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(71) Applicant: **VKR Holding A/S**
2970 Hørsholm (DK)

(72) Inventor: **JENSEN, Henrik**
2970 Hørsholm (DK)

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

(54) **HANDLING AND INSTALLATION ASSEMBLY FOR A ROOF WINDOW**

(57) A handling and installation assembly (10) for a roof window comprising a frame (3), a sash (2) and a sash hinge part (20) of a hinge (5). The assembly (10) is releasably connectable to the hinge. The assembly (10) comprises a first element (11) and a second element (12) connectable to the first element (11). The first element (11) and the second element (12) are engageable with each other in a first orientation to temporarily lock the sash hinge part (20) in the first orientation, and the first element (11) and the second element (12) are engageable with each other in a second orientation to temporarily lock the sash hinge part (20) in the second orientation.

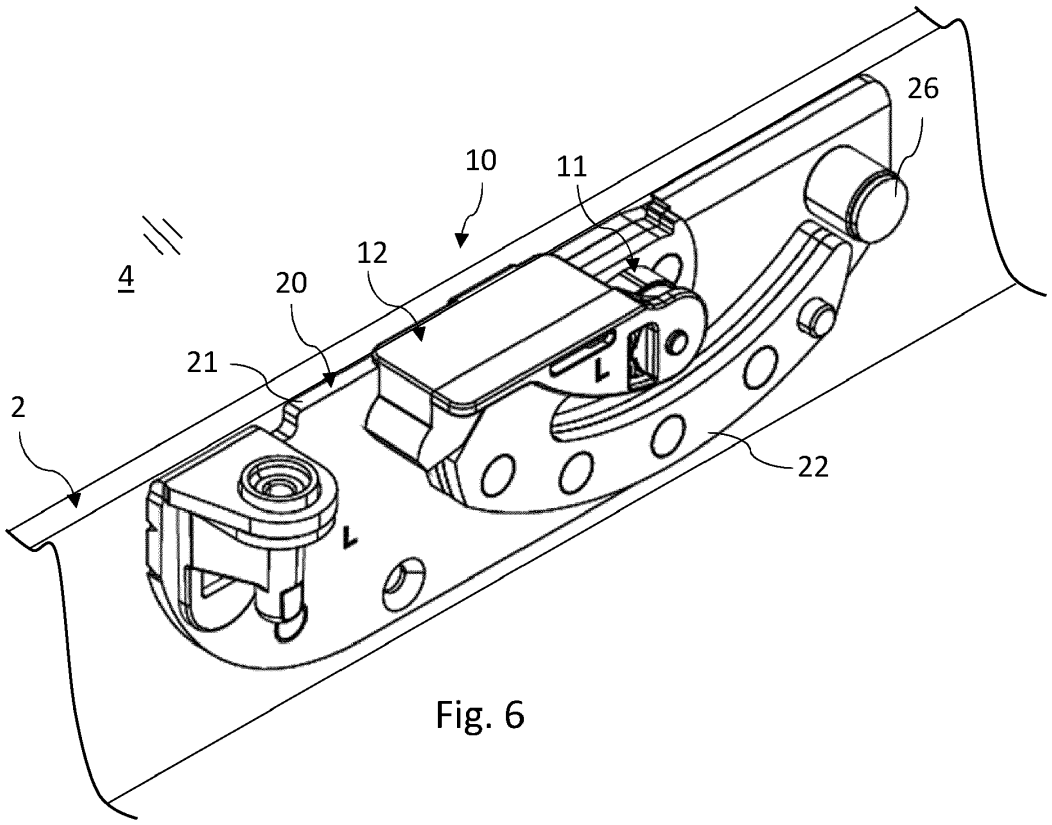

Fig. 6

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Description

Technical Field

[0001] The invention relates to a handling and installation assembly for a roof window comprising a frame, a sash and a hinge with a sash hinge part comprising a base plate, a slide rail, and a pivot pin, in which the pivot pin extends perpendicularly from the base plate, and the slide rail is connected to the pivot pin and configured to pivot about the pivot pin.

Background Art

[0002] Installation and handling of roof windows can be difficult tasks which sometimes require multiple people to perform certain tasks on a single roof window. Problems may arise as a cause of components moving in unforeseen ways during handling and installation. Such unforeseen movement may lead to damages to the roof window or wrongful installation. To avoid such unforeseen movement it might require an installer to physically hold the components to prevent unnecessary movement, however holding the components limits the resources of the installer available for handling and installation, which in turn leads to an additional installer being required for at least some parts of the installation and handling processes. During installation of such a roof window, the sash needs to be handled repeatedly in order to render mounting of the frame in the roof structure possible and to ascertain that the fit between the sash and frame is correct. Typically, the roof window including the sash and the frame is taken from its supply condition in suitable packaging, following which the sash is detached from the frame. The sash then needs to be handled and stored separately while the frame is being mounted in the roof structure. The sash may be attached, detached and reattached to the frame on several occasions. When handling the sash, there is a risk that the slide rail swings out uncontrollably beyond the contours of the sash with an ensuing risk of getting stuck and deformed, or causing damage to building parts.

[0003] Previous efforts have already been made to facilitate installation. For example, EP 1 762 680 A2 discloses a hinge arrangement for aiding the assembly/installation of roof windows, the hinge arrangement comprising a two-part hinge having a first component part of a hinge having a member for receiving a locating member. A second component part of the hinge has a locating member being movably mounted on the second component part of the hinge and means for releasably fixing the position of the locating member relative to the second component part of the hinge. This hinge arrangement provides for releasably fixing the position of the locating finger relative to the second component part of the hinge by brake means, whereby it is possible to align the locating finger at an angle. The brake means of the hinge arrangement comprises a U-shaped bracket with two legs spaced apart at a predetermined distance so as to apply a compressive force both on a cylindrical portion of a free end of the pivot pin of the hinge and also on flats of the pivot pin when the locating finger is in a single position are configured such that the locating finger is held stable in the single position. However, the brake means are limited to a single function, and as they form part of the hinge arrangement itself, they necessarily remain in place also during the daily operation of the roof window.

Summary of Invention

[0004] The object of the invention is to provide an improved handling and installation assembly.

[0005] The object of the invention is achieved by a handling and installation assembly for a roof window of the kind mentioned in the introduction and which is furthermore characterised in that the assembly is releasably connectable to the hinge, that the assembly comprises a first element connectable to the pivot pin and the slide rail and configured to rotate with the slide rail, that the assembly comprises a second element connectable to the first element and the base plate, that the first element and the second element are engageable with each other in a first orientation to temporarily lock the slide rail in the first orientation, and that the first element and the second element are engageable with each other in at least one other orientation including a second orientation to temporarily lock the slide rail in the second orientation.

[0006] Consequently, an assembly is provided which is able to aid in both handling and installation of a roof window. Furthermore, as the assembly is releasably connectable to the hinge, the assembly may be removed after aiding in handling and assembly, thus avoiding the risk of the assembly interfering with operation of the roof window after installation, e.g. during opening and/or closing of the roof window. Furthermore, as the assembly is provided separately from the roof window, the assembly does not impose any requirements onto the roof window to achieve correct functioning, thus leading to a flexible assembly which may be used in conjunction with a wide variety of roof windows. As a further advantage of the releasable feature, the assembly may be reused as is when installing another roof window.

[0007] In this context "handling", is to be interpreted as one or more actions performed in handling the roof window from a manufacturing site to and on an installation site, and also including detaching and reattaching the sash and frame during the installation process.

[0008] In this context "installation", is to be interpreted as one or more actions performed in installing the roof window at the installation site.

[0009] A hinge as described herein is already well known in the art of roof windows. For a more detailed description of such a hinge reference is made to Applicant's EP 0165954 B1, EP 1612352 A1, WO 99/28581 A1 and EP 3486413 A1.

