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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : E05D 7/086 — A1

(11) International Publication Number: **WO 99/28581**

(43) International Publication Date: 10 June 1999 (10.06.99)

(21) International Application Number: PCT/DK98/00482

(22) International Filing Date: 9 November 1998 (09.11.98)

(30) Priority Data:
1282/97 11 November 1997 (11.11.97) DK

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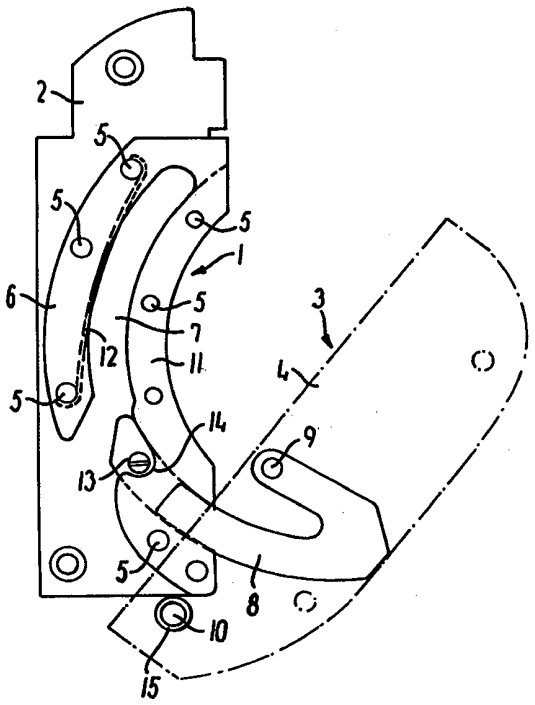
(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

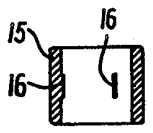
Published
With international search report.
In English translation (filed in Danish).

(54) Title: A HINGE FITTING FOR A PIVOTAL WINDOW

(57) Abstract

The hinge fitting comprises a first hinge part (1) to be fastened on the frame of the window and a second hinge part (3) to be fastened on the sash. The first hinge part (1) has on a base plate (2) a circular arc–shaped guidance (7) which cooperates with a slide rail (8) essentially uniform with the guidance and pivotally mounted on a base plate (4) of the second hinge part (3) together with a guide pin (10) to effect a pivoting movement of the window. In connection with the guidance (7) on the first hinge part (1), there is provided a brake system comprising a leaf spring (12) which during at least one part of the pivoting movement is in a frictional engagement with said guide pin (10). On the guide pin (10) is provided a separate bushing (15).





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A hinge fitting for a pivotal window

The present invention relates to a hinge fitting for a pivotal window with a frame and a sash connected to the frame at a centre line, comprising a first hinge part to be fastened on the frame and a second hinge part to be fastened on the sash, in which the first hinge part on a base plate is provided with a guide element in the form of a circular arc-shaped guidance which cooperates with a slide rail essentially uniform with the guidance and pivotally mounted on a base plate of the second hinge part together with a guide pin to effect a pivoting movement of the window, and in which in connection with the guidance on the first hinge part, there is provided a brake system comprising a leaf spring which during at least one part of the pivoting movement is in a frictional engagement with said guide pin.

According to DK Published Specification no. 150661, a hinge fitting of this type is known. Because of the considerable forces required for stopping the pivoting movement of such a window, in particular windows mounted in a pitched roof, the impact on the guide pin is necessarily relatively important. Consequently, the guide pin is usually produced of steel with an abrasion resistant surface.

Even though the function of this design has proven satisfactorily, especially if the guide pin has been lubricated in connection with the production, it will, however, in order to assure a continuous good function, be necessary to lubricate the guide pin regularly.

An inconvenience of this design is thus that irrespective of the choice of material for the pin, wear and tear will unavoidably occur on the part of the pin surface which is in contact with the leaf spring

and the guidance. This wear and tear may possibly have such an extent that the braking effect is reduced and that it will thus be necessary to replace the pin which in practice implies that the entire associated hinge part must be dismantled or even exchanged.

