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(54) **A COUPLING DEVICE**

VERBINDUNGSVORRICHTUNG

DISPOSITIF DE COUPLAGE

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Description

[0001] The present invention relates to a coupling device for connecting an elongate operator means, such as an operator chain of a chain operator, to a sash member of a window, said coupling device comprising a securing means adapted to be secured to said sash member,

a first coupling member, which at a first end is designed for connection with said free end of said operator means and at a second end has a mouth of a cut-out, and a second coupling member comprising a shaft member rotationally secured to said securing means, said shaft member comprising a connection section with a first transverse dimension corresponding to a width of said mouth and a second, larger dimension corresponding to a width of said cut-out, and rotating means for rotating said shaft member.

[0002] Such a coupling device is known from applicant's European patent no. 0 740 042 B1. When assembling a window to which such a coupling device has been applied or carrying out subsequent repairs of the window, it is of advantage to be able to release a first coupling member of the coupling device from a second coupling member. Hereby, it is made possible to transport a sash and frame of the window separately before mounting the window, and it is possible to open the window more in order to gain access to interior parts of the window, e.g. from a roof in which the window has been mounted.

[0003] The shaft member comprises a connection section having a recess with a first transverse dimension corresponding to a width of a mouth of the first coupling member and a second, larger dimension corresponding to a width of a cut-out of the first coupling member, the mouth being a mouth of this cut-out. Hereby, the shaft member may be secured to the first coupling member by guiding it into the recess in an unlocked position in which said first dimension faces said mouth, and then rotating to a locked position in which the second dimension faces the mouth. The shaft member is rotated by means of a turning handle, which extends into and forms part of the shaft member.

[0004] With this prior art coupling device when a user rotates the shaft member, he has difficulties determining whether the shaft member is in the locked or unlocked position. It is typically necessary to rotate the shaft member some degrees and then lift up the often heavy window sash to see if it is separated from the frame. If not, it is necessary to put the sash back down and then try rotating again. This approach is continued until the sash is, in fact, released from the frame.

[0005] Also, the user has no way of determining whether retention of the first coupling member to the shaft member is in a reliably locked position. If the shaft member has been rotated only a few degrees into the locked position, a few degrees of rotation in the opposite direction would unintentionally release the sash from frame, which is of course unfavourable. Such few degrees of rotation

might arise during normal operation of the window.

[0006] Thus, it is the object of the present invention to provide a coupling device of the above-mentioned type, with which it is possible for a user to more readily and reliably determine whether the coupling device is in a locked or an unlocked position.

[0007] To meet this object the coupling device is characterized by further comprising an indicating means abutting said shaft member, said indicating means being adapted to indicate to a user the rotational position of said shaft member when said user operates said rotating means.

[0008] When a user rotates the shaft member to shift between the locked and unlocked positions of the coupling device according to the invention, the indicating means thus communicates to the user the rotational position of the shaft member, i.e. whether the first dimension or second dimension of the connection section faces the mouth. From this information the user can derive whether the first coupling device is locked to or released from the second coupling member without applying a troublesome test of for example lifting up a heavy window sash to determine if it is separated from a window frame or not.

[0009] With the coupling device according to the invention the user is able to readily and reliably determine whether the coupling device is in the locked or unlocked position. The solution according to the invention can be applied in a low-cost and easy manner during production of the coupling device. Further, the indicating means can be formed as a relatively small element to be positioned within the coupling device such as to not influence the appearance of the coupling member. The indicating means abutting the shaft member provides a reliable, mechanically based method of determining the rotational position of the shaft member.

[0010] In an advantageous embodiment of the invention said indicating means is designed such that said shaft member must overcome a predetermined force in order to rotate. Hereby, information about the position of the shaft member is provided to the user while ensuring that the coupling device does not unintentionally switch between the locked and unlocked positions. An advantageous possibility of providing such a predetermined force is to let said indicating means comprise a spring-loaded abutment means abutting said connection section of said shaft member. Preferably, said abutment means is a leaf spring secured to said securing means for holding said shaft member onto said sash member.

[0011] In another embodiment said rotating means for rotating said shaft member is in the form of a slot for a screwdriver, making it possible to dispense with a handle for rotating the shaft member. This provides for a smaller coupling device with a better appearance.

[0012] In an embodiment said securing means comprises a fixture to be fixed on an inner wall of a hollow profile of said sash member and two holding projections holding respective portions of said shaft member to allow for rotation, but prevent radial and axial movement of

said shaft member. Preferably, said two holding projections are connected by means of a bridge member, said indicating means being attached to said bridge member such as to project towards and abut said connection section of said shaft member.

[0013] In another embodiment said second coupling member is secured to a sash member of a sash of a window, said first coupling member being connected to a drive means, such as a chain operator, by means of an elongate operator means, such as an operator chain, said drive means being secured to a frame of said window, said first coupling member being adapted to be connected to said second coupling member for pivoting said sash in relation to said frame between an open and a closed position of said window.

[0014] The invention will be explained in detail in the following by means of examples of embodiments with reference to the schematic drawing, in which

Fig. 1 is a perspective view of a window applying a first embodiment of the coupling device according to the invention,

Fig. 2 is a cross-sectional view of the window according to Fig. 1,

Fig. 3 is a perspective view of a detail of the window according to Fig. 1 showing inter alia the coupling device of the window of Fig. 1, Fig. 4 is an end view of the detail according to Fig. 3,

Fig. 5 is a first perspective view of the coupling device of the window of Fig. 1,

Fig. 6 is a second perspective view of the coupling device of the window of Fig. 1,

Fig. 7 is a detailed perspective view of a first coupling member of the coupling device of the window of Fig. 1,

Fig. 8 is a detailed perspective view of an indicating means of the coupling device of the window of Fig. 1,

Fig. 9 is a detailed perspective view of a shaft member of the coupling device of the window of Fig. 1,

Fig. 10 is a detailed perspective view of a retainer clip of the coupling device of the window of Fig. 1,

Fig. 11 is a perspective view of a second embodiment of the coupling device according to the invention,

Fig. 12 is a perspective view of a securing member and a shaft member of the coupling device of Fig. 11,

Fig. 13 is a perspective view of an indicating means of the coupling device of Fig. 11, and

Fig. 14 is side view of the coupling member of Fig. 11 mounted in a window sash of a window corresponding to that of Fig. 1.

