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(54) **A ROOF WINDOW REFURBISHMENT SYSTEM AND METHOD FOR REFURBISHING A ROOF WINDOW**

DACHFENSTERERNEUERUNGSSYSTEM UND VERFAHREN ZUR ERNEUERUNG EINES DACHFENSTERS

SYSTÈME DE REMISE EN ÉTAT DE FENÊTRE DE TOIT ET PROCÉDÉ DE REMISE EN ÉTAT D'UNE FENÊTRE DE TOIT

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(73) Proprietor: **VKR Holding A/S
2970 Hørsholm (DK)**

(72) Inventor: **WIIG, Martin Schwartz
8260 Viby J (DK)**

(74) Representative: **AWA Denmark A/S
Strandgade 56
1401 Copenhagen K (DK)**

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DescriptionField of the invention

[0001] The present invention relates to a roof window refurbishment system, comprising a roof window having a stationary frame with a top frame member, a bottom frame member, and two side frame members defining a central opening, and, placed within the stationary frame, a sash with sash members carrying a pane, in which each frame member of the stationary frame has an inner side facing the central opening, each of said inner sides having an exterior portion and an interior portion, the refurbishment system further comprising a set of capsules adapted to be connected to the frame members of the stationary frame in a mounted condition. The invention furthermore relates to a method for refurbishing a roof window.

Background art

[0002] Replacement of windows involves a substantial investment for a household due to the cost of the new window and the high cost of contractors for installing the new window and removing the old one.

[0003] The reasons for replacing an old window can be numerous but often the decision to replace a window is made due to material decay or to gain the benefits provided by advances in window technology such as improved inlet of incident light, ventilation, or thermal insulation to provide an improved indoor climate.

[0004] As the movable sash will often be worn at a faster rate than the frame due to the frequent movement when opening and closing the sash, the sash may often need replacement before the stationary frame. Furthermore, as advances within the field of window, e.g. improvements of the thermally insulating window pane, the sash and window pane may be obsolete quicker than the stationary frame.

[0005] However, even if the movable sash is in an acceptable state, the stationary frame may also be worn prematurely. One problem associated with keeping an old stationary frame is that it may often be damaged due to normal indoor activities throughout the life time of the window. Also, the stationary frame of a window is traditionally made from wooden frame members or polyurethane members optionally with a wooden core. Hence, the stationary frame will after some years be worn down and it may be increasingly difficult to keep the stationary frame clean and maintain in a mint condition.

[0006] Thus, it remains a challenge how to refurbish a window, either in a single component, or of several components of a window.

[0007] EP 0 948 696 discloses a roof window refurbishment system with capsules having flexible flanges for engaging the frame members to provide a snap lock.

Summary of the invention

[0008] With this background it is therefore an object of the invention to provide a refurbishment system, which allows an improvement of the overall properties of the roof window, including visual appearance of the stationary frame. Furthermore, the refurbishment system should be easily installed in the roof structure.

[0009] In a first aspect, this and further objects are met by a refurbishment system comprising the features of claim 1.

[0010] The set of capsules provides an excellent opportunity to refresh the appearance and cleanability of the stationary frame, and may be provided to either match the finish and colour of the sash, or to provide a contrast thereto. Consumers may be interested in being able to refurbish their window, either by simply refreshing the appearance of scratched or faded frame members, or by also replacing the sash of the old window and keeping the existing frame, now refreshed, thereby prolonging the life time of the window and minimizing the work of the contractor. As the stationary frame of the window is maintained, the frame may function as an installation frame, thus rendering the mounting simple. This applies both when the refurbishment system comprises only the set of capsules, and in the case in which also a replacement sash is provided with the system. The advantages are particularly present in roof windows, in which installation takes place in an inclined roof.

[0011] The term capsule should be understood as an interior cladding adapted to encapsulate and cover an interior portion, i.e. a portion facing the interior of the building, of the roof window.

[0012] In a presently preferred embodiment which is particularly advantageous for a window, in which the sash is movable between an open and a closed position and each frame member of the stationary frame has an inner side facing the central opening, each of said inner sides having an exterior portion which is covered by the sash when the sash is in the closed position, and an interior portion which is not covered by the sash when the sash is in the closed position, the set of capsules of said refurbishment system comprising at least one of the following: a top capsule, a bottom capsule and two side capsules, each of which having a closed surface and an exposed surface, adapted to be mounted on the frame member with the closed surface facing the frame member and the exposed surface facing the AWA#137484 central opening, such that the capsule covers the interior portion of the inner side of the frame member in the mounted condition.

[0013] In the context of the application, a closed position of the sash means a position in which the plane defined by the stationary frame and plane defined by the sash coincide, that is form an angle of no more than a few degrees with each other. Similarly, an open position of the sash as used herein generally means a position in which the sash is tilted about the pivot hinge axis such

that the stationary frame plane and the sash plane no longer coincide.

[0014] The exterior portion and the interior portion of the inner sides of the frame members can be defined by the imaginary plane defined by the surface of the sash which faces the interior when the window is in the installed condition. That is, for a roof window installed in an inclined surface and when the sash is in the closed position, the exterior portion of the frame members will be above this plane and the interior portion of the frame members will be positioned below.

[0015] In this, whenever the term "frame" is used it is to be understood as including referring to a stationary frame carrying a sash. The terms stationary frame and frame are used interchangeably.

[0016] In the context the term "to cover" is to be understood as extending over a component of the window without necessarily being in contact in order to protect or conceal it its entirety. Hence, when the capsule covers an interior portion of a frame member it should be understood that it may be in contact but should not be limited thereto, as the contour of the capsule does not have to correspond to that of the interior portion of the frame member.

[0017] An advantage of providing a system where the capsules are adapted to cover the interior portion of the inner side of the frame members it is possible to provide a complete makeover to an old frame and thereby extending the life time of the stationary frame. Furthermore, as the capsules are not limited to the shape or material of the original frame, they may provide new functionalities to be added to the window by enabling the use of various materials or shapes.

[0018] According to the invention at least one of the capsules also covers at least a part of the exterior portion of the frame member to which the capsule is to be mounted, such that the capsule forms an interior section adapted for covering the interior portion and an exterior section adapted for covering at least part of the exterior portion.

[0019] By adding an exterior section to the capsule the capsule may also cover at least part of the exterior portion of the inner side of the frame member, thereby giving the frame member a cleaner look when the sash is in the open position.

[0020] In a further embodiment of the invention each capsule of the set of capsules of said refurbishment system covers the interior portion and at least part of the exterior portion.

[0021] According to the invention the interior section of at least one of the capsules has a thicker profile relative to the exterior section.

[0022] By providing the interior section with a thicker profile the capsule becomes more durable and will appear more solid to the end user i.e. higher quality in the eyes of the consumer. While this advantage is also sought after in the exterior section, the exterior section cannot be made so thick that the sash of the window cannot fit in the central opening which will have slightly

reduced dimensions as a result of mounting the capsules.

[0023] In an embodiment of the invention the exterior section of at least one of the capsules comprises a groove, said groove being adapted for holding a seal.

[0024] By having a seal between the new surface provided by the exposed side of the capsule and the sash it may be ensured that the window is properly sealed against weather and drafts.

[0025] According to the invention at least one of the capsules further comprise a first and a second end, wherein the ends are provided with flexible flanges adapted for engaging the frame member to provide a snap lock.

[0026] By providing a snap lock the process of mounting the capsules on the frame members is facilitated such that it may be performed by a person with limited expertise.

[0027] The first and the second end may both be positioned in the interior section of the capsule so as the capsule only covers the interior portion of the inner side of the frame member or in another embodiment having one end in the interior section and a second end in the exterior section of the capsule.

[0028] In an embodiment according to the invention at least one of the capsules are made from at least two separate pieces. This is particularly advantageous in the embodiments in which the capsule or capsules is/are formed to cover an exterior portion of the frame member.

[0029] As the length of a frame member may in some cases be relatively long, it may be difficult for a single person to mount a capsule having the same length as the frame member on which it is to be mounted. By providing at least one of the capsules in multiple pieces the process of mounting the capsule on the frame member may be made easier for a single person, as the person may mount the capsule in steps.

[0030] In an embodiment of the invention at least one of the capsules further comprises an adhesive material arranged on the closed surface. By adding an adhesive material arranged on the closed surface, it may be ensured that the capsule is securely mounted on the frame member.

[0031] In an embodiment of the invention at least one of the capsules are adapted to create a hollow cavity between the capsule and the interior portion of a stationary frame member when mounted on said frame member.

[0032] This allows the contour of the capsules to differ from the contour of the original frame, such as to provide a more aesthetically pleasing and/or interesting look as the new surface provided by the exposed surface of the capsule may be more modern than the original and optionally may be asymmetrical by providing capsules with exposed surfaces with different contours.

[0033] In an embodiment of the invention at least one of the capsules are made from polyvinyl chloride (PVC). PVC allows the capsules to be made thin without compromising the durability and structural integrity of the capsule profile. Furthermore, in the embodiments where the

capsule also covers part of the exterior portion of the inner side of a frame member, the capsule should be thin such that the dimensions of the central opening are not reduced so much, that the sash can no longer fit therein. Additionally, the thin profile also makes the process of mounting the capsules on the frame members easier as the capsules will be lighter and therefore easier to handle. Other conceivable materials include stainless steel, aluminium, acrylonitrile butadiene styrene (ABS) and polyethylene (PE).

[0034] In a further embodiment of the invention the system further comprises a corner cover adapted to connect two adjacent capsules at a frame corner, by being mounted on two different frame members so as to give the refurbished window a nice finish and to avoid that dirt may access a corner of the stationary frame, which is difficult to clean.

[0035] In a further embodiment the refurbishment system further comprises at least one further component selected from the group comprising a frame part of a pivot hinge, a frame covering, a frame cladding, a top casing, a striking plate and insulation elements.

[0036] The insulation element may be adapted to fit in the hollow cavity between the capsule and the interior portion of a stationary frame member. By providing insulation for the cavity formed between the capsule and the frame, the overall insulation properties may be improved.

[0037] In an embodiment of the invention, the sash is fixedly connected to the stationary frame in the mounted condition, and the exterior section of at least some capsules of the set of capsules covers the sash member in said mounted condition.