Therefore, the object of the invention is to provide a hinge fitting of the initially stated kind which can be kept maintenance-free for a long time and which has an increased total useful life.

This purpose is fulfilled by a hinge fitting which is characterized in that a separate bushing is provided on the guide pin.

By this design, a by and large maintenance-free hinge fitting is provided, the guide pin, by an appropriate choice of material for the bushing, never or only rarely needing lubrication, and at the same time, the material can be selected in such a way that a favourable brake effect is obtained in combination with an abrasion resistant surface. In case of a need for replacement of the bushing, this may be removed by a simple handle and replaced by a new one.

In order to assure a good abutting surface for the guide pin against the guidance and/or the spring, the bushing extends over essentially the entire axial measure of the guide pin.

In an embodiment of the invention, which is advantageous for the mounting, the bushing is on its inside provided with evenly distributed ribs. The ribs contribute to the fastening of the bushing on the guide pin, when mounting the window, however, after some time of use of the window, they are worn-down due to the friction against the guide pin. This entails thus that the bushing is able to rotate somewhat on the guide pin so that it is not always the same part of the bushing which is in contact with the spring and/or the guidance

whereby the useful lifetime of the bushing is increased.

For a further improved axial fastening of the bushing on the guide pin, the latter is at its side facing away from the base plate provided with a projecting collar portion.

The invention will in the following be explained more in detail with reference to the schematic drawing, where

Fig. 1 shows a side view of a hinge fitting according to the invention,

Fig. 2 is a cross-sectional view on an enlarged scale of a detail of the hinge fitting according to the invention, and

Fig. 3 is a side view on an enlarged scale of a further detail of the hinge fitting according to the invention.

In Fig. 1, a hinge fitting for a pivotal window is shown, comprising a first hinge part 1 which with a base plate 2 is adapted to be fastened on a not shown side element of the window frame, and a second hinge part 3 which also with a base plate is adapted to be fastened on a corresponding sash side element, neither shown. It must be understood that a corresponding, but mirror-inverted hinge fitting is mounted on the opposite pair of frame and sash side elements to determine a pivot axis essentially parallel to the top and bottom elements of the frame and the sash.

On the base plate 2 of the first hinge part 1 by means of rivets or screws 5 and in a distance from the base plate 2, there is fastened a plate member 6 with a circular arc-shaped aperture which forms a guide means or a guidance 7 for a slide rail 8 essentially uniform herewith on the second hinge part 3 during a part of the opening and closing movement of the

window. The slide rail 8 is by means of a hinge pin 9 pivotally connected to the base plate 4 of the second hinge part 3 which in addition has a guide pin 10, the function of which will be explained in the following.

The convex side or wall 11 of the guidance 7 comprises in addition to the plate member 6 one or more discs provided between the plate member 6 and the base plate 2, and which with the plate member forms an abutting surface for the guide pin 8 and the guide pin 10, whereas in the concave side between the plate member 6 and the base plate 2, there is inserted a spring device comprising a leaf spring 12 which with its folded ends is clasped on the exterior rivets 5 in this side and which is less curved than the guidance 7 such that its middle portion projects into the guidance.

In the position shown in the figure, the window sash and thus the second hinge part 3 are turned out to an opening angle of about 135° from the closing position. e.g. with a view to cleaning the outside of window.

The slide rail 8 is displaced at a maximum out of the guidance 7, i.e. until a stop screw 13 on the slide rail has been caught in a recess 14 in the plate member 6. Subsequently, the base plate 4 is turned further around the hinge pin 9. When closing the window again, this base plate 4 is first turned back until the guide pin 10 has entered the guidance 7 where it is placed in front of the front end of the slide rail 8. During the further closing, the guide pin 10 and the slide rail 8 are displaced inwards in the guidance 7 and, by entering into frictional engagement with the leaf spring 12, the pin 10 thus cooperates herewith in a braking manner, such that the

closing movement of the window sash is stopped.

