(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 770 356 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.01.2021 Bulletin 2021/04

(21) Application number: **20185710.9**

(22) Date of filing: **14.07.2020**

(51) Int Cl.:
E04D 13/03 *(2006.01)* ***E04D 13/035*** *(2006.01)*
E04F 11/06 *(2006.01)* ***E05F 15/616*** *(2015.01)*
E05B 1/00 *(2006.01)* ***E05F 11/06*** *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **24.07.2019 DK PA201970478**

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

(72) Inventors:
- **Nielsen, Kristian Ørnsvig**
  2970 Hørsholm (DK)
- **Ullersted, Thomas**
  2970 Hørsholm (DK)
- **Thomsen, Carsten**
  2970 Hørsholm (DK)

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

(54) **AN UPGRADE KIT FOR ROOF WINDOW COMPRISING A MANUAL OPERATING ASSEMBLY, AND A ROOF WINDOW ARRANGEMENT COMPRISING SUCH AN UPGRADE KIT**

(57) The upgrade kit comprises an electrical operating assembly configured to assist in operation of the sash (2) between the open and the closed position, and a set of appliance members including at least a first appliance member in the form of a remote control unit (9) configured to cooperate with the electrical operating assembly. In turn, the remote control unit (9) includes a control portion (91) and an engagement portion (92) to be held on the manual operating assembly (4) of the roof window in a positive or non-positive engagement. The engagement may be provided by forming the engagement portion (92) with snap-on means to be connected with the handle portion (41) of the manual operating assembly (4).

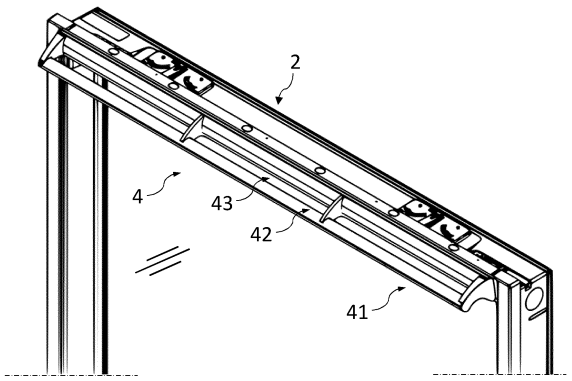

Fig. 4a

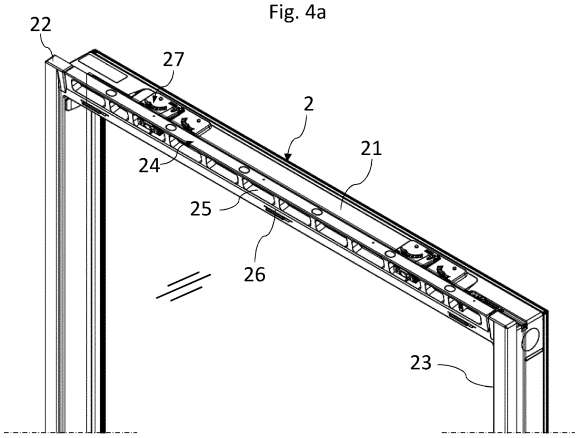

Fig. 4b

EP 3 770 356 A1

Description

Technical Field

[0001] The present invention relates to an upgrade kit for a roof window with a stationary frame and a sash carrying a pane, in which the sash includes at least a top member defining a width of the sash, two mutually parallel side members defining a length of the sash, and a bottom member parallel to the top member, and is connected to the stationary frame by means of a set of hinges and configured to assume at least an open position and a closed position by rotation about a hinge axis substantially parallel to the top member of the sash, the roof window furthermore comprising a manual operating assembly configured to assist in operation of the sash between the open and the closed positions, said manual operating assembly including a handle portion located at the top member of the sash and having a longitudinal extension substantially in parallel with the top member of the sash, said upgrade kit comprising an electrical operating assembly configured to assist in operation of the sash between the open and the closed position, and a set of appliance members including at least a first appliance member in the form of a remote control unit configured to cooperate with the electrical operating assembly The invention furthermore relates to a roof window arrangement comprising such an upgrade kit.

Background Art

[0002] Roof windows are typically provided either as manual roof windows, or electrical roof windows.

[0003] Roof windows which are electrically operated are typically located in so-called out of reach positions, but are also prepared for manual operation and consequently comprise both electrical and manual operating assemblies. A number of appliance members may be associated with the roof window in the roof window arrangement, including at least a first appliance member in the form of a remote control unit. The remote control unit is most often hand-held and may, when not used, be located in a console mounted on for instance a wall of a room in the building in which the roof window is installed. Thus, during normal operation of an out of reach roof window, the roof window is brought to for instance an open position by activating the electrical operating assembly by means of the remote control unit to position the sash at an angle relative to the frame. Such roof window arrangements often include sensors, allowing the sash to be closed automatically in case of rain detected by a rain sensor. The roof window is normally prepared also for manual operation, as manual opening of the roof window at any time, including during power outage, may be a requirement for safety reasons, and/or for reasons that it is desirable to clean the outside of the pane from the interior of the room, requiring the sash to pivot through about 180°. However, manual opening of an electrically operated roof window decouples the electrical operating assembly, and the electrical operating assembly then needs to be reconnected to ensure correct operation, including subsequent closing of the sash by means of the electrical operating assembly. Since manual opening is only rarely relevant, the user will most often remember to reconnect the electrical operating assembly subsequently. Many examples of such roof window arrangements are known in the art, including Applicant's EP 3 235 993 A1.

[0004] However, in case such a roof window is instead installed within reach, it is understandable if a user will open the roof window manually, either because he or she does not know that the roof window is set up for electrical operation, or believing that the subsequent closing will reactivate the electrical operating assembly, or because the remote control unit is not immediately locatable. Although the user will experience that the sash is in fact positioned in an open position by handling the manual operating assembly, this action thus decouples the electrical operating assembly and as a consequence, the sash will not be able to be closed again by activating the electrical operating assembly, neither by means of the remote control unit, nor automatically in response to signals from for instance a rain sensor.

Summary of Invention

[0005] With this background, it is therefore an object of the invention to provide an upgrade kit which overcome the deficiencies of the prior art.

[0006] In a first aspect, this and further objects are achieved with an upgrade kit for a roof window, of the kind mentioned in the introduction, which is furthermore characterised in that the remote control unit comprises a control portion and an engagement portion configured to be held on the manual operating assembly of the roof window in a positive or non-positive engagement.

[0007] By providing an upgrade kit comprising an electrical operating assembly, including a remote control unit configured to cooperate with the electrical operating assembly, it becomes possible to retrofit roof window which are not equipped with an electrical operating assembly to provide a roof window arrangement having the capabilities of other models which are equipped with an electrical operating assembly. Upgrading of current roof window models is also possible with such an upgrade kit. As the remote control unit of the upgrade kit is configured to be held on the manual operating assembly, which forms part of the roof window in any event, no prior modification of the roof window is required. Another advantage provided by the upgrade kit is the reduced risk in misplacing the remote control unit for the roof window arrangement; since the remote control unit is configured to held on the manual operating assembly it provides a logical place for placing the remote control unit, resulting in a reduced risk in misplacing it. The engagement portion of the remote control unit being configured to be held in

a positive or non-positive engagement on the manual operating assembly also provides the advantage of allowing a user to use the remote control unit from a distance from the manual operating assembly, if desired, and then easily re-engage the remote control with the manual operating assembly of the roof window.

[0008] In a preferred embodiment of the upgrade kit, the engagement is provided by forming the engagement portion of the remote control unit with snap-on means to be connected with the handle portion of the manual operating assembly. Placing the remote control unit on the handle portion ensures that the remote control unit is placed in a position where the user would interact with the manual operating assembly in any event, thus making the choice of control of the operation intuitive. The location on the handle portion also assures that when opening and closing the window the remote control unit is not in the way of normal operation of the window. Snap-on engagement is well-known as a reliable and simple mechanical solution which is furthermore easy to use. By "snap-on means" is here understood as incorporating engagement means encompassing positive engagement relying mainly on form-locking properties of interacting parts and which need to be released in another direction than the opposite of the engagement direction, and non-positive engagement relying mainly on force-locking properties of interacting part and which may be released in the opposite of the engagement direction, as well as engagement means which make use of both positive and non-positive engagement. Synonymous to snap-on means is used clip-on means. By placing the snap-on means on the engagement portion of the remote control, the engagement portion can be formed to suit differently shaped handle portions, whereas the control portion can be formed in a uniform manner. This is particularly advantageous in the case of retrofitting older windows.

[0009] Alternatively, the engagement can also be provided with other means than clip-on or snap-on, e.g. engagement means making use of hook and loops, magnets or releasable adhesion. It is mentioned that the engagement portion is to be connected with the handle portion of the manual operating assembly, but in some cases this might not be suitable, as there is no space available or it is in a difficult to reach position. In such cases the engagement portion could also be formed to engage with another part of the window, e.g. the frame or the sash.

[0010] In an embodiment of the upgrade kit, the snap-on means comprise at least one set of legs. By a "set of legs" it is hereby meant at least one structure extending from the remote control unit, being suitable for engagement of the remote control unit on the roof window arrangement, preferably the handle bar of the roof window arrangement.

[0011] In a second aspect of the invention, a roof window arrangement comprising such an upgrade kit is provided.

[0012] Other presently preferred embodiments and further advantages will be apparent from the subsequent detailed description and drawings.

Brief Description of Drawings

[0013] In the following description embodiments of the invention will be described with reference to the schematic drawings, in which

Fig. 1a is a schematic perspective view of a prior art roof window arrangement comprising a wall-mounted remote control unit, shown on a larger scale;

Fig. 1b is a schematic partial perspective view of another prior art roof window assembly comprising a first appliance member in the form of a hand-held remote control unit and another appliance member in the form of a screening assembly;

Fig. 2 is an isometric view of a roof window arrangement in a first embodiment of the invention, with the roof window shown in an open position;

Fig. 3 is an isometric view of details of the roof window arrangement of Fig. 2, from another angle and with the roof window in a closed position;

Figs 4a and 4b are partial isometric views of the upper part of the roof window arrangement of Fig. 3;

Fig. 5 is a partial perspective view of a manual operating assembly with the click-on remote attached to the handlebar according to the first embodiment of the upgrade kit;

Fig. 6 is an isometric view, of the click-on remote shown Fig.'5 according to the first embodiment of the upgrade kit;

Fig. 7 is an isometric view of a handlebar with the click-on remote attached to the handlebar according to the second embodiment of the upgrade kit;

Fig. 8 is an isometric view, of one end of the click-on remote shown Fig. 7 according to the second embodiment of the upgrade kit;

Fig. 9 is an isometric view of a manual operating assembly with the click-on remote attached to the handlebar according to the third embodiment of the upgrade kit;

Fig. 10 is a sectional view along the lines VIII-VIII of Fig. 9;

Fig. 11 is an isometric view of a manual operating assembly with the click-on remote attached to the handlebar according to the fourth embodiment of the upgrade kit;

Fig. 12 is an isometric view of a manual operating assembly with two handlebar sections, with the click-on remote attached to one of the handlebar sections according to the second embodiment of the upgrade kit;

Fig. 13 is an isometric view of the manual operating assembly shown in Fig. 12 with the click-on remote attached to the handlebar according to the second embodiment of the upgrade kit;

Fig. 14 is an isometric view of a manual operating assembly, with the click-on remote attached to the

manual operating assembly according to the fifth embodiment of the upgrade kit;

Fig. 15 is an isometric view of a click-on remote according to a sixth embodiment of the upgrade kit;

Fig. 16 is an isometric view of the top part of a window arrangement, with the click-on remote shown Fig. 15 attached to the manual operating assembly according to the sixth embodiment of the upgrade kit;

Fig. 17 is an isometric view of the backside of the click-on remote shown Fig. 15; and

Fig. 18 is an exploded view of the click-on remote shown Fig.15.

