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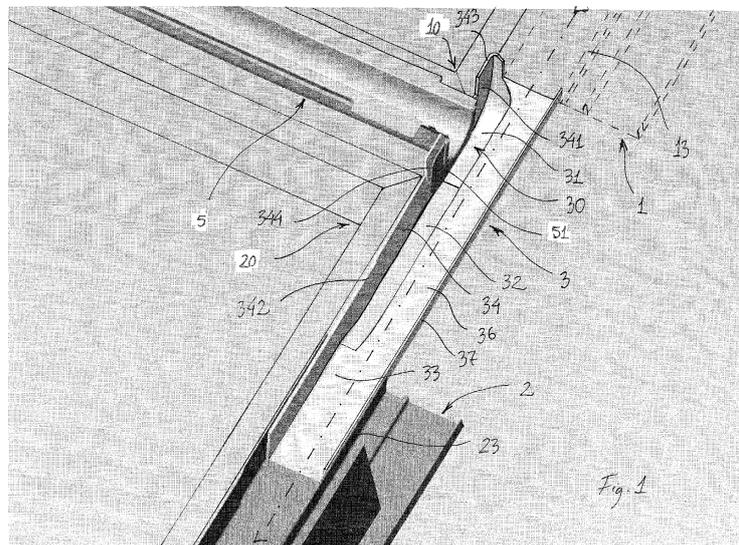
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(54) **A flashing kit and a method for flashing roof penetrating structures arranged in an inclined roof with one structure above another**

(57) A flashing kit for use at a joint between two structures each penetrating a roof or a wall meet, at least one of these structures being arranged in an inclined roof, where a first roof penetrating structure is arranged above a second structure seen in the direction of slope of the roof. The flashing kit comprises a first side flashing member adapted for being arranged along an outer side surface of the first roof penetrating structure, a second side flashing member adapted for being arranged along an outer side surface of the second structure, a gutter flashing member adapted for being arranged between a lower outer surface of the first roof penetrating structure and an upper outer surface of the second structure, and a third side flashing member adapted for interconnecting the gutter flashing member with at least the second side flashing member. The third side flashing member has a substantially U-shaped cross section with a first leg of the U being adapted for engaging a side outer surface of the second structure and the base of the U being adapted for being arranged substantially in parallel with the plane with the roof. The third side flashing member further comprising a receiving section adapted for being arranged at level with the gutter flashing member, a draining section adapted for being interconnected to the second side flashing member, and a lifting section between the receiving and draining sections. In the mounted state the draining section is positioned below the receiving section seen in the direction of slope of the roof and higher than the receiving section seen perpendicular to the plane of the roof.



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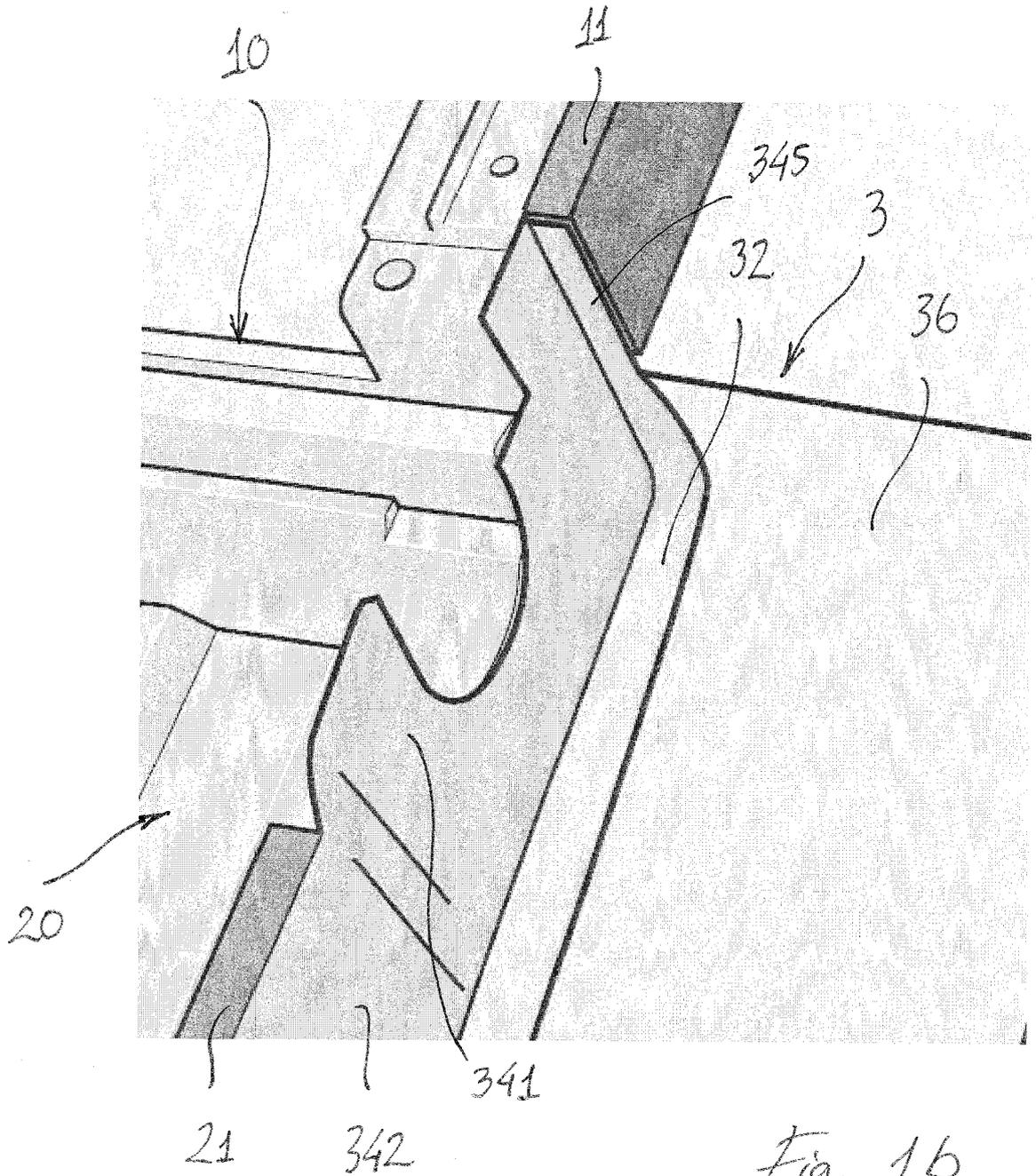


Fig. 1b

Description

[0001] The present invention relates to a flashing kit for use at a joint between two structures each penetrating a roof or a wall meet, at least one of these structures being arranged in an inclined roof, where a first roof penetrating structure is arranged above a second structure seen in the direction of slope of the roof, said kit comprising a first side flashing member adapted for being arranged along an outer side surface of the first roof penetrating structure, a second side flashing member adapted for being arranged along an outer side surface of the second structure, and a gutter flashing member adapted for being arranged between a lower outer surface of the first roof penetrating structure and an upper outer surface of the second structure. The invention also relates to such a flashing kit for use with roof penetrating structures arranged in an inclined roof with a first roof penetrating structure above a second roof penetrating structure and to a method for mounting a flashing kit.

[0002] Such a flashing kit is known for example from DK154099B, where the gutter flashing member is provided with a T-shaped end section serving to interconnect the first and second side flashing members. This works very well when standard type roof windows are mounted in the normal mounting depth in relation to the roof, but as the flashing member are arranged substantially in plane with the roofing it cannot be used when roof windows are mounted in the so-called "Encastrée" manner, where the window does not project as far above the plane of the roof as is normally the case. This type of mounting has become still more common over the later years since it improves the insulation properties of the construction and is thought to be more aesthetically pleasing.

[0003] Similar problems arise if the gutter flashing member is also to be used for draining off water condensing on the inside of a window constituting the first roof penetrating structure, as it must then be located below the level of the inner side of the window pane.

[0004] These problems have been solved with flashing kits where at least the second side flashing member is provided with a depression extending in the length direction of the flashing member closest to the roof penetrating structure and with a transition section at the lowermost end having a smaller slope than the rest of the flashing member. The depression then serves as a drainage channel leading water along the side of the lowermost roof penetrating structure and when reaching the transition section, the water is "lifted" up to the plane of the roofing by the decreased slope and led onto the bottom flashing members. Such side flashing members are also shown in DK154099B.

[0005] This, however, necessitates the use of different kinds of side flashing members depending on the installation depth of the roof penetrating structure, thus making it necessary to manufacture and keep a large number of different flashing products in stock and involving the risk of choosing the wrong one. Moreover, a space in the roof

structure, which could otherwise have been used for example for insulating material, must be kept open to make room for the drainage channel and it may sometimes be necessary to remove material from the roof structure to create the space.

[0006] It is therefore the object of the invention to provide a flashing kit and a method for flashing roof penetrating structures, which minimize the needed number of different flashing members or flashing kits and/or which have less impact on the design of the roof structure.