On the guide pin 10 is placed a bushing 15 shown most clearly in Fig. 2. The length of the bushing 15 is here chosen in such a way that it extends over the axial measure of essentially the entire guide pin 10 and its outer diameter such that a good abutment against the wall of the guidance 7 and the leaf spring 12 is assured. The inner diameter is chosen with a view to obtaining a relatively tight slide fitting between the bushing 15 and the guide pin 10 so that the bushing 15 without problems can be placed on the guide pin 10, but where during the mounting of the window, there is no danger of the bushing 15 sliding off.

The fastening during mounting can be further improved by providing a number of evenly distributed ribs 16 on the inside of the bushing 15, as shown in Fig. 2. In the shown design, there are three ribs 16, however, the number may as a matter of course be chosen arbitrarily just as their length and form may be variable. After some time of use of the window, the height of the ribs 16 is somewhat reduced due to the friction against the guide pin 10, whereupon the bushing 15 will be turnable during the pivoting movement.

Finally, in Fig. 3, an embodiment of the guide pin 10 is shown where in the end, which in a mounted condition faces away from the base plate 4, there is provided a head portion 17 which has a larger radial measure than the remaining part of the guide pin, and which is adapted to prevent axial movement of the bushing 15 on the guide pin 10. In the opposite end, the guide pin 10 is provided with a stepped portion 18 which serves to fasten the guide pin 10 to the base plate 4 of the second hinge part 3. By way of

example, this fastening is made by riveting or as a press fit so that the guide pin 10 can relatively easy be removed from and placed on the base plate 4 with a view to replacing the bushing 15. As an alternative, the stepped portion 18 of the guide pin 10 and the associated opening in the base plate 4 can be provided with cooperating engagement connections as e.g. a screw thread to form a releasable connection.

PATENT CLAIMS

1. A hinge fitting for a pivotal window with a frame and a sash connected to the frame at a centre line,

comprising a first hinge part (1) to be fastened on the frame and a second hinge part (3) to be fastened on the sash,

in which the first hinge part (1) on a base plate (2) is provided with a guide element in the form of a circular arc-shaped guidance (7) which cooperates with a slide rail (8) essentially uniform with the guidance and pivotally mounted on a base plate (4) of the second hinge part (3) together with a guide pin (10) to effect a pivoting movement of the window, and

in which in connection with the guidance (7) on the first hinge part (1), there is provided a brake system comprising a leaf spring (12) which during at least one part of the pivoting movement is in a frictional engagement with said guide pin (10),

characterized in that a separate bushing (15) is provided on the guide pin (10).

2. A hinge fitting according to claim 1, characterized in that the bushing (15) extends over essentially the entire axial measure of the guide pin (10).

3. A hinge fitting according to claim 1 or 2, characterized in that the bushing (15) is on its inside provided with evenly distributed ribs (16).

4. A hinge fitting according to any of the claims 1-3, characterized in that the guide pin (10) is at its side facing away from the base plate provided with a projecting collar portion (17) for an improved axial fastening of the bushing.

5. A hinge fitting according to any of the claims 1-4, c h a r a c t e r i z e d in that the guide pin (10) at its stepped end (18) facing toward the base plate (4) is provided with engagement means which can cooperate with means at an opening in the base plate (4) to form a releasable connection.

