

PATENT SPECIFICATION

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(54) ADJUSTABLE-POSITION PIVOT MECHANISM FOR PIVOTED WINDOWS

(71) We, YOSHIDA KOGYO K.K., a corporation duly organised under the laws of Japan and existing at No. 1, Kanda Izumicho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to an adjustable-position pivot mechanisms for pivoted windows.

In a pivoted window assembly, as is well known, the sash is mounted within a supporting frame by means of a pair of pivots for pivotal motion about either a vertical or a horizontal axis. Thus, unless the pivots are located exactly on the vertical or the horizontal axis, the sash cannot be held in such a position relative to the supporting frame as to permit its smooth pivotal motion between closed and open positions. For this purpose, the pivots should be adjustably movable in the longitudinal direction of the supporting frame members on which they are mounted. Further, in some instances, the pair of pivots are required to be adjustably movable toward and away from each other in order to engage and hold the sash properly therebetween.

The present invention seeks to provide an adjustable-position pivot mechanism having a pivot that is easily adjustably movable in the longitudinal direction of a supporting frame member on which the pivot is mounted.

According to the invention, there is provided an adjustable pivot mechanism for cooperating with a further pivot mechanism to retain a window sash in a frame, the pivot mechanism comprising a stationary base for mounting rigidly on an elongate member of the frame, a movable base on the stationary base and arranged for guided movement relative thereto longitudinally of the frame

member means for moving the movable base relative to the stationary base, means for securing the movable base directly to the frame through the stationary base and a pivot projecting from the movable base in a direction away from the stationary base.

The invention will now be described in greater detail, by way of example, with reference to the drawings, in which:

Figure 1 is a front elevational view of a pivoted window assembly incorporating an adjustable-position pivot mechanisms constructed in accordance with the present invention;

Figure 2 is an enlarged exploded perspective view of one of the pivot mechanisms used in the window assembly of Figure 1;

Figure 3 is a plan view of the pivot mechanism of Figure 2 in assembled form;

Figure 4 is a front elevational view partly broken away, of the assembled pivot mechanism;

Figure 5 is a cross-sectional view taken along line V-V of Figure 3, but the stationary base as well as the capscrew are eliminated for clarity;

Figure 6 is a cross-sectional view taken along line VI-VI of Figure 3, but the stationary base is eliminated for clarity; and

Figure 7 is an enlarged vertical sectional view of one of the graduated arms of the pivot mechanism.

In Figure 1, a pivoted window assembly comprises a supporting frame 10 and a sash 11 mounted within the supporting frame for pivotal motion about a vertical axis A-A. The supporting frame 10 is mounted in the usual window receiving opening in an enclosing wall (not shown), and comprises a header 12, a sill 13, and side jambs 14, which are connected into generally rectangular shape. The window sash 11 comprises a panel or pane 15 of glass or other suitable material, and a frame 16 extending along and

embracing the periphery of the panel.

There are a pair of adjustable-position pivot mechanisms 17 which jointly hold the sash 11 within the supporting frame 10 for pivotal motion about the vertical axis A-A. The pair of pivot mechanisms 17 are identical in construction, so that only the one which is mounted on the sill 13 of the supporting frame 10 will hereinafter be described in detail with reference to Figures 2 to 7, the same description being applicable to the other pivot mechanism mounted on the header 12.

As shown in Figure 2, the adjustable-position pivot mechanism 17 broadly comprises a stationary base 18 fastened to the sill 13 of the supporting frame 10, and a movable base 19 carrying a pivot 20 and fastened to the sill 13 via the stationary base after positional adjustment of the pivot 20 at least in the longitudinal direction of the sill 13.

The stationary base 18 is elongated in the longitudinal direction of the sill 13 and is secured in position thereto by means of a pair of flathead machine screws 21 extending through tapped and countersunk holes 22 in the stationary base and tapped holes 23 in the sill 13. Through the stationary base 18, there is a central guide slot 24 of comparatively large width, the slot 24 extending in the longitudinal direction of the stationary base 18, and therefore of the sill 13, for constraining the movable base 19 to movement at least in the longitudinal direction of the sill 13, as described below in more detail.

