

Description

[0001] The invention relates to a mechanical support for use with door and window hinges.

[0002] The invention has been devised particularly, though not solely, for hinges which are secured in position via the creation of a friction joint between the hinge and a channel incorporated in the structure, usually a frame, from which the door/window is supported.

[0003] A number of door/window designs incorporate channels that can be used by hinges to allow ease of mounting. When mounted, the hinges are secured in position via the creation of a friction joint between the hinge and the door/window channel. In order to adjust the vertical position of the hinge on the door/window frame, it is necessary to loosen the friction joint, slide the hinge along the door/window channel and secure it in its new position by tightening of the friction joint.

[0004] This type of hinge has grown to be very popular because it can be very easy and fast to mount it on the door/window and allows for vertical adjustment of its position with respect to the door/window frame.

[0005] Although hinges of the above type have appeared in various sizes and shapes, their performance is limited by the amount of load the friction joint can withstand. This is especially significant in the case of doors and large windows which tend to be heavy and, as a result, overload the hinges, causing them to slide downwards.

[0006] Adjustment of the vertical position of the door/window, so as to meet clearance tolerances, is usually carried out via the movement of the hinge with respect to the door/window frame. However, in practice, to carry out adjustment in this way requires at least one person to hold and move the door/window and another to loosen, and thereafter tighten, the friction joint, so as to move the hinge to a new position.

[0007] Adjustment, in most cases, is made even more problematic in that the hinge usually needs to be moved no more than a few millimeters and the door/window is generally heavy without any means to hold it properly.

[0008] An aim of the invention present invention is to address the drawbacks outlined above.

[0009] Accordingly, the invention resides in an adjustable support device for a door or window hinge, the hinge having a first end arranged to be supported from a structure and a second end from which said door or window is to be supported, the support device comprising:

- a base arranged to be fixed to said structure;
- a support member arranged to support the door or window; and
- an adjustment means disposed between the base and the support member, the adjustment means being adapted to permit adjustment of the spacing between the base and the support member along an axis which is parallel to the axis of the hinge.

[0010] According to a preferred feature of the invention, the base is adapted to be fixed to the structure by a through-fastener.

[0011] According to a preferred feature of the invention, said adjustment means comprises an adjustment member having a threaded portion to permit rotation of said adjustment member relative to said base to adjust said spacing.

[0012] According to a preferred feature of the invention, the adjustment means is engageable with the base and the support member is engageable with the first end of the hinge to support the hinge.

[0013] According to a preferred feature of the invention, the base is adapted to be received in a channel on the structure in which said first end is receivable, the channel on the structure extending parallel to said axis. According to a further preferred feature of the invention, the support member and adjustment means are arranged to be received in the channel on the structure.

[0014] According to a preferred feature of the invention, the adjustable support device further comprises a further support member, the further support member adapted to be fixed to the window or door and arranged to be supported from the second end of the hinge.

[0015] According to a further preferred feature of the invention, the further support member is adapted to engage the second end of the hinge.

[0016] According to a preferred feature of the invention, the further support member is adapted to be fixed to the window or door by a through-fastener.

[0017] According to a preferred feature of the invention, the further support member is adapted to be received in a channel on the window or door in which said second end is receivable, the channel on the window or door being arranged to extend parallel to said axis.

[0018] According to an embodiment of the invention, the base is L-shaped, the longer side of the base being receivable against and fixed to the structure. According to a preferred feature of the embodiment, the support member comprises a sliding block. According to a preferred feature of the embodiment, the adjustment means comprises an adjustment screw and a lock nut, threadingly engageable with the screw, provided in the base. According to a preferred feature of the embodiment, the adjustment screw is rotatably receivable in the support member to be engageable therewith.

[0019] According to a preferred feature of the embodiment, the further support member comprises a T-shaped stopper, the central projecting portion of the T-shaped stopper being receivable in a channel provided at the periphery of the window or door and the two opposed projecting portions of the stopper being arranged to lie outside of that channel and to project transverse to the longitudinal axis of that channel.

