

PATENT SPECIFICATION

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(54) ADJUSTABLE KEEPER PLATE ASSEMBLY FOR USE WITH CRESCENT SASH FASTENER

(71) We, YOSHIDA KOGYO K.K., a Japanese body corporate, of No. 1 Kanda Izumi-cho, 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:

This invention relates to an adjustable keeper plate assembly adapted for use with a (so-called) crescent fastener, that is to say, a rotatable fastener device having a member which is generally in the shape of a crescent engageable with the keeper plate assembly for locking together meeting stiles of two sliding sashes of a door or window, the keeper plate assembly being mounted in use on one of the stiles and the crescent fastener on the other stile.

There is known an arrangement comprising a crescent fastener mounted on a stile of one sash and a keeper plate mounted on the meeting stile of another sash, in which the crescent fastener is capable of being engaged with the keeper plate and the attachment position of the keeper plate can be adjusted so as to accommodate an error in the fitting dimensions.

As one method for adjusting the attachment position of the keeper plate in the above-mentioned arrangement, there is known a method in which a laterally elongate hole is formed in the keeper plate, a backing plate is temporarily fitted to the stile and the keeper plate is then fixed while adjusting the position thereof. As another method, there can be mentioned a method in which an elongate hole or slot is formed in the stile itself, and the keeper plate is fixed so that the attachment position thereof can be adjusted by a screw extending through the slot.

These known methods, however, are still insufficient. For example, the method

comprising fixing the keeper plate to the stile by means of the backing plate is defective in that the operation of fixing the backing plate temporarily to the stile in advance is troublesome. Further, the method comprising fixing the keeper plate directly to the stile is defective in that the elongate hole formed in the stile is visible from the outside and spoils the appearance.

According to the invention there is provided an adjustable keeper plate assembly adapted for use with a crescent fastener for locking together meeting stiles of two sliding sashes of a door or window, the keeper plate assembly comprising two separately made members, one of said members comprising a hook portion which, in use, extends horizontally from a hook at one end thereof for engagement by the crescent fastener to an integrally joined fixing plate portion at the opposite end for fixing said one member to one of the stiles, the other of said members being a backing plate arranged, in use, with said fixing plate portion interposed between said backing plate and said one stile, the backing plate being adapted to be fixed in a single given position on said one stile, the fixing plate portion and the backing plate having upper and lower inter-engaging parts positioned, in use, respectively above and below the level of the hook for permitting horizontal sliding adjustment relative to said one stile of said one member, which can be fixed in any selected one of a plurality of different positions relative to said one stile.

The present invention will be described by way of examples with reference to the accompanying drawings which illustrate preferred embodiments of the present invention and in which:

Fig. 1 is an exploded perspective view, showing a keeper plate assembly accord-

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ing to a first embodiment of the present invention;

Fig. 2 is a perspective view, showing the state where component members of the keeper plate assembly of Fig. 1 are assembled;

Fig. 3 is a sectional view, showing the state where the keeper plate assembly of the first embodiment is attached to a stile;

Fig. 4 is an enlarged sectional view, showing the keeper plate assembly of Fig. 3;

Fig. 5 is a front view of the keeper plate assembly shown in Fig. 3;

Fig. 6 is an enlarged view, showing a section taken along the line A-A in Fig. 5;

Fig. 7 is an exploded perspective view, showing a keeper plate assembly according to a second embodiment of the present invention;

Fig. 8 is an exploded perspective view, showing a keeper plate assembly according to a third embodiment of the present invention;

Fig. 9 is an exploded perspective view, showing a keeper plate assembly according to a fourth embodiment of the present invention; and

Fig. 10 is a plan view, showing the state where component members of the keeper plate assembly of Fig. 9 are assembled.

Referring to Figs. 1 to 6, the first embodiment of the present invention illustrated therein will now be described. A keeper plate assembly 1 according to the first embodiment of the present invention comprises as basic structural elements thereof a first member 2 forming a keeper plate and a second member 3 forming a backing plate for engaging and fixing the keeper plate 2 to a stile 7.

The first member or keeper plate 2 comprises a hook portion 5 integrally joined to a fixing plate portion 6. The hook portion 5, on the left-hand side in each of Figs. 1 and 2, extends horizontally from a hook at the left-hand end (for engagement by a crescent fastener 4 mounted on a meeting stile 7—see Fig. 3) to the fixing plate portion 6, which overlies and is generally contiguous with the backing plate 3. The hook portion 5 tapers as shown from the fixing plate portion 6 to the hook.