[0007] This is achieved with a flashing kit, which further comprises a third side flashing member adapted for interconnecting the gutter flashing member with at least the second side flashing member, said third side flashing member having a substantially U-shaped cross section with a first leg of the U being adapted for engaging a side outer surface of the second structure, a second leg being substantially parallel to the first leg and the base of the U being adapted for being arranged substantially in parallel with the plane with the roof, a length axis of the third side flashing member being substantially perpendicular to the plane of the U, and said third side flashing member further comprising a receiving section, a lifting section and a draining section, the receiving section being adapted for being arranged at level with the gutter flashing member to receive water there from, the draining section being adapted for being interconnected to the second side flashing member in an overlapping joint, and the lifting section being arranged between the receiving and draining sections at an angle to at least the draining section so that in the mounted state the draining section will be positioned below the receiving section seen in the direction of slope of the roof and higher than the receiving section seen perpendicular to the plane of the roof. When intended for being used with two roof windows mounted one above the other in the direction of slope of the window, the third side flashing member is adapted for interconnecting the gutter flashing member with at least the second side flashing member, said third side flashing member having a substantially U-shaped cross section with a first leg of the U being adapted for engaging a side outer surface of the second roof penetrating structure, a second leg being substantially parallel to the first leg and the base of the U being adapted for being arranged substantially in parallel with the plane with the roof, a length axis of the third side flashing member being substantially perpendicular to the plane of the U, and said third side flashing member further comprising a receiving section, a lifting section and a draining section, the receiving section being adapted for being arranged at level with the gutter flashing member to receive water there from, the draining section being adapted for being interconnected to the second side flashing member in an overlapping joint, and the lifting section being arranged between the receiving and draining sections at an angle to at least the draining section so that in the mounted state the draining section will be positioned below the receiving section seen in the direction of slope of the roof and higher than

the receiving section seen perpendicular to the plane of the roof.

[0008] The provision of a third side flashing member, which serves as an intermediate piece between the gutter flashing member and the second side flashing member entails that the second side flashing member does not need to be specially adapted for the installation depth but can in all cases be located substantially in plane with the roofing. Depending on the type of roof penetrating structures and another installation details the gutter flashing member may potentially also be the same for all installation depths.

[0009] In the following reference will be made to two roof penetrating structures for the sake of simplicity, but unless otherwise it is explicitly stated it is to be understood that it also applies to the cases where a roof penetrating structure is arranged above a structure penetrating a wall.

[0010] The first side flashing member may be connected to the third side flashing member and/or directly to the second side flashing member as will be elaborated below.

[0011] The dimensions of the third side flashing member will depend primarily on the dimensions of the other flashing members connected to it, i.e. the receiving section must for example be sufficiently long to accommodate the width of the gutter flashing member and the draining section must provide a reliable transition to the second side flashing member.

[0012] The receiving and draining sections preferably have substantially the same slope in the mounted state as the slope of the roof, while the lifting section is arranged horizontally or with a relatively small slope in the same direction as the slope of the roof. The lifting section may thus be said to "lift" the water from the level of the gutter flashing member and the receiving section to the level of the draining section and second side flashing member. A small slope on the lifting section is preferred since it will make sure that water is drained off properly and prevent impurities from accumulating, but for practical and aesthetical reasons the slope will normally not exceed 10° above horizontal.

[0013] One of the most important qualities of the third side flashing member is water-tightness and it is therefore preferred, that the flashing is formed from a single piece of material, for example by moulding, drawing and/or folding. It is, however, also possible to use welded joints or the like. The third flashing member can be made from any suitable material such as metal or rubber, but in a preferred embodiment is made from plastic, such as for example polyvinyl chloride (PVC), polyoxymethylene (POM), polycarbonate (PC) or highdensity polyethylene (HDPE), but the material chosen should of course be suitable for contact with the other flashing members and the structure(s), which it will come into contact with. Depending on the material, it may be given a surface coating, and different materials may be used in combination, such as by providing metal reinforcement at ap-

propriate places in a flashing member made primarily from plastic. The other flashing members of the kit can be made from the same material as the third side flashing member, but it is presently preferred to use lacquered or painted aluminium, which in practice has proven well suited for the purpose.

[0014] In some embodiments the first leg of the third side flashing member comprises a first section adapted for interconnection to the gutter flashing member and a second section adapted for engaging the side outer surface of the second roof penetrating structure, said first section being off-set in relation to the second section in a direction away from the second leg.

[0015] In the mounted state the first section of the first leg can be located in the space between the first and second roof penetrating structures. This has numerous advantages. For one, the same size gutter flashing member to be used with roof penetrating structures of different widths, not only when they are first installed but also when the structure is later modified, for example when adding additional insulating material or replacing cladding or covering members. Only the third side flashing member will have to be replaced when the width of the roof penetrating structure changes, thus minimizing the number of components to be manufactured and sold and reducing the risk of choosing the wrong flashing members. Another advantage is that the receiving section is relatively wide compared to when the first section is not off-set, thus increasing the water holding capacity of the third side flashing member, which may particularly be needed when water from the first side flashing member is also led onto the receiving section. Thirdly, the joint between the gutter flashing member and the third side flashing member is not located in direct continuation of the first side flashing member, where large amounts of water may be coming from above.

[0016] It is noted that the expression "in the space between the first and second roof penetrating structures" is intended to cover all parts associated with the respective structures, including insulation material and the like, and that the first section therefore does not have to be located between for example the frames of two roof windows.

[0017] The provision of third side flashing members with more or less off-set first sections is particularly useful when the third side flashing members are made from plastic with limited deformability. When making the third side flashing member of aluminium or like materials, the natural deformability and low elasticity of the material means that small variations in the width of the roof penetrating structures may be compensated for simply by bending the first leg slightly away from or towards the third leg.

[0018] The first leg of the third side flashing member preferably comprises a recess having substantially the same shape as the cross-sectional shape of the gutter flashing member perpendicularly to its length axis, so that when mounting the flashing kit, an outer end of the

gutter flashing member can be arranged in the recess. In this context the length axis extends from one end of the gutter to the other, i.e. horizontally from one side of the roof penetrating structures to the other in the mounted state.

[0019] To provide a stable and water-tight joint between the third side flashing member and the gutter flashing member one or both of them may be provided with a connector flange adapted for forming an overlapping joint with the other flashing member. These connector flanges are preferably substantially perpendicular to the parts of the flashing members to which they are attached. I.e. the flange on the gutter flashing member is perpendicularly to its length axis and thus parallel to the first leg of the third side flashing member in the mounted state, whereas the flange or flanges on the third side flashing member is perpendicular to the first leg and extending in the length direction of the gutter flashing member in the mounted state, preferably away from the second leg. Each flashing member may be provided with more than one flange.

[0020] In some embodiments the third side flashing member comprises a side portion extending from the second leg away from the first leg substantially in plane with the draining section and a side flange projecting from the side portion substantially away from the plane of the receiving section and extending substantially in parallel with the length axis of the third side flashing member. The length axis of the third side flashing member extends from the end intended to engage the first side flashing member to the end intended to engage the second side flashing member, i.e. in the intended direction of water transport and the slope of the roof in the mounted state.

[0021] The side flange may be adapted for engagement with flanges, recesses, grooves or slits in/on one or more other side flashing member(s) and be used for positioning side flashing members in relation to other each other and/or interconnecting side flashing members. In a structurally simple embodiment this is achieved by providing the first side flashing member with a longitudinal upwards bent flange having the cross-sectional shape of an inverted U and arranging this bent flange to ride on the side flange of the third side flashing member. The longitudinal engagement between these two flanges is easy to establish during mounting of the flashing kit and will provide a very exact positioning of the two side flashing members in relation to each other. Another example is to provide the second side flashing member with a longitudinal flange, which is arranged at a distance from the outer side surface of the second structure or second roof penetrating structure, said distance being marginally larger than the distance between the first leg of the third side flashing member and the side flange. The third side flashing member may then be arranged between the outer side surface of the roof penetrating structure and the flange on the second side flashing member. This too will provide a great precision in positioning the third side flashing member and when dimensioned appropriately a tight fit between the side flashing members may even

result in the third side flashing member being fixed. These two embodiments may of course be combined so that the first side flashing member rides on an upper part of the side flange in the mounted state, while a lower part is in engagement with the second side flashing member.

[0022] Moreover, if the side flange extends substantially over the entire length of the third side flashing member, it will prevent water from running sideways off the third side flashing member and penetrate underneath the roofing. This principle is known from traditional side flashing members for use with undulated roofing materials such as tiles and will therefore not be described in further detail here.

[0023] In some embodiments the flashing kit comprises a fourth side flashing member adapted for interconnecting the first and second side flashing members, one end of the fourth side flashing member engaging the first side flashing member, another end engaging the second side flashing member, and a centre section of the fourth side flashing member spanning at least partially over the third side flashing member. By spanning over the third side flashing member the fourth side flashing member diverts at least some of the water draining off the first side flashing member, so that it is led directly onto the second side flashing member instead of onto the third side flashing member. This considerably reduces the risk of overflow from the third side flashing member.

[0024] Moreover, as the fourth side flashing member partially covers the third side flashing member, the risk of dirt such as leaves entering the channel or pocket formed by the receiving and lifting sections is reduced.

[0025] As described for the third side flashing member above, the fourth side flashing member may also be provided with one or more recesses, grooves, slits, flanges and/or projecting parts adapted for engagement with corresponding flanges, recesses, grooves, slits or openings in one or more other flashing member(s). In this way the fourth side flashing member may be positioned in relation to and/or interconnected to one or more other flashing member(s) by one or more recesses, grooves, slits, flanges or projecting parts being arranged in engagement with corresponding flanges, recesses, grooves, slits or openings in one or more of the other flashing member(s). In a preferred and structurally simple embodiment the fourth side flashing member is provided with a bent flange, which rides on a side flange of the third side flashing member as described for the first side flashing member above, and a bent flange of the first side flashing member may then be adapted for riding on the bent flange of the fourth side flashing member. In this way the side flashing members come to overlap in a cascading manner.

[0026] It is to be understood that the fourth side flashing member may in principle also be used in constructions, where there is no separate third side flashing member, but where the receiving, lifting and draining sections are included in the first or/and second side flashing members and/or gutter flashing member.

