(12) UK Patent Application (19) GB (11) 2 304 784 (13) A

(43) Date of A Publication 26.03.1997

(21) Application No 9517662.4

(22) Date of Filing 30.08.1995

(51) INT CL$^6$
E05C 9/02

(52) UK CL (Edition O )
E2A AEB

(56) Documents Cited
GB 2271605 A GB 2241531 A GB 2194280 A

(58) Field of Search
UK CL (Edition N ) E2A AEB
INT CL$^6$ E05B 15/02 , E05C 9/02 9/04

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# (54) Espagnolette fastenings

(57) An espagnolette fastening arrangement is provided for an openable window or door member in which the ability to open or close the window is controlled by a slidable member 13 provided with fastening elements 14 which engage with a keeper element (16).

Any attempt to move the window from the open to closed state with a locking element (15) already in the locked position results in the fastening elements (14) abutting against a stepped edge portion provided on the keeper element (16). This prevents further movement of the locking element (15) towards the fixed frame (11) and thus prevents undesirable impact of the fixed frame (11) against the locking element (15).

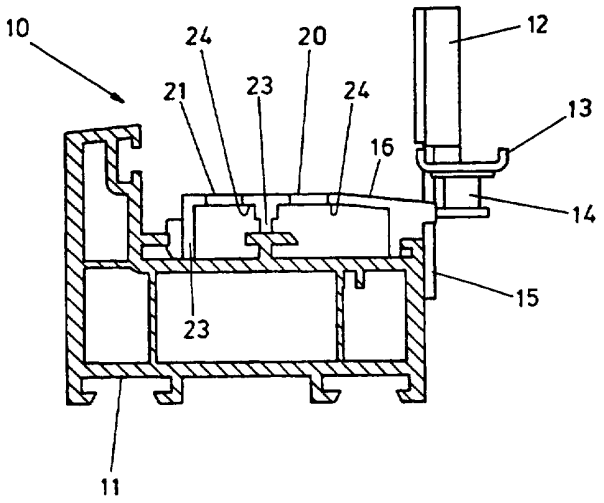


FIG. 1

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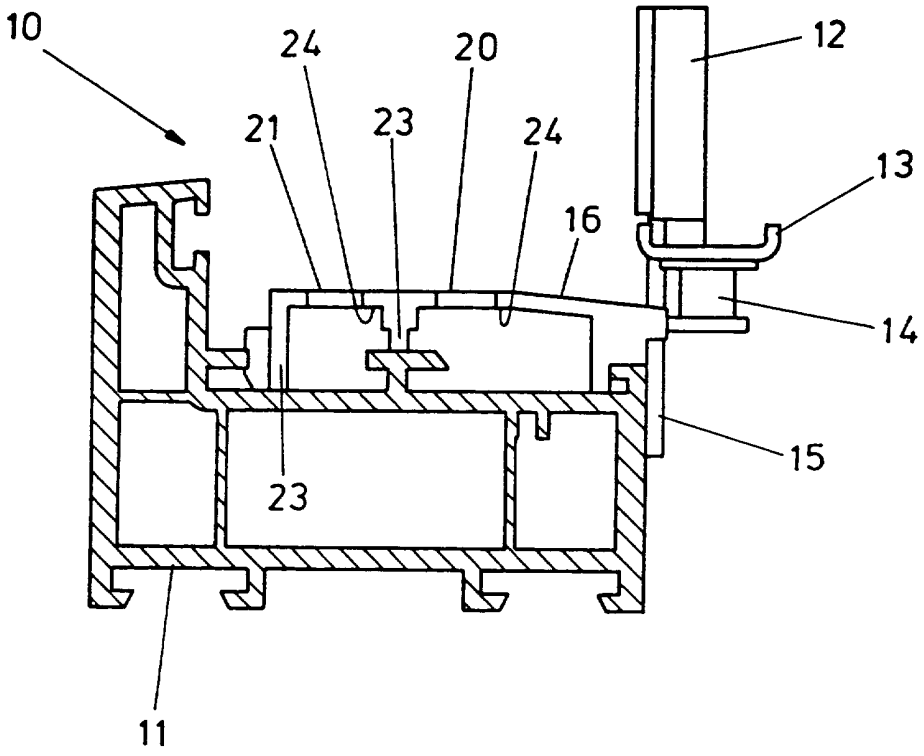


