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A HINGE FOR PIVOT WINDOWS, IN PARTICULAR INCLINED ROOF WINDOWS.

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Description

The present invention relates to a hinge device intended for use in tilting windows, especially windows installed in an inclined roof, and being of the type consisting of two hinge parts having base plates adapted to be secured to the frame and the sash, respectively, of the window and having guide means in the form of a part-circular guide member carried by one hinge part and a slide member displaceable in the guide member and defining a tilting axis for sash movements near the closed position, the axis being outside the window thickness; the second hinge part being, in positions remoter from the closed position, pivotable with respect to the first hinge part on a hinge pin, which is carried by the slide member and is movable from a position within the window thickness to a position outside said thickness during movement of the sash away from the closed position by swinging around said tilting axis.

An example of such hinge devices is known from British Patent No. 1 028 251 (corresponding to Danish Patent No. 99 616) and various modifications thereof have been commercially available for a number of years.

In the known embodiments it has been a problem to control the frictional conditions of the hinge device. It is on one hand a wish that the slide member is capable of maintaining any position in the guide member corresponding to keeping the window sash in a suitable ventilating position, but on the other hand the friction should not be so high that it hampers the opening and closing of the window and causes noticeable wear on the involved parts, that is on the part circular faces of the slide member and guide member. With a view to ensure the position maintaining effect it is known to build into the concave side wall of the guide member a spring segment or blade spring which to a suitable extent urges the opposite side of the slide member against the convex side of the guide member, however, with the purpose of limiting the friction between and the wear on the surfaces sliding on each other the hinge device should now and then be maintained by lubricating, this being considered a drawback in utility. Lacking maintainance in this respect may under adverse conditions result in seizing of the sliding surfaces and thus impeding the manoeuvring of the window and finally destruction of the hinge device.

By the hinge device according to the invention this problem is solved in that the slide member comprises partly a core having sufficient strength to carrying the window sash and partly a frictional element being in itself form stable, which element covers at least the curved faces of the core facing the part circular walls of the guide member and consists of a material which together with the counterfaces of the guide member produces a stable non-seizing friction.

Various kinds of plastics materials will be suitable in this respect, but other known materials could be used as well.

Just like the known hinge devices, the hinge device according to the invention allows the initial frictional conditions to be adjusted at will, but through the special measures according to the invention it is ensured that these conditions will not change considerably during usage of the hinge device mainly because there will be no tendency of seizing between the hinge elements which are kept in mutual abutment with a certain pressure. Both the resistance to wear and the friction may be taken in consideration by choice of material of the frictional element, and thus the hinge device may be considered as having no need for maintainance during normal conditions of use.

According to the invention it is preferred that the core of the slide member includes two sectors riveted to each other, and that the frictional element has an I-shaped cross section with flange portions covering the curved surfaces of the core and with a body portion being fixed in a gap between the sectors riveted to each other, said gap being determined by spacers.

Particular embodiments of the invention are set out in dependent claims 2 and 3.

The spacers are operative to relieve the friction element of the riveting pressure, which otherwise could deform the body portion and thus the entire element so that one could not expect a uniform surface pressure on the sliding surfaces.

An embodiment of the hinge device according to the invention will now be described in more detail with reference to the accompanying drawing in which

Fig. 1 is a side elevational view of the hinge device with the frame part drawn in solid lines and with the sash part positioned in front thereof shown in dashed lines and in almost fully turned position, and

Fig. 2 is a cross section through the slide member of the hinge device.

The hinge part 1 belonging to the window frame includes a base plate 2 with holes 3 for mounting screws and with a bent-up part-circular edge portion 4 constituting one of the side walls in the above mentioned guide member or guide channel 5. The opposite concave side is constituted of partly a wall-section 9 and partly a plate member 7 secured to base plate 2 by rivets 6 and having a subjacent spring segment or blade spring 8, the ends of which are held on the rivets 6.