[0027] Whenever terms such as "upper", "lower", "inner", "outer", "interior" and "exterior" are used in this description they are referring to the intended orientation in the mounted state of the flashing kit, not to orientations in which a particular part or component may be found during manufacture, transport, storage or installation.

[0028] In the following the invention will be described in more detail with reference to embodiments of the invention shown in the drawing, where:

Fig. 1 shows a perspective view of a flashing kit mounted at the righthand side of a pair of roof windows mounted one above the other,

Fig. 1b corresponds to Fig. 1 but with a different configuration of the roof windows and hence a different position of the third side flashing member,

Fig. 2 corresponds to Fig. 1 but showing only the flashing kit and with a fourth side flashing member added,

Fig. 3 shows a third side flashing member corresponding to the one in Figs 1 and 2 but intended for use at the left-hand side of a pair of roof windows,

Figs 4-6 shows the third side flashing member in Fig 3 seen from the bottom, side and top, respectively, Figs 7 and 8 show the third side flashing member in Figs 4-6 seen from respective ends,

Fig. 9 shows part of the third side flashing member in Figs 4-8 seen in cross-section along the line A-A in Fig. 6,

Fig. 10 shows another embodiment of a third side flashing member, which has no side flange,

Fig. 11 shows another embodiment of a third side flashing member, where the first leg is plane,

Fig. 12 shows another embodiment of a third side flashing member, which has no side flange and where the first leg is plane, and

Fig. 13 shows the side flashing member in Fig. 12 when mounted in a structure, where a roof window meets a façade window.

[0029] A flashing kit according to the invention is shown in a perspective partially cut away view in Fig. 1. A first side flashing member 1, which is only indicated in punctured lines, is arranged along the outer side of a first roof window 10, and a second side flashing member 2 is arranged along the outer side of a second roof window 20. Though reference is made only to roof windows here and in the following it is to be understood that the flashing kit may also be used with other types of roof penetrating structures of a substantially rectangular shape. Accordingly, the roof windows 10, 20 have been illustrated as simple frames in Fig. 1 and have been left out entirely in Fig. 2.

[0030] Extending between the first side flashing member 1 and the second side flashing member 2 is a third side flashing member 3, which is further interconnected to a gutter flashing member 4 arranged between the first roof window 10 and the second roof window 20.

[0031] The first and second side flashing members 1, 2 are of the types used with tile roofings and mounted in the traditional manner at level with the roofing (not shown), whereas the gutter flashing member 4 is arranged in a relatively deep position. Typically the bottom of the gutter flashing member will be approximately 50 mm below the level of the first and second side flashing members seen in a direction perpendicular to the plane of the roof. The second side flashing member has been shortened to give room for the third side flashing member, but is otherwise a standard side flashing member. Such shortening may be performed at the installation site and the standard side flashing member may be provided with an indication of where to cut it, so that this may easily be performed, even by persons without special knowledge.

[0032] The main purpose of the third side flashing member 3 is to lift the water from the level of the bottom of the gutter flashing member 4 to the level of the second side flashing member 2. To this end the third side flashing member is provided with a receiving section 31, which is substantially at level with the bottom of the gutter flashing member, and a lifting section 32 with a relatively small slope extending from the receiving section to a draining section 33, which is substantially at level with the first and second side flashing members, reference now also being made to Figs 3-9. At the sides the receiving section 31 and lifting section 32 are delimited by a first leg 34 extending substantially in parallel with and engaging the outer surface of the second roof window 20 and a second leg 35, which is arranged in parallel at a distance there from, thus forming a channel or pocket 30 at the upper end of the third side flashing member suitable for receiving water. If seen in cross-section the third side flashing 3 thus has a U-shape, where the receiving and lifting sections form the base of the U. In the embodiment shown the first leg extends over the entire length of the third side flashing member as defined by length axis L, whereas the second leg becomes gradually smaller towards the draining section, so that the cross-sectional shape is angular at the lower end of the third side flashing member. It is, however, to be understood that the height of the first leg may be equal to or smaller than the height of the second leg, so that the first leg stops at the transition between the lifting and the draining section and/or that the second leg may form a flange at the side of the draining section facing away from the roof window. Likewise, it is to be understood that the height of the first and/or second leg may vary over the length of the third side flashing member.

[0033] The end of the gutter flashing member 5 is resting in a recess 38 in the first leg 34 of the third side flashing member 3 and a flange 51 on the gutter flashing member provides for an overlapping joint. This overlap not only makes the joint water-tight, but when a similar joint to a third side flashing member (not shown) at the opposition of the windows 10,20 is established, it also contributes to fixating the flashing kit. It is also possible to provide the third side flashing member with a similar flange (not

shown) on the first leg extending along the gutter flashing member to provide an additional or alternative overlap. Such a flange should preferably extend away from the second leg 35 and be arranged on the lower side of the gutter flashing member.

[0034] In Fig. 1 the first side flashing member 1 is illustrated as ending in a straight cut at level with the upper end of the third side flashing member 3, but it will be understood that flanges designed for providing an overlapping joint between these two flashing members may also be provided. The first side flashing member may also be provided with flanges (not shown) or the like serving to direct at least some of the water coming down the first side flashing member away from the pocket 30 and onto the flat side section 36 of the third side flashing member. Likewise it is to be understood that the first side flashing member may be provided with projecting parts (not shown), such as for example a part extending along the outer side of the third side flashing member down to the second side flashing member 2. Such an extension might also be provided on the second side flashing member.

[0035] In the embodiments in Figs 1-10 the first leg 34 of the third side flashing member 3 comprises two off-set sections, a first section 341 at the upper end engaging the gutter flashing member and a second section 342 at the lower end engaging the outer side surface of the lower roof window 20. The first section is further away from the second leg 35 than the second section, thus making the channel or pocket 30 wider at the upper end than at the lower end and resulting in the first section being located in the space formed between the two roof windows. This not only increases the water receiving capacity but, also means that the joint between the gutter flashing member 5 and the third side flashing member is well protected. Moreover, by providing the third side flashing members with different widths, the same gutter flashing member may be used with roof penetrating structures of different widths, which for example allows the use of the same gutter flashing member for windows of different types or brands. Still another advantage is, that the off-set section may be used for interconnecting the third side flashing member to top and/or bottom coverings members (not shown) used over the gutter on the roof penetrating structures 10, 20 and/or side covering and/or cladding members (not shown) used at the sides of the roof penetrating structures. The shape of the upper inner corner 343 of the third side flashing member and the ledge 381 on the recess 38 in the first leg 34 is designed to facilitate the mounting of such covering and cladding members.

[0036] The first off-set section 341 of the first leg may in principle be connected to the second section 342 in any desired way as long as the water-tightness is ensured, but here an inclined interconnecting section 344 provides optimal draining properties and prevents the accumulation of water and dirt.

[0037] At the opposite side of the channel or pocket 30 formed by the first and second legs 34, 35 and receiving and lifting sections 31, 32, facing away from the roof win-

dows 10, 20 are a side section 36 and a side flange 37. The side section 36 extends over the entire length of the third side flashing member 3 and will receive a large part of the water coming from the first side flashing member 1 and deliver it to the second side flashing member 2. The side flange 37 will prevent this water from flowing sideways off the third side flashing member.

[0038] The first and second side flashing members 1, 2 are here provided with upstanding flanges 13, 23, as is common with side flashing used together with undulated roofings, and the width of the side section 36 is so that the side flange 37 interacts with these flanges. As may be seen in Fig. 1, the side flange 37 lies closely against the inner side of the flange 23 on the second side flashing member 2, so that the third side flashing member 3 is prevented from moving sideways. A bent flange 13 on the first side flashing member 1 may be made to ride (not shown) on the upper end of the side flange 37, which will provide a similar interlocking of these two side flashing members.

[0039] In Fig. 1b the third side flashing member in Fig. 1 has instead been mounted at a pair of roof windows 10, 20, which are provided with additional insulation 11, 21 at their outer side surfaces. As may be seen, this insulating material terminates at a distances from the corners of the windows frames and the first section 341 is located between the ends of the respective insulating pieces. As may be seen the width of the flange 345 extending perpendicular to the length axis of the third side flashing member has a width corresponding to the width of the insulation.

[0040] Figs. 10-12 show alternative embodiments with and without an off-set first section 341 and with and without a side flange 37. Where applicable, these embodiments have been provided with the same reference numbers as in Figs. 1-9.

[0041] In Fig. 2 a fourth side flashing member 4 extending from the first side flashing member 1 to the second side flashing member 2 and spanning over the third side flashing member 3 has been added. The upper end of the fourth side flashing member is arranged under the lower end of the first side flashing member forming an overlapping joint with a length in the direction of slope of the roof of approximately 90 mm and a similar overlap is provided between the lower end of the fourth side flashing member and the upper end of the second side flashing member.

[0042] The fourth side flashing member 4 here has the same profile as the first and second side flashing members 1, 2, which makes the manufacture of the fourth side flashing member simple and cheap. A bent flange 13 of the first side flashing member rides on the corresponding, but locally compressed bent flange 43 of the fourth side flashing member at the overlap, and in the same way the bent flange 43 of the fourth side flashing member rides on the corresponding, but locally compressed bent flange 23 of the second side flashing member. Likewise, side flanges 14, 15, 44, 45, 24, 25 of the respective side flash-

ing member are locally slightly off-set to allow a cascading overlap and these engagements between flanges may be sufficient to keep at least the fourth side flashing member in place. Depending on the resilience of the material(s) used it may also be possible to establish the overlap without compressing the flanges.