Figs 1 and 2 show different views of a window comprising a first embodiment of the coupling device according to the present invention. The window comprises a rectangular window portion in the form of a standard Velux® top-hung roof window (GHL type), which is able to pivot about a horizontal axis positioned along a side of the window (i.e. the left side of Fig. 2). The window portion is installed in a flat

roof 16 and comprises a window sash 17 positioned in a window frame 18, the sash 17 and frame 18 being in the form of extruded PVC profiles. In other embodiments the frame and sash may be in the form of for example extruded aluminium profiles or they may comprise wooden parts. The window sash 17 encloses a windowpane 19 with two layers of glazing sandwiching a layer of gas to provide insulation glazing.

[0015] A dome portion 20 in the form of a dome-shaped acrylic plate is attached to the sash 17 to form a weather shield protecting the window portion. The dome portion 20 comprises a peak point from which the surface descends to the sides. Sealing projections or weather strips 21, 22 are supporting the dome portion 20, sealing the sash 17 against the dome portion 20.

[0016] Pivoting the sash 17 and dome 20 about said horizontal axis by means of a chain operator 23 embedded in the frame 4 provides movement between an open and a closed position of the window. The chain operator 23 may be driven automatically and may be radio controlled.

[0017] The sash 17 comprises a sash member 1, and the frame 18 comprises a frame member 4, which are both positioned at the right side of Fig. 2 and shown in more detail in Figs 3 and 4.

[0018] Within the sash member 1 is secured a first embodiment of the coupling device according to the present invention, the coupling device being shown without the sash and frame members 1,4 in Figs. 5 and 6. Individual members of the coupling device are shown separately in Figs. 7 to 10.

[0019] The coupling device comprises a first coupling member 3 (Fig. 7), which is flat and disc-shaped, and a second coupling member 6 comprising a transverse shaft member 6a (Fig. 9).

[0020] The first coupling member 3 is at a first end secured to an elongate operator means in the form of an operator chain 2 (Fig. 7) of the chain operator 23, the operator chain extending into the frame member 4, cf. Fig. 4. At a second end the first coupling member 3 has a mouth 5a of a keyhole-shaped cut-out 5.

[0021] The shaft member 6a of the second coupling member 6 is rotationally secured to a securing means 10, the shaft member 6a comprising a connection section 8 with a first transverse dimension a corresponding to a width of the mouth 5a and a second, larger dimension b corresponding to a width of the cut-out 5. The connection section 8 is in the form of a local two-sided constriction with substantially rectangular cross-section.

[0022] Further, the shaft member 6a comprises rotating means in the form of a slot 7 for a screwdriver for rotating the shaft member 6a. The sash member 1 comprises a bore 7a to allow for insertion of a screwdriver into the slot 7.

[0023] The securing means 10 is preferably made from metal such as steel and comprises a fixture 12 fixed on

an inner wall of a hollow profile of the sash member 1 by means of a bolt 10a, cf. Figs. 3 to 6. A corresponding, not shown bolt is positioned on the opposite side of the shaft member 6a. Two holding projections 13, 14 of the securing means 10 hold respective portions of the shaft member 6a to allow for rotation, but prevent radial and axial movement of the shaft member 6a. A separate clip 9 (Fig. 10) is inserted abutting an outer wall of the holding projection 13 into a circumferential slot 24 of the shaft member 6a to ensure that the shaft member 6a is not released from its proper position.

[0024] The two holding projections 13, 14 are connected by means of a bridge member 15. An indicating means in the form of a spring-loaded leaf spring 11 (Fig. 8) is attached by means of end foldings 11a, 11b to the bridge member 15 such as to project downwards abutting the connection section 8 of the shaft member 6a. As is seen best in Fig. 4, the leaf spring is positioned offset in an axial direction of the shaft member 6 such as to not interfere with the first coupling member 3 during operation of the coupling device. To ensure that the leaf spring 11 does not move out of position on the bridge member 15, the bridge member 15 may comprise corresponding cut-outs (not shown) for taking up the end foldings 11a, 11b. The leaf spring 11 is shaped to be symmetrical over two centre planes and comprises three linear plate-shaped sections 11c, 11d, 11e, the middle part 11d abutting the connection section 8. As will be explained in more detail below, the leaf spring 11 is adapted to indicate to a user the rotational position of the shaft member 6a when the user operates the slot 7 by means of a screwdriver (not shown).

[0025] In Figs 1 to 6 the coupling device is positioned in a locked position, in which the shaft member 6a has been rotated such that the second, larger dimension b faces the mouth 5a of the first coupling member 3. In this position the first coupling member 3 is firmly connected to the second coupling member 6 such that a user is not able to pull the two apart.

[0026] When the user wants to unlock the coupling members 3, 6 from each other, e.g. to gain access to the chain operator 23, he positions a suitable screwdriver through the bore 7a into the slot 7. When the screwdriver is turned, the shaft member 6a is turned such as to assume an unlocked position, in which the first, smaller dimension a of the constricted shaft member section 8 faces the mouth 5a. It is then possible to pull the shaft member 6a out of the cut-out 5 and, thereby, out of engagement with the first coupling member 3.

[0027] When in the locked position one of the two wider surfaces of the constricted section 8 abuts the leaf spring section 11d, the leaf spring 11 providing a spring force against the shaft member 6a. When rotating the shaft member 6a, the user must overcome this spring force to position the coupling device into the unlocked position. When the rotational force on the shaft member 6a has overcome the spring force, the shaft member 6a is forced, by the leaf spring 11, to rotate a remaining distance to

enter the unlocked position, in which the dimension a faces the mouth 5a. In the unlocked position one of the two smaller surfaces of the constricted section abuts the leaf spring section 11d to form another equilibrium of forces. Correspondingly, when rotating the shaft member 6a again, the user must overcome the spring force of this new equilibrium to, again, position the coupling device into the locked position. And again, when the rotational force on the shaft member 6a has overcome the spring force, the shaft member 6a is forced, by the leaf spring 11, to rotate the remaining distance to enter the locked position, in which the dimension b faces the mouth 5a.