[0038] Some customers realize through use, that they do not use their openable roof window for ventilation, e. g. due to high placement of the roof window or because air condition is used instead. The sash may thus advantageously be fixated to the frame and both the frame and sash covered by the set of capsules to provide the window with a customer desired seamless finish.

[0039] In a further embodiment, the set of capsules form a coherent capsule frame, preferably also comprising a groove adapted to receive a screening device.

[0040] Advantageously, by providing a groove it is possible to integrate a screening device into capsules, hereby reducing the complexity and cost associated with installing a screening device in a roof window.

[0041] In another embodiment of the invention, the refurbishment system comprises a replacement sash.

[0042] In a second aspect, the invention relates to a method for refurbishing a roof window having a stationary frame and a sash, comprising the steps of: a) providing a refurbishment system according to the first aspect of the invention, b) preparing the roof window for refurbishment, and c) mounting the refurbishment system to the stationary frame.

[0043] By providing a method of this kind, the refurbishment is carried out in a number of simple and logical steps so as to allow a person with limited expertise to

upgrade the window. Thus, making the method more cost efficient for the consumer.

[0044] In an embodiment of the invention, step c) includes the steps of: I) mounting a side capsule on an interior portion of the inner side of the side frame members, II) mounting a capsule on an interior portion of the inner side of the bottom frame member, and III) mounting a capsule on an interior portion of the inner side of the top frame member.

[0045] In a particular embodiment of the invention, step a) includes providing a replacement sash, and step b) includes removal of the existing sash.

[0046] In an embodiment of the invention, wherein step b) includes fixedly connecting the sash to the stationary frame, and further comprising a step d) of connecting the exterior section of the set of capsules to the sash.

[0047] In a further embodiment, wherein step a) includes the provision of at least one further component selected from the group comprising a frame part of a pivot hinge, a frame covering, a frame cladding, a top casing, a striking plate and an insulation element, and wherein the step b) includes the respective steps of: removing the striking plate, and/or removing the frame parts of the pivot hinges, and/or removing the top casing, and/or removing sides and bottom frame coverings, and/or removing frame claddings.

[0048] Other presently preferred embodiments and further advantages will be apparent from the following detailed description and the dependent claims.

Brief description of drawings

[0049] The invention will now be described in more detail below by means of non-limiting examples of embodiments and with reference to the schematic drawing, in which

Fig. 1 shows a perspective view of conventional roof window in an open state from the interior side;

Fig. 2 shows a perspective view of a stationary frame of a roof window without the sash from the interior side;

Fig. 3 shows a cross-sectional view of a side frame member of a roof window with details of an embodiment of a refurbishment system according to the invention, including a side capsule in a mounted condition;

Fig. 4 shows a cross-sectional view corresponding to Fig. 3, but of another embodiment of the side capsule of the refurbishment system according to the invention in a mounted condition;

Fig. 5 shows a partial perspective view of a side frame member with a side capsule of a refurbishment system according to the invention mounted;

Fig. 6 shows a cross-sectional view of a bottom frame member of a roof window with details of an embodiment of a refurbishment system according to the invention, including a bottom capsule in a mounted

condition;

Fig. 7 shows a cross-sectional view corresponding to Fig. 6, but of another embodiment of the bottom capsule of the refurbishment system according to the invention in a mounted condition;

Fig. 8 shows a cross-sectional view of a top frame member of a roof window with details of an embodiment of a refurbishment system according to the invention, including a top capsule in a mounted condition;

Fig. 9 shows a cross-sectional view corresponding to Fig. 8, but of another embodiment of the top capsule of the refurbishment system according to the invention in a mounted condition;

Fig. 10 shows a partial perspective view of the corner of a stationary frame with a detail of an alternative embodiment of the refurbishment system according to the invention in the mounted condition;

Fig. 11 shows a top capsule for a roof window refurbishment system, wherein the sash is fixedly connected to the stationary frame;

Fig. 12 shows a bottom capsule for a roof window refurbishment system, wherein the sash is fixedly connected to the stationary frame;

Fig. 13 shows a side capsule for a roof window refurbishment system, wherein the sash is fixedly connected to the stationary frame; and

Fig. 14 shows another embodiment of a side capsule for a roof window refurbishment system, wherein the sash is fixedly connected to the stationary frame.

Detailed description of the invention

[0050] In the following, embodiments of the first and the second aspects will be described in further detail. The roof window is installed in an inclined roof surface. Directional terms such as "upper", "lower" etc. relate to the position shown in the drawings.

[0051] Fig. 1 shows a conventional roof window 1 seen from the side of the roof window which faces the interior side of a building structure in which the roof window 1 is installed. The roof window shown in Fig. 1 comprises a frame 2 which is stationary when the roof window 1 is in a mounted condition. The stationary frame 2 has a top frame member 300, a bottom frame member 200 and two side frame members 100 defining a central opening, and a sash 3' carrying a pane 4. Each of the frame members 100, 200, 300 has an inner side facing the central opening.

[0052] By the terms "exterior" and "interior", mutually opposite sides of components of the roof window 1 are indicated, in a direction substantially perpendicular to the plane of the pane 4. The terms "outer" and "inner" are used to indicate for instance mutually opposite sides of the frame members 100, 200, 300, substantially in a direction parallel to the plane of the pane 4.

[0053] In the type of roof window 1 shown in Fig. 1, the sash 3' is movably mounted in the stationary frame 2 by

means of a set of pivot hinges 5 (cf. Fig. 2), such that the sash 3' is pivotable about a substantially centrally located axis between an open and closed position relative to the stationary frame 2.

[0054] The inner sides of the respective frame members 100, 200, 300 each comprises an exterior portion 102, 202, 302, which, when the window is in the closed position, is covered by the sash 3' and therefore not visible from the interior of the building structure, and an interior portion 101, 201, 301 which is not covered by the sash 3, when the window is in the closed position. Hence, the interior portion 101, 201, 301 is visible from the interior side of the building structure in both in the open and closed positions of the sash. In the shown embodiment, the exterior portions 102, 202, 302 of the inner sides of each of the frame members 100, 200, 300 are offset relative to the interior portions 101, 201, 301 to form a recess in which the sash 3' abuts when the window is in a closed position. Eventually, each of the stationary frame members 100, 200, 300 also has a bottom surface 103, 203, 303 which here, in a manner known *per se*, includes a groove adapted to accommodate a lining forming a transition between the roof window 1 and the roof structure.

[0055] In order to renovate or refurbish the roof window 1 to extend the lifetime and/or improve the properties thereof, including for instance the appearance and insulating properties, a refurbishment system according to the invention is provided. In its most basic form, the refurbishment system comprises a replacement sash indicated throughout by reference numeral 3 in the following, and a set of capsules 110, 210, 310 adapted to be connected to the frame members 100, 200, 300 of the stationary frame 2 in the mounted condition. Details of embodiments of the inventive refurbishment system and the method for refurbishing will be described in the following.

[0056] In a first step, Fig. 2 shows the stationary frame 2 of the roof window 1, where the sash 3' has been dismantled to reveal the interior portions 101, 201, 301 and the exterior portions 102, 202, 302 of the inner sides of the frame members 100, 200, 300.

[0057] In further embodiments, which are not shown or described in detail, the refurbishment system comprises, in addition to the basic components of a replacement sash and a set of capsules, at least one further component selected from the group comprising a frame part of pivot hinge 5, a frame covering to replace existing frame cover 6, a frame cladding to replace existing frame cladding 7, a top casing to replace existing top casing 8, a striking plate to replace existing striking plate 9 (cf. Fig. 9) and insulation elements.

[0058] Referring now to Figs 3 to 5, the refurbishment system applied to the roof window 1, with its stationary frame represented by one of its side frame members 100, comprises a replacement sash generally designated 3 which has been mounted in the stationary frame, and one capsule of the set of capsules.

[0059] Thus in the embodiments of Figs 3 to 5, a side capsule 110 of the set of capsules of the refurbishment

system according to the invention has been mounted to cover the interior portion 101 of the inner side of the side frame member 100. The side capsule 110 has a closed surface 111 which is adapted to face the frame member 100 and to follow the contour of the interior portion 101, and an exposed surface 112 adapted to face the central opening and to be visible, when the capsule 110 is mounted on the side frame member 100.

[0060] The side capsule 110 in the embodiment shown in Fig. 3 has an interior section 114 which extends the total height of the interior portion 101 such that the capsule 110, when mounted, covers the entire interior portion 101 of the inner side of the side frame member 100, whereby the exposed surface 112 of the capsule 110 now forms part of the inner side of the frame member 100. Furthermore, the capsule comprises an exterior section 113 that extends into the exterior portion 102 of the inner side of the side frame member 100.

[0061] The capsule 110 in shown in Fig. 3 does not comprise means that enable the side capsule 110 to support itself. Hence, the side capsule 110 will in this embodiment have to be fixed to inner side of the side frame 100 by fastening means or by means of adhesion. For a clean finish and additional support, the capsule 110 is in the embodiment shown in Fig. 3 provided with a first flange 115 that follows the contour of the bottom surface 103. Advantageously, in this embodiment the interior section 114 of the side capsule 110 has a thicker profile than the profile in relation to the exterior section 113. Thus, the visual appearance and the feeling of the exterior side of the capsule may be improved.

[0062] Referring now to Figs 4 and 5 that show a cross-sectional view and a perspective view of side frame member, respectively, the side capsule 110 mounted on the inner side of the side frame 100 is rather similar to the side capsule 110 shown and described in the embodiment shown in Fig. 3 as described in the above. Elements having the same or analogous function are denoted by the same reference numerals.

[0063] In the embodiment of Figs 4 and 5, the side capsule 110 is advantageously further provided with means for mounting the side capsule 110. The side capsule 110 comprises in addition to the first flange 115 which in this embodiment is configured to extend partially over the bottom surface 103 and into the lower recess, a second flange 116 which is configured follow the contour of the inner side of the side frame member 100, namely at the step provided by the offsetting of the interior portion 101 relative to the exterior portion 102. In this embodiment the first flange 115 further comprises coupling means 119 adapted to engage the lower recess in the bottom surface 103, so as the capsule 110 forms a snap lock so that it may be mounted on the frame member 100 without any need for further attachment means.