FIG. 1

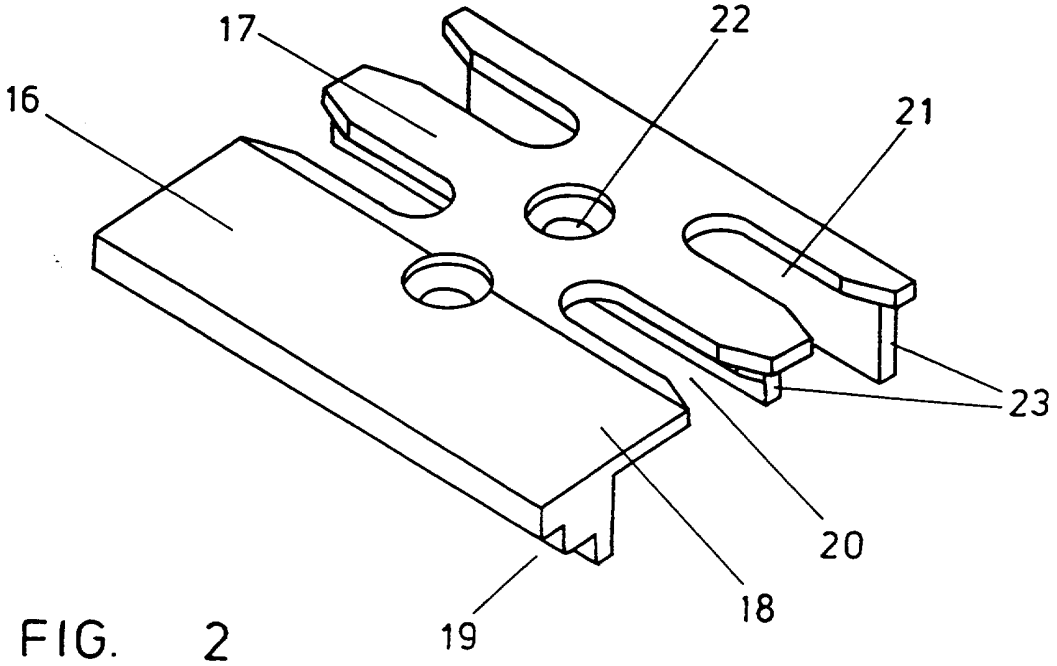


FIG. 2

# KEEPER ELEMENT AND ESPAGNOLETTE FASTENING FOR WINDOW OR DOOR

This invention relates to a keeper element and an espagnolette fastening for a window or door, in which a pinion housing can be mounted in a closing face of the window or door, an elongate slidable member is movable longitudinally between fastening and release positions, a pinion is rotatably mounted in the housing and is adapted to co-operate with the spindle of an actuating handle which can rotate the pinion between release and fastening positions, and a mechanism inter-connects the pinion and the slidable member and is operable to convert rotary motion of the actuating handle into longitudinal movement of the slidable member.

Espagnolette type fastenings are well-known in the art for fastening windows and doors, and need not be described in further detail herein.

Usually, the slidable member, often referred to as an espagnolette rod, is provided with one or more locking elements, which may be in the form of so-called "mushroom cams". The locking elements are movable between release and fastening positions with respect to corresponding keeper elements, upon longitudinal movement of the espagnolette rod.

In espagnolette type fastening for doors and windows, and in which so-called "mushroom cams" are used as the locking elements, these cams slide into locking engagement with suitably designed keeper elements mounted in the fixed frame in which the door or window is hingedly mounted. The cams have a cylindrical shank which is received in a slot defined by the respective keeper element, and which resists opening movement of the door or window (i.e. in a direction perpendicular to the axis of the shank) when the cams are in the fastening position.

