

May 5, 1970

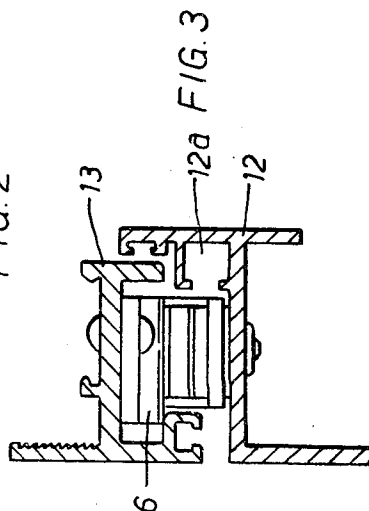
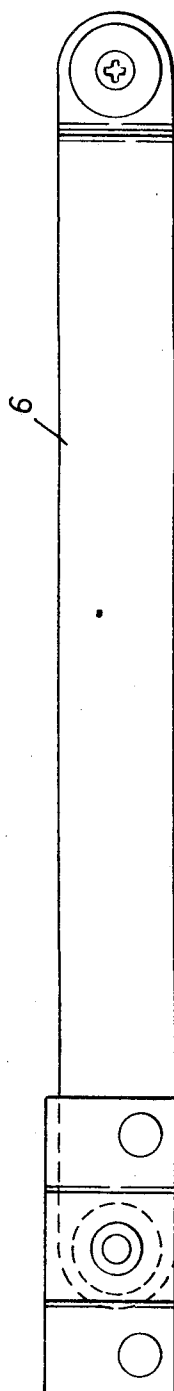
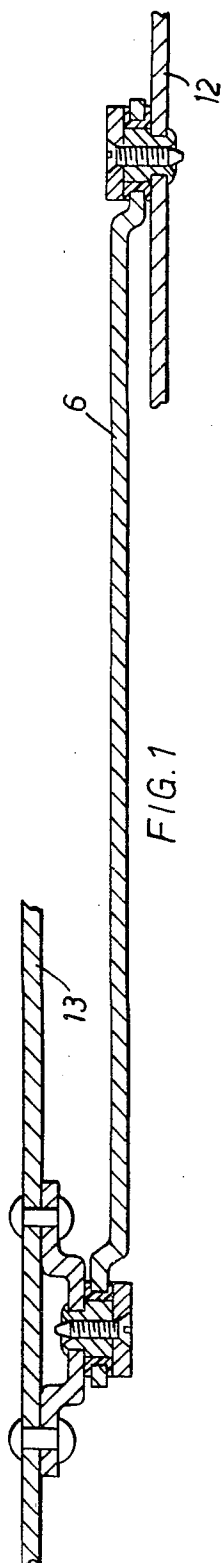
ALBERT CHENG SHU LOK