Description of Embodiments

[0014] Referring initially to Figs 1a and 1b, a prior art roof window arrangement is shown. The prior art roof window arrangement as shown on Figs 1a and 1b comprises a stationary frame 1'. Installed in the stationary frame 1' is a sash 2' having a manual operating assembly 4' for opening or closing the roof window. The prior art roof window arrangement presented is provided with an electrical operating assembly 6'. The electrical operating assembly 6' functioning as an alternative to the manual operating assembly 4', the electrical operating assembly 6' is also capable of opening and closing the roof window. As shown in Fig. 1b, the prior art roof window arrangement may further include a screening assembly 7'. The electrical operating assembly 6' is controllable through a remote control unit 10', allowing a user of the remote control unit to control the roof window arrangement from a distance. Examples of a prior art remote control unit 10' are a hand-held remote control unit or a wall-mounted remote control unit.

[0015] In the following detailed description, preferred embodiments 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 of the invention.

[0016] Referring to Figs 2 and 3, a roof window arrangement is shown in an open and in a closed position. The roof window arrangement shown comprises a roof window with a stationary frame 1, connected to the stationary frame 1 is a sash 2 carrying a pane 3. The sash 2 is connected to the stationary frame 1 by means of a set of hinges 5 and configured to assume at least an open position and a closed position by rotation about a hinge axis substantially parallel to the top member 21 of the sash 2. The sash 2 comprises at least a top member 21 defining a width of the sash, two mutually parallel side members 22, 23 defining a length of the sash, and a bottom member 20 parallel to the top member 21. Mounted on the sash 2 is a manual operating assembly 4, which is configured to assist in operation of the sash 2 between the open and the closed positions. The manual operating assembly 4 has a handle portion 41 located at the top member 21 of the sash 2 and has a longitudinal extension substantially in parallel with the top member 21 of the sash 2. The handle portion 41 is in the embodiment shown provided in the shape of a handle bar, but may be formed to take any shape suitable for being grabbed. The roof window arrangement is provided with an upgrade kit which may either be supplied with the window arrangement as such, or separately for retrofitting. The upgrade kit comprises an electrical operating assembly 6, configured to at least assist in operation of the sash 2 between the open and the closed position. For the opening and closing of the window, the electrical operating assembly 6 may be configured to control the manual operation assembly 4. The upgrade kit further comprises a set of appliance members, including at least a first appliance member 9. The electrical operating assembly 6 is configured to cooperate with at least the first appliance member 9, where the first appliance member 9 may be part of a set of appliance members, where the set of appliance members, or at least part of the set is in cooperation with the electrical operating assembly 6, the first appliance member 9 is not shown on Figs 2 and 3. The set of appliance members comprising the first appliance member 9 may further comprise appliance members configured to cooperate with the roof window, and/or with the manual operating assembly 4, and/or with the electrical operating assembly 6 and/or with other appliance members of the set of appliance members. Though not shown on Figs 2 and 3 the roof window arrangement can be equipped with an exterior or interior screening assembly as in the prior art arrangement shown in Fig. 1b, such a screening assembly may be in cooperation with the first appliance member 9, allowing a user to control the screening assembly by using the first appliance member 9.

[0017] Referring now to Figs 4a and 4b showing partial isometric views of the upper part of the roof window arrangement, with and without the manual operating assembly 4.

[0018] Fig. 4a shows the upper part of the roof window arrangement with the manual operating assembly 4. The manual operating assembly 4 is in the form of a ventilation flap 4, which allows for ventilation of an interior space in connection with the window. The manual operating assembly comprises a handle portion 41, which on Fig. 4a is in the shape of a handle bar extending in parallel with the top member of the sash 21 and extending substantially throughout the whole width of the sash 2, other shapes and sizes of handle portions will be described later. In connection with the handle portion 41 is a connection portion 42, the connection portion 42 connects the handle portion 41 with the closure portion 43 of the manual operating assembly 4 such that a distance is provided between the handle portion 41 and the closure portion 43. If the manual operating assembly 4 is a ventilation

flap, the opening and closing of the closure portion 43 controls ventilation of the interior space.

[0019] Fig. 4b shows the upper part of the roof window arrangement without the manual operating assembly 4, in the case where the manual operating assembly 4 is a ventilation flap 4. The ventilation flap 4 is pivotally connected to the sash top member 21 by a flap hinge, or set of flap hinges (not visible). The flap hinge being located within a flap hinge recess 26. A pivotal connection allows the ventilation flap 4, to rotate about an axis in a plane parallel to the plane of the pane 3. With the manual operating assembly 4 being a ventilation flap, further possibilities than just opening and closing the window are given, as a ventilating position is also provided. When ventilation is needed the ventilation flap 4 can be opened or closed, opening the ventilation flap opens the closure portion 43 of the ventilation flap 4, which in turn allows for air to flow through at least one ventilation opening 25 in the sash top member 21. A lock mechanism 27 is provided to be operated by the manual operating assembly 4, alternatively no lock mechanism is provided and the locking is provided for in other manners. The lock mechanism 27 is connected to the closure portion 43 and the sash top member 21, allowing to lock in place the manual operating assembly 4 in relation to the sash top member 21 and thus the sash 2 relative to the frame. It is noted that while the manual operating assembly 4 is configured to rotate about a hinge axis provided by the flap hinge or hinges, the handle portion 41 is fixed, and not rotatable, relative to the other parts of the manual operating assembly 4, i.e. the connection portion 42 and the closure portion 43.

[0020] Fig. 6 shows the first appliance member 9 according to a first embodiment of the invention. In the following, reference will be made in equal measures to the first appliance member 9 and a remote control unit 9. When the first appliance member 9 is referred to as a remote control unit 9 in the description, this is not to be considered a limitation of the invention but is meant as an exemplary embodiment. The remote control unit is on the front provided with a control portion 91. The control portion 91 shown is in the form of a touch pad, but could also be conventional push buttons, or means for receiving acoustic signals e.g. a microphone or means suitable for receiving a signal through Bluetooth or other wireless means. Furthermore, the control portion could include sensors, for instance including a gesture sensor allowing the user to activate the functionality of the roof window arrangement by a certain movement pattern, for instance clapping or waving. Since such functionality may include opening of the roof window, it is of course necessary to ascertain that the sensor is not able to be triggered by movements from the exterior of the building, i.e. from the outer side of the roof window. The control portion 91 allows a user to interact with a roof window arrangement which have been provided with the upgrade kit. On the backside of the remote control unit 9 is an engagement portion 92, which is provided to allow for the remote control unit 9 to go in releasable engagement with the manual operating assembly 4. The engagement portion 92 is configured to be held on the manual operating assembly 4 of the roof window in a positive or non-positive engagement. In the shown embodiment the engagement portion 92 is in the form of two set of legs 921, 922 which are adapted for snapping onto a handle portion 41 of a manual operating assembly, the legs can be configured dependent on the profile of the handle portion 41.

[0021] Reference is now made to Fig. 5, which show a partial isometric view of a manual operating assembly 4 of a roof window arrangement as seen on Fig. 4a, which have been provided with the upgrade kit according to a first embodiment of the invention. The remote control unit 9 is releasably engaged with the handle portion 41 of the manual operating assembly 4. The engagement portion 92 is configured to be held on the manual operating assembly 4 of the roof window in a positive or non-positive engagement, in the shown roof window arrangement the handle portion 41 is formed as a handle bar profile 411, with the engagement portion 92 being adapted to go in releasable engagement with the handle bar profile 411. The engagement means can be anything which is suitable for releasably engaging the remote control unit 9 to the manual operating assembly, such as snap-on, clip-on, hook and loops, magnets or a combination of these. If the engagement is provided by snap-on or clip on, the engagement portion 92 of the remote control unit 9 may be formed with snap-on means or clip-on means to be connected with the handle portion 41 of the manual operating assembly 4. The engagement portion 92 is shown engaging the handlebar profile 411 of the handle portion 41, though if different engagement means are provided, the remote control unit 9 has different engagement possibilities between the manual operating assembly 4 and the remote control unit 9. In the case of hook and loop engagement means, loop tape might be adhered to the end cover 421, or the plate element 432, or the handle portion 41, then by having the engagement portion 92 of the remote control unit 9 being provided with hooks suitable for releasably engaging the loop tape, the remote control unit 9 can be releasably engaged with the manual operating assembly wherever the loop tape has been adhered, other engagement means and positions will be discussed later in this text. If the manual operating assembly 4 is provided with an end cover 421, the remote control unit may advantageously be releasably engaged with the handle portion 41, as the end cover 421 will confine the remote control unit 9 so it does not slip off at the ends of the handle portion 41.

[0022] Referring to Figs 7 and 8 showing a remote control unit 409 in releasable engagement with the handle portion 41, also showing the remote control unit 409 in a disengaged state, according to a second embodiment of the invention. Elements having the same or analogous function are denoted by the same reference numerals as in the first embodiment to which 400 has been added. The profile of the remote control unit 409 is made to be

a similar shape as the profile of the handle bar portion 41. In the shown example the profile of the remote control unit is substantially triangular, with the control portion 491 formed on one side of the triangular profile, and the engagement portion 492 formed on another side of the triangular profile. The releasable engagement portion 492 is formed as two legs forming two opposing hook-like portions 4921 and 4922, which are adapted to be engaged with a handle bar portion 41 of a manual operating assembly 41. In one embodiment, the hook-like portions 4921, 4922 are formed by providing a track 4920 on the back side of the remote control unit 409, the track extending in the longitudinal direction of the remote control unit and extending throughout the whole back side of the remote control unit 409 to make it possible to either slide the remote control unit 409 on from the end of the handle bar portion 41, or snap-on by pressing the remote control unit 409 at the track 4920 and thereby resiliently deforming the hook-like portions 4921, 4922 and then allowing the hook-like portions 4921, 4922 to relax at the back of the handle bar portion 41.

