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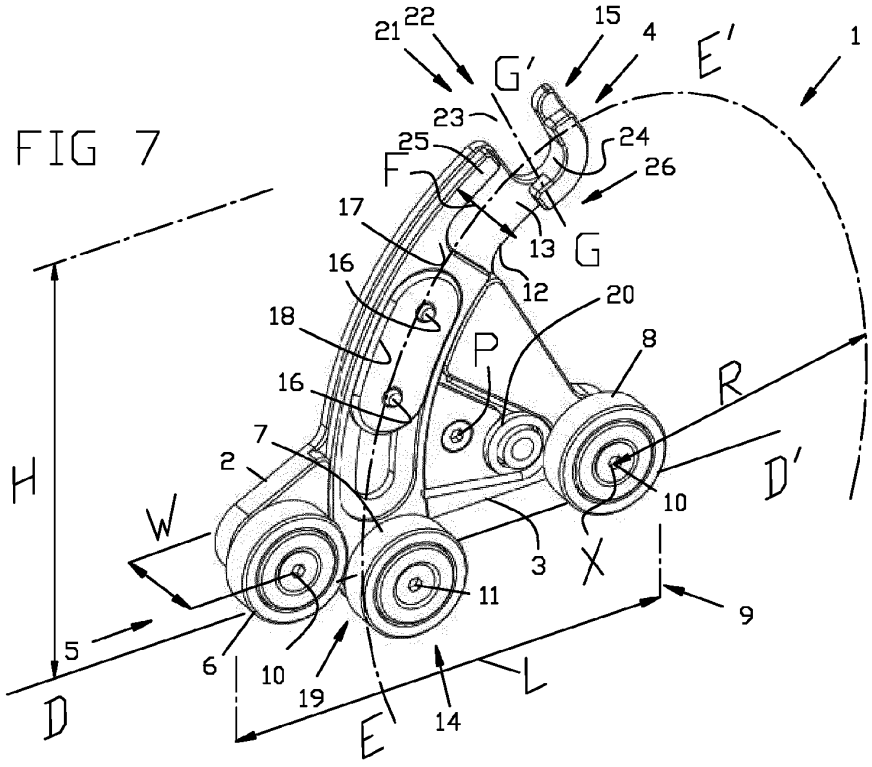
(54) **A guiding component, as well as a mounting kit part, a mounting kit and a window comprising at least one such a guiding component.**

(57) A guiding component (1) for guiding a window sash part (74) with respect to a window casing (29) during a movement of the window sash (28) which movement is a rotational or translational movement or a combination thereof, comprising at least the following elements:
- a track mover (5) for guiding the guiding component (1) in a guiding track (53) ; and,
- a guiding component connection means (21) which can be activated for making and releasing a releasable, rotatable connection between the window sash part (74) and the guiding component (1), respectively in a connecting status and a releasing status.

FIG 7



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Description

[0001] The present invention relates in first instance to a guiding component.

[0002] In particular, the present invention relates to such a guiding component which is intended for guiding a window sash part, with respect to a window casing during a movement of the window sash, which is a rotational or translational movement or a combination of both.

[0003] Moreover, such a guiding component is intended for travelling back and forward, for example on a guiding track provided on the window casing.

[0004] The guided window sash part is typically a fixed or in- and outwardly movable pin or pivot extending from a lateral side member of the window sash, but other forms of window sash parts, such as an opening or recess in a window sash member or a window sash part extending from a window sash member which is not shaped as a pin, are not excluded from the invention. The window sash can be formed by a frame having lateral side members and cross members surrounding a glazing panel.

[0005] However, according to the invention a window sash for which the guiding component of the invention is intended, can also consist of a so-called structural glazing panel itself, comprising a spacer frame or spacer frame structure having spacer frame cross members and spacer frame lateral side members which are actually forming the members of the window sash.

[0006] In still another embodiment the window sash can even be just a panel to be mounted to the window casing and to be guided by a guiding component of the invention.

[0007] In most applications known in the prior art in which a window sash needs to be guided with respect to a window casing, no guiding components in the meaning of the present application are used for that purpose, but the window sash part to be guided is actually forming the guiding component itself.

[0008] Indeed, in these known cases, guiding tracks are provided at both sides of the window casing, and a window sash part such as a fore-mentioned pin or the like provided at both sides of the window sash is introduced directly into the corresponding guiding track without the use of an additional guiding component and the pin can make a translational movement directly in the guiding track, most of the time also combined with and simultaneous with a rotational movement of the pin directly in the guiding track.

[0009] It is obvious that this type of guidance system is rather primitive and that it is not a very good solution from a mechanical point of view.

[0010] In order to improve the guidance, also some cases are known according to the state of the art wherein guiding components are used for guiding a window sash part with respect to a window casing.

[0011] These known guiding components are executed as a shoe having a broad base sometimes provided with wheels, the shoe being hinge mounted on the window sash part to be guided (i.e. a pin extending from a window sash member).

[0012] The broad base of the shoe is intended for increasing the guidance of the window sash part over a guiding track, so to better guide the window sash part for as far as the translational part of its movement is concerned.

[0013] The hinge mount of the shoe to the window sash part ensures of course a better guidance of the window sash part for as far as the rotational part of its movement is concerned.

[0014] In that way the guiding component is provided with elements which are each adapted for their specific guiding purpose, i.e. for translational movements or rotational movements, and which can provide the needed guidance independently from one another, so to increase the total guiding performance.

[0015] Although these known guiding components perform very well in the windows of the known types provided with mechanisms for opening and closing a window sash with respect to a window casing by tilting, reversing, sliding and or a combination thereof in a known manner, there is a need for another kind of guiding components which make it possible to develop a new type of windows allowing other and new kinds of manipulations of the window sash, which is an aim of the present invention.

[0016] Hereby, special attention is paid to roof windows, but not exclusively to roof windows.

[0017] Indeed, according to the state of the art essentially two types of mounting a window sash to a window casing exist, i.e. a mounting wherein the window sash is mounted on top of the window casing members at the outside of the window casing, as is represented in figure 1, hereafter indicated as a top assembly, and a mounting wherein the window sash is mounted in between the window casing members, as is represented in figure 2, hereafter indicated as an enclosed assembly.

[0018] It is clear that the top assembly has the advantage that the window sash members do not obstruct the opening in the window casing so that more light can pass through the opening than with a window sash mounted in an opening of equal dimensions by applying an enclosed assembly.

[0019] On the other hand, in an enclosed assembly of the window sash, the window has a smaller height, since the window sash is mounted within the window casing.

[0020] Furthermore, in the known roof windows the window sash is mounted by means of window fittings to the window casing in order to allow certain typical movements of the window sash.

[0021] A known type of roof window is for example illustrated in figure 3.

[0022] The window sash can make a turning movement with respect to the window casing, the window sash being rotated around a side edge AA' of the window casing.

[0023] This simple construction can be realized with a top assembly as well as an enclosed assembly of the

window sash, but a disadvantage of such a window is that the outside surface of the window pane is difficult to reach for cleaning.

[0024] This problem is solved in other types of known roof windows, a first example of which is represented schematically in figure 4.

[0025] In this type of roof window the window sash can pivot around a pivot axis BB' which passes more or less centrally through the window sash.

[0026] A disadvantage of this type of windows is that it can only be realized with an enclosed assembly of the window sash, so that a large part of the window opening is obstructed for incident light.

[0027] Furthermore, when the window sash is opened, rain can rather easily enter in the building and the view of a person is restricted due to the presence of the window sash, while space inside the building is also needed during the pivoting movement.

[0028] Figure 5 illustrates a known window which is a combination of both former examples and wherein the window sash can undergo a turning movement around the side edge AA' in a turning mode of operation, as well as a pivoting movement around the central pivot axis BB' in a pivoting mode of operation.

[0029] When opened in the turning mode of operation, this type of windows have not the above-mentioned disadvantages of the known windows having only a turning mode of operation, while the pivoting mode is practical for cleaning purposes.

[0030] Nevertheless, this type of window can only be realized with a window sash mounted in an enclosed assembly, resulting again in an important loss of light transmission compared to a top assembly.

[0031] Finally, still another type of known windows is illustrated in figure 6, the window sash being mounted this time such that a side edge of the window sash can slide over the window casing, indicated by the arrows in figure 6, while the window sash is making simultaneously a rotating movement around a pivot axis CC'.

[0032] The known windows of this type have as advantage that they can be realized with a window sash mounted in a top assembly as well as in an enclosed assembly, but, when opening the window sash, the view is still obstructed partly, while rain can penetrate through an opening at the top side, which are clearly disadvantages of this type of window.

[0033] It is therefore an objective of this invention to overcome one or more of the above-mentioned drawbacks or possibly other non-mentioned drawbacks of the known windows.

[0034] In particular it is an aim of the invention to realize a window which has at least two modes of operation, a first mode wherein the window sash can be turned around a side edge and a second mode wherein the window sash outer surface can be reversed towards the window casing for cleaning purposes, and wherein during the entire reversing movement the window sash is kept at the outside of the window casing and is not partly turning inwardly through the window casing opening.

[0035] Still another purpose of the invention is to avoid rain penetration, when the window sash is opened, and to ensure that the opening in the window casing is used to a maximum for light penetration.

[0036] The invention proposes also an interesting solution for new types of windows, especially a new type of roof window, wherein the structural strength of the window sash is provided substantially only by a spacer frame structure of a structural glazing panel and wherein the window sash is mounted only by using this spacer structure.

[0037] In these new types of windows, the spacer frame structure of the structural glazing panel is the principal load bearing part of the window sash, so that only a very light window sash frame can be used or even no window sash frame at all, the spacer frame structure forming in this case the window sash frame.

[0038] In order to attain these aims, the present invention first of all proposes a new type of guiding component for guiding a window sash part with respect to a window casing during a movement of the window sash, which movement is a rotational or translational movement or a combination of both, the guiding component comprising at least the following elements:

- a track mover for guiding the guiding component in a guiding track; and,
- a guiding component connection means which can be activated for making and releasing a releasable, rotatable connection between the window sash part and the guiding component, respectively in a connecting status and a releasing status.

[0039] Such a guiding component according to the invention is very advantageous in that it is provided with guiding component connection means, by which a rotatable or hinged connection between the guiding component and a window sash part can be temporarily made, typically in order to allow a certain mode of operation of the window wherein such a hinged and guided connection of the window sash part is needed, while by releasing the hinged connection again, the window sash can be set in another mode of operation, wherein there is no need for such a guidance of the concerned window sash part and wherein there is on the contrary a need for a free non confined movement of the window sash part.

[0040] This is not possible with the known guiding components, since these guiding components are permanently connected to the window sash part restricting the movement of the window sash part in all modes of operation.

[0041] A preferred embodiment of a guiding component according to the invention further comprises a track mover locking means which can be activated for locking and releasing the track mover of the guiding component, respectively for preventing in a locked status and allowing in an unlocked status a translational movement of the

track mover.