In order to provide further resistance against forced entry, such as may be attempted by the introduction by an intruder of a suitable tool between the closing face of the door or window and the fixed frame, each mushroom cam has a flange or dome shaped head at the end of each shank, and which fits within each keeper slot and resists axial separation between the shank and the keeper. The flange or dome shaped head therefore provides axial restraint against possible forced

separation between the closing face of the door or window and the fixed frame.

Such existing designs of mushroom cam are generally not sufficiently strong to resist serious attempts at forced entry. An espagnolette type fastening is known which alleviates this pattern in which an additional locking element in the form of a claw is provided on the pinion and is rotatable therewith, such that the additional locking element moves between a retracted position in which it is at least partly accommodated within the pinion housing when the pinion is in the release position, and an extended position in which it engages with a corresponding keeper on the fixed frame to provide additional resistance to forced relative separation of the keeper and the closing face when the pinion is in its fastening position.

This arrangement suffers from the drawback that because the additional locking element is generally in the form of a elongate claw, the locking element can be damaged by impact from the sides. As a result, if an attempt is made to close the window with the espagnolette rod in the locked position, impact of the claw against the profile of the fixed frame often causes deformation or damage which results in the additional locking element no longer being operative.

It is therefore an object of the present invention to overcome the above problem of the prior art.

According to an aspect of the present invention, there is provided a keeper element for an espagnolette fastening for fastening an openable window or door member to a fixed frame to which it is mounted, the keeper element comprising a body portion for mounting to said fixed frame and having engaging means for engaging a respective fastening element mounted to said window or door member in use, as said fastening element moves from a release position to a fastening position, to resist opening of the window or door member when in said fastening position, and an abutment portion extending from said body portion and protruding from said fixed frame in use, a wherein said abutment portion abuts against said fastening element to prevent impact of a locking element mounted to the

window or door member against said fixed frame when said window or door member is moved towards a closed position thereof when said fastening element is in said fastening position.

The provision of such a keeper element enables the simple and relatively inexpensive conversion of the existing espagnolette type fastening arrangement to avoid damage to the relatively more expensive locking element.

The abutment portion may comprise a flange protruding from said body portion and extending substantially parallel to the or each means.

According to another aspect of the present invention, there is provided an espagnolette fastening arrangement for fastening an openable window or door member to a fixed frame to which it is mounted, the arrangement comprising a pinion housing mounted in use in a closing face of the window or door member, an elongate member slidable longitudinally and having at least one fastening element movable with the elongate member between release and fastening positions with respect to a respective keeper element mounted in use to the fixed frame, a mechanism arranged within the housing for converting rotary movement of an actuating handle into longitudinal movement of the elongate member, a locking element connected to the mechanism and movable between a retracted position in which it is accommodated at least partly within the housing when the elongate member is in the release position, and an extended position in which it is capable of making locking engagement with a corresponding keeper on the fixed frame, and a respective said keeper element having engaging means for engaging the associated said fastening element to resist relative separation of the keeper element and said closing face when the elongate member is in said fastening position, and an abutment portion against which said associated fastening element abuts when the closing face is moved towards a closed position thereof with said elongate member in said fastening position to prevent impact between said locking element and said fixed frame.

The provision of a keeper element having an abutment

portion to prevent impact between the locking element and the fixed frame prevents damage to the locking element by attempted closure of the door or window when the actuating handle is in the fastening position, but by relatively simple means.

The fastening arrangement preferably comprises a respective said keeper element as defined above.

The engaging means may comprise at least one slot arranged in use substantially parallel to the direction of movement of the associated fastening element between said release and fastening positions.

The engaging means may comprise at least two laterally spaced said slots extending substantially parallel to each other.

This provides the advantage of enabling the window or door to be either fastened in a closed position, or a so-called "night vent" position.

The or each slot may have a relatively widened open end. This facilitates engagement of the fastening element.