[0010] The releasable connection between the assembly and the hinge may be achieved in a plethora of ways. The assembly may be screwed onto the hinge. Preferably, the assembly is frictionally and/or snap connectable with the hinge, thus allowing the assembly to be connected to the hinge by simply pressing the assembly onto the hinge, and for releasing the assembly from the hinge, the assembly may simply be pulled off, if relevant following release of the snap connection, without the use of tools. The engagement between the first element and the second element may be a frictional engagement, a snap-fit engagement, a magnetic engagement or similar. A magnetic engagement may for example be achieved by providing the first element with a permanent magnet and the second element with two or more permanent magnets, where the two magnets of the second element are placed positions corresponding to the first and the second orientation, where when the permanent magnet of the first element is aligned with a magnet of the second element they attract each other thus temporarily locking the slide rail in either the first or the second orientation. In one embodiment, the engagement between the first element and the second element to provide the temporary lock in the first and second orientations is a form-locking engagement. In this way, a secure locking takes place substantially without depending on frictional forces; however being at the same time easily releasable, either by removing the form-lock, or by forming at least one of the first and second elements with resilient components.

[0011] Although, only a first orientation and a second orientation have been mentioned, the invention is not limited to only two different orientations. The first element and the second element may be able to engage with each other to temporarily lock the slide rail in a third orientation, and/or a fourth orientation.

[0012] In an embodiment the first element comprises one or more protrusions, wherein the second element comprises one or more notches, wherein the one or protrusions and the one or more notches are engageable with each other in a first orientation to temporarily lock the slide rail in the first orientation, and wherein the one or protrusions and the one or more notches are engageable are engageable with each other in a second orientation to temporarily lock the slide rail in the second orientation. Consequently, a simple mechanism for providing an engagement between the first element and the second element is achieved. In one embodiment the first element comprises a plurality of protrusions and the second element comprises a single notch. In another embodiment the first element comprises one or more protrusions and the second element comprise a plurality of notches. The one or more protrusions are preferably configured for engaging the one or more notches by being rotated into the one or more notches by rotating the slide rail, thus allowing the one or more protrusions to be received within the one or more notches. The one or more protrusions may be released from the notch by applying a force to further rotate the slide rail, the force applied leads to the one or more notch and/or the one or more protrusion elastically deforming, thus allowing the one or more protrusions to rotate out of the one or more notch.

[0013] In an embodiment the first element comprises an outer section and an inner section, wherein the one or more protrusions protrudes from the outer section, and wherein the inner section defines a receiving space for receiving at least part of the pivot pin and at least part of the slide rail. The inner section may be formed with a complementary shape to that of the slide rail and the pivot pin.

[0014] In an embodiment the first element comprises a connection pin extending from the upper section, and where the second element comprises a connection aperture for receiving the connection pin to connect the first element to the second element. Consequently, a simple mechanism for connecting the first element to the second element is achieved.

[0015] In an embodiment the second element comprises a connection flange for connecting the second element to the base plate of the hinge. This facilitates connection of the assembly to the sash hinge part.

[0016] In an embodiment the hinge comprises a base pin extending from the base plate, and wherein the second element comprises a snap-connector for engaging and connecting the second element to the base pin. In addition to facilitating the connection operation, this also provides for a stable positive or non-positive engagement of the assembly with the sash hinge part.

[0017] In an embodiment the first orientation is a handling orientation configured for facilitating handling of the roof window, and wherein the second orientation is an installation orientation configured for facilitating installation of the roof window, including detachment and reattachment of the sash in the frame. The handling orientation may for example be used when handling the sash of the roof window, including transporting the roof window in a box, a packaging, or similar. In some cases, the sash is provided separately, in which case it is advantageous to keep the slide rail temporarily locked within the contours of the sash. This also applies if the sash is provided together with the frame, in which the handling includes storing the sash separately before attachment and possible detachment and subsequent reattachment to the frame. The installation orientation may for example be used when installing the roof window into a roof. In such cases the assembly may keep the slide rail in a desired orientation, thus freeing up resources for an installer installing the window.

[0018] In an embodiment the roof window comprises a plurality of hinges, each comprising a sash hinge part with a base plate, a slide rail, and a pivot pin, and wherein the assembly comprises an associated first element and an associated second element for each sash hinge part of the plurality of hinges. By providing an assembly for each hinge, the installation is facilitated even further, since a temporary lock at either side of the sash is achieved.

[0019] Other presently preferred embodiments and further advantages will be apparent from the subsequent detailed description and drawings.

[0020] A feature described in relation to one of the aspects may also be incorporated in the other aspect, and the advantage of the feature is applicable to all aspects in which it is incorporated.

Brief Description of Drawings

[0021] In the following description embodiments of the invention will be described with reference to the drawings, in which

Fig. 1 is a perspective view of a hinge with a handling and installation assembly in an embodiment of the invention;

Fig. 2 is a perspective view of a roof window for use with a handling and installation assembly according to the invention;

Fig. 3 is an exploded perspective view of the hinge of Fig. 1;

Fig. 4 is a perspective view of a sash hinge part of the hinge of Figs 1 and 3;

Fig. 5 is an exploded perspective view of the sash hinge part of Fig. 4 with the handling and installation assembly in an embodiment of the invention;

Fig. 6 is a partial perspective view of the sash hinge part of Fig. 4 with a handling and installation assembly according to an embodiment of the invention in a first orientation corresponding to a handling orientation;

Fig. 7 is a front perspective view of the handling and installation assembly of Fig. 6;

Fig. 8 is a front view of the handling and installation assembly of Fig. 6;

Figs 9 and 10 are views of a second element of the handling and installation assembly according to an embodiment of the invention;

Fig. 11 is a front perspective view of a first element of the handling and installation assembly according to an embodiment of the invention;

Fig. 12 is a partial front view of the handling and installation assembly in an embodiment of the invention, connected to a sash hinge part of a hinge fastened to a sash of a roof window and shown in a first orientation corresponding to a handling orientation;

Fig. 13 is a partial front view of the handling and installation assembly in an embodiment of the invention, connected to a sash hinge part of a hinge fastened to a sash of a roof window and shown in a second orientation corresponding to an installation orientation;

Fig. 14 is partial front view of a handling and installation assembly according to another embodiment of the invention;

Figs 15 and 16 are perspective views from different angles of a first element of the handling and installation assembly in an embodiment of the invention; and

Figs 17 and 18 are perspective views from different angles of a second element of the handling and installation assembly in an embodiment of the invention.

Description of Embodiments

[0022] In the following detailed description, a preferred embodiment of the present invention will be described. However, it is to be understood that features of the different embodiments are exchangeable between the embodiments and may be combined in different ways, unless anything else is specifically indicated. It may also be noted that, for the sake of clarity, the dimensions of certain components illustrated in the drawings may differ from the corresponding dimensions in real-life implementations.

[0023] It is noted that terms such as "up", "down", "left-hand", "right-hand", "exterior", "interior", "outer", "inner" are relative and refers to the viewpoint in question.

[0024] Referring initially to Fig. 1, a handling and installation assembly 10 according to an embodiment of the invention is shown in connection with a hinge 5. Such a hinge 5 is well-known as such and suitable embodiments and descriptions of the functionality are shown and described in Applicant's EP 0165954B1, EP 1612352 A1, WO 99/28581 A1 and EP 3486413 A1.

[0025] The hinge 5 forms part of a set of hinges fastened to a roof window 1 shown in Fig. 2, corresponding to a mounted condition installed in an inclined roof structure. The roof window 1 comprises a number of elements including a sash 2, a frame 3 and a pane 4 encased in the sash 2. The sash 2 is connected to the frame 3 by means of the set of hinges 5 as described in the above fastened to side members of the frame 3 and sash 2, respectively, such that the sash 2 is openable relative to the frame 3 around a hinge axis α substantially parallel to top and bottom members of the frame 3 and sash . In Fig. 1, the hinge 5 is shown in a position corresponding to a closed position of the roof window.

