(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 29 November 2001 (29.11.2001)

PCT

(10) International Publication Number WO 01/90524 A1

(51) International Patent Classification⁷: E06B 3/50

(21) International Application Number: PCT/FI01/00486

(22) International Filing Date: 18 May 2001 (18.05.2001)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:

20001215 22 May 2000 (22.05.2000) F

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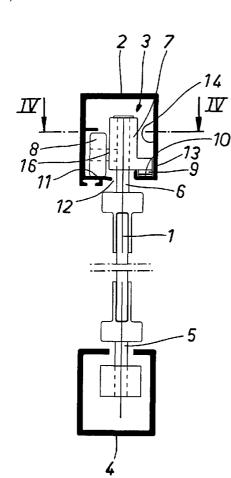
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(81) Designated States (national): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, 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,

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(54) Title: SUPPORT ARRANGEMENT



(57) Abstract: The invention relates to a support arrangement for balcony glazing or a similar movable element, the arrangement comprising a first guide rail for two support/wheel units of the element, which are movable in the longitudinal direction of the guide rail and carry substantially the weight of the element, and a second guide rail against which a guiding means protruding from the opposite edge with respect to the support/wheel unit of the element is arranged to rest, especially a support arrangement in which the element is arranged to travel on a track which comprises at least two guide rails arranged diagonally with respect to each other. The adjacent guide rails form a mitre joint with each other. The support/wheel unit comprises a vertical support shaft connected to the element, and a frame part, against which the element rests in a pivoting manner by means of the support shaft, and to which frame part is connected a wheel for supporting and conveying the element, and at a distance from the support shaft is arranged a projecting part. The first guide rail (2) comprises a groove (10) guiding the projecting part (9), a guide surface (11) supporting the wheel (8), and a groove (12) for the support shaft (6) between the said guiding groove (10) and the said guide surface (11).



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IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

with international search report

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Support arrangement

The invention relates to a support arrangement for balcony glazing or a similar movable element, the arrangement comprising a first guide rail for two support/wheel units of the element, which are movable in the longitudinal direction of the guide rail and carry substantially the weight of the element, and a second guide rail against which a guiding means protruding from the opposite edge with respect to the support/wheel unit of the element is arranged to rest, especially a support arrangement in which the element is arranged to travel on a track which comprises at least two guide rails arranged diagonally with respect to each other.

In a prior art solution - disclosed in the publication WO 99/32752 - is described a solution in which the turning of the wheel construction carrying the element at a corner is achieved by means of additional pieces placed in the corner area of the guide rails. The said solution has the following disadvantages:

- Since the angle between element groups, and thus the guide rails, can be any angle, usually between 180 and 90 degrees, the additional pieces will always have to be made separately for the corner in question.
- 20 The fixing of the small additional pieces to the guide rail must be carried out at the installation stage in construction site conditions and may thus be expensive and unreliable.
 - Friction between the additional piece and the wheel may impede the turning process unless the parts in question are lubricated.
- When the wheel turns, it always has to "straighten out" the wheel on the carrying rail section and may thus be left at least partly "in the air".

The aim of the invention is to eliminate the disadvantages relating to the known solution and to provide a structurally simple, easily made and installed, reliable support arrangement.

This aim has been achieved by means of a support arrangement, which is characterised in that adjacent guide rails form a mitre joint with each other, that the support/wheel unit comprises a vertical support shaft connected to the

element and a frame part, against which the element rests in a pivoting manner, and to which frame part is connected a wheel for supporting and conveying the element, and at a distance from the support shaft is arranged a projecting part, and that the first guide rail comprises a groove guiding the projecting part, a guide surface supporting the wheel, and a groove for the support shaft between the said guiding groove and the said guide surface.

Further preferable developments of the invention are described in the dependent claims.

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The invention is described in greater detail in the following, with reference to the accompanying drawings, in which:

Figure 1 shows balcony glazing provided with the support arrangement relating to the invention.