[0043] To allow water to get out of the third side flashing member 3 and onto the second side flashing member 2, the fourth side flashing member 4 is provided with an opening 46 above the lifting section 32 and draining section 33. Here the opening is provided by the lower inner corner of the fourth side flashing being cut off, which again makes the manufacture of the fourth side flashing member simple and cheap, but it would of course be possible to provide the opening with other sizes or shapes as long as proper water draining is ensured.

[0044] A flange 41 or the like indicated by the dash-dotted line is provided above the opening 46 to divert water away from the pocket 30 in the third side flashing member 3 as shown by the arrows w, again minimizing the need for special adaptation of the first side flashing member 1. In Fig. 2 the flange is indicated as extending all the way down to the lower end of the fourth side flashing member 4 to prevent the water from flowing sideways into the pocket 30 in the third side flashing member, but it may be sufficient if it extends down to the upper outer corner 42 of the opening. A similar effect, though possibly less efficient, may be achieved by providing local thickenings, embossed patterns or the like designed to hinder the downwards movement of water on the first and/or fourth side flashing members.

[0045] Fig. 13 shows how the flashing kit may be used where a roof window 10 is arranged above a façade window 200. By comparing to Fig. 1b it may be seen that the first leg 34 of the third side flashing member here does not need to have an be off-set section to be able to lie underneath the end of the insulating material 11 on the roof window, since it is not in direct abutment against the outer side surface of the window. The lowermost part 40 of the roofing here serves as the second side flashing member, but it is of course possible and sometimes even necessary to have a separate second side flashing member even in this embodiment.

[0046] In the drawing the dimensions of the different parts of the flashing kit is adapted for use with roof windows in a relative small building and in a north European climate. They may, however, vary greatly and will of course depend on the dimensions of the roof penetrating structures and the nature of the load bearing structure in which they are mounted. Other factors such as the expected amounts of precipitation at the installation site should also be considered. One very important matter, which should always be taken into account, is the angle of the lifting section, which should never be negative, i. e. never slope a direction opposite the direction of the slope of the roof, since this would result in water accumulating in the pocket 30.

[0047] Even though the third and fourth side flashing

members have been described as separate members, it is also possible to integrate either or both of them into the first and/or second side flashing members, but this will of course mean that it is no longer possible to use standard side flashing members as the first and/or second side flashing member. Likewise, the fourth side flashing member may be integrated in the third side flashing member so that one member provides the functionality of both as described above.

[0048] Above the invention has been described with reference to its use when installing roof windows in a inclined roof, but it will be understood that it may also apply to other types of roof penetrating structures, such as solar collectors or solar panels. Likewise, it will be understood that when mounting two roof penetrating structures above each other a first, second, third and fourth side flashing members will be usually used at both sides in a mirror-inverted manner, and that the same principles of mounting may also be used with larger groups of roof penetrating structures.

Claims

1. A flashing kit for use at a joint where two structures each penetrating a roof or a wall meet, at least one of these structures being arranged in an inclined roof, where a first roof penetrating structure is arranged above a second structure seen in the direction of slope of the roof, said kit comprising
 - a first side flashing member adapted for being arranged along an outer side surface of the first roof penetrating structure,
 - a second side flashing member adapted for being arranged along an outer side surface of the second structure, and
 - a gutter flashing member adapted for being arranged between a lower outer surface of the first roof penetrating structure and an upper outer surface of the second structure,

characterized in that it further comprises a third side flashing member adapted for interconnecting the gutter flashing member with at least the second side flashing member, said third side flashing member having a substantially U-shaped cross section with a first leg of the U being adapted for engaging a side outer surface of the second structure, a second leg being substantially parallel to the first leg and the base of the U being adapted for being arranged substantially in parallel with the plane with the roof, a length axis of the third side flashing member being substantially perpendicular to the plane of the U, and said third side flashing member further comprising a receiving section, a lifting section and a draining section, the receiving section being adapted for being arranged at level with the gutter flashing member to receive water there from, the draining section being adapted for being interconnected to

- the second side flashing member in an overlapping joint, and the lifting section being arranged between the receiving and draining sections at an angle to at least the draining section so that in the mounted state the draining section will be positioned below the receiving section seen in the direction of slope of the roof and higher than the receiving section seen perpendicular to the plane of the roof.
2. A flashing kit according to claim 1 for use with roof penetrating structures arranged in an inclined roof with a first roof penetrating structure above a second roof penetrating structure seen in the direction of slope of the roof, where the second roof penetrating structure constitutes the second structure, where the second side flashing member is adapted for being arranged along an outer side surface of the second roof penetrating structure, and where the gutter flashing member is adapted for being arranged between a lower outer surface of the first roof penetrating structure and an upper outer surface of the second roof penetrating structure, **characterized in that** the first leg of the third side flashing member is adapted for engaging a side outer surface of the second roof penetrating structure.
 3. A flashing kit according to claim 1 or 2, where the first leg of the third side flashing member comprises a first section adapted for interconnection to the gutter flashing member and a second section adapted for engaging the side outer surface of the second structure or second roof penetrating structure, said first section being off-set in relation to the second section in a direction away from the second leg.
 4. A flashing kit according to any of the preceding claims, where the first leg of the third side flashing member comprises a recess having substantially the same shape as the cross-sectional shape of the gutter flashing member perpendicularly to its length axis and where the third side flashing member and/or the gutter flashing member is/are provided with a connector flange adapted for forming an overlapping joint with the gutter flashing member and/or the third side flashing member, respectively.
 5. A flashing kit according to any of the preceding claims, where the third side flashing member further comprises a side portion extending from the second leg away from the first leg substantially in plane with the draining section and a side flange projecting from the side portion substantially away from the plane of the receiving section and extending substantially in parallel with the length axis of the third side flashing member.
 6. A flashing kit according to claim 5, where the side flange is adapted for engagement with flanges, recesses, grooves or slits in one or more other side flashing member(s).
 7. A flashing kit according to claim 5 or 6, where the side flange extends substantially over the entire length of the third side flashing member.
 8. A flashing kit according to any of the preceding claims, further comprising a fourth side flashing member adapted for interconnecting the first and second side flashing members while spanning at least partially over the third side flashing member.
 9. A flashing kit according to claim 8, where the fourth side flashing member is provided with one or more recesses, grooves, slits, flanges or projecting parts adapted for engagement with corresponding flanges, recesses, grooves, slits or openings in one or more other flashing member(s).
 10. A method for flashing a joint where two structures each penetrating a roof or a wall roof meet, at least one of these structures being arranged in an inclined roof, where a first roof penetrating structure is arranged above a second structure seen in the direction of slope of the roof, said method comprising arranging a first side flashing member along an outer side surface of the first roof penetrating structure, arranging a second side flashing member along an outer side surface of the second structure, and arranging a gutter flashing member between a lower outer surface of the first roof penetrating structure and an upper outer surface of the second structure, **characterized in that** it further comprises interconnecting the gutter flashing member with at least the second side flashing member using a third side flashing member having a substantially U-shaped cross section, where a first leg of the U is arranged in engagement with a side outer surface of the second structure, a second leg is arranged substantially in parallel to the first leg and the base of the U is arranged substantially in parallel with the plane with the roof, a length axis of the third side flashing member being substantially perpendicular to the plane of the U, and where said third side flashing member further comprising a receiving section, a lifting section and a draining section, the receiving section being arranged at level with the gutter flashing member to receive water there from, the draining section being interconnected to the second side flashing member in an overlapping joint, and the lifting section being arranged between the receiving and draining sections at an angle to at least the draining section so that in the mounted state the draining section is positioned below the receiving section seen in the direction of slope of the roof and higher than the receiving section seen perpendicular to the

plane of the roof.

11. A method according to claim 10 for flashing roof penetrating structures arranged in an inclined roof with a first roof penetrating structure above a second roof penetrating structure seen in the direction of slope of the roof, where the second roof penetrating structure constitutes the second structure, comprising arranging the second side flashing member along an outer side surface of the second roof penetrating structure, and arranging the gutter flashing member between a lower outer surface of the first roof penetrating structure and an upper outer surface of the second roof penetrating structure, **characterized in that** the first leg of the third side flashing member is arranged in engagement with a side outer surface of the second roof penetrating structure.
12. A method according to claim 10 or 11, where the third side flashing member is arranged with a first section interconnected to the gutter flashing member and a second section engaging the side outer surface of the second structure or second roof penetrating structure, said first section being off-set in relation to the second section in a direction away from the second leg so that it is located between the first roof penetrating structure and the second structure or second roof penetrating structure.
13. A method according to claim 11 or 12, where an outer end of the gutter flashing member is arranged in a recess in the first leg of the third side flashing member and where a connector flange on the third side flashing member and/or on the gutter flashing member is/are made to form an overlapping joint with the gutter flashing member and/or the third side flashing member, respectively.
14. A method according to any of claims 11-13, where a side flange of the third side flashing member, provided on a side portion extending from the second leg away from the first leg substantially in plane with the draining section and projecting from the side portion substantially away from the plane of the receiving section and extending substantially in parallel with the length axis of the third side flashing member, is used for positioning side flashing members in relation to other each other and/or interconnecting side flashing members.
15. A method according to any of claims 11-14, further comprising the step of arranging a fourth side flashing member in with one end engaging the first side flashing member, another end engaging the second side flashing member, and a centre section spanning at least partially over the third side flashing member.
16. A methods according to claim 15, where the fourth side flashing member is positioned in relation to other and/or interconnected to one or more other flashing member(s) by one or more recesses, grooves, slits, flanges or projecting parts being arranged in engagement with corresponding flanges, recesses, grooves, slits or openings in one or more of the other flashing member(s).