[0026] Referring now also to Figs 3 and 4, each hinge 5 comprises a sash hinge part 20 and a frame hinge part 30. The sash hinge part 20 comprises a base plate 21, a slide rail 22, a pivot pin 23, a base pin 24, an indicator 25, and a guide pin 26. The base plate 21 is formed as a substantially planar plate 21. The pivot pin 23 is connected to and extends perpendicularly from the base plate 21. The slide rail 22 is connected to the pivot pin and configured to pivot about the pivot pin 23. The slide rail 22 is configured to rotate in a plane parallel to a plane defined by the base plate 21. The base pin 24 extends from the base plate 21. The base pin 24 functions as a stop for the rotation of the slide rail 22 in the clockwise direction. The indicator 25 indicates to which side member of the sash 2 the hinge 20 should be connected. In the shown embodiment, the indicator 25 is provided as

an L formed in the base plate 21. The L indicates the hinge 20 should be connected on the left-hand side member of the sash 2. It is understood that the other, right-hand hinge of the set of hinges has a similar, mirror-inverted configuration. The frame hinge part 30 comprises, in a manner known per se, a base plate 31 and is provided with an arc-shaped guide 32 in which the slide rail 22 of the sash hinge part 20 is slidably accommodated in the mounted condition of the hinge 5. To keep the sash 2 in a stable open position relative to the frame 3, a leaf spring 33 protrudes into the arc-shaped guide 32 to interact with the slide rail 22 and the guide pin 25. The frame hinge part 30 comprises two entry and exit points for the slide rail 22 and the guide pin 25, namely a first entrance 34 configured to receive the slide rail 22 and a second entrance 35 for the guide pin. The slide rail 22 comprises a release pin 27 near its free end, the release pin 22a being axially displaceable perpendicularly to the base plate 21. During installation, the slide rail 22 of the sash hinge part 20 is introduced into the arc-shaped guide 32 and the release pin 27 interacts with a ramp portion 31a of the base plate 31 of the frame hinge part 30 such that the release pin 26 is moved axially by contact with the ramp portion 31a to extend to the opposite side of the slide rail 22 as compared to the position shown in Fig. 4. In the installed position, the slide rail 22 is slidable in the arc-shaped guide 32 during opening of the sash 2 relative to the frame 3 until the release pin 27 of the sash hinge part 20 is lodged in the recess 36 of the frame hinge part 30. In order to disengage the sash 3 from the frame 2, the release pin 27 is manually pushed into its release position and the slide rail 22 may then be slid out of the arc-shaped guide 32.

[0027] Referring to Figs 5 and 6, showing perspective views of the sash hinge part 20 with a handling and installation assembly 10 according to an embodiment of the invention, the assembly 10 is releasably connectable to the sash hinge part 20 to allow the slide rail 22 to assume two or more orientations. The assembly 10 comprises a first element 11 and a second element 12. The first element 11 is connected to the pivot pin 23 and the slide rail 22 and configured to rotate with the slide rail 22. The second element 12 is connected to the first element 11 and the base plate 21. The first element 11 and the second element 12 are engageable with each other in a first orientation to temporarily lock the slide rail 22 in the first orientation. The first element 11 and the second element 12 are also engageable with each other in a second orientation to temporarily lock the slide rail 22 in the second orientation. In the position shown in Fig. 5, the first element 11 has been connected to the pivot pin 23 and the second element 12 is shown at an angle, from which the second element 12 is first moved towards the first element 11 and hence the base plate 21 of the sash hinge part 20. Following contact with the first element 11, the second element 12 is then rotated to engage with the base pin 24 and the base plate 21 itself as will be described in further detail below. The first element 11 and the second element 12 are now engaged with each other to temporarily lock the slide rail 22 in the first orientation as shown in Fig. 6. The first orientation is a handling orientation which keeps the slide rail 22 from moving unnecessarily during handling of the roof window. In this first orientation, the slide rail 22 is kept within the contours of the side member of the sash 2 as indicated in Fig. 6 (the structure of the sash 2 and the pane 4 is indicated schematically for easy reference).

[0028] Referring now also to Figs 7 to 11, showing various views of details of the handling and installation assembly 10 according to an embodiment of the invention: The first element 11 comprises an inner section 113, an outer section 114, and a plurality of protrusions designated 112 in the overview of Fig. 5 and shown as three protrusions 112a, 112b, 112c in the details of the embodiment shown. The plurality of protrusions 112 protrudes from the outer section 114 with an angular spacing between them. In the embodiment shown, the angular spacing is about 55° such that a central protrusion 112b is roughly located at the nine o'clock position, a next protrusion 112a at the eleven o'clock and the adjacent protrusion 112c to the other side at the seven o'clock positions, respectively. The inner section 113 defines a receiving space for receiving at least part of the pivot pin 23 and at least part of the slide rail 22, the inner section 113 being formed with complementary shape to that of the slide rail 22 and the pivot pin 23. The first element 11 further comprises a connection pin 111. The connection pin 111 extends from the outer section 114 and is intended for connecting the first element 11 to the second element 12. Finally, the outer section 114 comprises indents 115 to accommodate movement of the first element 11 relative to other parts of the hinge 5. The outer section 114 is formed with a general cylindrical shape with the three protrusions 112a, 112b, 112c extending radially from the outer section 114 and the connection pin 111 extending axially outwards from the outer section 114. The angular spacing between the protrusions is chosen such that the at least two distinctly different orientations are attainable, and with due consideration to the requirements that the slide rail 22 lies within the contours of the side member of the sash 2 in the first orientation and protrudes beyond the contours in the second orientation. Suitable angle ranges are 30 to 75°, typically around 45 to 60°.

[0029] The second element 12 comprises a notch 124 formed by a curvature in a beam 125. The notch 124 is configured to receive one of the protrusions 112 of the first element 11 at a time to define an associated orientation. In the embodiment shown, the central protrusion 112b is accommodated within the notch 124 when the slide rail 22 is in the first orientation and the next protrusion 112a in the clockwise direction when the slide rail 22 is in the second orientation.

[0030] The engagement between the first element 11 and the second element 12 is here provided as a form-locking engagement. The reception of the protrusion 112

in the notch 124 can be made almost frictionless by creating a small play between the protrusion 112 and the notch 124 when the protrusion 112 is moved into the connected first or second orientation. In this way, any stress acting upon the notch curvature in the beam 125 can be avoided. The beam 125 is formed in such a way that it is resilient and allows elastic deformation when the protrusion 112 is to be moved out of the notch 124. It is also conceivable to provide the protrusions with resilient properties, or otherwise provide either the first element 11, the second element 12 or both with one or more resilient components.

[0031] The second element 12 further comprises a connection flange 126. The connection flange 126 is also shown in Fig. 3 and is intended for connecting the second element 12 to the base plate 21 of the hinge 20, the connection flange 126 being configured for hooking the second element 12 onto the base plate 21. The connection flange 126 extends in a plane parallel to the base plate 21 when the assembly 10 is connected to the sash hinge part 20 of the hinge 5. The connection flange 126 extends from a spacer element 121 of the second element 12. The spacer element 121 extends perpendicularly to the connection flange 126 and serves the purpose of distancing part of the second element 12 away from the base plate 21. The distance created by the spacer element 121 allows the slide rail 22 to move in-between the second element 12 and the base plate 21. The second element 12 further comprises a snap-connector 123 for engaging and connecting the second element 12 to a base pin 24 of a hinge 20. The second element 12 further comprises an indicator 122. The indicator 122 may correspond to or match an indicator 25 of the hinge 20.

[0032] The second element 12 is thus a left-hand element in the embodiment shown, whereas the first element 11 is symmetrical, cf. Fig. 16 in which a symmetry line S is indicated, such that the same element may be used both for the left-hand and the right-hand hinge 5. It is noted that the central protrusion 112b and the next protrusion 112a in the clockwise direction are here used in connection with the left-hand sash hinge part 20, and when used with the right-hand sash hinge part, it is the central protrusion 112b and the adjacent protrusion 112c in the counter-clockwise direction that are in use; however, it is also conceivable to form the first element as tailored element fitting the left-hand and right-hand versions, respectively. A right-hand second element 12 is shown in Figs 17 and 18.

