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(54) **KEEPS FOR DOORS OR WINDOWS**

AUFSETZVORRICHTUNGEN FÜR TÜREN ODER FENSTER

GÂCHES POUR PORTES OU FENÊTRES

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(73) Proprietor: **ERA Home Security Limited
Wolverhampton
WV9 5GB (GB)**

(72) Inventor: **JOHNSON, David Leonard
Wolverhampton WV5 9HR (GB)**

(74) Representative: **Oxley, Robin John George et al
Marks & Clerk LLP
90 Long Acre
London WC2E 9RA (GB)**

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Description

[0001] This invention relates to keeps for doors or windows, more particularly, but not exclusively, for bi-fold doors or windows.

[0002] A keep, also known as a strike plate, is typically a metal plate which is fixed to a door or window frame and has a hole or holes for receiving a door or window holding means such as a lock or latch which may be a bolt or a hook. When the door or window is closed, the locking or latching means extends into the hole or holes in the keep and holds the door panel or window sash closed. The metal keep protects the door or window frame against friction from the locking or latching means and increases security in the case of a frame made of a softer material, such as wood.

[0003] Keeps may be made from any suitable material such as from rolled steel, from a polymer or from PVC-U and may be 'individual or 'single', for a single point lock or each locking point separately of a multipoint lock, or 'one piece' for all the locking points of a multi-point lock.

[0004] The way in which the keeps are formed may vary as desired to suit the particular application. For example, the keeps may be assembled from inner and outer lengths of rolled or extruded material which are inter-fitted and with the aid of screws and packing set a clearance (the so-called 'hook clearance' in the case of a latch) between the latch and the oppositely facing surface of the outer keep length. Separate fixing screws are used to secure the keep to the door panel or window sash profile with an air gap between the door panel or window sash profile and the surrounding frame.

[0005] However, all such keeps are subject to thermal expansion which can cause the holding means to operate incorrectly. In hot weather the air gap is reduced, which might cause clashing between the door panel or window sash profile and frame, so the door or window won't open or close. In cold weather the thermal expansion may cause the holding means, e.g. hook clearance, to reduce, which might mean that the hook cannot be thrown fully to hold and secure the door.

[0006] When keeps are made from PVC-U, for an original 1000mm length of PVC-U at 20°C and an increase in temperature to 40°C, the change in temperature is 20°C. The change in length is given by: $1000\text{mm} \times 0.00006/^{\circ}\text{C} \times 20^{\circ}\text{C} = 1.2\text{mm}$, i.e. a total length after expansion is 1001.2mm. If the temperature is decreased to 0°C then the calculation is the same but the change in temperature is -20°C. So, the length changes by -1.2mm, i.e. a decrease in length to 998.8mm.

[0007] In the present market, both one piece and individual/single keeps have built-in features to allow for adjustments to be carried out on the holding (locking or latching) points to give more or less compression on the door or window weather sealing strip or gasket (side-ways adjustments). However, if clearance behind the holding points is required, the hinges which mount the door or window to the frame on the opposite side of the

door or window have to be adjusted. Unfortunately, this can cause problems on the hinge side because the most common way to build a door or window is to set the holding side with the correct air gap, prior to fitting the hinges. With multi-folding sliding doors or windows, such as bi-fold doors or windows, this problem is multiplied because there is more than one set of hinges.

[0008] Accordingly, it is an object of the present invention to provide an adjustable keep which avoids or at least substantially reduces the aforementioned problems.

[0009] To this end, the invention resides in a keep according to claim 1 for a door or window having holding means which cooperate with the keep to secure the door or window. The keep is adapted to provide in-out adjustments to give clearance behind the holding points.

[0010] By means of the invention, in-out adjustments, i.e. adjustments in the plane of the door panel or window sash profile, to give clearance behind the holding points can be provided in addition to side-ways compression adjustments without sacrificing security which is an important advantage.

[0011] Other advantages of this extra adjustment over hitherto known keeps enables the assembly of doors and windows to be sped up because the keep can be adjusted as well as the hinges and also enables a fitted door or window that is suffering from thermal expansion preventing the door or window from closing or the bolts/hooks of the security holding means from going into a security position to be fixed quickly and easily.