3,509,664

HINGE ASSEMBLIES

Filed May 1, 1968

3 Sheets-Sheet 1



May 5, 1970

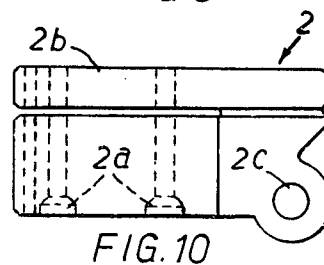
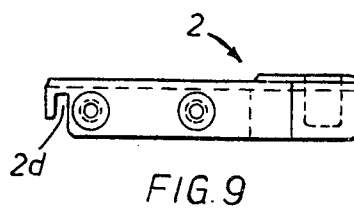
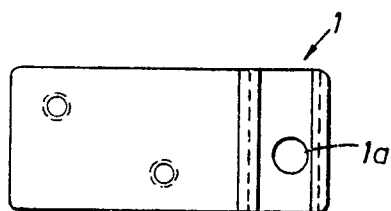
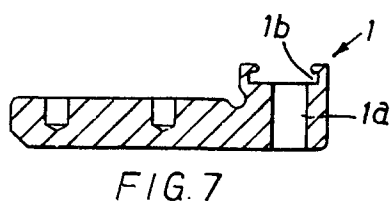
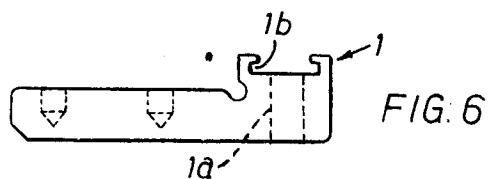
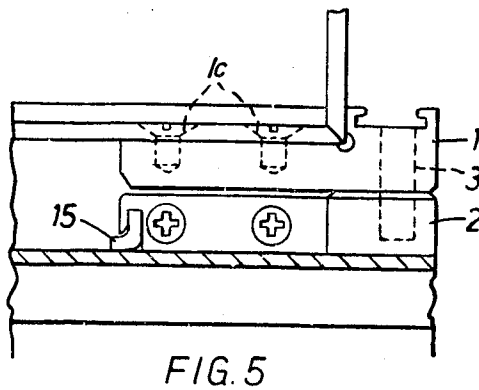
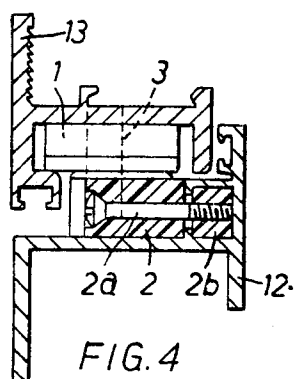
ALBERT CHENG SHU LOK