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

Figure 1 is a side cross-sectional view of an espagnolette fastening embodying the present invention and shown in a position in which closure of the closing face of the door or window is attempted with the fastening arrangement in the fastening position; and

Figure 2 is a perspective view of a keeper element shown in Figure 1 for receiving a fastening element of the arrangement.

Referring to Figure 1, an espagnolette fastening embodying the invention is designated generally by reference 10, and is adapted to fasten an openable window or door (not shown) to a fixed frame 11 in which it is mounted.

The fastening 10 comprises a pinion housing 12 which is mounted in a suitable recess formed in a closing face of the window or door member, such that rotation of an actuating handle (not shown) causes longitudinal movement of an

espagnolette rod 13 in a direction perpendicular to the plane of the drawing between locking and release positions. This in turn causes movement of one or more so-called mushroom cams 14 parallel to the direction of movement of the espagnolette rod.

A locking element 15 in the form of a locking claw is mounted to the pinion housing 12 and is rotatable with the actuating handle such that movement of the actuating handle (not shown) from the release to the fastening position causes rotation of the locking element 15 from a retracted position in which it is at least partly accommodated in the pinion housing 12 to an extended position as shown in Figure 1 in which it protrudes from the housing 12 for engagement with a corresponding keeper (not shown) in the fixed frame 11. It will be appreciated by the skilled person that the pinion housing 12 and mushroom cam 14 and therefore the mushroom cam 14 and the locking element 15 are spaced from each other in a direction perpendicular to the plane of the drawing in Figure 1.

A respective keeper element 16 is mounted to the fixed frame 11 for receiving the corresponding mushroom cam 14. One such keeper element 16 is shown in greater detail in Figure 2 and comprises a generally flat front face 17 and a sloping face 18 extending therefrom and provided with a stepped edge portion 19. The keeper element 16 is also provided with two pairs of elongate slots 20, 21, the slots 20, 21 having widened end portions, and a pair of mounting holes 22 for enabling the keeper element 16 to be mounted to the fixed frame 11 by means of screws or the like.

The slots 20, 21 are narrower in the region of the front face 17 than between walls 23 of the keeper element 11. As a result, the shank of the mushroom cam 14 is received in the narrower part of the slot 20, 21 while the widened head of the associated mushroom cams 14 abuts against the inner face 24 of the keeper element 16 to prevent opening of the door or window.

The operation of the fastening 10 will now be described.

When the door or window element is moved to its closed position with the pinion of the fastening 10 in its release

position, locking element 15 is accommodated at least partly within the pinion housing 12, and mushroom cams 14 pass by the edge position 19 of the keeper element to approach the widened ends of slots 20, 21 of the respective keeper element 16 from a direction perpendicular to the direction of the slots 20, 21. The window or door element is then held by the operator in the desired position (closed or night vent) by means of the actuating handle, and the actuating handle (not shown) is then rotated to cause the mushroom cams 14 to move along the respective slot 20 (in the case of the night vent position) or 21 (in the case of the closed position). At the same time, rotation of the actuating handle causes rotation of locking element 15 out of the pinion housing 12 to engage the associated respective keeper (not shown) on the fixed frame 11 at a location longitudinally spaced from the keeper element 16. It will be appreciated that the keeper which co-operates with the locking element 15 will generally be different in construction from the keeper elements 16.

If, on the other hand, an attempt is made to close the door or window when the actuating handle is turned to the fastening position, the locking element 15 already protrudes from the pinion housing 12. As the closing face of the door or window approaches the adjacent part of the fixed frame 11, the mushroom cams 14 are no longer arranged opposite the widened ends of slots 20, 21, but the stepped edge portions 19 of the respective keeper elements 16 lie between the mushroom cams 14 and the slots 20, 21. As a result, the mushroom cam abuts against the stepped edge portion 19, preventing further movement of the locking element 15 towards the fixed frame 11, thus preventing impact of the fixed frame 11 against the locking element 15. In order to close the closing face of the window or door further, the actuating handle must be moved to the release position which causes retraction of the locking element 15 into the pinion housing 12, and movement of the mushroom cams 14 out of engagement with the corresponding stepped edge portion 19 to only enable movement of the mushroom cams 14 towards the associated widened ends of slots 20, 21

when the locking element 15 is retracted into its release position.

