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

(11) **EP 4 575 157 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.06.2025 Bulletin 2025/26

(21) Application number: **24211844.6**

(22) Date of filing: **08.11.2024**

(51) International Patent Classification (IPC):
E05D 15/52 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E05D 15/5205; E05C 9/066; E05Y 2600/626; E05Y 2600/63; E05Y 2800/174; E05Y 2800/72; E05Y 2900/132; E05Y 2900/148

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **22.12.2023 BE 202306057**

(71) Applicant: **Sobinco NV**
9870 Zulte (BE)

(72) Inventor: **VAN PARYS, Emmanuel Diederich Camille**
9790 Wortegem-Petegem (BE)

(74) Representative: **Bureau M.F.J. Bockstael NV**
Tavernierkaai 2
2000 Antwerp (BE)

(54) **FITTINGS FOR A WINDOW**

(57) Fittings are provided for a window with a fixed frame and a tiltable or rotatable leaf with a configurable selection of the turn position, tilt position and close position. The fittings comprise a peg (18) connected to a moveable sliding slat (1) as selection means. The peg (18) cooperates with the main arm (3) of a scissor mechanism for tilting the leaf. On the level of a double bend (13), the main arm is provided with a longitudinal slot (14) in which the peg is slid in the close position. An extended protrusion (16) is placed on the main arm. A moveable short protrusion (17) is placed transversally next to and separate from this and overlapping lengthways. The configuration is such that in the turn position the peg is enclosed between the two protrusions and in the tilt position is located in a free space transversally delimited by the extended protrusion.

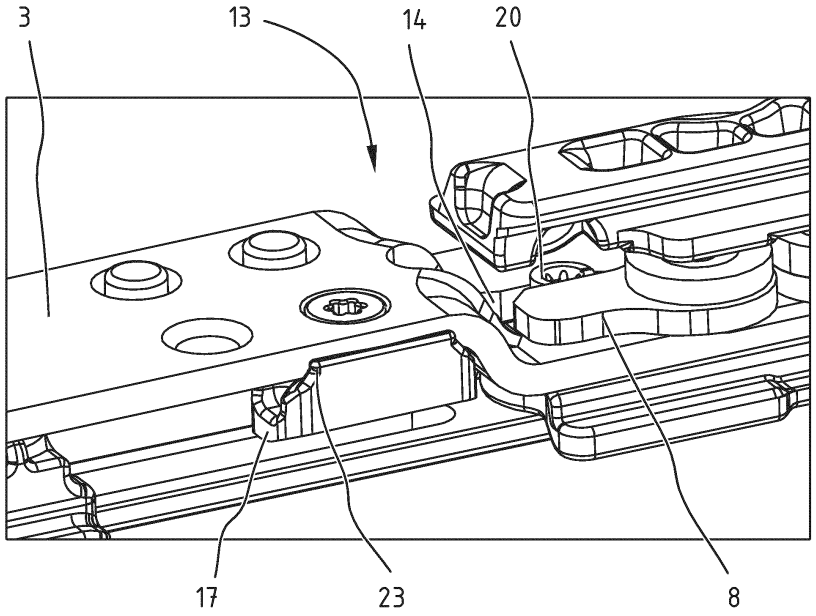

Fig. 2

EP 4 575 157 A1

Description

[0001] The present invention relates to fittings for a window.

[0002] More specifically the invention relates to fittings for a window with a fixed frame and a leaf that is rotatably applied around a vertical shaft and/or is tiltable around a horizontal shaft.

[0003] The control device of such fittings is typically provided with an operating mechanism for operating the fittings by rotating an operating crank that is applied on the leaf on the opposite side of the vertical shaft around which the leaf can be rotated. Typically, such operating crank can be rotated a quarter turn each time from a vertical close position facing down in which the window is closed, to a horizontal position corresponding with the turn or tilt position and subsequently to a vertical position facing up corresponding with the remaining turn or tilt position. The rotational movement of the operating crank is converted by the operating mechanism into a translation movement of sliding parts, such as sliding slats and/or latches of the fittings which are slideably applied in a fitting groove, provided to that end, along the outer contour of the leaf. For converting the sliding movement of a sliding part applied in a horizontal fitting groove of the leaf to a sliding movement of a sliding part applied in a vertical fitting groove of the leaf, corner transmissions can be used that partially extend in the horizontal and in the vertical fitting groove.

[0004] Depending on whether the window is first brought from the close position to the turn position and subsequently to the tilt position or alternatively first to the tilt position and subsequently to the turn position using the control device, this is known as a turn-tilt or tilt-turn sequence. However, said sequences cannot be simultaneously realised on the window which means a choice needs to be made for fittings suitable for the turn-tilt sequence or fittings for the tilt-turn sequence.

[0005] Instead of fully or partly replacing the fittings if a transformation from a tilt-turn sequence to a turn-tilt sequence or vice versa is desirable, other solutions are also known.

[0006] BE1017949A5 discloses an example of such solution. A sliding slat that is connected to the operating mechanism is slideably applied in a horizontal fitting groove at the upperside of the leaf. The fittings contain a scissor mechanism with a main arm that is hingedly connected to the leaf and to the fixed frame for allowing the leaf to tilt by hinging the main arm. The main arm is provided with a peg and the sliding slat is provided with a complementary part, whereby the peg and the complementary part can interlock. When the peg and the complementary part interlock, the main arm cannot hinge and tilting the leaf is locked in other words. The complementary part on the sliding slat acts as selection element that can be moved using the control device to a position whereby the complementary part and the peg on the main arm interlock, i.e. the selection of the turn position and a position whereby the complementary part does not interlock, i.e. the selection of the tilt position. The peg on the main arm is movable between two locations in the longitudinal direction of the main arm. Depending on the location of the peg, the selection element, when shifting from the close position is first moved to the position in which the peg and the complementary part interlock and subsequently to the position in which the complementary part does not interlock, in other words the turn-tilt sequence, or is first moved to the position in which the complementary part does not interlock and subsequently to the position in which the peg and the complementary part interlock, in other words the tilt-turn sequence.

[0007] The invention aims to provide an alternative for fittings as described above whereby the fittings are such that the transformation of the fittings suitable for the tilt-turn sequence to the fittings suitable for the turn-tilt sequence can be efficiently and effectively realised.

[0008] An objective of the invention is to provide a solution whereby the selection element in the close position of the window reliably supports the prevention of the unintentional opening and compression of the sealing rubber of the window.

[0009] It is also an objective of the invention to provide a compact solution whereby the stroke and the dimensions of the selection element are limited to allow the fittings to be used on narrower windows.

[0010] To at least partially provide a solution to one or several aforementioned objectives the invention provides fittings for a window with a fixed frame and a leaf that is rotatable around a vertical shaft or tiltable around a horizontal shaft, and a control device for the fittings that is movable from a close position in which the window is closed, to a first opening position for opening the window using either one of the turn or tilt movements of the leaf, and further to a second opening position for opening the window using the other of the turn and tilt movements of the leaf.