[0042] Such a guiding component in accordance with said preferred embodiment allows for a locking of the guiding component in the guiding track under certain circumstances, for example in order to ensure its position on the guiding track corresponding to a position in which the window sash part can connect with the guiding component when needed.

[0043] The invention also relates to a mounting kit part comprising at least one guiding component in accordance with the invention, and which mounting kit part is intended for mounting a window sash to a window casing in a reversible manner and which is mountable between one lateral side member of the window sash and the window casing, and which will be described further in the text more in detail by referring to the drawings.

[0044] Furthermore, the invention also relates to a complete mounting kit for mounting a window sash to a window casing in a reversible manner, which mounting kit comprises a pair of fore-mentioned mounting kit parts according to the invention, the mounting kit parts being symmetric in shape and mountable respectively at opposite lateral side members of the window sash and window casing, the mounting kit further comprising central actuating means connectable to actuating means of each mounting kit part for their simultaneous actuation.

[0045] Finally, the invention also relates to a window comprising:

- a window casing providing an opening and having casing lateral side members and casing cross members;
- a window sash comprising:
    - ○ sash lateral side members;
    - ○ sash cross members;
    - ○ a pivot axis around which the window sash can pivot and which is positioned between the cross members and which is parallel therewith;
- a pair of retaining arms mounted at both sides of the window sash for holding the window sash into the window casing, and each having:
    - ○ a first retaining arm extremity which is connected in a pivoting manner to the window sash at a position coincident with the pivot axis;
    - ○ a second retaining arm extremity which is hinge mounted to the window casing at or in the vicinity of a casing cross member; and, wherein, according to the invention, the window further comprises:
- a pair of guiding track members, a guiding track member being provided at each lateral side member of the window casing;
- a guiding track in each guiding track member provided with a guiding component in accordance with the invention as described before, the track movers of which being movable in an unlocked status along the concerned guiding track at least over a part of the guiding track extending from a first guiding track member extremity;
- a first pair of window sash parts and a second pair of window sash parts provided at opposite lateral sides of the pivot axis on the window sash;
- the guiding component connection means of each guiding component being such that it can work together with a window sash part of the first pair of window sash parts for making or releasing a releasable connection between that window sash part and the concerned guiding component; respectively in a connecting status and a releasing status; and,
- a retaining arm connection means on each retaining arm for making and releasing a releasable connection between a window sash part of the second pair of window sash parts and the retaining arm, respectively in a connecting status and a releasing status.

[0046] With such a window in accordance with the invention at least two modes of operation can be realized as follows:

- a standard mode of operation, wherein the retaining arm connection means are in the connected status, the window sash being connected to the retaining arms at its pivot axis as well as at the second pair of window sash parts, so that the window can be opened and closed by turning the window sash simultaneously with the retaining arms around one of the side edges of the window sash with the retaining arm hinges (see e.g. figures 9 and 10); and,
- a reverse mode of operation, the window sash being connected to the retaining arms at its pivot axis and being connected to the guiding components with its first pair of window sash parts, so that the window sash can be reversed, i.e. the outside of the window sash can be turned towards the window casing and vice versa, by a combined movement comprising a rotational movement of the window sash around the pivot axis and a translational movement of the second pair of pins of the window sash which are guided by the guiding components along the guiding tracks (see e.g. figures 12 to 14).

[0047] It is clear that with such a window in accordance to the invention the problems encountered in the prior art windows are solved, since, in the standard mode of operation, the view of a person is not obstructed and there is no rain penetration through a top opening; in the reverse mode of operation, the window can still be reversed for cleaning purposes, and, in both modes of operation, the window sash does not turn into the space inside the building.

[0048] Furthermore, the window sash can be mounted in a top assembly as well as in an enclosed assembly.

[0049] With the intention of better showing the characteristics of the invention, hereafter, as example without any limitative character, some preferred embodiments are described of a guiding component, a mounting kit part, a mounting kit and a window in accordance with the invention, with reference to the accompanying drawings, wherein:

figures 1 and 2 represent cross-sectional views through a roof window, the window sash of which being mounted to the window casing respectively in a top assembly and an enclosed assembly;
figures 3 to 6 illustrate in perspective view possible movements made by a window sash in windows known according to the prior art;
figures 7 and 8 are perspective views on a guiding component according to the invention in a direction corresponding to arrow F7 in figure 24, respectively with the guiding component connection means in the releasing status and in the connecting status;
figures 9 to 11 are perspective views on a roof window according to the invention, in a closed position respectively in two consecutive positions during opening of the window sash in standard mode of operation;
figures 12 to 14 are perspective views, similar to the views of figures 9 to 11, on the same roof window according to the invention, respectively in consecutive positions during opening of the window sash in reverse mode of operation;
figures 15 to 17 represent side views on a closed window as illustrated in figure 9 in a direction indicated by arrows XV to XVII, in three consecutive stages during a change from standard operation mode to reverse operation mode;
figures 18 to 20 illustrate the position of the handle of the central actuating means respectively corresponding to the stages represented in figures 15 to 17;
figure 21 is a side view in a direction indicated by arrows XXI on the window opened in the standard operation mode, as illustrated in figure 11;
figure 22 combines two side views, in a direction indicated by arrows XXII in figures 12 and 14, on the window opened in the reverse mode of operation, part F12 and part F14 of figure 22 representing the side views corresponding respectively to the situations of figures 12 and 14;
figure 23 is a cross-sectional view along line XXIII-XXIII in figure 9; and,
figures 24 and 25 are perspective views on a larger scale of the part indicated in figure 22 by F24 and F25, respectively in a completely assembled status and a partly disassembled status.

[0050] A guiding component 1 according to the invention and illustrated in detail in figures 7 and 8 has a guiding component body 2, which is in this example formed by a flat part 2 with a more or less triangular side profile having a base 3 and a top 4 at a height H above the base 3, as well as a center of mass P.

[0051] The guiding component 1 is among others intended for making a movement which consists of a translational movement whereby its center of mass P is displaced with respect to a guiding track and a rotational movement whereby the guiding component undergoes a rotation around its center of mass P.

[0052] All parts of the guiding component 1 which enable such a movement of the guiding component 1 over a guiding track, regardless whether it is a movement by rolling or by sliding, form a track movable part 5 or track mover 5 of the guiding component 1.

[0053] In the represented example, the track mover 5 is partly formed by the base 3 of the guiding component body 2, which base 3 is for the purpose of moving the guiding component 1 over a guiding track provided with a certain length L which is sufficiently large in order to ensure a good stability of the guiding component 1 during this translational movement.

[0054] Furthermore, the guiding component 1 is in this embodiment executed as a carriage 1 having multiple wheels 6, 7 and 8 which support the guiding component 1 at the base 3 and by which the guiding component 1 can ride over a guiding track, if at least certain conditions are fulfilled as will be explained further in the text.

[0055] These wheels 6, 7 and 8 also form a constituent part of the track mover 5 for guiding the guiding component 1 in a guiding track.

[0056] Nevertheless, it is not excluded from the invention to execute the guiding component 1 and more in particular the track mover 5 of the guiding component 1 otherwise, for example without wheels and the base 3 of the guiding component body 2 intended for making a direct sliding movement over a guiding track.

[0057] The wheels 6, 7 and 8 are in the represented embodiment all provided at the same side 9 of the guiding component body 2, so to minimize the width W of the guiding component 1, and so that the wheels 6, 7 and 8 can roll in a same guiding track.

[0058] However, it is as an alternative not excluded to replace each wheel 6, 7 or 8 by a pair of wheels provided at opposite sides of the guiding component body 2, so to increase the lateral stability of the guiding component 1 during its translational movement over a guiding track.

[0059] Wheels 6 and 8 are provided at the longitudinal extremities of the base 3 of the guiding component 1 and are freely rotatable around their central axis on little shafts 10 which are provided fixedly on the guiding component base 3.

[0060] These wheels 6 and 8 will hereafter briefly be indicated as being fixedly positioned wheels 6 and 8, meaning of course that they are fixedly positioned on the guiding component 1, not with respect to the guiding track.

[0061] In the represented embodiment, only two fixedly positioned wheels 6 and 8 are provided, which are there-

fore automatically aligned with one another, but it is not excluded from the invention to provide more than two fixedly positioned wheels which are all aligned with one another in order to ensure a fluent movement over a guiding track.

[0062] Wheel 7 is of another type in that it is freely rotatable around its central axis on a shaft 11 which is this time not fixedly positioned on the guiding component body 2, but which shaft 11 is fixedly positioned on a slider 12, this slider 12 being movable with respect to the guiding component body 2.

[0063] The wheel 7 will for that reason be indicated hereafter as a movably positioned wheel 7.

[0064] The slider 12 is introduced in a recess 13 which is provided at the side 9 of the guiding component body 2 and which extends from an intermediate base part 14 at the base 3 of the guiding component body 2 and intermediate between the wheels 6 and 8, to a top part 15 at the top 4 of the guiding component body 2.

[0065] The slider 12 and recess have a complementary shape allowing a back and forward sliding movement of the slider 12 in the recess 13.

[0066] In the embodiment represented in figures 7 and 8 the recess 13 and the slider 12 are shaped as an arc EE' having a width F with a radius of curvature R and a center of curvature X, which is coincident in this case with the shaft 10 of wheel 8.

[0067] In order to limit the backward and forward movement of the slider 12 along the arc EE' in the recess 13, two upstanding pins 16 provided centrally in the recess 13 extend through a passage 17 provided centrally in the slider 12.

[0068] Furthermore, a mounting plate 18 partly covering the slider 12 and connected to the pins 16 keeps the slider 12 in the recess 13.

[0069] In the embodiment represented in figures 7 and 8, the slider 12 fulfills two main functions at the same time.

[0070] First of all, it is a constituent part of a track mover locking means 19 of the guiding component 1, which track mover locking means 19 is intended for locking and releasing the track mover 5, respectively for preventing in a locked status, as represented in figure 7, and allowing in an unlocked status, as represented in figure 8, a translational movement of the track mover 5 with respect to a guiding track.

[0071] The movably positioned wheel 7 is in the embodiment here described also a constituent part of this track mover locking means 19.

[0072] In particular, the movably positioned wheel 7 is movable by being mounted on the slider 12 between an out of line position corresponding to the locked status, represented in figure 7, wherein the movably positioned wheel 7 is out of line with respect to the fixedly positioned wheels 6 and 8, and an aligned position, corresponding to the unlocked status, represented in figure 8, wherein wheel 7 is aligned with the fixedly positioned wheels 6 and 8 along a direction DD' parallel to the base 3 corresponding to the direction DD' of movement on a guiding track.

[0073] In the represented case, the slider 12 is furthermore spring activated by a torsion spring 20 acting in a direction to bring the movably positioned wheel 7 in the out of line position, corresponding to the locked status of figure 7.

[0074] It is clear that in this embodiment the track mover locking means 19 can be activated by pushing the slider 12 into the unlocked status or by releasing the slider 12 in which case it returns automatically to its locked status.