3,509,664

HINGE ASSEMBLIES

Filed May 1, 1968

3 Sheets-Sheet 2



May 5, 1970

ALBERT CHENG SHU LOK

3,509,664

HINGE ASSEMBLIES

Filed May 1, 1968

3 Sheets-Sheet 3

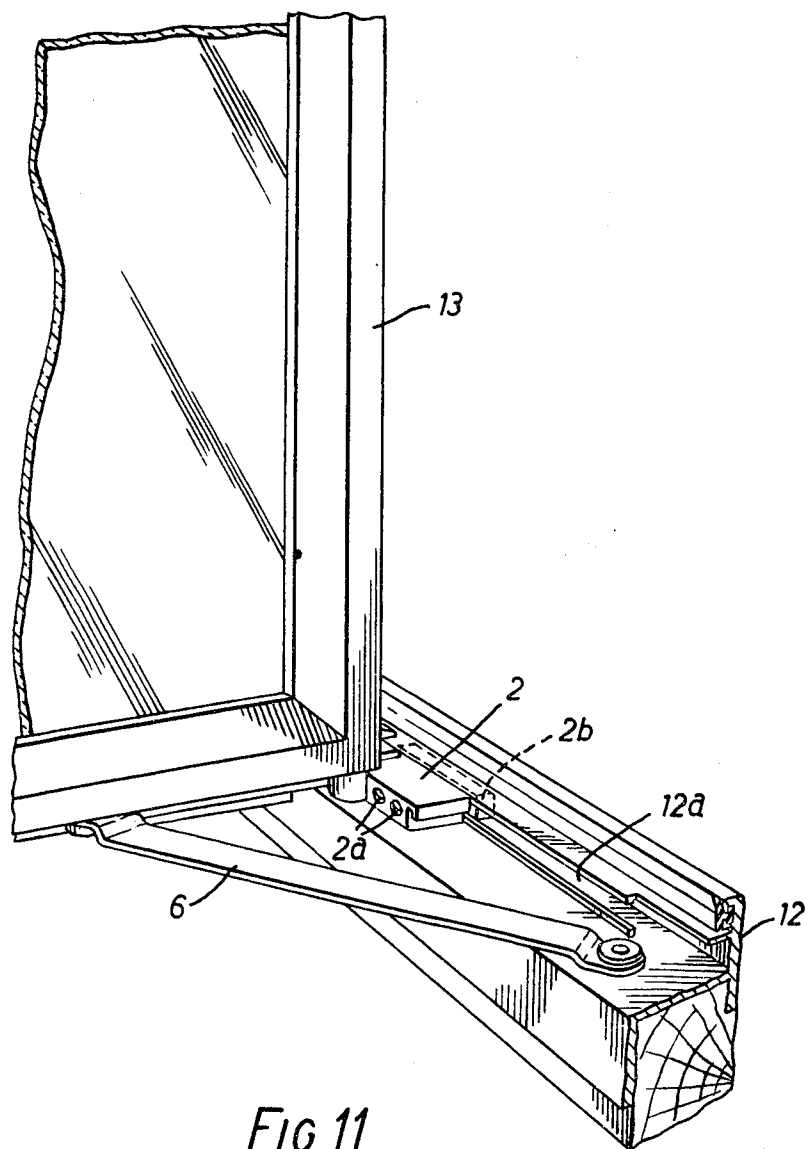


FIG. 11

1

3,509,664

HINGE ASSEMBLIES

Albert Cheng Shu Lok, Kowloon, Hong Kong, assignor to The Hong Kong Chiap Hua Mfy. Co., (1947) Ltd., Hong Kong

Filed May 1, 1968, Ser. No. 725,727

Claims priority, application Great Britain, May 1, 1967, 20,123/67

Int. Cl. E05d 15/30

U.S. Cl. 49—251

4 Claims

ABSTRACT OF THE DISCLOSURE

A hinged window assembly is made up of a rectangular frame and a window sash. A hinge member is attached to the frame and another to the sash. A pivot pin connects the two hinge members. One of the latter is a nylon block which slides relative to the window frame member. Friction between these parts can be adjusted.

This invention relates to a hinged window assembly particularly for casement windows, but it could of course be applied to awning windows or doors of suitable construction. For simplicity of language in this specification, the term "window" will be used as including doors.

According to the invention, we provide a hinged window assembly comprising a window frame formed by four members, a window sash, and first and second hinge members connected by a pivot pin, one of the hinge members being slidable in and along one of the window frame members, and the other hinge member being secured to the window sash.

The said one hinge member is preferably of nylon or "Teflon" and preferably is adjustable in overall size so that the frictional force between it and the said frame member of the window is adjustable. This frame member is preferably an aluminium or aluminium alloy extrusion having a cross-section such that a recess is provided to receive the said one hinge member.

The window may be connected to the window frame by a link arm of extruded aluminium or aluminium alloy, pivoted at one end to the window and the other to the frame.

The invention will be better understood from the following particular description of an illustrative embodiment, given with reference to the accompanying drawings in which:

FIG. 1 is a vertical section through the link arm showing its pivotal attachment to the window and window frame but not showing any hinge detail;

FIG. 2 is a plan view corresponding to FIG. 1;

FIG. 3 is an end elevation of the edge of the window and the window frame section, showing the link arm assembly installed;

FIG. 4 is a vertical section showing the pivot fixing block and the friction block installed;

FIG. 5 is a side elevation corresponding to FIG. 4;

FIG. 6 is a side elevation of the pivot fixing block;

FIG. 7 is a section corresponding to FIG. 6;

FIG. 8 is a plan view corresponding to FIGS. 6 and 7;

FIGS. 9 and 10 are respectively side elevation and plan views of the friction block illustrated in FIG. 4; and

FIG. 11 is a fragmentary perspective view of the hinged window assembly of the present invention.

Referring firstly to FIGS. 1-4, the window hinge assembly basically comprises first and second hinge members connected by a pivot pin 3, the first hinge member being constituted by the pivot fixing block 1 and the second hinge member being constituted by a friction

2

block 2. The friction block 2 is slidable in and along a member 12 of the window frame, and the window edge is secured to the window frame 12 by an adjustable link arm 6. This arm is pivotally attached at one end to the window frame 12 and at the other end to a window sash 13 constituting the frame of the window pane. The members 12 and 13 are preferably extruded aluminium or aluminium alloy. In consequence, upon pivoting of the window, the point relative to the window frame about which the window pivots moves along the window frame as the link arm 6 rotates. When the window is closed, the link arm 6 is parallel to the window edge and is located in an enclosed recess formed by the co-operation of the extruded sections 12 as seen best in FIGURE 3.