[0023] Referring to Figs 9 and 10 showing a remote control unit 109 according to a third embodiment of the invention, in an engaged state, where it is engaged to a manual operating assembly 104. Elements having the same or analogous function are denoted by the same reference numerals as in the first embodiment to which 100 has been added. In Fig. 9 an example is shown of a manual operating assembly 104 for which an upgrade kit according to the invention can be provided. The manual operating assembly 104 has a handle portion 141, a closure portion 143, with the closure portion being connected to the handle portion 141 via a connection portion 142 extending between the closure portion 143 and the handle portion 141, such that a distance is provided between the handle portion 141 and the closure portion 143. The closure portion 143 may be configured to selectively close off and open up passage through at least one ventilation opening at the sash top member. The handle bar profile 1411 has a generally open, inverted U-shaped configuration in which the handle portion 141 and the closure portion 143 form legs of the U-shape and the connection portion 142 forms a base of the U-shape. As in the first embodiment, the manual operating assembly 104 is configured to rotate about a hinge axis provided by the flap hinge or hinges, and the handle portion 141 is fixed, i.e. not rotatable, relative to the other parts of the manual operating assembly 104, i.e. the connection portion 142 and the closure portion 143. With the engagement portion 192 of the remote control unit 109 being provided in the form of a leg including a clip profile 1921, which is adapted for clipping on the remote control unit 109 to the handle portion 141. In the embodiment shown, the clip profile 1921 of the engagement portion 192 is integral with the control portion 191, but other configurations are conceivable as well. The remote control unit 109 is formed so as to have the control portion 191 of the remote control unit 109 turning away from the roof window arrangement, when the roof window is closed and the closure portion143 is closed off, thus being immediately visible to the user.

[0024] Referring to Fig. 11 showing a remote control unit 309 in a disengaged state, where it is to be engaged to a manual operating assembly 304 according to a fourth embodiment of the invention. Elements having the same or analogous function are denoted by the same reference numerals as in the first embodiment to which 300 has been added. The handle portion 341 of the manual operating assembly 304 is substantially formed as a box with bars on the back side of the handle portion 341 connecting the handle portion 341 to the closure portion 343, though a substantially box-shaped handle portion 341 is shown, the handle portion 341 could also have a varying cross-section, including portions with a substantially circular or triangular cross-section. The handle portion 341 has a smaller longitudinal extension than the width of the sash 2, preferably in the range of 20 to 40% of the width of the sash 2. The remote control unit 309 is shown formed as a box, but may also take other shapes. The engagement portion 392 of the remote control unit 309 comprises a plate section 3920 on which two legs formed as clips 3921 and 3922 are mounted, but could also be one clip or more than two clips adapted so as to engage with the box-shape of the handle portion 341. The control portion 391 of the remote control unit 309 is located on the front side of the remote control unit 309 and is here shown as connected to the plate section 3920.

[0025] Referring to Figs 12 and 13 showing a manual operating assembly 243 which have been provided with an upgrade kit according to a second embodiment of the invention. The manual operating assembly shown is structurally the same as seen Fig. 4a, though with the difference that the handle portion is separated into two handle portions a left handle portion 241a and a right handle portion 241b. A remote control unit 209 corresponding in substance to the second embodiment is in releasable engagement with the right handle portion 241b, alternatively the remote control unit 209 could also be in releasable engagement with the left handle portion 241a. Each of the handle portion has a smaller longitudinal extension than the width of the sash 2, preferably in the range of 20 to 40% of the width of the sash 2.

[0026] Fig. 14 shows a remote control unit 509 in an releasably engaged state according to a fifth embodiment of the invention, with the remote control unit 509 being engaged to the manual operating assembly 4. Elements having the same or analogous function are denoted by the same reference numerals as in the first embodiment to which 500 has been added. The remote control unit 509 is engaged in a recess 44 formed between the handle portion 41 and the closure portion 43, since these components are provided with a distance between them. The width of the recess is defined by the connection portion 42 connecting the closure portion 43 with the handle portion 41. The recess 44 may extend throughout the whole width of the manual operating assembly 4, or may only

extend part of the width of the manual operating assembly 4. The remote control unit 509 when placed in the recess may be releasably engaged with either the handle portion 41, the connection portion 42 or the closure portion 43 or a combination of these. The control portion of remote control unit 509 is located so it protrudes out of the recess to ensure visibility of the control portion. The connection of the remote control unit 509 to the manual operating assembly 4 may be provided in any suitable manner ensuring easy engagement and safe retention, while at the same time allowing removal. One example of the engagement is given in the below description of the sixth embodiment shown in Figs 15 to 18.

[0027] Reference is now made to Figs 15 to 18 which show a remote control unit 609, when it is in an releasably engaged state on the manual operating assembly 4 and when disengaged, according to a sixth embodiment of the invention. Elements having the same or analogous function are denoted by the same reference numerals as in the first embodiment to which 600 has been added.

[0028] The remote control unit 609 is as in the above fifth embodiment engaged in the recess 44 formed between the handle portion 41 and the closure portion 43. The control portion 691 of the remote control unit 609 is formed as a plate element which when the remote control unit is engaged with the manual operating assembly 4 protrudes slightly over the handle portion 41.

[0029] The engagement portion 692 comprises a set of legs 6921, 6922 adapted to enter into releasable engagement with the handle portion 41 and the closure portion 43 and/or possibly other components of the manual operating assembly 4. The width of the recess is defined by the connection portion 42 connecting the closure portion 43 with the handle portion 41. The recess may extend throughout the whole width of the manual operating assembly 4, or may only extend part of the width of the manual operating assembly 4. The engagement portion 692 of the remote control unit 609 may alternatively or additionally be in operational connection with a locking mechanism 620, in the shown example schematically depicted as a bolt lock. The locking mechanism 620 is able to interact with the remote control unit 609 and the manual operating assembly 4 in any suitable manner conceivable to the skilled person, including tracks, slots, guide apertures etc. which are able to provide the desired functionality to allow locking in place of the remote control unit 609. Alternatively, the locking mechanism may be incorporated into the end cover 421 or elsewhere in the manual operating assembly 4. Another alternative is to provide the remote control unit 609 with an integrated locking mechanism allowing the remote control unit 609 to lock itself in place within the recess 44, for instance by gripping below the handle portion 41.

[0030] In the embodiment shown, the remote control unit 609 comprises a plurality of parts which as best shown in Fig. 18 include a housing part 610 adapted to have room for power e.g. batteries and print boards and/or other necessary components (not shown in the drawings) which are required for the control portion 691 of the remote control unit 609. The engagement portion 692 is comprised in the housing part 610, and the control portion 691 comprises a set of buttons 611, a plate part 612 with apertures for the set of buttons 611 and a cover part 613. The plate part 612 is provided with a set of hooks of which only one hook 6121 is visible in Fig. 18 to provide snap engagement with an aperture 6121 in wall sections of the housing part 610. A lid 614 for access to the interior of the housing part 610 is provided as well for easy exchange of batteries. A USB stick may be provided, for instance for charging of batteries, or for connecting accessories including auxiliary equipment. This may include solar cells.

[0031] Specific embodiments of the invention have now been described. However, several alternatives are possible, as would be apparent for someone skilled in the art. For example, the cross-sectional configuration of the remote control unit may be substantially uniform, with a substantially plane configuration throughout the majority of its length, preferably including the engagement portion. Further, though no material has been described with regards to the remote control unit, it is obvious that in cases where the engagement portion is formed to snap-on or clip-on to the manual operating assembly, an elastically deformable material is preferable for at least the engagement portion of the remote control unit. Though mainly a remote control unit has been described, other possible appliance members would be possible, e.g. an appliance member communicatively connected to a rain sensor of the roof window arrangement provided with an upgrade kit according to the invention, where such an appliance member would be able to indicate if it was raining outside, such a feature may also be incorporated into the remote control unit.

[0032] The invention is not limited to the embodiments shown and described in the above, but various modifications and combinations may be carried out.

List of reference numerals

[0033]

- 1 stationary frame
- 2 sash
  - 20 sash bottom member
  - 21 sash top member
  - 22 sash side member
  - 23 sash side member
  - 24 top sash unit
  - 25 ventilation opening
  - 26 recess for flap hinge
  - 27 lock mechanism
  - 241a left handle portion
  - 241b right handle portion
- 3 pane
- 4 manual operating assembly / ventilation flap
  - 41 handle portion

411 handle bar profile
42 connection portion
421 left-hand end console
431 plate element
43 closure portion
44 recess
5 hinge
6 electrical operating assembly / chain operator
9 remote control unit
91 control portion
92 engagement portion
921 leg
922 leg
7' screening assembly (Fig. 1b)
109 remote control unit
191 control portion
192 engagement portion
1921 leg / clip profile
209 remote control unit
309 remote control unit
391 control portion
392 engagement portion
3920 plate section
3921 leg / clip
3922 leg / clip
409 remote control unit
491 control portion
492 engagement portion
4920 track
4921 leg / hook-like portion
4922 leg / hook-like portion
509 remote control unit

609 remote control unit
610 housing part
6101 aperture
611 set of buttons
612 plate part
6121 hook
613 cover part
614 lid
620 locking means
691 control portion
692 engagement portion
6921 leg
6922 leg

Claims

1. An upgrade kit for a roof window with a stationary frame (1) and a sash (2) carrying a pane (3), in which the sash (2) includes at least a top member (21) defining a width of the sash, two mutually parallel side members (22, 23) defining a length of the sash, and a bottom member (20) parallel to the top member (21), and is connected to the stationary frame (1) by means of a set of hinges (6) and configured to assume at least an open position and a closed position by rotation about a hinge axis substantially parallel to the top member (21) of the sash (2), the roof window furthermore comprising a manual operating assembly (4) configured to assist in operation of the sash (2) between the open and the closed positions, said manual operating assembly (4) including a handle portion (41) located at the top member (21) of the sash (2) and having a longitudinal extension substantially in parallel with the top member (21) of the sash (2), said upgrade kit comprising an electrical operating assembly (6) configured to assist in operation of the sash (2) between the open and the closed position, and a set of appliance members including at least a first appliance member (9) in the form of a remote control unit (9) configured to cooperate with the electrical operating assembly (6),
characterised in that
the remote control unit (9; 109; 209; 309; 409; 509; 609) comprises a control portion (91) and an engagement portion (92) configured to be held on the manual operating assembly (4) of the roof window in a positive or non-positive engagement.

2. An upgrade kit according to claim 1, wherein the engagement is provided by forming the engagement portion (92) of the remote control unit (9) with snap-on means to be connected with the handle portion (41) of the manual operating assembly (4).

3. An upgrade kit according to claim 2, wherein the snap-on means comprise at least one set of legs (921, 922; 1921; 3921, 3922; 4921, 4922; 6921, 6922).

4. An upgrade kit according to any one of the preceding claims, wherein the handle portion (41; 141) is formed as a handle bar profile (411; 1411).

5. An upgrade kit according to any one of the preceding claims, wherein the manual operating assembly comprises a ventilation flap (4) and wherein the handle portion (41) is connected to a closure portion (43) via a connection portion (42) extending between the closure portion (43) and the handle portion such that a distance is provided between the handle portion (41) and the closure portion (43), said closure portion (43) being configured to selectively close off and open up passage through at least one ventilation opening (25) at the sash top member (21).

6. An upgrade kit according to any one of claims 1 to 4, wherein the manual operating assembly in addition to the handle portion (141) comprises a closure portion (143) connected to the handle portion (141) via a connection portion (142) extending between the closure portion (143) and the handle portion (141) such that a distance is provided between the

handle portion (141) and the closure portion (143), said closure portion (143) being configured to selectively close off and open up passage through at least one ventilation opening at the sash top member, and wherein the handle bar profile (1411) has a generally open, inverted U-shaped configuration in which the handle portion (141) and the closure portion (143) form legs of the U-shape and the connection portion (142) forms a base of the U-shape.

