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(71) Applicant: **VAN PARYS, Emmanuel Diederich Camille**  
**9790 Wortegem-Petegem (BE)**

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

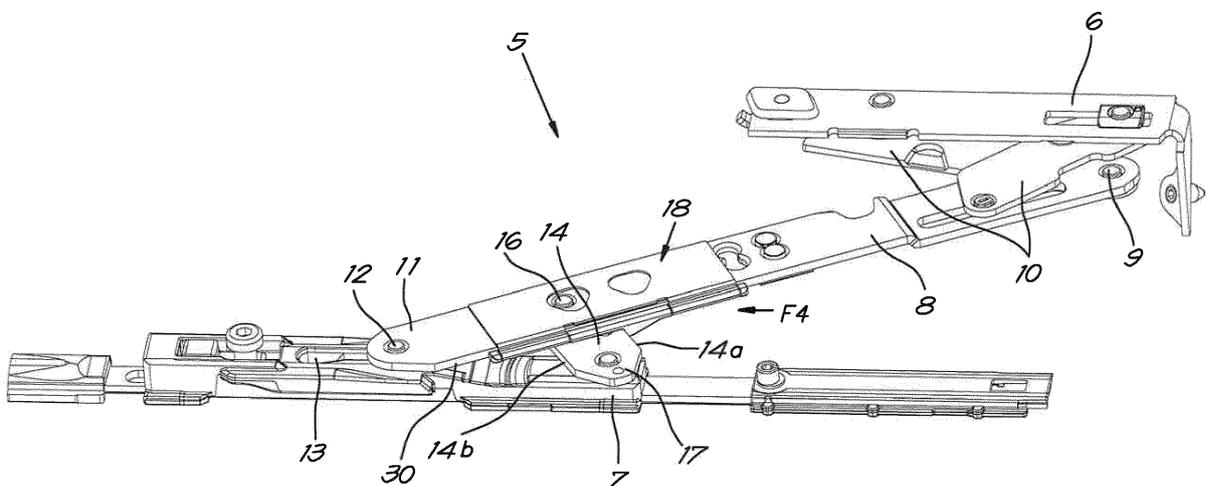
(74) Representative: **Donné, Eddy et al**  
**Bureau De Rycker nv**  
**Arenbergstraat 13**  
**2000 Antwerpen (BE)**

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(54) **ANTI-SLAM DEVICE FOR A TILT WINDOW AND SCISSOR MECHANISM AND TILT WINDOW EQUIPPED WITH IT**

(57) Scissor mechanism for holding a leaf (3) of a tilt window (1) in an opened tilt position, said scissor mechanism (5) containing a leaf section (7) and also a long arm and a short arm (8, 14), whereby the leaf section (7) and the arms (8, 14) are connected in a mutually rotatable way and which on opening and closing the scissor mechanism (5) are rotatable relative to each other between a closed condition whereby said mutually rotatable parts (7, 8, 14) lie parallel or practically parallel to each other and an open tilt position whereby said mutually rotatable

parts (7, 8, 14) enclose an angle, **characterised in that** the scissor mechanism (5) is equipped with an anti-slam device (18) containing an elastic element (24) with a cam-shaped part or cam (25) which in said open tilt position of the scissor mechanism (5) is elastically clicked in a click position and which is pushed out of its click position against the elastic deforming resistance of the elastic element (24) when closing the scissor mechanism (5).



*Fig.3*

## Description

**[0001]** The present invention relates to an anti-slam device for a tilt window.

**[0002]** A tilt window is a window with a fixed frame and a leaf which is hingeably attached to the fixed frame.

**[0003]** In a tilt window the leaf can hinge around an imaginary horizontal tilt axis at the underside of the window until a certain opening appears at the top called the tilt position which is used for short-term or long-term ventilation.

**[0004]** To hold the leaf in its tilt position it is customary to apply a scissor mechanism which is mounted at the top between the fixed frame and the leaf and which limits opening the leaf around the imaginary tilt axis to a certain open tilt position.

**[0005]** Such scissor mechanism is typically composed of a long arm and a short arm which are hingeably connected.

**[0006]** The long arm is hingeably connected via a frame section to the fixed frame with a first end and with the other second end is slideably and hingeably connected to the leaf via a leaf section.

**[0007]** The short arm is hingeably connected to the long arm with one end in a central point between the ends of the long arm and with its other end is hingeably connected to the leaf section.

**[0008]** In a closed window the scissor mechanism is closed and concealed in the rebate between the fixed frame and the leaf, whereby the arms are parallel to each other.

**[0009]** On tilting open the window, the arms rotate open whereby the hinge on the second end of the long arm moves into a slotted hole in the leaf section up against the end of the slotted hole.

**[0010]** Thus, the scissor mechanism functions as a restrictor which stops the window falling open on tilting, which is important in terms of safety. The weight of the leaf helps to hold open the leaf.

**[0011]** However, tilt windows may also have the tendency to unintentionally fall shut again from the tilt position, for example by underpressure resulting from an accidental gust of wind.

**[0012]** That is why typically such scissor mechanisms are provided with an anti-slam device as a standard practice. This is a kind of clip which is mounted on the first end of the long arm and which holds the leaf with a certain resistance in the open tilt position, but which must not have too much resistance either so that when you want to shut the leaf again, the operation is still somewhat flexible and comfortable without needing too much force.

**[0013]** However, there are certain trends in the windows market, more specifically that:

- leaf profiles are becoming increasingly thicker dep-  
twise for a higher thermal performance;
- windows are becoming increasingly higher; and,
- increasingly, triple glass is being used in the leaf.

**[0014]** Each of these trends causes the centre of gravity of the leaf to be increasingly closer against the vertical plane through the imaginary tilt axis, such that the weight of the leaf is increasingly unhelpful to hold open the leaf and consequently the leaf will fall shut more easily in the event of a gust of wind or the like.

**[0015]** However, providing a stronger anti slam device as a standard practice is not a solution because than operating, for example, less high windows becomes too hard.

**[0016]** The invention relates to an anti-slam device which can be applied additionally or alone and preferably can be mounted later on. It can be provided for high windows or applied in the event of problems.

**[0017]** To this end, the invention relates to an anti-slam device for offering resistance against the slamming shut of a tilt window which is held in its opened tilt position by means of a scissor mechanism, characterised in that the anti-slam device contains an elastic element and a plate-shaped or other element with a side for attaching the anti-slam device to the scissor mechanism, whereby the elastic element contains a cam-shaped part or cam which in its resting position protrudes from the plate-shaped or other element and whereby the elastic element has a certain resistance against pushing the cam of the elastic element out of said resting position.

**[0018]** An anti-slam device according to the invention is intended to be attached with its plate-shaped element to one of the constituent parts of the scissor mechanism or to be part of it such that the cam of the elastic element on opening the scissor mechanism is located in the trajectory of one of the other constituent parts of the scissor mechanism and hooks behind it when or before the open tilt position of the scissor mechanism is reached.