[0033] Further referring to Fig. 10, showing a back view of a second element 12 according to an embodiment of the invention. The second element 12 comprises a connection aperture 127 configured for receiving the connection pin 111 of the first element 11, thus connecting the first element 11 to the second element 12. Referring again to Fig. 5, the assembly 10 is connected onto the sash hinge part 20 as indicated. In a first step the sash hinge part 20 is provided. In a second step the first element 11 is connected to the sash hinge part 20. The first element 11 is connected by pressing the inner section 113 of the first element onto the slide rail 22 and the pivot pin 23. In a third step the second element 12 is connected to the base plate 21 and the first element 11. The second element 12 is connected to the base plate 21 by hooking the connection flange 126 onto the base plate 21, and connecting the snap connector 123 onto the base pin 24. In some not-shown embodiments, the second element 12 is only connected via either the connection flange 126 or the snap connector 123, or by any other means. The second element 12 is connected to the first element 11 by having the connection aperture 127 receiving the connection pin 111, when the second element 12 forms an angle with the first element 11 and the sash hinge part 20, and then rotate the second element 12 such that the snap connector 123 may snap onto the base pin 24.

[0034] During installation of the roof window 1, the sash 2 needs to be handled repeatedly during installation in order to render mounting of the frame 3 in the roof structure possible and to ascertain that the fit between the sash 2 and frame 3 is correct. Typically, the roof window 1 including the sash 2 and the frame 3 is taken from its supply condition in suitable packaging, following which the sash 2 is detached from the frame 3 and stored separately while the frame 3 is being mounted in the roof structure. During this initial handling and storage, the handling and installation assembly 10 is put in its first orientation.

[0035] In Fig. 12, the handling and installation assembly 10 is shown connected to the sash hinge part 20 of the left-hand hinge 5. The sash hinge part 20 is in turn fastened the side member of the sash 2. Fig. 12 represents the first orientation in which the central protrusion 112b of the first element 11 is received in the notch 124 of the second element 12 such that the sash 2 may be handled with the slide rail 22 staying in its position within the contours of the sash 2. Thus, the risk of the slide rail 22 swinging out beyond the contours of the sash 2 and thereby getting stuck and deformed, or causing damage to building parts, is eliminated.

[0036] Once the sash 2 is to be reattached to the frame 3, the handling and installation assembly 10 is put in its second orientation by rotating the slide rail 22 and consequently the first element 11 until the next protrusion 112a (in the left-hand hinge 5 in the embodiment shown) is received in the notch 124 in the second element 12 to provide a distinctly different position than in the first orientation. This operation is repeated at both sides of the sash 2. The sash 2 is then held in a suitable position for attachment, or reattachment, to the frame 3, i.e. such that the sash hinge part 20 at either side of the sash 2 is engageable with the respective frame hinge part 30 at either side of the frame 3. This is shown in Fig. 13, from which it emerges that the slide rail 22 protrudes beyond the contours of the side member of the sash 2. In this way, the installer may easily introduce the slide rail 22 at either side of the sash 2 into the first entrance 34 of the arc-shaped guide 32 in the frame hinge part 30.

[0037] Referring to Fig. 14 depicting a partial front view of a handling and installation assembly 10 according to another embodiment of the invention. Only differences relative to the embodiments described in the above will be described in detail and elements having the same or analogous function are denoted by the same reference numerals. In the shown embodiment, the outer section 114 of the first element 11 comprises at least one protrusion, here two protrusions 112a and 112b. The second element 12 comprises a plurality of notches, here a first notch 124a, and a second notch 124b. In the position shown in Fig. 14, the protrusion 112a engages with the first notch 124a such that the first orientation corresponding to a handling position is attained. In order to put the handling and installation assembly 10 in the second orientation, the slide rail 22 and the first element 11 are rotated such that the protrusion 112a is brought into reception within the second notch 124b.

[0038] While the above embodiments have been described as providing two distinctly different orientations of the handling and installation assembly 10, namely a first orientation and a second orientation, the invention is not limited to only two different orientations. The first element and the second element may be able to engage with each other to temporarily lock the slide rail in a third orientation, and/or a fourth orientation.

[0039] In the embodiment including three protrusions 112a, 112b, 112c and a single notch 124, it would thus be possible to provide three distinct orientations. In embodiment of Fig. 14, it could be conceivable to allow each of the two protrusions 112a and 112b to engage the two notches 124a and 124b in at least two different orientations of a slide rail 22 on which the assembly is mounted. Thus, each protrusion 112a and 112b may be engageable with each of the notches 124a, thus allowing for the slide rail 22 on which the assembly is mounted to be temporarily locked in four different orientations.

[0040] The installation and handling assembly 10 is suitably provided as moulded parts of a plastic material and may be removed once the installation of the roof window has been completed. The installation and handling assembly 10 could be reused as is when installing another roof window, or be recycled by appropriate environmentally responsible disposal means.

List of reference numerals

[0041]

1 roof window
2 sash
3 frame
4 pane
5 hinge
10 handling and installation assembly
- 11 first element
- 111 connection pin
- 112 protrusion
- 113 inner section
- 114 outer section
- 115 indents
- 12 second element
- 121 spacer element
- 122 indicator
- 123 snap connector
- 124 notch
- 125 beam
- 126 connection flange
- 127 connection aperture

20 sash hinge part
- 21 base plate
- 22 slide rail
- 23 pivot pin
- 24 base pin
- 25 indicator
- 26 guide pin
- 27 release pin

30 frame hinge part
- 31 base plate
- 31a ramp portion
- 32 arc-shaped guide
- 33 leaf spring
- 34 first entrance
- 35 second entrance
- 36 recess

S symmetry line
α hinge axis

Claims

1. A handling and installation assembly (10) for a roof window (1) comprising a frame (3), a sash (2) and a hinge (5) with a sash hinge part (20) comprising a base plate (21), a slide rail (22), and a pivot pin (23), in which the pivot pin (23) extends perpendicularly from the base plate (21), and the slide rail (22) is connected to the pivot pin (23) and configured to pivot about the pivot pin (23), **characterised in that** the assembly is releasably connectable to the hinge, that the assembly (10) comprises a first element (11) connectable to the pivot pin (23) and the slide rail (22) and configured to rotate with the slide rail (22), that the assembly (10) comprises a second element (12) connectable to the first element (11) and the base plate (21), that the first element (11) and the second element (12) are engageable with each other in a first orientation to temporarily lock the slide rail (22) in the first orientation, and that the first element (11) and the second element (12) are engageable with each other in at least one other orientation including a second orientation to temporarily lock the slide rail (22) in the second orientation.

2. A handling and installation assembly (10) according to claim 1, wherein the engagement between the first

element (11) and the second element (12) to provide the temporary lock in the first and second orientations is a form-locking engagement.

3. A handling and installation assembly (10) according to claim 1 or 2, wherein the first element (11) comprises one or more protrusions (112; 112a, 112b, 112c), wherein the second element (12) comprises one or more notches (124; 124a, 124b), wherein the one or more protrusions (112; 112a, 112b, 112c) and the one or more notches (124; 124a, 124b) are engageable with each other in a first orientation to temporarily lock the slide rail (22) in the first orientation, and wherein the one or more protrusions (112; 112a, 112b, 112c) and the one or more notches (124; 124a, 124b) are engageable with each other in a second orientation to temporarily lock the slide rail (22) in the second orientation.

4. A handling and installation assembly (10) according to claim 3, wherein the first element (11) comprises an outer section (114) and an inner section (113), wherein the one or more protrusions (112) protrudes from the outer section (114), and wherein the inner section (113) defines a receiving space for receiving at least part of the pivot pin (23) and at least part of the slide rail (22).

5. A handling and installation assembly (10) according to claim 4, wherein the first element (11) comprises a connection pin (111) extending from the outer section (114), and wherein the second element (12) comprises a connection aperture (127) for receiving the connection pin (111) to connect the first element (11) to the second element (12).

6. A handling and installation assembly (10) according to any of the preceding claims, wherein the second element (12) comprises a connection flange (126) for connecting the second element (12) to the base plate (21) of the hinge (20).

7. A handling and installation assembly (10) according to any of the preceding claims, wherein the sash hinge part (20) comprises a base pin (24) extending from the base plate (21), and wherein the second element (12) comprises a snap-connector (123) for engaging and connecting the second element (12) to the base pin (24).