7. An upgrade kit according to claim 5, wherein the engagement portion (692) of the remote control unit (509; 609) is adapted to be held in engagement in a recess (44) formed between the closure portion (43) and the handle portion (41).

8. An upgrade kit according to claim 7, wherein the engagement portion (692) comprises snap-on means comprising at least one set of legs (6921, 6922) and/or locking means (620) for locking in place the remote control unit (9) on the manual operating assembly (4).

9. An upgrade kit according to claim 7 or 8, wherein the remote control unit (609) comprises a housing part (610), a set of buttons (611), a plate part (612) and a cover part (613), and wherein the housing part (610) comprises the engagement portion (692).

10. An upgrade kit according to any one of claims 3 to 6, wherein the at least one set of legs (921, 922; 1921; 3921, 3922; 4921, 4922) are adapted to hook around the handle portion (41; 141; 241b; 341).

11. An upgrade kit according to claim 10, wherein the engagement portion (392) of the remote control unit (309) comprises two legs formed as clips (3921, 3922), preferably mounted on a plate section (3920), the control portion (391) being more preferably connected to the plate section (3920).

12. An upgrade kit according to claim 10 when dependent on claim 6, wherein the engagement portion (192) of the remote control unit (109) comprises a leg in the form of a clip profile (1921), preferably integral with the control portion (191) of the remote control unit (109).

13. An upgrade kit according to claim 10 when dependent on claim 5, wherein the engagement portion (92) of the remote control unit (9) comprises two sets of legs (921, 922).

14. An upgrade kit according to claim 10 when dependent on claim 5, wherein the engagement portion (492) of the remote control unit (409) comprises two legs forming two opposing hook-like portions (4921, 4922) at either side of a track (4920).

15. An upgrade kit according to claim 14, wherein a cross-sectional profile of the remote control unit (409) has substantially a similar shape as the cross-sectional profile of the handle portion (41).

16. An upgrade kit according to any one of the preceding claims, wherein the set of appliance members including the remote control unit (9) includes further appliance members configured to cooperate with the roof window, with the manual operating assembly (4), with the electrical operating assembly (6) and/or with another appliance member of the set of appliance members.

17. An upgrade kit according to any one of the preceding claims, wherein the upgrade kit comprises means for receiving acoustic signals for opening of the handle portion (41) via acoustic means and/or internet- or Bluetooth-compatible communication means.

18. An upgrade kit according to claim 1, wherein the upgrade kit comprises a set of hook-and-loop fastener, and wherein the engagement portion comprises one element of the set and the other element of the set is configured to be connected to the manual operating assembly (4) for releasable engagement.

19. A roof window arrangement comprising a roof window with a stationary frame (1) and a sash (2) carrying a pane (3), in which the sash (2) includes at least a top member (21) defining a width of the sash, two mutually parallel side members (22, 23) defining a length of the sash, and a bottom member (20) parallel to the top member (21), and is connected to the stationary frame (1) by means of a set of hinges (6) and configured to assume at least an open position and a closed position by rotation about a hinge axis substantially parallel to the top member (21) of the sash (2), the roof window furthermore comprising a manual operating assembly (4) configured to assist in operation of the sash (2) between the open and the closed positions, said manual operating assembly (4) including a handle portion (41) located at the top member (21) of the sash (2) and having a longitudinal extension substantially in parallel with the top member (21) of the sash (2), **characterised in** further comprising an upgrade kit according to any one of claims 1 to 18.

Fig. 1a (PRIOR ART)

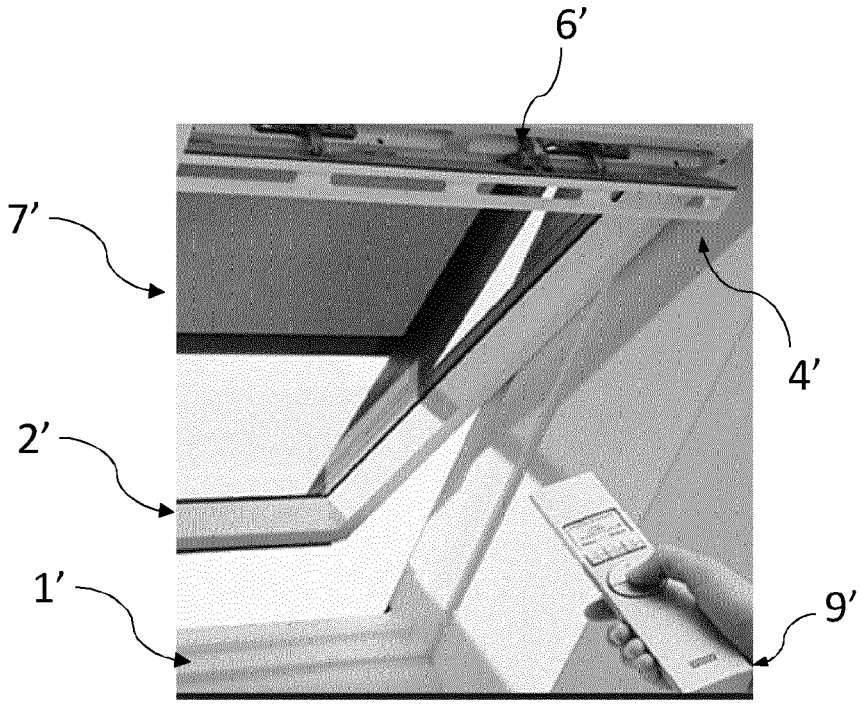

Fig. 1b (PRIOR ART)