[0011] The fittings comprise a sliding slat that is slideable by means of the control device in a fitting groove provided to that end along an outer contour of the leaf, a main arm that is hingedly and slideably connected to an end with the leaf and whose other end is hingedly connected to the fixed frame. Typically, the sliding slat is located in a horizontal fitting groove at the upperside of the leaf and is workably connected to the operating mechanism of the control device such that movements of the operating crank of the control device are converted into sliding movements of the sliding slat in the horizontal fitting groove of the leaf. Optionally, a glide piece can be provided that is slideable relative to the sliding slat for hingedly and slideably connecting the main arm to the leaf. Said glide piece can be slideably applied in the fitting groove relative to the sliding slat. Alternatively, the glide piece can also be slideably applied in a slot of a support part provided to that end that is fixedly applied in the fitting groove.

[0012] Optionally, the end of the main arm connected to

the glide piece can further be provided with a pin that protrudes through an opening in the glide piece to realise a hingeable connection of the main arm with the glide piece.

[0013] Characteristic is that the main arm is provided with a double bend, a longitudinal slot that extends in the main arm on the level of the double bend, a first protrusion on the main arm near the double bend, and a second protrusion on the main arm transversally next to and separate from the first protrusion through an opening and overlapping lengthways with the first protrusion, whereby the first protrusion has a section which does not overlap lengthways with the second protrusion. Preferably the first and second protrusion are attached on the main arm in such a way that the facing sides of the first and second protrusion are practically parallel. Furthermore, optionally, the second protrusion can be provided on an upperside, i.e. the side that faces the main arm when the second protrusion is attached on the main arm, with an upright edge which acts as a stop for a corresponding side edge of the main arm. This simplifies the parallel alignment of their facing sides and the mounting of the first and second protrusion on the main arm relative to each other such that a peg can be easily slid back and forth lengthways through the opening between both protrusions.

[0014] The sliding slat is connected to an outwardly protruding peg that acts as selection element. The fittings and the control device are configured such that for selecting the close position the peg is slid in the longitudinal slot in the main arm at the double bend. For selecting the turn position, the peg is slid in the opening between the first and the second protrusion such that the peg is transversally enclosed in between. For selecting the tilt position, the peg is slid in a free space in the transversal direction delimited by the non-overlapping section of the first protrusion.

[0015] A further characteristic is that the second protrusion can be movably attached on the main arm in several locations lengthways of the main arm overlapping with the first protrusion. Consequently, depending on the chosen location of the attachment, the second protrusion, i.e. whether the second protrusion is located between the free space and the double bend, or alternatively the free space is located between the second protrusion and the bend, a close-turn-tilt or a close-tilt-turn sequence respectively can be realised.

[0016] The advantage of the configuration according to the invention is that it is very compact, inter alia because only one selection element for the three positions is used. Furthermore, the three positions are located close to each other lengthways such that the stroke of the selection element is limited, also because the selection element is narrow in the longitudinal direction in that it is executed as a peg. Furthermore, the peg can move easily without a hitch or jerking from the tilt position to the turn position and vice versa along the first protrusion. The non-overlapping part of the protrusion helps to accommodate any transversal hitches or jerks.

[0017] In an embodiment according to the invention the undersides of the first and second protrusion of the main arm, i.e. the side that, when in use, faces the sliding slat when the protrusions are attached on the main arm, are provided with a laterally protruding edge at the sides that face each other when in use. Optionally the peg on the sliding slat can be executed mushroom-shaped with a base and a broadened head. This allows the protrusions and the peg to be configured such that when in use the peg can be slid in the opening between the first and the second protrusion with the base between and the head above the laterally protruding edges of the protrusions respectively such that the head in the opening partially overlaps the laterally protruding edges. This prevents the peg, in the turn position of the window from shooting out of the opening between the two protrusions at the bottom in the case of a shock.

[0018] Also in an embodiment according to the invention, the first protrusion on the main arm can be attached on the main arm in several locations in the transversal direction of the main arm. This allows the attachment location to be chosen such that in mounted condition the first protrusion is located between the second protrusion and the outside of the window regardless of whether the vertical shaft around which the leaf can be rotated is located on the left or the right side of the window. This means the fittings can be used for a left and for a right opening window.

[0019] In an embodiment according to the invention, the main arm of the fittings is provided with four holes placed symmetrically relative to each other near the double bend. For attaching the first extended protrusion, two holes that are separate from each other in the longitudinal direction are used. Thus, there are two installation options for the first protrusion whereby the choice of the installation depends on the use of the fittings for a left or right opening window. This leaves two remaining holes, one hole of which remains open and the other hole is used for attaching the second protrusion and whereby the choice of which hole is used depends on the sequence to be realised, i.e. close-turn-tilt or close-tilt-turn.

[0020] Also in an embodiment according to the invention, the end of the main arm connected to the fixed frame is hingedly connected to an end of a leaf arm, whereby the leaf arm is connected to the fixed frame, directly or with an intermediate arm, and whereby the leaf arm is configured such that in close position when the peg is located in the slot the peg also hooks behind the end of the leaf arm, whereby the leaf arm in said close position of the window is stably connected to the fixed frame, and thus via the peg can stably compress the window leaf against the window frame on the level of the scissor mechanism in close position. Note that it is also conceivable that the peg does not hook behind the end of the leaf arm, but for example behind an elevation on the attachment piece of the link arm in the fixed frame. The configuration of the

fittings allows the height of the peg, i.e. the dimension with which the peg protrudes relative to the sliding slat, to be chosen optimally such that the peg has sufficient margin to not collide, when sliding to the opening positions, with the underside of the main arm such that the entire fittings could lock and on the other hand is sufficiently high to have enough overlap in the close position with the leaf arm to guarantee a good closure. Optionally the peg can be applied excentrically on the sliding slat with an adjustable position to set an optimum position of the peg upon assembly by rotating the peg.

[0021] With the intention of better showing the characteristics of the invention, a preferred embodiment of fittings according to the invention for a window with a leaf that can be turned or tilted is described by way of an example without any limiting nature, with reference to the accompanying drawings wherein:

figure 1 schematically shows a partial side view of an embodiment of the fittings according to the invention for a window that can turn and tilt in a close-turn-tilt embodiment, whereby fig.1A, fig.1B, fig.1C show the fittings in the tilt position, the turn position, and the close position respectively;

figure 2 shows a perspective view of the components indicated in figure 1 with F2 on a larger scale;

figure 3 schematically shows the components in disassembled condition of the fittings shown in fig.1 for the hinged connection of the main arm with the fixed frame;

figure 4 schematically shows a perspective view of components of the fittings shown in fig.1 for assembly on the main arm for realising a turn-tilt or tilt-turn sequence;

figure 5 schematically shows a bottom view and side view of different embodiments of the fittings according to the invention, whereby fig.5A, fig.5B, fig.5C, fig.5D show the fittings in a right opening embodiment with a close-turn-tilt sequence, in a right opening embodiment with a close-tilt-turn sequence, in a left opening embodiment with a close-turn-tilt sequence, and in a right opening embodiment with a close -tilt-turn sequence respectively.

[0022] The fittings shown in figures 1 to 4 are fittings for a window with a fixed frame and a leaf which, relative to the fixed frame, is rotatable around a vertical shaft and tiltable around a horizontal shaft. The fittings shown partially by way of an example are for a right inwardly opening window or in other words the leaf is rotatably attached around a vertical shaft on the fixed frame on or near the right side of the leaf. The operating crank or lever is located on the inside near the left side of the leaf.