**[0019]** Because the cam of the elastic element hooks into the open position to lock the scissor mechanism in this position, this results in an extra resistance against the tilt window slamming shut because first the elastic resistance of the hooked elastic element needs to be overcome.

**[0020]** Preferably, the anti-slam device is glued to the scissor mechanism and to this end is for example provided with double-sided tape on its plate-shaped section which is covered with a removable film that needs to be removed at the time the anti-slam device needs to be glued to the scissor mechanism.

**[0021]** In this way the anti-slam device can be easily mounted on a scissor mechanism of an existing tilt window or as an extra anti slam device in the event of a high window and when this appears to be necessary.

**[0022]** In this way a classic scissor mechanism can be used for both low and high windows and in the case of a high window an additional anti slam device can be attached to the scissor mechanism.

**[0023]** Preferably the anti-slam device is mounted on the long arm with the cam in the trajectory of the rotational movement of the short arm relative to the long arm when tilting open the tilt window.

**[0024]** Preferably, the cam is executed as a triangle which points down and which in the closed condition of the scissor mechanism is located next to and at a distance of a side edge of the short arm.

**[0025]** Thus, the resistance to be overcome on initiating tilting open the tilt window is limited because the short arm on tilting open at an angle comes into contact with a slanted side of the cam such that the required force to push up the cam from its resting position into the closed condition of the tilt window is less.

**[0026]** The invention also relates to a scissor mechanism provided with an anti-slam device according to the invention and a tilt window equipped with such mechanism.

**[0027]** The invention also relates to the use of an anti-slam device according to the invention for offering resistance against the slamming shut of a tilt window which is held in its opened tilt position by means of a scissor mechanism.

**[0028]** With the intention of better showing the characteristics of the invention, a preferred embodiment of an anti-slam device according to the invention applied to the scissor mechanism of a tilt window is described hereinafter, by way of an example without any limiting nature, with reference to the accompanying drawings wherein:

figure 1 schematically and in cross-section shows a tilt window equipped with a scissor mechanism with an anti-slam device according to the invention;  
 figure 2 shows a front view according to arrow F2 in figure 1;  
 figure 3 shows a perspective view of the scissor mechanism indicated in figure 2 by F3;  
 figure 4 shows the anti-slam device according to the invention indicated in figure 3 with F4 on a larger scale;  
 figure 5 shows a bottom view according to arrow F5 of the anti-slam device in figure 4;  
 figure 6 shows the anti-slam device of the figures 4 and 5 in an exploded view;  
 figure 7 shows a cross-section according to line VII-VII in figure 4;  
 figure 8 shows the scissor mechanism of figure 3 but shown in three different positions;  
 figure 9 shows a local cross-section according to line IX-IX in figure 8;  
 figure 10 shows the local cross-section of figure 9 but in the start position of tilting open the tilt window.

**[0029]** The tilt window 1 shown in figure 1 consists of a fixed frame 2 and a leaf 3 which is hingeably attached at the bottom in the frame 2 around an imaginary horizontal tilt axis 4.

**[0030]** A scissor mechanism 5 is mounted between the fixed frame 2 and the leaf 3 which restricts the maximum tilting angle over which the leaf 3 can be tilted open as in the case of figure 1.

**[0031]** A classic scissor mechanism by way of example

is shown in figure 3.

**[0032]** As shown in more detail as appears from this figure 3, the scissor mechanism 5 is composed in the known way of a frame section 6 for attaching on the fixed frame 2; a leaf section 7 for attaching on the leaf 3; a long arm 8 which with a first end 9 is rotatably connected to the frame section 6, in this case by means of a double link 10, and with the other second end 11 is slideably and hingeably connected to the leaf section 7, in this case by means of a hinge pin 12 which engages in a slotted hole 13 of the leaf section 7, and a short arm 14 which is hingeably connected with one end 15 to the long arm 8 with a hinge pin 16 between the first and the second end of the long arm 8 and which with its other end is hingeably connected to the leaf section 7.

**[0033]** The rotatable connection between the long arm 8 and the frame section 6 can also occur in other forms than by means of a double link 10, for example directly or by means of more than 2 arms.

**[0034]** The combined slide and hinge connection between the long arm 8 and the leaf section 7 can also be realised in other ways than by means of a hinge pin 12 and slotted hole 13.

**[0035]** Typically, a scissor mechanism 5 is always provided with a frame section 6, a leaf section 7 and a long arm 8 and a short arm 14 in between which is hingeable relative to the long arm 8 when opening and shutting the tilt window 1.

**[0036]** The long arm 8, the short arm 14 and the leaf section 7 are rotatably connected and are jointly called the mutually rotatable parts 7, 8 and 14.

**[0037]** On the leaf side the scissor mechanism 5 can be provided with an anti-slam device not shown here.

**[0038]** Specific to the invention is that the scissor mechanism 5 is provided with an anti-slam device 18 as shown in the figures 4 to 7 which in this case is glued to the long arm 8 as shown in figure 3 for offering resistance against the tilt window 1 slamming shut.

**[0039]** The anti-slam device contains a plate-shaped element 19 with a side edge 20 and an underside 21 which is provided with a self-adhesive layer of glue 22 or double-sided tape to be able to attach the anti-slam device 18 to the scissor mechanism 5. In unmounted condition, the layer of glue can be provided with a removable film 23.

**[0040]** The anti-slam device 18 also contains an elastic element 24 which is mounted next to and along the side edge 20 and is connected to the plate-shaped element 19 and which contains a cam or cam-shaped part 25 which in its resting position protrudes downward under the underside 21 of the plate-shaped element 19, whereby the assembly is such that the cam 25 can be elastically pushed upward by an upward force in a direction perpendicular to the underside 21 of the plate-shaped element 19.

**[0041]** Preferably, the elastic element is made entirely of an elastic material such as polyamide.

**[0042]** In the example of the figures the elastic element

24 is made with a longitudinal elastic body 26 on which said cam 25 is mounted and which is enclosed in two seats 27 of the plate-shaped element 19 along said side edge 20, whereby said cam 25 is mounted between both seats 27 and whereby the seats 27 are such that they allow an elastic stretch of the body 26 in longitudinal direction X-X' but prevent a rotation thereof in the seats 27.

**[0043]** To this end the longitudinal elastic body 24 is in this case made for example as a flat strip and each of the seats 27 is formed by a U-shaped bracket with legs 27a and 27b between which the longitudinal elastic body 24 is enclosed.

**[0044]** The legs 27a and 27b of the U-shaped bracket 27 extend parallel or practically parallel with the underside 21 of the plate-shaped element 19 and the opening 27c of the U-shaped bracket 27 faces the plate-shaped element 19.

**[0045]** The plate-shaped element 19 is made for example of a metal stainless steel plate or the like and the seats 27 are for example formed by double-folding the plate at a right angle.