[0020] With the further support member on the door/window, the hinge is prevented from sliding with respect to the door/window leaf since in its path it finds a rigid obstacle presented by the T-shaped stopper. In addition,

the hinge is prevented from sliding with respect to the door/window frame since in its path it finds a rigid obstacle presented by the sliding block which in turn rests on the adjustment screw which is mounted on the L-shaped base via the locknut.

[0021] Since the sliding block is free to slide inside the door/window channel but rests on the adjustment screw, any vertical movement of the adjustment screw via its rotation also affects the position of the sliding block. Upon loosening of the hinge friction joint, the latter rests on the sliding block and any vertical movement of the sliding block is translated into a corresponding and equal vertical movement of the hinge with respect to the door/window frame. In this way, the controlled vertical adjustment of the hinge with respect to the door/window frame is accomplished via the rotation of the adjustment screw.

[0022] Further advantages of this invention include simplicity in terms of design, construction and assembly, which results in lowering the cost of investment and production.

[0023] A preferred embodiment of the invention will now be described by way of example, with reference to the accompanying drawings, in which:

Figures 1A-1E are top, side, end, bottom and cross-sectional (along line A-A) views of an L-shaped base, sliding block, adjustment screw, lock nut and fixing means employed in this invention;

Figures 2A-2D are top, side, bottom and cross-sectional (along line A-A) views of a T-shaped stopper and the fixing means;

Figure 3 shows a typical fitting of a mechanical support on a door/window in position with a hinge;

Figures 4A-4E are top, side, end, bottom and cross-sectional (along line A-A) views, respectively, of an L-shaped base according to the present invention;

Figures 5A-5E are top, side, end and bottom views, respectively, of a sliding block;

Figures 6A-6d are top, side, bottom and cross-sectional (along line A-A) views, respectively, of a T-shaped stopper; and

Figures 7A-7B are top and side views, respectively, of an adjustment screw.

[0024] Figures 1A-1E provide an illustration of the assembly of the mechanical support components that are fixed on a door/window frame, which comprises an L-shaped base 1, sliding block 2, adjustment screw 3, lock nut 4 and fixing means 5 for securing the L-shaped base 1 on the door/window frame.

[0025] The installation of the abovementioned components on the door/window frame is carried out by first

positioning the sliding block 2 inside the door/window frame channel below a first end of the hinge (which is receivable in the channel in the frame to be supported from the frame), such that it can freely slide vertically, followed by fixing the L-shaped base 1 inside the door/window frame channel below the sliding block 2 via the fixing means 5, and, finally, inserting the adjustment screw 3 through the a hole 6 in the L-shaped base so as to screw in the lock nut 4 such that its tip 7 is received inside the sliding block hole 8. When these components are mounted on the door/window frame, the hinge rests on the sliding block 2 which, in turn, is supported by the adjustment screw 3, the adjustment screw being locked into position by the lock nut 4 housed inside the L-shaped base 1. Therefore, in effect, the load generated by the hinge on the sliding block 2 is supported by the fixing means 5.

[0026] Because the sliding block 2 rests on the adjustment screw 3, rotation of latter with respect to the lock nut 4 accordingly varies the distance 9 between the sliding block 2 and the L-shaped base 1. Upon loosening of the friction joint of the hinge, the hinge will be free to move vertically, inevitably bearing against the sliding block 2, and will move vertically along with it to any new position the adjustment screw will force it to take. In this way, the controlled vertical adjustment of the hinge with respect to the door/window frame is accomplished via the rotation of the adjustment screw.

[0027] Figures 2A-2D provide an illustration of the assembly of the mechanical support components that are fixed on the door/window leaf, the assembly comprising a T-shaped stopper 10 and a fixing means 11 for securing the T-shaped stopper on the door/window leaf. The installation of the above components on the door/window leaf is carried out by positioning the T-shaped stopper 10 inside the door/window leaf channel above the a second end of the hinge (which is receivable in the door/window leaf channel such that the window/door is supported therefrom) and securing it into position via the fixing means 11.

[0028] Figure 3 provides a illustration of the complete assembly of the mechanical support on the door/window, the assembly comprising the L-shaped base 1, the sliding block 2, the adjustment screw 3, the fixing means 5 and 11, the T-shaped stopper 10, the door/window frame 14, the door/window leaf 13 and the hinge 12. As illustrated by Figure 3, the T-shaped stopper 10 is mounted on top of the hinge 12, whereas the L-shaped base 1, the sliding block 2 and the adjustment screw are mounted below the hinge.