[0064] Generally, a snap lock engagement can be provided by making capsules from a flexible and resilient material, such that the capsule may be temporarily deformed when mounting the capsule.

[0065] The material, the dimensions such as thickness, material properties etc. may be chosen according to the specific requirements. In the presently preferred embodiment, the capsules are made from polyvinyl chloride (PVC), but other conceivable materials include stainless steel, aluminium, acrylonitrile butadiene styrene (ABS) and polyethylene (PE).

[0066] Referring now to Fig. 6. Which shows a cross-sectional view of a stationary bottom frame 200 and a bottom capsule 210 of a refurbishment system according to the invention, where the bottom capsule has been mounted to cover the entire interior portion 201 of the bottom frame member 200.

[0067] The bottom capsule 210 in the shown embodiment is generally similar to the above-described side capsule 110 in that it also comprises a closed surface 211 adapted to face the interior portion 201 of the inner side of the bottom frame member 200, and an exposed surface 212 adapted to face the central opening, such as to cover the interior portion 201 of the inner side of the bottom frame member 200.

[0068] The bottom capsule 210 shown in Fig. 6 differs from the side capsule 110 in that it has a V-shaped profile, so when the capsule 210 is mounted to the interior portion 201 of the inner side of the bottom frame member 200, the capsule 210 protrudes from the stationary bottom frame member 200 towards the central opening of the stationary frame 2. In this way a hollow cavity is provided between the closed surface 211 of the capsule 210 and the interior portion 201 of the inner side of the bottom frame member 200.

[0069] Although the V-shaped profile of the capsule is only shown for a bottom capsule 210, it should be noted that side and/or top capsules 110, 310 may also have V-shaped profiles adapted to provide a hollow cavity between the closed surface of the capsules and the interior portion of the frame members in a mounted condition, and that this feature is independent of other non-essential features.

[0070] Referring now to Fig. 7 which shows a cross-sectional view of a bottom frame member 200 similar to that shown in Fig. 6, the roof window 1 shown in Fig. 7 also shows the sash 3 in its closed position.

[0071] The bottom capsule 200 shown in Fig. 7 differs from that shown in Fig. 6 in that it does not comprise a second flange 216 or coupling means 219. The bottom capsule 200 of this embodiment therefore relies on chemical or mechanical fastening means such as adhesives or screws. The bottom capsule 210 of this embodiment comprises an interior section 214 and an exterior section 213, wherein the interior section 214 is provided with a thicker profile than the exterior section 213.

[0072] Referring now to Fig. 8 which shows a cross-sectional view of stationary top frame member 300, the top capsule 310 of this embodiment protrudes from the interior portion 301 towards the central opening. In this way a hollow cavity is provided between the top capsule 310 and the interior portion 301 of the stationary top frame

member 300.

[0073] The top capsule 310 in the embodiment shown in Fig. 8 is generally similar to the previously described capsules in that it comprises the features which that allows it to be mounted on the top frame member 310 to cover the interior portion 301 of the inner side of the top frame member 300.

[0074] The capsule in the embodiment shown in Fig. 8 differs from that of previously described capsules in that the capsule further comprises an exterior section 313 extending over part of the exterior portion 302 of the inner side of the top frame member 300, such that top capsule 310 besides having an interior section covering the entire interior portion 301 of the inner side of the top frame member 300, the top capsule also has an exterior section that covers part of the exterior portion 302 of the inner side of the frame member.

[0075] The contour of the capsule is such that the capsule forms a groove 318 between the exterior section 313 and interior section which is adapted to cover the interior portion 301. The groove 318 is adapted to accommodate a sealing, such as to prevent water or draft from entering the building through the cap formed between the exposed side 312 of the capsule 310 and the sash 3.

[0076] Like previously described embodiments, the exterior section 313 is provided with a shape that protrudes from inner side of the stationary frame towards the central opening, such that a cavity is formed between the closed surface of the exterior section and the exterior portion of the inner side of the frame member. This cavity has the same advantages as the cavities disclosed in the description of previous embodiments.

[0077] Fig. 9 shows a further embodiment of the refurbishment system applied at the top frame member 300 in a cross-sectional view. In this embodiment the sash 3 is mounted to the stationary frame 2 as before. The capsule 310 in this embodiment is adapted to cover the entire interior portion 301 that is visible when the sash 3 is in a closed position. In the shown embodiment, the capsule 310 further extends into the exterior portion 302 of the top frame member 300 and abuts a protrusion of the exterior portion 302 of the inner side of the top frame member 310.

[0078] The top capsule 310 of this embodiment comprises an interior section 314 and an exterior section 313, wherein the interior section 314 is provided with a thicker profile in relation to the exterior section 313.

[0079] Fig. 10 shows a schematic drawing of a portion of a stationary frame 2 seen from the inside of a building structure. In one of the frame corners 400 of the roof window 1 is a corner cover 420 provided to cover the connection of the two frame members (100, 300). In this embodiment the cladding does not extend over the whole interior portion 401 of the corner frame 400, however, it should be noted that the corner cover 420 may in another embodiment extend the over the whole interior portion 401 of the corner frame 400. Furthermore, it is contemplated

that corner cover 420 may be provided to all four of the corners frames 400 of the window 1.

[0080] Turning now to Figs 11 to 14, a set of capsules 120, 220, 320 for a roof window refurbishment system according to another embodiment is shown. In these embodiments, the sash 3" is fixedly connected to the stationary frame 2 in the mounted condition, i.e. the sash 3" is fixated to the stationary frame 2 by means of attachment elements, e.g. screws, nails, or adhesives, or by the set of capsules 120, 220, 320.

[0081] In the shown embodiment, the capsules 120, 220, 320 are adapted to cover the interior portion of the frame members 100, 200, 300 and at least a portion of the sash members 3". This will allow the refurbishment system to cover the visible surfaces of the roof window, whereby the original surfaces of the roof window can be covered in case the surfaces have been aged or in the case a more modern appearance is desired. The refurbishment system, thus prolongs the lifetime of the roof window.

[0082] Fig. 11 shows a top capsule of the refurbishment system, wherein the top capsule 320 having a closed surface 321 and an exposed surface 322, adapted to be mounted on the top frame member 300 and/or sash 3" with the closed surface 321 facing the interior portion of the sash member 3" and top frame member 300, and the exposed surface 322, facing the central opening, has an interior section 323 such that the top capsule 320 covers the interior portion of the inner side of the top frame member 300 and sash 3" in the mounted condition.

[0083] Fig. 12 shows a bottom capsular similar to the top capsule in Fig. 11, wherein the bottom capsule 220 is covering both the interior portion of the bottom frame member 200 and the sash 3".

[0084] Figs 13 and 14 show two different side capsules 120 for the refurbishment system, wherein the sash 3" is fixedly connected to the stationary frame 2. Generally, the refurbishment system will comprise two symmetrical side capsules 120 adapted to be mounted on opposite side frame members 100 of the stationary frame 2. The side capsule 120 shown in Fig. 13 is similar to the top 320 and bottom capsules 220 shown in Figs 11 and 12, wherein the closed surface 121 of capsule 120 covers the interior portion of the sash 3" and frame member 100.

[0085] Fig. 14 shows a side capsule 120 of a refurbishment system of another embodiment of the invention. The side capsule 120 differs from the one shown in Fig. 13 in that the side capsule 120 comprises a groove 128 formed along the length of the side capsule 120, preferably in parallel with the plane of the pane (not shown). The groove 128 is adapted to accommodate the edges of the screening device of a screening arrangement, such as a roller blind. Generally, the side capsules 120 may follow the contour of the sash 3" and the frame member 120. However, for a seamless finish it is preferred that the capsule does not follow the contours of the exterior portions of the sash and frame member over the entire length of the capsule.

[0086] According to the invention, the method of refurbishing a stationary frame should be simple so a person with limited expertise within the field of window installations can carry out method for refurbishing the window. Hence, the invention provides both a method for refurbishing a roof window installed in a roof structure and having a stationary frame and an existing sash, in which a step of preparing the roof window for refurbishment is included.

[0087] It is to be understood that several modifications and combinations may be carried out. For instance, regarding the capsules shown and described it is to be understood that capsules may also be used on other windows than the centre-hung pivotable roof window, and that their shape and design may be varied accordingly. Likewise, different combinations of features mentioned as alternatives above are also covered by the invention as defined by the scope of the claims.

Claims

1. A roof window refurbishment system, comprising a roof window (1) having a stationary frame (2) with a top frame member (300), a bottom frame member (200), and two side frame members (100) defining a central opening, and, placed within the stationary frame, a sash (3') with sash members carrying a pane (4), in which each frame member (100, 200, 300) of the stationary frame (2) has an inner side facing the central opening, each of said inner sides having an exterior portion (102, 202, 302) and an interior portion (101, 201, 301), the refurbishment system further comprising a set of capsules (110, 210, 310; 120, 220, 320) adapted to be connected to the frame members (100, 200, 300) of the stationary frame (2) in a mounted condition, the set of capsules (110, 210, 310; 120, 220, 320) comprising:

a top capsule (310; 320) having a closed surface (311; 321) and an exposed surface (312; 322), adapted to be mounted on the top frame member (300) with the closed surface (311; 321) facing the top frame member (300) and the exposed surface (312; 322) facing the central opening, and the top capsule having an interior section (314) such that the top capsule (310; 320) covers the interior portion (301) of the inner side of the top frame member (300) in the mounted condition;

a bottom capsule (210; 220) having a closed surface (211; 221) and an exposed surface (212; 222), adapted to be mounted on the bottom frame member (200) with the closed surface (211; 221) facing the bottom frame member (200) and the exposed surface (212; 222) facing the central opening, and the bottom capsule having an interior section (214) such that the

bottom capsule (210; 220) covers the interior portion (201) of the inner side of the bottom frame member (200) in the mounted condition; and

two side capsules (110; 120) each having a closed surface (111; 121) and an exposed surface (112; 122), each adapted to be mounted on respective side frame members (100) with the closed surface (111; 121) facing the respective side frame member (100) and the exposed surface (112; 122) facing the central opening, and each side capsule having an interior section (114) such that each side capsule (110; 120) covers the interior portion (101) of the inner side of a respective side frame member (100) in the mounted condition, wherein

at least one of the capsules (110, 210, 310; 120, 220, 320) has an exterior section (113, 213, 313; 123, 223, 323) adapted for covering at least part of the exterior portion of the frame member and/or a sash member in said mounted condition,

and wherein

at least one of the capsules (110, 210, 310; 120, 220, 320) further comprises a first and a second end, wherein the ends are provided with flexible flanges (119; 116) adapted for engaging the frame member to provide a snap lock;

characterized in that the interior section of at least one of the capsules (110, 210, 310; 120, 220, 320) has a thicker profile relative to the exterior section.

