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EP 0 736 658 A1

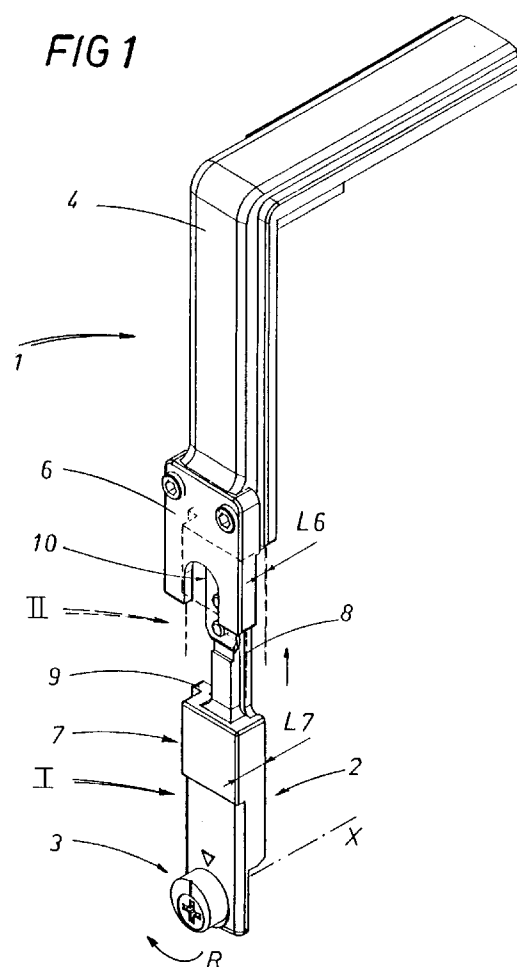
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40121 Bologna (IT)(54) **A corner joint for tilt-and-turn metal door and window frames**

(57) The corner joint for metal door and window frames in question consists of an external body (4) substantially shaped as a right-angle, having an internal cavity inside which a flexible control strip (8) slides and having, at the lower end which is positioned on an upright, a connecting part or block (2) integral with the said flexible strip (8), having a locking pawl (3) for intermediate locking and a protrusion (9) which allows one side only of the block (2) to be inserted in a guide in the upright; when the door or window is opened and closed, the connecting part or block (2) travels between two limit configurations: open (I) and closed (II); the external body (4) has a projecting section (6) which faces downwards and projects outwards in such a way as to fit over the joint (7) in the closed configuration (II), thus preventing it from flexing or turning.

FIG 1**EP 0 736 658 A1**

Description

The present invention relates to a corner joint or transmission rod for metal door and window frames, especially for doors and windows with tilt-and-turn twin opening.

In the metal door and window frame sector, window wings are normally divided into those with conventional opening, which turn about a vertical axis which passes through the hinge supporting the wing (turn opening) and those with tilt opening, that is to say, with a horizontal axis of rotation and the mobile part of the fitting producing an opening at the top. Doors and windows with twin opening, both tilt and turn, are increasingly found in this sector; however, for this purpose, both the fixed and mobile parts of the fitting must be equipped with a series of accessories (tie rods, rods which limit opening, twin movement handles, etc.) which allow the passage from one configuration to the other following operation of the handle.

A component which is always present in conventional windows is the corner joint, located in the top corner on the side opposite the hinge; the corner joint has an external body in the shape of a right-angle, having an internal cavity inside which a steel flexible control strip slides, acting as a transmission element for the movements between the handle and the manoeuvre rods which run along the external upright of the mobile frame. At the bottom end of this joint (as shown in figure 3 showing a known type of corner joint) is a block which is integral with the said flexible strip and has a connecting pin, which points towards the inside of the frame, designed to engage in a corresponding seat made in the control element or rod below it.

