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(54) **A sliding device, a window having such a sliding device and a method for mounting a sash in such a window**

Eine Schiebevorrichtung, ein Fenster mit einer solchen Schiebevorrichtung und Verfahren zum Montieren eines Flügels in einem solchen Fenster

Un dispositif de coulissement, une fenêtre avec un tel dispositif et un procédé de montage d'une aile dans une telle fenêtre

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Description

[0001] The present invention relates to an assembly for windows comprising a sliding device and a substantially U-shaped rail adapted to be provided at a front side of a window frame, the sliding device comprising a slide member having a slide shoe, said slide shoe being adapted to engage the substantially U-shaped rail comprising a bottom wall, a side wall and a front wall. The front wall has a backside facing away from the bottom wall. The invention further relates to a window having such an assembly and a method for mounting a sash in such a window.

[0002] Such sliding devices are known i.a. from reversible windows. The known sliding devices have a rail with a comparatively deep U-shape and correspondingly a comparatively big slide shoe, as there would otherwise be a risk that the slide shoe during use might fall out from the rail, which under unlucky circumstances may damage the window and at all events cause trouble for the user, which is to bring the slide shoe back into the rail to enable the window to function correctly. Such known sliding devices are therefore comparatively big, which makes them less suited for new window types, where the space for the fittings of the window is limited.

[0003] Another kind of sliding device uses partially closed rails, i.e. with C-shaped cross section, such that the slide shoe is retained against removal. This kind of sliding device ensures a good securing of the slide shoe in the rail, but it is on the other hand difficult to get the slide shoe in and out of engagement with the rail as required during mounting and dismounting of the window. The slide shoe is thus to be introduced into the rail from one end thereof, or a recess should be provided in the rail, such that the slide shoe can be taken out of the rail at a certain place, which, however, increases the risk of the slide shoe unintentionally disengaging the rail, and at the same time it is difficult to take out the block, as it is to be positioned on precisely the right place to be removed from the rail.

[0004] US 1,543,956 discloses a sash mounting showing all the features of the preamble of claim 1.

[0005] WO 96/23125 discloses a window stay.

[0006] It is an object of the present invention to provide a sliding device, which is easy to mount, takes up little room and in which the slide shoe cannot unintentionally disengage the rail.

[0007] It is a further object to provide a window, in which the mounting and the operation of the sash relative to the frame is simple and flexible and which ensures the engagement between sash and frame.

[0008] With a view to meeting the above objects an assembly according to claim 1 is provided. It comprises a safety member adapted to releasably engage the slide member, said safety member being in the mounted condition of the sliding device in engagement with a backside of the side wall of the rail. In this manner it has in a simple way been ensured that the slide shoe will not unintentionally disengage the rail, as this is prevented thereby that the safety member in the mounted position abuts against the backside of the sidewall.

[0009] Said safety member, in the mounted condition of the sliding device, is in abutment against the backside of the front wall of the rail and at the same time in engagement with a backside of the side wall of the rail and furthermore in engagement with the slide member to ensure that the slide shoe will not unintentionally disengage the rail during use.

[0010] The safety member may be a loose member adapted to be connected with the sliding member after mounting of the slide shoe in the rail, for instance with securing means, like a screw, a bolt or a snap connector, but according to a preferred embodiment the safety member is displaceably connected to the slide member to be displaced from a first position at a distance from the slide shoe to a second position, in which the safety member at least partially overlaps the slide shoe.

[0011] With a view to getting a desired retaining function, such that a certain amount of force is to be exerted to move the sliding device, the sliding device comprises means for a varied frictional engagement between the sliding device and the rail.

[0012] In a second aspect, a window with a frame and a sash is provided, said window comprising a tension bar, a compression bar, a rail and a sliding device. The window is characterized in that the sash is connected to the frame by means of an assembly according to the invention.

[0013] An embodiment is characterized in that the rail is provided with means for the attainment of a varied frictional engagement with the sliding device on one or more of its sides over the whole or over a part of its length. This embodiment makes it possible to attain a varying friction over the opening angle of the window, for instance in such a manner that the window has a holding function in chosen angle positions or has a child proofing by means of a point, where the window slides tightly, such that a child cannot open the window fully. Furthermore, the friction coating may be adapted to compensate for the fact that the slide shoe does not move equally much in all the angle areas, such that in spite of this, a fairly uniform resistance against opening and closing is attained.