In the guide channel 5 there is a correspondingly curved slide member 10 which is shown after its maximum displacement in the opening direction. A pin 11 located in the slide member 10 is in the mentioned position abutting against a non-visible stop in a piece of sheet metal 12 overbridging the lowest end of the guide channel 5.

The hinge part 13 belonging to the sash likewise includes a base plate 14 with holes 15 for mounting screws, and this base plate is through a pivot 16 connected with the part of the slide member 10 that lies outside guide channel 5. The base plate 5 carries a fixed guide cam 17 with a curved rear edge 18 which by retrograde turning of the hinge part 13 in the direction of the marked arrow becomes aligned with the free side of edge portion 4 on the base plate 2 of the frame part. The edge portion 4 referred to continues into a straight edge section 19 which until completed retrograde turning of the sash part about pivot 16 functions as an abutment for the downwards facing end of cam 17, which thus prevents a backwards displacement of slide member 10 in guide channel 5 during the turning of the sash part.

This turning is stopped by the fact that a guide block 20 securely positioned on base plate 14 enters the guide channel 5 through an opening between plate member 7 and wall section 9 and then strikes an end section with reduced width of the slide member 10. Following this the slide member may be displaced upwards in guide channel 5, during which displacement the guide block 20 engages with the blade spring 8 and loads the slide member in the direction of the convex side wall 4 of the guide channel.

The particular design of the slide member 10 of the hinge device according to the invention is the best seen in Fig. 2. It will appear that the slide member consists of partly a core composed of three punched out steel sectors 22, 23 and 24 (of which the two first mentioned may be a single piece), and partly a frictional element 25 having an I-shaped cross section, which element may be of an appropriate plastic. The flanges 26 and 27 of the element are in close surface abutment with the opposite curved sides of the core 22, 23, 24, whereas the body 28 of the element reaches into and is fixed in a slot 29 in the core. The core sectors are assembled by rivets 30 for which suitable holes are punched out in the sectors, and in the sector 24 each rivet hole is encircled by a neck 31 functioning as a spacer between this sector and the adjoining sector so that the riveting together does not cause a narrowing of slot 29 and thus an undesirable deformation of the frictional element, the body of which is provided with holes surrounding the necks 31 with a certain clearance.

The above mentioned guide block 20 may advantageously be made of a material with the same properties as the material of the frictional element 25.

Claims

1. A hinge device intended for use in tilting windows, especially windows installed in an inclined roof, and consisting of two hinge parts (1, 13) having base plates (2, 14) adapted to be secured to the

frame of the window and to its sash, respectively, and having guide means in the form of a part-circular guide member (5) carried by one hinge part (1) and a slide member (10) displaceable in the guide member and defining a tilting axis for sash movements near the closed position, the axis being outside the window thickness; the second hinge part (13) being, in positions remoter from the closed position, pivotable with respect to the first hinge part on a hinge pin (16) which is carried by the slide member (10) and is movable from a position within the window thickness to a position outside said thickness during movement of the sash away from the closed position by swinging around said tilting axis, characterized by that the slide member (10) comprises partly a core (22,23,24) having sufficient strength to carrying the window sash and partly a frictional element (25) being in itself form stable, which element covers at least the curved faces of the core facing the part circular walls of the guide member and consists of a material which together with the counterfaces (4,7,8,9) of the guide member produces a stable non-seizing friction.

2. A hinge device according to claim 1, characterized in that the core of the slide member (10) includes two sectors (23,24) riveted to each other, and that the frictional element (25) has an I-shaped cross section with flange portions (26,27) covering the curved surfaces of the core and with a body portion (28) being fixed in a gap (29) between the sectors riveted to each other, said gap being determined by spacers (31).
3. A hinge device according to claim 2, characterized in that the spacers consists of necks (31) encircling the rivet holes in one of the core sectors (24).