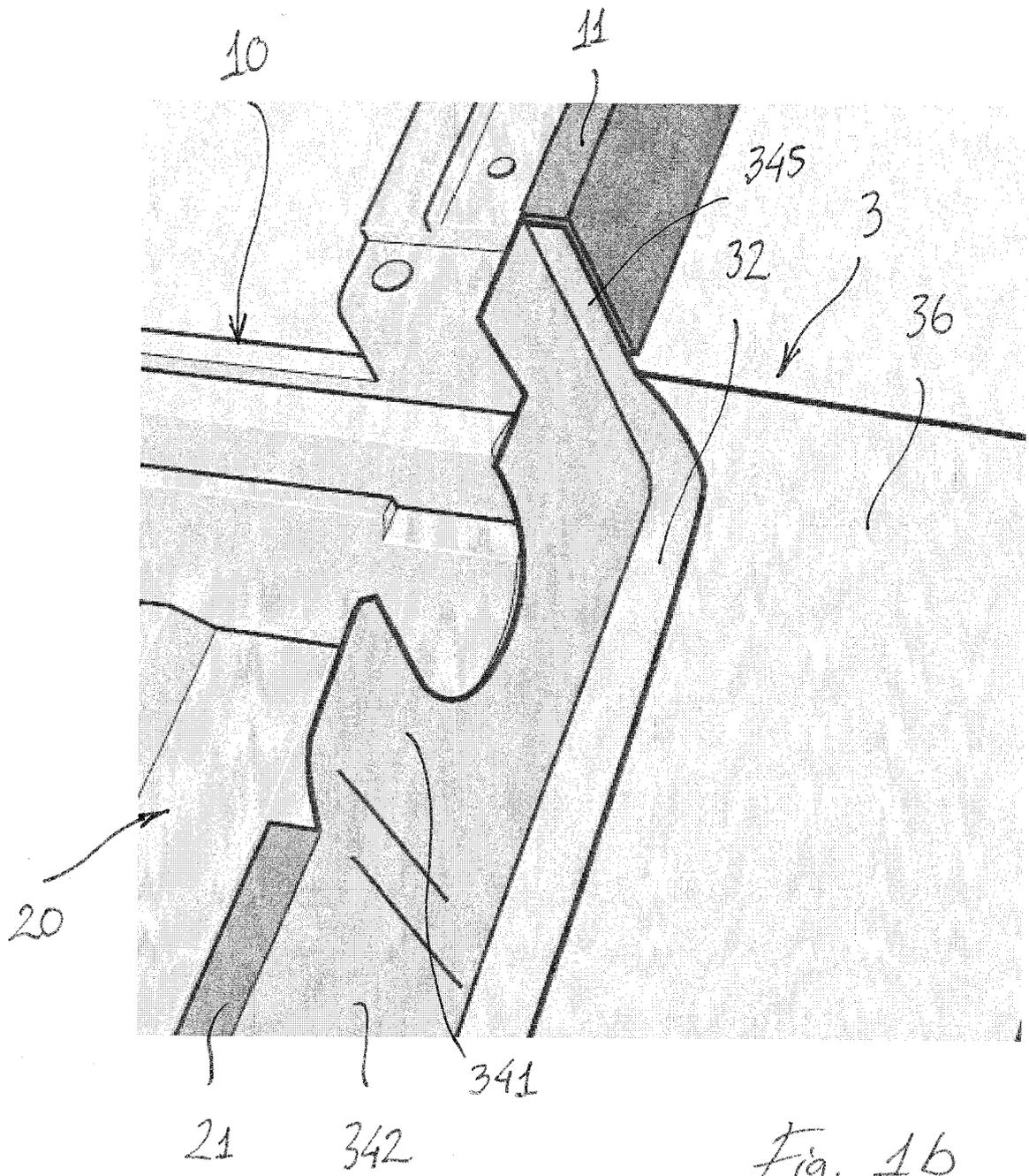
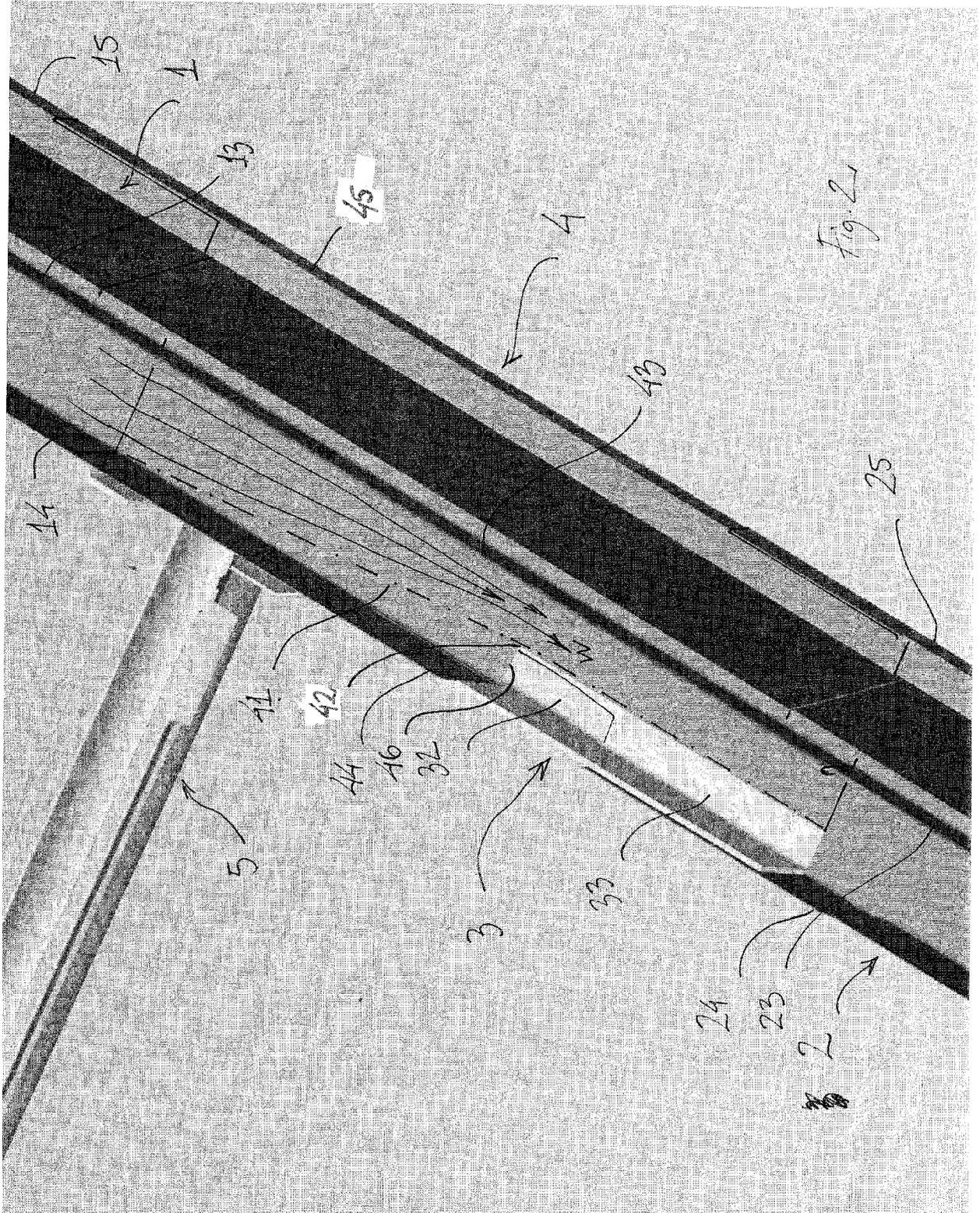