[0014] In other cases it is desirable that the sliding device is easy to move, for which reason the slide shoe, the rail and the safety member may be adapted to a low mutual friction over the major part of the length of the rail, whereas at predetermined places a high friction is established.

[0015] A third aspect of the invention relates to a method for mounting a sash for a reversible window, comprising the steps according to claim 12.

[0016] Other features and advantages of the invention will appear from the remaining dependent claims and from the following description.

[0017] The invention will be explained in detail in the

following by means of an example of an embodiment with reference to the accompanying drawings, in which

Fig. 1 is a lateral view of a slide member,
Fig. 2 is an end view of the slide member and a rail,
Fig. 3 is a lateral view of a reversible window,
Fig. 4 is an enlarged part view of a sash corner of the reversible window,
Fig. 5 is a lateral view of a safety member,
Fig. 6 is an end view of the safety member,
Fig. 7 is a sectional view through a slide shoe inserted in a rail, in which a safety member is in its passive position,
Fig. 8 is a sectional view through a slide shoe inserted in a rail, in which the safety member is in its active position, and
Fig. 9 is a schematic view of a sash for a reversible window during mounting.

[0018] A slide member 2, which constitutes a part of a sliding device 1, is shown in a lateral view in Fig. 1. The slide member 2 comprises a slide shoe 3 extending along a side edge. The slide member 2 may, as shown, be a comparatively small fitting adapted to be connected to a further member, like a sash of a reversible window, for instance by means of an eye 11. The slide member 2 has, moreover, a leg 16, the function of which will be explained in the following.

[0019] Fig. 2 is an end view of the slide member 2 and a rail 4, said rail comprising a bottom wall 5, a sidewall 6 and a front wall 7. The slide shoe 3 may be a bent metal leg, which is appropriately provided with an outer layer of plastic, whereby a slide shoe 3 is established, said slide shoe being easily displaceable in the rail 4 without any noise. If a particularly small resistance against displacement of the slide shoe 3 in the rail 4 is required, the slide shoe 3 may be provided with an exterior coating of a friction-dampening material, such as Teflon. Alternatively or supplementary the rail 4 may be provided with friction-dampening material on the surfaces, where the slide shoe 3 slides. In other cases a considerable friction between the slide shoe 3 and the rail 4 is desirable for instance in order to obtain a holding function, such that the window may be open in a ventilating position, and in that case the slide shoe 3 and/or the rail 4 may be provided with a friction-increasing surface, for instance at selected places along the length of the rail. Alternatively, the rail 4 may be dimensioned in such a manner that the slide shoe 3 slides comparatively tight-fittingly in the rail 4 over the whole length thereof or solely at selected places.

[0020] A suitable use for such a sliding device 1 is as a guide for a sash 13 relative to a frame 23 of a reversible window 12 known per se, as illustrated in a slightly open position in Fig. 3. The design of such a reversible window will be described in consideration of principles only. The sash 13 of the reversible window 12 is mounted in a guide member comprising a tension bar 33, the upper end of which is rotatably connected to the frame 23, and the lower end of which is connected to a compression bar 43. One end of the compression bar 43 is connected to the sash substantially at its central body and the other end is displaceably connected to the frame 23. The sash 13 is at its upper edge displaceably connected to the frame 23 by means of the sliding device 1 according to the invention, which is more clearly seen in Fig. 4, which is an enlarged part view of a sash corner of the reversible window. It will be seen here, how the slide member 2 is connected to the sash 13 at the eye 11, whereas the slide shoe 3 of the sliding device is inserted in the rail 4. In this manner the upper edge of the sash 13 is displaceable along the front side of the window frame, such that the sash 13 can be turned completely over, whereby for instance cleaning of the window is facilitated.

[0021] Figs 5 and 6 show a lateral view and an end view, respectively, of a safety member 8. It will be seen that the safety member 8 comprises an arm 14 functioning as a pre-stressing member and a locking member, which will be explained in detail below. The safety member may preferably be manufactured from a suitable plastic material. In cases, where it is desirable that the sliding device 1 has a particularly high friction, the safety member 8 may be manufactured from a material comprising hard particles, if at all, solely at the abutment surfaces against the rail in the mounted position of the safety member. In other cases, in which it is required that the sliding device has a particularly low friction, the safety member 8 may have a surface of a friction-dampening material, for instance Teflon.