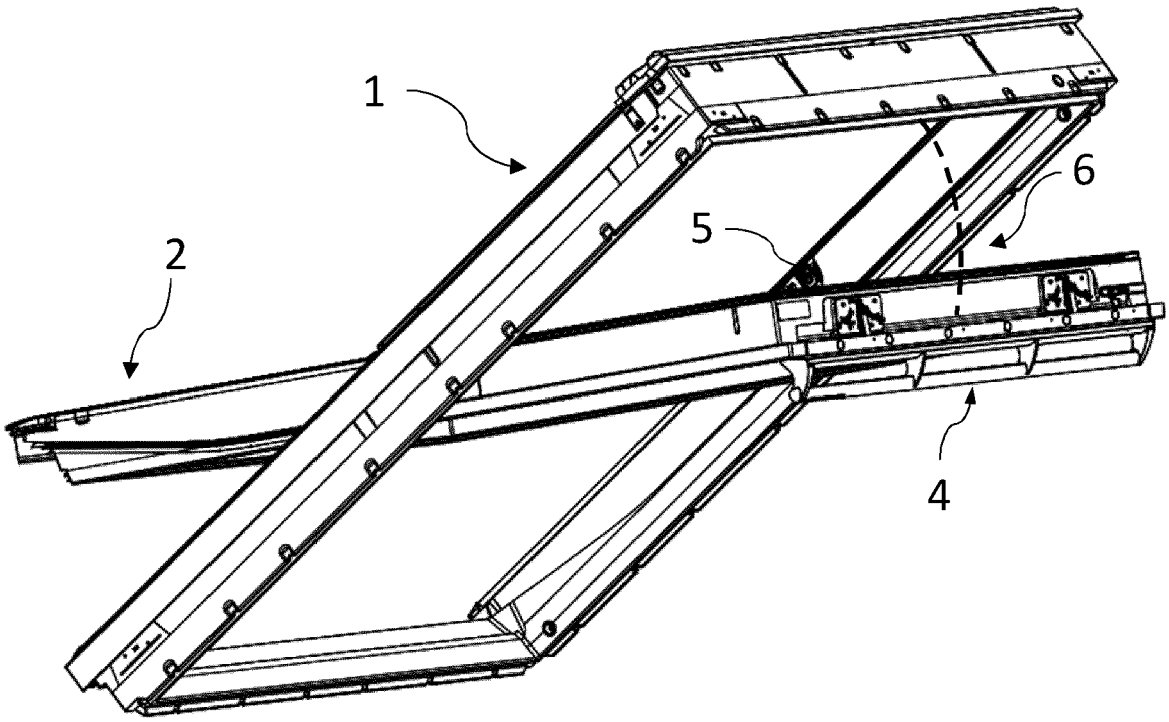

Fig. 2

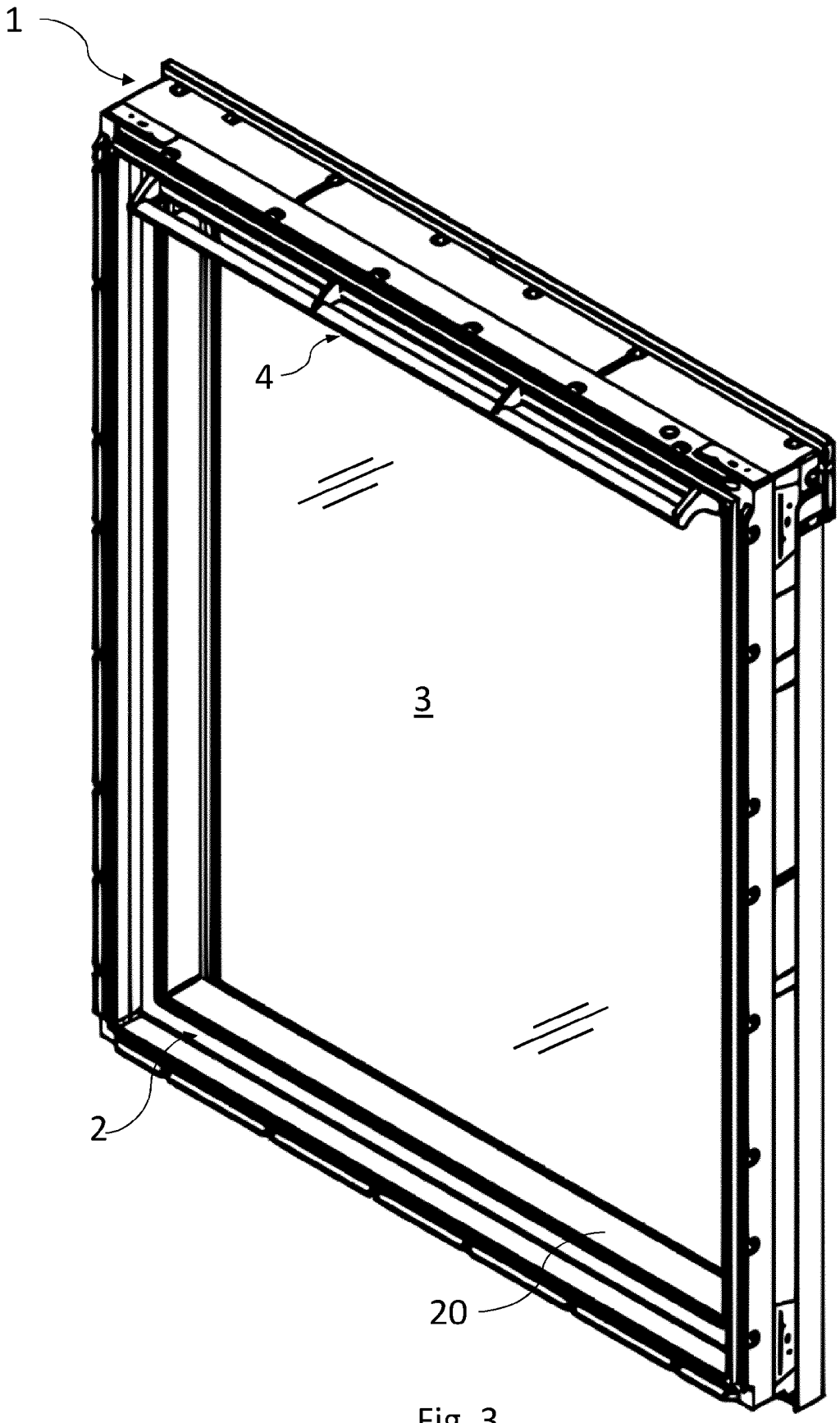

Fig. 3

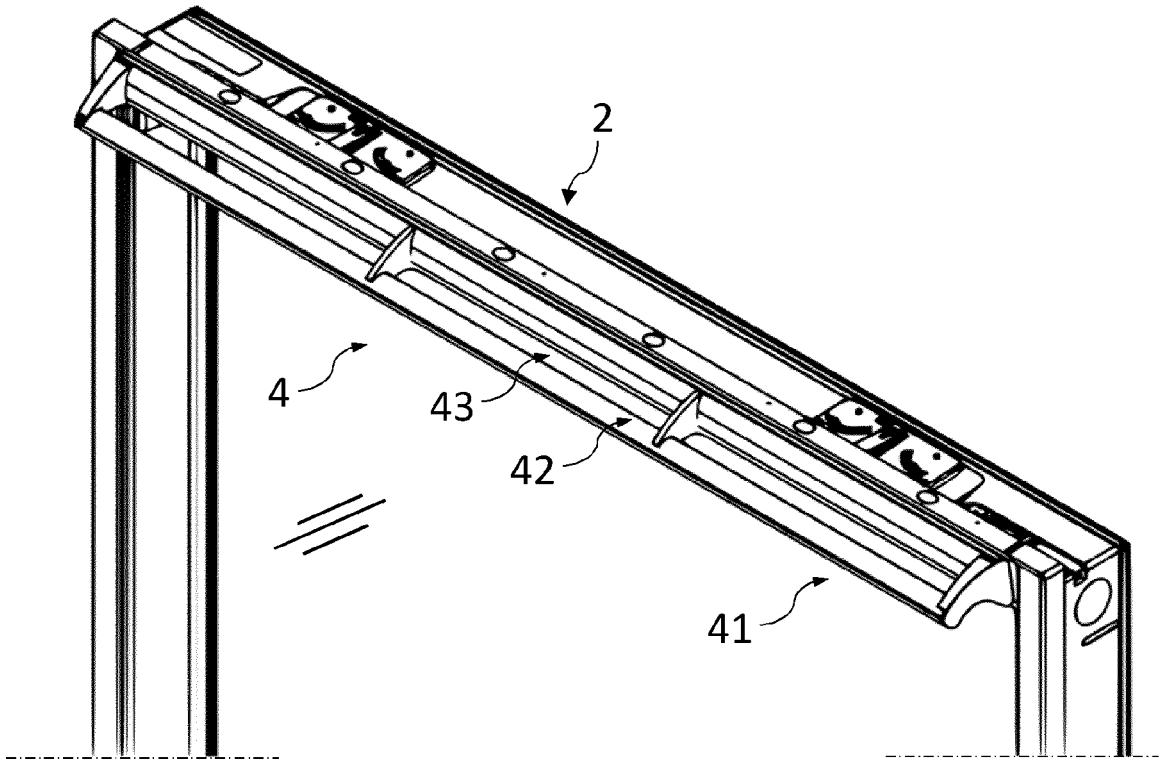

Fig. 4a

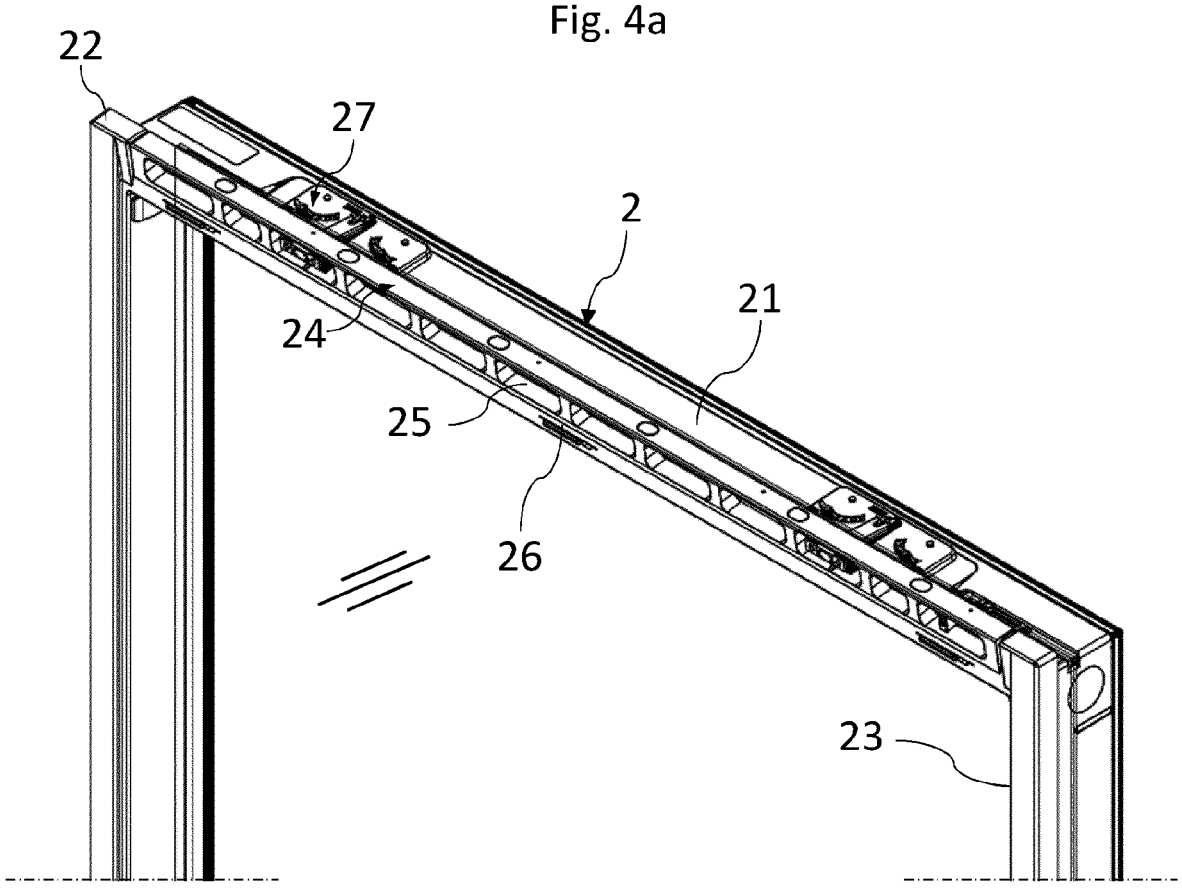

Fig. 4b

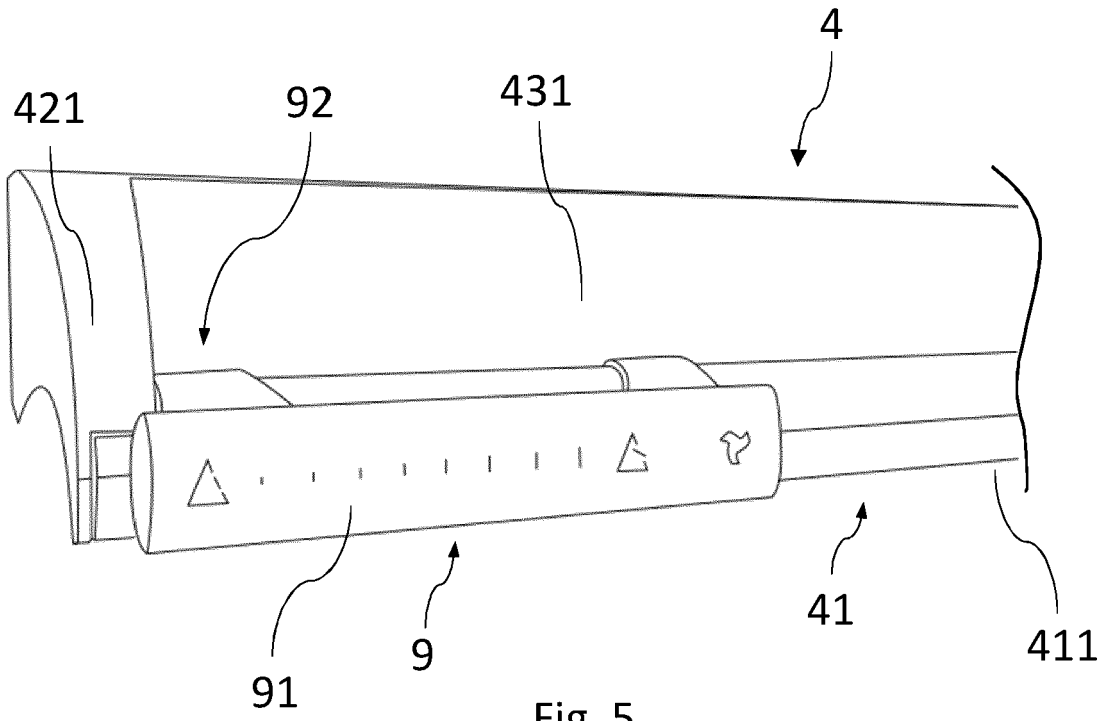

Fig. 5

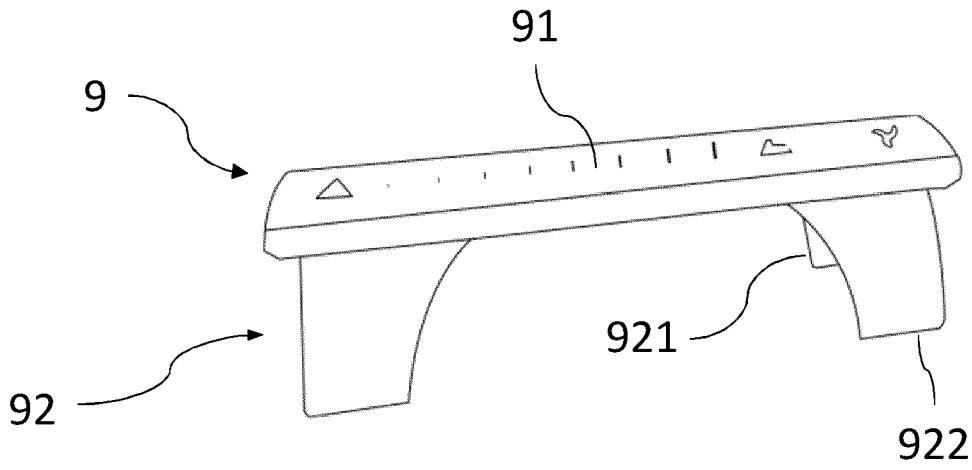

Fig. 6

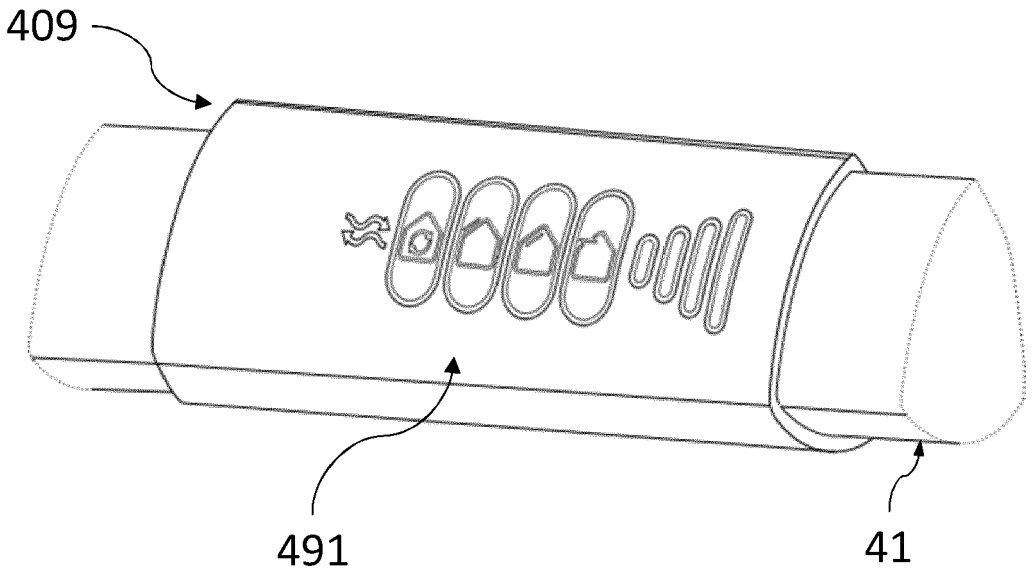

Fig. 7

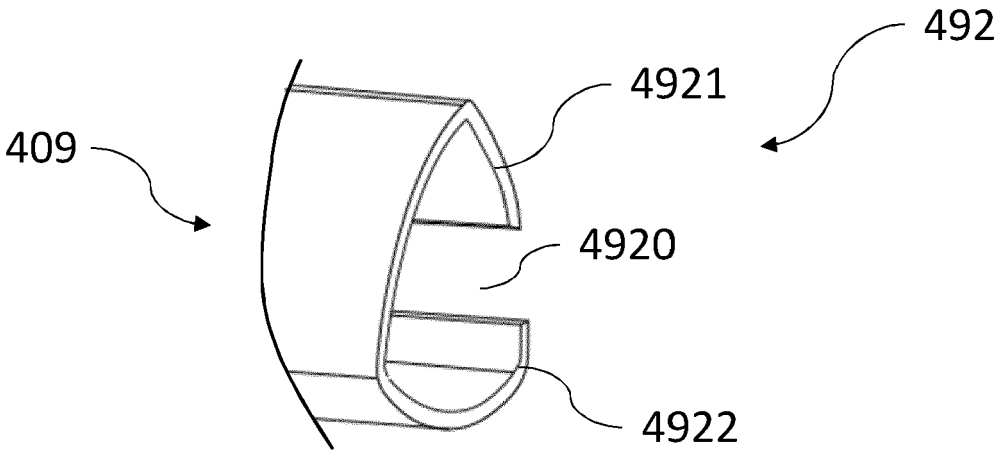

Fig. 8

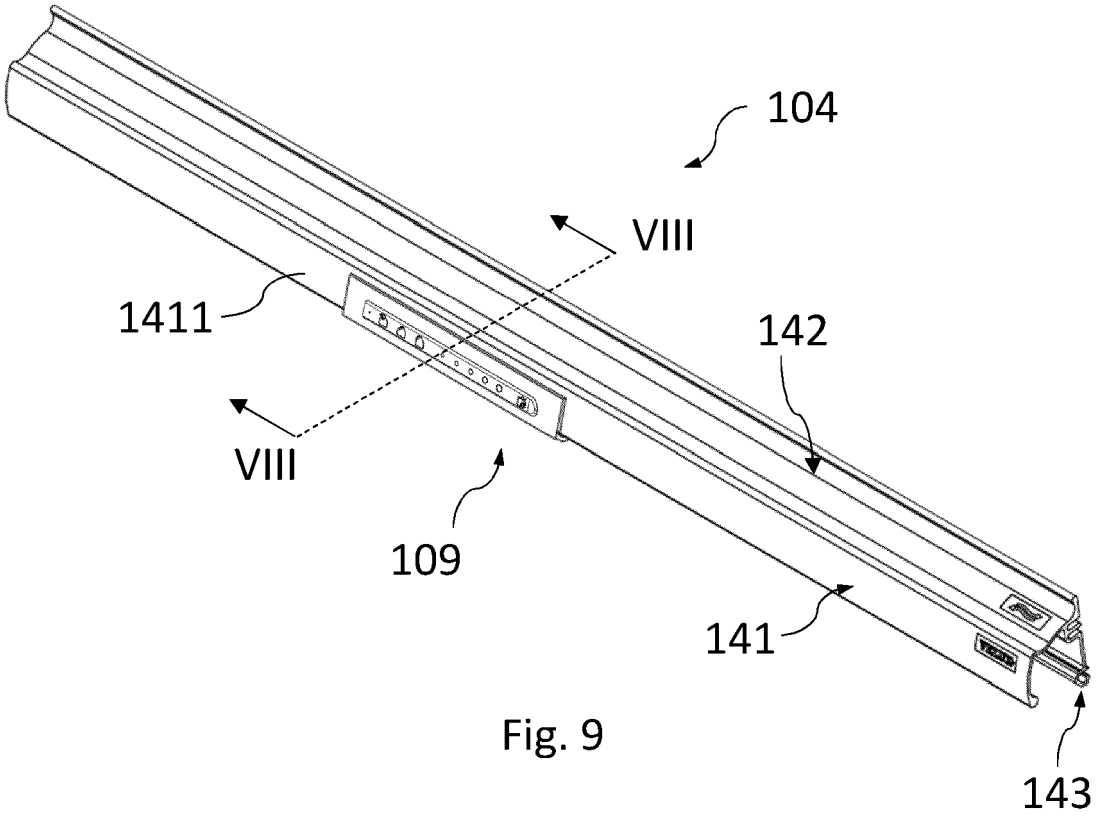

Fig. 9

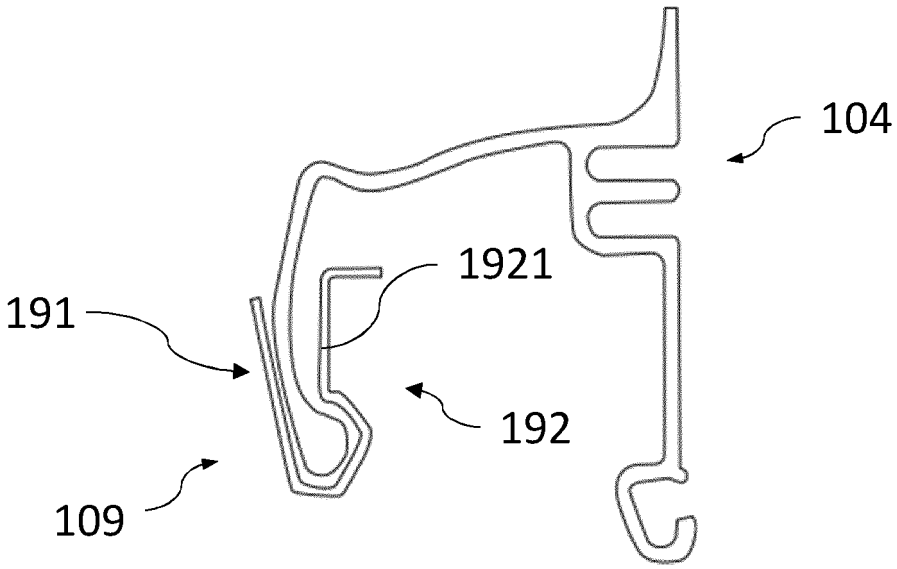

Fig. 10