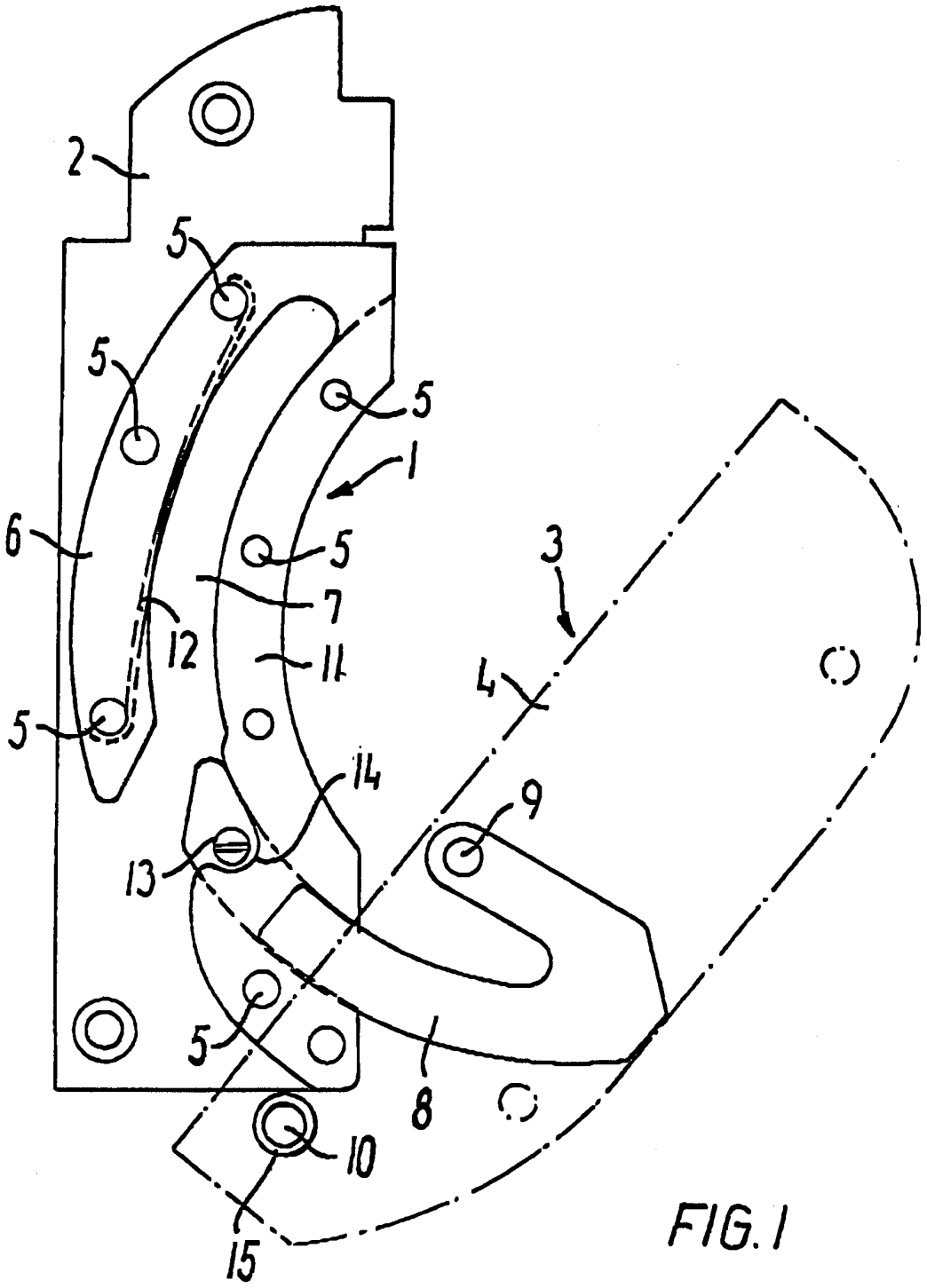


FIG. 1

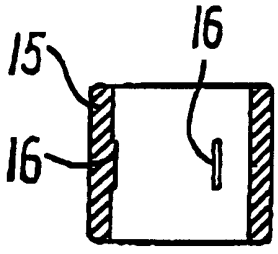


FIG. 2

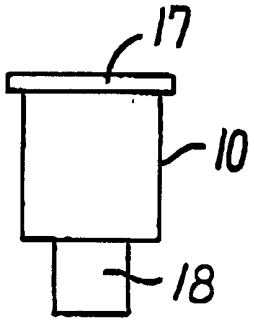


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 98/00482

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: E05D 7/086
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: E05D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 9004077 A1 (V. KANN RASMUSSEN INDUSTRI A/S), 19 April 1990 (19.04.90), page 5, line 12 - line 15, figure 2 --	1-5
Y	US 3276069 A (W.F. ROTHEMUND), 4 October 1966 (04.10.66) --	1-5
Y	US 4573239 A (R.L. VALENTI ET AL), 4 March 1986 (04.03.86) --	3
Y	US 2143704 A (F. KUFNER), 10 January 1939 (10.01.39) --	4

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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