**[0046]** The elastic element 24 can for example be slid along the openings 27c laterally in the seats 27 and thereafter be secured against lateral removal and rotation by providing the longitudinal body 26 on the level of the brackets 27 with an undercut or a slot 28 and folding at least one leg 27b of the brackets 27 into the undercut or the slot 28 as shown in figure 7.

**[0047]** The brackets are connected by a downward facing collar 29 to the plate-shaped element 19, said collar 29 being able to serve during mounting to align the anti-slam device 18 against a side edge 30 of the long arm 8.

**[0048]** To secure the longitudinal body 26 in longitudinal direction X-X' in the seats 27, said longitudinal body 26 is made thinner for example in the sections 26a on the level of the seats 27 than in the sections outside the seats 27, respectively in the central section 26b and at the ends 26c.

**[0049]** Preferably, the cam 25 is made as a triangle which with its base 25a is attached or connected to the central section 26b of the longitudinal body 26 and which possesses a short side 25b and a long side 25c which together enclose an angle facing away from the underside 21 of the plate-shaped element 19.

**[0050]** The cam 25 is mounted with its base 25a eccentrically from the central section 26b and extends from one seat 27 on the side of the long side 25c up to a distance from the other seat 27 on the side of the short side 25b, said distance in the example being approximately equal to half the length of the central section 26b.

**[0051]** The base 25a and the long side 25c enclose an angle B between 15 and 20°, preferably an angle B of approximately 18°.

**[0052]** The base 25a and the short side 25b enclose an angle A of approximately 70°.

**[0053]** In the example, the anti-slam device 18 is attached to the long arm 8 as shown in figure 3 with the collar 29 against the side edge 30 of the long arm 8 and

in such a way that the cam 25 hooks with its short side 25b behind the side edge 14a of the short arm 14 facing the first end 9 when the scissor mechanism 5 is opened to its maximum tilt position, whereby the cam 25 with its angle B between the base 25a and the long side 25c faces the first end 9 of the long arm 8.

**[0054]** If mounted in this way, the elastic element 24 extends in its longitudinal direction along the side edge 30 and on opening and shutting the scissor mechanism 5, the cam 25 is located in the trajectory of the short arm 14 which on opening and shutting the scissor mechanism 5 relative to the long arm 8 rotates around the hinge pin 16 and in the closed condition of the scissor mechanism 5 the cam 25 falls next to the opposite side edge 14b of the short arm 14 and at a lateral distance D thereof as shown in figure 9.

**[0055]** The operation of the anti-slam device is very simple and is illustrated by figure 8 which shows three supposed positions of the scissor mechanism 5, i.e. a closed position I; an open position III and a position II located in between corresponding respectively with a closed tilt window, a tilt window opened as far as possible and an intermediate position of the tilt window.

**[0056]** In the closed position I the short arm is located at a distance D from the cam 25 as shown in the bottom view of the corresponding figure 9.

**[0057]** When the scissor mechanism 5 is opened, the side edge 14b of the short arm 14 comes into contact with the long side 25c of the cam 25 as shown in figure 10.

**[0058]** On opening it further the short arm 14 pushes up the cam 25, as shown in the intermediate position II in figure 8, up to when the cam 25 hooks with its short side 25b behind the short arm 14 as shown in the position III of figure 8, corresponding with the opened position of figure 3.

**[0059]** Consequently, the open tilt position of the scissor mechanism 5 and thus of the tilt window 1 is somewhat blocked and secured against the accidental slamming shut under the influence of a gust of wind or the like.

**[0060]** To willingly shut the tilt window 1 from its tilt position, the user must first overcome the resistance of the motion of the short arm 14 which is counteracted by the cam 25 and which must first be unlocked because the short arm 14 needs to push the cam 25 along its short slanted side 25b upward with its side edge 14a.

**[0061]** This solution does not unnecessarily increase the force.

**[0062]** There is a possibility to reduce the force required to unlock the tilt window from its tilt position to a limited extent by cutting the elastic element, for example at one of the sections 26b such that said cut section 26b no longer has any influence on the forces required for the elastic deforming of the elastic element 24.

**[0063]** Note that it is also conceivable that a similar additional anti slam device is provided in other locations, for example on the level of the angle between the short arm 14 and the leaf section 7 or on the level of the angle between the long arm 8 and the leaf section 7.

**[0064]** Thus the anti-slam device 18 can be mounted on each of said mutually rotatable parts 7, 8 and 14 whereby the cam 25 in the open tilt position of the scissor mechanism 5 hooks behind a side edge of another mutually rotatable part 7, 8 or 14 and is pushed up by said latter part on closing the scissor mechanism 5.

**[0065]** The attachment of the anti-slam device to the scissor mechanism is not necessarily by glueing, but can also be done with clips, screws or any other suitable way or can even be provided with the manufacture of the scissor mechanism as an integrated component of the constituent elements of the scissor mechanism, for example that the plate-shaped element 19 is formed by one of the arms itself to which the elastic element is attached.

**[0066]** Note that the anti-slam device 18 can also be mounted with said underside of the plate-shaped element 19 facing upward with the cam pointing upward, for example when the short arm 14 is located above the long arm 8 instead of below as shown in the figures or that the plate-shaped element 19 can be mounted with its opposite top under the long arm 8 or another element. And that consequently the concepts "underside" and "downward" may not be interpreted restrictively as relating to an absolute direction indication.

**[0067]** Certain characteristics listed again:

- that the longitudinal body 26 on the level of the seats 27 can be made thinner than the sections on either sides of each bracket 27;
- that the base 25a of the cam 25 for example extends over a length that is approximately half the length of the central section 26b of the longitudinal body 26 between both seats 27;
- that the long side 25c and the base 25a enclose an angle B between 15 and 20°, preferably an angle of around 18° and this angle B faces said first end of the central section 26b of the longitudinal body 26;
- that the short side 25b and the base 25a enclose an angle of approximately 70°;
- that the elastic element 24 with its longitudinal body 26 and its cam 25 are made of an elastic material such as polyamide;
- that the plate-shaped element 19 and the seats 27 are made of a metal sheet material such as stainless steel;
- that the cam 25 with the angle B between the base 25a and the long side 25c of the cam 25 faces the first end 9 of the long arm 8;
- that the tilt window contains a fixed frame 2 and a leaf 3 which is hingeably mounted at the bottom in the fixed frame 2 into a tilt position, whereby the tilt window 1 is provided at the top with a scissor mechanism 5 mounted between the fixed frame 2 and the leaf 3 and is attached thereto with its frame section 6 and its leaf section 7 respectively.

**[0068]** The present invention is by no means limited to the embodiments described as an example and shown

in the figures, but an anti-slam device according to the invention can be realised in all kinds of forms and dimensions without departing from the scope of the invention.