Patentansprüche

1. Scharniervorrichtung für Schwenkfenster, insbesondere in ein Schrägdach eingebaute Fenster, und bestehend aus zwei Scharnierteilen (1, 13) mit zur Befestigung auf dem Fensterstock bzw. Flügelrahmen vorgesehenen Grundplatten (2, 14), und umfassend Führungsorgane in Form einer von dem einen Scharnierteil (1) getragenen, teilkreisförmigen Führung (5) und einer in der Führung verschiebbaren Gleitschiene (10) zur Festlegung einer ausserhalb der Fensterdicke liegenden Schwenkachse für Bewegungen des Flügelrahmens nahe der geschlossenen Stellung, wobei das zweite Scharnierteil (13) in von der geschlossenen Stellung mehr entfernten Stellungen um einen von der Gleitschiene

- (10) getragenen Drehzapfen (16) im Verhältnis zum ersten Scharnierteil schwenkbar ist, der während einer durch Schwenken um die erwähnte Schwenkachse hervorgerufenen Bewegung des Flügelrahmens weg von der geschlossenen Stellung von einer Stellung innerhalb der Fensterdicke in eine ausserhalb der Fensterdicke liegende Stellung bewegbar ist, dadurch **gekennzeichnet**, dass die Gleitschiene (10) teils aus einem Kern (22, 23, 24) mit ausreichender Stärke zum Tragen des Flügelrahmens und teils einem in sich selbst formbeständigen Friktionselement (25) besteht, welches Element zumindest die den teilkreisförmigen Wänden der Führung zuwendenden gekrümmten Flächen des Kernes deckt und aus einem Material besteht, das zusammen mit den Gegenflächen (4, 7, 8, 9) der Führung eine stabile, reissungsfreie Friktion ergibt.
2. Scharniervorrichtung nach Anspruch 1, dadurch **gekennzeichnet**, dass der Kern der Gleitschiene (10) zwei miteinander zusammengeknittete Abschnitte (23, 24) aufweist, und dass das Friktionselement (25) im Querschnitt I-Form mit Flanschen (26, 27) hat, die die krummen Flächen des Kernes decken, und mit einem Körperteil (28), der in einem durch Abstandhalter (31) festgesetzten Zwischenraum (29) zwischen den zusammengeknitteten Abschnitten festgehalten ist.
3. Scharniervorrichtung nach Anspruch 2, dadurch **gekennzeichnet**, dass die Abstandhalter Hälse (31) sind, die die Nittenlöcher in einem der Kernabschnitte (24) umschliessen.
- jusqu'à une position externe à cette épaisseur durant le mouvement du châssis depuis la position fermée, par basculement autour dudit axe de basculement, caractérisée en ce que la pièce glissante (10) comprend, d'une part, un noyau (22, 23, 24) de résistance suffisante pour supporter le châssis de fenêtre, et, d'autre part, un élément de friction (25), en lui-même de forme stable, lequel élément recouvre au moins les parties incurvées du noyau situées face aux parois partiellement circulaires de la pièce de guidage et est constitué d'un matériau qui, avec les contre-faces (4, 7, 8, 9) de la pièce de guidage, assure une friction stable, sans blocage.
2. Charnière selon la revendication 1, caractérisée en ce que le noyau de la pièce glissante (10) comprend deux secteurs (23, 24) rivetés l'un à l'autre, et en ce que l'élément de friction (25) présente une coupe transversale en I avec des ailes (26, 27) recouvrant les surfaces incurvées du noyau et avec un corps (28) fixé dans un espace intermédiaire (29) entre les secteurs rivetés l'un à l'autre, ledit espace étant déterminé par des cales d'espacement (31).
3. Charnière selon la revendication 2, caractérisée en ce que les cales d'espacement sont constituées par des collets (31) entourant les trous de rivet de l'un des secteurs (24) du noyau.