[0029] When the door/window is positioned into place, the door/window load is exerted on the leaf 13, which is supported by the hinge 12. When the hinge 12 reaches its friction limit, the leaf 13 has a tendency to slide downwards with respect to the hinge 12, as indicated by arrow 35. This sliding action will be restricted by the T-shaped stopper 10, which acts as a resilient obstacle in the sliding path of the leaf 13. In turn, the hinge 12 is forced to slide

downwards with respect to the door/window frame 14, as indicated by arrow 36, but this action will be prevented by the sliding block 2, which acts as a resilient obstacle in the sliding path of the hinge 12.

[0030] In order to adjust the vertical position of the door/window, the hinge 12, with its friction joint loosened such that it is engaged and supported by the sliding block 2, is able to slide along the door/window frame channel 15 via turning of the adjustment screw 3 and resultant movement of the sliding block 2.

[0031] Figures 4A-4E show a series of views of the L-shaped base 1. The L-shaped base 1 comprises an L-shaped component 20, having two stepped circular openings 21 and one circular opening 22 leading to a hexagonal socket 23. The L-shaped component 20, as viewed from one of its ends, has a T-shaped profile in which there is a submerged U-shaped recess. When viewed from its adjacent end, it forms a T-shaped profile on top of which there is a half hexagon.

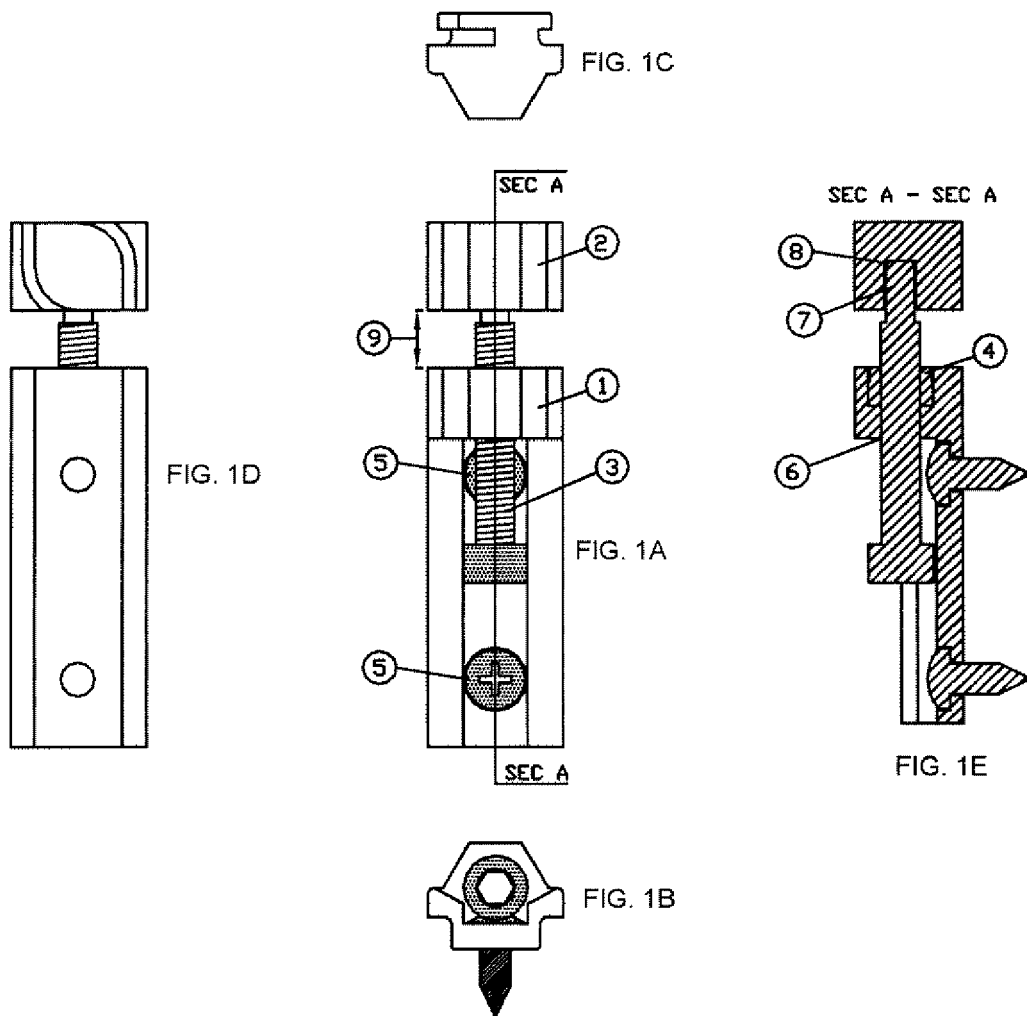
[0032] Figures 5A-5E show a series of views of the sliding block 2. The sliding block 2 comprises a rectangular plate 24 on top of which there is a half hexagon 25 and a reversed T-component 26 on the bottom. When viewed from the side, there is a circular opening 27 in the middle.