[0023] Typically, a leaf is constructed from profiles, for example from aluminium, which on their outside are provided with a fitting groove such that the leaf contains a continuous fitting groove all along its outer contour. Fitting grooves are known and are typically formed by two upright parallel ribs of the profiles which are positioned at a distance from each other and the free edges of which are bent towards each other.

[0024] The fittings shown contain a sliding slat 1 that is slideably applied lengthways in the fitting groove in the horizontal profile at the upperside of the leaf. The sliding slat 1 is workably connected, for example via one or several sliding parts 2 applied in the continuous fitting groove along the contour of the leaf, to the operating mechanism of the control device such that movements of the operating crank of the control device are converted into sliding movements of the sliding slat 1 in the horizontal fitting groove of the leaf. Examples of sliding parts include sliding slats and/or latches that are applied in the vertical and horizontal fitting grooves of the leaf and/or corner transmissions partially protruding in a vertical and partially protruding in a horizontal fitting groove in the corners of the leaf for converting the sliding movement of the sliding parts in the vertical fitting groove to the sliding parts in the horizontal fitting groove and/or vice versa.

[0025] To allow the leaf to tilt relative to the fixed frame of the window the fittings contain a scissor mechanism. The scissor mechanism is provided with a main arm 3 and a support arm 4. One end of the support arm 4 is hingedly connected to the main arm 3 and the other end is connected to a support part 5 that is fixedly mounted in the horizontal fitting groove of the leaf above the sliding slat 1 such that the sliding slat 1 can slide under the support part 5 in the fitting groove. One end of the main arm 3 is provided with a coupling pin 7 for coupling with a glide piece 6 via a relevant coupling opening in the glide piece. The glide piece 6 is slideably applied in the longitudinal direction relative to both the fixed support part 5 and the sliding slat 1 in the horizontal fitting groove. This is done such that the sliding slat 1 can slide under the glide piece 6 in the fitting groove and that when opening and closing the window with a tilt movement of the leaf, the glide piece 6 shifts toward or away, respectively, from the fixed support part 5.

[0026] The other end of the main arm 3 is hingedly connected to the fixed frame of the window. An example of such hinged connection is shown in more detail in disassembled form in fig. 3. An end of the leaf arm 8 is hingedly connected to the end of the main arm 3 which in mounted condition of the fittings is located near the vertical shaft around which the leaf can be rotated. Near its other end the leaf arm 8 is hingedly connected to a frame hinge piece 10 which in turn is hingedly connected to a frame corner part 12 of the fittings which is fixedly applied in a frame groove in the horizontal profile of the fixed frame at the upperside of the window. A frame groove is a fitting groove formed on the inside in the profiles of the fixed frame of the window in which frame parts of the fittings can be applied which cooperate with parts of the fittings applied in the fitting grooves of the leaf. The leaf arm 8 is also hingedly connected to the frame arm 9 which in turn is hingedly connected to the frame corner part 12 and via a leaf hinge piece 11 is connected

to the main arm. Said hinged connection between main arm 8 and fixed frame supports the tilting and turning of the leaf relative to the fixed frame.

[0027] The main arm 3 has the form of a slat whereby said slat shows a double bend 13. On the level of said double bend 13 a slot 14 is applied in the main arm 3 in the longitudinal direction. Between the double bend 13 and the end of the main arm 3 provided with the coupling pin 7, the main arm is provided with four holes 15 placed symmetrically relative to each other near the double bend. In one pair of the holes in the longitudinal direction of the main arm 3, an extended protrusion 16 is attached on the underside of the main arm, i.e. the side that, when in use, faces the upperside of the sliding slat 1 using a rivet connection protruding in the direction of the sliding slat. Alternatively, the extended protrusion 16 can also of course be provided at the side facing the main arm with screw openings through which removable screws can be screwed through the holes 15 for attachment of the extended protrusion 16 on the main arm 3. In one of the remaining holes 15, i.e. in the example shown the hole located nearest to the double bend 13, separate from the extended protrusion 16, a short protrusion 17 is applied in the transversal direction of the main arm 3, lengthways overlapping the extended protrusion 16, whereby an opening is formed which is laterally delimited by the short protrusion 17 and the extended protrusion 16 respectively and at the upperside is delimited by the main arm 3. The short protrusion 17 is applied by screwing a removable screw through the relevant hole 15 in a screw opening 19 formed in the short protrusion 17 on the side facing the underside of the main arm 3 when in use. If desired, the short protrusion 17 can be easily moved to another location on the main arm, for example on the level of the hole 15 that is still free by removing the removable screw and attaching the short protrusion 17 on this other location by screwing the removable screw through said free hole in the screw opening 19 of the short protrusion 17.

[0028] A peg 18 is provided on the sliding slat 1 with a substantially cylindrical form which in mounted condition of the fittings and with the window closed protrudes outwardly toward the main arm 3. As the sliding slat 1 is workably connected to the control device, said peg 18 shifts together with the control device and the peg 18 can act as a selection means for selecting a tilt position, a turn position or a close position according to the position of the operating crank.

[0029] In figure 1C, and in a magnified view in fig.2, the close position is shown. In said position the peg 18 protrudes via the longitudinal slot 14 on the level of the double bend 13 at the upperside through the main arm 3. The peg 18 hooks behind the leaf arm 8. In close condition, the end of the leaf arm is stably connected to the frame (because of the at that moment almost perpendicular connecting arm 10). The peg 18 pushes the leaf toward the frame by hooking behind the leaf arm 8 when closing the window. In this way, when closing the window, a good compression of the sealing rubbers on the level of the link arm is obtained.

[0030] Indeed, it is not possible to place a locking peg/locking piece combination in the immediate proximity.

[0031] The peg 18 is excentrically attached on the sliding slat and at its upperside is provided with a recess 20 complementary to a torx-key or a screwdriver. By fittingly inserting the torx key or screwdriver in the recess 20, the peg 18 can be rotated such that, depending on the direction of rotation the leaf is more or less compressed against the frame when closing the window. Using the control device, the peg 18 can be shifted from the close position to the turn position or in other words from the longitudinal slot 14 in the opening between the extended protrusion 16 and the short protrusion 17.

[0032] Figure 1B shows the fittings with the turn position selected. In said position, the peg 18 protrudes in the opening between the extended protrusion 16 and the short protrusion 17 such that the peg is enclosed transversally and the peg does not touch the underside of the main arm in the opening. The height of the peg is chosen or set such that it not only ensures a good closure in the close position but also sufficient margin for the peg not to collide with the underside of the main arm when sliding from the close position to the turn position. By enclosing the peg 18 transversally, the main arm 3 cannot hinge relative to the leaf and tilting the leaf is locked. However, the leaf can rotate around the vertical shaft. Using the control device, the peg 18 can be shifted from the turn position to the opening between the extended protrusion 16 and the short protrusion 17 along the extended protrusion 16 in the free space which in the transversal direction on the outward facing side of the leaf is delimited by the section of the extended protrusion 16 which does not overlap lengthways with the short protrusion 17.