Fig. 1b



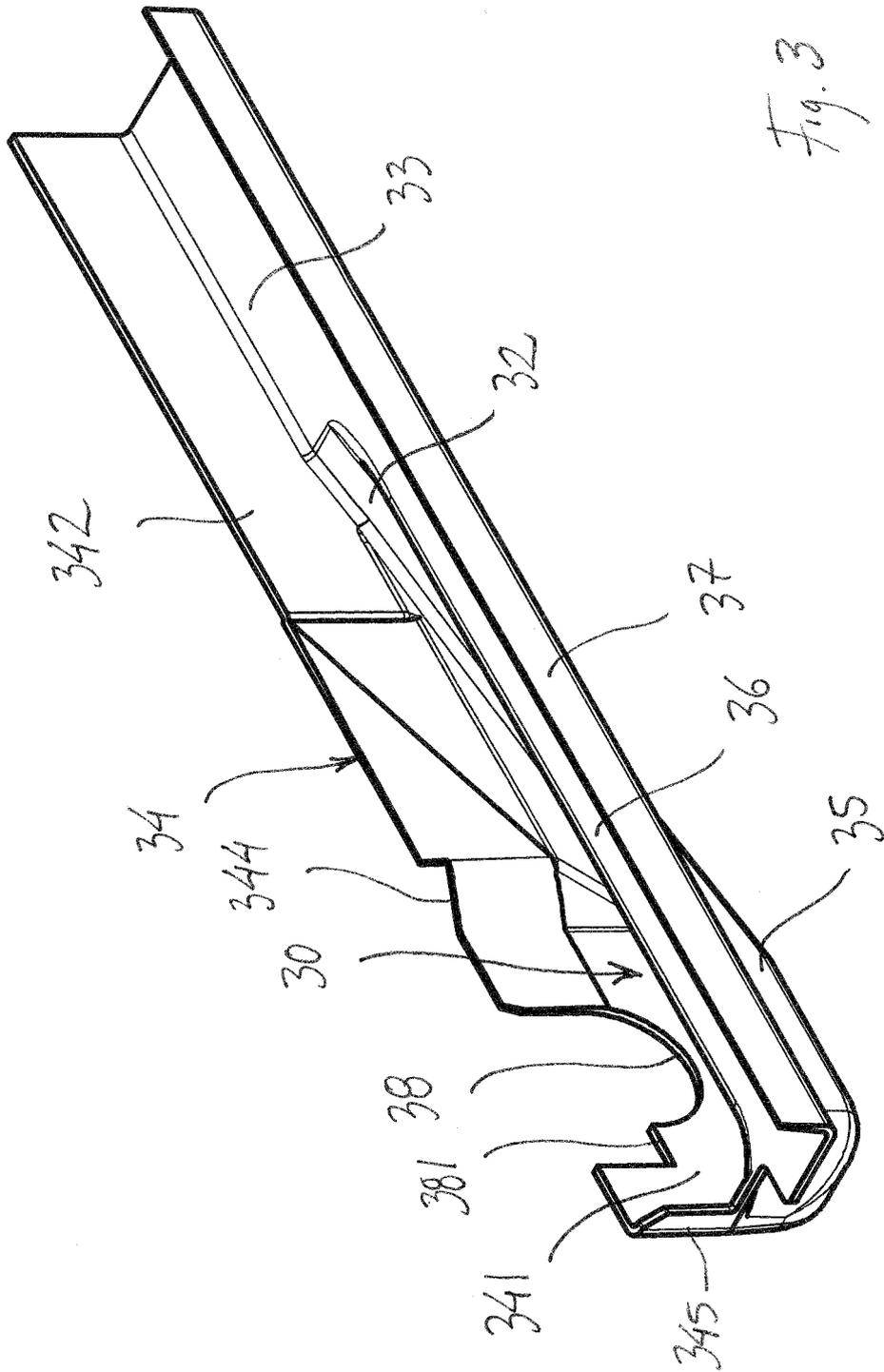
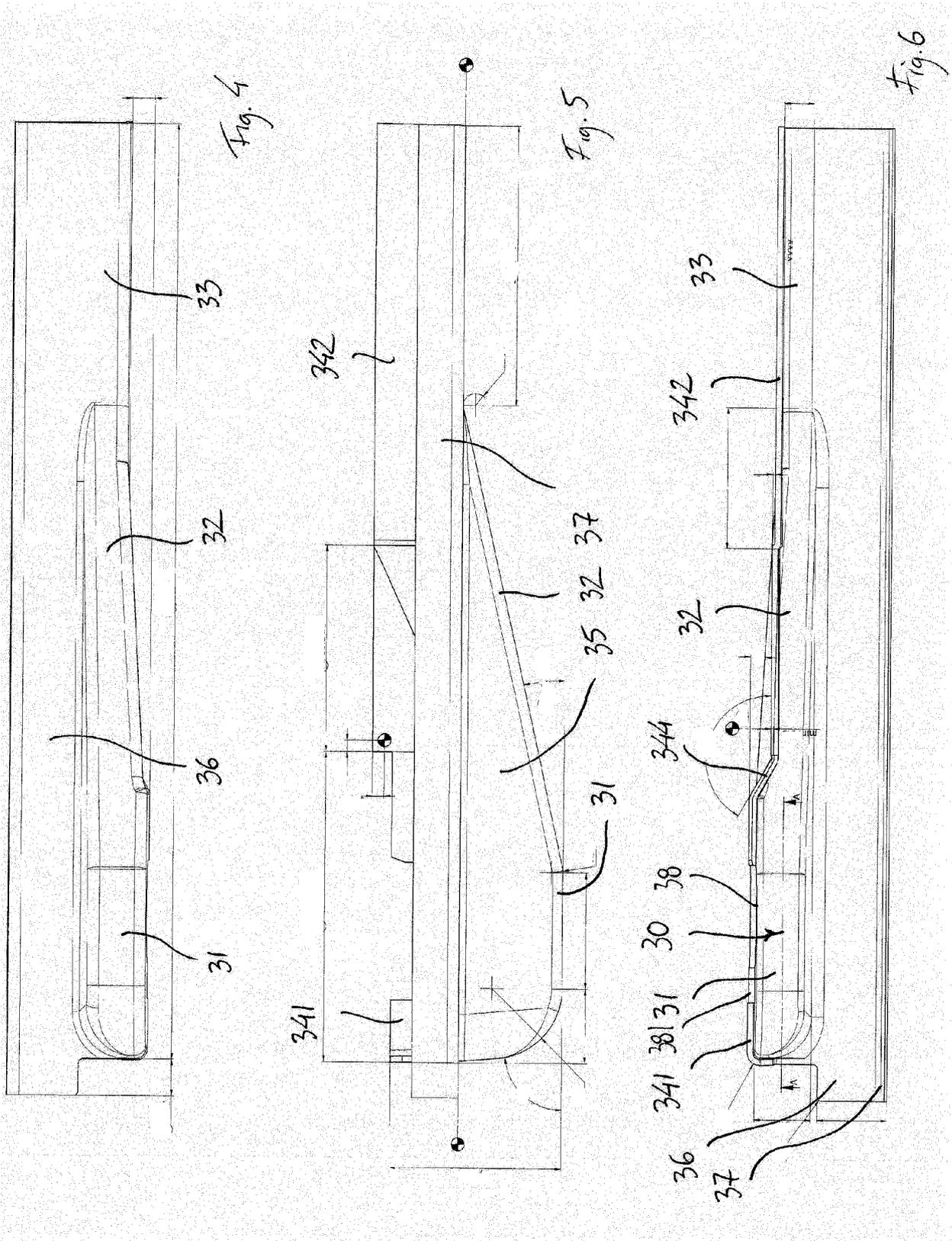