Figure 2 shows a section along line II-II in Figure 1.

shows a section along line III-III in Figure 1.

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Figure 3

Figure 4 shows a section along line IV-IV in Figure 3, at the connecting point of the guide rails.

Figures 1 and 2 show diagrammatically an example of balcony glazing. The support arrangement of the glass elements 1 in this type of balcony glazing comprises an upper guide rail 2 and a lower guide rail 4 of the element 1. The upper guide rail 2 supports two support/wheel units 3 of the element, which are movable in the longitudinal direction of the guide rail and carry substantially the weight of the element 1. A guiding means 5 protruding from the lower part of the element 1 is arranged to rest against the lower guide rail 4 of the element.

The support arrangement is also intended especially for the type of case in which the element 1 is arranged according to Figures 1 and 2 to travel on a

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track which comprises at least two guide rails 2, 4 arranged diagonally with respect to each other.

As seen best in Figure 4, the adjacent upper guide rails 2 form a mitre joint with each other. The lower guide rails also form a mitre joint with each other. In the example shown in Figure 4, the guide rails 2 are perpendicular to each other, but it is obvious that the angle between the rails 2 can be selected freely.

As seen best in Figure 3, the support/wheel unit 3 comprises a vertical support shaft 6 connected at its lower end to the element 1, and a frame part 7, on which the element 1 is suspended in a pivoting manner by means of the support shaft 6. To the frame part 7 is connected a wheel 8 for supporting and conveying the element 1. The wheel 8 is connected by means of a horizontal shaft 16 to the frame part 7, and the wheel 8 is arranged to rest against the horizontal guide surface 11 arranged on the guide rail 2.

To the frame part 7 is in addition arranged, at a distance from the support shaft 6, a projecting part 9, which is most preferably formed, for example, into a circular or semicircular pin in cross-section. The guide rail 2 has a groove which guides the projecting part 9 sideways. Between the guide surface 11 supporting the wheel 8 and the said guiding groove 10 is in addition a groove 12 for the support shaft 6.

The frame part 7 further comprises a guide surface 13 which, in the example shown in the drawing, is formed by a straight level which is arranged to allow the frame part to turn at the connecting point 17 of the guide rails 2 joined diagonally, but to prevent turning outside the connecting point. The guide surface 13 is arranged to rest against that side wall 14 of the guide rail 2 which is closest to projecting part 9.

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At the connecting point 17 of the guide rails 2 joined diagonally is fitted a separate plate 15 at the bottom of the guiding groove 10, the thickness of the plate being dimensioned in such a way that the upper surface of the plate 15 forms a carrying slide surface on the lower surface of the projecting part 9.

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The support arrangement relating to the invention functions as follows.

In Figure 4, one of the support/wheel units 3 of the element 1 is shown in three different locations as it moves past the connecting point 17 of the guide rails 2. The unit 3 furthest to the right moves in the direction of arrow 18 on the straight section of the guide rail 2 towards the connecting point 17. The guide surface 13 of the frame part 7 rests against the side wall 14 of the guide rail 2, whereby the unit 3 maintains its direction until the projecting part 9 collides with the side wall 19 of the groove 10 of the second guide rail 2, which is an extension of the first guide rail 2. Then, due to the effect of leverage, the unit 3 turns in the direction of arrow 20 until the guide surface 13 becomes parallel with the side wall 14 of the guide rail 2 and thus proceeds parallel with the unit 3 shown topmost in Figure 4.

15 In the solution relating to the invention:

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- 1. No separate pieces need to be fixed to the guide rail 2
- When the wheel unit 3 turns, surfaces causing friction are not formed, but
 the wheel unit turns on a fulcrum pin 9
 - 3. The fulcrum pin 9 can be arranged to travel with a small play with respect to the bottom of the groove 10, whereby it will carry the wheel unit during the turn, if necessary, and the movement of the wheel 8 will become completely smooth. If necessary, this action can be intensified by placing a separate plate 15 in the corner on the bottom of the groove 10, which plate will form a sliding surface for the fulcrum pin 9.

