet ben strækker sig i det væsentlige parallelt med det hosliggende karmelement i den monterede tilstand og definerer en længderetning af inddækningselementet, og

hvor nævnte vinkel af det andet ben i forhold til det første ben ikke er ret, således at den udvendige vinkel (B) imellem det første ben og det andet ben på den udvendige side af inddækningselementet er større end 90 grader, og således at samlingen imellem det første ben og det andet ben er beliggende i en afstand (D) fra den ydre side af det hosliggende karmelement i den monterede tilstand, hvorved der gives plads til isoleringsmateriale (51,52) imellem tagvinduets karm og den indvendige side af inddækningselementet,

k e n d e t e g n e t ved, at i det mindste det andet ben (222) af sideinddækningselementet (22) er indrettet til at strække sig over den ydre side (111) af topkarmelementet (11) i den monterede tilstand, således at det dækker i det mindste en del af afstanden (D) imellem den ydre side af topkarmelementet og den indvendige side af topinddækningselementet (21).

2. Inddækningssæt ifølge krav 1, hvor i det mindste den endekant (227) af sideinddækningselementet (22), der er indrettet til at vende imod topinddækningselementet (21) i den monterede tilstand, er skrå, således at længden af det andet ben (222) er længere ved samlingen (225) imellem det første ben (221) og det andet ben end ved en fri kant af det andet ben, der vender væk fra denne samling.

3. Inddækningssæt ifølge krav 2, hvor vinklen af den skrå endekant (227) af sideinddækningselementet (22) i et vertikalt plan, der strækker sig parallelt med den ydre side af sidekarmelementet (12), svarer til vinklen (A) af det andet ben (212) af topinddækningselementet (21) i forhold til det første ben (211) af topinddækningselementet, således at endekanten af sideinddækningselementet er i det væsentlige parallel med den indvendige side af det andet ben af topinddækningselementet i den monterede tilstand.

4. Inddækningssæt ifølge et eller flere af de foregående krav indbefattende to sideinddækningselementer (22) indrettet til at blive anbragt på modstående sider af tagvinduets karm (1) strækkende sig langs hver af tagvinduets sidekarmelementerne (11).

5. Inddækningssæt ifølge et eller flere af de foregående krav, yderligere indbefattende mindst et tophjørneinddækningselement (23), som er indrettet til at overlappe topinddækningselementet (21) og et sideinddækningselement (22) i den monterede tilstand, således at der etableres en i det væsentlige vandtæt forbindelse imellem topinddækningselementet og sideinddækningselementet.

6. Inddækningssæt ifølge et eller flere af de foregående krav, hvor ét eller flere inddækningselementer (21,22,23,24,25) er forsynet med isoleringsmateriale på den indvendige side.

7. Inddækningssæt ifølge et eller flere af de foregående krav, hvor ét eller flere inddækningselementer (21,22,23,24,25) er forsynet med tætningsstrimler eller andre vejrsikringselementer.

8. Sæt omfattende et tagvindue og et inddækningssæt (2) ifølge et eller flere af kravene 1-7, hvor nævnte tagvindue er indrettet til et blive indbygget i en skrå tagoverflade og har en karm (1) omfattende en flerhed af karmelementer (11,12,14), der afgrænser en karmåbning (13).

9. Fremgangsmåde til vejrsikring af et tagvindue monteret i en skrå tagoverflade, hvor nævnte tagvindue har en karm (1) omfattende en flerhed af karmelementer (11,12,14), der afgrænser en karmåbning (13), indbefattende følgende trin:

at anbringe et bundinddækningselement (24) under tagvinduet langs et bundkarmelement (14),

at anbringe mindst et sideinddækningselement (22) langs et sidekarmelement (12),

at anbringe ét topinddækningselement (21) over tagvinduet langs et topkarmelement (11),

hvor hvert inddækningselement (21,22,23,24,25) har en indvendig side og en udvendig side, hvor nævnte udvendige side anbringes, så den vender imod det udvendige,