[0022] Fig. 7 is a cross section through the sliding device 1 in a position during mounting or dismounting of the sash relative to the frame. In this position the safety member 8 is positioned somewhat at a distance from the rail 4, the end 14a being brought out of engagement with the leg 16. In this position it is thus possible to insert the slide shoe 3 in the rail 4 during mounting or to remove the slide shoe 3 from the rail during dismounting. In case of dismounting the safety member 8 can be further displaced relative to the slide shoe 3, such that the edge 15 (shown more clearly in Fig. 6) goes completely clear of the slide shoe.

[0023] Fig. 8 is a cross section through the sliding device 1 in its mounted position, in which the slide shoe 3 is inserted in the rail 4, and in which the safety member 8 is in abutment against the front wall 7 of the rail 4. At the same time the edge 15 of the safety member 8 is positioned at a backside 6a of the side wall 6, such that the slide shoe 3 is prevented from being removed from the rail 4. Furthermore, the end 14a of the arm 14 is in this mounted position of the sliding device in engagement with the leg 16 on the slide member 2, such that the safety member 8 is prevented from being removed from the rail 4. At the same time the leg 16 prevents the safety member 8 from being displaced relative to the slide member 2 in the direction of the rail 4.

[0024] The safety member 8 may, moreover, be adapt-

ed, in a manner not shown in detail, to be retained at differing distances from the rail 4, whereby is achieved that the friction of the sliding device against the rail 4 is adjustable. This may for instance take place in a stepless manner by fastening the safety member 8 with screws in the desired position, or stepwise for instance by engagement between a leg of the safety member 8 and a hole in the slide member 2, or for instance thereby that the arm 14 is provided with a row of notches for engagement with the leg 16, alternatively thereby that the end 14a of the arm 14 may engage the underside of the leg 16. In a very simple embodiment (not shown) the sliding device may be provided with a pressure member in the form of for instance a leaf spring, which increases the friction against the rail. Other ways of varying the friction are conceivable, in this connection devices like cam mechanisms or the like, which makes it possible to shift manually or automatically between a condition, in which the friction is very low, and a condition, in which the friction is very high. The actuation thereof may for instance take place at predetermined places along the rail by means of actuating means provided on or in the rail itself.

[0025] Mounting of a sash of a reversible window in the rail is illustrated in Fig. 9, which is a schematic view of a sash 13 for a reversible window 12 during the mounting of the sash 13 on the frame 23. It will be seen that the sash 13 is positioned slightly askew, such that the horizontal distance between the slide shoes gets smaller, following which the slide shoes 3 may be introduced in the rail at the respective sides of the frame.

[0026] The window is preferably designed in such a manner that the sash 13 has substantially the same circumference as the frame 23 and in such a manner that the tension bar 33 is situated at or close to the exterior edge of the frame 23, for instance 1-2 mm from the frame. This means that the tension bar will be only slightly visible, when the window is closed. When the window is turned over, for instance to attain a cleaning position, the tension bar 33 will slightly touch the edge of the sash 13.

[0027] The rail 4 may preferably be manufactured by extrusion from aluminium, whereby a comparatively strong and low-cost rail is attained. The rail 4 may furthermore preferably be provided with a mounting means 17, for instance in the form of one or more protruding flanges or a longitudinal wall part adapted to be secured to the frame.

[0028] The invention is not to be considered as being limited to the embodiments described above and shown in the drawings, but different variations and combinations are conceivable as defined in the appended claims.

Claims

1. An assembly for windows comprising a sliding device (1) and a substantially U-shaped rail (4) adapted to be provided at a front side of a window frame, the substantially U-shaped rail (4) comprising a bottom wall (5), a side wall (6) and a front wall (7), the side wall (6) connecting the bottom wall (5) and the front wall (7) and having a backside (6a) facing away from the bottom wall (5) and the front wall (7), the front wall (7) having a backside (7a) facing away from the bottom wall (5), the sliding device (1) comprising a slide member (2) having a slide shoe (3) being adapted to engage the substantially U-shaped rail (4) and being displaceable in the rail (4) between the bottom wall (5) and the front wall (7), the sliding device (1) further comprising a safety member (8) being releasably engaged with the slide member (2), **characterized in that** the safety member (8) in the mounted condition of the sliding device is in abutment against the backside (7a) of the front wall (7) of the rail (4) and at the same time in engagement with the backside (6a) of the side wall (6) of the rail (4) and furthermore in engagement with the slide member (2) to ensure that the slide shoe will not unintentionally disengage the rail during use:

2. An assembly according to claim 1, **characterized in that** the safety member (8) is displaceably connected to the slide member (2) for displacement during mounting from a first position at a distance from the slide shoe (3) to a second position, in which the safety member (8) at least partially overlaps the slide shoe (3).