## Claims

1. Anti slam device for offering resistance against the slamming shut of a tilt window (1) which is held in its opened tilt position by means of a scissor mechanism (5) **characterised in that** the anti-slam device (18) contains an elastic element (24) and a plate-shaped or other element (19) with a side for attaching the anti-slam device (18) to the scissor mechanism (5), whereby the elastic element (24) contains a cam-shaped part or cam (25) which in its resting position protrudes from the plate-like or other element (19) and whereby the elastic element (24) has a certain resistance against pushing the cam (25) of the elastic element (19) out of said resting position.
2. Anti slam device according to claim 1, **characterised in that** the elastic element (24) is made with a longitudinal elastic body (26) on which said cam (25) is mounted and which is enclosed in two seats (27) of the plate-shaped element (19) which are located in each other's extension, whereby said cam (25) is mounted between both seats (27) and whereby the seats (27) are such that they allow an elastic stretch of the body (26) in longitudinal direction (X-X') but prevent a rotation thereof in the seats (27).
3. Anti slam device according to claim 2, **characterised in that** the longitudinal elastic body (26) is made as a flat strip and that each of the seats (27) is formed by a U-shaped bracket with legs (27a, 27b) between which the longitudinal elastic body (26) is enclosed.
4. Anti slam device according to claim 3, **characterised in that** the legs (27a, 27b) of the U-shaped bracket extend parallel or practically parallel with said side (21) of the plate-shaped element (19).
5. Anti slam device according to claim 3 or 4, **characterised in that** the longitudinal body (26) on the level of the brackets (27) is provided with an undercut or a slot (28), whereby the longitudinal body (26) is secured in a lateral direction in the brackets (27) because at least one leg (27b) of the brackets (27) is bent into the undercut or in the slot (28).
6. Anti slam device according to any one of the claims 2 to 5, **characterised in that** the cam (25) is mounted eccentrically from the central section (26b) of the longitudinal body (26) which is located between the seats (27) .
7. Anti slam device according to any one of the claims

- 2 to 6, **characterised in that** the cam (25) is made as a triangle which extends perpendicular to said side of the plate-shaped element (19) and with its base (25a) is attached to the longitudinal body (26) and with a short and a long side (25b, 25c) which together enclose an angle which faces away from said side (21) of the plate-shaped element (19).
8. Anti slam device according to claim 7, **characterised in that** the base (25a) of the cam (25) extends approximately from a first end of said central section (26b) in the longitudinal direction (X-X') of the longitudinal body (26) up to a longitudinal distance from the other second end of said central section (26b).
9. Anti slam device according to any one of the previous claims, **characterised in that** the plate-shaped element (19) is provided with a layer of glue (22) with a removable film (23) .
10. Anti slam device according to any one of the previous claims, **characterised in that** the anti-slam device (18) is intended for mounting on a scissor mechanism with mutually rotatable parts (7,8,14) which in the opened tilt position of the scissor mechanism (5) mutually enclose an angle and which in the closed condition of the scissor mechanism (5) lie parallel or practically parallel to each other and that the anti-slam device (18) in a mounted condition is attached with its plate-shaped or other element (19) to one of said mutually rotatable parts (7, 8, 14) in such a way that the cam (25) in the open tilt position of the scissor mechanism (5) clicks behind one of the other mutually rotatable parts (7, 8, 14) in a position whereby the cam (25) when closing the scissor mechanism is pushed out of this clicked condition by the mutual rotation.
11. Scissor mechanism for holding a leaf (3) of a tilt window (1) in a fixed frame (2) of the tilt window (1) in an opened tilt position, said scissor mechanism (5) containing a leaf section (7) for attaching to the leaf (3) and also a long arm (8) and a short arm (14), whereby the leaf section (7) and the arms (8, 14) are connected in a mutually rotatable way and are called the mutually rotatable parts (7,8,14) of the scissor mechanism (5) here which on opening and closing the scissor mechanism (5) are rotatable relative to each other between a closed condition whereby said mutually rotatable parts (7, 8, 14) lie parallel or practically parallel to each other and an open tilt position whereby said mutually rotatable parts (7, 8, 14) enclose an angle, **characterised in that** the scissor mechanism (5) is equipped with an anti-slam device (18) containing an elastic element (24) with a cam-shaped part or cam (25) which in said open tilt position of the scissor mechanism (5) is elastically clicked in a click position and which is pushed out of its click position against the elastic deforming resistance of the elastic element (24) when closing the scissor mechanism (5).
12. Scissor mechanism according to claim 11, **characterised in that** the elastic element (24) is mounted on one of the mutually rotatable parts (7, 8, 14) of the scissor mechanism (5) in such a way that in said click position of the cam (25) the cam (25) is clicked behind one of the other mutually rotatable parts (7, 8, 14) in a position whereby the cam (25) is pushed out of its click position by the mutual rotation of the mutually rotatable parts (7, 8, 14) when closing the scissor mechanism (5).
13. Scissor mechanism according to claim 11 or 12, **characterised in that** the elastic element (24) of the anti-slam device (18) on the long arm (8) is attached in such a way that the cam (25), on opening the scissor mechanism (5), is located in the trajectory of the short arm (14) of the scissor mechanism (5) and hooks behind the short arm (14) when or before the open tilt position of the scissor mechanism (5) is reached .
14. Scissor mechanism according to any one of the claims 11 to 13, **characterised in that** it is equipped with an anti-slam device (18) according to any one of the claims 1 to 15, whereby the plate-shaped or other element (19) is formed by one of said mutually rotatable parts (7, 8, 14) or by an element (19) with which the elastic element (24) is attached to such part.
15. Scissor mechanism according to claim 14 with an anti-slam device according to any one of the claims 7 to 10, **characterised in that** in the opened tilt position of the scissor mechanism (5) the cam (25) hooks behind one of said mutually rotatable constituent parts (7, 8, 14) of the scissor mechanism (5) with its short side (25b).
16. Scissor mechanism according to claim 14 or 15, **characterised in that** the cam (25) in the closed condition of the scissor mechanism (5) is located next to and at a lateral distance (D) of a side edge (14b) of the mutually rotatable part (7, 8, 14) behind which it needs to be able to hook in the open tilt position.
17. Scissor mechanism according to any one of the claims 11 to 16, **characterised in that** the anti-slam device (18) with the plate-shaped or other element (19) is glued to the scissor mechanism (5).
18. Scissor mechanism according to any one of the claims 11 to 17, **characterised in that** the anti-slam device (18) constitutes an extra security in addition

to the present anti slam device between the long arm (8) and the frame section (6).