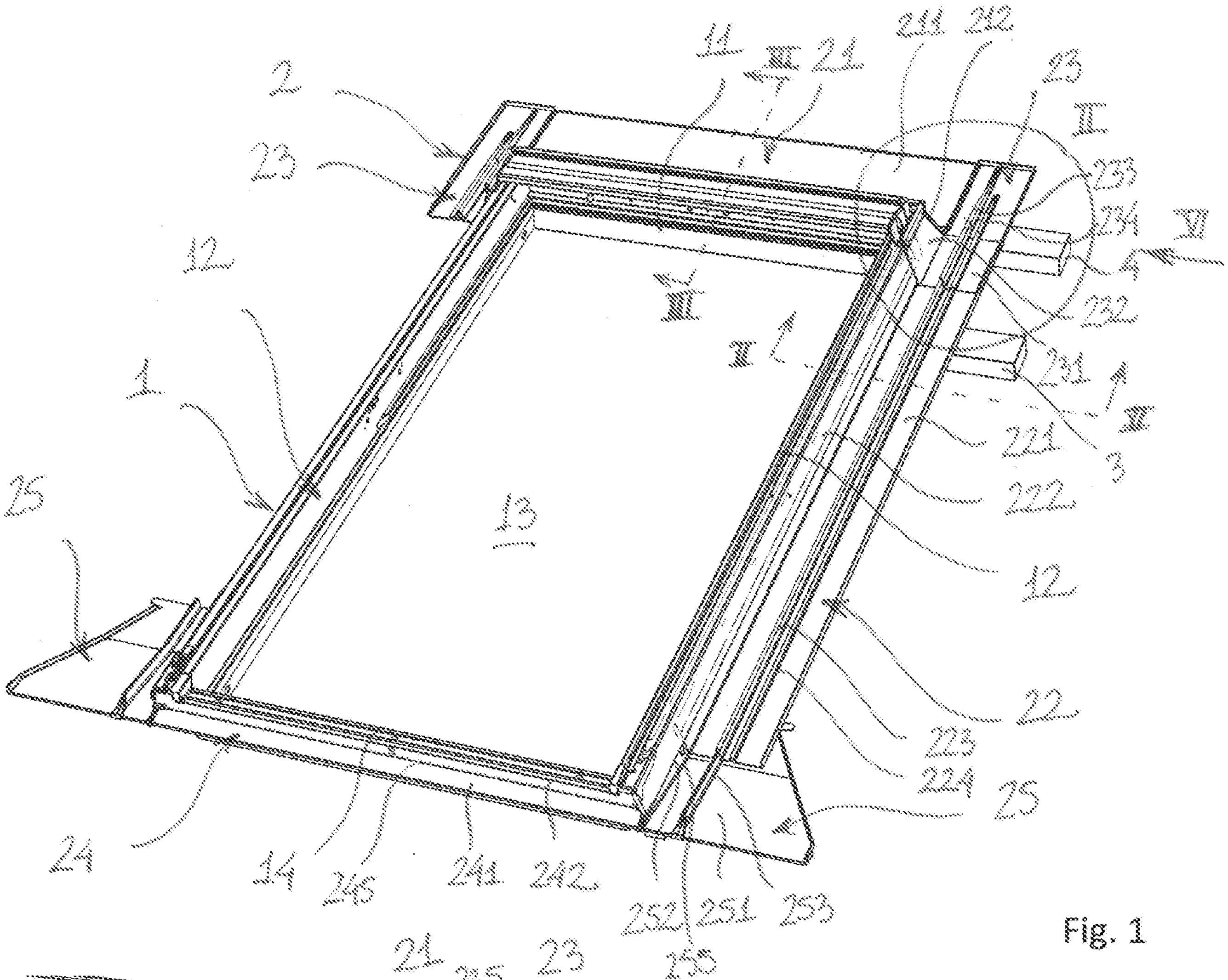
hvor topinddækningselementet (21) og sideinddækningselementet (22) anbringes med et første ben (211,221) i det væsentlige i plan med tagoverfladen og med et andet ben (212,222) strækkende sig op langs en ydre side (111,121) af et hosliggende karmelement, hvor nævnte ydre side vender væk fra karmåbningen,

hvor det andet ben af hvert inddækningselement strækker sig i en vinkel i forhold til

det første ben, hvilken vinkel af det andet ben i forhold til det første ben ikke er ret, således at den udvendige vinkel (B) imellem det første ben og det andet ben på den udvendige side af inddækningselementet er større end 90 grader, og således at samlingen imellem det første ben og det andet ben er beliggende i en afstand (D) fra den ydre side af det hosliggende karmelement i den monterede tilstand, hvorved der gives plads til isoleringsmateriale (51,52) imellem tagvinduets karm og den indvendige side af inddækningselementet,

k e n d e t e g n e t ved, at når sideinddækningselementet (22) anbringes, placeres det således, at det strækker sig over den ydre side (111) af topkarmelementet (11) og dækker i det mindste en del af afstanden (D) imellem den ydre side af topkarmelementet og den indvendige side af topinddækningselementet (21).