It will be appreciated by the skilled person that the above embodiment has been described by way of example only and not in any limitative sense, and that various modifications are possible without departing from the scope of the invention.

CLAIMS:

1. A keeper element for an espagnolette fastening for fastening an openable window or door member to a fixed frame to which it is mounted, the keeper element comprising a body portion for mounting to said fixed frame and having engaging means for engaging a respective fastening element mounted to said window or door member in use, as said fastening element moves from a release position to a fastening position, to resist opening of the window or door member when in said fastening position, and an abutment portion extending from said body portion and protruding from said fixed frame in use, wherein said abutment portion abuts against said fastening element to prevent impact of a locking element mounted to the window or door member against said fixed frame when said window or door member is moved towards a closed position thereof when said fastening element is in said fastening position.

2. A keeper element according to claim 1, wherein the abutment portion comprises a flange protruding from said body portion and extending substantially parallel to the or each engaging means.

3. An espagnolette fastening arrangement for fastening an openable window or door member to a fixed frame to which it is mounted, the arrangement comprising a pinion housing mounted in use in a closing face of the window or door member, an elongate member slidable longitudinally and having at least one fastening element movable with the elongate member between release and fastening positions with respect to a respective keeper element mounted in use to the fixed frame, a mechanism arranged within the housing for converting rotary movement of an actuating handle into longitudinal movement of the elongate member, a locking element connected to the mechanism and movable between a retracted position in which it is accommodated at least partly within the housing when the elongate member is in the release position, and an extended position in which it is capable of making locking engagement with a corresponding keeper on the fixed frame, and a respective said keeper element having engaging means for

engaging the associated said fastening element to resist relative separation of the keeper element and said closing face when the elongate member is in said fastening position, and an abutment portion against which said associated fastening element abuts when the closing face is moved towards a closed position thereof with said elongate member in said fastening position to prevent impact between said locking element and said fixed frame.

4. A fastening arrangement according to claim 3, comprising a keeper element according to claim 1 or 2.

5. A fastening arrangement according to claim 3 or 4, wherein the engaging means comprises at least one slot arranged in use substantially parallel to the direction of movement of the associated fastening element between said release and fastening positions.

6. A fastening arrangement according to claim 5, wherein the engaging means comprises at least two laterally spaced said slots extending substantially parallel to each other.

7. A fastening arrangement according to claim 5 or 6, wherein the or each slot has a relatively widened open end.

8. A keeper element substantially as hereinbefore described with reference to the accompanying drawings.

9. An espagnolette fastening arrangement substantially as hereinbefore described with reference to the accompanying drawings.

| Patents Act 1977 10<br>Examiner's report to the Comptroller under Section 17<br>(The Search report) | Application number<br>GB 9517662.4 |
|---|---|
| **Relevant Technical Fields**<br>(i) UK Cl (Ed.N) E2A (AEB)<br>(ii) Int Cl (Ed.6) E05B 15/02 E05C 9/02, 9/04 | Search Examiner<br>E W BANNISTER<br>Date of completion of Search<br>15 NOVEMBER 1995 |
| **Databases** (see below)<br>(i) UK Patent Office collections of GB, EP, WO and US patent specifications.<br>(ii) | Documents considered relevant following a search in respect of Claims :-<br>1-9 |

**Categories of documents**

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**&:** Member of the same patent family; corresponding document.

| Category | Identity of document and relevant passages | | Relevant to claim(s) |
|---|---|---|---|
| X | GB 2271605 A | (GIBSON) eg Figure 2 - if bolt 14 is in fastening position when door is closed, then the bolt will engage keeper member 16 | 1 |
| X | GB 2241531 A | (SECURISTYLE) eg the Figures, showing "abutment portion" 9 | 1, 2 |
| X | GB 2194280 A | (SMITH) eg the Figures, showing "abutment portions" either side of opening 31 | 1, 2 |

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