[0075] Secondly, the slider 12 also forms a constituent part of a guiding component connection means 21 which is, in its broadest definition, intended for making and releasing a releasable, rotatable connection between a window sash part, typically a pin extending from a window sash member, and the guiding component 1, respectively in a connecting status, represented in figure 8, and a releasing status, represented in figure 7.

[0076] In the represented embodiment, the guiding component connection means 21 comprises, on the one hand, a rounded notch 22 provided in the guiding component body 2, in particular at the top 4 in the recess 13.

[0077] This rounded notch 22 is in this case more or less symmetric with respect to a radial direction GG' of the arc EE', has an open side 23 in a direction away from the center of curvature X and is intended for receiving and releasing a window sash part through that open side 23 of the notch 22.

[0078] The rounded shape of the notch 22 forms a kind of bearing surface 24 for supporting window sash parts having a cylindrical shape, such as pins or shafts or the like, in a rotatable manner.

[0079] In the represented embodiment, the guiding component connection means 21 comprises, on the other hand, a curved shutter 25, which extends from the extremity 26 of the slider 12 near the top 4 along the arc EE'.

[0080] By being a part of the slider 12, the shutter 25 is movable with respect to the guiding component body 2, in particular between a closed position corresponding to the connecting status, represented in figure 8, and an open position, corresponding to the releasing status, and which is represented in figure 7.

[0081] In the closed position, the shutter 25 extends at least partially over the open side 23 of the notch 22 and forms together with the notch 22, in particular with the bearing surface 24 of the notch 22, an enclosure 27 in order to prevent a window sash part received in the notch 22 from being released from the notch 22.

[0082] In the open position of the shutter 25, the open side 23 of the notch 22 is unobstructed by the shutter 25 in order to allow a window sash part of being received into the notch 22 or being released from the notch 22 via the open side 23 of the notch 22.

[0083] Since, in the case represented in figures 7 and 8, the shutter 25, as well as the wheel 7, is provided on the movable slider 12, the position of both is interrelated,

and as a consequence there is in this case also a direct relation between the status of the track mover locking means 19 and the guiding component connection means 21.

[0084] In particular, the movably positioned wheel 7 is in the aligned position corresponding to the unlocked status when the shutter 25 is in the closed position corresponding to the connecting status.

[0085] Similarly, but the other way around, the movably positioned wheel 7 is in the out of line position corresponding to the locked status, when the shutter 25 is in the open position corresponding to the released status.

[0086] A guiding component 1 in accordance with the invention is intended for being used as an element for guiding a window sash 28 with respect to a window casing 29 in a window 30, in particular in a roof window 30, according to the invention.

[0087] An example of such a roof window 30 in accordance with the invention is illustrated in different positions in figures 9 to 14, the window being mounted in a roof under an angle Z with respect to the vertical direction VV'.

[0088] The window casing 29 is formed by a pair of parallel casing lateral side members 31 and 32, and, a pair of parallel casing cross members 33 and 34, respectively a bottom casing cross member 33 and a top casing cross member 34, the window casing 29 surrounding an opening 35.

[0089] The window sash 28 comprises a pair of parallel sash lateral side members 36 and 37, and, a pair of parallel sash cross members 38 and 39, respectively a bottom sash cross member 38 and a top sash cross member 39, which form the border of a glazing panel 40.

[0090] The glazing panel 40 has an outside glazing surface 41, which is the surface of the glazing panel 40 intended for forming the outside of the window 30 in contact with the outside environment, when the window 30 is in the closed status, as illustrated in figure 9.

[0091] The glazing panel 40 has also an inside glazing surface 42, which is limiting the space inside a building when the window 30 in is the closed status.

[0092] Figures 9 to 11 illustrate the standard mode of operation of the window 30, wherein the window sash 28 can be opened and closed by rotating the window sash 28 around an axis I-I', in the vicinity of top sash cross member 39 and top casing cross member 34, the axis I-I' being parallel therewith.

[0093] Figures 12 to 14 illustrate the reverse mode of operation of the window 30, wherein the window sash 28 can be reversed by the combination of, on the one hand, a translational movement of the bottom sash cross member 38 over the casing lateral side members 31 and 32 towards the top casing cross member 34, and, on the other hand, a rotational movement of the window sash 28 around a pivot axis J-J' which is positioned between the sash cross members 38 and 39 and which is parallel therewith.

[0094] As is illustrated for example in figures 13 and 14, when the window sash 28 is reversed, the outside glazing surface 41 is in some positions turned towards the window casing 29, while the inside surface 42 is in those positions turned towards the outer environment.

[0095] The mechanism behind the different modes of operation of the window 30 as well as the role of the guiding component 1 therein, will now be described in more detail by referring to figures 15 to 22, which are side views on a lateral side of the window 30.

[0096] The window sash 28 is mounted to the window casing 29 by means of a mounting kit 43 in accordance with the invention.

[0097] It is clear that such a mounting kit 43 comprises a pair of mounting kit parts 44 according to the invention, which are symmetric in shape, each mounting kit part 44 being mounted between a sash lateral side member 36 or 37 and the window casing 28.

[0098] The mounting kit 44 further comprises central actuating means 45, provided at the top casing cross member 34 which is connectable to each mounting kit part 44 for their simultaneous actuation.

[0099] It is clear that the central actuating means 45 can also be provided in the bottom casing cross member 33.

[0100] Apart from a guiding component 1 described here before, each mounting kit part 44 furthermore comprises a number of essential elements, i.e. a guiding track member 46, a retaining arm 47 and an actuating means 48 for changing or setting the status of actuated elements.

[0101] The guiding track member 46 is located on the concerned lateral side member 31 or 32 of the window casing 29, in particular at the outmost side of that lateral side member 31 or 32, adjacent to the window sash 28 when the window 30 is in the closed position.

[0102] The guiding track member 46 has a first guiding track member extremity 49 and a second guiding track member extremity 50, which are respectively mounted in the vicinity of the bottom casing cross member 33 and in the vicinity of the top casing cross member 34.

[0103] The guiding track member 46 has furthermore a certain height K, which is the distance K between a bottom side 51 and a top side 52 of the guiding track member 46, the top side 52 being mounted towards the window sash 28.

[0104] A guiding track 53 is provided on the guiding track member 46 extending over the length of it.

[0105] The guiding track 53 has a sloped part 54 of a length corresponding more or less to the length L of the base 3 of a guiding component 1, which sloped part 54 starts at the first extremity 49 from the bottom side 51 of the guiding track member 46 in an inclined direction towards the top side 52 of the guiding track member 46.

[0106] The remaining part 55 of the guiding track 53 extends alongside the top side 52 of the guiding track member 46.

[0107] A guiding component 1 is provided in the guiding track 53, the track mover 5 of which being movable in the unlocked status along the guiding track 53 over at

least a part of the guiding track 53 extending from the first guiding track member extremity 49, but preferably the track mover is movable over the entire length of the guiding track member 46.

[0108] The sloped part 54 of the guiding track 53 is interrupted, as can be seen more in detail in figure 25, providing a space 56 in which the slider 12 of the guiding component 1 can slide when the guiding component 1 is positioned at the end of the guiding track 53 at the first guiding track member extremity 49, so to bring the track mover 5 of the guiding component 1 in the locked status.

[0109] The retaining arms 47 are intended for retaining the window sash 28 to the window casing 29 under all circumstances, regardless of the operation mode in which the window is used.

[0110] Each retaining arm 47 has a first retaining arm extremity 57 and a second retaining arm extremity 58.

[0111] At the first retaining arm extremity 57, each retaining arm 47 is provided with a retaining arm hinge 59, which is intended for realizing a permanent, fixedly positioned, but hinged interconnection between the retaining arm 47 and the window casing 29 in the vicinity of the second guiding track member extremity 50.

[0112] The retaining arm hinges 59 at the top casing cross member 34 of the window casing 29 or at opposite lateral sides of the window casing 29 are aligned with one another along the axis of rotation I-I' described herebefore.

[0113] At the second retaining arm extremity 58, each retaining arm 47 is provided with a window sash pivoting means 60, which is intended for realizing a permanent, fixedly positioned, but pivoting interconnection between the retaining arm 47 and a lateral side member 36 or 37 of the window sash 28 at an intermediate position 60 of the concerned lateral side member 36 or 37 which is coincident with the pivot axis J-J', described herebefore.

[0114] Near to its first retaining arm extremity 57, each retaining arm 47 is furthermore provided with a retaining arm connection means 62, which can be activated for making and releasing a releasable connection between the window sash 28 and the concerned retaining arm 47, respectively in a connecting status and a releasing status.

[0115] The retaining arm connection means 62 comprises a sliding element 63 which is activated by a compression spring 64 and which is provided with a notch 65 for receiving a window sash part, such as for example a pin extending from the window sash 28.

[0116] The sliding element 63 is movable forward and backward on the retaining arm 47 between a forward position, corresponding to the connecting status, wherein a window sash part received in the notch 65 is locked and thus connected, and a backward position corresponding to the releasing status, wherein the window sash part is unobstructed from entering or leaving the notch 65, the compression spring 64 pushing the sliding element 63 towards the forward position.

[0117] The sliding element 63 is beveled towards the notch 65 in order to automatically receive a window sash part falling on the sliding element 63 when it is in the connecting status, the force of the window sash 28 on the bevel 66 pushing the sliding element 63 temporarily backwards to the releasing status.

[0118] The actuating means 48 of each mounting kit part 44 comprises in the represented embodiment a pushrod 67 provided at its both extremities with a tappet, respectively 68 and 69.

[0119] The pushrod 67 is movable back and forward along the guiding track member 46 in a rail, a groove or the like or in a space provided under or in the vicinity of the guiding track 53, between a neutral position, represented in figures 15 and 18, an intermediate position, represented in figures 16 and 19, and a final position, represented in figures 17 and 20.

[0120] In the represented embodiment, the extremity of the push rod 67 with tappet 69 is in the neutral position more or less aligned with the second extremity 50 of the guiding track member 46.

[0121] In the intermediate position the push rod 67 is pushed over a first step, i.e. distance M, towards the first extremity 49 of the guiding track member 46, while in the final position the push rod 67 is still further pushed in the same direction over a second step, i.e. distance N.

[0122] The actuating means 48 are intended for setting the status of actuated elements, i.e. the status of the retaining arm connection means 62, the status of the guiding component connection means 21 and the status of the track mover locking means 19 of the guiding component 1.

[0123] The status of the guiding component connection means 21 and the track mover locking means 19 of the guiding component 1 are set by positioning the tappet 68 in the space 56 provided in the sloped part 54 of the guiding track 53, i.e. by closing respectively opening the gap or space 56, so to prevent respectively allow the movably positioned wheel 7 of the guiding component 1 to enter in that space 56.

[0124] The status of the retaining arm connection means 62 is set by positioning the other tappet 69, which tappet 69 can be brought into contact with the sliding element 63 for exerting a force against the compression spring 64 so to bring the sliding element 63 into the releasing status.

[0125] In each of the three above-mentioned positions of the pushrod 67 the status of each of the actuated elements 62, 21 and 19 are set to a particular combination.