2. A roof window refurbishment system according to claim 1 further comprising a corner cover (420) adapted to connect two adjacent capsules at a frame corner.

3. A roof window refurbishment system according to claim 1, wherein the sash (3') is connected to the frame (2) via a set of pivot hinges and is movable about a turning axis defined by the pivot hinges and movable between an open and a closed position and each exterior portion (102, 202, 302) of the frame is covered by the sash (3') when the sash (3') is in the closed position, and the interior portion (101, 201, 301) of the respective frame member is not covered by the sash (3') when the sash (3') is in the closed position, and wherein each capsule of the set of capsules (110, 210, 310) of said refurbishment system covers the interior portion and at least part of the exterior portion of the frame.

4. A roof window refurbishment system according to claim 1, wherein the sash (3") is fixedly connected to the stationary frame (2) in the mounted condition, and wherein the exterior section (123, 223, 323) of at least some capsules of the set of capsules (120,

220, 320) covers the sash member in said mounted condition.

5. A roof window refurbishment system according to claim 4, wherein the set of capsules form a coherent capsule frame, preferably also comprising a groove (128) adapted to receive a screening device. 5
6. A roof window refurbishment system according to any one of the preceding claims, wherein the refurbishment system comprises a replacement sash (3). 10
7. A roof window refurbishment system according to any one of the preceding claims, wherein the exterior section of at least one of the capsules comprises a groove (318) adapted to accommodate a sealing in the mounted condition. 15
8. A roof window refurbishment system according to anyone of the preceding claims, wherein at least one of the capsules is adapted to create a hollow cavity between the capsule and the interior portion of a stationary frame member when mounted on said frame member, and wherein the system comprises an insulation element adapted to fit in the hollow cavity between the capsule and the interior portion of a stationary frame member. 20 25
9. A roof window refurbishment system according to anyone of the preceding claims, wherein at least one of the capsules are made from polyvinyl chloride (PVC). 30
10. Method for refurbishing a roof window (1) having a stationary frame (2) and a sash (3'), comprising the steps of: 35
 - a) providing a refurbishment system according to any one of claims 1 to 9;
 - b) preparing the roof window for refurbishment; 40
 - and
 - c) mounting the refurbishment system to the stationary frame (2).
11. The method of claim 10, wherein step c) includes the steps of: 45
 - I) mounting a side capsule (110) on an interior portion of the inner side of the side frame members, 50
 - II) mounting a capsule on an interior portion of the inner side of the bottom frame member, and
 - III) mounting a capsule on an interior portion of the inner side of the top frame member. 55
12. The method of claim 11, wherein step a) includes providing a replacement sash (3), and step b) includes removal of the existing sash (3').

13. The method of claim 11, wherein step b) includes fixedly connecting the sash (3') to the stationary frame (2), and further comprising a step d) of connecting the exterior section (123, 223, 323) of the set of capsules (120, 220, 320) to the sash (3').

Patentansprüche

1. Dachfenstersanierungssystem, das ein Dachfenster (1) umfasst, welches einen feststehenden Rahmen (2) mit einem oberen Rahmenglied (300), einem unteren Rahmenglied (200) und zwei Seitenrahmengliedern (100), die eine zentrale Öffnung definieren, und, in dem feststehenden Rahmen platziert, einen Flügel (3') mit Flügelgliedern, die eine Scheibe (4) tragen, aufweist, wobei jedes Rahmenglied (100, 200, 300) des feststehenden Rahmens (2) eine zu der zentralen Öffnung weisende Innenseite aufweist, wobei jede der Innenseiten einen äußeren Teil (102, 202, 302) und einen inneren Teil (101, 201, 301) aufweist, wobei das Sanierungssystem ferner einen Satz von Kappen (110, 210, 310; 120, 220, 320) umfasst, die zur Verbindung mit den Rahmengliedern (100, 200, 300) des feststehenden Rahmens (2) in einem montierten Zustand ausgeführt sind, wobei der Satz von Kappen (110, 210, 310; 120, 220, 320) Folgendes umfasst:

eine obere Kappe (310; 320), die eine geschlossene Fläche (311; 321) und eine freiliegende Fläche (312; 322) aufweist und dazu ausgeführt ist, mit der geschlossenen Fläche (311; 321) zu dem oberen Rahmenglied (300) weisend und der freiliegenden Fläche (312; 322) zu der zentralen Öffnung weisend an das obere Rahmenglied (300) montiert zu werden, und wobei die obere Kappe einen inneren Abschnitt (314) aufweist, so dass die obere Kappe (310; 320) im montierten Zustand den inneren Teil (301) der Innenseite des oberen Rahmenglieds (300) bedeckt;

eine untere Kappe (210; 220), die eine geschlossene Fläche (211; 221) und eine freiliegenden Fläche (212; 222) aufweist und dazu ausgeführt ist, mit der geschlossenen Fläche (211; 221) zu dem unteren Rahmenglied (200) weisend und der freiliegenden Fläche (212; 222) zu der zentralen Öffnung weisend an das untere Rahmenglied (200) montiert zu werden, und wobei die untere Kappe einen inneren Abschnitt (214) aufweist, so dass die untere Kappe (210; 220) im montierten Zustand den inneren Teil (201) der Innenseite des unteren Rahmenglieds (200) bedeckt; und

zwei Seitenkappen (110; 120), die jeweils eine geschlossene Fläche (111; 121) und eine freiliegende Fläche (112; 122) aufweisen und je-

- weils dazu ausgeführt sind, mit der geschlossenen Fläche (111; 121) zu dem jeweiligen Seitenrahmenglied (100) weisend und der freiliegenden Fläche (112; 122) zu der zentralen Öffnung weisend an jeweilige Seitenrahmenglieder (100) montiert zu werden, und wobei jede Seitenkappe jeweils einen inneren Abschnitt (114) aufweist, so dass jede Seitenkappe (110; 120) im montierten Zustand den inneren Teil (101) der Innenseite eines jeweiligen Seitenrahmenglieds (100) bedeckt, und wobei mindestens eine der Kappen (110, 210, 310; 120, 220, 320) einen äußeren Abschnitt (113, 213, 313; 123, 223, 323) aufweist, der dazu ausgeführt ist, im montierten Zustand mindestens einen Teil des äußeren Teils des Rahmenglieds und/oder ein Flügelglied zu bedecken, und wobei mindestens eine der Kappen (110, 210, 310; 120, 220, 320) ferner ein erstes und ein zweites Ende umfasst, wobei die Enden mit flexiblen Flanschen (119; 116) versehen sind, die zum Eingriff mit dem Rahmenglied zur Bereitstellung eines Schnappverschlusses ausgeführt sind; **dadurch gekennzeichnet, dass** der innere Abschnitt von zumindest einer der Kappen (110, 210, 310; 120, 220, 320) ein dickeres Profil bezüglich des äußeren Abschnitts aufweist.
2. Dachfenstersanierungssystem nach Anspruch 1, das ferner eine Eckabdeckung (420) umfasst, die dazu ausgeführt ist, zwei angrenzende Kappen an einer Rahmenecke zu verbinden.
 3. Dachfenstersanierungssystem nach Anspruch 1, wobei der Flügel (3') über einen Satz von Scharniergelenken mit dem Rahmen (2) verbunden ist und um eine durch die Scharniergelenke definierte Drehachse beweglich ist und zwischen einer geöffneten und einer geschlossenen Position beweglich ist und jeder äußere Teil (102, 202, 302) des Rahmens durch den Flügel (3') bedeckt wird, wenn sich der Flügel (3') in der geschlossenen Position befindet, und der innere Teil (101, 201, 301) des jeweiligen Rahmenglieds nicht durch den Flügel (3') bedeckt wird, wenn sich der Flügel (3') in der geschlossenen Position befindet, und wobei jede Kappe des Satzes von Kappen (110, 210, 310) des Sanierungssystems den inneren Teil und mindestens einen Teil des äußeren Teils des Rahmens bedeckt.
 4. Dachfenstersanierungssystem nach Anspruch 1, wobei der Flügel (3'') im montierten Zustand fest mit dem feststehenden Rahmen (2) verbunden ist, und wobei der äußere Abschnitt (123, 223, 323) mindestens einiger Kappen des Satzes von Kappen (120, 220, 320) im montierten Zustand das Flügelglied bedeckt.
 5. Dachfenstersanierungssystem nach Anspruch 4, wobei der Satz von Kappen einen einheitlichen Kappenrahmen bildet, vorzugsweise ferner umfassend eine Nut (128), die zur Aufnahme einer Abschirmungsvorrichtung ausgeführt ist.
 6. Dachfenstersanierungssystem nach einem der vorhergehenden Ansprüche, wobei das Sanierungssystem einen Ersatzflügel (3) umfasst.
 7. Dachfenstersanierungssystem nach einem der vorhergehenden Ansprüche, wobei der äußere Abschnitt mindestens einer der Kappen eine Nut (318) umfasst, die zur Aufnahme einer Dichtung im montierten Zustand ausgeführt ist.
 8. Dachfenstersanierungssystem nach einem der vorhergehenden Ansprüche, wobei mindestens eine der Kappen dazu ausgeführt ist, einen Hohlraum zwischen der Kappe und dem inneren Teil eines feststehenden Rahmenglieds zu schaffen, wenn sie an dem Rahmenglied montiert ist, und wobei das System ein Isolationselement umfasst, das dazu ausgeführt ist, in den Hohlraum zwischen der Kappe und dem inneren Teil eines feststehenden Rahmenglieds zu passen.
 9. Dachfenstersanierungssystem nach einem der vorhergehenden Ansprüche, wobei mindestens eine der Kappen aus Polyvinylchlorid (PVC) hergestellt ist.
 10. Verfahren zum Sanieren eines Dachfensters (1), das einen feststehenden Rahmen (2) und einen Flügel (3') umfasst, die folgenden Schritte umfassend:
 - a) Bereitstellen eines Sanierungssystems nach einem der Ansprüche 1 bis 9;
 - b) Vorbereiten des Dachfensters für die Sanierung; und
 - c) Montieren des Sanierungssystems an den feststehenden Rahmen (2).
 11. Verfahren nach Anspruch 10, wobei Schritt c) die folgenden Schritte beinhaltet:
 - I) Montieren einer Seitenkappe (110) an einen inneren Teil der Innenseite der Seitenrahmenglieder,
 - II) Montieren einer Kappe an einen inneren Teil der Innenseite des unteren Rahmenglieds, und
 - III) Montieren einer Kappe an einen inneren Teil der Innenseite des oberen Rahmenglieds.
 12. Verfahren nach Anspruch 11, wobei Schritt (a) Bereitstellen eines Ersatzflügels (3) beinhaltet und Schritt b) Entfernen des bestehenden Flügels (3') beinhaltet.