3. An assembly according to one of the claims 1 and 2, **characterized in that** said sliding device (1) comprising means for a varied frictional engagement between the sliding device (1) and the rail (4).

4. An assembly according to claim 3, **characterized in that** the safety member (8) comprises means for frictional engagement with the rail (4).

5. An assembly according to claim 3 or 4, **characterized in that** the slide shoe (3) comprises a friction material.

6. An assembly according to one of the claims 3-5, **characterized in that** the sliding device comprises a pre-stressing member.

7. An assembly according to one of the preceding claims, **characterized in that** the releasable connection between the slide member and the safety member in the mounted condition is locked by an arm (14).

8. A window (12) with a frame (23) and a sash (13) comprising a tension bar (33), a compression bar (43), a rail (4) and a sliding devices (1), **characterized in that** the sash (13) is connected to the frame (23) by means of the assembly according to one of the claims 1-7

9. A window (12) according to claim 8, **characterized in that** the rail (4) is provided with means for the attainment of a varied frictional engagement with the sliding device on one or more of its sides over the whole or over a part of its length.

10. A window (12) according to claim 8 or 9, **characterized in that** the slide shoe (3), the rail (4) and the safety member (8) are adapted to display a low mutual friction over the major part of the length of the rail, whereas at predetermined places a high friction is established. (12.)

11. A window (12) according to one of the claims 8-10, **characterized in that** the circumference of the sash (13) substantially corresponds to that of the frame (23), and in which the tension bar (33) is positioned by or close to the exterior edge of the frame (23).

12. A method for mounting a sash (13) for a reversible window (12) by means of an assembly according to claims 1, comprising the following steps:

provision of a frame (23),
provision of a sash (13),
provision of a set of rails of substantially U-shaped cross section at a front side of the frame, said rails (4) opening towards the opening of the window, each rail (4) comprising a bottom wall (5), a side wall (6) and a front wall (7), the side wall) (6) connecting the bottom wall (5) and the front wall (7) and having a backside (6a) facing away from the bottom wall (5) and the front wall (7), the front wall (7) having a backside (7a) facing away from the bottom wall (5),
provision of two sliding devices (1) comprising a set of slide shoes (3) at the sash (13),
insertion of the slide shoes (3) in the rails (4) by tilting the sash (13) relative to the frame (23),

characterized by the further step of actuating a safety member (8) provided at the sliding device (1), such that the safety member (8) is brought into abutment against the rail (4) at its backside (7a) of the front wall (7) and at the same time in engagement with the backside (6a) of the side wall (6) of the rail (4) and furthermore in engagement with the slide member (2), whereby removal of the slide shoe (3) from the rail (4) during use is prevented.