[0126] As illustrated in the figures 15 and 18, the neutral position of the pushrod 67 corresponds to a combined status of the actuated elements, hereafter indicated as the standard mode status, as follows:

- the retaining arm connection means 62 is in the connecting status, the tappet 69 being at a distance M from the sliding element 63;
- the guiding component connection means 21 is in the releasing status, the tappet 68 being not in the

space 56 allowing the wheel 7 to slide into that space 56; and,

- as a consequence, the track mover locking means 19 is in the locked status.

[0127] As illustrated in the figures 16 and 19, the intermediate position of the pushrod 67 at a distance M from the neutral position corresponds to a combined status of the actuated elements, hereafter indicated as the secured status, as follows:

- the retaining arm connection means 62 is still in the connecting status, the tappet 69 being almost in contact with the sliding element 63;
- the guiding component connection means 21 is in the connecting status, the tappet 68 being moved into the space 56 so to push the wheel 7 out of that space 56; and,
- as a consequence, the track mover locking means 19 is in the unlocked status.

[0128] The secured mode is an intermediate status which is such that when the window sash 28 is in the closed position it is kept by both guiding components 1 while being connected to the retaining arms 46 at the pivot axis JJ' as well as at retaining arm connection means 62.

[0129] As illustrated in the figures 17 and 20, the final position of the pushrod 67 at a distance N further from the intermediate position corresponds to a combined status of the actuated elements, hereafter indicated as the reverse mode status, as follows:

- the retaining arm connection means 62 is now brought into the releasing status, the tappet 69 having pushed the sliding element 63 to the backward position;
- the guiding component connection means 21 is still in the connecting status, the tappet 68 not having moved during this step, which is realized by moving the push rod 67 in a passage 70 provided in the tappet 68 against the force of a compression spring 71; and,
- as a consequence, the track mover locking means 19 is still in the unlocked status.

[0130] Figures 18 to 20 illustrate schematically a possible embodiment for realizing the central actuating means 45 provided at the top casing cross member 34 and which are connected or are at least in contact with the actuating means 48 of each mounting kit part 44, i.e. with the pushing rod 67, for their simultaneous actuation.

[0131] This central actuating means comprise a handle 72 provided centrally between the casing lateral side members 31 and 32, as well as a mechanism 73 which is in se known according to the state of the art and which is therefore not further elaborated in detail, by which a rotating movement of the handle 72 is transformed into a pushing movement on the push rods 67, hereby passing beyond the concerned corners of the window sash 28 by well-known corner transmissions.

[0132] Figure 18 represents the standard mode status, in which the handle 72 is positioned on and parallel to the top casing cross member 34.

[0133] By turning the handle 72 over an angle of 90°, the actuating means 48 are brought into a position corresponding to the secured status, as illustrated in figure 19.

[0134] A slight further turning of the handle 72 over for example 45° brings the sliding elements 63 into a releasing status, corresponding to the reverse mode status, which is represented in figure 20.

[0135] In order to be functional, the window sash 28 of the window 30 according to the invention is provided with window sash parts 74 and 75 which can work together with different parts of the mounting kit 43.

[0136] In particular, the window sash 28 is provided with a first pair of window sash parts 74, which are in this case a first pair of pins 74 extending outwardly from the window sash lateral side members 36 and 37 more or less at the center thereof, the pins 74 being positioned nearby the bottom sash cross member 38 and parallel therewith.

[0137] The window sash 28 is also provided with a second pair of window sash parts 75, which are in this case a second pair of pins 75 extending outwardly with respect to the window sash lateral side members 36 and 37 and at a position somewhat below thereof, and which are positioned at the opposite lateral side of the pivot axis J-J' nearby the top sash cross member 39 and parallel therewith.

[0138] Hereby, the guiding component connection means 21 of each guiding component 1 is such that it can work together with a window sash part 74 of the first pair of window sash parts 74 for making or releasing simultaneously a releasable connection between the pins 74 and both concerned guiding components 1, respectively in a connecting status and a releasing status.

[0139] Similarly, the pair of retaining arm connection means 62 are each capable of working together with a pin 75 of the second pair of pins 75 on the window sash 28 so to make and release simultaneously the releasable connection between the window sash 28 and both retaining arms 47.

[0140] Now, the functioning of the window 30 according to the invention is completely apparent.

[0141] Indeed, the window 30 has two modes of operation which are set by the central actuating means 45.

[0142] In the standard mode of operation, the actuating means 48 are in the neutral position and the actuated elements 19, 21 and 62 are brought into the standard mode status defined herebefore.

[0143] In this standard mode of operation, the window sash 28 can be brought from a closed position, illustrated in figure 15, to an opened position, illustrated in figure 21 by turning the window sash 28 simultaneously with the

retaining arms 47 around the axis I-I' at one of the side edges of the window sash 28 with the retaining arm hinges 59, the pins 74 being freely releasable from the guiding components 1.

[0144] In the reverse mode of operation, the actuating means 48 are brought in the final position and the actuated elements 19, 21, 62 are brought into the reverse mode status defined herebefore.

[0145] Hereby, in the closed position of the window sash 28, the pins 75 are freely releasable from the sliding elements 63, which situation is illustrated in figure 17.

[0146] So, in this reverse mode of operation, the window sash 28 can be reversed, i.e. the outside glazing surface 41 of the window sash 28 can be turned towards the window casing 29 and vice versa, by a combined movement comprising a rotational movement of the window sash 28 around the pivot axis J-J' and a translational movement of the first pair of pins 74 of the window sash 28 which are guided by the guiding components 1 along the guiding tracks 53.

[0147] In order to facilitate the opening and closing of the window sash 28, according to the invention a pair of supporting arms 76 is preferably provided, each supporting arm 76 linking the corresponding sash retaining arm 47 to the guiding track member 53.

[0148] The supporting arms 76 have a first supporting arm extremity 77 and a second supporting arm extremity 78, a pivoting interconnection 79 being provided between the first supporting arm extremity 77 and an intermediate position 80 on the sash retaining arm 47 and a movable pivoting means 81 being provide at the second supporting arm extremity 78 which is movable along the guiding track member 53 at least over a part of the guiding track member 53 extending from the second guiding track member extremity 50.

[0149] Preferably, a driving element 82, such as a spring, a motor, a chain driven actuator and so, is provided which is capable of pushing or pulling the movable pivoting means 81 towards the first guiding track member extremity 49 in order to overcome gravitational forces.

[0150] Figures 24 and 25 illustrate that the window 30 is preferably provided with additional mechanisms which prevent the malfunctioning of the window 30.

[0151] As an example, a safety means 83 is illustrated which prevents the guiding component connection means 21 from being activated to the connecting status for connecting the guiding component 1 to the window sash part 74, when the window sash 28 is not in a position ready for connection, i.e. when the pins 74 are not yet received in the bearing surface 24 on the guiding component 1.

[0152] This situation is detected by a first side 84 of a cantilever 85, which is pushed down by the window sash 28 when a pin 74 is received in the bearing surface 24.

[0153] The second side 86 of the cantilever 85 is standardly in a downward position, obtained by a torsion spring 87, and blocks the tappet 68 from moving forward by being in contact with a tappet extension 88.

[0154] When the first side 84 of the cantilever is pushed downwardly, the second side goes upwardly, leaving the tappet extension 88 free and allowing the tappet 68 to be pushed into the space 56 for activating the guiding component 1 to the corresponding status.

[0155] An additional notch 89 is provided in the second side 86 of the cantilever to grab the tappet extension 88, when the window sash 28 is being or has been reversed, so that the tappet 68 is temporarily and locked in a releasable manner in its final position, till the window sash 28 is returned to the closed position.

[0156] Of course additional and other kinds of safety means are not excluded from the invention.

[0157] Preferably, those safety means are located near the tappets 68 or 69 or near the handle 72, so that the safety means can lock the tappets 68 or 69 or the handle 72.

[0158] A dead-end sloping part 90 of the sloped part 54 near the first guiding track extremity 49 can be executed with sidewalls forming a narrowing slot 91 in order to hold the guiding component body 2 in a straight position when it is brought into the dead-end sloping part 90, so to increase the lateral stability of the guiding component 1 as well as to keep the guiding component 1 in place, when the actuated elements are in the standard mode status or in the secured status.

[0159] Preferably, a pushing spring or the like is provided between the sash 28 and the retaining arms 47, in the vicinity of the top sash cross member 39, which pushing spring is capable of pushing out the sash 28 when the push rod 67 is in the final position, so to start the reversing operation of the sash 28 and in order to absorb the movement of the sash 28 when the actuated elements are brought back into to secured status from the reversing mode status.

[0160] Also preferably, a torsion spring or the like is provided between the sash 28 and the retaining arms 47, in the vicinity of the window sash pivoting means 60, which torsion spring can twist when the sash 28 is being reversed with respect to the retaining arms 47.

[0161] Preferably, such a torsion spring exerts a torque which is proportional to the amount of twist in a direction opposite to the direction of the twist so to facilitate the start of the movement of the sash 28 in the reversed mode of operation, in order to bring it back to its closed position.

[0162] The present invention is by no means limited a guiding component 1, a mounting kit part 44, a mounting kit 43 and a window 30 according to the invention described as examples and illustrated in the drawings, but such a guiding component 1, a mounting kit part 44, a mounting kit 43 and a window 30 according to the invention can be realised in all kinds of variants, without departing from the scope of the invention.

Claims

1. A guiding component (1) for guiding a window sash part (74) with respect to a window casing (29) during a movement of the window sash (28) which movement is a rotational or translational movement or a combination of both, **characterized in that** the guiding component (1) comprises at least the following elements:

   - a track mover (5) for guiding the guiding component (1) in a guiding track (53); and,
   - a guiding component connection means (21) which can be activated for making and releasing a releasable, rotatable connection between the window sash part (74) and the guiding component (1), respectively in a connecting status and a releasing status.

2. A guiding component (1) according to claim 1, **characterized in that** it is executed as a carriage having multiple wheels (6-8), the wheels (6-8) forming a constituent part of the track mover (5) for guiding the guiding component (1) in a guiding track (53).

3. A guiding component (1) according to claim 1 or 2, **characterized in that** the guiding component further comprises a track mover locking means (19) which can be activated for locking and releasing the track mover (5), respectively for preventing in a locked status and allowing in an unlocked status a translational movement of the track mover (5).

4. A guiding component (1) according to claims 2 and 3, **characterized in that** it comprises fixedly positioned wheels (6,8) reely rotatable around their central axis on a shaft (10) which is fixedly positioned on a guiding component body (2), which fixedly positioned wheels (6,8) are aligned with one another, and, a movably positioned wheel (7) which is a constituent part of the track mover locking means (19), which is freely rotatable around its central axis on a shaft (11) which is movable on the guiding component body (2) between an out of line position corresponding to the locked status, wherein the movably positioned wheel (7) is out of line with respect to the fixedly positioned wheels (6,8), and an aligned position corresponding to the unlocked status, wherein it is aligned with the fixedly positioned wheels (6,8).