[0033] Figure 1A shows the fittings with the tilt position selected. In said position the peg 18 protrudes in the free space which is only delimited outwardly by the non-overlapping part of the extended protrusion 16 such that the leaf can tilt inwardly without obstruction.

[0034] The sequence shown in figures 1C to 1A is the close-turn-tilt sequence. By moving the short protrusion 17 to the free hole 15 the close-tilt-turn sequence can easily be realised.

[0035] Figure 4 shows the extended protrusion 16 and the short protrusion 17 between which the peg 18 is enclosed upon selecting the turn position when the protrusions are attached on the main arm 3. The extended protrusion 16 and the short protrusion 17 are substantially beam-shaped and are attached on the main arm 3 such that their respective sides that face each other 21,22 are practically parallel. On its upperside, i.e. the side that faces the main arm 3 upon assembly, the short protrusion 17 is provided with an upright edge 23 that acts as a stop for a corresponding side edge of the main arm 3. On their underside, i.e the side that, when in use, faces the sliding slat 1 when the protrusions are attached on the main arm

3, the protrusions 16,17 are optionally provided with a laterally protruding edge 24 on the sides 21,22 that face each other when in use. Optionally, the peg 18 on the sliding slat 1 can be executed mushroom-shaped with a base and a broadened head. This allows the protrusions and the peg to be configured such that when in use the peg 18 can be slid in the opening between the protrusions 16,17 with the base between and the head above the laterally protruding edges 24 respectively to stop the peg 18 in the turn position of the window from shooting out of the opening between the two protrusions 16,17 at the bottom in case of a shock.

[0036] Figure 5 shows a bottom view and side view of different embodiments of the main arm 3 of the fittings according to the invention with an example of its hinged connection with the frame corner part 12. However, the invention is in no way whatsoever limited to the hingeable connection shown but the hinged connection can be realised in any which way which may or may not involve the use of arms, hinge points, and/or gliding pegs. In the example shown, the frame corner part 12 in the horizontal frame groove of the fixed frame is mounted at the upper-side of the window in the corner near the vertical shaft around which the leaf can be turned. In the different configurations shown the movable protrusions 16, 17 are placed at different positions in the symmetrical holes of the main arm. The positioning in the different configurations corresponds with the desired opening sequence, i.e. close-turn-tilt or close-tilt-turn and depending on whether the fittings are for a left or right inwardly opening window. In a left opening window, the frame corner part 12 is applied in the top left corner of the fixed frame near the vertical rotation shaft of the leaf which is then located on the left side of the leaf. In a right opening window, the frame corner part 12 is applied in the top right corner of the fixed frame near the vertical rotation shaft of the leaf which is then located on the right side of the leaf.

[0037] Figure 5A shows the configuration whereby the extended protrusion 16 is applied in the holes 15 provided to that end on the side facing inwardly when in use such that the leaf can tilt inwardly in the tilt position. The short protrusion 17 is subsequently applied in the remaining hole 15 that is located nearest to the double bend. Said configuration is adapted for a right opening window with a close-turn-tilt opening sequence.

[0038] Figure 5B shows the configuration whereby the extended protrusion 16 is applied in the holes 15 provided to that end on the side facing inwardly when in use such that the leaf can tilt inwardly in the tilt position. The short protrusion 17 is subsequently applied in the remaining hole 15 that is located furthest from the double bend. Said configuration is adapted for a right opening window with a close-tilt-turn opening sequence.

[0039] Fig.5C shows the configuration whereby the extended protrusion 16 is applied in the holes 15 provided to that end on the side facing inwardly when in use such that the leaf can tilt inwardly in the tilt position. The short protrusion 17 is subsequently applied in the remaining hole 15 that is located nearest to the double bend. Said configuration is adapted for a left opening window with a close-turn-tilt opening sequence.

[0040] Fig.5D shows the configuration whereby the extended protrusion 16 is applied in the holes 15 provided to that end on the side facing inwardly when in use such that the leaf can tilt inwardly in the tilt position. The short protrusion 17 is subsequently applied in the remaining hole 15 that is located furthest from the double bend. Said configuration is adapted for a left opening window with a close-tilt-turn opening sequence.

[0041] The present invention is by no means limited to the embodiments described as an example and shown in the drawings, but fittings according to the invention for a window with a fixed frame and a leaf that can tilt and turn can be realised in all kinds of forms and dimensions, without departing from the scope of the invention.

Claims

1. - Fittings for a window with a fixed frame and a leaf that is rotatable around a vertical shaft or tiltable around a horizontal shaft, and a control device of the fittings that is movable from a close position in which the window is closed, to a first opening position for opening the window using either one of the turn or tilt movements of the leaf, and further to a second opening position for opening the window using the other of the turn and tilt movements of the leaf, said fittings comprising

a sliding slat (1) that is slideable by means of the control device in a fitting groove provided to that end along an outer contour of the leaf, and
a main arm (3) that at one end is hingedly and slideably connected to the leaf and at the other end is hingedly connected to the fixed frame, **characterised in that** the sliding slat is connected to an outwardly protruding peg (18),
the main arm is provided with a double bend (13), a longitudinal slot (14) that extends in the main arm on the level of the double bend, a first protrusion (16) on the main arm near the double bend, and a second protrusion (17) on the main arm transversally next to and separate from the first protrusion through an opening and overlapping lengthways with the first protrusion, whereby the first protrusion has a section which does not overlap lengthways with the second protrusion,
whereby the fittings and the control device are configured such that in operational condition, the peg is slid using the control device in the slot in the main arm for the close position, for the opening position for opening the window by a rotational movement in the opening such that the peg is enclosed between the first and the

second protrusion, and for the opening position for opening the window by a tilt movement in a free space delimited by the non-overlapping section of the first protrusion, and
whereby the second protrusion is movably attachable in several locations on the main arm lengthways of the main arm overlapping with the first protrusion such that depending on the chosen location of the attachment the second protrusion is located between the free space and the double bend or the free space is located between the second protrusion and the double bend respectively for allowing a close-turn-tilt or a close-tilt-turn sequence.

2. The fittings according to claim 1, **characterised in that** the sides of the first (16) and second protrusion (17) that face each other (21,22) are practically parallel.

3. The fittings according to any one of the previous claims, **characterised in that** an upperside of the second protrusion (17), i.e. the side that, when in use, faces the main arm when the second protrusion (3) is attached on the main arm, is provided with an upright edge (23) which acts as a stop for a corresponding side edge of the main arm (3) .

4. The fittings according to any one of the previous claims, **characterised in that** the underside of the first (16) and second protrusion (17), i.e. the side that, when in use, faces the sliding slat (1) when the protrusions are attached on the main arm (3), is provided on the sides (21 22) facing each other with a laterally protruding edge (24), the peg (18) is mushroom-shaped with a base and a broadened head, and whereby the protrusions and the peg are configured such that when in use the peg can be slid in the opening between the first and the second protrusion with the base between and the head above the laterally protruding edges of the protrusions respectively such that the head in the opening partially overlaps the laterally protruding edges.

5. The fittings according to any one of the previous claims, **characterised in that** the position of the peg (18) is adjustable relative to the sliding slat (1).