[0028] Thus, the spring force provided by the leaf spring 11 acting on the shaft member 6a indicates to a user the rotational position of the shaft member 6a when the user rotates it. Furthermore, the shaft member 6a automatically assumes ("clicks") into the proper locked or unlocked position when the user has overcome the spring force. And the shaft member 6a is held firmly in the position assumed, minimizing the risk of the coupling device jumping out of the locked position during ordinary use of the window.

[0029] The leaf spring 11 could be replaced by other means with similar or like function, such as a spring-loaded plate or an elastic projection.

[0030] Figs 11 to 14 show different views of a second embodiment of the coupling device according to the invention, this embodiment applying such an elastic projection. The second embodiment is in many aspects similar to the first embodiment described above. Similar components and features are provided with similar reference numbers and a detailed description of these is provided in the above description of the first embodiment.

[0031] As in the first embodiment the shaft member 6a is rotationally secured to a fixture 12, which is fixed on an inner wall of a hollow profile of a sash member 1 by means of bolts 10a, 10b. The two holding projections 13, 14 are still present in this embodiment. However, no bridge member connecting these is necessary in the present embodiment.

[0032] In the present embodiment the leaf spring 11 of the first embodiment has been replaced by an indicating means in the form of end plug 25 provided separately from the shaft member 6a, the end plug 25 in this context being considered to form part of the second coupling member 6. The end plug 25 is manufactured from POM and comprises a head part 26, which in the mounted position abuts an outer surface of the sash member 1, cf. Fig. 14, and projections 27 of clip members 28 abut opposite, inner surfaces of the sash member 1 to hold the end plug 25 in position. The head 26 of the end plug 25 comprises two chamfered sides 33 adapted to abut an abutment face, such as a sealing track 34, of the sash member 1 to provide a rotational lock of the end plug 25. Circumferential guide rails 29 are also provided, ensuring proper rotation of the end plug 25.

[0033] The end plug 25 further comprises a transversely extending key 30 provided on an end surface of a lon-

gitudinally extending and centrally positioned plug rod 31, which at its opposite end is connected to the plug head 26. The shaft member 6a comprises a slot 32 corresponding to the key 30.

[0034] In Figs 11 and 14 the end plug 25 has been inserted through a bore 7a in the sash member 1 such that the key 30 engages the slot 32. This provides the locked position of the coupling device, the key 30 and slot 32 in this position hindering rotation of the shaft member 6a. Note that the end plug 25 is rotationally locked to the sash member 1 because one chamfered side 33 of the plug head 26 engages the sealing track 34 of the sash member 1 cf. Fig. 14.

[0035] When rotating the shaft member 6a, the user must overcome a friction-induced, spring-like force between the slot 32 of the shaft member 6a and the elastic material of the key 30 of the end plug 25. When this force has been overcome, a "click" sounds. Hereby, the user can hear and feel that the shaft member 6a is no longer locked in the cut-out 5 of the first coupling member 3. A like signal is released when the shaft member 6a again enters the locked position.

[0036] Thus, the force provided by the slot 32 acting on the key 30 of the shaft member 6a indicates to a user the rotational position of the shaft member 6a when the user rotates it. The shaft member 6a is held firmly in the locked position, minimizing the risk of the coupling device jumping out of the locked position during ordinary use of the window.

[0037] The end plug 25 thus provides a function quite similar to that of the leaf spring 11 of the first embodiment. However, in the present embodiment no indication or signal is provided to the user when the coupling device enters into the unlocked position.

[0038] As shown in Figs 11 to 14 a second end plug 35 has been inserted at an opposite end of the shaft member 6a into bore 7a. A similar end plug could be applied to the first embodiment of the coupling device. Alternatively, the rotating means 7 may be in the form of a handle extending into the shaft member 6a.

[0039] In the above two non-limiting examples of embodiments of the coupling device according to the invention have been described. As would be clear to the skilled person, further embodiments with similar functions can be developed, without departing from the scope of the present invention, as defined by the appended claims.

Claims

1. A coupling device for connecting an elongate operator means (2), such as an operator chain of a chain operator, to a sash member (1) of a window, said coupling device comprising a securing means (10) adapted to be secured to said sash member (1), a first coupling member (3), which at a first end is designed for connection with said free end of said

operator means (2) and at a second end has a mouth (5a) of a cut-out (5), and a second coupling member (6) comprising a shaft member (6a) rotationally secured to said securing means (10),

said shaft member (6a) comprising a connection section (8) with a first transverse dimension (a) corresponding to a width of said mouth (5a) and a second, larger dimension (b) corresponding to a width of said cut-out (5), and rotating means (7) for rotating said shaft member (6a),

characterized by further comprising an indicating means (11, 25) formed as a relatively small element to be positioned within the coupling device, said indicating means (11, 25) abutting said shaft member (6a) and being designed such that said shaft member (6a) must overcome a predetermined force in order to rotate such as to indicate to a user the rotational position of said shaft member (6a) when said user operates said rotating means (7).

2. A coupling device according to claim 1, wherein said indicating means (11, 25) comprises a spring-loaded abutment means abutting said connection section (8) of said shaft member (6a).
3. A coupling device according to claim 2, wherein said abutment means is a leaf spring secured to said securing means (10) for holding said shaft member (6a) onto said sash member (1).
4. A coupling device according to any one of the previous claims, wherein said rotating means (7) is in the form of a slot for a screwdriver.
5. A coupling device according to any one of the previous claims, wherein said securing means (10) comprises a fixture (12) to be fixed on an inner wall of a hollow profile of said sash member (1) and two holding projections (13, 14) holding respective portions of said shaft member (6a) to allow for rotation, but prevent radial and axial movement of said shaft member (6a).
6. A coupling device according to claim 5, wherein said two holding projections (13, 14) are connected by means of a bridge member (15), said indicating means (11) being attached to said bridge member (15) such as to project towards and abut said connection section (8) of said shaft member (6a).
7. A coupling device according to any one of the previous claims, wherein said second coupling member (6) is secured to a sash member (1) of a sash (17) of a window, said first coupling member (3) being connected to a drive means, such as a chain operator, by means of an elongate operator means (2), such as an operator chain, said drive means being

secured to a frame (18) of said window, said first coupling member (3) being adapted to be connected to said second coupling member (6) for pivoting said sash (17) in relation to said frame (18) between an open and a closed position of said window.