19. Use of an anti-slam device for offering resistance against the slamming shut of a tilt window (1) which is held in its opened tilt position by means of a scissor mechanism (5) whereby the scissor mechanism (5) contains a leaf section (7) for attaching to the leaf (3) and also a long arm (8) and a short arm (14), whereby the leaf section (7) and the arms (8, 14) are connected in a mutually rotatable way and are called the mutually rotatable parts (7, 8, 14) of the scissor mechanism (5) here which on opening and closing the scissor mechanism (5) are rotatable relative to each other between a closed condition whereby said mutually rotatable parts (7, 8, 14) lie parallel or practically parallel to each other and an open tilt position whereby said mutually rotatable parts (7, 8, 14) enclose an angle, **characterised in that** the anti-slam device (18) is an anti-slam device (18) according to any one of the claims 1 to 10 with an elastic element (24) with a cam-shaped part or cam (25) whereby the elastic element (24) is attached to one of the mutually rotatable parts (7, 8, 14) in such a way that the cam (25) in said open tilt position of the scissor mechanism (5) is elastically clicked in a click position and which is pushed out of its click position against the elastic deforming resistance of the elastic element (24) when closing the scissor mechanism (5) .

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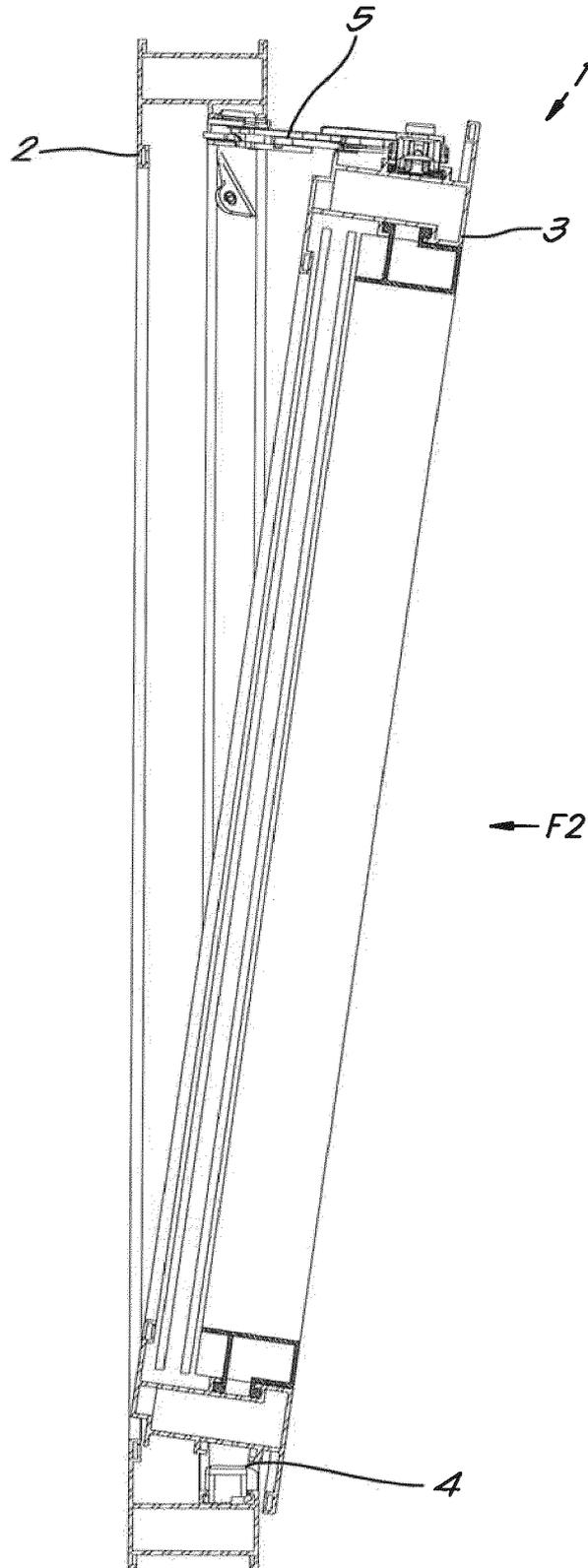
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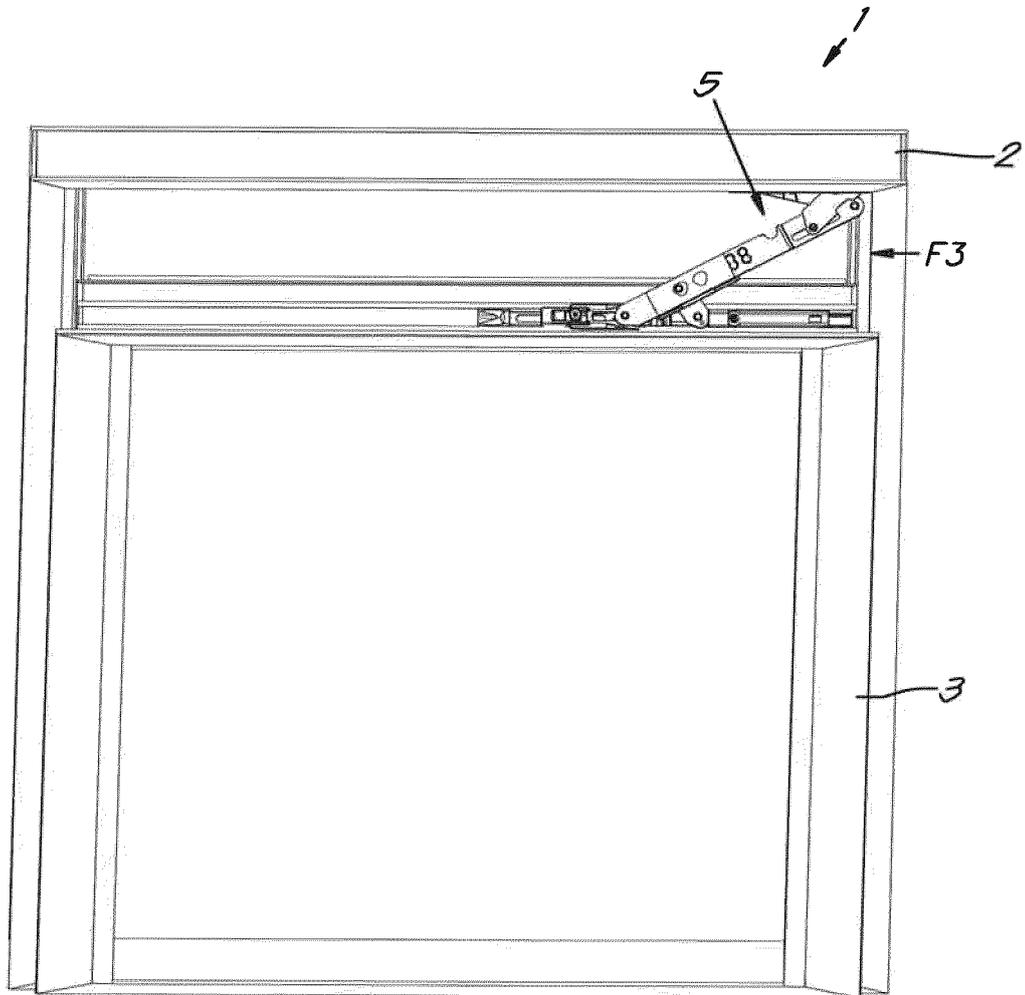
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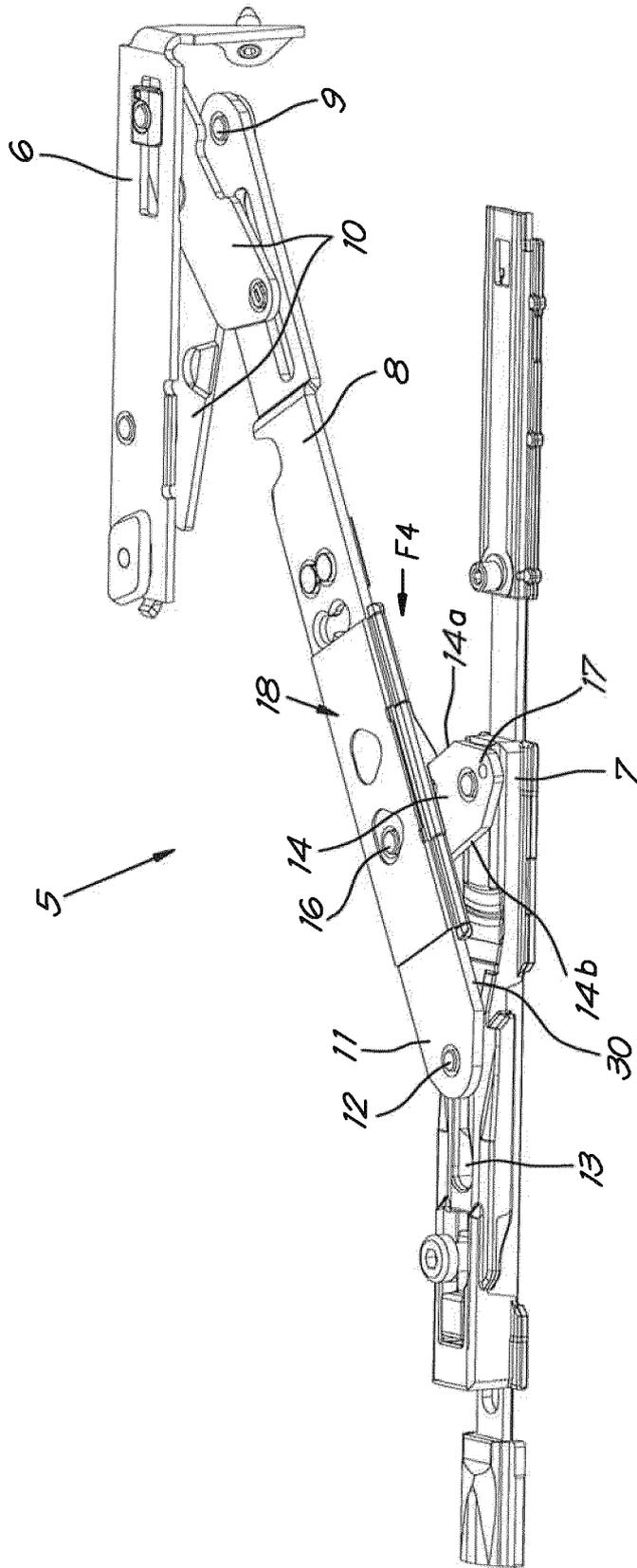
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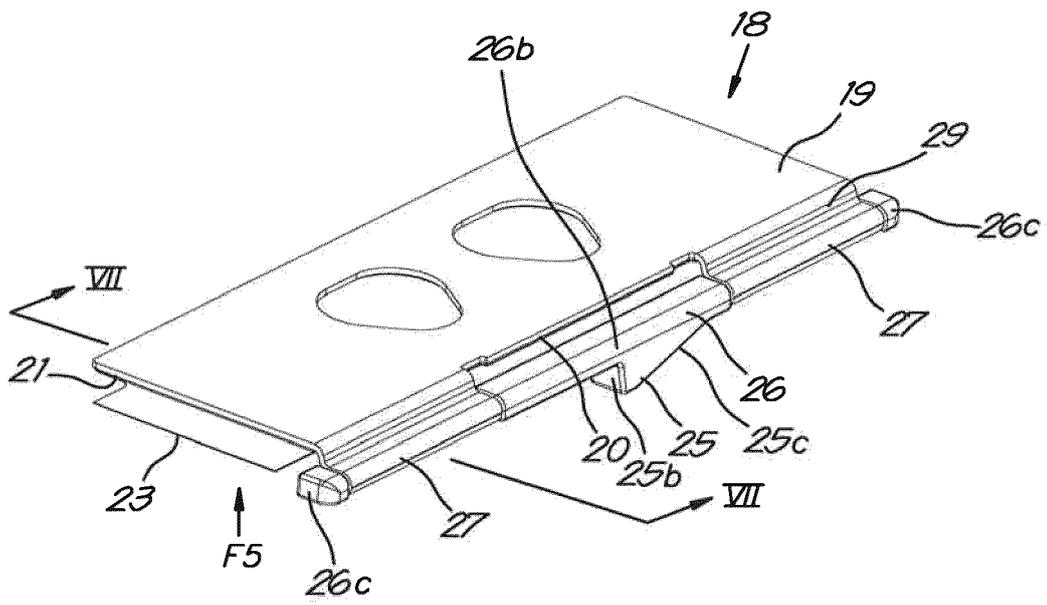
*Fig. 1*