13. Verfahren nach Anspruch 11, wobei Schritt b) festes Verbinden des Flügels (3') mit dem feststehenden Rahmen (2) beinhaltet, und ferner umfassend einen Schritt d) des Verbindens des äußeren Abschnitts (123, 223, 323) des Satzes von Kappen (120, 220, 320) mit dem Flügel (3").

Revendications

1. Système de remise en état d'une fenêtre de toit, comprenant une fenêtre de toit (1) ayant un dormant fixe (2) doté d'un élément de dormant supérieur (300), d'un élément de dormant inférieur (200) et de deux éléments de dormant latéraux (100) définissant une ouverture centrale et, placé à l'intérieur du dormant fixe, un châssis (3') doté d'éléments de châssis portant un vitrage (4), dans lequel chaque élément de dormant (100, 200, 300) du dormant fixe (2) comporte un côté intérieur faisant face à l'ouverture centrale, chacun desdits côtés intérieurs ayant une partie extérieure (102, 202, 302) et une partie intérieure (101, 201, 301), le système de remise en état comprenant en outre un ensemble de capsules (110, 210, 310 ; 120, 220, 320) conçues pour être reliées aux éléments de dormant (100, 200, 300) du dormant fixe (2) dans un état monté, l'ensemble de capsules (110, 210, 310 ; 120, 220, 320) comprenant :

une capsule supérieure (310 ; 320) présentant une surface fermée (311 ; 321) et une surface exposée (312 ; 322), conçue pour être montée sur l'élément de dormant supérieur (300) avec la surface fermée (311 ; 321) en face de l'élément de dormant supérieur (300) et la surface exposée (312 ; 322) en face de l'ouverture centrale, et la capsule supérieure ayant une section intérieure (314) telle que la capsule supérieure (310 ; 320) recouvre la partie intérieure (301) du côté intérieur de l'élément de dormant supérieur (300) dans l'état monté ;

une capsule inférieure (210 ; 220) présentant une surface fermée (211 ; 221) et une surface exposée (212 ; 222), conçue pour être montée sur l'élément de dormant inférieur (200) avec la surface fermée (211 ; 221) en face de l'élément de dormant inférieur (200) et la surface exposée (212 ; 222) en face de l'ouverture centrale, et la capsule inférieure ayant une section intérieure (214) telle que la capsule inférieure (210 ; 220) recouvre la partie intérieure (201) du côté intérieur de l'élément de dormant inférieur (200) dans l'état monté ; et

deux capsules latérales (110 ; 120) présentant chacune une surface fermée (111 ; 121) et une surface exposée (112 ; 122), chacune étant conçue pour être montée sur des éléments de dormant latéraux respectifs (100) avec la surfa-

ce fermée (111 ; 121) en face de l'élément de dormant latéral respectif (100) et la surface exposée (112 ; 122) en face de l'ouverture centrale, et chaque latérale ayant une section intérieure (114) telle que chaque capsule latérale (110 ; 120) recouvre la partie intérieure (101) du côté intérieur de l'élément de dormant latéral respectif (100) dans l'état monté ; et dans lequel au moins l'une des capsules (110, 210, 310 ; 120, 220, 320) a une section extérieure (113, 213, 313 ; 123, 223, 323) conçue pour recouvrir au moins une partie de la partie extérieure de l'élément de dormant et/ou un élément de châssis dans l'état monté, et dans lequel au moins l'une des capsules (110, 210, 310 ; 120, 220, 320) comprend en outre une première et une seconde extrémité, dans lequel les extrémités sont munies de brides flexibles (119 ; 116) conçues pour venir en prise avec l'élément de dormant pour produire un verrou à cliquet ; **caractérisé en ce que** la section intérieure d'au moins l'une des capsules (110, 210, 310 ; 120, 220, 320) présente un profil plus épais par rapport à la section extérieure.

2. Système de remise en état de fenêtre de toit selon la revendication 1, comprenant en outre un couvercle d'angle (420) conçu pour relier deux capsules adjacentes à un angle du dormant.

3. Système de remise en état de fenêtre de toit selon la revendication 1, dans lequel le châssis (3') est relié au dormant (2) à l'aide d'un ensemble d'articulations pivotantes et peut bouger autour d'un axe tournant défini par les articulations pivotantes et peut bouger entre une position ouverte et une position fermée et chaque partie extérieure (102, 202, 302) du dormant est recouverte par le châssis (3') lorsque le châssis (3') est dans la position fermée, et la partie intérieure (101, 201, 301) de l'élément de dormant respectif n'est pas recouverte par le châssis (3') lorsque le châssis (3') est dans la position fermée, et dans lequel chaque capsule de l'ensemble de capsules (110, 210, 310) dudit système de remise en état recouvre la partie intérieure et au moins une partie de la partie extérieure du dormant.

4. Système de remise en état de fenêtre de toit selon la revendication 1, dans lequel le châssis (3") est relié à demeure au dormant fixe (2) dans l'état monté, et dans lequel la section extérieure (123, 223, 323) d'au moins certaines capsules de l'ensemble de capsules (120, 220, 320) recouvre l'élément de châssis dans ledit état monté.

5. Système de remise en état de fenêtre de toit selon la revendication 4, dans lequel l'ensemble de capsules forme un cadre de capsules cohérent, de pré-

- férence comprenant également une rainure (128) conçue pour recevoir un dispositif de protection.
6. Système de remise en état de fenêtre de toit selon l'une quelconque des revendications précédentes, le système de remise en état comprenant un châssis de remplacement (3). 5
7. Système de remise en état de fenêtre de toit selon l'une quelconque des revendications précédentes, dans lequel la section extérieure d'au moins l'une des capsules comprend une rainure (318) conçue pour loger un joint d'étanchéité dans l'état monté. 10
8. Système de remise en état de fenêtre de toit selon l'une quelconque des revendications précédentes, dans lequel au moins l'une des capsules est conçue pour créer une cavité creuse entre la capsule et la partie intérieure d'un élément de dormant fixe lorsqu'elle est montée sur ledit élément de dormant, et le système comprenant un élément d'isolation conçu pour s'ajuster dans la cavité creuse entre la capsule et la partie intérieure d'un élément de dormant fixe. 15
20
9. Système de remise en état de fenêtre de toit selon l'une quelconque des revendications précédentes, dans lequel au moins l'une des capsules est constituée de polychlorure de vinyle (PVC). 25
10. Procédé de remise en état d'une fenêtre de toit (1) ayant un dormant fixe (2) et un châssis (3'), comprenant les étapes suivantes : 30
- a) fourniture d'un système de remise en état selon l'une quelconque des revendications 1 à 9 ; 35
- b) préparation de la fenêtre de toit pour sa remise en état ; et
- c) montage du système de remise en état sur le dormant fixe (2). 40
11. Procédé selon la revendication 10, dans lequel l'étape c) inclut les étapes suivantes : 45
- I) montage d'une capsule latérale (110) sur une partie intérieure du côté intérieur des éléments de dormant latéraux,
- II) montage d'une capsule sur une partie intérieure du côté intérieur de l'élément de dormant inférieur, et
- III) montage d'une capsule sur une partie intérieure du côté intérieur de l'élément de dormant supérieur. 50
12. Procédé selon la revendication 11, dans lequel l'étape a) inclut la fourniture d'un châssis de remplacement (3) et l'étape b) inclut le retrait du châssis existant (3'). 55
13. Procédé selon la revendication 11, dans lequel l'étape b) inclut la liaison à demeure du châssis (3') au dormant fixe (2), et comprenant en outre une étape d) de liaison de la section extérieure (123, 223, 323) de l'ensemble de capsules (120, 220, 320) au châssis (3').