Revendications

1. Charnière pour emploi sur fenêtres basculantes, en particulier fenêtres installées dans un toit incliné, comportant deux parties de charnière (1, 13) dotées d'embases (2, 14) prévues pour montage sur le cadre de la fenêtre et sur son châssis, respectivement, et dotées de moyens de guidage sous la forme d'une pièce de guidage (5), partiellement circulaire, supportée par une partie de charnière (1), et d'une pièce glissante (10) déplaçable dans la pièce de guidage et définissant un axe de basculement pour mouvements du châssis, proche de la position fermée, cet axe étant situé à l'extérieur de l'épaisseur de la fenêtre, la seconde partie de charnière (13) étant, dans des positions plus éloignées de la position fermée, pivotable par rapport à la première partie de charnière, autour d'un goujon d'articulation (16) supporté par la pièce glissante (10) et mobile depuis une position interne à l'épaisseur de la fenêtre

FIG. 1

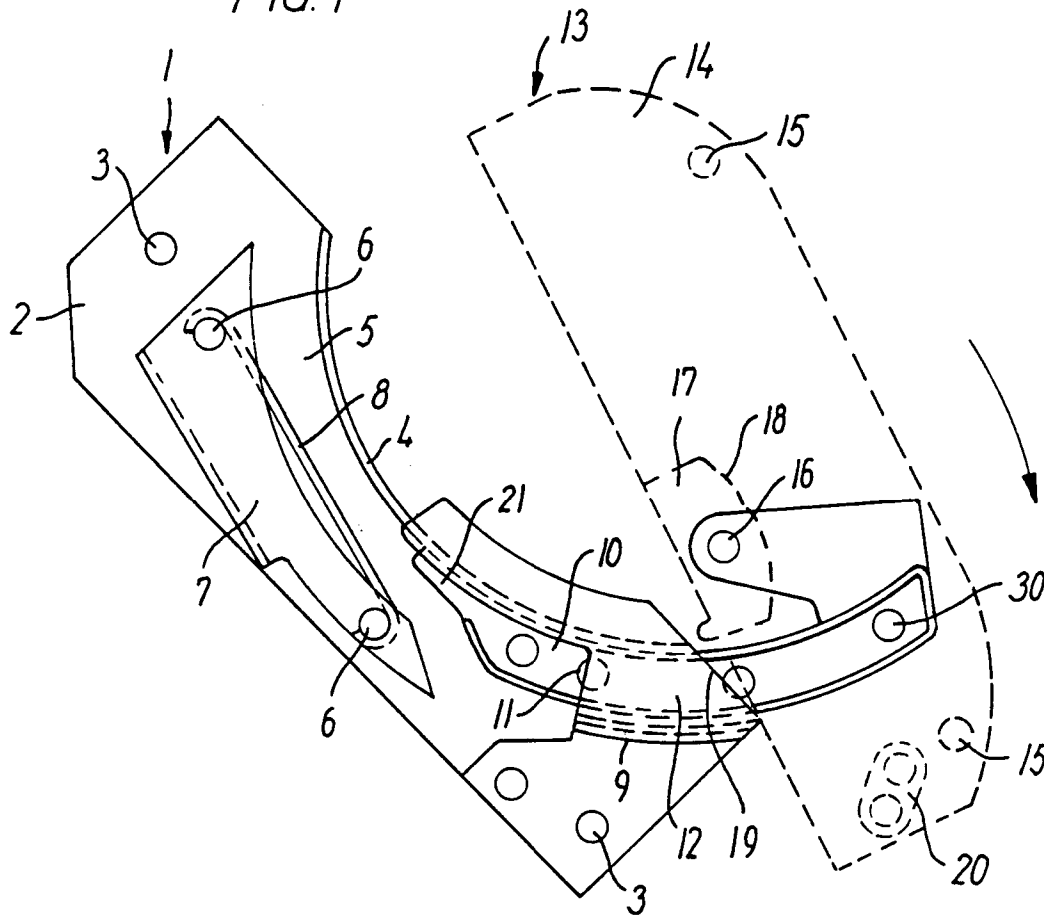


FIG. 2