Patentansprüche

1. Verbindungsvorrichtung zum Verbinden eines lang gestreckten Betätigungsmittels (2), wie beispielsweise eine Betätigungskette eines Kettenantriebs, mit einem Flügelrahmenelement (1) eines Fensters, wobei die Verbindungsvorrichtung Folgendes aufweist:

ein Befestigungsmittel (10), welches dafür angepasst ist, an dem Rahmenelement (1) befestigt zu werden,

ein erstes Verbindungselement (3), welches an einem ersten Ende zur Verbindung mit dem freien Ende des Betätigungsmittels (2) ausgelegt ist und an einem zweiten Ende eine Mündung (5a) einer Aussparung (5) aufweist, und

ein zweites Verbindungselement (6), welches ein Wellenelement (6a) aufweist, welches drehbar an dem Befestigungsmittel (10) befestigt ist, wobei das Wellenelement (6a) einen Verbindungsabschnitt (8) mit einer ersten querverlaufenden Abmessung (a), welche einer Breite der Mündung (5a) entspricht, und

mit einer zweiten größeren Abmessung (b), welche einer Breite der Aussparung (5) entspricht, und Drehmittel (7) zum Drehen des Wellenelements (6a) aufweist.

dadurch gekennzeichnet, dass sie weiter ein Anzeigemittel (11, 25) aufweist, welches als ein relativ kleines, innerhalb der Verbindungsvorrichtung anzuordnendes Element ausgebildet ist, wobei das Anzeigemittel (11, 25) an das Wellenelement (6a) anstößt und derartig ausgelegt ist, dass das Wellenelement (6a) eine vorgegebene Kraft überwinden muss, um sich derartig zu drehen, um einer Bedienperson die Drehposition des Wellenelements (6a) anzuzeigen, wenn die Bedienperson das Drehmittel (7) betätigt.
2. Verbindungsvorrichtung nach Anspruch 1, wobei das Anzeigemittel (11, 25) ein federbelastetes Anschlagmittel aufweist, welches am Verbindungsabschnitt (8) des Wellenelements (6a) anliegt.
3. Verbindungsvorrichtung nach Anspruch 2, wobei das Anschlagmittel eine an dem Befestigungsmittel (10) befestigte Blattfeder ist, um das Wellenelement (6a) an dem Flügelrahmenelement (1) zu halten.

4. Verbindungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei das Drehmittel (7) in der Form eines Schlitzes für einen Schraubendreher vorliegt.
5. Verbindungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei das Befestigungsmittel (10) eine Halterung (12), welche an einer inneren Wand eines Hohlprofils des Flügelrahmenelements (1) zu befestigen ist, und zwei Haltevorsprünge (13, 14) aufweist, welche jeweilige Abschnitte des Wellenelements (6a) halten, um Drehung zu ermöglichen aber radiale und axiale Bewegung des Wellenelements (6a) zu verhindern.
6. Verbindungsvorrichtung nach Anspruch 5, wobei die beiden Haltevorsprünge (13, 14) mittels eines Brückenelements (15) verbunden sind, wobei das Anzeigemittel (11) an dem Brückenelement (15) derartig befestigt ist, dass es zum Verbindungsabschnitt (8) vorspringt und an dem Verbindungsabschnitt (8) des Wellenelements (6a) anliegt.
7. Verbindungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei das zweite Verbindungselement (6) an einem Flügelrahmenelement (1) eines Flügelrahmens (17) eines Fensters befestigt ist, wobei das erste Verbindungselement (3) mit einem Antriebsmittel, wie beispielsweise einem Kettenantrieb, mittels eines lang gestreckten Betätigungsmittels (2), wie beispielsweise einer Betätigungskette, verbunden ist, wobei das Antriebsmittel an einem Rahmen (18) des Fensters befestigt ist, wobei das erste Verbindungselement (3) dafür angepasst ist, um mit dem zweiten Verbindungselement (6) verbunden zu werden, um den Flügelrahmen (17) in Bezug auf den Rahmen (18) zwischen einer offenen und einer geschlossenen Position des Fensters zu drehen.