8. A handling and installation assembly (10) according to any of the preceding claims, wherein the first orientation is a handling orientation configured for facilitating handling of the roof window, and wherein the second orientation is an installation orientation configured for facilitating assembly of the roof window.

9. A handling and installation assembly (10) according to any of claims 3 to 8, wherein the first element (11) comprises at least two, optionally three, protrusions (112a, 112b, 112c) and the second element (12) comprises one notch (124).

10. A handling and installation assembly (10) according to any of claims 3 to 8, wherein the first element (11) comprises at least one, optionally two, protrusions (112a, 112b) and the second element (12) comprises two notches (124a, 124b).

11. A handling and installation assembly (10) according to any of the preceding claims, wherein the releasable connection between the assembly and the hinge is provided by frictional and/or snap engagement.

12. A handling and installation assembly (10) according to any of the preceding claims, wherein the first element (11) is provided as a symmetrical component and the second element (12) is provided in a left-hand and a right-hand version.

13. A handling and installation assembly (10) according to any of the preceding claims, wherein the first element (11) and/or the second element (12) comprises at least one resilient component.

14. A handling and installation assembly (10) according to any of the preceding claims, wherein the roof window (1) comprises a plurality of hinges (5), each comprising a sash hinge part (20) with a base plate (21), a slide rail (22), and a pivot pin (23), and wherein the assembly (10) comprises an associated first element (11) and an associated second element (12) for each sash hinge part (20) of the plurality of hinges (5).