A pair of fastener receiving slots 25 of smaller width than that of the guide slot 24 are provided through the stationary base 18 on opposite sides of the guide slot 24, with each fastener receiving slot also extending in the longitudinal direction of the stationary base 18. These fastener receiving slots 25 each permit a pair of threaded fastener elements such as roundhead screws 26 to pass therethrough in securing the movable base 19 to the sill 13 via the stationary base 18.

A pair of abutments 27 are provided at opposite ends of the stationary base 18, the abutments 27 being abutted upon by respective threaded elements such as roundhead adjusting machine screws 28 whereby the movable base 19 can be adjustably moved relatively to the stationary base 18 at least in the longitudinal direction of the sill 13. Preferably, the abutments 27 are disposed at an angle to the general plane of the sill 13 in order to permit movement of the movable base 19 away from or back toward the stationary base 18.

The stationary base 18 includes a pair of arms of extensions 29 projecting beyond the abutment 27 at each end of the stationary base in parallel spaced relationship to each

other. As best illustrated in Figure 7, the paired arms 29 are each graduated or marked with a series of notches 30 that serve as scale to permit visual confirmation of the extent of movement of the movable base 19 relative to the stationary base 18 in the longitudinal direction of the sill 13.

In Figures 2 through 4, the movable base 19 also extends in the longitudinal direction of the sill 13 and is of approximately the same longitudinal dimension as the stationary base 18. The pivot 20 projects from the midpoint of the movable base 19 away from the stationary base 18 and comprises a pedestalled standard 31 erected on the movable base 19 and a ball 32 partly buried in the tip of the standard. This pivot 20 engages the window sash 11 in the usual manner for pivotally supporting same in cooperation with the pivot of the opposite pivot mechanism.

A guide boss 33 is provided centrally on the underside of the movable base 19 and fits slidably in the guide slot 24 in the stationary base 18. The movable base 19 is movable longitudinally within limits determined by the lengths of the guide slot 24 and boss 33, and is movable away from or back toward the sill 13.

The movable base 19 further includes a skirt 34 extending along and directed downwardly from the marginal edges of the movable base so as to surround the guide boss 33 with spacings therebetween. When mounted in position over the stationary base 18 as shown in Figures 3 and 4, the skirted movable base 19 substantially completely encloses the stationary base thereby protecting the mating surfaces of the stationary and the movable bases from dust and other foreign matter which might impede their relative sliding motion.

On opposite sides of the pivot 20, there are a pair of elongate sinks or depressions 35 provided in the movable base 19, the sinks 35 being substantially in register with the respective fastener receiving slots 25 in the stationary base 18 when the two bases are assembled. A pair of fastener receiving slots 36 are provided in each sink 35 and extend through the movable base 19 so as to be in alignment in the longitudinal direction of the sill 13. The fastener receiving slots 36 receive therethrough the capscrews 26 that are screwed tapped holes 37 in the sill 13 through the slots 25 in the stationary base 18 for securing the movable base 19 to the sill.

The movable base 19 has a pair of bevels 38 at its opposite ends in parallel relationship to the respective sloping abutments 27 of the stationary base 18, and tapped holes 39 (Figure 2) are provided through the bevelled ends of the movable base 19. The aforesaid adjusting screws 28 pass through the tapped holes 39 in the movable base 19, the screws 28 extending normal to the respective abutments 27 and having their flat points held

thereagainst.

The skirt 34 has a pair of recesses 40 at each end of the movable base 19, the recesses 40 slidably receiving the graduated arms 29 of the stationary base 18. The graduated arms 29 are connected in the respective recesses 40 when the stationary and the movable bases 18 and 19 are disposed in exact register with each other in their longitudinal direction.

For assembling and mounting in position the adjustable-position pivot mechanism 17, the stationary base 18 is first fastened to the sill 13 by the pair of machine screws 21 passing through the tapped holes 22 in the stationary base and the tapped holes 23 in the sill 13. The movable base 19 is then placed over the stationary base 18, and with the four cap screws 26 held loose thereon, the pair of adjusting screws 28 at both ends of the movable base are manipulated to adjustably move same relative to the stationary base 18 longitudinally of the sill 13. The extent of movement of the movable base 19 in either direction can be ascertained from the graduations 30 on either pair of arms 29.