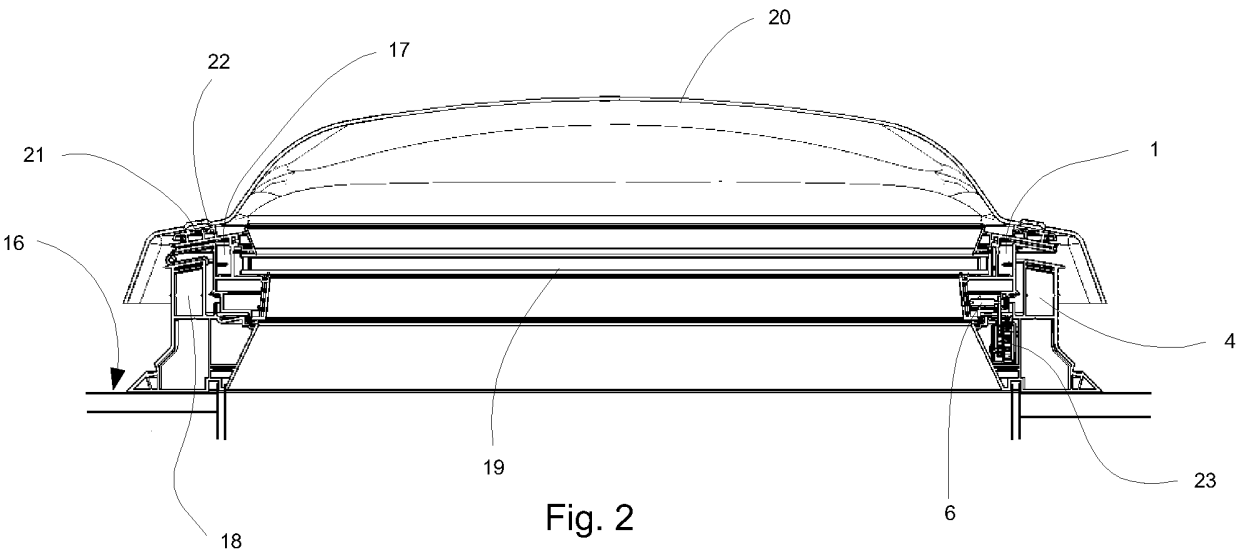
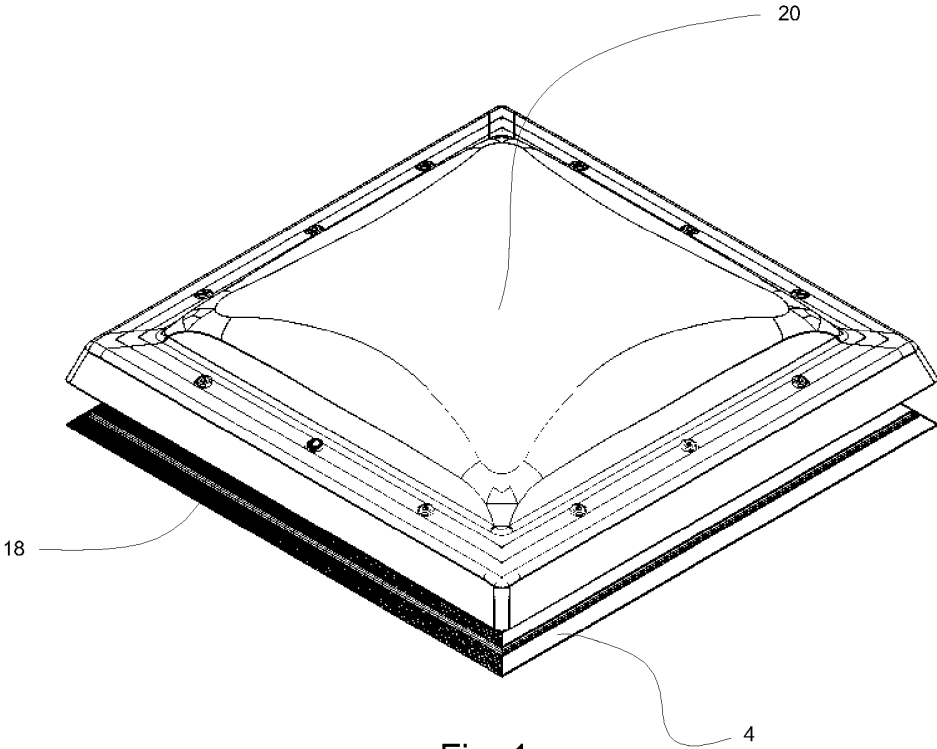
Revendications

1. Dispositif d'accouplement servant à raccorder un moyen d'actionnement (2) allongé, tel qu'une chaîne d'actionnement d'un dispositif d'actionnement à chaîne, à un élément de châssis (1) d'une fenêtre, ledit dispositif d'accouplement comprenant un moyen de fixation (10) conçu pour être fixé audit élément de châssis (1),
- un premier élément d'accouplement (3) qui, à une première extrémité, est conçu pour son raccordement avec ladite extrémité libre dudit moyen d'actionnement (2) et, à une seconde extrémité, comporte une ouverture (5a) d'un évidement (5), et un second élément d'accouplement (6) comprenant un élément formant tige (6a) fixé à rotation audit moyen de fixation (10),

ledit élément formant tige (6a) comprenant une section de raccordement (8) présentant une première dimension transversale (a) correspondant à une largeur de ladite ouverture (5a) et une seconde dimension (b) supérieure, correspondant à une largeur dudit évidement (5), et des moyens de rotation (7) servant à faire tourner ledit élément formant tige (6a), **caractérisé en ce qu'il** comprend en outre un moyen d'indication (11, 25) réalisé sous la forme d'un élément relativement petit destiné à être positionné à l'intérieur du dispositif d'accouplement, ledit moyen d'indication (11, 25) étant en appui contre ledit élément formant tige (6a) et étant conçu de telle sorte que ledit élément formant tige (6a) doive surmonter une force prédéterminée afin de tourner de façon à indiquer à un utilisateur la position en rotation dudit élément formant tige (6a) lorsque ledit utilisateur actionne lesdits moyens de rotation (7).

2. Dispositif d'accouplement selon la revendication 1, dans lequel ledit moyen d'indication (11, 25) comprend un moyen d'appui à ressort en appui contre ladite section de raccordement (8) dudit élément formant tige (6a).
3. Dispositif d'accouplement selon la revendication 2, dans lequel ledit moyen d'accouplement est un ressort à lame fixé audit moyen de fixation (10) pour maintenir ledit élément formant tige (6a) sur ledit élément de châssis (1).
4. Dispositif d'accouplement selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de rotation (7) se présentent sous la forme d'une fente pour un tournevis.
5. Dispositif d'accouplement selon l'une quelconque des revendications précédentes, dans lequel ledit moyen de fixation (10) comprend un élément de fixation (12) destiné à être fixé sur une paroi intérieure d'un profilé creux dudit élément de châssis (1) et deux saillies de maintien (13, 14) maintenant respectivement des parties dudit élément formant tige (6a) afin de permettre une rotation, mais bloquant tout déplacement radial et axial dudit élément formant tige (6a).
6. Dispositif d'accouplement selon la revendication 5, dans lequel lesdites deux saillies de maintien (13, 14) sont raccordées par le biais d'un élément de liaison (15), ledit moyen d'indication (11) étant attaché audit élément de liaison (15) de façon à faire saillie en direction de ladite section de raccordement (8) dudit élément formant tige (6a) et à être en appui contre celle-ci.
7. Dispositif d'accouplement selon l'une quelconque des revendications précédentes, dans lequel ledit

second élément d'accouplement (6) est fixé à un élément de châssis (1) d'un châssis (17) d'une fenêtre, ledit premier élément d'accouplement (3) étant raccordé à un moyen d'entraînement, tel qu'un dispositif d'actionnement à chaîne, par le biais d'un moyen d'actionnement (2) allongé, tel qu'une chaîne d'actionnement, ledit moyen d'entraînement étant fixé à un cadre (18) de ladite fenêtre, ledit premier élément d'accouplement (3) étant conçu pour être raccordé audit second élément d'accouplement (6) afin de faire pivoter ledit châssis (17) par rapport audit cadre (18) entre une position ouverte et une position fermée de ladite fenêtre.