10. Fremgangsmåde ifølge krav 9, yderligere indbefattende trinnet at anbringe en hjælpelægte (3) over tagvinduet parallelt med topkarmelementet (11), hvor nævnte hjælpelægte tjener til at understøtte topinddækningselementet (21), og hvor sideinddækningselementet (22) anbringes således, at en endedel af sideinddækningselementet beliggende ved topinddækningselementet kommer til at hvile på hjælpelægten.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23
12
1
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24
14
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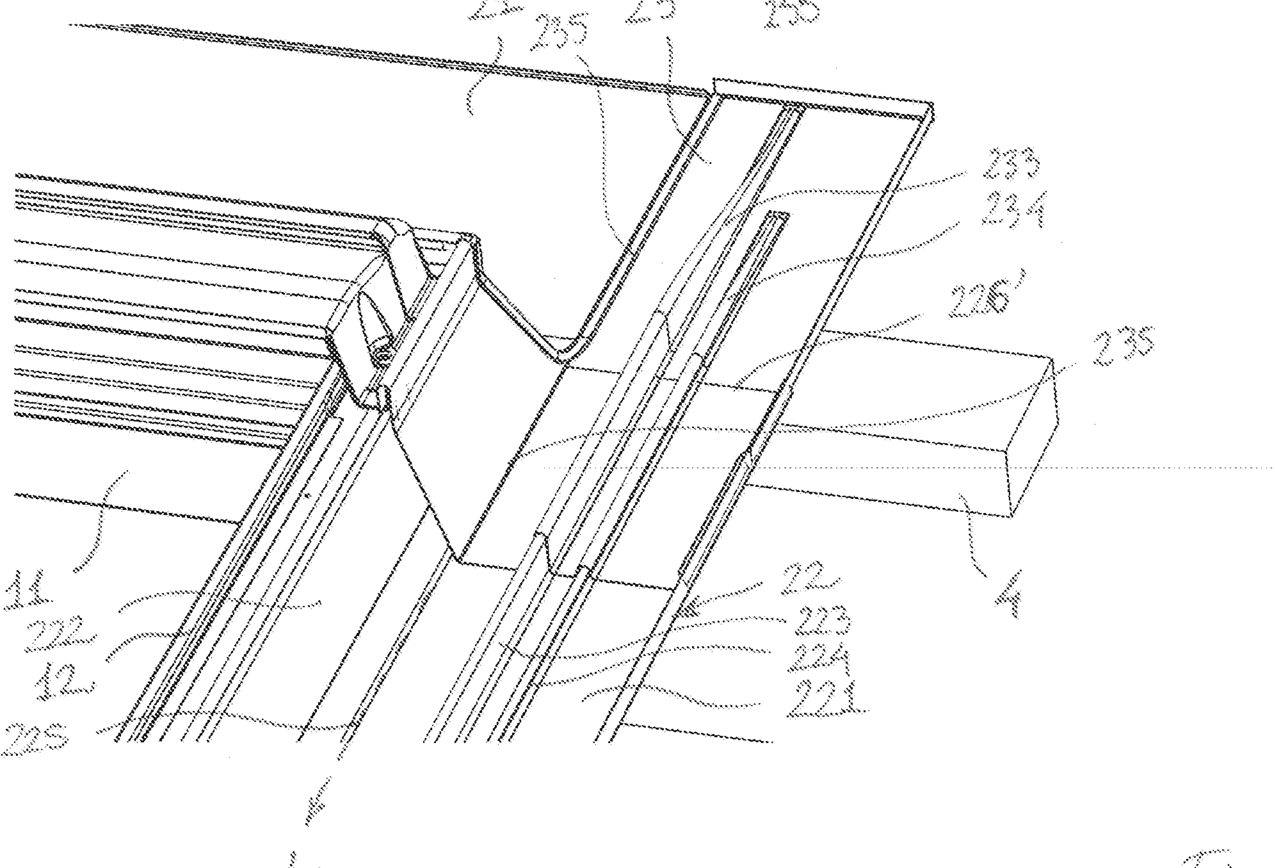
241
242
252
251
253
250
13
III
II
VI
211
212
233
234
4
232
231
221
3
222
22
223
224