Since the corner joint is fitted after assembly of the parts which form the uprights and crosspieces of the frame, the said block has a protrusion on one side only, so that the operator can use it from the outside, flexing and turning it so as to release the block from the relative holding-sliding seat during initial assembly operations in order to attach it to or release it from the other elements which form the drive mechanism. In such cases the locking pawl for so-called "intermediate locking" must be attached to an additional accessory which "joins" the corner joint and the control rod which extends from the handle, thus increasing the cost due to the increased number of elements and complex assembly: this being because at the locking pawl which causes locking, the rod which supports the locking pawl must have protrusions on both sides to avoid its unwanted release.

The object of the present invention is to overcome the afore-mentioned disadvantages by creating a corner joint which allows the rods to be attached and released with a flexing-turning movement, without compromising the closing seal and without necessitating additional accessories.

The technical features of the present invention, in

accordance with the aforesaid objects, are clearly illustrated in the claims herein, and the advantages of the said features are more clearly described in the detailed description below, with reference to the accompanying drawings, which illustrate an embodiment by way of example only, and in which:

- figure 1 is a perspective plan view of a possible embodiment of the present invention;
- figure 2 is a perspective schematic view of a possible application for the present invention;
- figure 3 is a perspective plan view of a conventional corner joint.

With reference to the accompanying drawings, figure 3 illustrates a conventional corner joint, including an external corner body 1a, in which a flexible strip 20a is inserted and slides, the latter being attached to a block 21a having a protrusion 19a, one side of which may be inserted in the guide on the section of frame (not illustrated).

According to the prior art, a connecting element 17a with a locking pawl 23a for intermediate locking must be used, having rails 18a on both sides, to prevent any unwanted flexing or turning about the protrusion 19a of the block 21a during closure.

Figures 1 and 2 show a corner joint 1 for twin-opening metal frames, which according to the present invention is of the type consisting of an external body 4 substantially shaped as a right-angle, having an internal cavity within which a flexible control strip 8 slides.

The strip 8 acts as a transmission element between a vertical upright 11 and an upper crosspiece 12 (indicated schematically only in figure 2) of a mobile frame, for the movements sent from a handle 14 to vertical manoeuvre rods 13 which slide within a guide (not illustrated) envisaged along the upright.

At the bottom end of the joint 1, positioned on the upright 11, is a connecting part or block 2 which is integral with the flexible strip 8 and has a protrusion 9 which allows one side of the block 2 to be inserted in the guide, and a connecting pin (not illustrated and represented by its axis X in figure 1), which points towards the inside of the mobile frame and is designed to engage in a corresponding seat made in the control element or rod below it.

When the door or window is opened or closed, the connecting element or block 2, together with the strip 8 connected to it, travels between two limit configurations: open and closed.

In the said configurations, the first represented by I and a continuous line, and the second by II and a dashed line, the block 2 is respectively at a maximum and minimum distance from the external body 4.

Advantageously, the bottom of the external body 4 has a projecting section 6 which faces downwards and projects outwards for a value L6 substantially equal to but slightly greater than the corresponding height L7 of

a section of joint 7 on the connecting element or block 2.

In this way, the projecting section 6 of the external body 4 fits over the section of joint 7 in the closed configuration II and does not fit over it in the open configuration I.

Moreover, the connecting part or block 2 has a locking pawl 3 for intermediate locking.

In this way, the corner joint 1 may be positioned in at least a first or "open" configuration I, in which the connecting part or block 2 can be turned about the protrusion 9 (for example, in the direction indicated by R in figure 1) and a second or "closed" configuration II.

In the closed configuration II, the locking pawl 3 interacts with the striker 5 of the intermediate lock, and the flexing-turning of the control strip 8 is prevented by the interaction of the projecting section 6 with the section of joint 7 which are positioned over one another.

The projecting section 6, as shown in figure 1, may have a notch 10 on its bottom edge, designed to allow access to the strip 8 housed in the external body 4 for assembly and/or disassembly in the open configuration. Thus, with the corner joint disclosed herein, it is possible to carry out assembly/disassembly operations in the open configuration I, since the connecting part or block 2 can be flexed-turned about the protrusion 9; in contrast, when the door or window is closed (configuration II), safety is guaranteed by the simultaneous action of the locking pawl 3, which is inserted in the striker 5, and the projecting section 6, which prevents the rotation of the block 2.