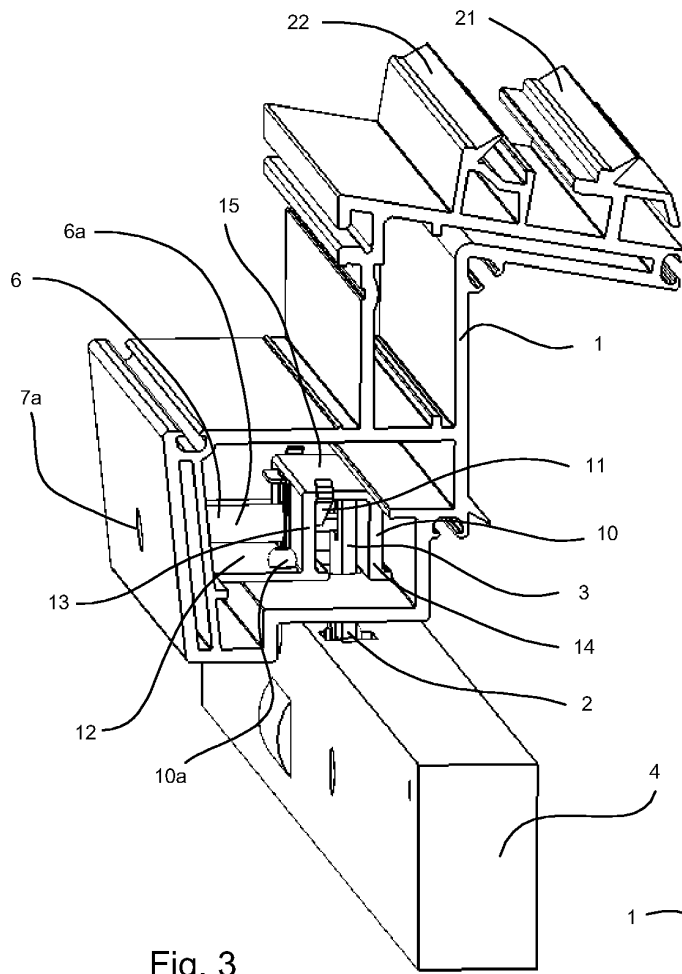


Fig. 3

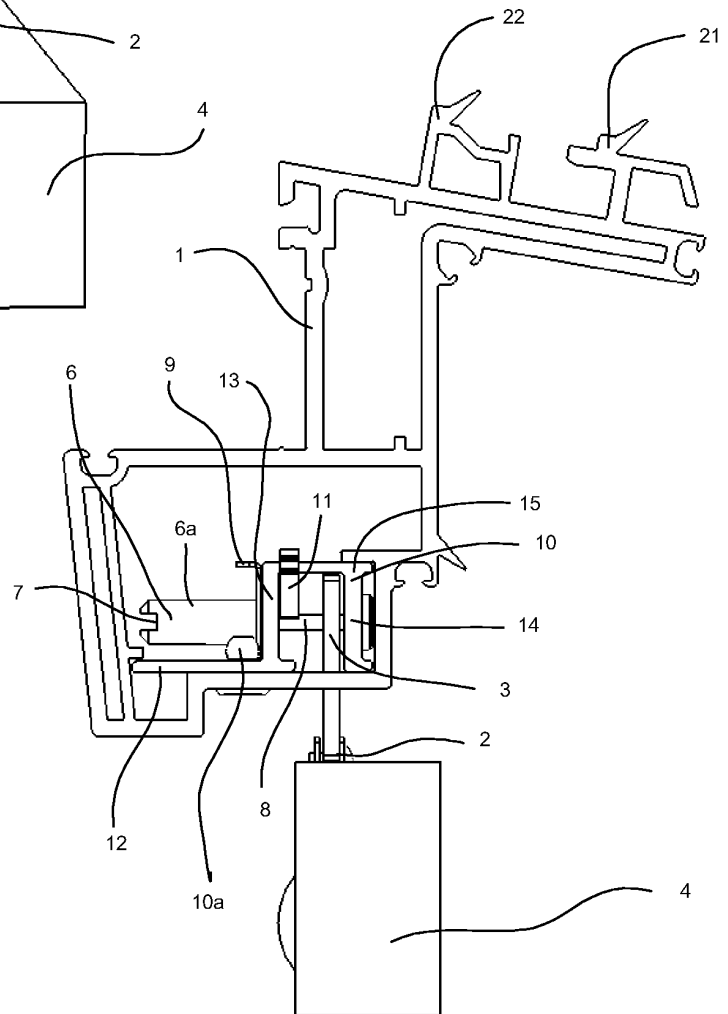


Fig. 4

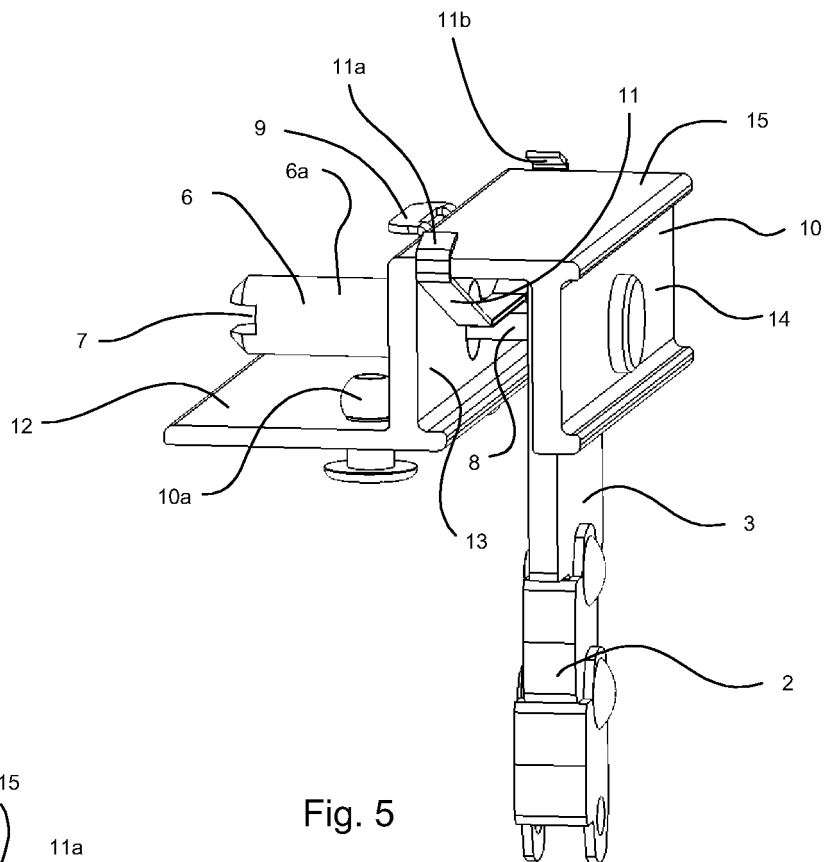


Fig. 5

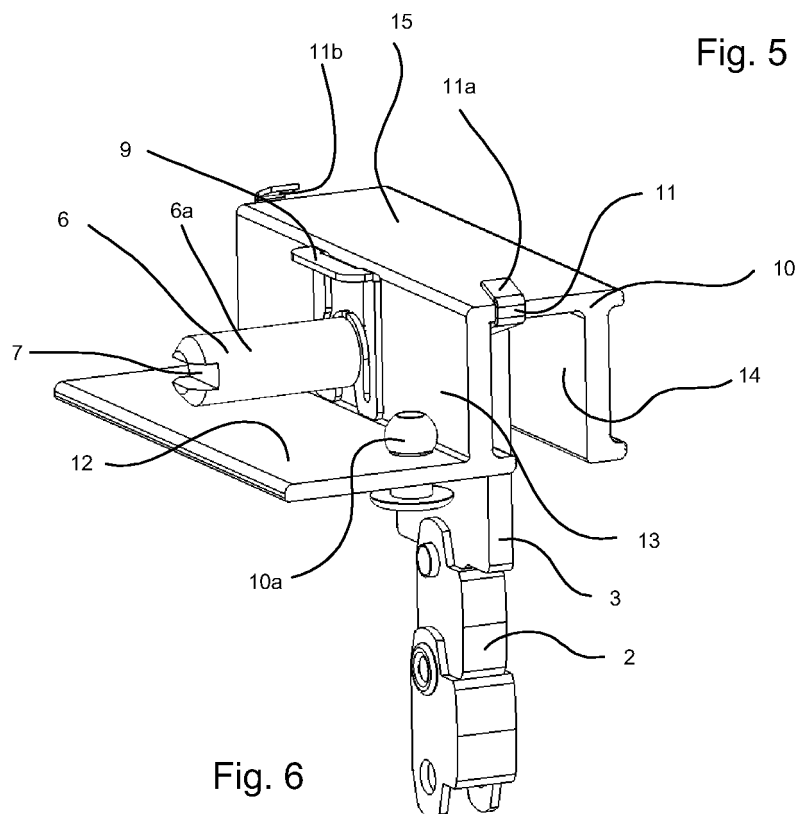


Fig. 6

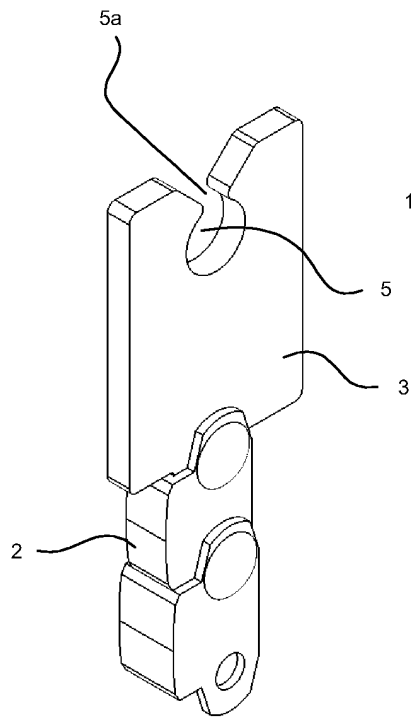