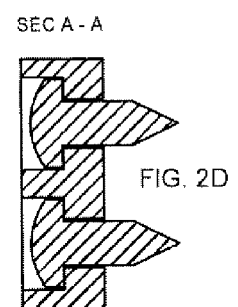
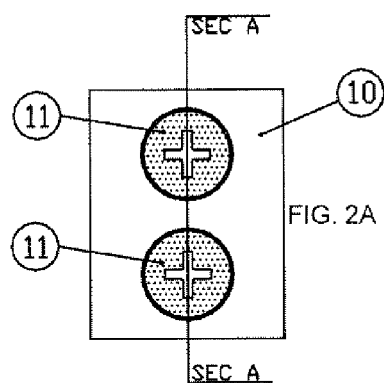
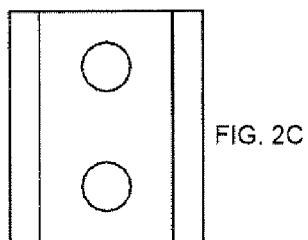
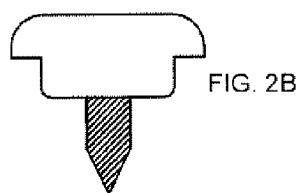
[0033] Figures 6A-6D show a series of views of the T-shaped stopper 10. The T-shaped stopper 10 comprises a rectangular plate 28 which is disposed above a smaller rectangular plate 29, forming a T-shape profile with rounded edges and two stepped circular openings 30.

[0034] Figure 7A and 7B show a series of views of the adjustment screw 3. The adjustment screw 3 consists of a tubular head 31 with a hexagonal socket 32 connected on a threaded tube 33 leading to a tubular tip 34.

Claims

1. An adjustable support device for a door or window hinge, the hinge having a first end arranged to be supported from a structure and a second end from which said door or window is to be supported, the support device comprising:
 - a base arranged to be fixed to said structure;
 - a support member arranged to support the door or window; and
 - an adjustment means disposed between the base and the support member, the adjustment means being adapted to permit adjustment of the spacing between the base and the support member along an axis which is parallel to the axis of the hinge.
2. An adjustable support device according to claim 1, wherein the base is adapted to be fixed to the structure by a through-fastener.
3. An adjustable support device according to claim 1 or claim 2, wherein said adjustment means comprises an adjustment member having a threaded portion to permit rotation of said adjustment member relative to said base to adjust said spacing.
4. An adjustable support device according to any of the preceding claims, wherein the adjustment means is engageable with the base and the support member is engageable with the first end of the hinge to support the hinge.
5. An adjustable support device according to any of the preceding claims, wherein the base is adapted to be received in a channel on the structure in which said first end is receivable, the channel on the structure extending parallel to said axis.
6. An adjustable support device according to claim 5, wherein the support member and adjustment means are arranged to be received in the channel on the structure.
7. An adjustable support device according to any of the preceding claims, further comprising a further support member, the further support member adapted to be fixed to the window or door and arranged to be supported from the second end of the hinge.
8. An adjustable support device according to claim 7, wherein the further support member is adapted to engage the second end of the hinge.
9. An adjustable support device according to claim 7 or claim 8, wherein the further support member is adapted to be fixed to the window or door by a through-fastener.
10. An adjustable support device according to any of claims 7 to 9, wherein the further support member is adapted to be received in a channel on the window or door in which said second end is receivable, the channel on the window or door being arranged to extend parallel to said axis.