[0012] At present an engineer would need to adjust the hinges towards or away from the locking points, which in itself can cause other problems with the fitted door or window.

[0013] According to the invention, this is achieved by the keep being made up on a base section that is secured to the sash or frame and a top plate in the base section, that is inwardly and outwardly moveable.

[0014] For ease of manufacture and operation and according to the invention, a stud is threadedly mounted and held captive, in the base section for turning with respect thereto, to provide the inward and outward movement.

[0015] The threaded stud mounting according to the invention, incorporates co-operating multi-start threads respectively provided on the stud and a threaded bush retained in the outer keep extrusion which enables the keep to be adjusted quickly and easily.

To provide a simple and neat construction and for further ease of adjustment, the threaded studs and bushes may be located either side of each holding point and the or each threaded stud may define a countersunk fixing screw hole for the keep. This enables the keep fixing screws to go through the centre of the or each threaded stud and secure the keep top plate to the sash or frame. By loosening the or each fixing screw and turning the stud as by a suitable driving tool such as an Allen key, the keep top plate can be moved in or out to the desired height and the or each fixing screw re-tightened to pro-

vide the requisite clearance behind the holding points, thereby compensating for the thermal expansion and enabling the door or window to operate correctly again. With the height adjustment, the keep can be installed to the optimum clearance (air gap) and the adjustment also can be used to eliminate manufacturing tolerances of the door panel or window sash.

In another preferred embodiment, the top plate and base section of the keep are made of inter-fitting one piece extrusions which are conveniently of PVC-U.

In order that the invention may be more readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:-

Fig 1 is a perspective view from one side and one end of an adjustable keep for a door or window;

Fig. 2 is a plan view of the central part of the adjustable keep of Fig. 1;

Fig. 3 is a longitudinal section of Fig. 2 including part of a sash which is shown diagrammatically;

Fig 4 is part-longitudinal section to an enlarged scale and in more detail of a threaded stud mounting which is shown in Fig. 3 and taken along the line indicated by the illustrated arrows in Fig. 5; and

Fig. 5 is a plan view of Fig. 4.

[0016] Referring to Figs. 1 to 5 of the drawings there is shown an adjustable one piece keep 1 for a bi-fold door or window having a multipoint lock or latch, for fixing to a window sash or frame profile (not shown) by fixing screws 3, with the exception of a sash 4 being partly shown in outline in Fig. 3. The keep 1 is made from inter-fitting extrusions (preferably of PVC-U), namely an outer keep extrusion constituting a bottom section 5 and an adjustable keep extrusion fitted on the bottom section 5 and constituting a top plate 7. Incorporated in the keep 1 are three security holding means 9 for locking/latching the door or window, located centrally of the keep at holding point 11 and at opposite end regions respectively of the keep at holding points 13.

[0017] Each holding means 9 is in the form of an adjustable hook plate 15 which cooperates with a respective latch hook 16 carried by the sash 4 as shown in Fig 3, to secure the door or window. Screws 17 passing through countersunk holes in the top plate 7 on opposite sides respectively of the top plate 7 are also provided to secure spacers 19 in the position shown in Fig. 3 beneath the top plate 7 and provide an initial hook clearance gap 21. As also shown in Fig. 3 there is an initial air gap 23 provided between the heads 25 of threaded height adjuster studs 27 (to be described) to enable the sash and keep to operate correctly without clashing when the door/window is opened and closed.

[0018] Between the heads 25 of the threaded studs 27 in the central holding point 11, the top plate 7 is provided with an adjustable latch plate 28.

[0019] The keep 1 is adapted to provide in-out-adjustments (i.e. adjustments in the plane of the door panel or window sash profile) to give clearance behind the holding points 11 and 13 by providing for the top plate 7 to be inwardly and outwardly moveable in the base section 5 with respect thereto in a manner to be described.

[0020] Ideally, the keep 1 is also adapted for carrying out side-ways (compression) adjustments on the holding (locking or latching) points to give more or less compression on the door or window weather sealing strip or gasket (not shown).