Fig. 1


21
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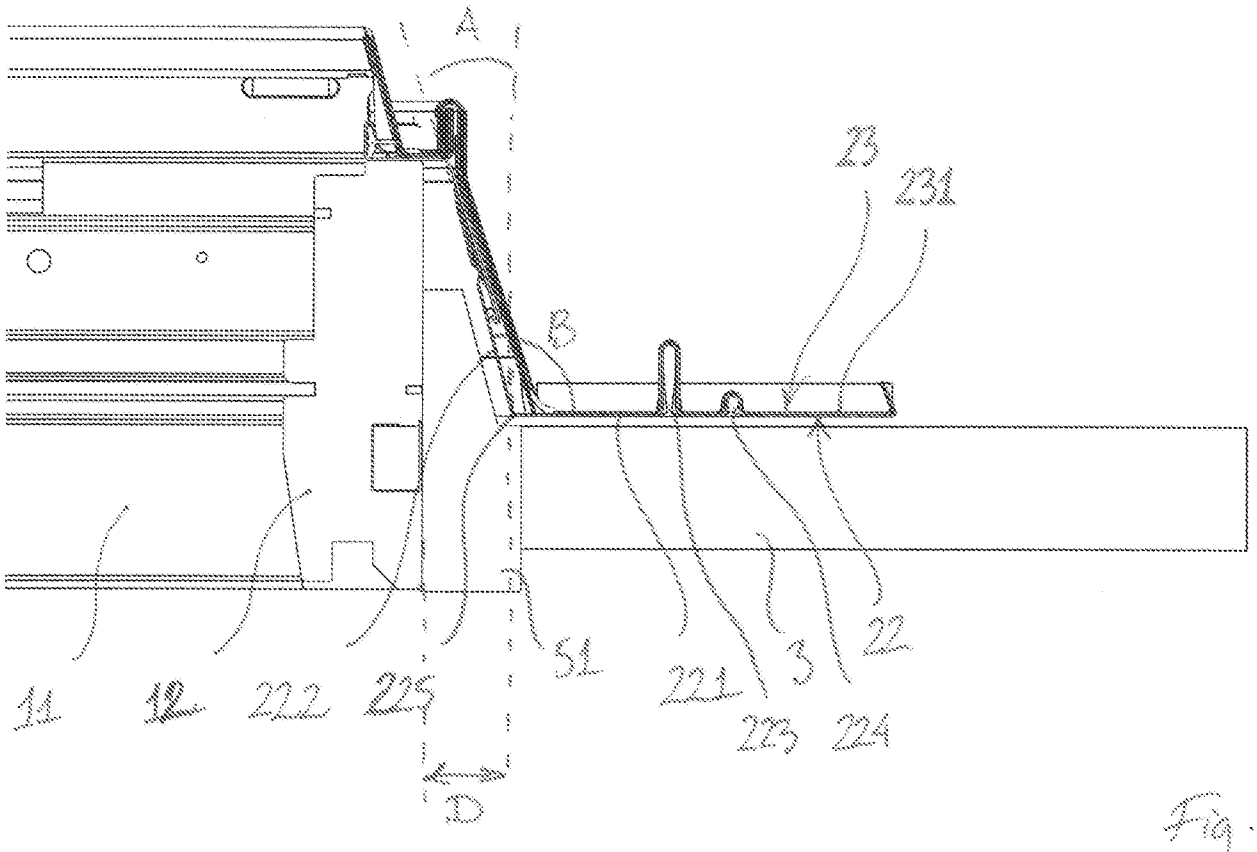
23
233
234
226'
235
11
222
12
225
22
223
224
221
4
L