Fig. 7

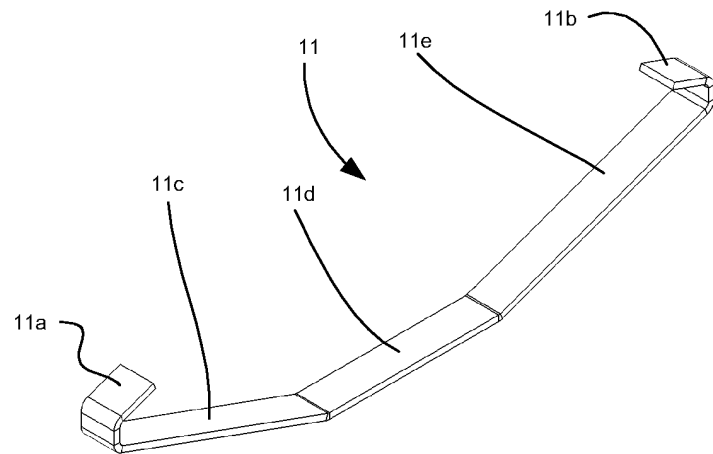


Fig. 8

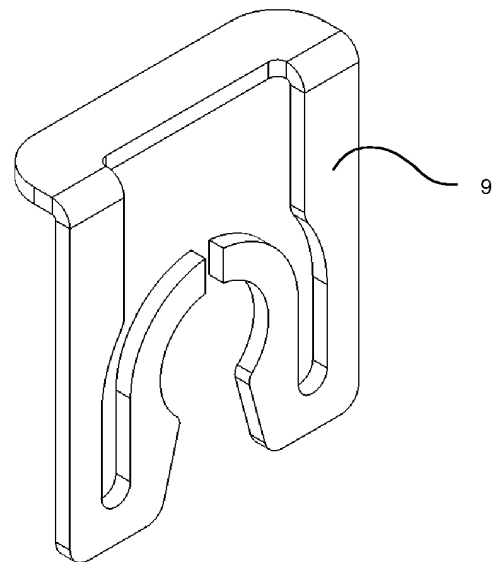


Fig. 10

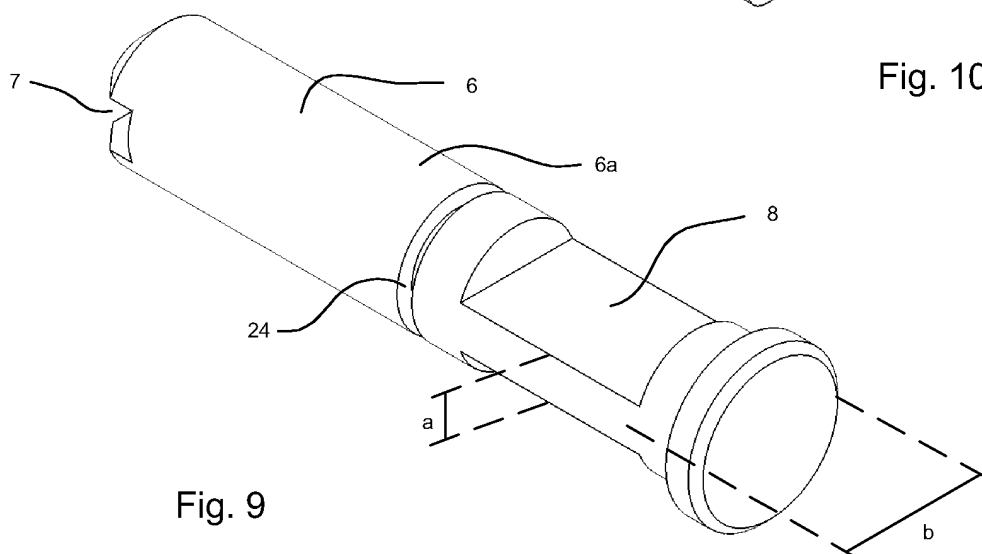


Fig. 9

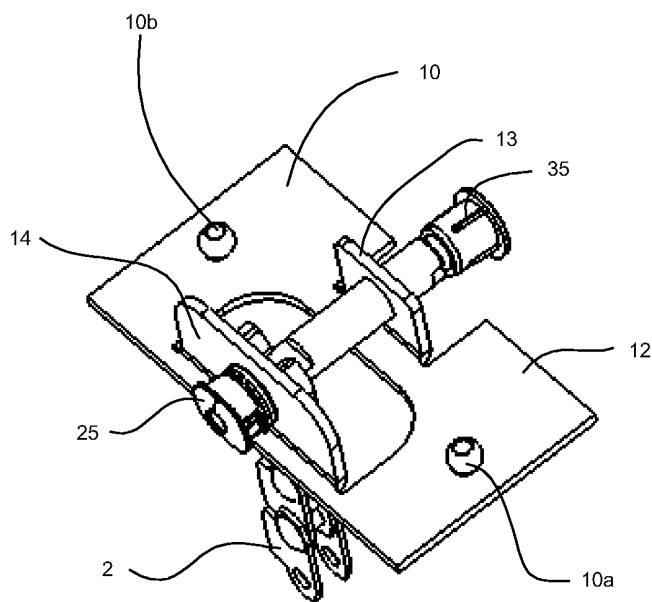


Fig. 11