Patentansprüche

1. Vorrichtung für Fenster umfassend eine Schiebevorrichtung (1) und eine im Wesentlichen U-förmige Schiene (4), welche dazu ausgebildet ist, an einer Vorderseite eines Fensterrahmens vorgesehen zu sein, wobei die im Wesentlichen U-förmige Schiene (4) eine Bodenwand (5), eine Seitenwand (6) und eine Vorderwand (7) aufweist, wobei die Seitenwand (6) die Bodenwand (5) und die Vorderwand (7) verbindet und eine der Bodenwand (5) und der Vorderwand (7) abgewandte Rückseite (6a) aufweist, wobei die Vorderwand (7) eine der Bodenwand (5) abgewandte Rückseite (7a) aufweist, wobei die Schiebevorrichtung (1) ein Schiebeelement (2) umfasst, welches einen Gleitschuh (3) aufweist, welcher dazu ausgebildet ist, mit der im Wesentlichen U-förmigen Schiene (4) in Eingriff zu gelangen und in der Schiene (4) zwischen der Bodenwand (5) und der Vorderwand (7) verschieblich ist, wobei die Schiebevorrichtung (1) ferner ein Sicherheitselement (8) aufweist, welches sich mit dem Schiebeelement (2) im lösbaren Eingriff befindet, **dadurch gekennzeichnet, dass** das Sicherheitselement (8) im montieren Zustand der Schiebevorrichtung an der Rückseite (7a) der Vorderwand (7) der Schiene (4) anliegt und sich gleichzeitig mit der Rückseite (6a) der Vorderwand (6) der Schiene (4) im Eingriff befindet und sich ferner mit dem Schiebeelement (2) im Eingriff befindet, um zu sichern, dass der Gleitschuh während des Gebrauchs nicht unbeabsichtlich mit der Schiene außer Eingriff gelangt.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Sicherheitselement (8) zum Verschieben während des Montierens von einer ersten Stellung in einem Abstand von dem Gleitschuh (3) in eine zweite Stellung, in welcher das Sicherheitselement (8) den Gleitschuh (3) zumindest teilweise überlappt, mit dem Schiebeelement (2) verschieblich verbunden ist.

3. Vorrichtung nach einem der Ansprüche 1 und 2, **dadurch gekennzeichnet, dass** die Schiebevorrichtung (1) Organe für einen abwechselnden Reibschluss zwischen der Schiebevorrichtung (1) und der Schiene (4) aufweist.

4. Vorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** das Sicherheitselement (8) Organe für einen Reibschluss mit der Schiene (4) aufweist.

5. Vorrichtung nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** der Gleitschuh (3) ein Reibungsmaterial umfasst.

6. Vorrichtung nach einem der Ansprüche 3 bis 5, **dadurch gekennzeichnet, dass** die Schiebevorrichtung ein Vorspannelement aufweist.

7. Vorrichtung nach einem der vorgehenden Ansprüche, **dadurch gekennzeichnet, dass** die lösbare Verbindung zwischen dem Schiebelement und dem Sicherheitselement im montierten Zustand durch einen Arm (14) verriegelt ist.

8. Fenster (12) mit einem Rahmen (23) und einem Flügelrahmen (13) umfassend eine Spannleiste (33), eine Kompressionsstange (43), eine Schiene (4) und eine Schiebevorrichtung (1), **dadurch gekennzeichnet, dass** der Flügelrahmen (13) mittels der Vorrichtung nach einem der Ansprüche 1 bis 7 mit dem Rahmen (23) verbunden ist.

9. Fenster (12) nach Anspruch 8, **dadurch gekennzeichnet, dass** die Schiene (4) mit Organen zum Festhalten eines abwechselnden Reibschlusses mit der Schiebevorrichtung an einer oder mehreren ihrer Seiten über die gesamte oder über einen Teil ihrer Länge ausgestattet ist.

10. Fenster (12) nach Anspruch 8 oder 9, **dadurch gekennzeichnet, dass** der Gleitschuh (3), die Schiene (4) und das Sicherheitselement (8) dazu ausgebildet sind, eine geringe gegenseitige Reibung über den größten Teil der Länge der Schiene auszuweisen, während an vorgegebenen Stellen eine hohe Reibung etabliert ist.

11. Fenster (12) nach einem der Ansprüche 8 bis 10, **dadurch gekennzeichnet, dass** der Umfang des Flügelrahmens (13) im Wesentlichen dem des Rahmens (23) entspricht, und wobei die Spannleiste (33) am äußeren Rand oder in der Nähe des äußeren Randes des Rahmens (23) angeordnet ist.

12. Verfahren zum Montieren eines Flügelrahmens (13) für ein reversierbares Fenster (12) mittels einer Vorrichtung nach Anspruch 1, umfassend die folgenden Schritte:

Vorsehen eines Rahmens (23),
Vorsehen eines Flügelrahmens (13),
Vorsehen eines Satzes von Schienen mit einem im Wesentlichen U-förmigen Querschnitt an einer Vorderseite des Rahmens, welche Schienen (4) sich gegen die Öffnung des Fensters öffnen, wobei jede Schiene (4) eine Bodenwand (5), eine Seitenwand (6) und eine Vorderwand (7) aufweist, wobei die Seitenwand (6) die Bodenwand (5) und die Vorderwand (7) verbindet und eine der Bodenwand (5) und der Vorderwand (7) abgewandte Rückseite (6a) aufweist, wobei die Vorderwand (7) eine der Bodenwand (5) abgewandte Rückseite (7a) aufweist,
Vorsehen zweier Schiebevorrichtungen (1) umfassend einen Satz von Gleitschuhen (3) am Flügelrahmen (13),
Einsetzen der Gleitschuhe (3) in die Schienen (4) durch Kippen des Flügelrahmens relativ zum Rahmen (23),

gekennzeichnet durch den weiteren Schritt der Betätigung eines an der Schiebevorrichtung (1) vorgesehenen Sicherheitselements (8) derart, dass das Sicherheitselement (8) zur Anlage an der Schiene (4) an der Rückseite (7a) der Vorderwand (7) und gleichzeitig in Eingriff mit der Rückseite (6a) der Seitenwand (6) der Schiene (4) und ferner in Eingriff mit dem Schiebeelement (2) gebracht wird, wodurch ein Lösen des Gleitschuhs (3) von der Schiene (4) während des Gebrauchs verhindert wird.

Revendications

1. Ensemble pour les fenêtres comprenant un dispositif de coulissement (1) et un rail essentiellement en U (4) adapté pour être pourvu à une face avant d'un cadre de fenêtre, le rail essentiellement en U (4) comprenant une paroi inférieure (5), une paroi latérale (6) et une paroi avant (7), la paroi latérale (6) reliant la paroi inférieure (5) et la paroi avant (7) et présentant un dos (6a) détourné de la paroi inférieure (5) et de la paroi avant (7), la paroi avant (7) présentant un dos (7a) détourné de la paroi inférieure (5), le dispositif de coulissement (1) comprenant un élément coulissant (2) présentant un coulisseau (3) étant adapté pour entrer en prise avec le rail essentiellement en U (4) et étant déplaçable dans le rail (4) entre la paroi inférieure (5) et la paroi avant (7), le dispositif de coulissement (1) comprenant un outre un élément de sécurité (8) étant en prise détachable avec l'élément coulissant (2), **caractérisé en ce que** l'élément de sécurité (8) dans l'état monté du dispositif de coulissement est en appui contre le dos (7a) de la paroi avant (7) du rail (4) et en même temps en prise avec le dos (6a) du paroi latérale (6) du rail (4) et en plus en prise avec l'élément coulissant (2) pour assurer que le coulisseau ne sort pas de la prise avec le rail accidentellement lors de l'usage.

2. Ensemble selon la revendication 1, **caractérisé en ce que** l'élément de sécurité (8) est relié de manière déplaçable à l'élément coulissant (2) pour déplacement lors du montage à partir d'une première position à une distance du coulisseau (3) vers une deuxième position dans laquelle l'élément de sécurité (8) au moins partiellement recouvre le coulisseau (3).

3. Ensemble selon l'une des revendications 1 et 2, **caractérisé en ce que** le dispositif de coulissement (1) comprend des moyens pour une prise de friction variée entre le dispositif de coulissement (1) et le rail (4).

4. Ensemble selon la revendication 3, **caractérisé en ce que** l'élément de sécurité (8) comprend des moyens pour une prise de friction avec le rail (4).

5. Ensemble selon la revendication 3 ou 4, **caractérisé**

en ce que le coulisseau (3) comprend un matériau de frottement.

6. Ensemble selon l'une des revendications 3 à 5, **caractérisé en ce que** le dispositif de coulissement comprend un élément de précontrainte.

7. Ensemble selon l'une des revendications précédentes, **caractérisé en ce que** la liaison détachable entre l'élément coulissant et l'élément de sécurité dans l'état monté est verrouillé par un bras (14).

8. Fenêtre (12) avec un cadre (23) et un ouvrant (13) comprenant une barre de tension (33), une barre de compression (43), un rail (4) et un dispositif de coulissement (1), **caractérisée en ce que** l'ouvrant (13) est relié au cadre (23) au moyen de l'ensemble selon l'une des revendications 1 à 7.

9. Fenêtre (12) selon la revendication 8, **caractérisée en ce que** le rail (4) est pourvu de moyens pour obtenir une prise de friction variée avec le dispositif de coulissement (1) sur l'une ou plusieurs de ses faces sur toute la longueur ou sur une partie de celle-ci.