Fig. 4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B
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12
222
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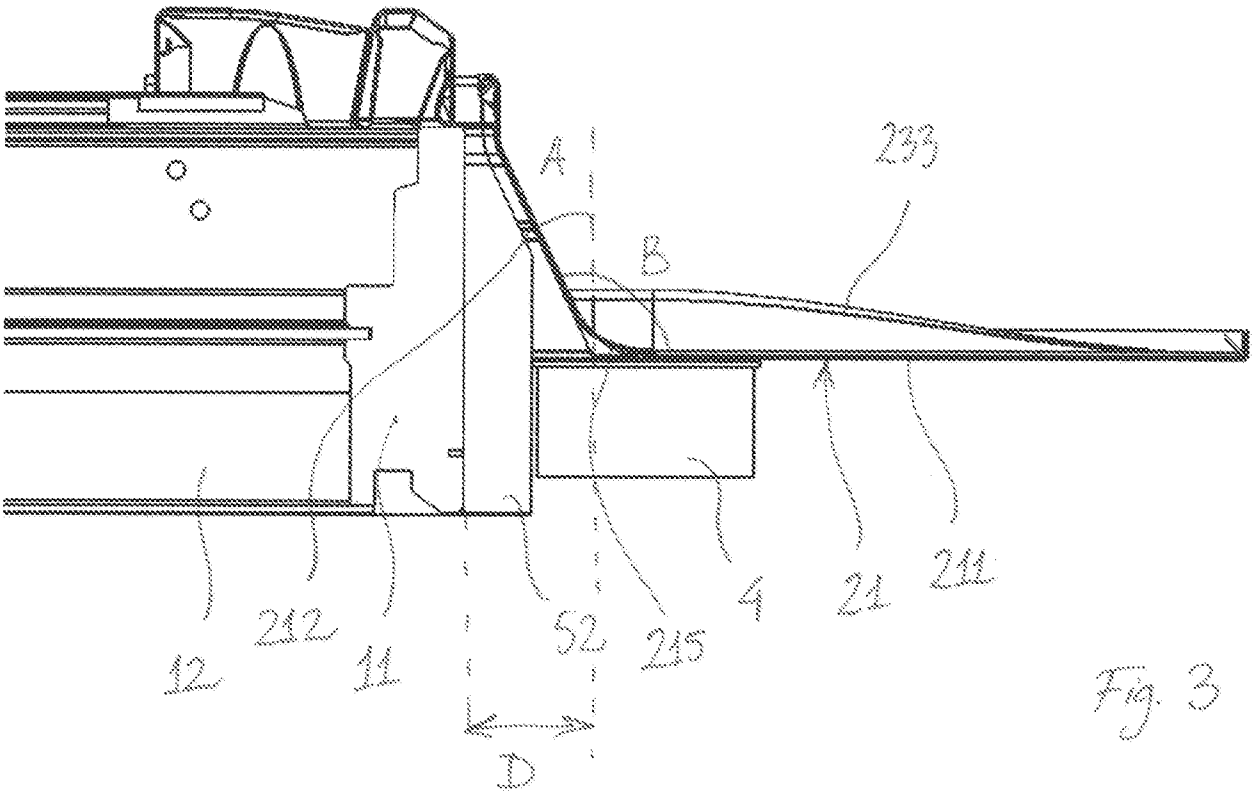
51
221
3
22
223
224
D

Fig. 2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B
12
212
11
52
215
4
21
211
D