[0021] Inward and outward adjusting movement of the top plate 7 is provided by means of the threaded height adjuster studs 27 and threadedly mounted in the base section 5 on opposite sides respectively of each holding point 11, 13 for turning with respect thereto. The threaded height adjuster studs 27 are retained (held captive) in the adjustable top plate 7 by a peripheral groove 29 in the threaded stud head 25 and washer 30 in the groove

[0022] The threaded stud mounting incorporates co-operating multi-start threads 31 respectively provided on the threaded stud 27 and a threaded bush 33 fixed in the outer keep extrusion in the manner shown. The threaded stud heads 25 are provided with a driving tool slot 35 which is conveniently of hexagonal form, as shown, suitable for an Allen key. Moreover, countersunk through holes 37 are provided in threaded studs 27 for the keep fixing screws 3 to go through the centres of the threaded studs 27 and secure the keep 1 to the sash or frame.

[0023] The described keep construction enables the adjustable top plate 7 and thus the keep 1 to be adjusted quickly and easily by loosening the fixing screws 3 and turning the threaded studs 27 by an Allen key, as shown by the illustrated arrow 39 in Fig. 5. By this means the keep top plate 7 can be moved in or out to the desired height and the fixing screws 3 retightened to provide the requisite clearance (air gap) behind the holding points 11, 13 thereby compensating for the thermal expansion and enabling the door or window to operate correctly again. One turn of the threaded stud 27 as indicated by the arrow in Fig. 5 equals 4 mm height adjustment which is shown by the reference 40 in Fig. 5. With such height adjustment, the keep 1 can be installed to the optimum clearance (air gap) and the adjustment also can be used to eliminate manufacturing tolerances of the door panel or window sash.

[0024] Various modifications may be made to the invention described herein without departing from the scope of the invention as defined in the appended claims. For example, other ways of mounting the adjustment studs may be used which are consistent with the in-out adjustment feature of the invention.

Claims

1. A keep (1) for a door or window having holding means (9) which cooperate with the keep (1) to secure the door or window, the keep (1) comprising:

a base section (5) that is secured to a sash or frame of the door or window,
a top plate (7) that is mounted in the base section (5) to be inwardly and outwardly moveable with respect thereto in the plane of the door or window, **characterised by**
a stud (27) and a bush (33) each provided with co-operating multi-start threads (31), the stud (27) being threadedly mounted in the bush (33) and held captive in the base section, the stud for turning with respect to the base section to provide in-out adjustments in a plane of the door or window to give clearance behind holding points (11, 13) incorporated in the keep (1).

2. A keep (1) as claimed in claim 1, wherein two threaded studs (27) and bushes (33) are located on opposite sides respectively either side of the or each holding point (11, 13), and wherein each threaded stud (27) defines a countersunk through hole (37) for fixing screws (3) which fix the keep (1) to the sash or frame.

3. A keep (1) as claimed in claim 2, wherein the threaded studs (27) are turnable in the base section (5) when the fixing screws (3) are loosened in their respective through holes (37) in the threaded studs (27) to enable the top plate (7) to be moved in or out to the desired height and wherein the fixing screws (3) can be retightened to provide the requisite clearance behind the holding points (11, 13).

4. A keep as claimed in any preceding claim, wherein the top plate (7) and base section (5) are made from inter-fitting one piece extrusions.

5. A keep as claimed in any preceding claim, wherein the top plate (7) and base section (5) are made from PVC-U.

6. A keep as claimed in any preceding claim, for a bi-fold door or window.

Patentansprüche

1. Schließblech (1) für eine Tür oder ein Fenster, welches Haltemittel (9) aufweist, die mit dem Schließblech (1) zusammenwirken, um die Tür oder das Fenster zu befestigen, wobei das Schließblech (1) Folgendes umfasst:

einen Basisabschnitt (5) der an einem Flügel

oder einem Rahmen der Tür oder des Fensters befestigt ist,

eine Oberplatte (7) welche in dem Basisabschnitt (5) montiert ist, um in Bezug auf diesen nach innen und nach außen in der Tür- oder Fensterfläche bewegbar zu sein, **gekennzeichnet, durch**

einen Bolzen (27) und eine Buchse (33), welcher/welche jeweils mit zusammenwirkenden mehrgängigen Gewinden (31) ausgestattet sind, wobei der Bolzen (27) schraubbar in der Buchse (33) montiert ist und in dem Basisabschnitt festgehalten wird, wobei der Bolzen vorgesehen ist, um in Bezug auf den Basisabschnitt zu drehen, um Innen-Außen-Einstellungen in einer Tür- oder Fensterfläche bereitzustellen, um Freiraum hinter den in dem Schließblech (1) eingebauten Haltepunkten (11, 13) bereitzuhalten.