Fig. 3



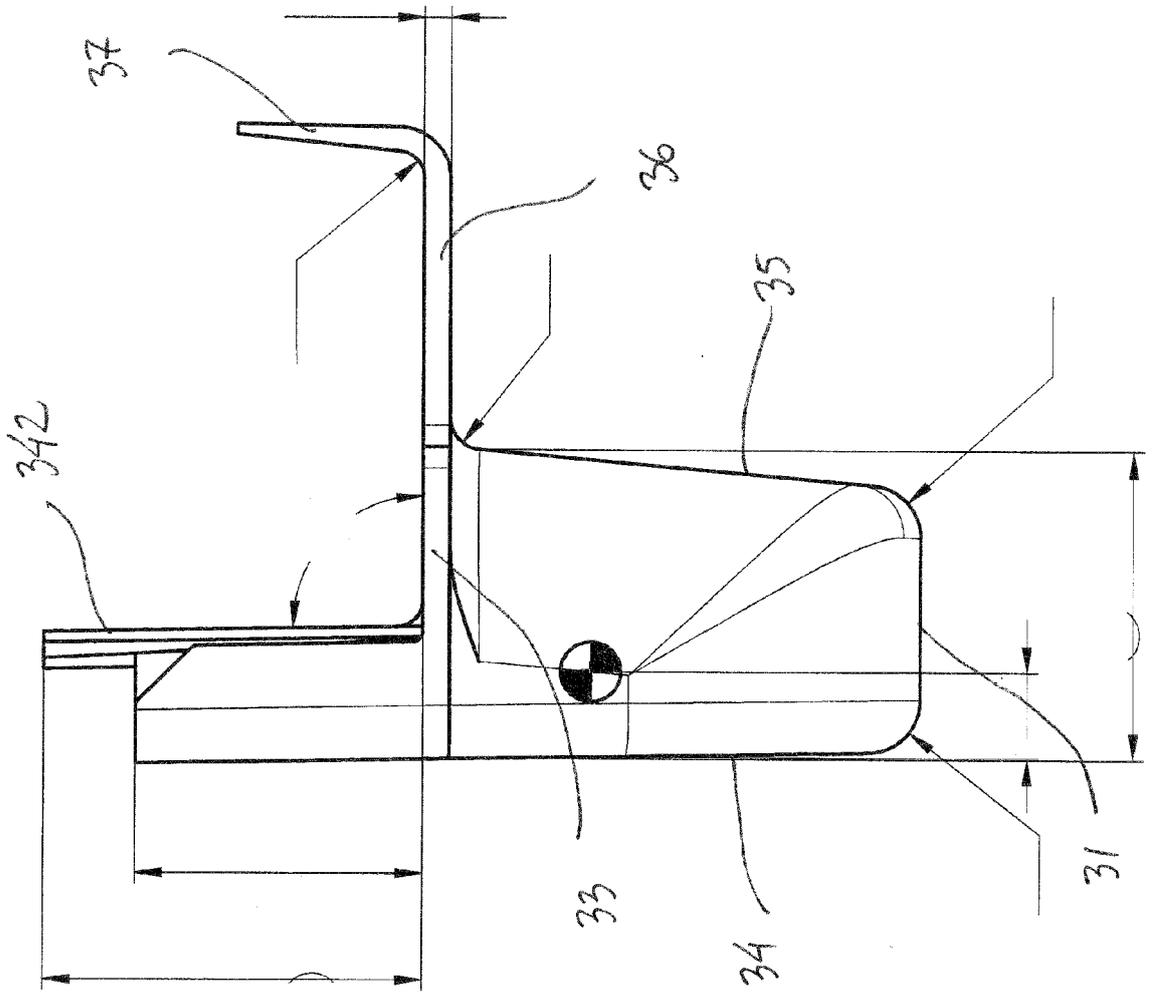


Fig. 7

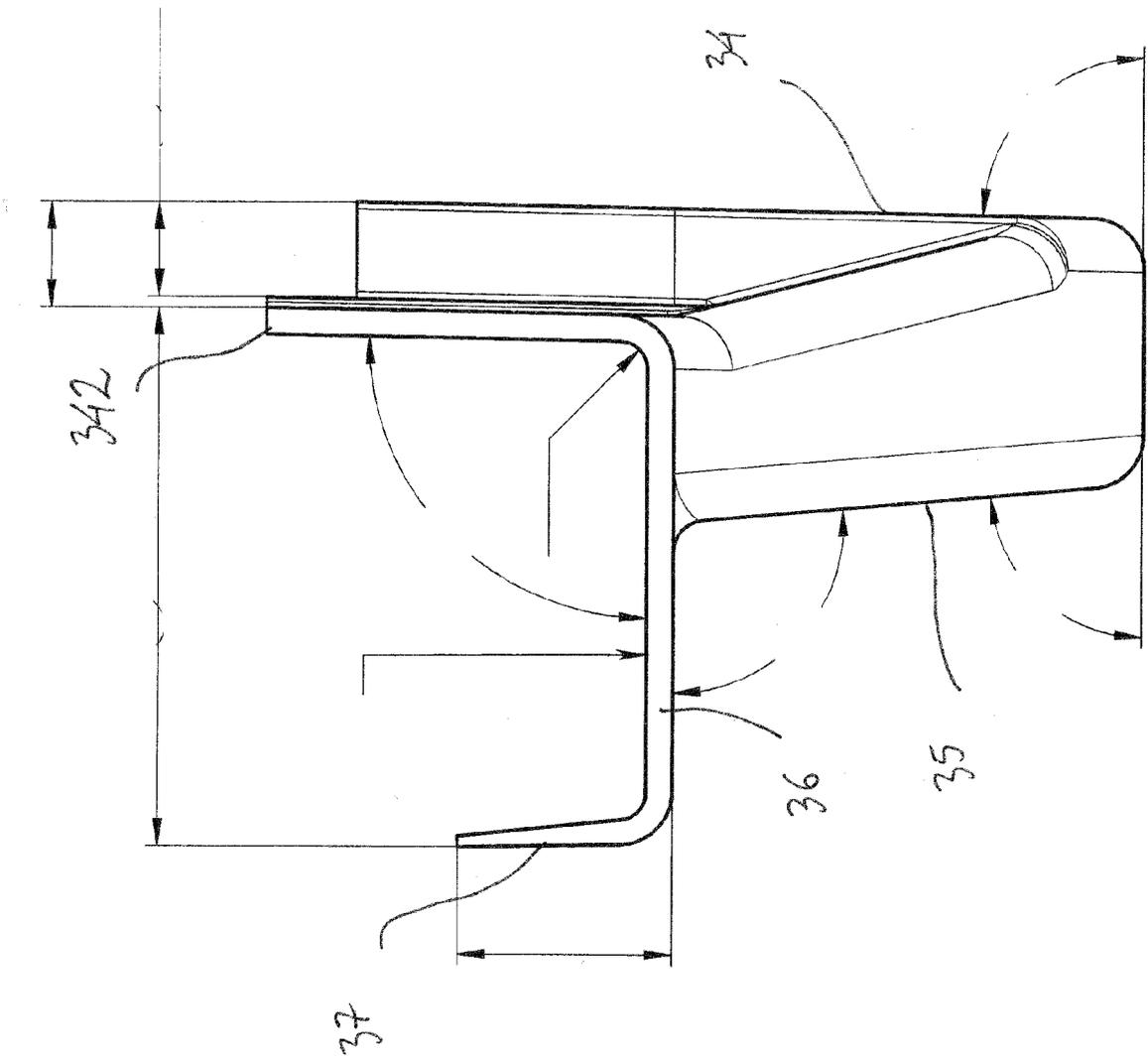
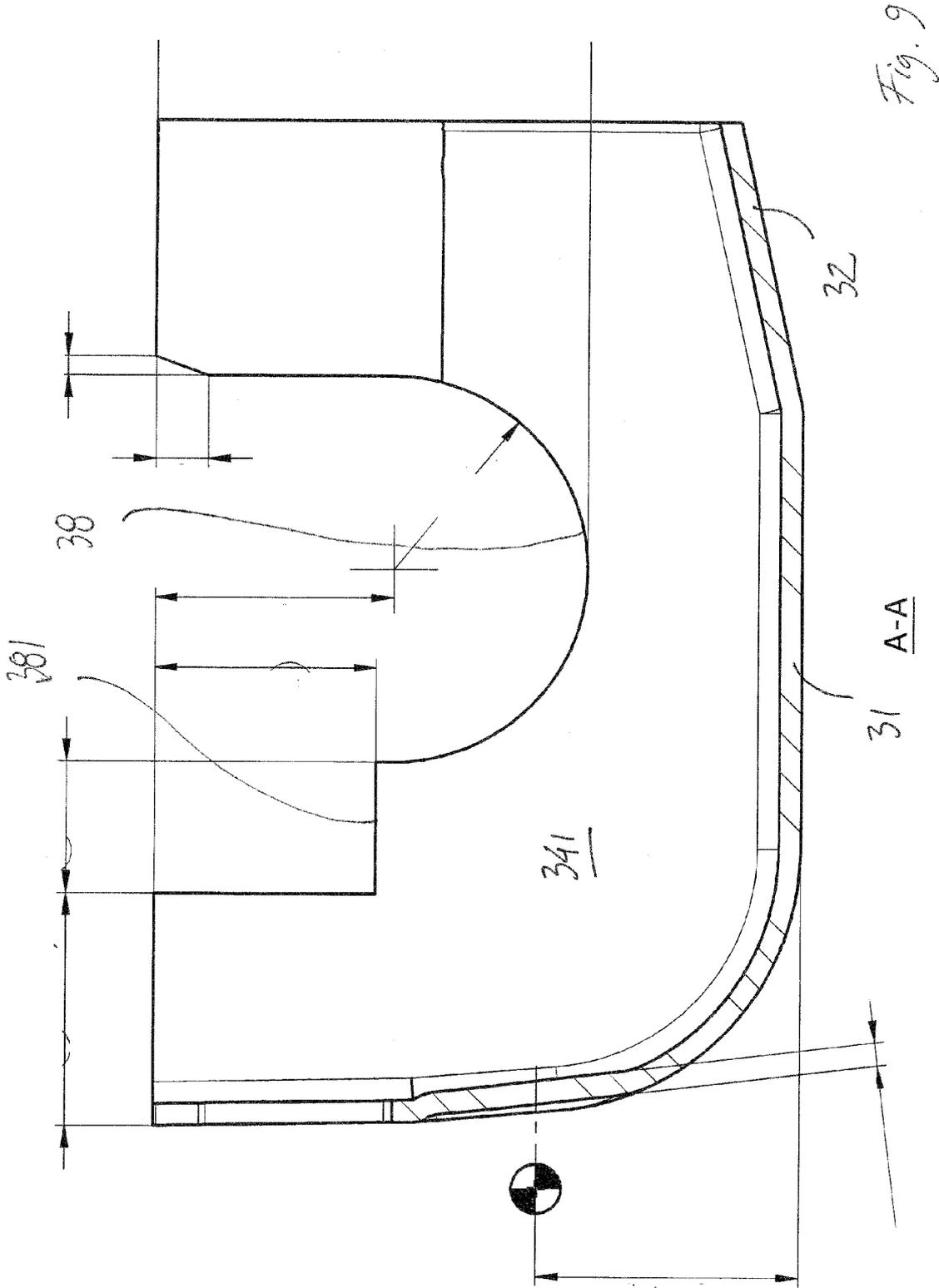