Fig. 3

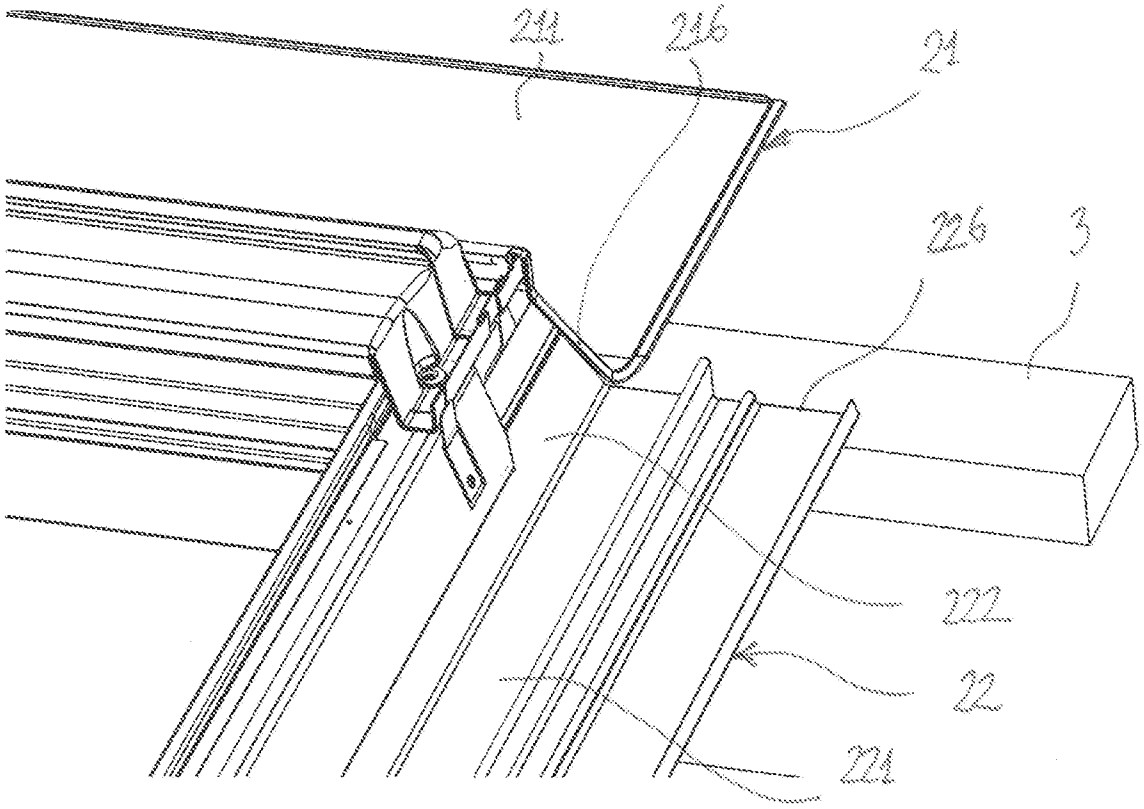

Fig. 5

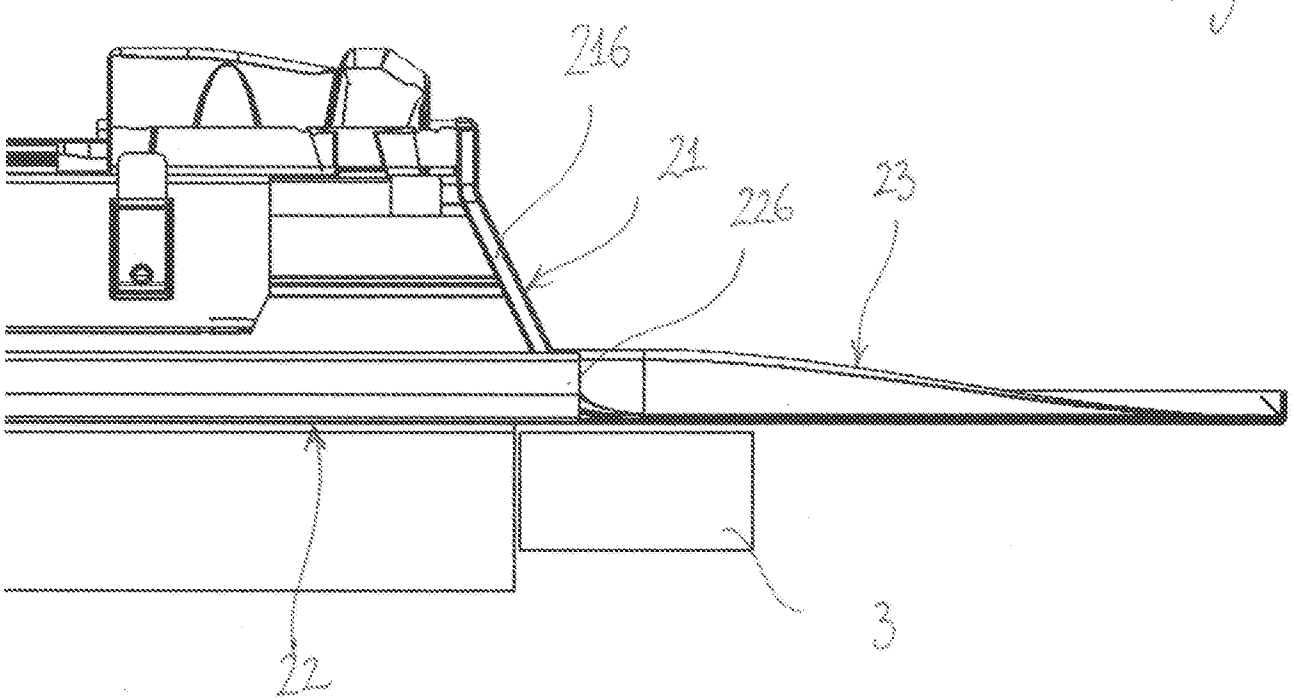

Fig. 6.