5. A guiding component (1) according to claim 4, **characterized in that** the track mover locking means (19) comprises a slider (12) which is provided movably on the guiding component body (2), the movably positioned wheel (7) mounted on the slider (12) and the slider (12) being spring activated in a direction to bring the movably positioned wheel (7) in the out of line position corresponding to the locked status.

6. A guiding component (1) according to any of the preceding claims, **characterized in that** the guiding component connection means (21) comprises, on the one hand, a notch (22) in the guiding component body (2) having an open side (23) which is intended for receiving and releasing a window sash part (74) through that open side (23) of the notch (22), and, on the other hand, a shutter (25) which is movable with respect to the guiding component body (2) between a closed position corresponding to the connecting status, wherein the shutter (25) extends over the open side (23) of the notch (22) and forms together with the notch (22) an enclosure (27) in order to prevent the window sash part (74) received in the notch (22) from being released from the notch (22), and, an open position corresponding to the releasing status, wherein the open side (23) of the notch (22) is unobstructed in order to allow the window sash part (74) of being received into the notch (22) or being released from the notch (22) via the open side (23) of the notch (22).

7. A guiding component (1) according to claims 5 and 6, **characterized in that** the shutter (25) is provided on or is part of the slider (12) and that the movably positioned wheel (7) is in the aligned position corresponding to the unlocked status when the shutter (25) is in the closed position corresponding to the connecting status, and that the movably positioned wheel (7) is in the out of line position corresponding to the locked status when the shutter (25) is in the open position corresponding to the releasing status.

8. A mounting kit part (44) for mounting a window sash (28) to a window casing (29) in a reversible manner and mountable between a lateral side member (36,37) of the window sash (28) and the window casing (29), **characterized in that** the mounting kit part (44) comprises at least the following elements:

   - a guiding track member (46) intended for being mounted on a lateral side member (31,32) of the window casing (29) and having a first guiding track member extremity (49) and a second guiding track member extremity (50);
   - a guiding track (53) on the guiding track member (46);
   - a guiding component (1) according to any of the preceding claims, the track mover (5) of which being movable in the unlocked status along the guiding track (53) at least over a part of the guiding track (53) extending from the first guiding track member extremity (49);
   - a retaining arm (47) for retaining the window sash (28) to the window casing (29), having a first retaining arm extremity (57) and a second retaining arm extremity (58);
   - a retaining arm hinge (59) provided at the first

retaining arm extremity (57) intended for realizing a permanent, fixedly positioned, but hinged interconnection between the retaining arm (47) and the window casing (29) in the vicinity of the second guiding track member extremity (50);
- window sash pivoting means (60) provided at the second retaining arm extremity (58) intended for realizing a permanent, fixedly positioned, but pivoting interconnection between the retaining arm (47) and a lateral side member (36,37) of the window sash (28) at an intermediate position (61) of that lateral side member (36,37);
- a retaining arm connection means (62) which can be activated for making and releasing a releasable connection between the window sash (28) and the retaining arm (47), respectively in a connecting status and a releasing status; and,
- an actuating means (48) for changing or setting the status of actuated elements (19,21,62), in particular of the retaining arm connection means (62), the guiding component connection means (21) and the track mover locking means (19) of the guiding component (1).

9. A mounting kit part (44) according to claim 8, **characterized in that** the retaining arm connection means (62) comprises a spring activated sliding element (63) which is provided with a notch (65) for receiving a window sash part (75) and which is movable forward and backward on the retaining arm (47) between a forward position corresponding to the connecting status wherein a window sash part (75) received in the notch (65) is locked and a backward position corresponding to the releasing status, wherein the window sash part (75) is unobstructed from entering or leaving the notch (65), the spring (64) pushing the sliding element (63) towards the forward position.

10. A mounting kit (43) part according to claim 8 or 9, **characterized in that** the actuating means (48) comprises a pushrod (67) provided with tappets (68,69), which is movable back and forward along the guiding track member (46) between a neutral, an intermediate and a final position respectively corresponding to a standard mode status, a secured status and a reverse mode status of the actuated elements, wherein:

- in the standard mode status,

  ○ the retaining arm connection means (62) is in the connecting status;
  ○ the guiding component connection means (21) is in the releasing status; and,
  ○ the track mover locking means (19) is in the locked status; and,

- in the secured status,

  ○ the retaining arm connection means (62) is in the connecting status;
  ○ the guiding component connection means (21) is in the connecting status; and,
  ○ the track mover locking means (19) is in the unlocked status; and,

- in the reverse mode status,

  ○ the retaining arm connection means (62) is in the releasing status;
  ○ the guiding component connection means (21) is in the connecting status; and,
  ○ the track mover locking means (19) is in the unlocked status.

11. A mounting kit part (44) according to any of claims 8 to 10, **characterized in that** it further comprises:

- a supporting arm (76) linking the sash retaining arm (47) to the guiding track member (46), having a first supporting arm extremity (77) and a second supporting arm extremity (78);
- a pivoting interconnection (79) between the first supporting arm extremity (77) and an intermediate position (80) on the sash retaining arm (47); and,
- movable pivoting means (81) at the second supporting arm extremity (79) which are movable along the guiding track member (46) at least over a part of the guiding track member (46) extending from the second guiding track member extremity (50).

12. A mounting kit (43) for mounting a window sash (28) to a window casing (29) in a reversible manner, **characterized in that** it comprises a pair of mounting kit parts (44) according to any of claims 8 to 11, the mounting kits parts (44) being symmetric in shape and mountable respectively at opposite lateral side members (36,37) of the window sash (28) and window casing (29), the mounting kit (43) further comprising central actuating means (45) connectable to the actuating means (48) of each mounting kit part (44) for their simultaneous actuation.

13. A window (30) comprising:

- a window casing (29) providing an opening (35) and having casing lateral side members (31,32) and casing cross members (33,34);
- a window sash (28) comprising:

  ○ sash lateral side members (36,37);
  ○ sash cross members (38,39);
  ○ a pivot axis (J-J') around which the win-

dow sash (29) can pivot and which is positioned between the sash cross members (38,39) and which is parallel therewith;

- a pair of retaining arms (47) mounted at both sides of the window sash (28) for holding the window sash (28) into the window casing (29), and each having:

  ○ a first retaining arm extremity (57) which is connected in a pivoting manner to the window sash (28) at a position coincident with the pivot axis (J-J');
  ○ a second retaining arm extremity (58) which is hinge mounted to the window casing (29) at or in the vicinity of a casing cross member (34);
  characterized in that the window (30) further comprises:

- a pair of guiding track members (46), a guiding track member (46) being provided at each lateral side member (31,32) of the window casing (29);
- a guiding track (53) in each guiding track member (46) provided with a guiding component (1) in accordance with any of claims 1 to 9, the track movers (5) of which being movable in an unlocked status along the concerned guiding track (53) at least over a part of the guiding track (53) extending from a first guiding track member extremity (49);
- a first pair of window sash parts (74) and a second pair of window sash parts (75) provided at opposite lateral sides of the pivot axis (J-J') on the window sash (28);
- the guiding component connection means (21) of each guiding component (1) being such that it can work together with a window sash part (74) of the first pair of window sash parts (74) for making or releasing a releasable connection between that window sash part (74) and the concerned guiding component (1); respectively in a connecting status and a releasing status; and,
- a retaining arm connection means (62) on each retaining arm (47) for making and releasing a releasable connection between a window sash part (75) of the second pair of window sash parts (75) and the retaining arm (47), respectively in a connecting status and a releasing status.

14. A window (30) according to claim 13, **characterized in that**

- the first and second pair of window sash parts (74,75) are formed by pins (74,75), the pins (74,75) of each pair extending outwardly with respect to opposite sash lateral side members (36,37) in a direction parallel to the sash cross members (38,39);
- the window sash (28) is mounted to the window casing (29) by means of a mounting kit (43) in accordance with claim 12;
- the mounting kit parts (44) of the mounting kit (43) are provided symmetrically at the opposite lateral side members (31,32) of the window casing (29);
- both guiding track members (46) are extending along the corresponding window casing lateral side member (321,32);
- both retaining arms (47) are hinge mounted by means of their retaining arm hinge (59) at their first retaining arm extremity (57) in the vicinity of or on a casing cross member (34);
- the window sash (28) is mounted in a pivoting manner around its pivot axis (J-J') by means of the window sash pivoting means (60) provided at each second retaining arm extremity (58);
- the pair of guiding component connection means (21) are each capable of working together with a pin (74) of the first pair of pins (74) on the window sash (28) so to make and release simultaneously the releasable connection between the window sash (28) and both guiding components (1); and,
- the pair of retaining arm connection means (62) are each capable of working together with a pin (75) of the second pair of pins (75) on the window sash (28) so to make and release simultaneously the releasable connection between the window sash (28) and both retaining arms (47).

15. A window (30) according to claim 14, **characterized in that** the window (30) has at least two modes of operation set by the central actuating means (45) as follows:

- a standard mode of operation, wherein the actuated elements (19,21,62) are brought into the standard mode status defined in claim 10 and wherein the window (30) can be opened and closed by turning the window sash (28) simultaneously with the retaining arms (47) around one of the side edges of the window sash (28) with the retaining arm hinges (59); and,
- a reverse mode of operation, wherein the actuated elements (19,21,62) are brought into the reverse mode status defined in claim 10 and wherein the window sash (28) can be reversed, i.e. the outside glazing surface (41) of the window sash (28) can be turned towards the window casing (29) and vice versa, by a combined movement comprising a rotational movement of the window sash (28) around the pivot axis (J-J') and a translational movement of the first pair of pins (74) of the window sash (28) which are guided by the guiding components (1) along

the guiding tracks (53).