10. Fenêtre (12) selon la fenêtre 8 ou 9, **caractérisée en ce que** le coulisseau (3), le rail (4) et l'élément de sécurité (8) sont adaptés pour afficher une basse friction mutuelle sur la plupart de la longueur du rail, tandis qu'à des places prédéterminées, une haute friction est établie.

11. Fenêtre (12) selon l'une des revendications 8 à 10, **caractérisée en ce que** la périphérie de l'ouvrant (13) essentiellement correspond à celle du cadre (23), et **en ce que** la barre de tension (33) est positionnée au niveau ou près du bord extérieur du cadre (23).

12. Procédé de montage d'un ouvrant (13) pour une fenêtre réversible (12) au moyen d'un ensemble selon la revendication 1, comprenant les étapes suivantes :

la réalisation d'un cadre (23),
la réalisation d'un ouvrant (13),
la réalisation d'un jeu de rails d'une section transversale essentiellement en U à une face avant du cadre, lesdits rails (4) s'ouvrant vers l'ouverture de la fenêtre, chaque rail (4) comprenant une paroi inférieure (5), une paroi latérale (6) et une paroi avant (7), la paroi latérale (6) reliant la paroi inférieure (5) et la paroi avant (7) et présentant un dos (6a) détourné de la paroi inférieure (5) et de la paroi avant (7), la paroi avant (7) présentant un dos (7a) détourné de la paroi inférieure (5),
la réalisation de deux dispositifs de coulissement (1) comprenant un jeu de coulisseaux (3) à l'ouvrant (13),
l'insertion des coulisseaux (3) dans les rails (4) par basculement de l'ouvrant (13) par rapport au cadre (23),

caractérisé par l'étape supplémentaire de l'activation d'un élément de sécurité (8) pourvu au dispositif de coulissement (1), si bien que l'élément de sécurité (8) est mis en appui contre le rail (4) à son dos (7a) de la paroi avant (7) et en même temps en prise avec le dos (6a) de la paroi latérale (6) du rail (4) et davantage en prise avec l'élément de coulissement (2), l'enlèvement du coulisseau (3) du rail (4) lors de l'usage étant empêché.

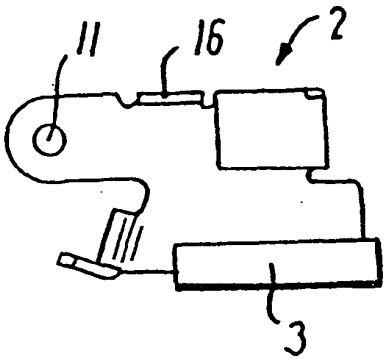
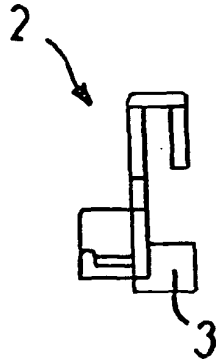