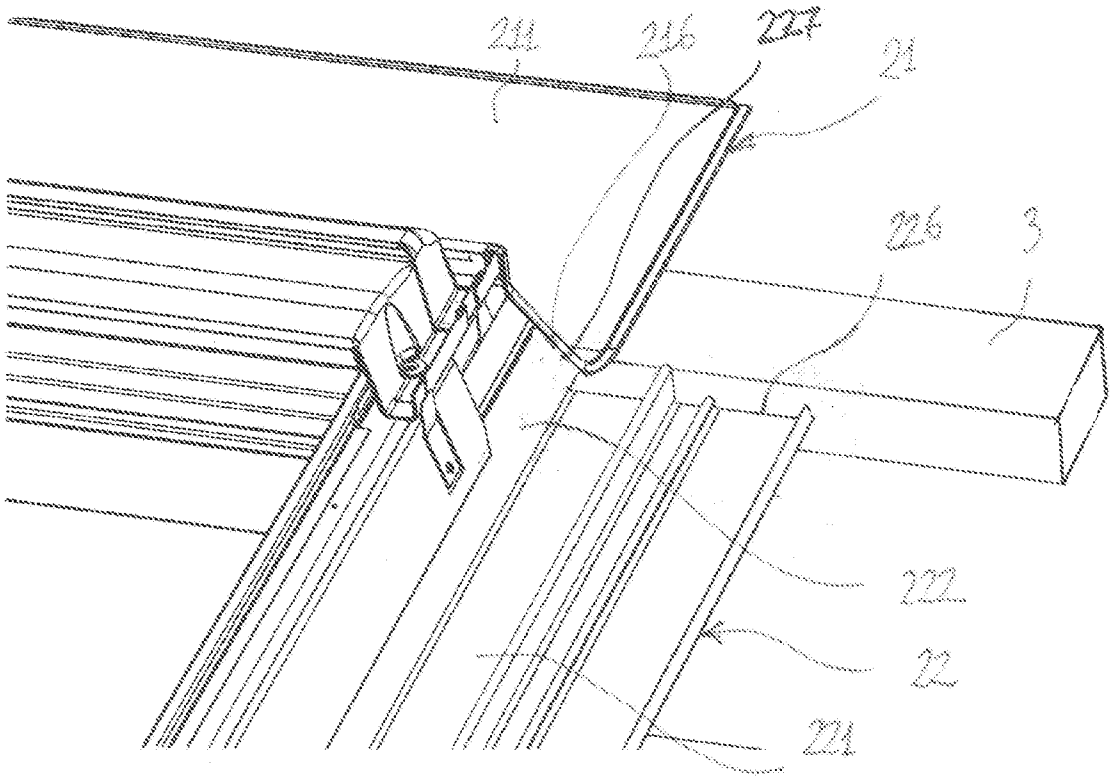

Fig 7

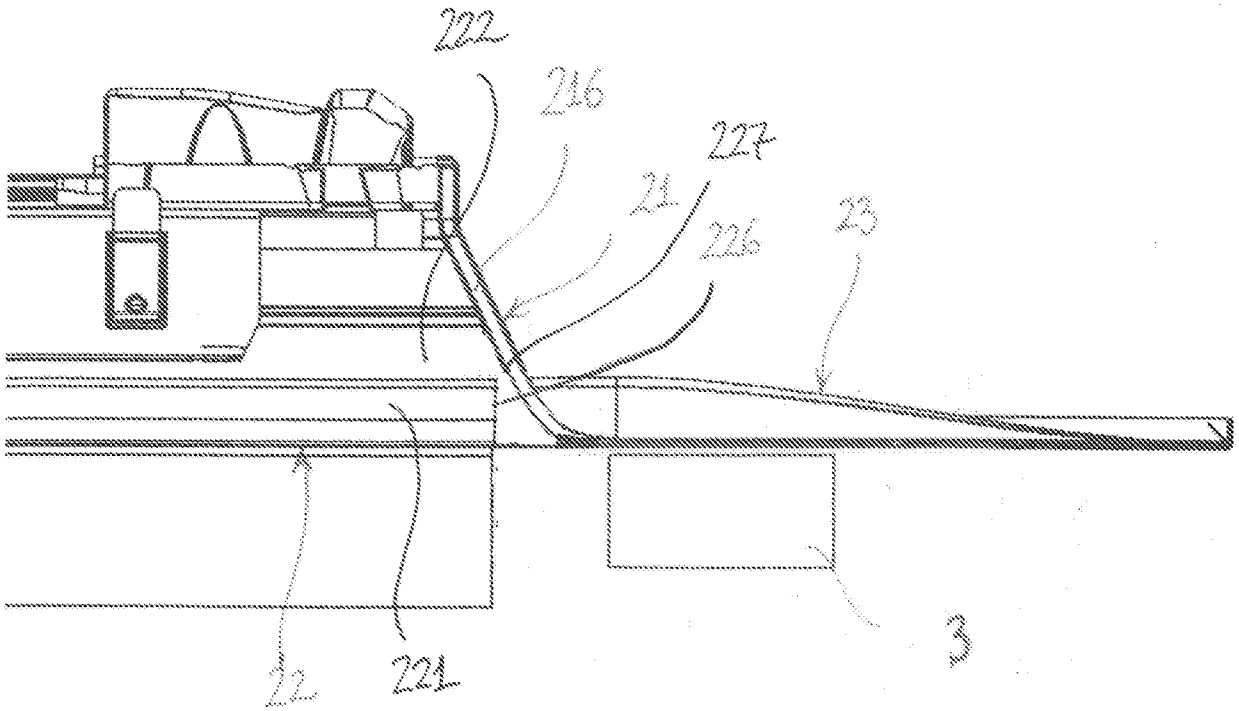

Fig. 8

SEARCH REPORT - PATENT	Application No. PA 2017 70344

1. ☐ Certain claims were found unsearchable (See Box No. I).

2. ☐ Unity of invention is lacking prior to search (See Box No. II).

A. CLASSIFICATION OF SUBJECT MATTER

E 04 D 13/147 (2006.01); E 04 B 7/18 (2006.01); E 04 D 13/03 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

PCT-minimum documentation searched (classification system followed by classification symbols)

CPC: E04D, E04B & E05Y.

IPC & FI: E04D & E04B.

Documentation searched other than PCT-minimum documentation

DK, NO, SE, FI: IPC-classes as above.

Electronic database consulted during the search (name of database and, where practicable, search terms used)

EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant for claim No.
A, D	EP 1550777 B1 (VKR HOLDINGS A/S) 2006.08.23, see figures 1-4.	1-10
A	PL 205441 B1 (FAKRO PP SPOLKA Z.O.O.) 2010.04.30, see the description of example II on page 4 and figures 2 and 4.	1-10
A	EP 2508690 A1 (FAKRO PP SPOLKA Z.O.O) 2012.10.10, see sections [0022] and [0027] and figures 1-4.	1-10
A	EP 0962606 A1 (LAFARGE DAKPRODUKTEN B.V.) 1999.12.08, see figures 3 and 4.	1-10
A	US 6966157 B1 (SANDOW, KIYOSHI) 2005.11.22, see figures 1-9.	1-10

☒ Further documents are listed in the continuation of Box C.

*	Special categories of cited documents:	"P"	Document published prior to the filing date but later than the priority date claimed.
"A"	Document defining the general state of the art which is not considered to be of particular relevance.	"T"	Document not in conflict with the application but cited to understand the principle or theory underlying the invention.