The fixing plate portion 6 is formed to have a substantially rectangular plate-like shape, and a round hole 8 including a large diameter portion on the side of the stile 7 on which it is mounted and a small diameter portion on the side of the backing plate 3 is formed in a central portion of the fixing plate portion 6 (the sectional shape of the hole 8 is shown in Fig. 6), level with the hook. Laterally elongate guide slots 9 are formed respectively above and below the hole 8 (and above and below the

level of the hook) and elongate holes or slots 10, each having a longitudinal axis extending in the lateral direction, are formed above the upper guide slot 9 and below the lower guide slot 9, respectively.

A laterally elongate slot 11 is formed in the backing plate 3 at a position confronting the hole 8, and projections 12, projecting towards the member 2, are provided on the backing plate 3 at positions confronting the guide slots 9. Further, screw holes 13 are formed at positions confronting the elongate slots 10. The guide slots 9 and projections 12 constitute inter-engaging portions 14.

A stopper 15 is inserted into the slot 11 and hole 8 from the side of the backing plate 3 and the inserted top end of the stopper 15 is caulked in the large diameter part of the hole 8 to integrate the backing plate 3 with the fixing plate portion 6 (Fig. 6). The keeper plate 2 of the keeper plate assembly is arranged so that it can slide in the lateral direction while being guided by the inter-engaging portions 14.

As will be apparent from the description and the drawings, in the keeper plate assembly 1, the backing plate 3 is disposed on the far side of the fixing plate portion 6 from the stile 7. The fixing plate portion 6 and backing plate 3 are assembled together as described and, due to the caulking of stopper 15, they are not separable from each other. Further, the member 2 of the fixing plate assembly is arranged so that the member 2 is allowed to move in the lateral direction with respect to the backing plate 3.

As shown in Figs. 3 and 4, the keeper plate assembly 1 having the above-mentioned structure is inserted into a notch 16 formed at a predetermined position of the stile 7 and the assembly 1 is attached to this portion of the stile 7 so that the position thereof can be adjusted in the lateral direction by fluted screws 17.

More specifically, fluted holes 18 are formed at predetermined positions of the stile 7 and the assembly 1 is attached to the stile 7 by means of the fluted screws 17 extending through the holes 18 and lateral slots 10 and fitted in the screw holes 13.

In attaching the assembly 1 having the above structure, the keeper plate 2 of the assembly is first attached non-removably to the backing plate 3 by means of the stopper 15 so that the keeper plate 2 can slide in the lateral direction, whereby the assembly 1 is assembled. Then, the assembly 1 is inserted in the notch 16 formed on the stile 7 and temporarily fixed by the fluted portions 17.

In adjusting the attachment position of

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the assembly 1 relative to the crescent fastener 4 mounted on the meeting stile 7, the keeper plate 2 of the assembly 1 is slid in the lateral direction to compensate for a dimensional error, if any, in the fitting work. At this point, the keeper plate 2 is slid in a predetermined range while being guided by the inter-engaging portions 14. After adjustment of the position, the fluted screws 17 are clamped to fix the assembly.

The second embodiment shown in Fig. 7 is characterized in that instead of the inter-engaging portions 14 of the first embodiment, there are provided inter-engaging portions 24 comprising engaging parts 19 mounted integrally on the upper and lower ends of the fixing plate portion 6 of the keeper plate 2 and guide parts 20 formed by upper and lower edges of the backing plate 3.

Each engaging part 19 is formed to have a hook-like shape, and the engaging parts 19 are mounted on the top and bottom ends of the attachment flat plate part 6 on the side of the backing plate 3.

The guide parts 20 are formed on the top and bottom ends of the backing plate 3, and both top and bottom ends of the backing plate 3 are embraced by the engaging parts 19 so that the backing plate 3 can slide in the lateral direction.

In the keeper plate assembly having the above-mentioned structure, a stopper 15 is passed through a lateral elongate slot 11 in the backing plate 3, and as shown in Fig. 6, the top end of the stopper 15 is inserted into the hole 8 and caulked, whereby the backing plate 3 is fixed and prevented from separating from the keeper plate 2 of the assembly.

In this structure, both upper and lower ends of the backing plate 3 act as guide means, and therefore, in this embodiment the processing operation can be simplified.

Fig. 8 illustrates a third embodiment of the present invention, in which instead of inter-engaging portions 14 of the first embodiment, there are provided inter-engaging portions 34 each comprising an engaging part 21 and a guide part 22.

In this embodiment, laterally elongate slots 26 are formed in the upper and lower portions of the backing plate 3, and round holes 23 are formed at upper and lower positions on the fixing plate portions of the keeper plate 2 of the assembly, corresponding to the location of the lateral slots 26. Stoppers 25 are passed through the elongate holes 26, and the top ends of the stoppers 25 are passed through the holes 23 and caulked.

In this structure, since the stoppers 25 are freely fitted in the holes 26, the keeper plate 2 and the backing plate 3 are allowed to slide relatively in the lateral direction.