Deviating from the solution shown in the drawing, the lower guide rail may carry the support/wheel unit 3, whereby the upper rail will guide in the sideways direction.

Claims

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- 1. A support arrangement for balcony glazing or a similar movable element (1), the arrangement comprising a first guide rail (2) for two support/wheel units (3) of the element, which are movable in the longitudinal direction of the guide rail and carry substantially the weight of the element (1), and a second guide rail (4) against which a guiding means (5) protruding from the opposite edge with respect to the support/wheel unit (3) of the element (1) is arranged to rest, especially a support arrangement in which the element (1) is arranged to travel on a track which comprises at least two guide rails (2, 4) arranged diagonally with respect to each other, characterised in that the adjacent guide rails (2, 4) form a mitre joint with each other, that the support/wheel unit (3) comprises a vertical support shaft (6) connected to the element (1), and a frame part (7), against which the element (1) rests in a pivoting manner by means of the support shaft (6), and to which frame part (7) is connected a wheel (8) for supporting and conveying the element, and at a distance from the support shaft (6) is arranged a projecting part (9), and that the first guide rail (2) comprises a groove (10) guiding the projecting part (9), a guide surface (11) supporting the wheel (8), and a groove (12) for the support shaft (6) between the said guiding groove (10) and the said guide surface (11).
- 2. A support arrangement as claimed in claim 1, **characterised** in that the frame part (7) comprises a guide surface (13) which is arranged to allow the frame part to turn at the connecting point (17) of the first guide rails (2) joined diagonally, but to prevent turning outside the connecting point.
- 3. A support arrangement as claimed in claim 2, **characterised** in that the guide surface (13) is arranged to rest against that side wall (14) of the first guide rail (2) which is closest to the projecting part (9).
- 4. A support arrangement as claimed in claim 1, **characterised** in that the projecting part (9) is formed by a pin which is circular or semicircular in cross-section.

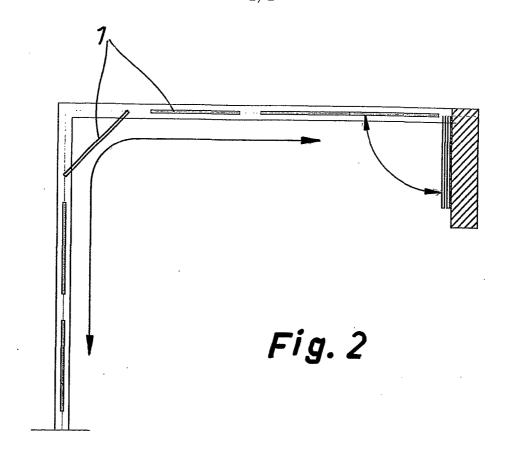
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. 6.

5. A support arrangement as claimed in claim 1, **characterised** in that at the connecting point (17) of the first guide rails (2) joined diagonally is fitted a separate plate (15) at the bottom of the guiding groove (10), the thickness of which plate is dimensioned in such a way that the upper surface of the plate (15) forms a carrying slide surface on the lower surface of the projecting part (9).

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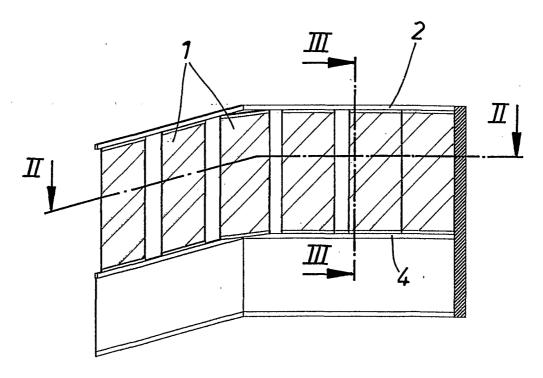


Fig. 1