An important feature of the invention is that the friction between the block 2 and the window frame member 12 can be adjusted, and this is effected by adjusting screws 2a, see FIG. 10. The friction block is made of injection-moulded "Teflon" or nylon. The friction block comprises a guiding block 2b which is received in a recess 12a in the window frame member 12, and can slide therealong. The block 2 is split and it will be seen that adjustment of the screws 2a alters the friction between the friction block and the window frame member 12. The block 2 has a bore 2c to accommodate the pivot pin 3. Another feature is that a small recess 2d is formed on the end opposite to the pin bore 2c, and the purpose of this is to accommodate a felt pad 15, FIG. 5, acting as a wiper to clear the track in the window frame member 12 of dust and other foreign matter. This pad may serve as a lubrication pad if soaked with grease.

The first hinge member is constituted by a pivot fixing block 1, and this also has a bore 1a for reception of the pivot pin 3. It is preferably manufactured of extruded aluminium and a recess 1b is provided to accommodate a cover strip, for example of synthetic plastics material, which serves to retain the pivot pin 3 and also as a decorative cover. The pin 3 is preferably turned from stainless steel rod.

In installation, four window sash sections 13 are welded together at the corners to form a window frame or sash which accommodates the glass of the window. Before installation at the site, the sash is fastened at its appropriate corners to two pivot fixing blocks and to two partially completed link arm assemblies (FIGS. 1 and 2). The hinge assembly is then assembled, by locating each friction block in its appropriate extruded section 12 and by attaching each pivot fixing block 1 to its associated window sash member for example by bolts 1c (FIG. 5). The pivot pins 3 are then inserted one through each of the pivot fixing blocks 1 and into each of the friction blocks 2. A cover strip is then located in the recess 1b to retain the pins 3 in position. An advantage of this construction and assembly method is that it is fully demountable without destruction or damage to any of the components.

It will be realised that modifications may be made without departing from the invention.

I claim:

1. A metal frame window assembly comprising:

- (1) a metal frame comprising a plurality of frame members forming a rectangular opening;
- (2) a track integrally formed in at least one of said frame members, said track comprising a first track section and a second, substantially closed track section, the common wall between said sections being provided with an elongated opening;
- (3) a window sash hingedly mounted in said frame;
- (4) a hinge connecting said sash to said frame and slidable along said track, said hinge comprising a first hinge block slidably mounted in said track, said first hinge block being in the form of a slotted block

3

having a first section slidable in said first track section and a second section slidable in said second track section; a second hinge block fixed to the window sash at the corner thereof, a pivot pin connecting said first and second hinge blocks;

(5) adjustable means interconnecting said first and second block sections for varying the friction developed between said block sections and the confronting sides of said common wall, and

(6) link means pivotally connected at one end to said sash and at its other end to said frame intermediate the length thereof.

2. A hinged window assembly according to claim 1 wherein said adjustable means interconnecting said first and second block sections comprises one or more threaded screws extending transversely through said elongated opening, adjustment of said screws varying the frictional clamping of said block sections on said common wall.

3. A hinged window assembly according to claim 1

4

in which said first hinge block has a recess containing a felt pad to act as a wiper relative to the window frame member.

4. A hinged window assembly according to claim 1 in which said second hinge block has a recess to receive a cover plate serving to retain the pivot pin in the block.

References Cited

UNITED STATES PATENTS

10 3,052,931 9/1962 Ewing ----- 49—252

FOREIGN PATENTS

17,562 7/1912 Great Britain.
664,807 6/1963 Canada.
15 145,303 2/1952 Australia.
627,894 5/1963 Belgium.

KENNETH DOWNEY, Primary Examiner