6. The fittings according to any one of the previous claims, **characterised in that** the main arm (3) near the double bend (13) is provided with four holes (15) placed symmetrically relative to each other, one pair of the holes separate from each other lengthways of the main arm for attaching the first protrusion (16) on the main arm, the other pair of the holes of which one hole remains open and the other hole is used for attaching the second protrusion (17) and whereby the choice of which hole is used depends on the sequence to be realised, i.e. close-turn-tilt or close-tilt-turn.

7. The fittings according to any one of the previous claims, **characterised in that** the first protrusion (16) is attachable on the main arm (8) in several locations transversally of the main arm whereby the location is chosen such that in mounted condition the first protrusion (16) is located between the second protrusion (17) and the outside of the window regardless of whether the vertical shaft around which the leaf can be turned is located on the left or the right side of the window.

8. The fittings according to any one of the previous claims, **characterised in that** the fittings comprise a glide piece (6) that is slideable relative to the sliding slat (1) and the main arm (3) is provided with a pin (7) which protrudes through an opening in the glide piece to connect the main arm to the glide piece.

9. The fittings according to any one of the previous claims **characterised in that** the end of the main arm (3) connected to the fixed frame is hingedly connected to an end of a leaf arm (8), whereby the leaf arm is connected to the fixed frame, and whereby the leaf arm is configured such that in close position when the peg (18) is located in the slot (14), the peg (18) hooks behind the other end of the leaf arm.