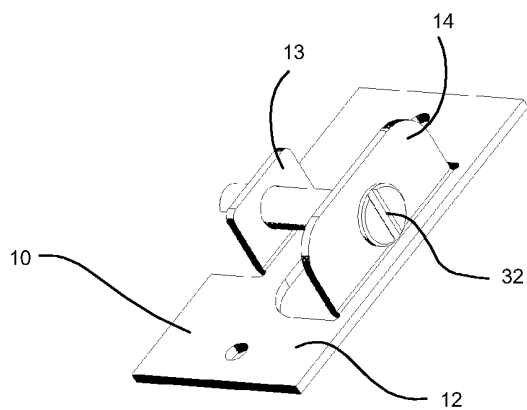


Fig. 12

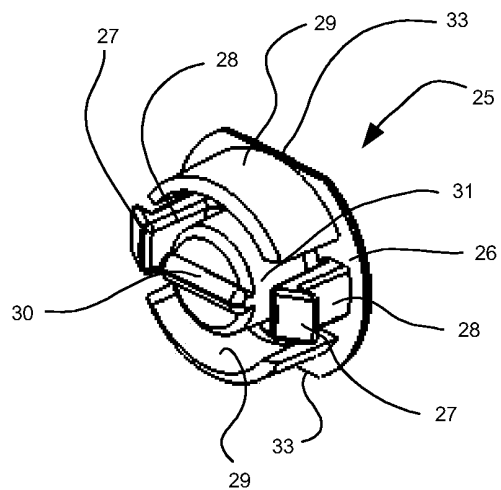


Fig. 13

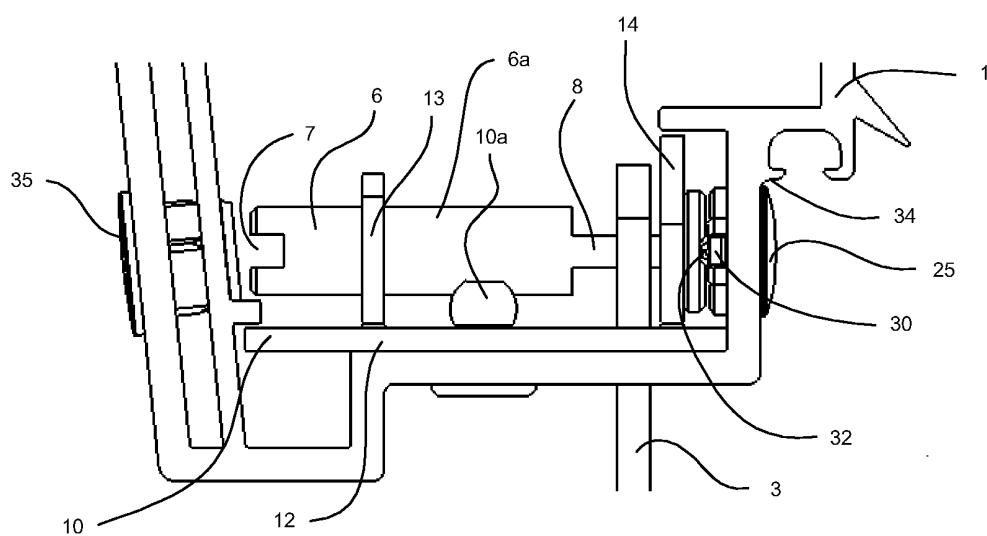


Fig. 14

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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