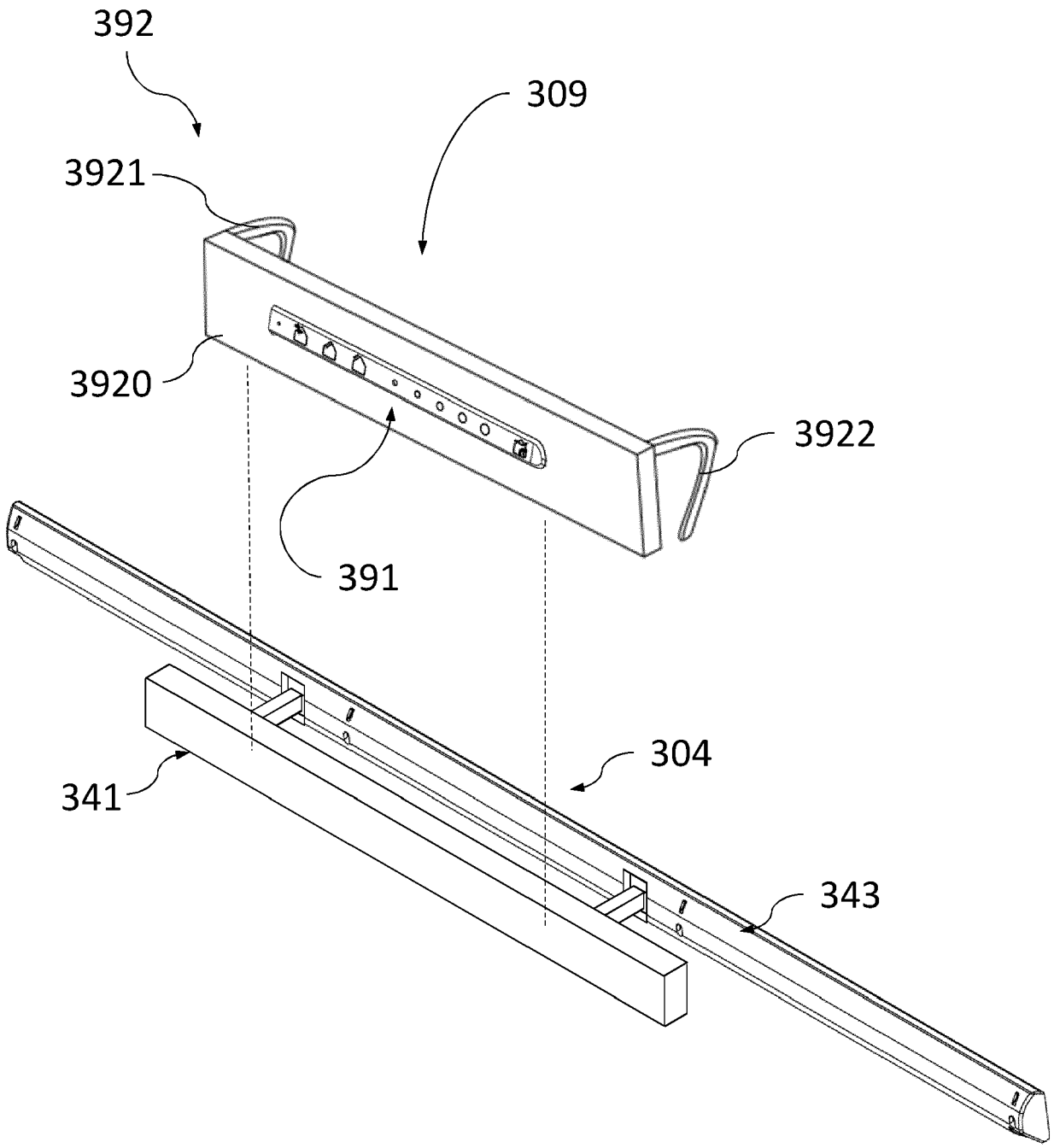

Fig. 11

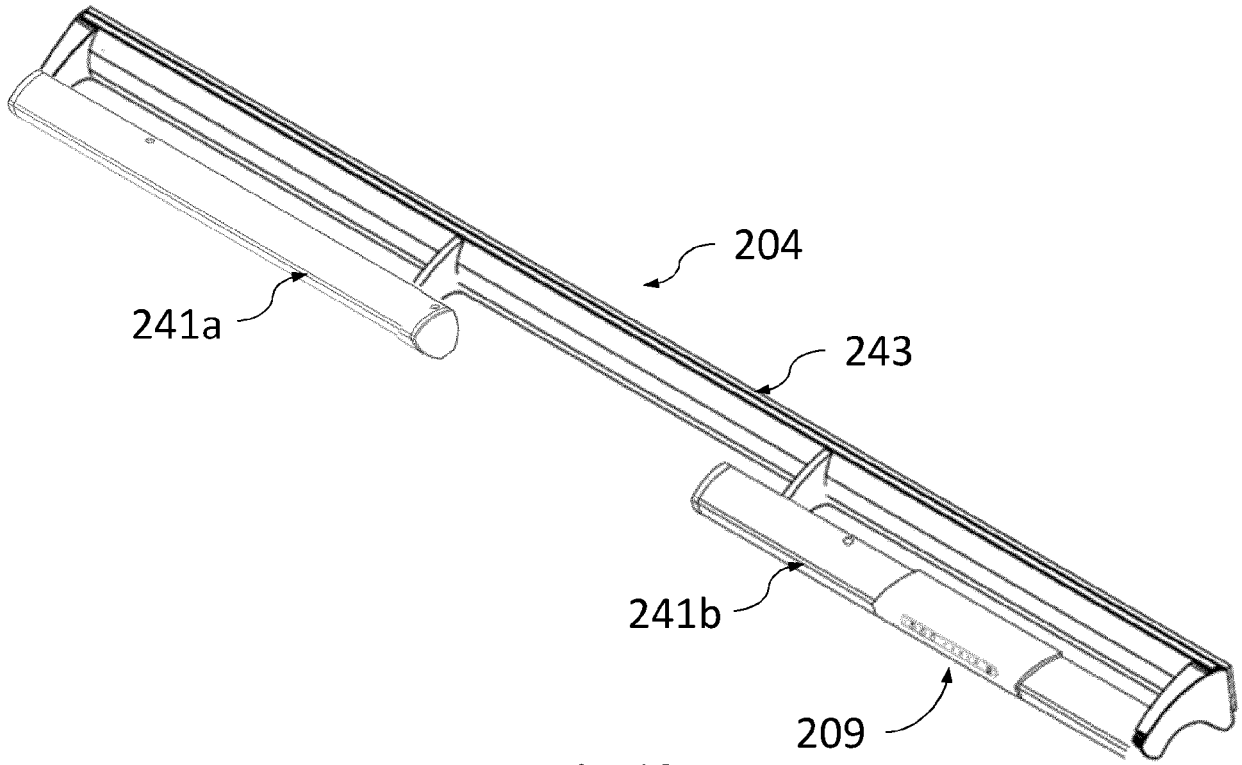

Fig. 12

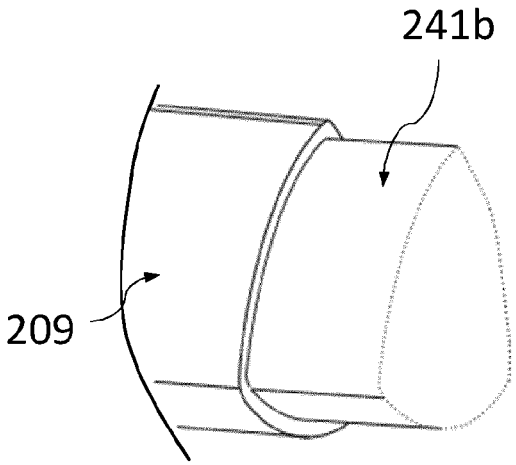

Fig. 13

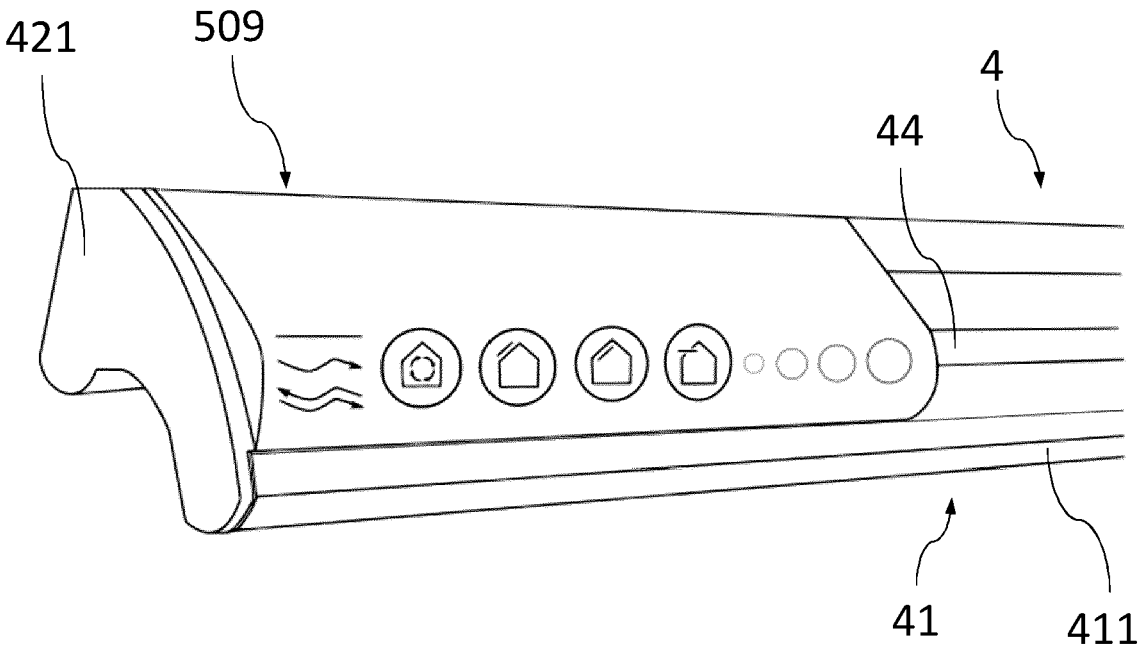

Fig. 14

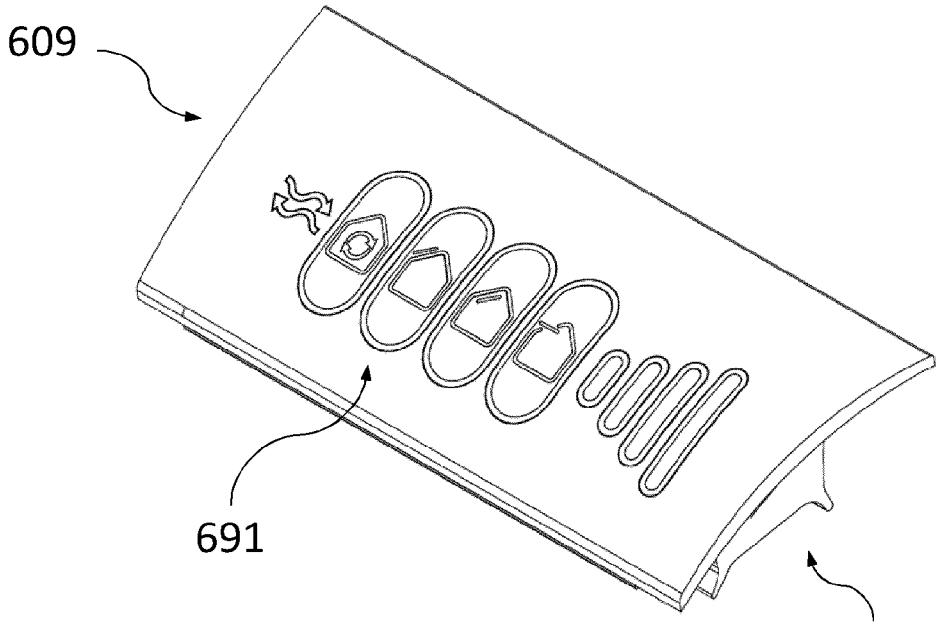

Fig. 15

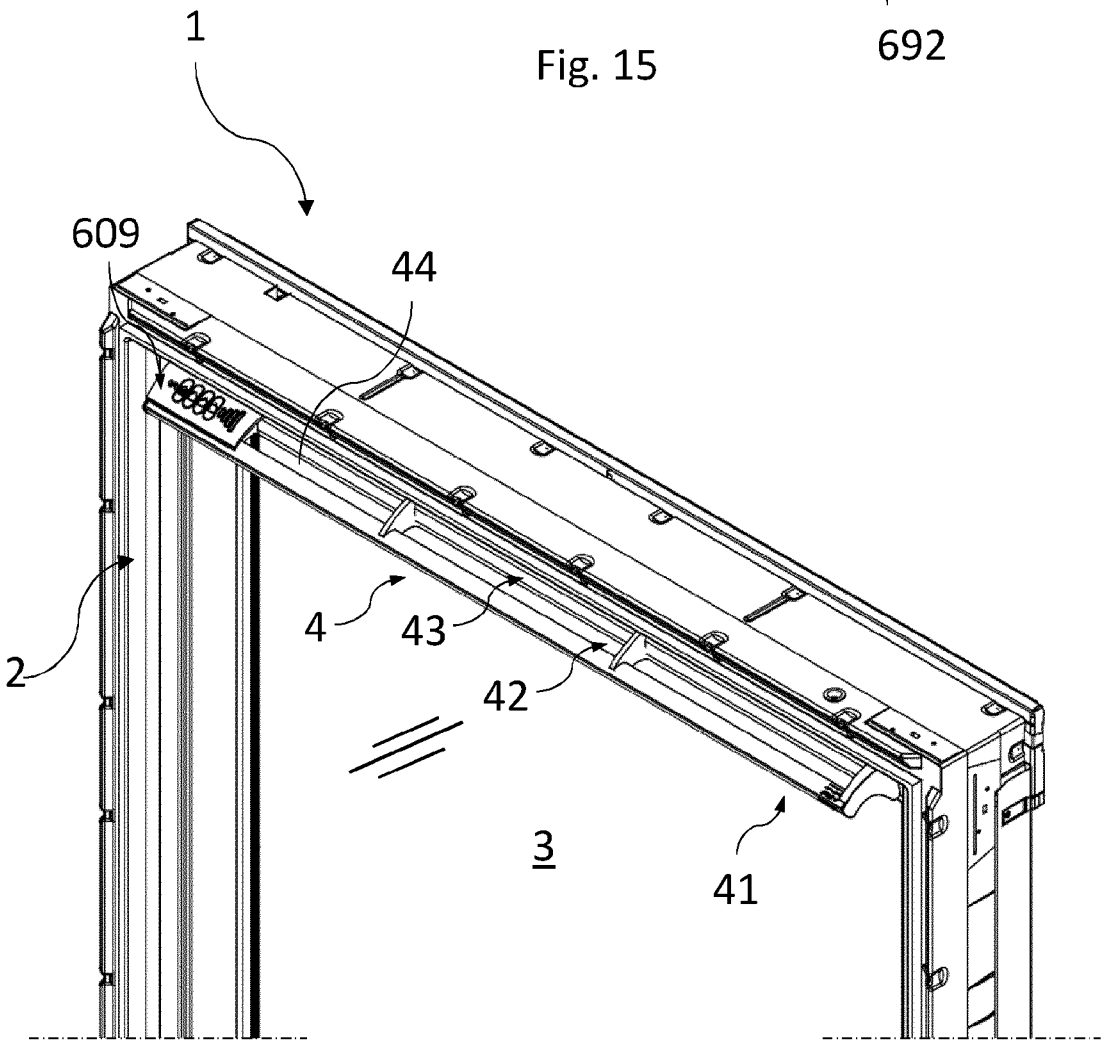

Fig. 16

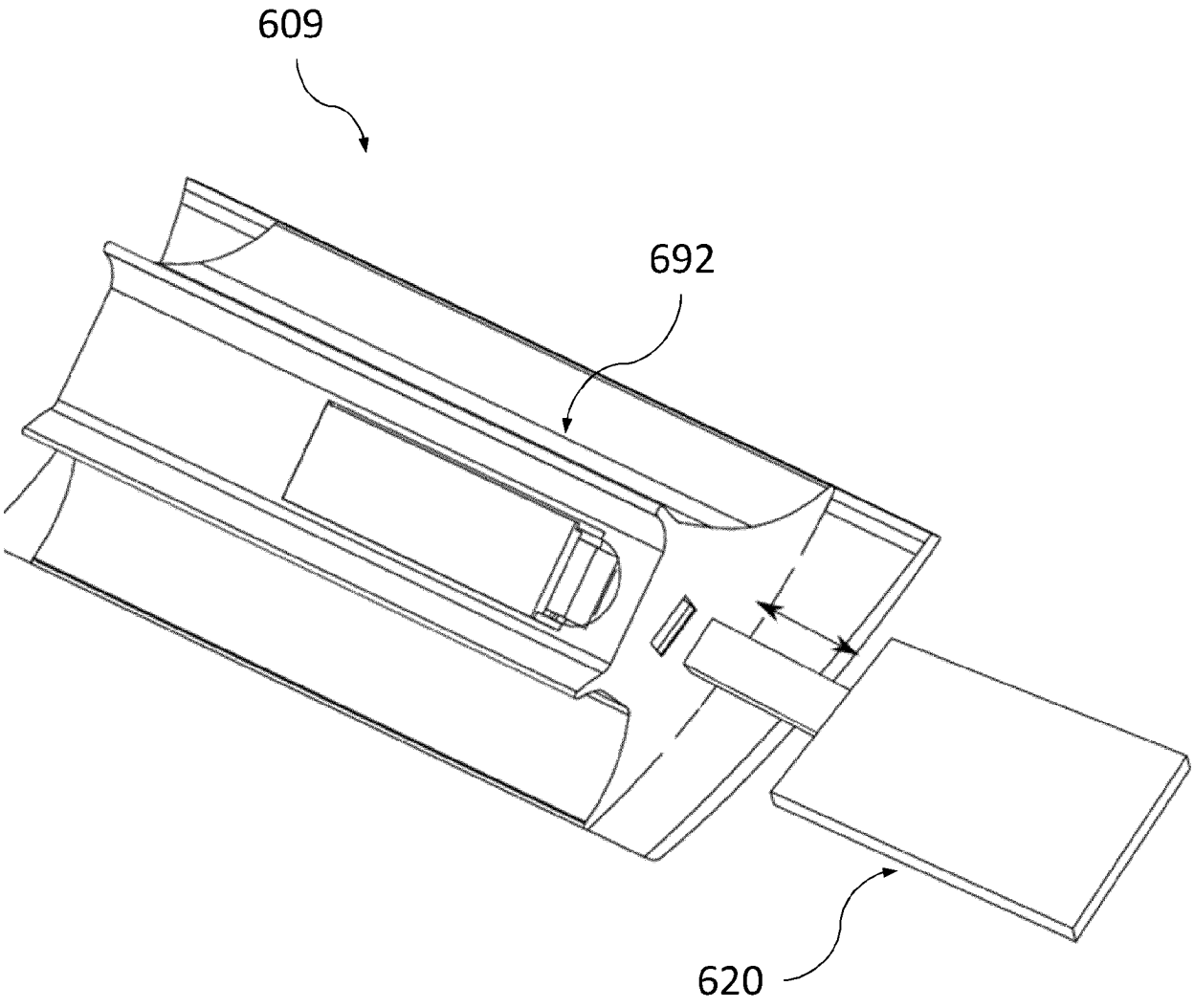

Fig. 17

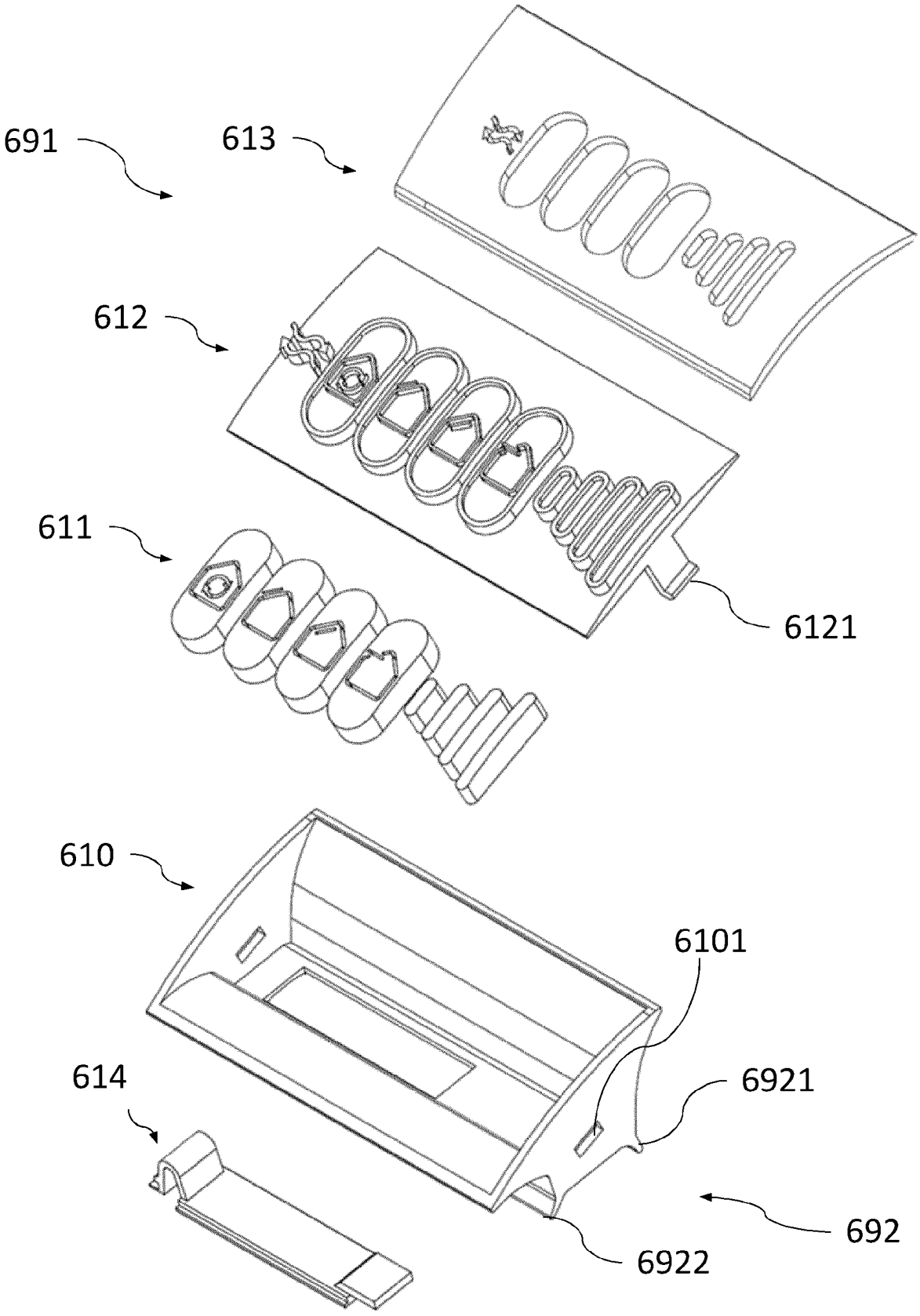

Fig. 18

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 20 18 5710

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 3 235 993 A1 (VKR HOLDING AS [DK]) 25 October 2017 (2017-10-25) * paragraphs [0024], [0027], [0029], [0037]; figures 2-5 *	1-19	INV. E04D13/03 E04D13/035 E04F11/06 E05F15/616 E05B1/00 E05F11/06
A	EP 2 957 700 A1 (VKR HOLDING AS [DK]) 23 December 2015 (2015-12-23) * paragraphs [0004] - [0005], [0037]; figure 1 *	1-19	
A	JP H06 108733 A (MATSUSHITA ELECTRIC WORKS LTD) 19 April 1994 (1994-04-19) * figures 1-2 *	1-19	

TECHNICAL FIELDS SEARCHED (IPC)

E04D
E04F
E05G
E05F
E05C
E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 November 2020	Demeester, Jan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 20 18 5710

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-11-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3235993 A1	25-10-2017	EP 3235991 A1	25-10-2017
		EP 3235992 A1	25-10-2017
		EP 3235993 A1	25-10-2017
EP 2957700 A1	23-12-2015	NONE	
JP H06108733 A	19-04-1994	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 3235993 A1 **[0003]**