Accordingly, in this embodiment, the stoppers 25 act as engaging parts 21 and have also a function of connecting the keeper plate 2 with the backing plate 3 in the assembly. Therefore, manufacture of the assembly can be facilitated.

Figs. 9 and 10 illustrate a fourth embodiment of the present invention, in which instead of the inter-engaging parts 14 of the first embodiment, there are provided inter-engaging parts 44 comprising projections 27 and notches 28, and instead of the stopper 15, there is disposed a projection 29.

Each of the upper and lower projections 27 is a projecting piece formed on the upper or lower end of the backing plate 3, and the notch 28 is a notch formed on the upper or lower end of the fixing plate portion 6.

The projection 27 may be formed by forming a slit of a predetermined width in the top or bottom end of the backing plate 3 and bending the slit-constituting part of the backing plate 3 towards the fixing plate portion 6. Further, a part of the backing plate 3 may be bulged out by press processing to form the projection 27.

The projection 29 is formed on the side end of the fixing plate portion 6, and when the keeper plate assembly is assembled, as shown in Fig. 10, the projecting piece 29 is bent to embrace the backing plate 2 along the back face of the keeper plate 2 of the assembly.

In the structure of the fourth embodiment, since a stopper need not be used, the disadvantage is eliminated that attachment would be made impossible by loss of the stopper. Further, manufacture of the assembly can be facilitated.

In accordance with the present invention, it is devised that the backing plate 3 is applied to line the fixing plate portion 6 of the keeper plate 2 of the assembly and that there is a guide means provided comprising guide members or portions in which inter-engaging parts of the fixing plate portion 6 and the backing plate 3, above and below the level of the hook on the hook portion 5, allow the keeper plate 2 of the assembly to slide in lateral directions, so that guiding of the keeper plate 2 in lateral directions can be free of failure.

Further, the guiding operation can be performed assuredly without causing shaking and rattling. Therefore, even if the keeper plate assembly is used for a long time, the clamping engagement between the crescent member and the keeper plate is not rendered unstable, and good and secure fastening of the sash can be maintained for a long time.

Furthermore, since the keeper plate and backing plate of the sash fastener are con-

nected so that sliding movement in the lateral direction is possible, the troublesome operation of temporarily fixing the backing plate to the stile that has been indispensable in the conventional techniques need not be performed, and therefore the attachment operation can be remarkably facilitated and provision of screws for temporary fixation of the backing plate becomes unnecessary. As a result, a good appearance can be attained.

Still further, when fluted holes are formed and fluted screws are inserted into those fluted holes to fix the keeper plate assembly, clearance of the stile on the side of the crescent fastener can be increased to a maximum, and the strength of a sash door can also be increased.

It will be appreciated that in each of the above-described embodiments it is unnecessary to temporarily fix to the stile the backing plate by itself for engaging and fixing the keeper plate to the stile, and only an integrated assembly of the keeper plate and the backing plate is fixed to the stile. Accordingly, the attachment operation can be remarkably facilitated. Further because of the inter-engaging parts of the keeper plate and the backing plate, adjustment of the position of the keeper plate can be performed very easily and assuredly, and shaking or rattling can be effectively prevented. Accordingly, even if the keeper plate assembly is used for a long time, the clamping and fixing performance is not loosened at all.

WHAT WE CLAIM IS:

1. An adjustable keeper plate assembly adapted for use with a crescent fastener for locking together meeting stiles of two sliding sashes of a door or window, the keeper plate assembly comprising two separately made members, one of said members comprising a hook portion which, in use, extends horizontally from a hook at one end thereof for engagement by the crescent fastener to an integrally joined fixing plate portion at the opposite end for fixing said one member to one of the stiles, the other of said members being a backing plate arranged, in use, with said fixing plate portion interposed between said backing plate and said one stile, the backing plate being adapted to be fixed in a single given position on said one stile, the fixing plate portion and the backing plate having upper and lower inter-engaging

parts positioned, in use, respectively above and below the level of the hook for permitting horizontal sliding adjustment relative to said one stile of said one member, which can be fixed in any selected one of a plurality of different positions relative to said one stile.

2. A keeper plate assembly as claimed in claim 1 wherein said inter-engaging parts comprise upper and lower projections on the backing plate and upper and lower slots or grooves in the fixing plate portion.

3. A keeper plate assembly as claimed in claim 1 wherein said inter-engaging parts comprise upper and lower hooks on the fixing plate portion slidably engaging upper and lower edges of the backing plate.

4. A keeper plate assembly as claimed in claim 1 wherein said inter-engaging parts comprise upper and lower projections on the backing plate slidably engaging in upper and lower notches in the fixing plate portion.