The projecting section 6 may have a substantially "C-shaped" cross-section (section through the upright), so as to strengthen the projecting portion and to better guide the block 2.

The present invention, thus designed for the said objects, may be subject to numerous variations, all encompassed by the original design concept, and all components may be substituted with technically equivalent parts.

Claims

1. A corner joint for twin-opening metal door and window frames, of the type consisting of an external body which is substantially shaped as a right-angle, having an internal cavity within which a flexible control strip slides, designed to act as a transmission element between a vertical upright and an upper crosspiece of a mobile frame, for the movements sent from a handle to vertical manoeuvre rods which slide within a guide envisaged along the upright; the bottom end of the joint, positioned on the upright, having a connecting part or block which is integral with the flexible control strip, having a protrusion allowing one side to be inserted in the guide and having a connecting pin, pointing towards the inside of the mobile frame, designed to engage in a

corresponding seat made in the locking element or rod below it; when the door or window is opened or closed, said connecting part or block, together with the connecting rod, travel between two limit configurations: open and closed, in which it is respectively at a maximum and minimum distance from the external body, the corner joint being characterised in that the bottom end of the external body (4) has a projecting section (6) pointing downwards and projecting outwards for a value (L6) substantially equal to but slightly greater than the corresponding height (L7) of a section of joint (7) on the said connecting part or block (2), so that it fits over the section of joint (7) in the closed configuration and does not fit over the said section of joint in the open configuration, the connecting part or block (2) having a locking pawl (3), facing outwards, for intermediate locking, allowing the joint (1) to be positioned in at least a first open configuration (I), in which the connecting part or block (2) can be turned about an axis parallel with the upright (11), and a second closed configuration (II), in which the locking pawl (3) interacts with a striker (5) on the said intermediate lock, the flexing-turning of the control strip (8) being prevented by the interaction of the projecting section (6) with the section of joint (7) which are positioned over one another.

2. The corner joint as described in claim 1, characterised in that the bottom edge of the projecting section (6) has an indentation or notch (10) which, in the open configuration, is designed to allow access for the assembly and/or disassembly of the strip (8) within the external body (4).
3. The corner joint as described in claim 1, characterised in that the projecting section (6) has a substantially "C-shaped" cross-section, so as to strengthen the projecting section and define a guide on both sides for the block (2).