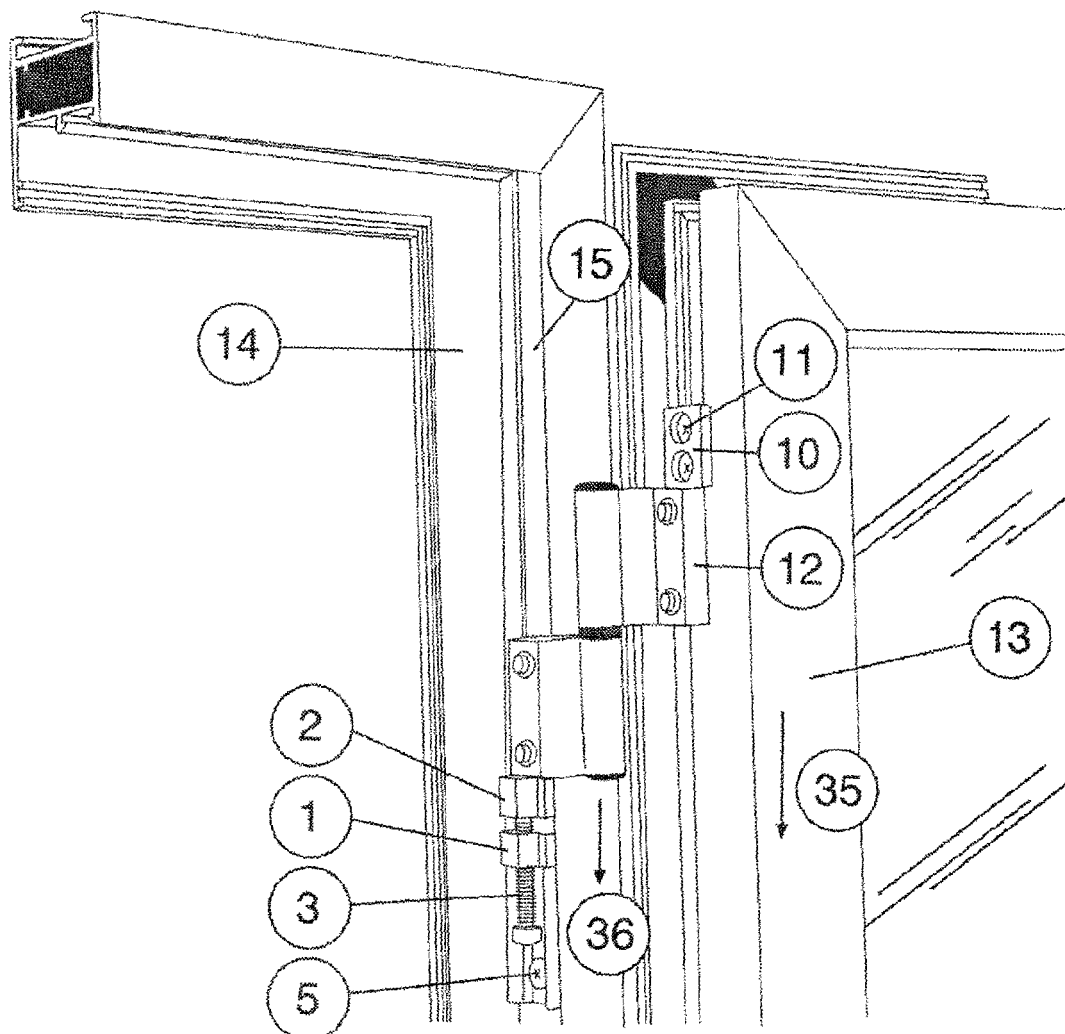


FIG 3

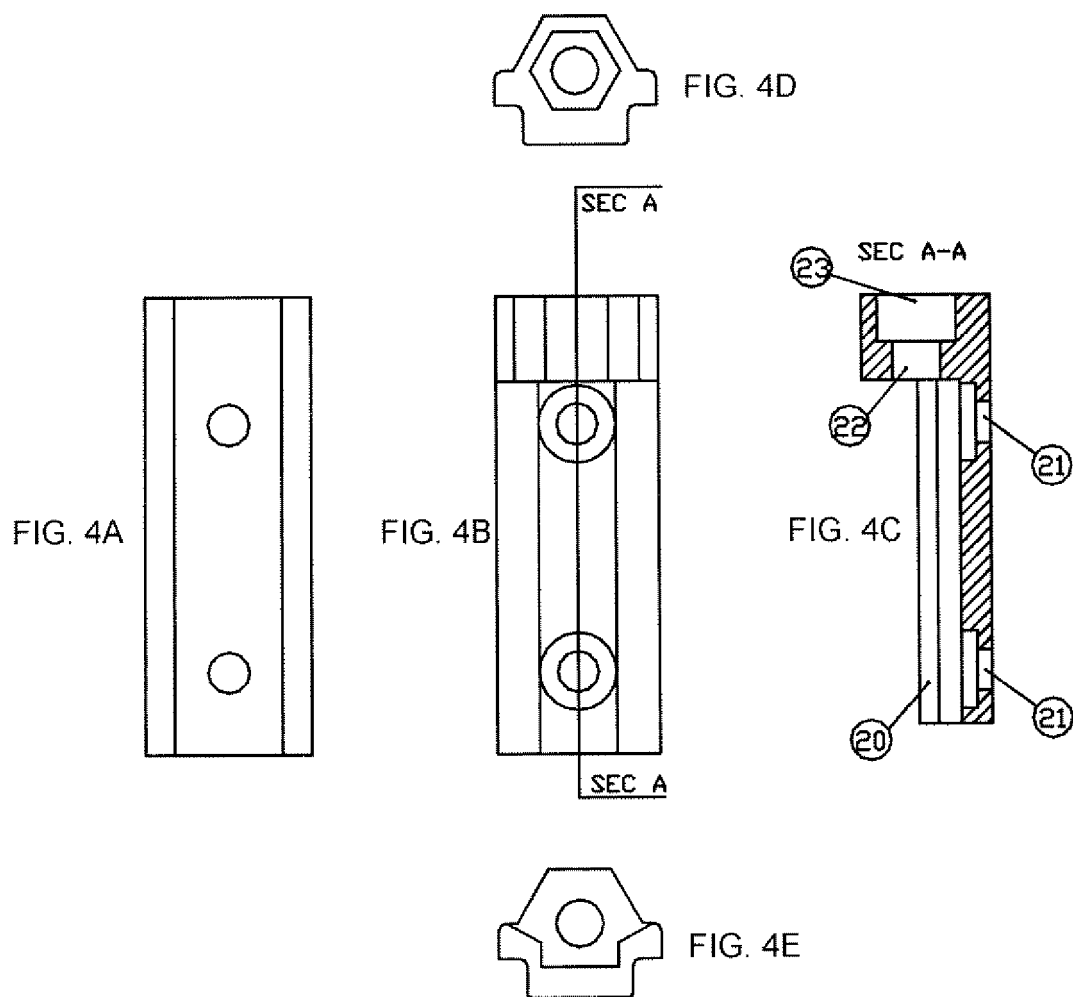


FIG. 5A

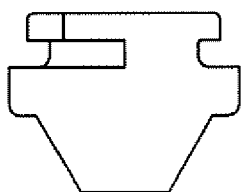


FIG. 5B

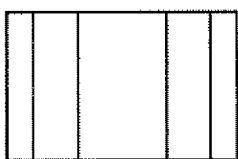


FIG. 5D

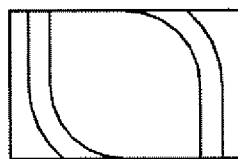


FIG. 5C

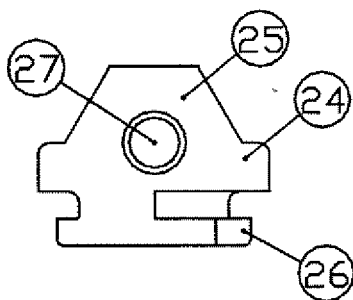


FIG. 5E