5. A keeper plate assembly as claimed in claim 1 or 3 wherein the backing plate and the fixing plate portion are provided one with a round hole and the other with a horizontal slot, a stopper member being fitted in the hole and sliding in the slot.

6. A keeper plate assembly as claimed in claim 1 wherein said inter-engaging parts comprise two stopper members, two round holes and two horizontal slots, the backing plate and the fixing plate portion being provided one with the round holes and the other with the slots, the two stopper members being fitted in the holes and sliding in the slots.

7. A keeper plate assembly as claimed in claim 1 or 4 wherein a projection on the fixing plate portion extends around one side of the backing plate and behind the backing plate at the side of the fixing plate portion remote from the hook portion.

8. A keeper plate assembly as claimed in any preceding claim wherein the backing plate has fixing screw-holes in registry with horizontal slots for the fixing screws in the fixing plate portion.

9. An adjustable keeper plate assembly substantially as described with reference to and as illustrated in Figures 1 to 6 or Figure 7 or 8 or Figures 9 and 10 of the accompanying drawings.

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nected so that sliding movement in the lateral direction is possible, the troublesome operation of temporarily fixing the backing plate to the stile that has been
5 indispensable in the conventional techniques need not be performed, and therefore the attachment operation can be remarkably facilitated and provision of screws for temporary fixation of the backing plate becomes unnecessary. As a result,
10 a good appearance can be attained.

Still further, when fluted holes are formed and fluted screws are inserted into those fluted holes to fix the keeper plate
15 assembly, clearance of the stile on the side of the crescent fastener can be increased to a maximum, and the strength of a sash door can also be increased.

It will be appreciated that in each of the
20 above-described embodiments it is unnecessary to temporarily fix to the stile the backing plate by itself for engaging and fixing the keeper plate to the stile, and only an integrated assembly of the keeper
25 plate and the backing plate is fixed to the stile. Accordingly, the attachment operation can be remarkably facilitated. Further because of the inter-engaging parts of the keeper plate and the backing plate, adjustment
30 of the position of the keeper plate can be performed very easily and assuredly, and shaking or rattling can be effectively prevented. Accordingly, even if
35 the keeper plate assembly is used for a long time, the clamping and fixing performance is not loosened at all.

WHAT WE CLAIM IS:

1. An adjustable keeper plate assembly adapted for use with a crescent fastener
40 for locking together meeting stiles of two sliding sashes of a door or window, the keeper plate assembly comprising two separately made members, one of said members comprising a hook portion which, in
45 use, extends horizontally from a hook at one end thereof for engagement by the crescent fastener to an integrally joined fixing plate portion at the opposite end for
50 fixing said one member to one of the stiles, the other of said members being a backing plate arranged, in use, with said fixing plate portion interposed between said
55 backing plate and said one stile, the backing plate being adapted to be fixed in a single given position on said one stile, the fixing plate portion and the backing plate having upper and lower inter-engaging

parts positioned, in use, respectively above and below the level of the hook for permitting horizontal sliding adjustment relative to said one stile of said one member,
60 which can be fixed in any selected one of a plurality of different positions relative to said one stile.

2. A keeper plate assembly as claimed 65 in claim 1 wherein said inter-engaging parts comprise upper and lower projections on the backing plate and upper and lower slots or grooves in the fixing plate portion.

3. A keeper plate assembly as claimed 70 in claim 1 wherein said inter-engaging parts comprise upper and lower hooks on the fixing plate portion slidably engaging upper and lower edges of the backing plate.

4. A keeper plate assembly as claimed 75 in claim 1 wherein said inter-engaging parts comprise upper and lower projections on the backing plate slidably engaging in upper and lower notches in the fixing plate portion. 80

5. A keeper plate assembly as claimed in claim 1 or 3 wherein the backing plate and the fixing plate portion are provided one with a round hole and the other with a horizontal slot, a stopper
85 member being fitted in the hole and sliding in the slot.

6. A keeper plate assembly as claimed in claim 1 wherein said inter-engaging parts comprise two stopper members, two
90 round holes and two horizontal slots, the backing plate and the fixing plate portion being provided one with the round holes and the other with the slots, the two stopper members being fitted in the holes and
95 sliding in the slots.

7. A keeper plate assembly as claimed in claim 1 or 4 wherein a projection on the fixing plate portion extends around one side of the backing plate and behind the
100 backing plate at the side of the fixing plate portion remote from the hook portion.

8. A keeper plate assembly as claimed in any preceding claim wherein the backing plate has fixing screw-holes in registry
105 with horizontal slots for the fixing screws in the fixing plate portion.

9. An adjustable keeper plate assembly substantially as described with reference to and as illustrated in Figures 1 to 6 or Figure 7 or 8 or Figures 9 and 10 of the
110 accompanying drawings.

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