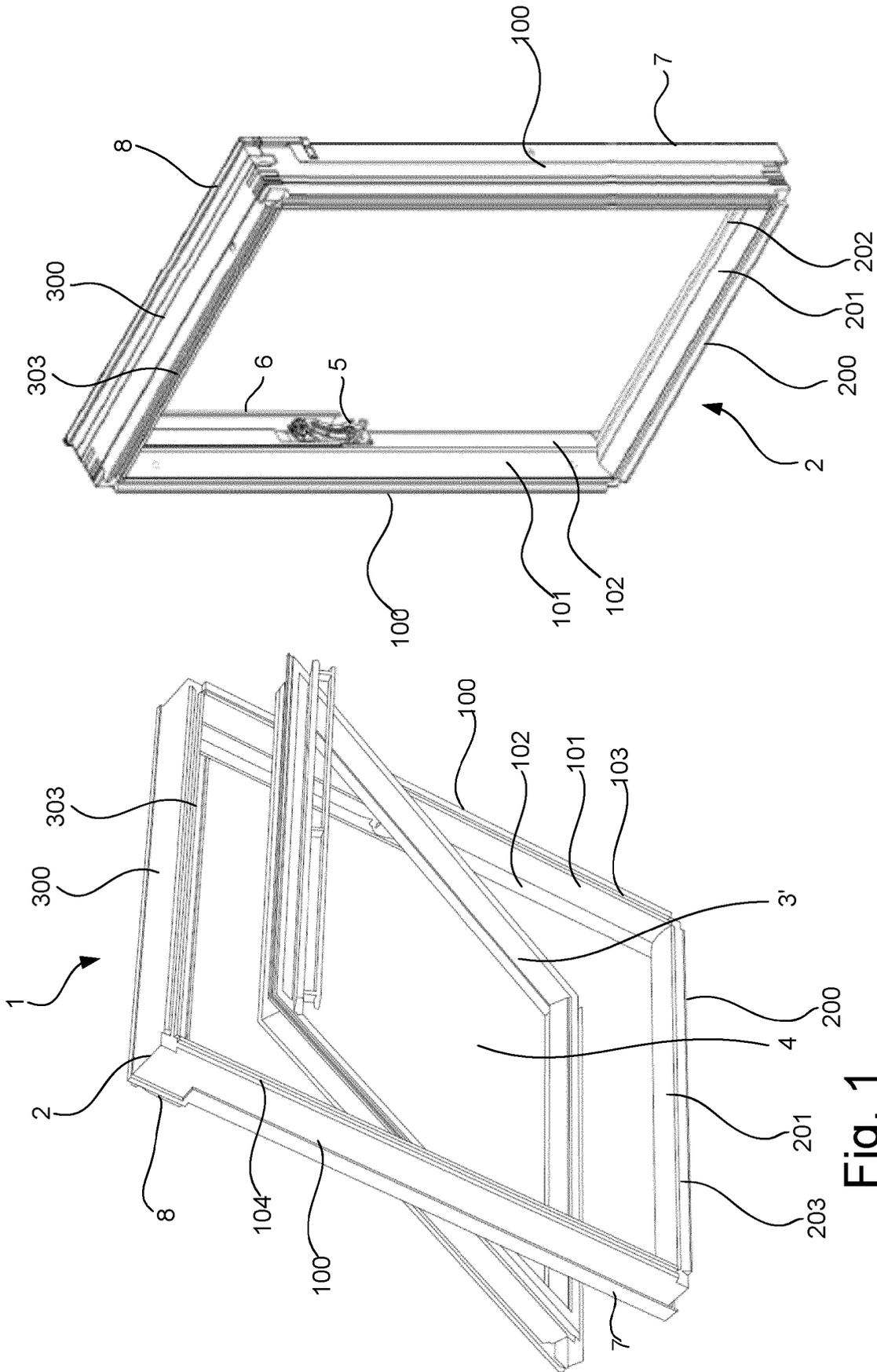


Fig. 2

Fig. 1

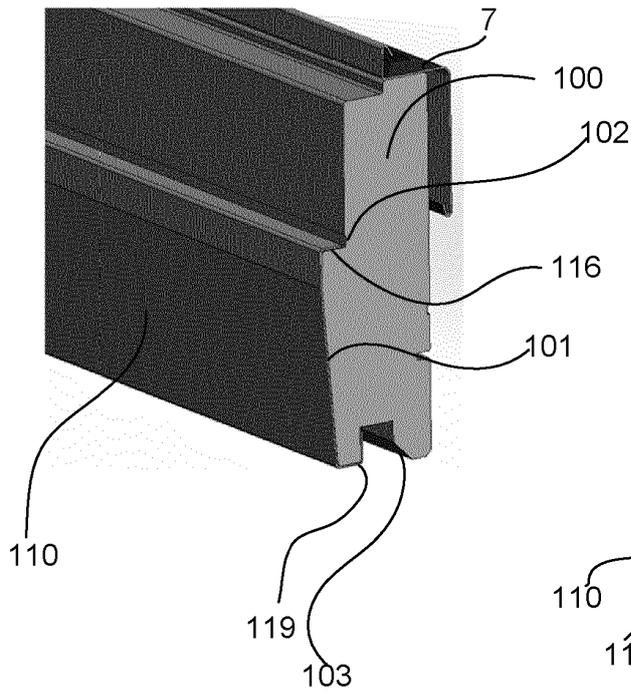


Fig. 5

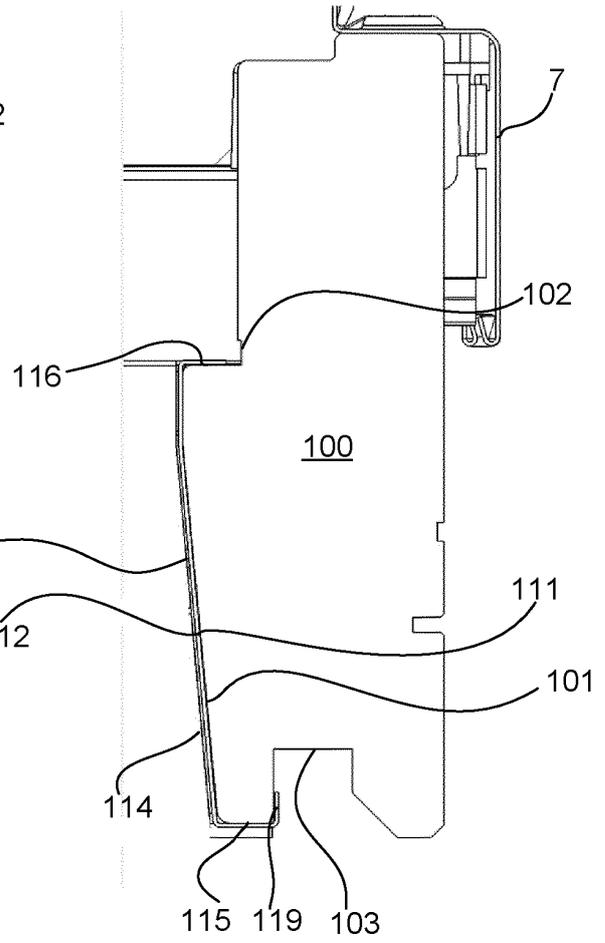


Fig. 4

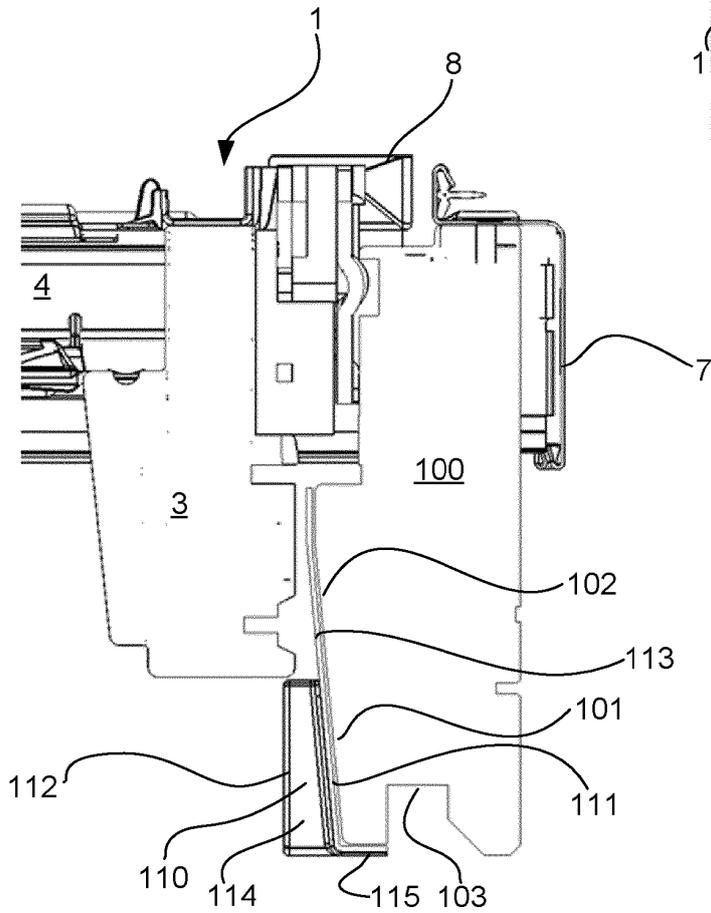


Fig. 3

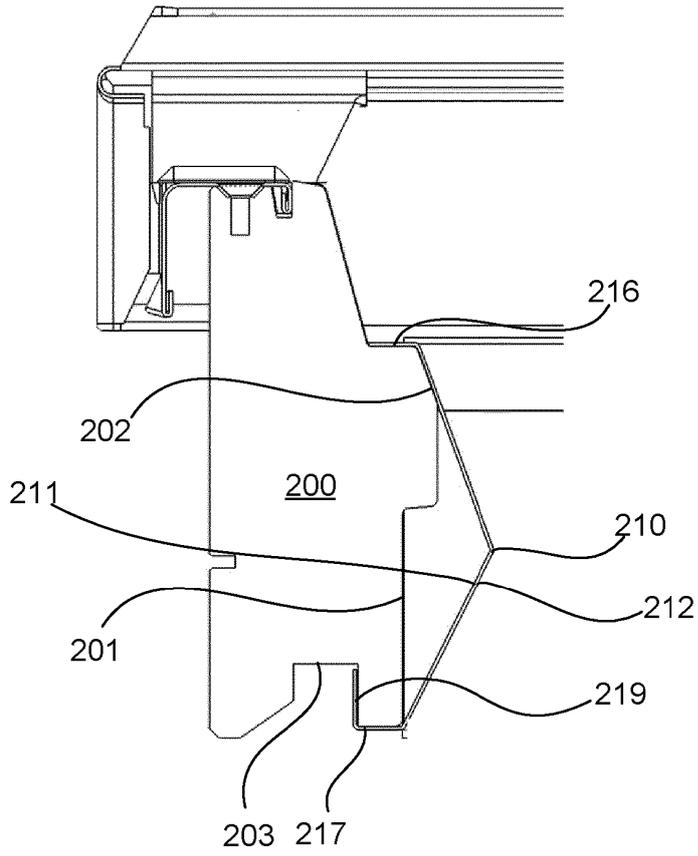


Fig. 6