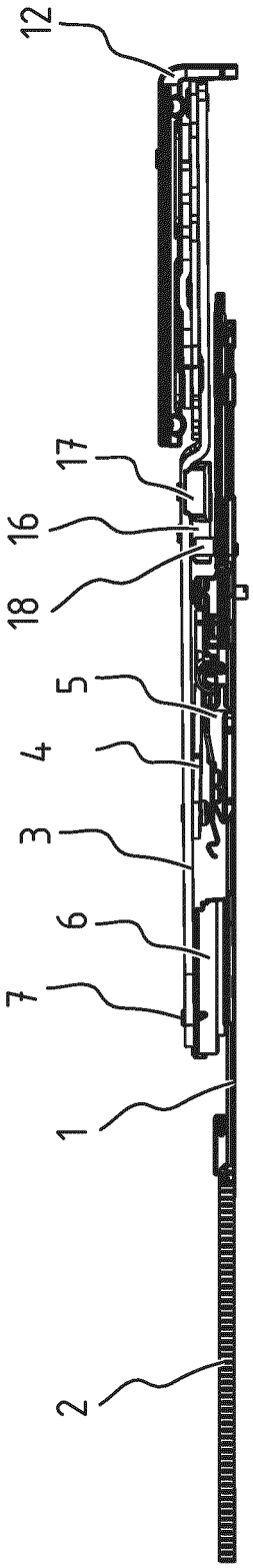

Fig. 1A

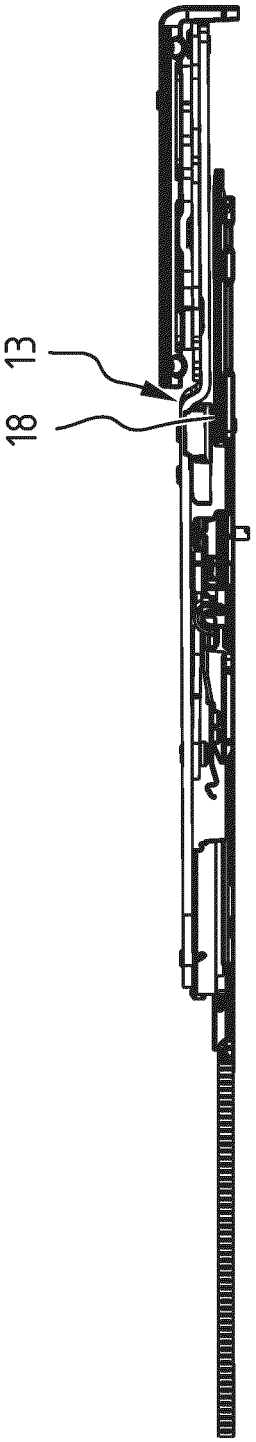

Fig. 1B

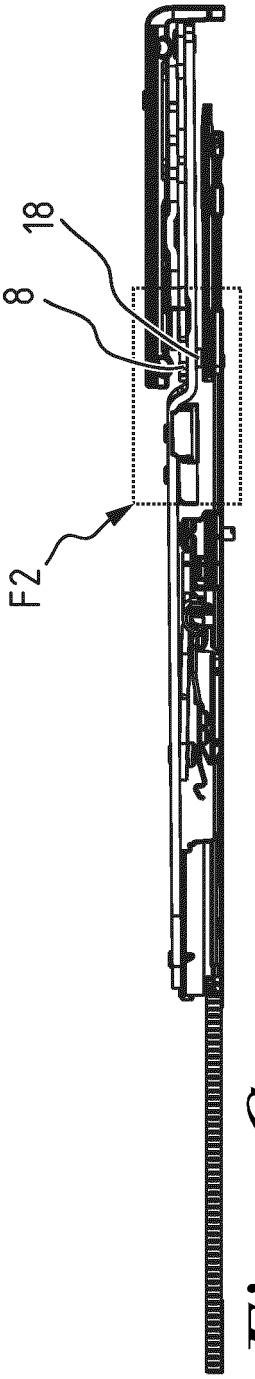

Fig. 1C

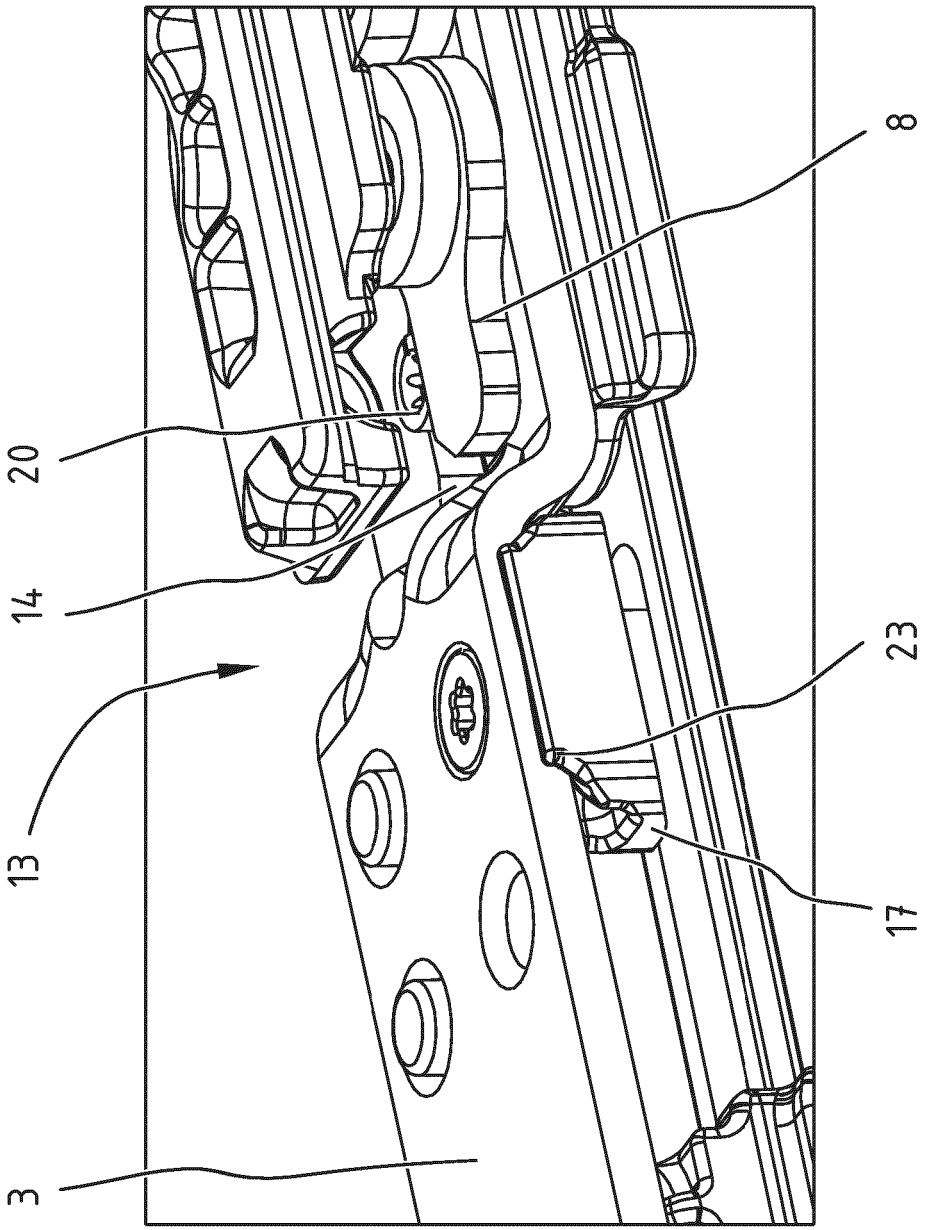

Fig. 2

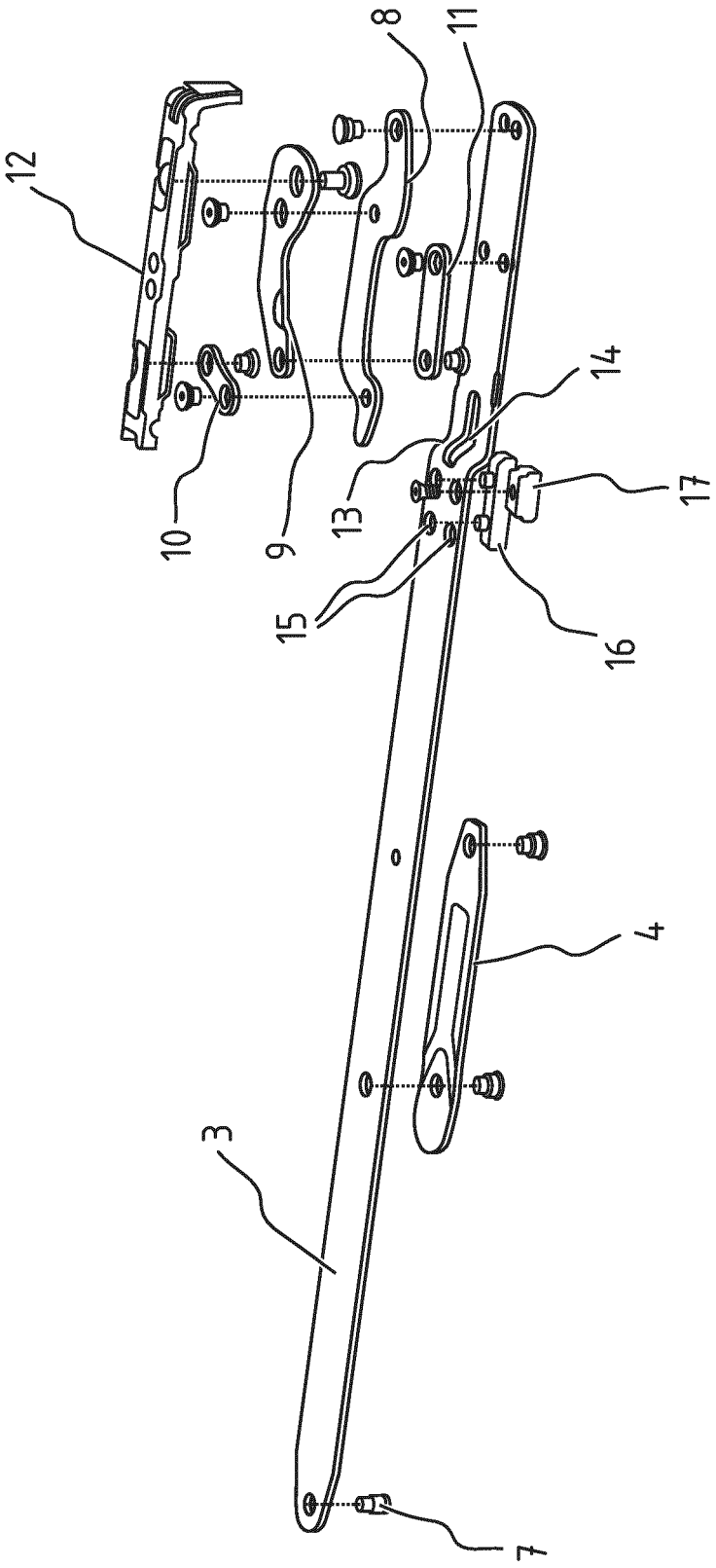

Fig. 3

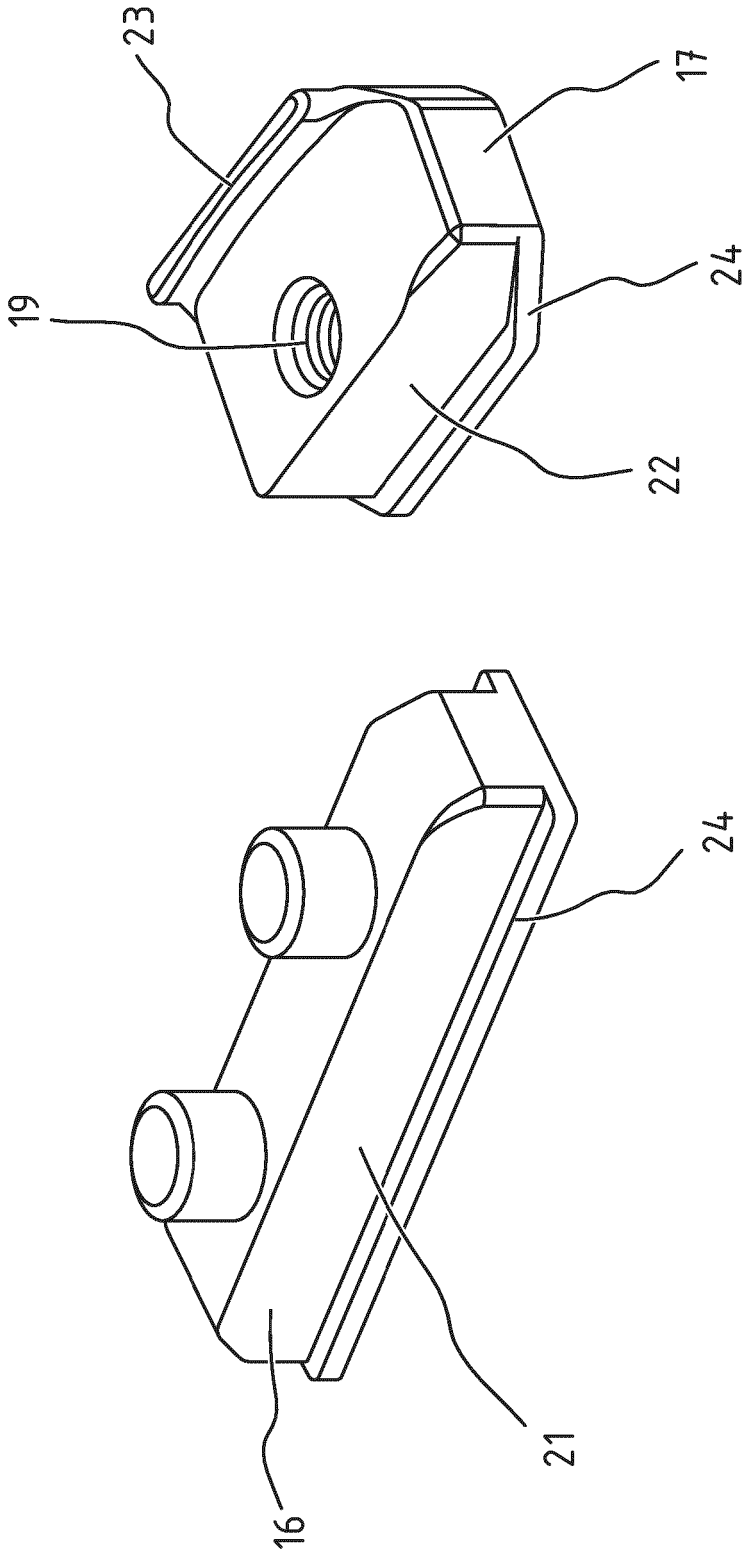

Fig. 4

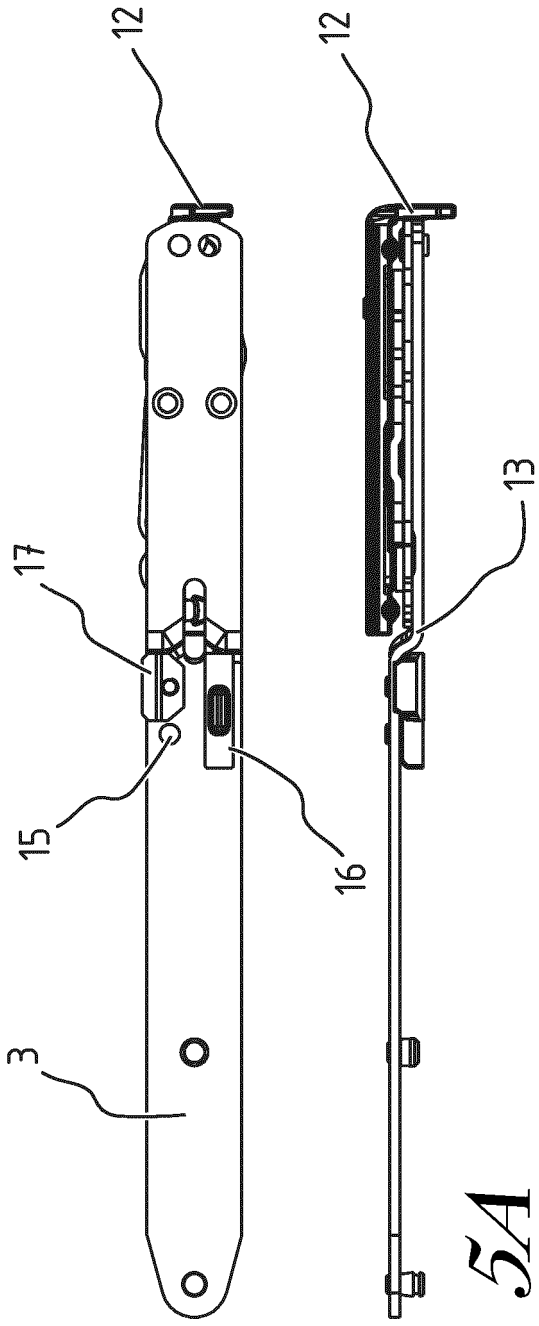

Fig. 5A

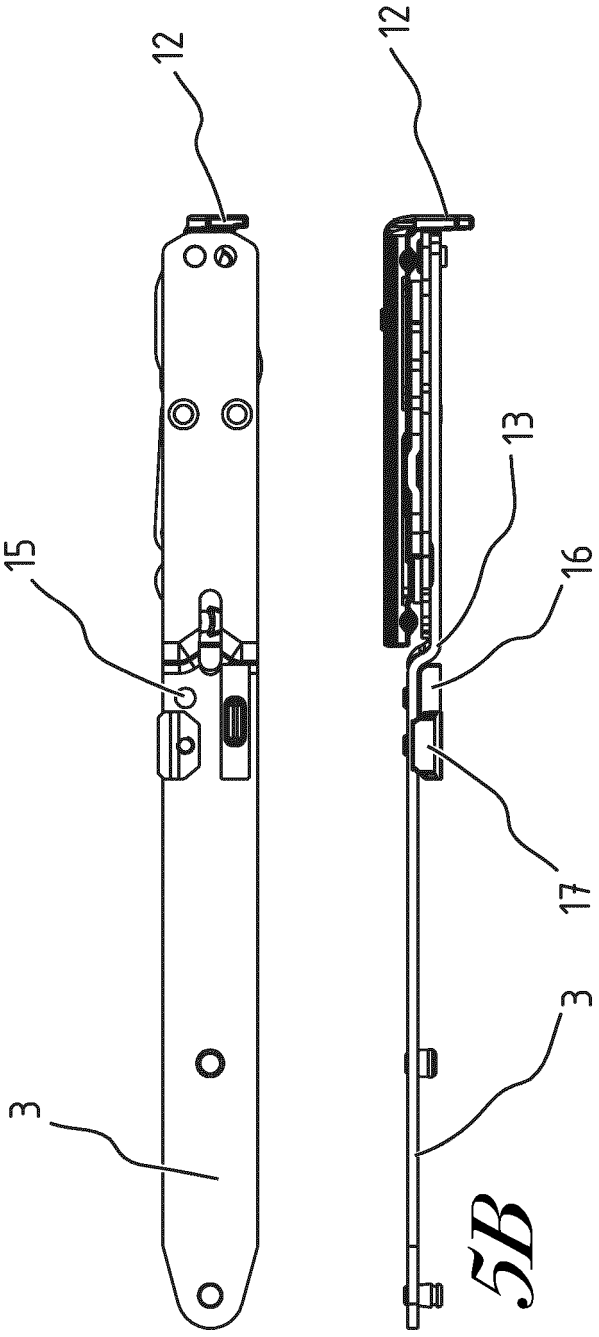

Fig. 5B

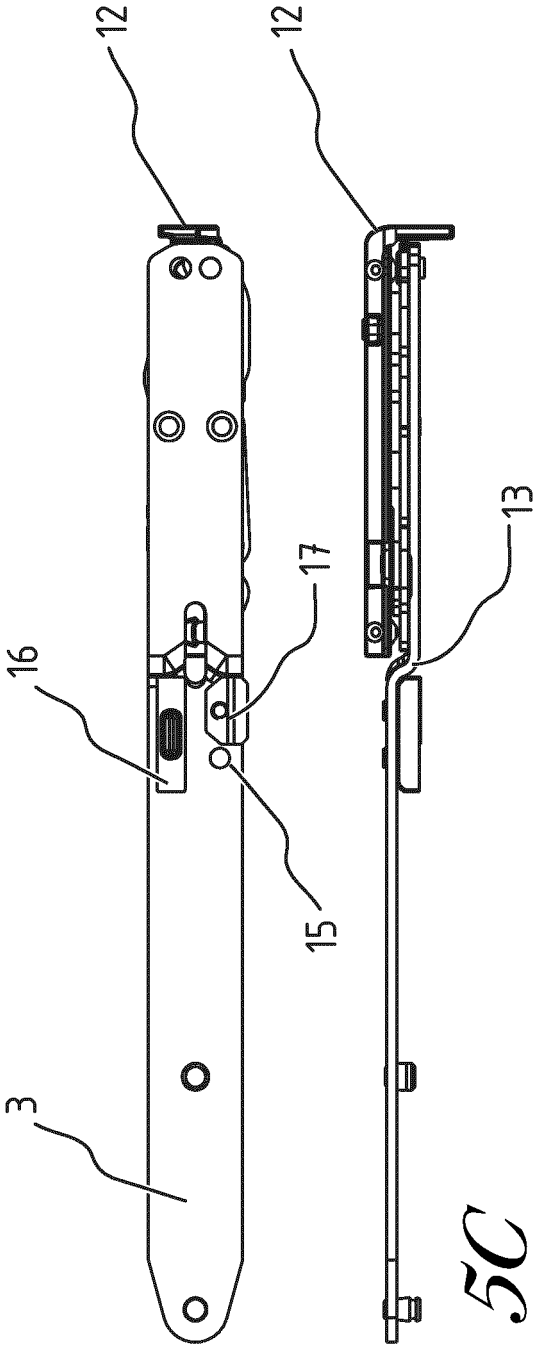

Fig. 5C

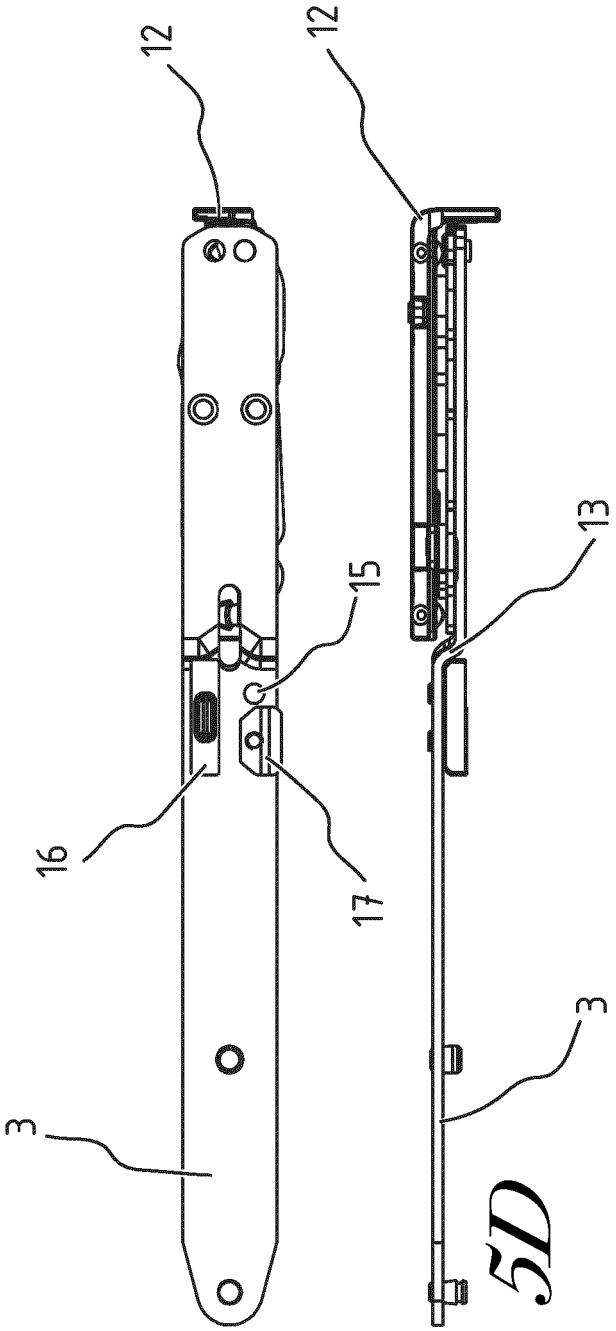

Fig. 5D

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 21 1844

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	DE 27 24 246 A1 (HUECK FA E) 30 November 1978 (1978-11-30) * page 4, paragraph 4 - page 5, paragraph 1; figures 5a,5b *	1-9	INV. E05D15/52