"D"	Document cited in the application.	"X"	Document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone.
"E"	Earlier application or patent but published on or after the filing date.	"Y"	Document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"L"	Document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified).	"&"	Document member of the same patent family.
"O"	Document referring to an oral disclosure, use, exhibition or other means.		

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Date of completion of the search report
15 November 2017

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SEARCH REPORT - PATENT		Application No. PA 2017 70344
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant for claim No.
A	US 5018333 A (BRUHM, RONALD) 1991.05.28, see figures 1-6.	1-10
A	DE 2142733 A1 (HOESCH AG) 1973.03.15, see figures 1-5.	1-10
A	EP 3012381 A1 (GODEST FT) 2016.04.27, see figures 1a-13.	1-10
A	JP S6279027 U (Unknown) 1987.05.20, see figures 1-3.	1-10

SEARCH REPORT - PATENT	Application No. PA 2017 70344

Box No. I Observations where certain claims were found unsearchable

This search report has not been established in respect of certain claims for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched, namely:

2. ☐ Claims Nos.:
because they relate to parts of the patent application that do not comply with the prescribed requirements to such an extent that no meaningful search can be carried out, specifically:

3. ☐ Claims Nos.:
because of other matters.

Box No. II Observations where unity of invention is lacking prior to the search

The Danish Patent and Trademark Office found multiple inventions in this patent application, as follows:

SEARCH REPORT - PATENT	Application No. PA 2017 70344

SUPPLEMENTAL BOX

Continuation of Box [.]