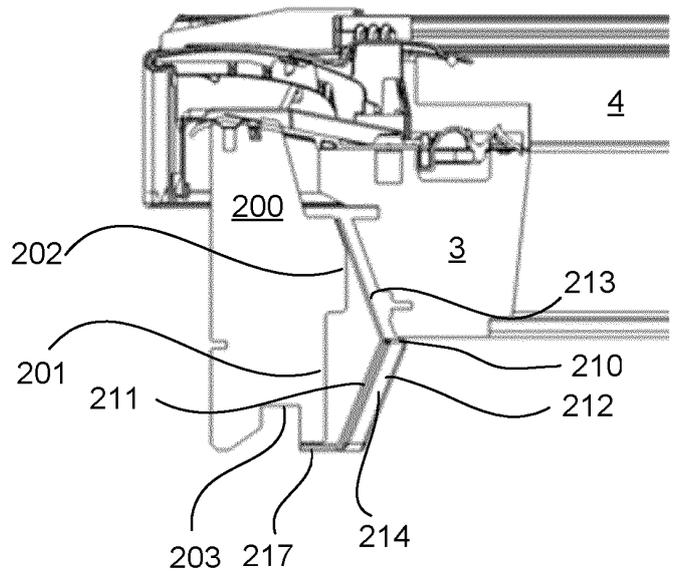


Fig. 7

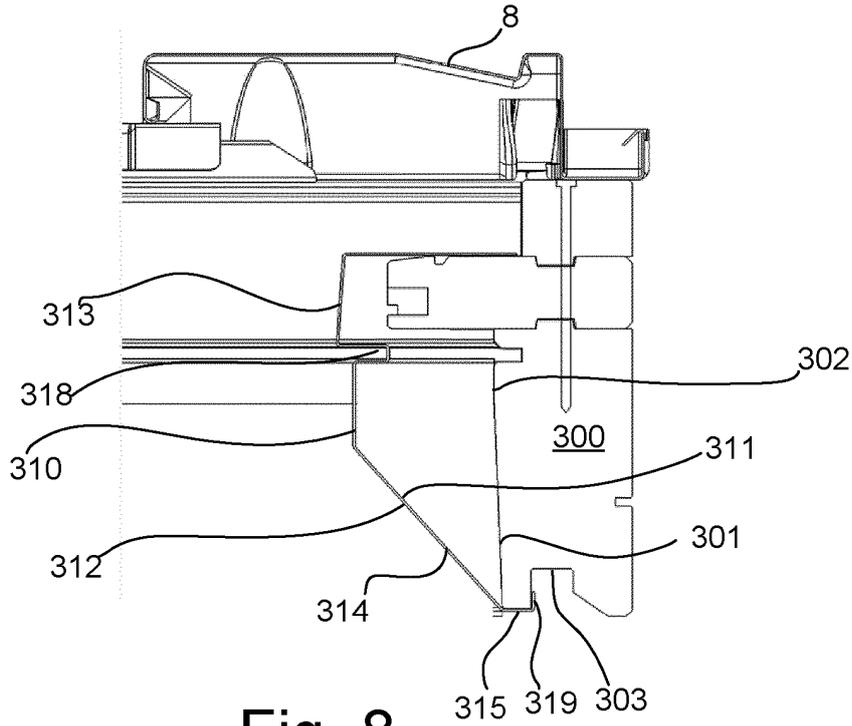


Fig. 8

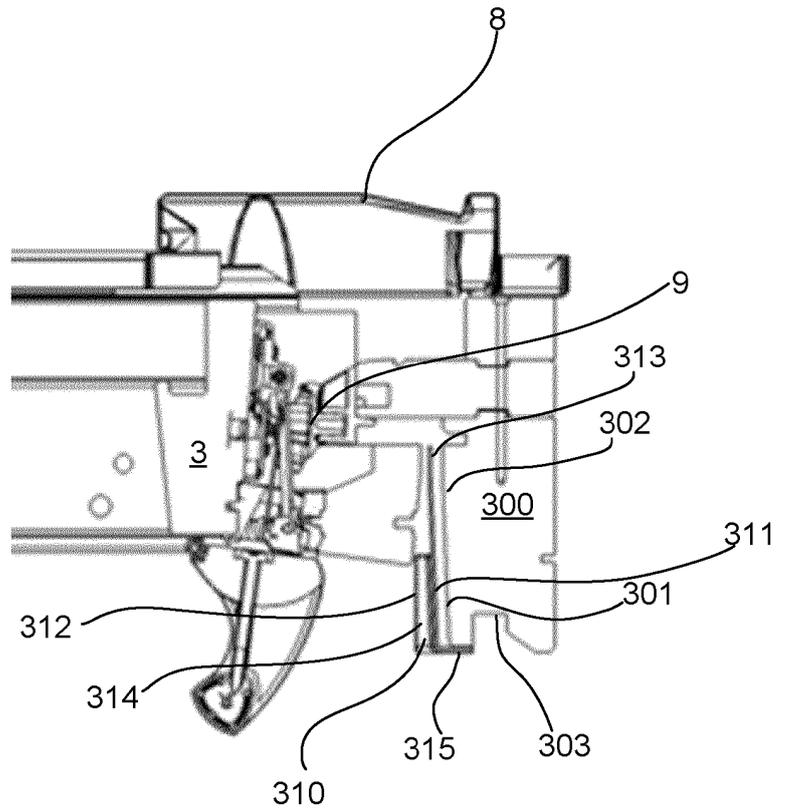


Fig. 9

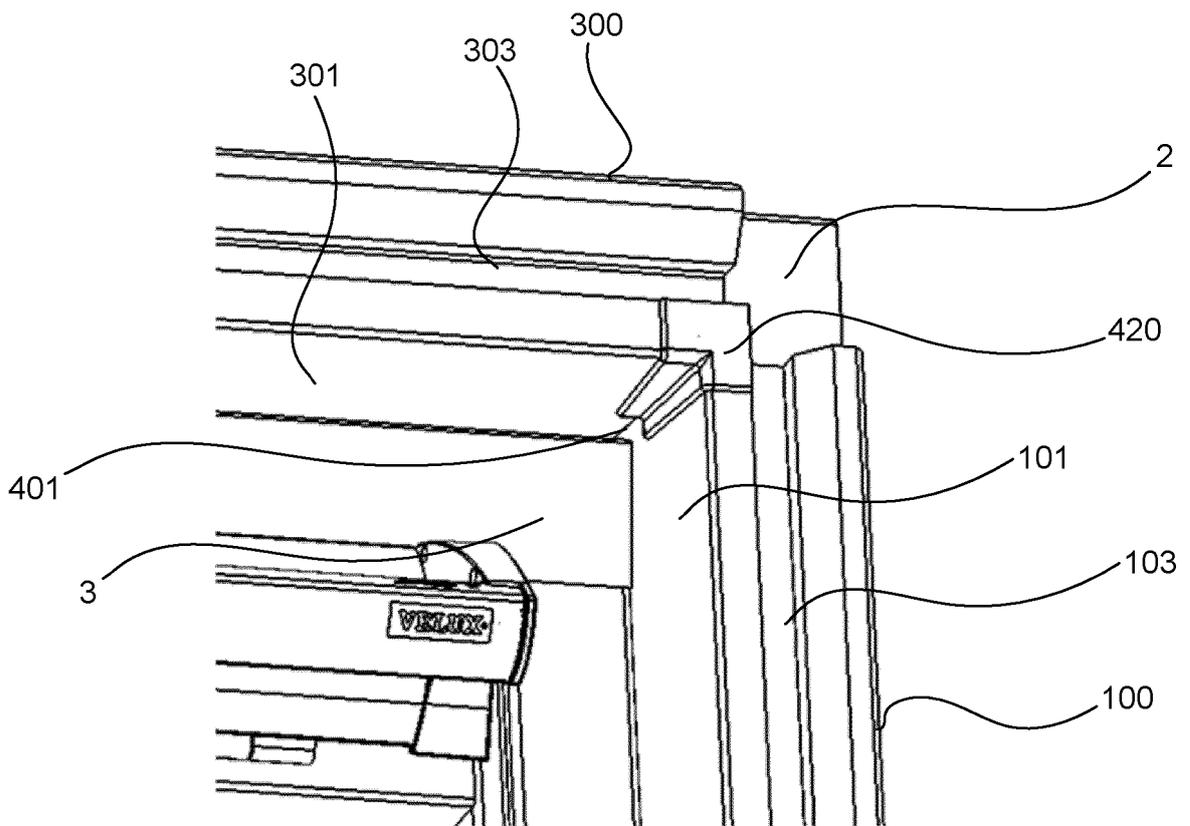
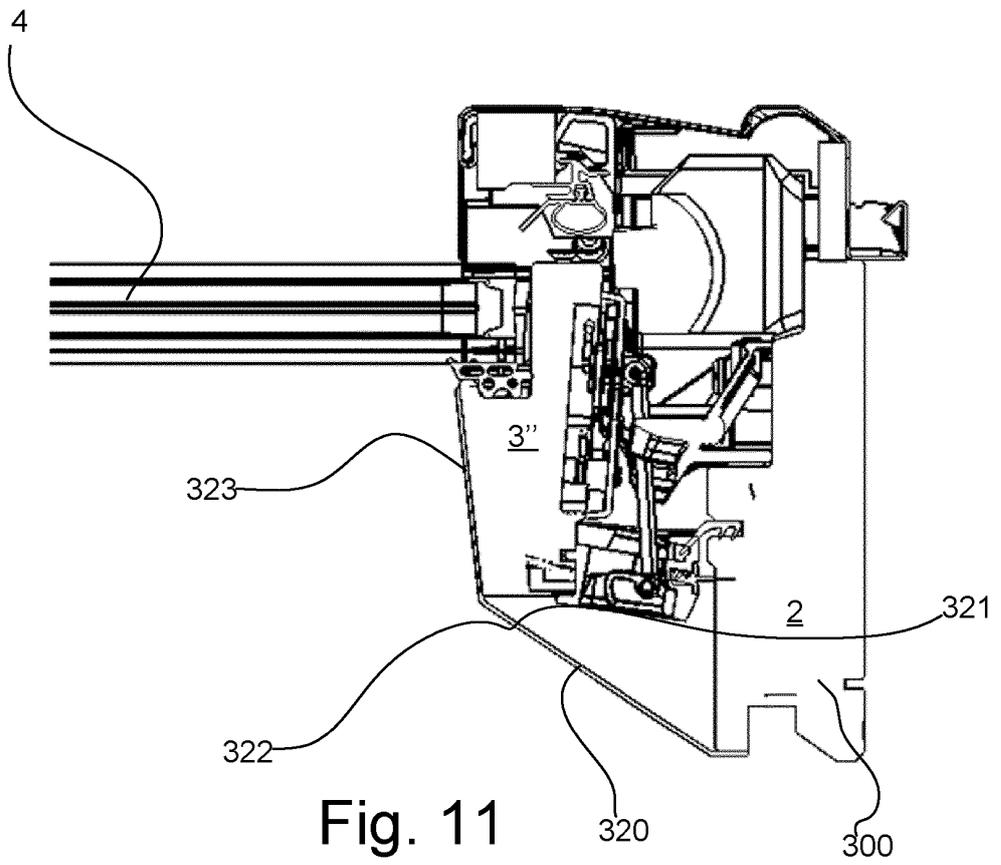
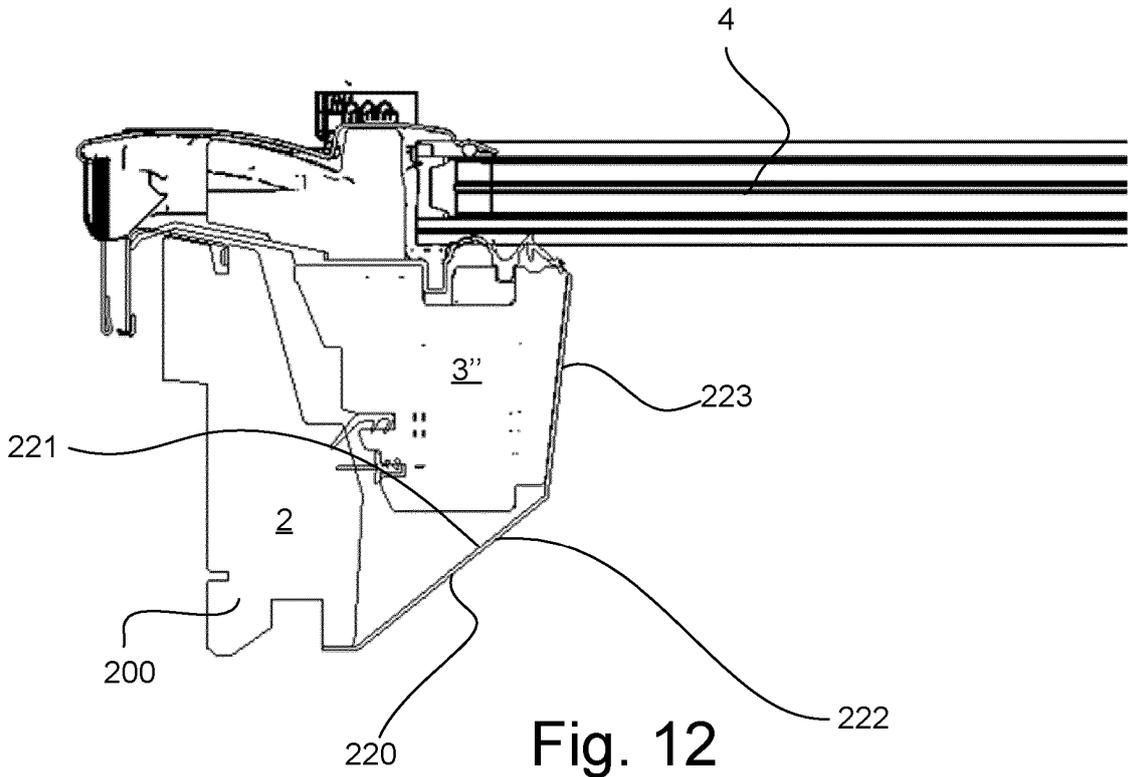