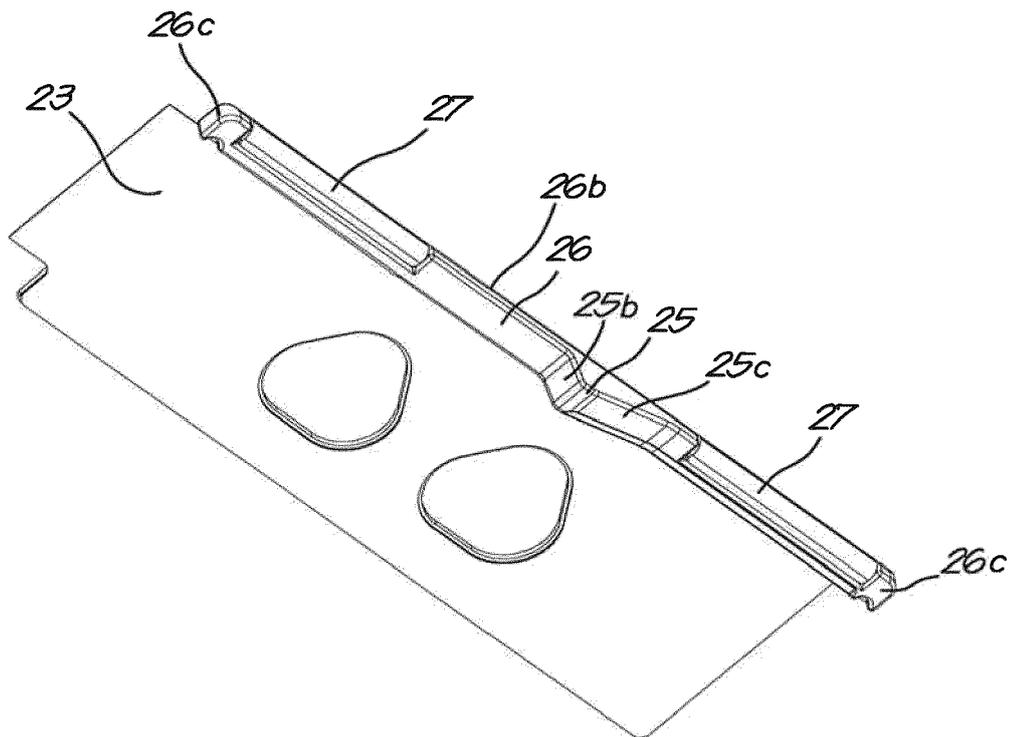
*Fig. 2*



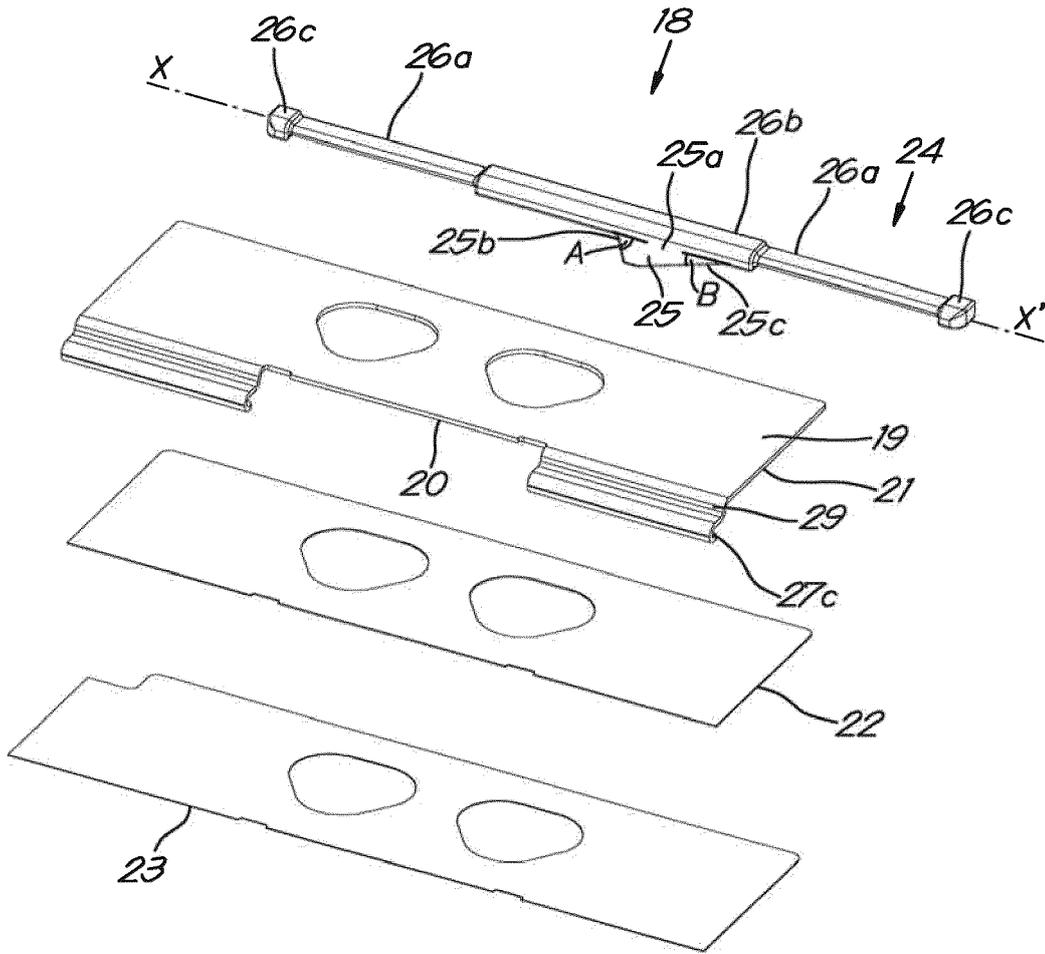
*Fig. 5*



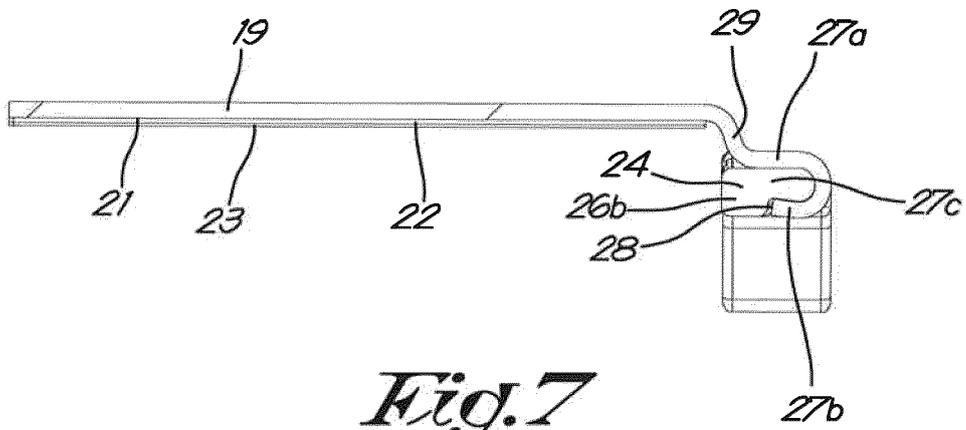
*Fig. 4*



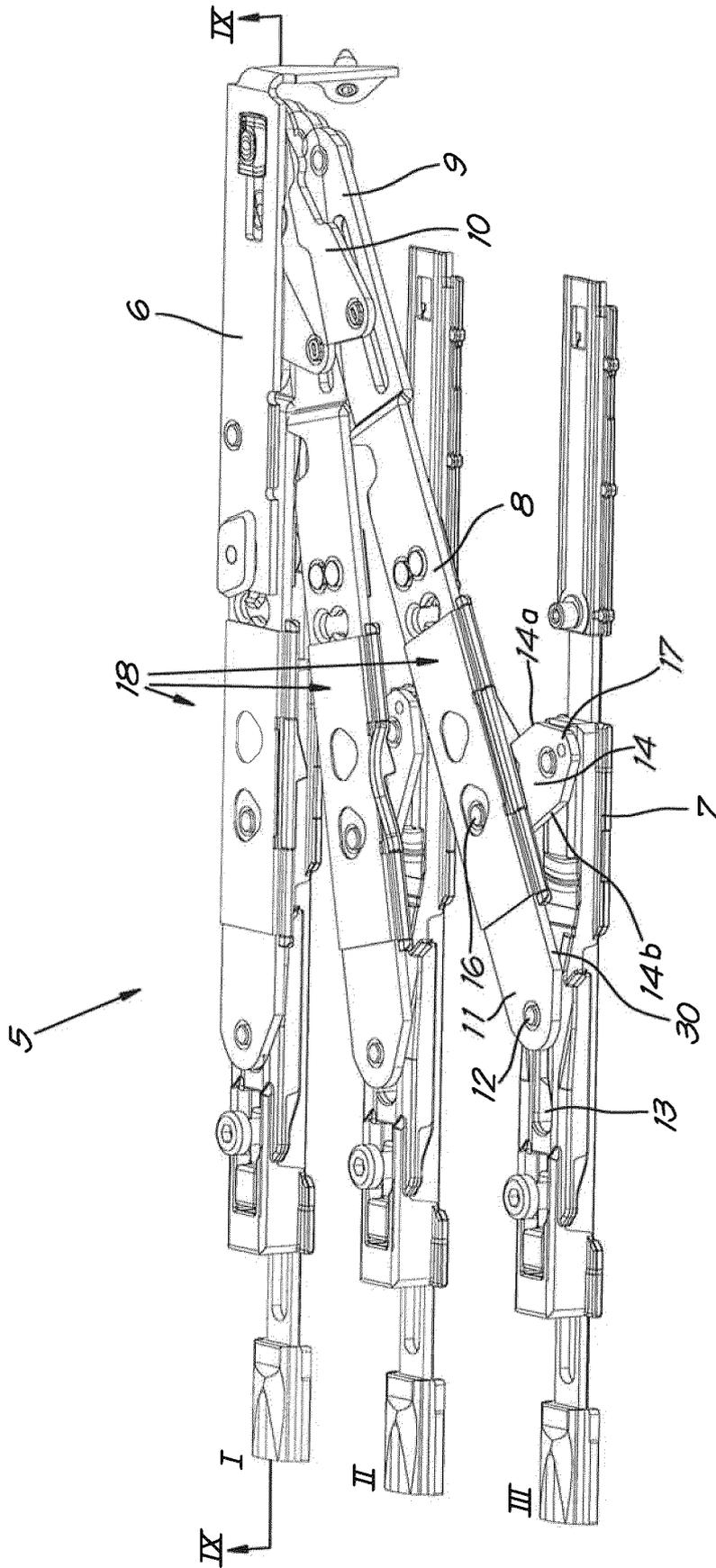