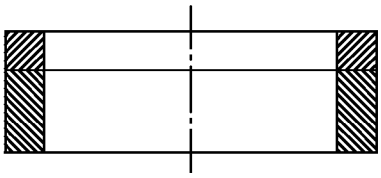


FIG 1

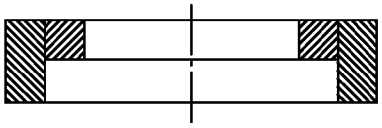


FIG 2

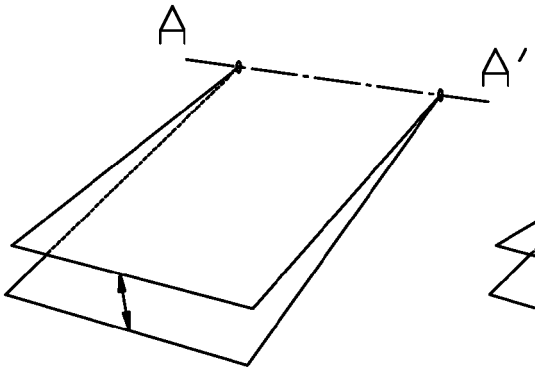


FIG 3

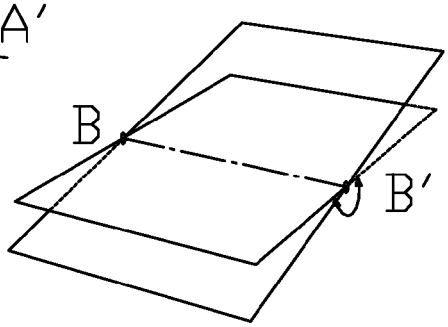


FIG 4

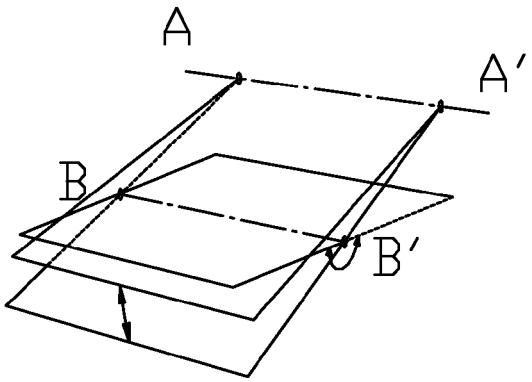


FIG 5

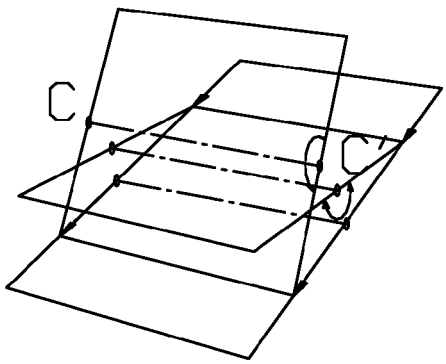
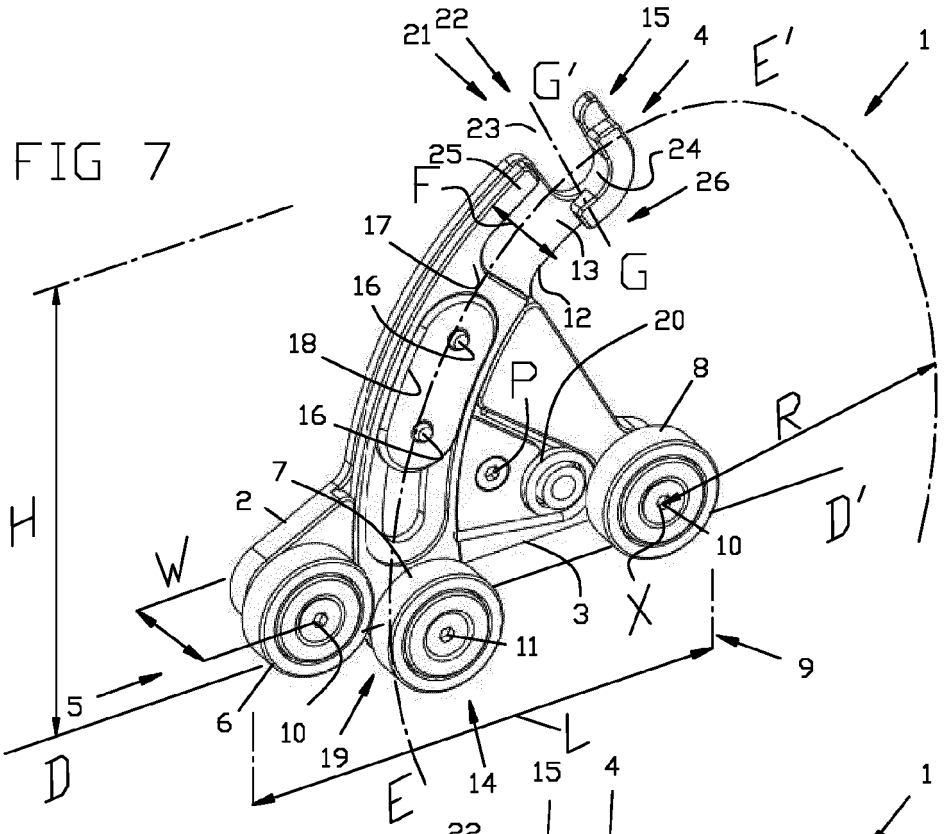


FIG 6

FIG 7


21
22
15
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E'
G'
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F
26
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18
P
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7
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D'
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W
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X
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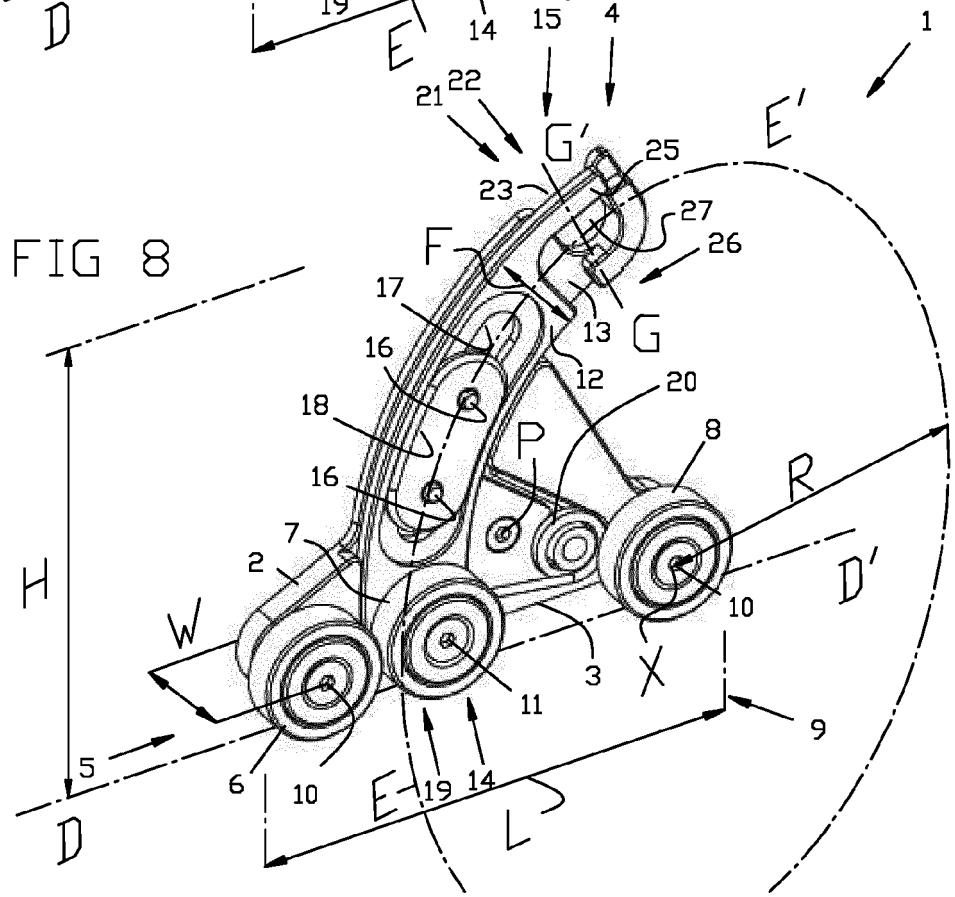
D
E

FIG 8


1
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E'
G'
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27
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F
17
13
G
16
12
20
18
P
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R
7
2
D'
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W
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X
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19
14
E
L
D