FIG.1



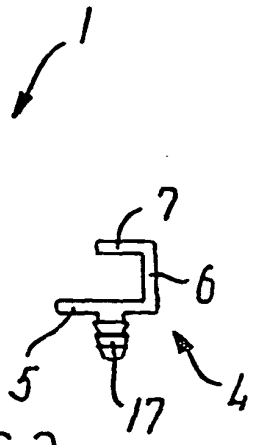


FIG.2

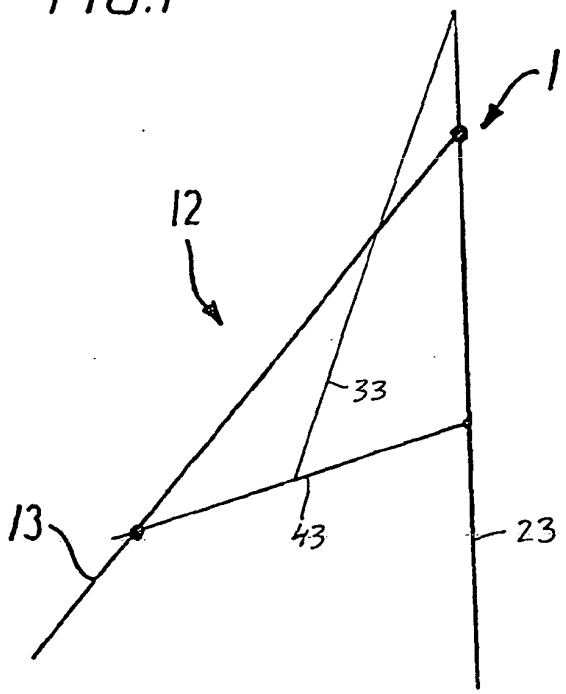


FIG.3

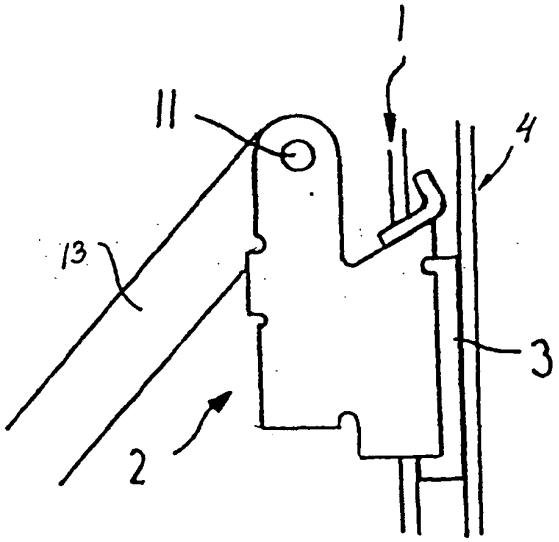


FIG.4

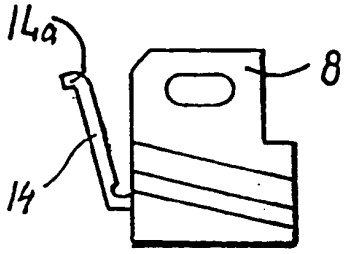


FIG.5

FIG.6

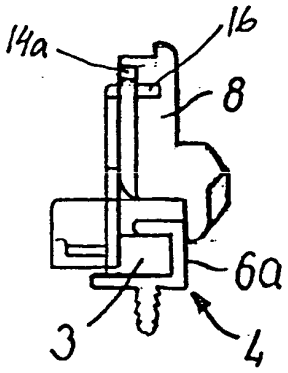


FIG.7

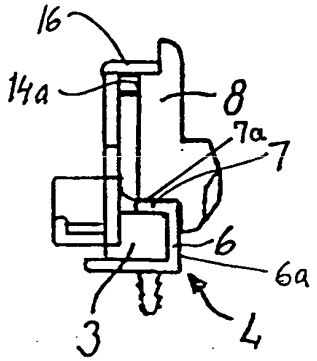


FIG.8

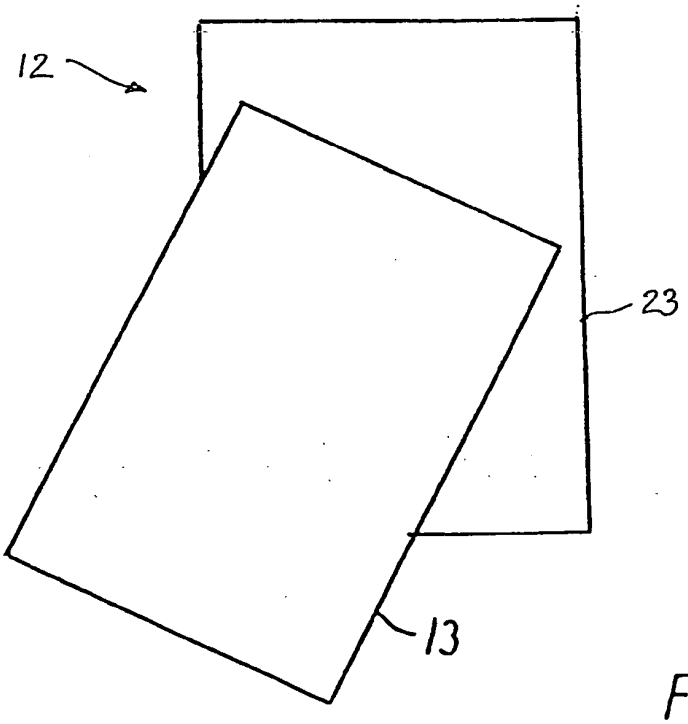


FIG.9

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 1543956 A **[0004]**
- WO 9623125 A **[0005]**