Such manual adjustment is necessary to locate the pivots 20 of the two pivot mechanisms 17 exactly on the vertical axis A-A about which the window sash 11 is to be pivoted relatively to the supporting frame 10. In event too much spacing exists between sash 11 and sill 13, both of the adjusting screws 28 are tightened to move the pivot 20 away from the sill 13 together with the movable base 19. After the necessary positional adjustment of the pivot 20, the movable base 19 is made fast by driving the four cap screws 26 into and through the tapped holes 37 in the sill 13 through the slots 36 in the movable base and the slots 25 in the stationary base 18.

For guiding the movable base 19 in the longitudinal direction of the sill 13 relative to the stationary base 18, the guide slot 24 may alternatively be provided in the movable base, and the guide boss 33 may be provided on the stationary base. Further, the adjustable-position pivot mechanism of this invention may be employed in combination with a pivot mechanism of any conventional construction for supporting a pivoted window sash for pivotal motion about either a vertical or a horizontal axis.

WHAT WE CLAIM IS:-

1. An adjustable pivot mechanism for

cooperating with a further pivot mechanism to retain a window sash in a frame, the pivot mechanism comprising a stationary base for mounting rigidly on an elongate member of the frame, a movable base on the stationary base and arranged for guided movement relative thereto longitudinally of the frame member means for moving the movable base relative to the stationary base means for securing the movable base directly to the frame through the stationary base and a pivot projecting from the movable base in a direction away from the stationary base.

2. A mechanism according to claim 1, wherein the movable base is guided by a guide boss on the movable base, cooperating with a guide slot in the stationary base which slidably receives the guide boss.

3. A mechanism according to claim 1 or 2 wherein the movable base is adjusted relative to the stationary base by adjusting means comprising a pair of abutments at opposite ends of said stationary base, and a pair of threaded elements threadedly extending through respective ends of the movable base into abutting engagement with the respective abutments of the stationary base.

4. A mechanism according to claim 3, wherein the abutments of the stationary base are disposed at an angle to the general plane of the frame member, and the threaded elements are disposed normal to the respective abutments, whereby the movable base can be adjustably moved away from or back toward the stationary base by the threaded elements and moved in the longitudinal direction of the frame member.

5. A mechanism according to any one of claims 1 to 4, when the stationary base has a scale portion at least at one end thereof to permit visual confirmation of the extent of movement of the movable base relative to the stationary base.

6. A pivot mechanism according to any one of claims 1 to 5 wherein the movable base includes an integral skirt whereby the stationary base is substantially completely enclosed within the movable base.

7. A pivot mechanism substantially as herein described with reference to the drawings.

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thereagainst.

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For assembling and mounting in position the adjustable-position pivot mechanism 17, the stationary base 18 is first fastened to the sill 13 by the pair of machine screws 21 passing through the tapped holes 22 in the stationary base and the tapped holes 23 in the sill 13. The movable base 19 is then placed over the stationary base 18, and with the four capscrews 26 held loose thereon, the pair of adjusting screws 28 at both ends of the movable base are manipulated to adjustably move same relative to the stationary base 18 longitudinally of the sill 13. The extent of movement of the movable base 19 in either direction can be ascertained from the graduations 30 on either pair of arms 29.

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2. A mechanism according to claim 1, wherein the movable base is guided by a guide boss on the movable base, cooperating with a guide slot in the stationary base which slidably receives the guide boss.

3. A mechanism according to claim 1 or 2 wherein the movable base is adjusted relative to the stationary base by adjusting means comprising a pair of abutments at opposite ends of said stationary base, and a pair of threaded elements threadedly extending through respective ends of the movable base into abutting engagement with the respective abutments of the stationary base.

4. A mechanism according to claim 3, wherein the abutments of the stationary base are disposed at an angle to the general plane of the frame member, and the threaded elements are disposed normal to the respective abutments, whereby the movable base can be adjustably moved away from or back toward the stationary base by the threaded elements and moved in the longitudinal direction of the frame member.

5. A mechanism according to any one of claims 1 to 4, when the stationary base has a scale portion at least at one end thereof to permit visual confirmation of the extent of movement of the movable base relative to the stationary base.

6. A pivot mechanism according to any one of claims 1 to 5 wherein the movable base includes an integral skirt whereby the stationary base is substantially completely enclosed within the movable base.

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