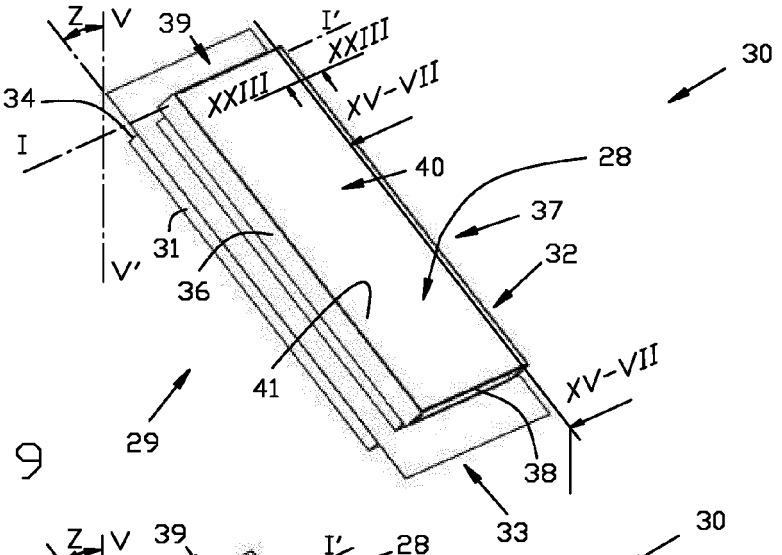


FIG 9

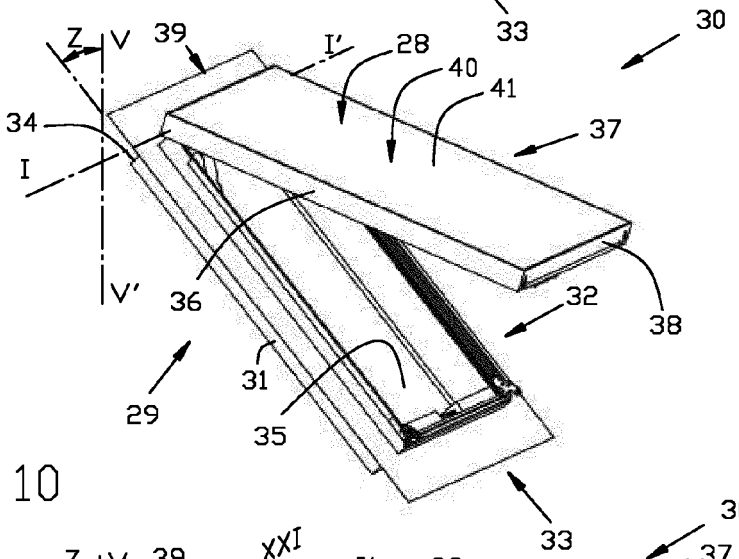


FIG 10

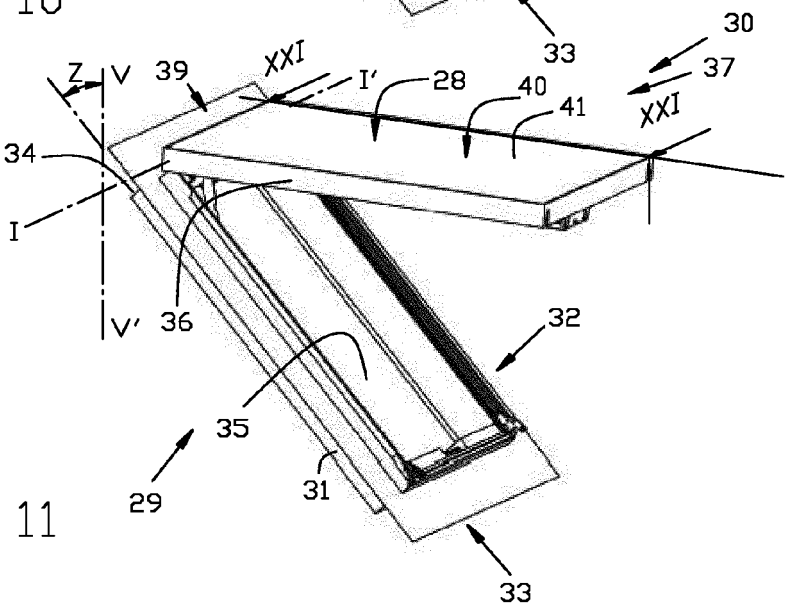


FIG 11

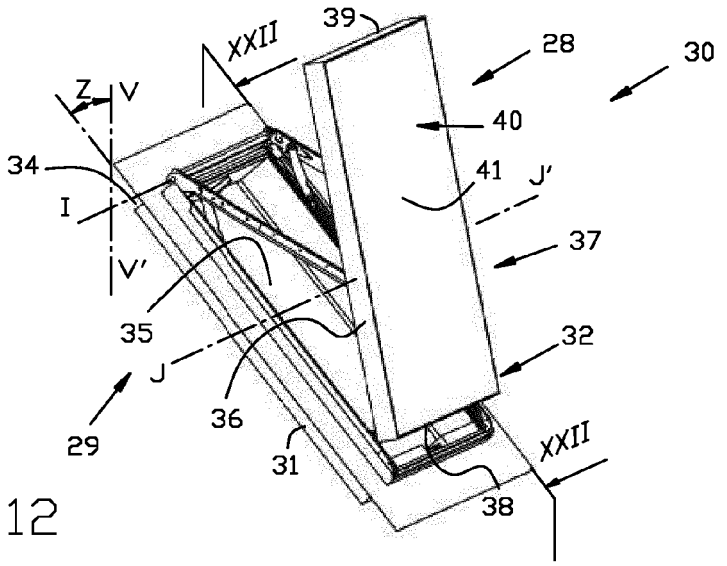


FIG 12

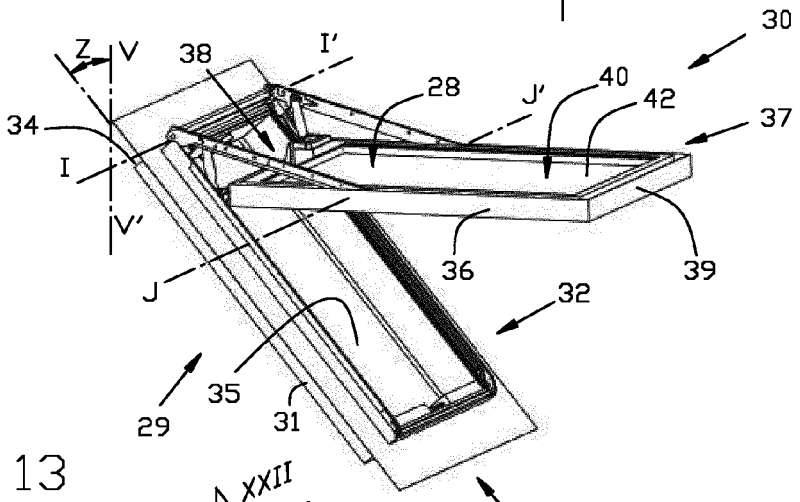


FIG 13

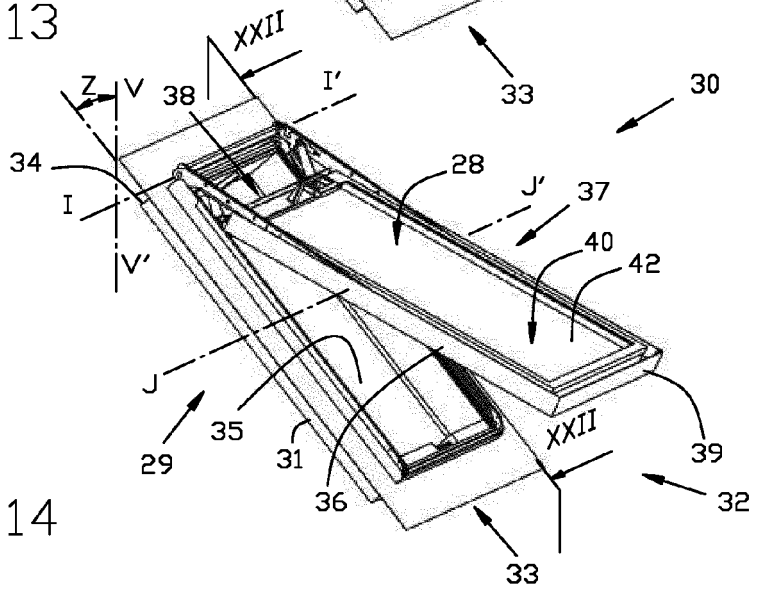


FIG 14

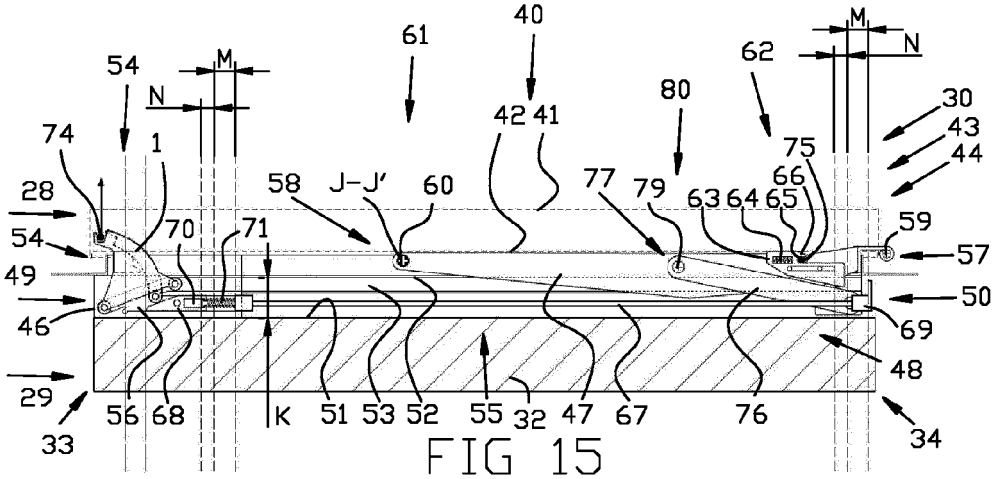


FIG 15

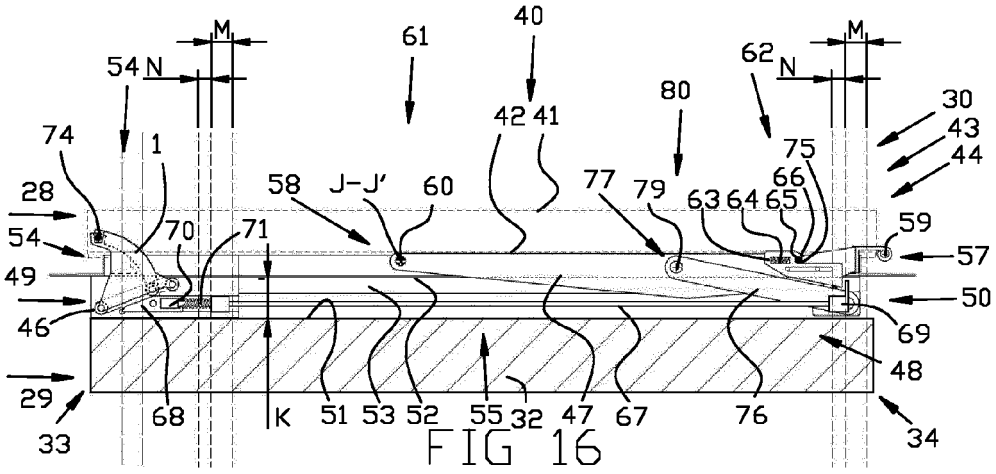


FIG 16

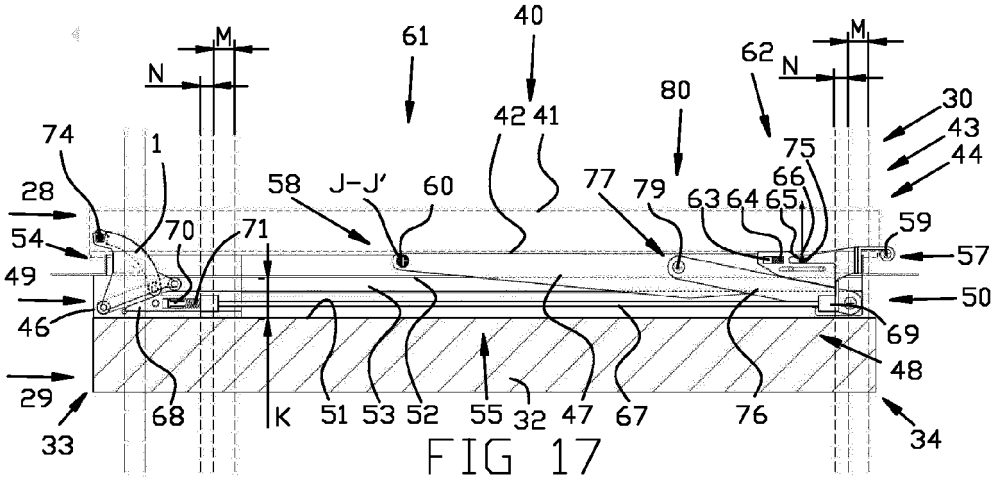


FIG 17

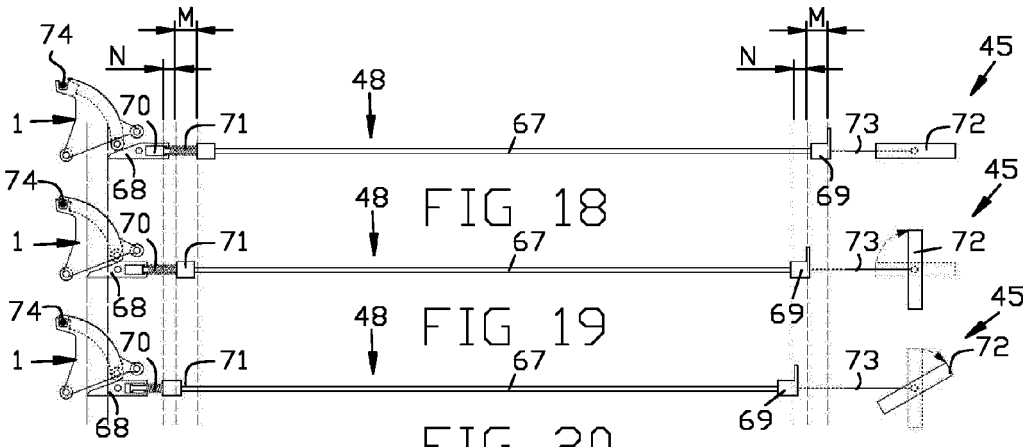


FIG 18

FIG 19

FIG 20

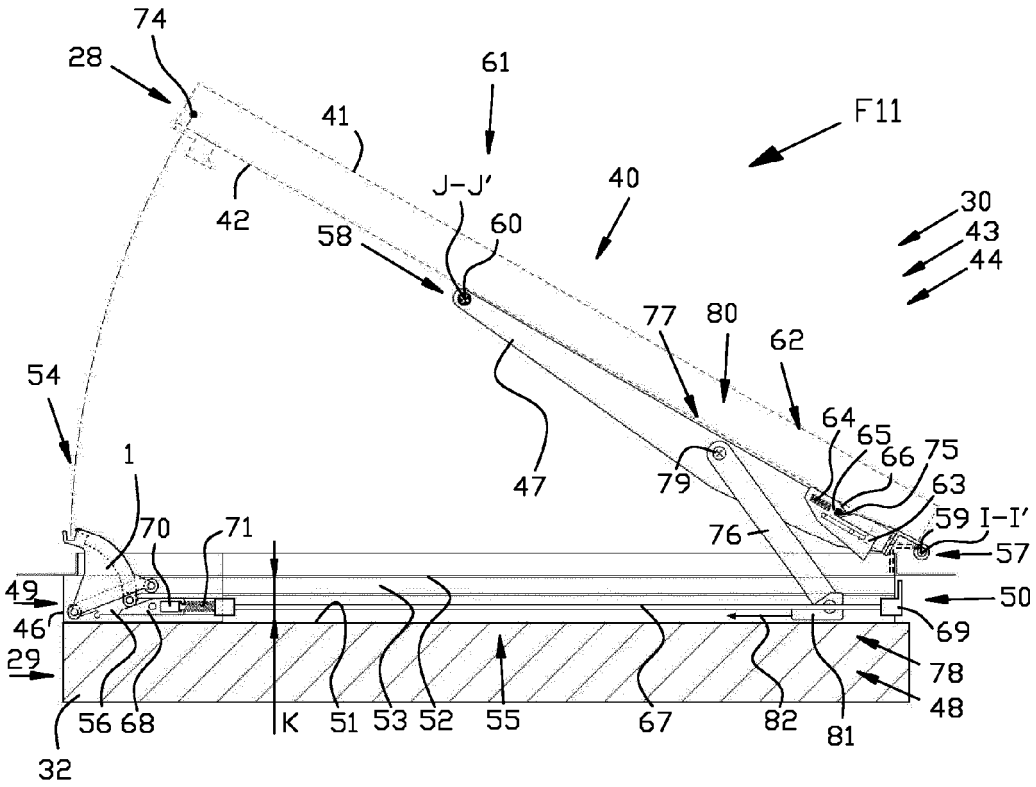
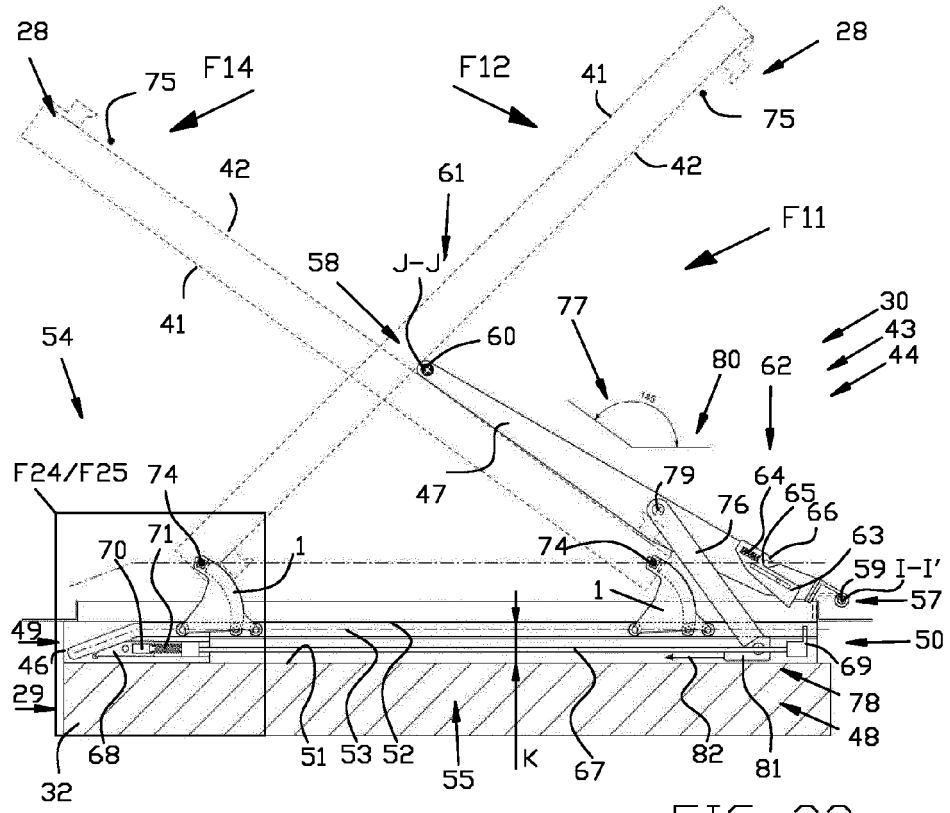