Fig. 8



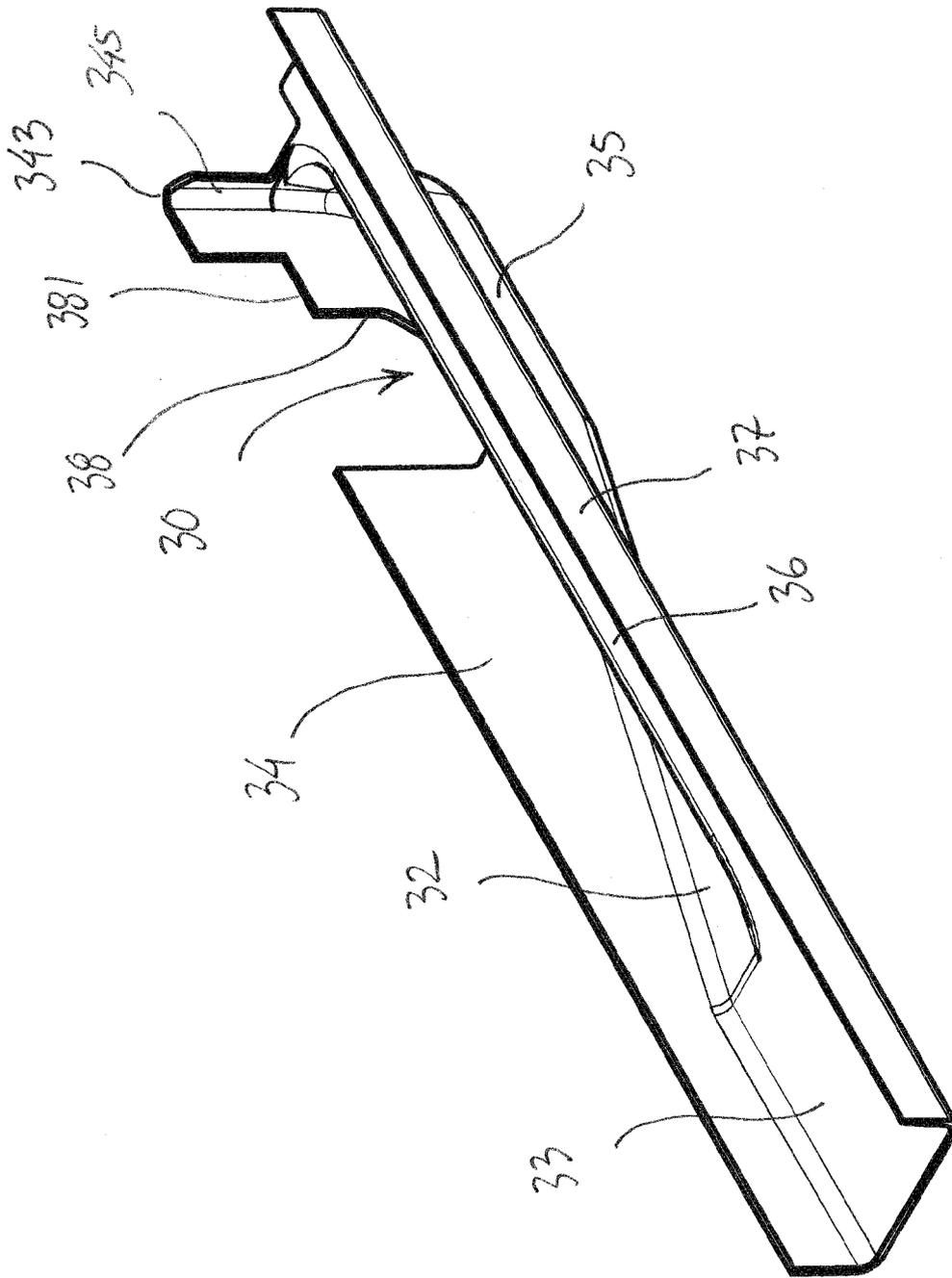


Fig. 11

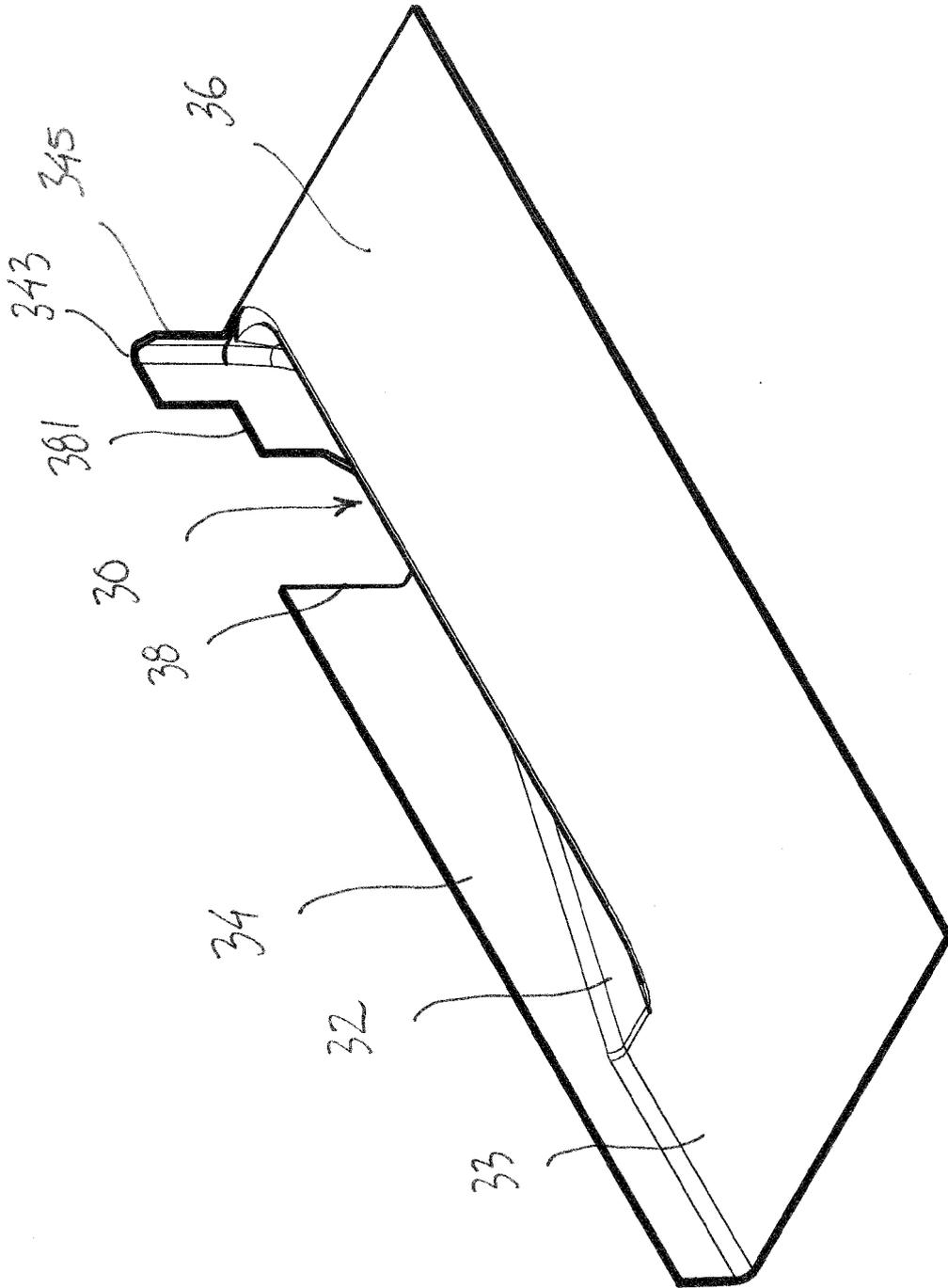


Fig. 12

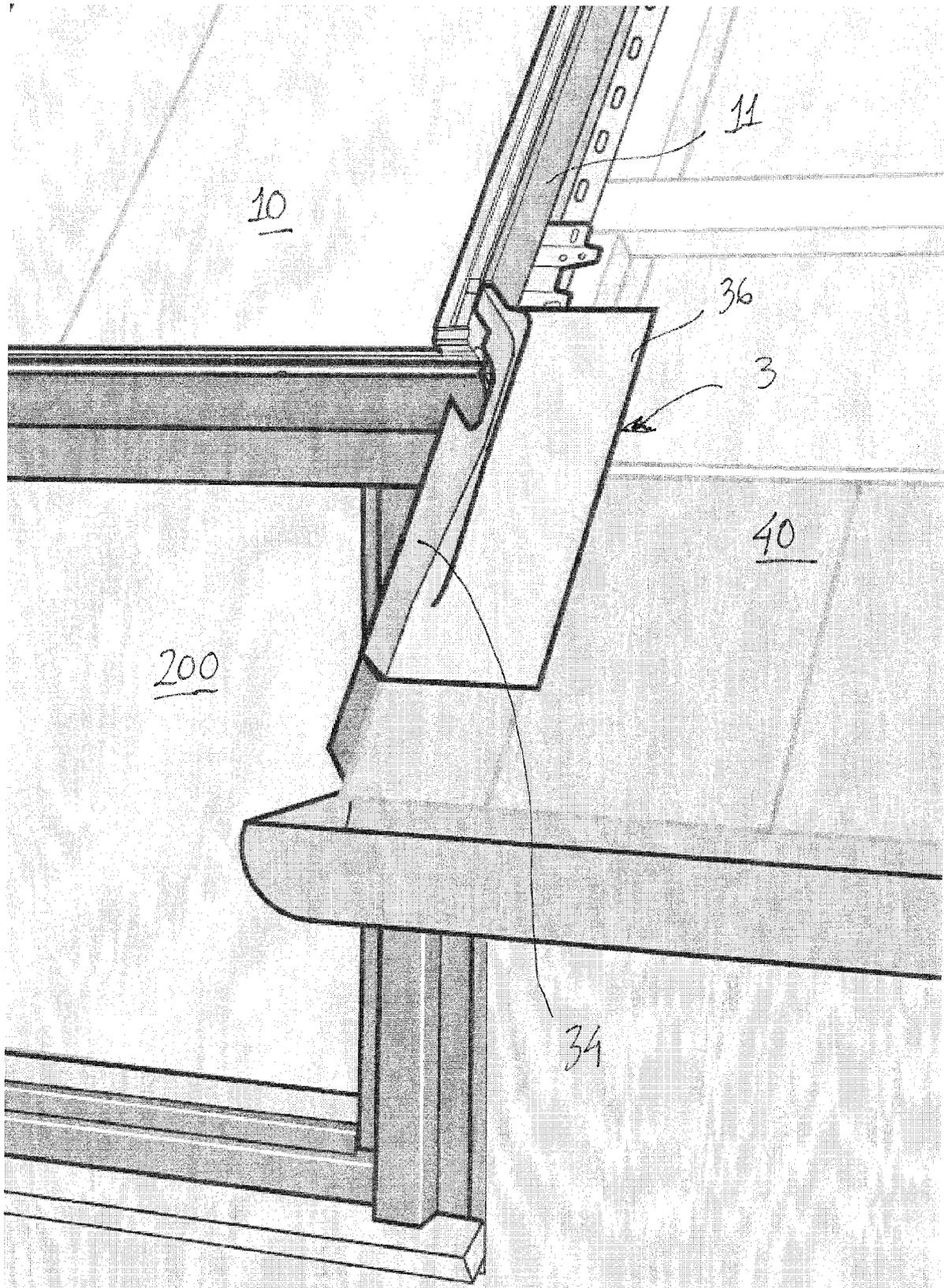


Fig. 13



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Place of search The Hague		Date of completion of the search 12 May 2014	Examiner Tran, Kim Lien
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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