*Fig. 5*



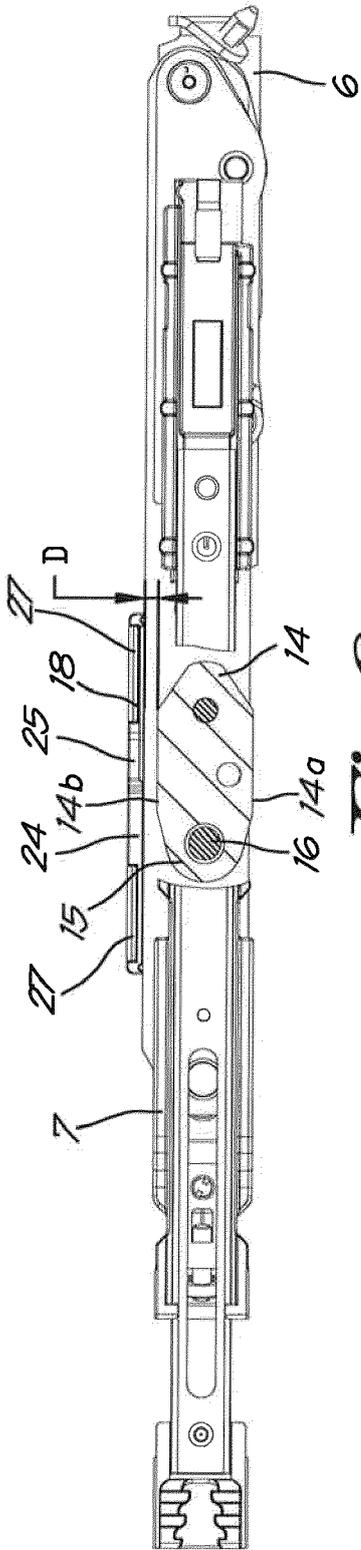
*Fig. 6*



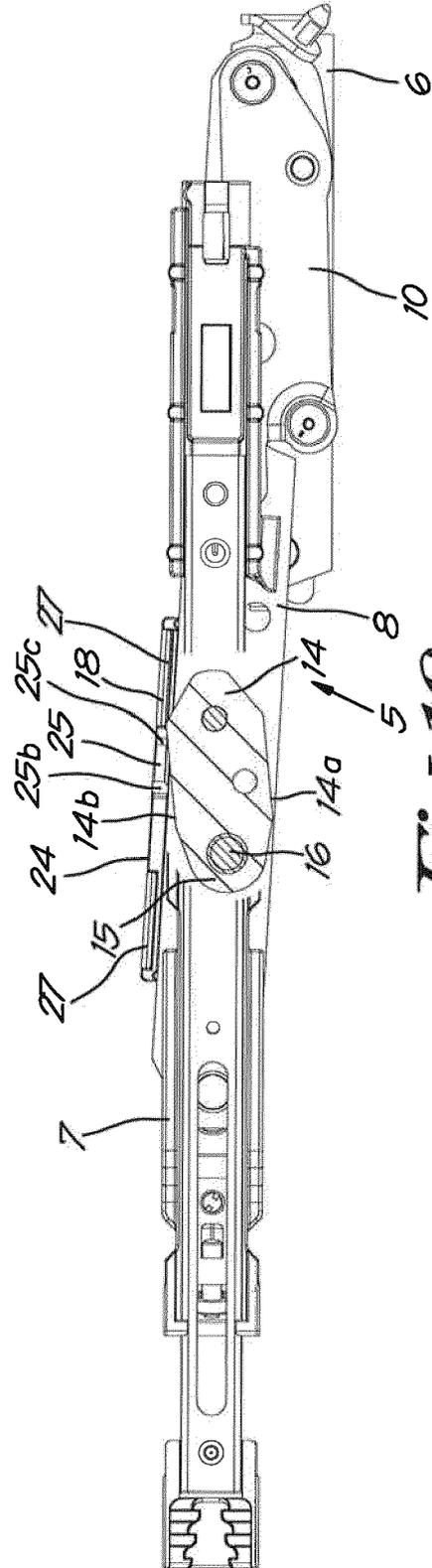
*Fig. 7*



*Fig. 8*



*Fig. 9*



*Fig. 10*



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