FIG 21


28
75
F14
F12
41
28
75
42
61
42
F11
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J-J
41
77
30
43
44
54
60
80
62
F24/F25
74
47
79
64
65
76
66
63
70
71
1
74
59
I-I'
57
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K
67
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FIG 22

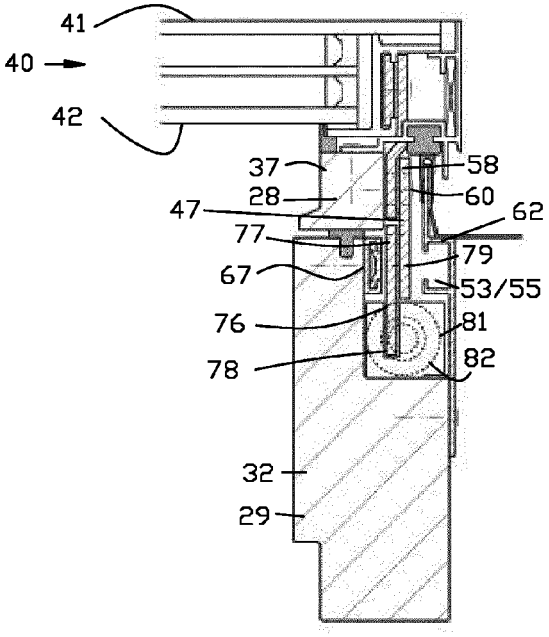
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FIG 23

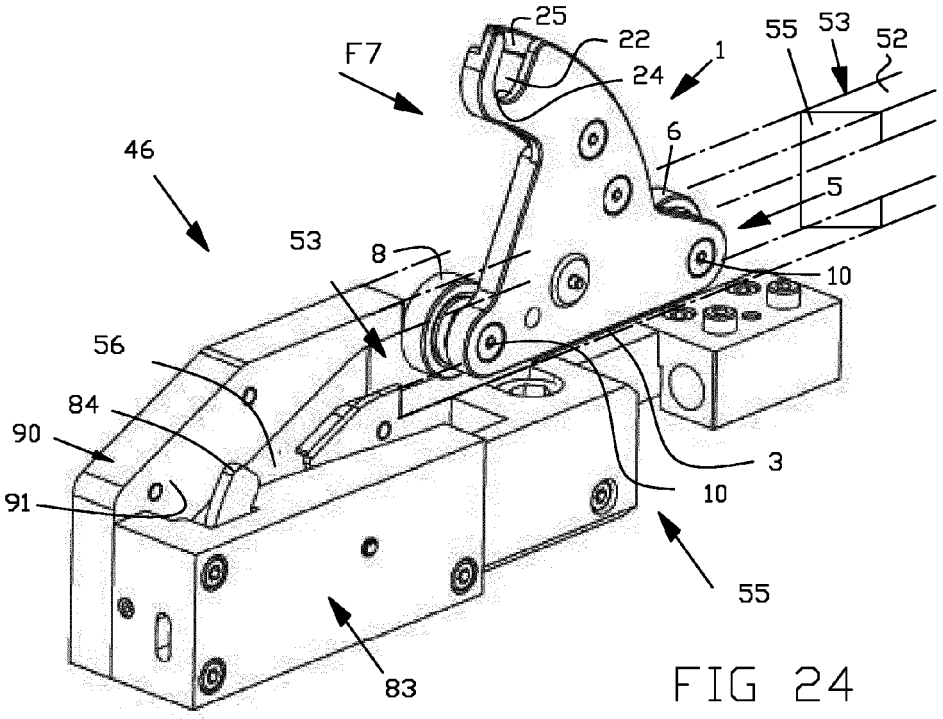
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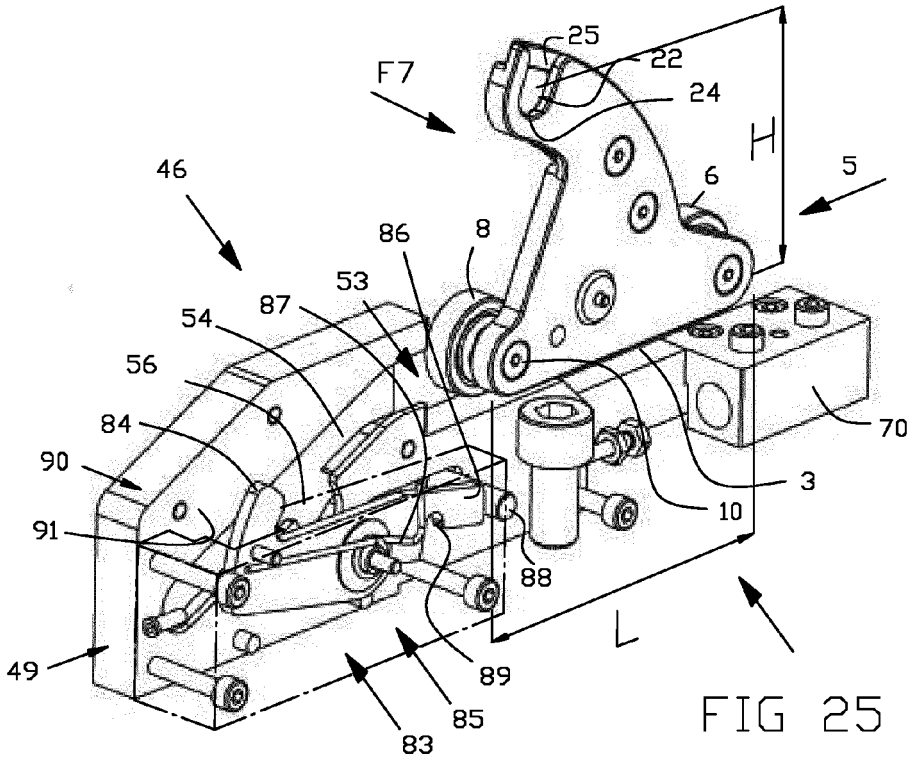
FIG 24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89
85
L
83

FIG 25