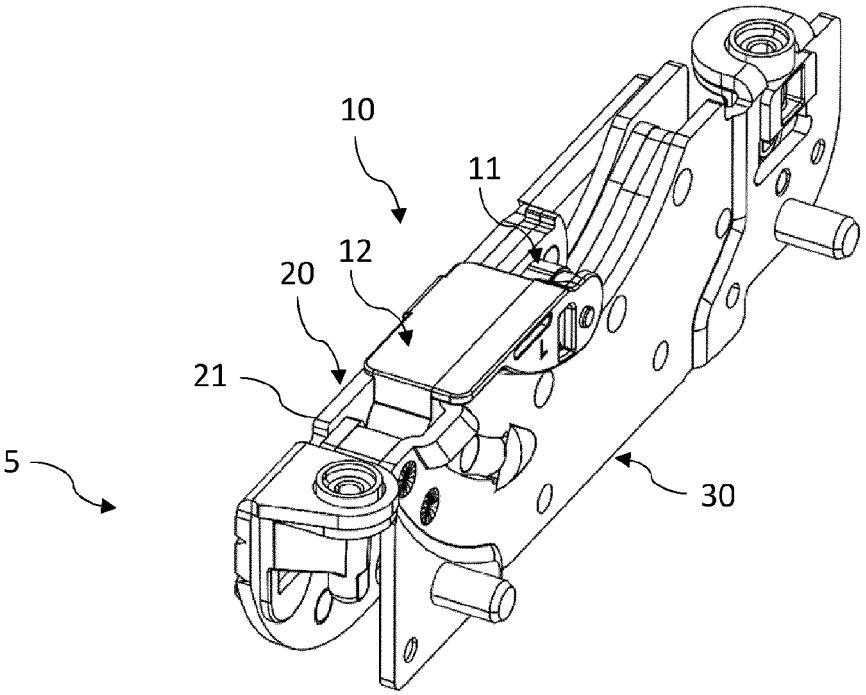

Fig. 1

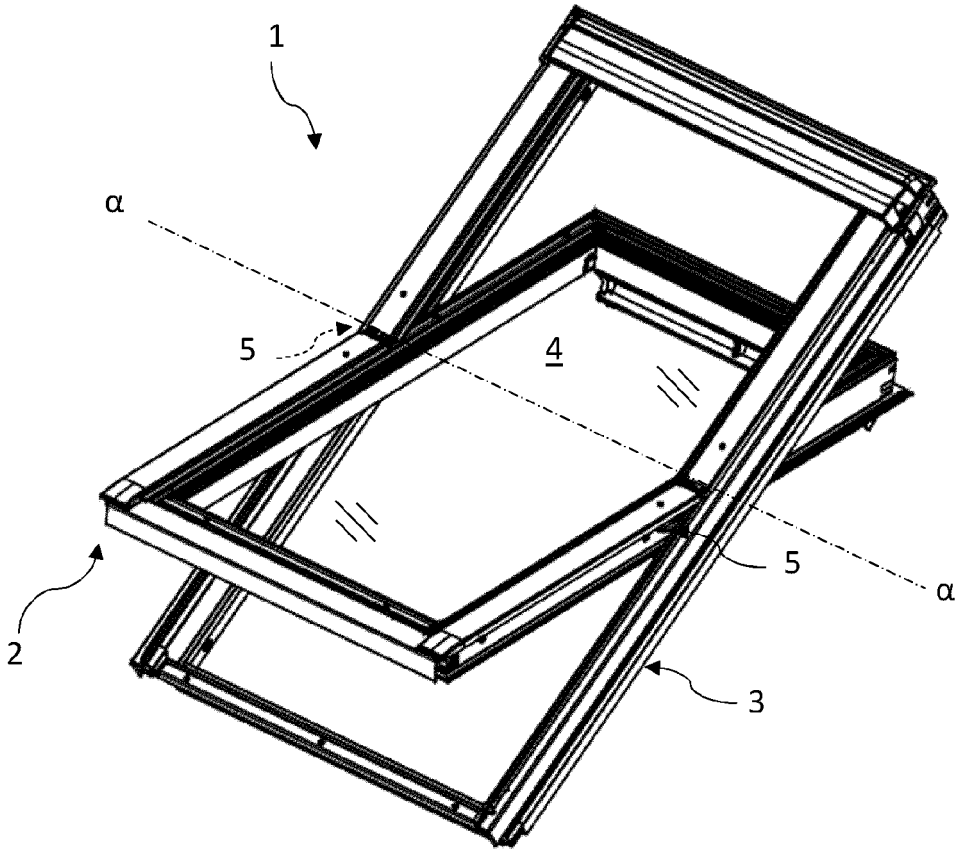

Fig. 2

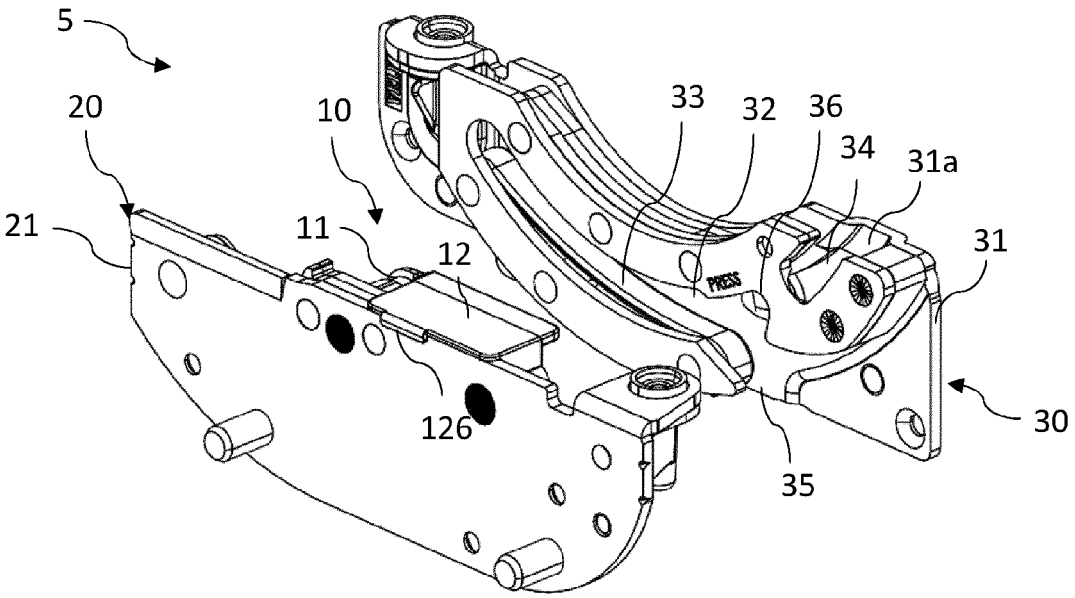

Fig. 3

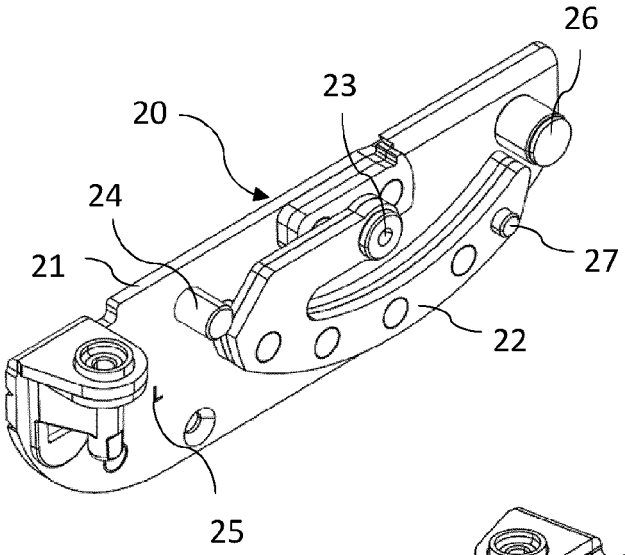

Fig. 4

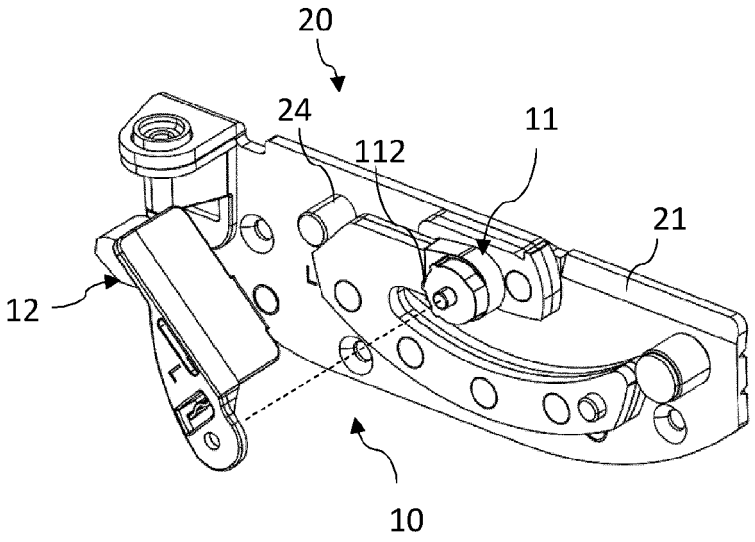

Fig. 5

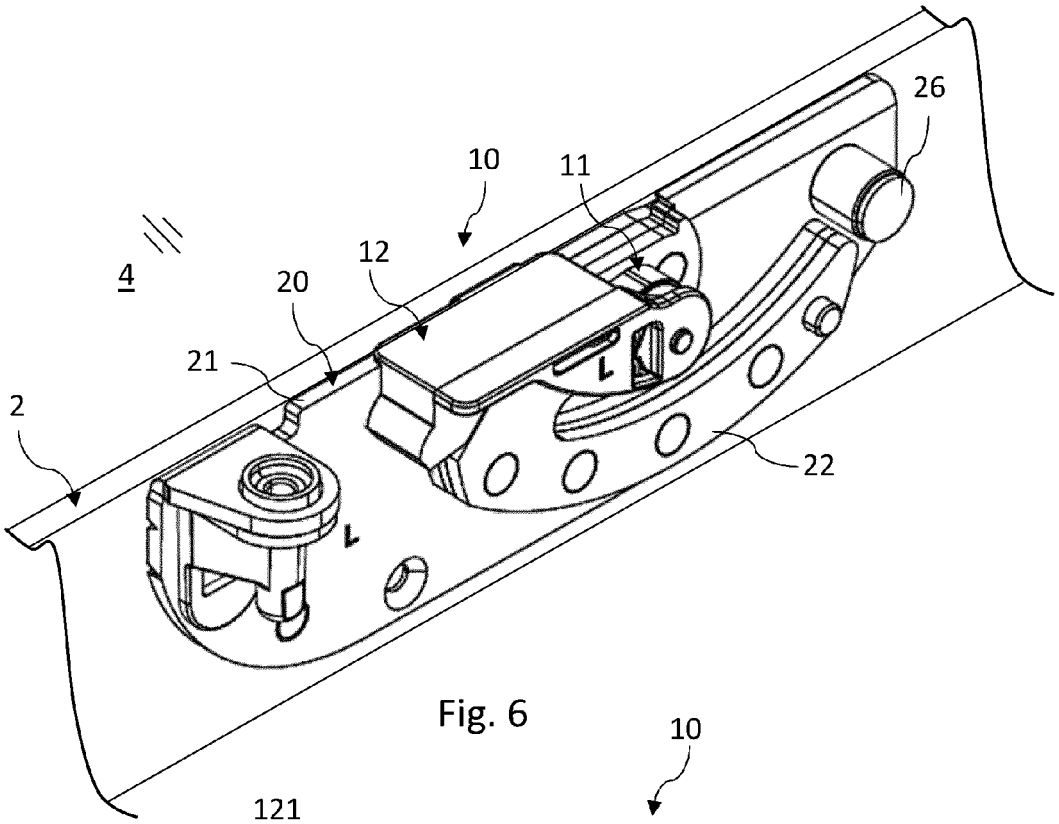

Fig. 6

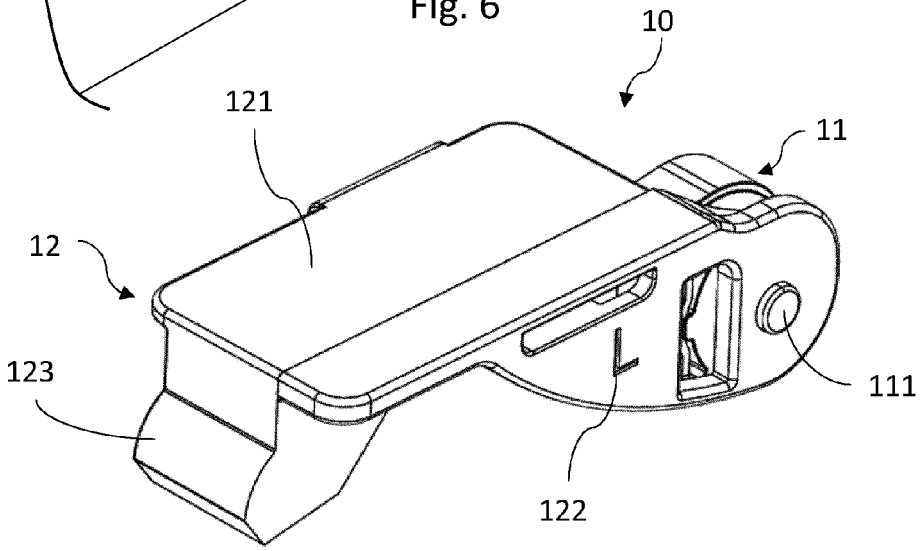

Fig. 7

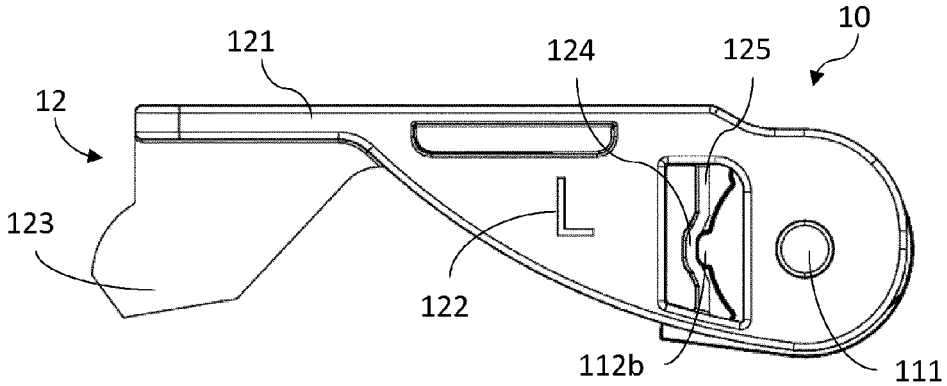

Fig. 8

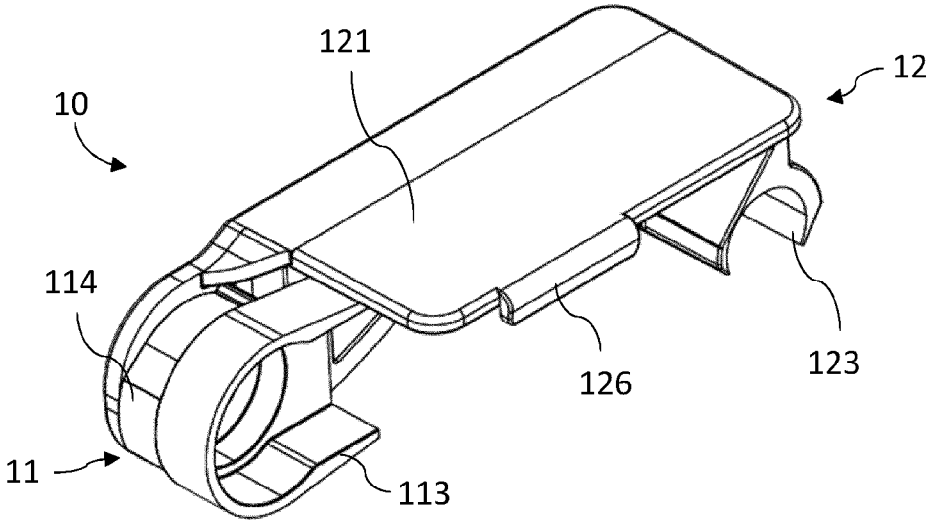

Fig. 9

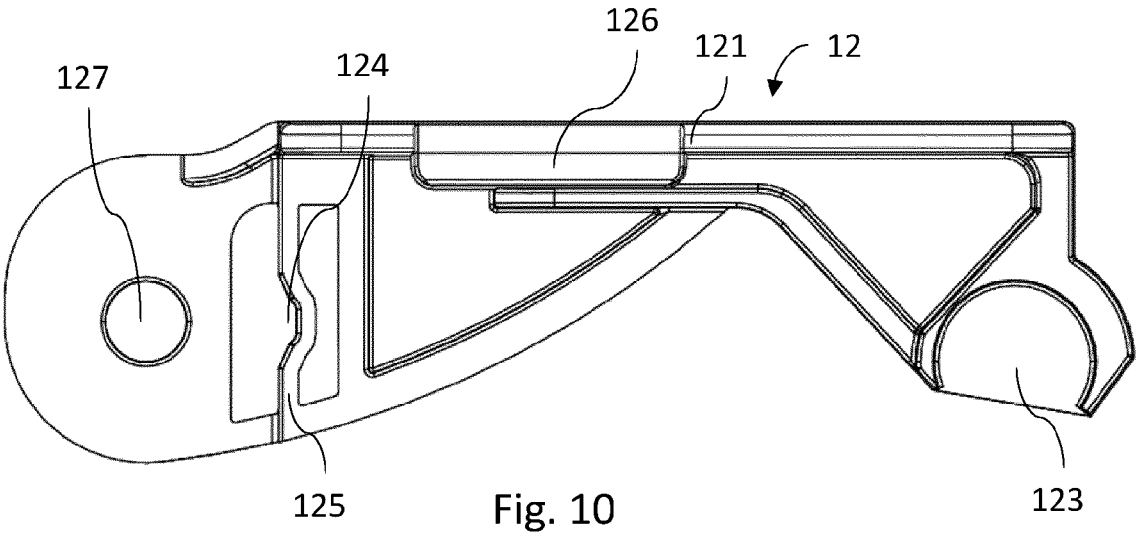

Fig. 10

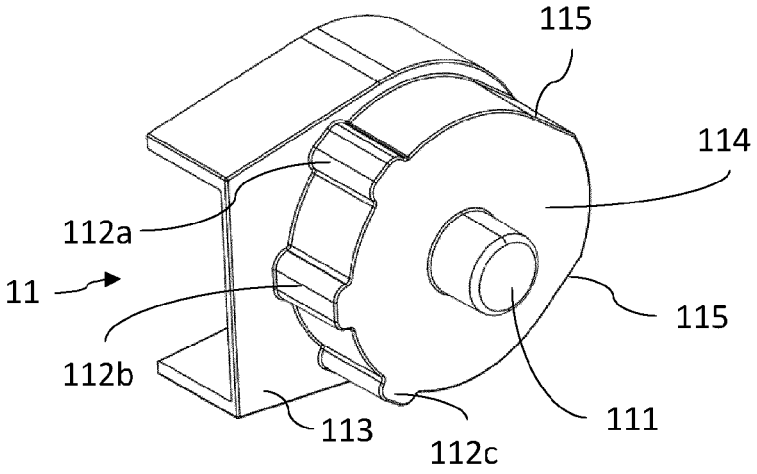

Fig. 11