Fig. 10



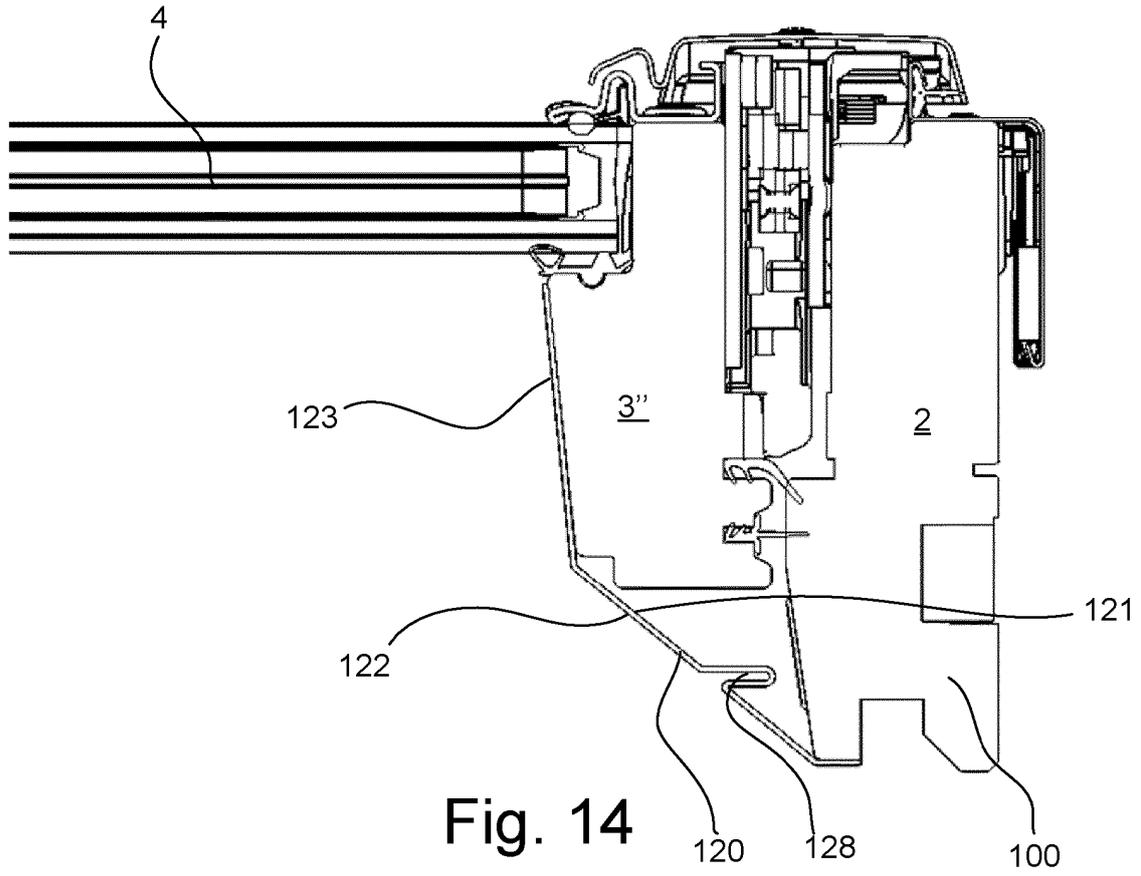


Fig. 14

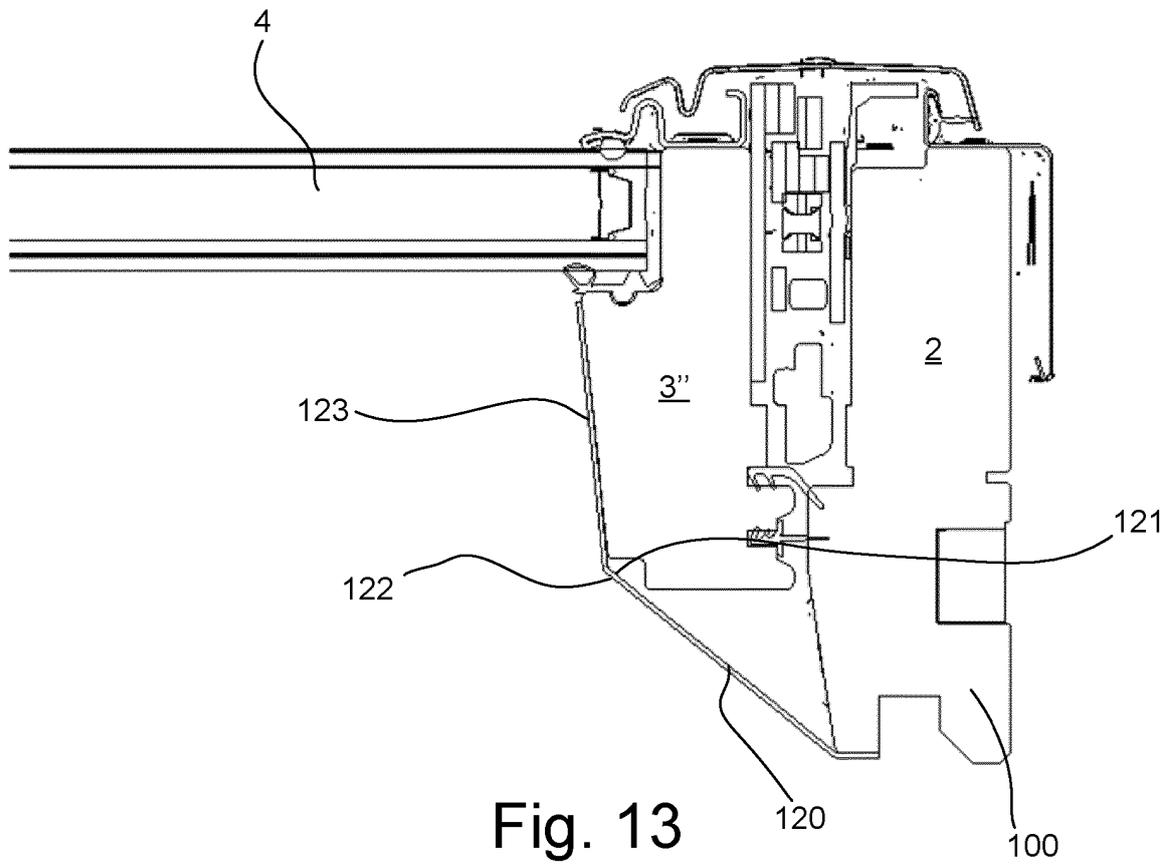


Fig. 13

REFERENCES CITED IN THE DESCRIPTION

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