FIG 1

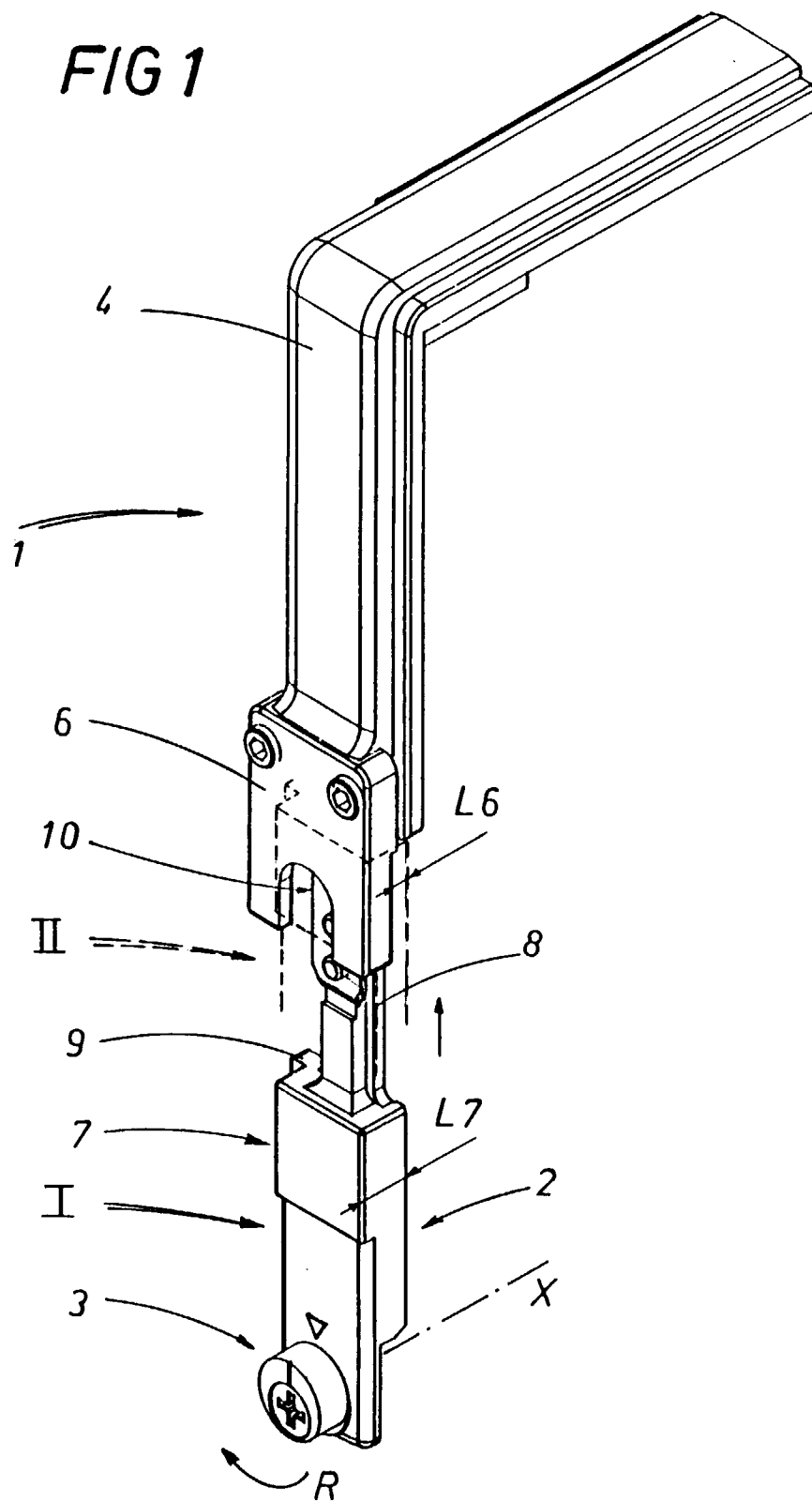


FIG 3

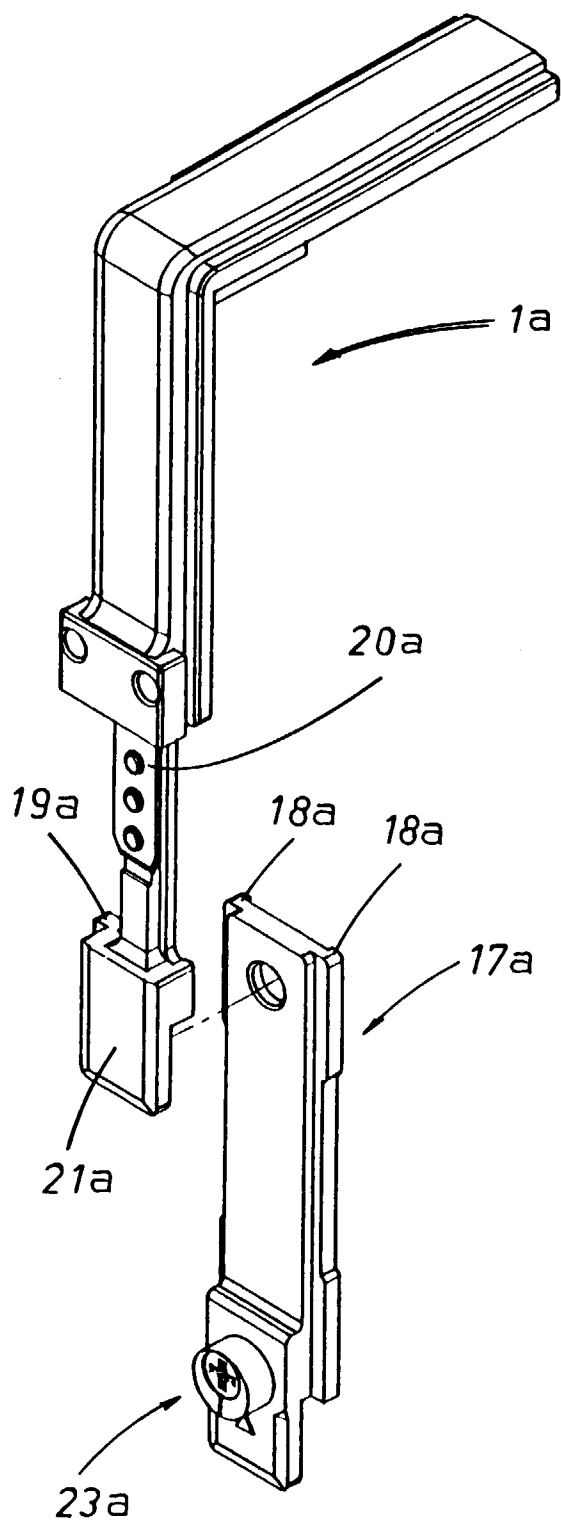
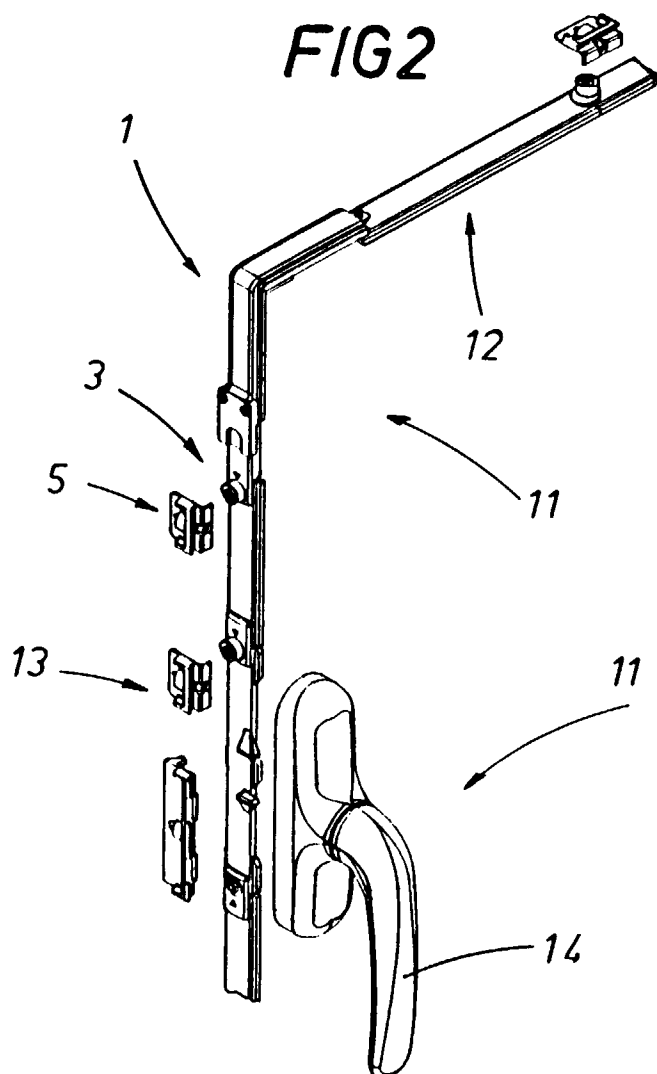


FIG 2





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EUROPEAN SEARCH REPORT

Application Number
EP 96 83 0139

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE-A-30 07 321 (ERNST SELVE GMBH & CO KG) 3 September 1981 * page 10, line 8 - page 12, line 6; figure 1 *	1	E05C9/20 E05D15/52
A	CH-A-627 226 (WILH. FRANK GMBH) 31 December 1981 * the whole document *	1	
A	US-A-4 208 838 (SIEGENIA-FRANK KG) 24 June 1980 * the whole document *	1-3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E05C E05D
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 10 July 1996	Examiner Vacca, R
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