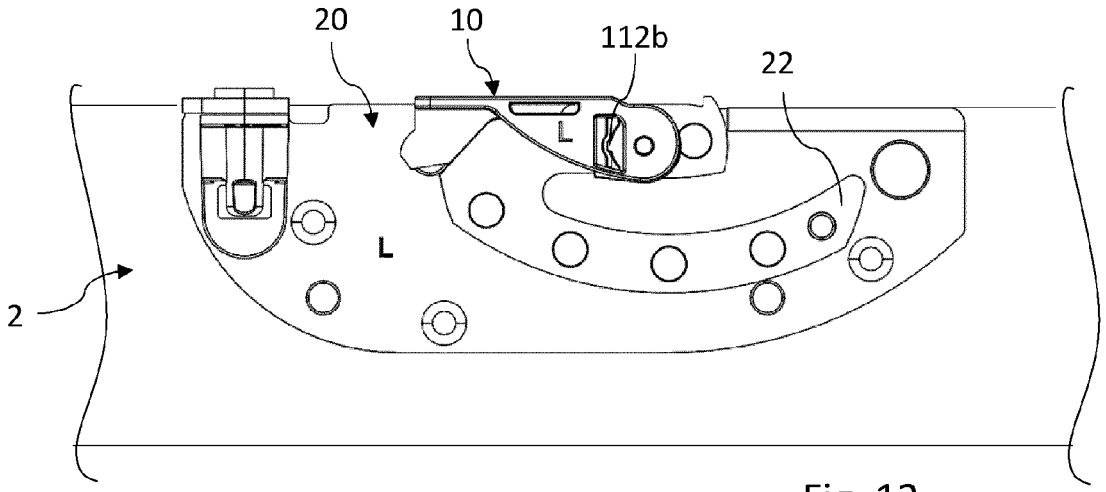

Fig. 12

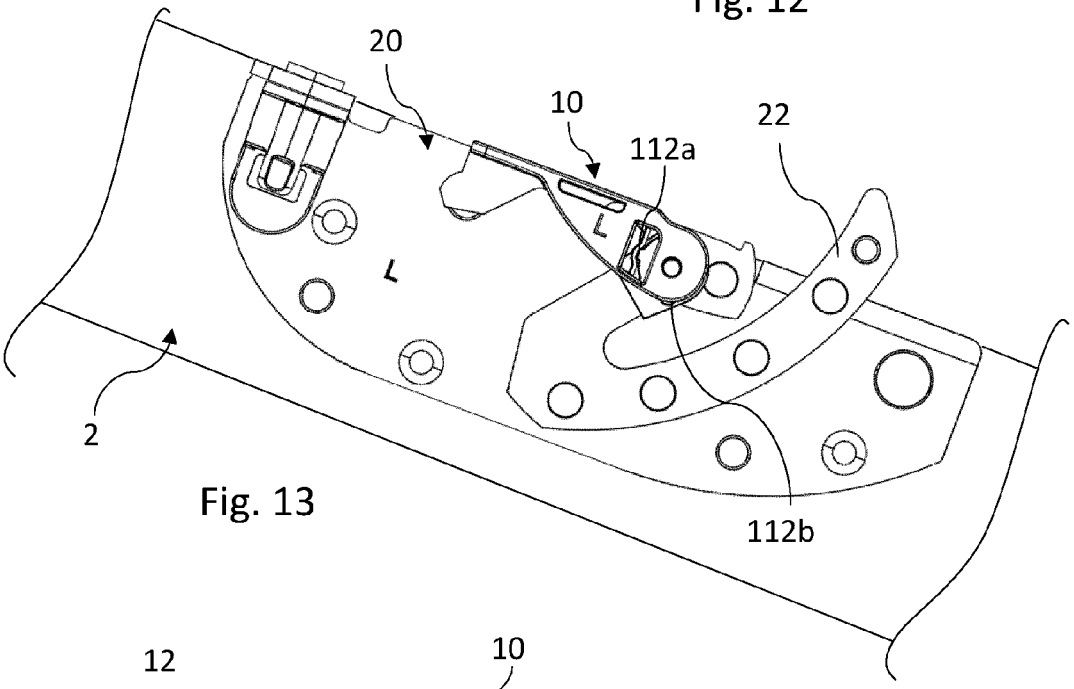

Fig. 13

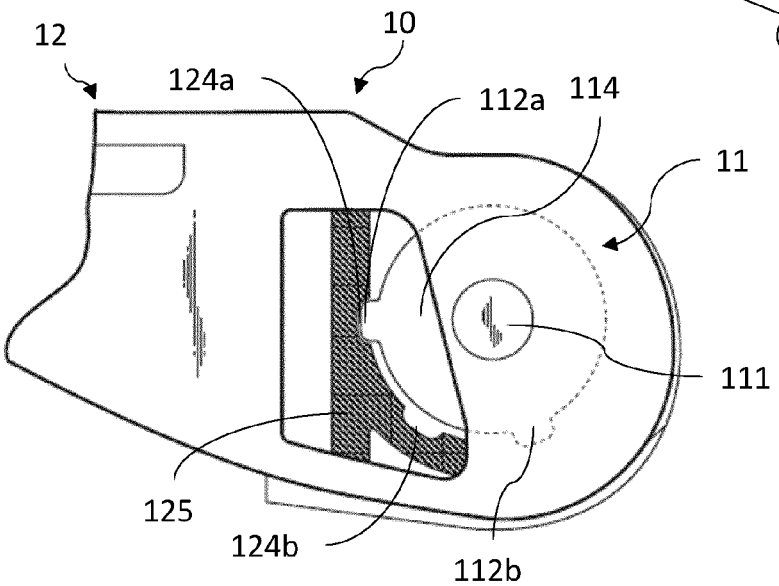

Fig. 14

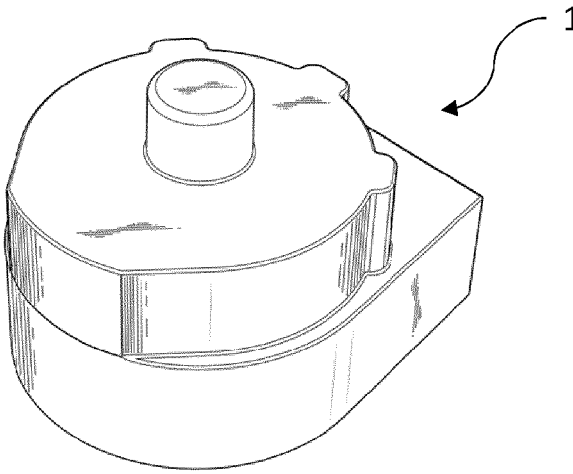

Fig. 15

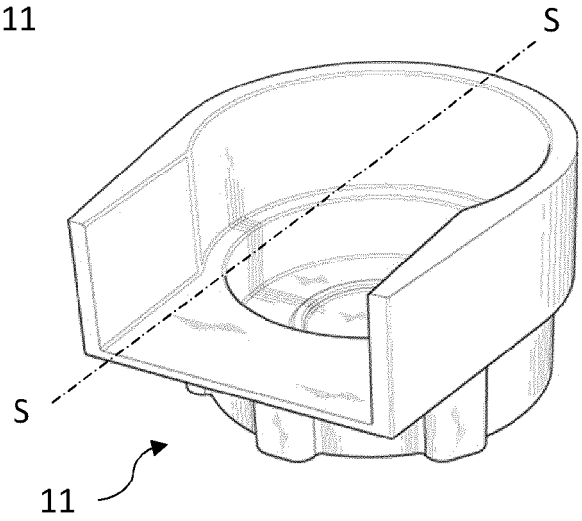

Fig. 16

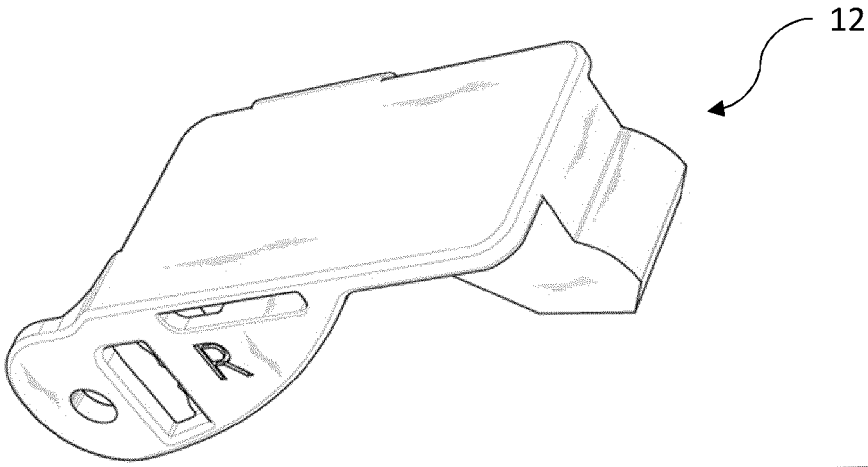

Fig. 17

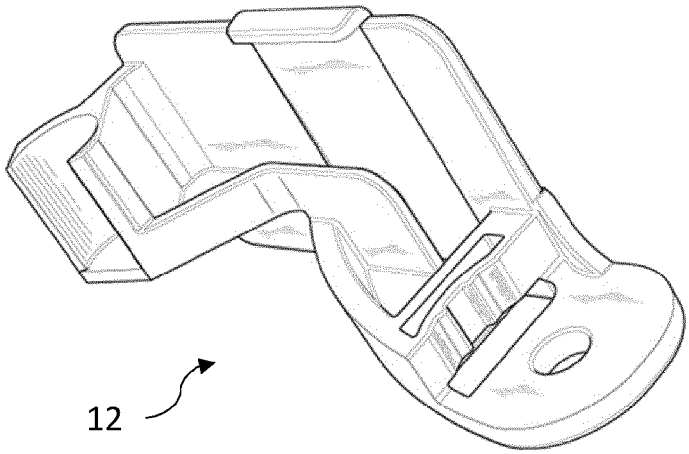

Fig. 18

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EUROPEAN SEARCH REPORT

Application Number
EP 21 21 6433

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	EP 1 762 680 A2 (KEYSTONE LINTELS LTD [GB]) 14 March 2007 (2007-03-14) * figures *	1-14	INV. E05D11/06 E05D11/10
A	DE 11 80 272 B (STEEB CHRISTIAN) 22 October 1964 (1964-10-22) * figures *	1-14	

TECHNICAL FIELDS SEARCHED (IPC)

E05D
E05G
E04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 June 2022	Tran, Kim Lien

CATEGORY OF CITED DOCUMENTS

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01-06-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1762680 A2	14-03-2007	EP 1762680 A2	14-03-2007
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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