2. Schließblech (1) nach Anspruch 1, wobei die zwei Gewindebolzen (27) und die Buchsen (33) an gegenüberliegenden Seiten, beziehungsweise auf jeder Seite der oder jedes Haltepunkts (11, 13) angeordnet sind, und wobei jeder Gewindebolzen (27) ein versenktes Durchgangsloch (37) zum Befestigen von Schrauben (3) definiert, welche das Schließblech (1) an dem Flügel oder dem Rahmen befestigen.

3. Schließblech (1) nach Anspruch 2, wobei die Gewindebolzen (27) in dem Basisabschnitt (5) drehbar sind, wenn die Befestigungsschrauben (3) in ihren jeweiligen Durchgangslöchern (37) in den Gewindebolzen (27) gelockert werden, um der Oberplatte (7) ermöglichen, innerhalb oder außerhalb ihrer gewünschten Höhe bewegt zu werden, wobei die Befestigungsschrauben (3) wieder angezogen werden können, um den erforderlichen Freiraum hinter den Haltepunkten (11, 13) bereitzustellen.

4. Schließblech nach einem der vorhergehenden Ansprüche, wobei die Oberplatte (7) und der Basisabschnitt (5) aus ineinanderpassenden einstückigen Strangpressprofilen gefertigt sind.

5. Schließblech nach einem der vorhergehenden Ansprüche, wobei die Oberplatte (7) und der Basisabschnitt (5) aus PVC-U gefertigt sind.

6. Schließblech nach einem der vorhergehenden Ansprüche, für eine zweiflügelige Falttür oder ein Fenster.

Revendications

1. Support (1) pour porte ou fenêtre comportant des moyens de retenue (9) qui coopèrent avec le support

(1) pour sécuriser la porte ou la fenêtre, le support
(1) comprenant :

- une section de base (5) fixée sur un battant ou
un cadre de la porte ou de la fenêtre, 5

une plaque supérieure (7) montée dans la sec-
tion de base (5) pour être déplacée vers l'inté-
rieur et vers l'extérieur par rapport à celle-ci dans
le plan de la porte ou de la fenêtre, **caractérisé**
par 10

un goujon (27) et un tenon (33), chacun pourvu
de filets multiples coopérants (31), le goujon (27)
étant monté par filetage dans le tenon (33) et
retenu captif dans la section de base, le goujon
tournant par rapport à la section de base pour 15

fournir des ajustements vers l'intérieur et vers
l'extérieur dans un plan de la porte ou de la fe-
nêtre pour laisser de la place derrière des points
de retenue (11, 13) incorporés dans le support
(1). 20
- 2. Support (1) selon la revendication 1, dans lequel les
goujons filetés (27) et les tenons (33) sont situés sur
des côtés opposés respectivement sur chaque côté
du ou de chaque point de retenue (11, 13), et dans 25

lequel chaque goujon fileté (27) définit un trou tra-
versant fraisé (37) pour fixer les vis (3) qui fixent le
support (1) au battant ou au cadre.
- 3. Support (1) selon la revendication 2, dans lequel les 30

goujons filetés (27) peuvent tourner dans la section
de base (5) quand les vis de fixation (3) sont des-
serrées dans leurs trous traversants respectifs (37)
dans les goujons filetés (27) pour permettre à la pla-
que supérieure (7) d'être déplacée vers l'intérieur ou 35

vers l'extérieur à la hauteur désirée et dans lequel
les vis de fixation (3) peuvent être resserrées pour
fournir l'espace nécessaire derrière les points de re-
tenue (11, 13). 40
- 4. Support selon l'une quelconque des revendications
précédentes, dans lequel la plaque supérieure (7)
et la section de base (5) sont constituées de pièces
d'extrusion monobloc emboîtées. 45
- 5. Support selon l'une des revendications précédentes,
dans lequel la plaque supérieure (7) et la section de
base (5) sont constituées de PVC-U.
- 6. Support selon l'une quelconque des revendications 50

précédentes, pour une porte pliante ou une fenêtre
double.

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