A,D	BE 1 017 949 A5 (PARYS REMI E VAN [BE]) 12 January 2010 (2010-01-12) * the whole document *	1-9	
A	DE 198 21 129 C1 (SIEGENIA FRANK KG [DE]) 21 October 1999 (1999-10-21) * figures 10-13 *	1-9	
A	CN 214 195 942 U (SHENZHEN HOPO WINDOW CONTROL TECH CO LTD) 14 September 2021 (2021-09-14) * figures 1-5 *	1-9	
A	CN 209 369 567 U (FOSHAN SHUNDE LELIU HUIQIANG METAL PRODUCT CO LTD) 10 September 2019 (2019-09-10) * abstract; figures 1-3 *	1-9	TECHNICAL FIELDS SEARCHED (IPC) E05D E05C
A	CN 217 872 449 U (GUANGDONG XIONG JIN METAL PRODUCTS CO LTD) 22 November 2022 (2022-11-22) * figures 10-13 *	1-9	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 March 2025	Berote, Marc

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 24 21 1844

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.

28-03-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2724246 A1	30-11-1978	NONE	
BE 1017949 A5	12-01-2010	AT E486187 T1	15-11-2010
		BE 1017949 A5	12-01-2010
		CN 101532365 A	16-09-2009
		EP 2080863 A1	22-07-2009
		ES 2354522 T3	15-03-2011
		PL 2080863 T3	29-04-2011
		PT 2080863 E	02-02-2011
		US 2009183449 A1	23-07-2009
DE 19821129 C1	21-10-1999	AT E215170 T1	15-04-2002
		DE 19821129 C1	21-10-1999
		EP 0957224 A1	17-11-1999
		PL 333049 A1	22-11-1999
CN 214195942 U	14-09-2021	NONE	
CN 209369567 U	10-09-2019	NONE	
CN 217872449 U	22-11-2022	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

- BE 1017949 A5 **[0006]**