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(71) Applicant: **GIESSE S.p.A.**
I-40054 Budrio (Bologna) (IT)

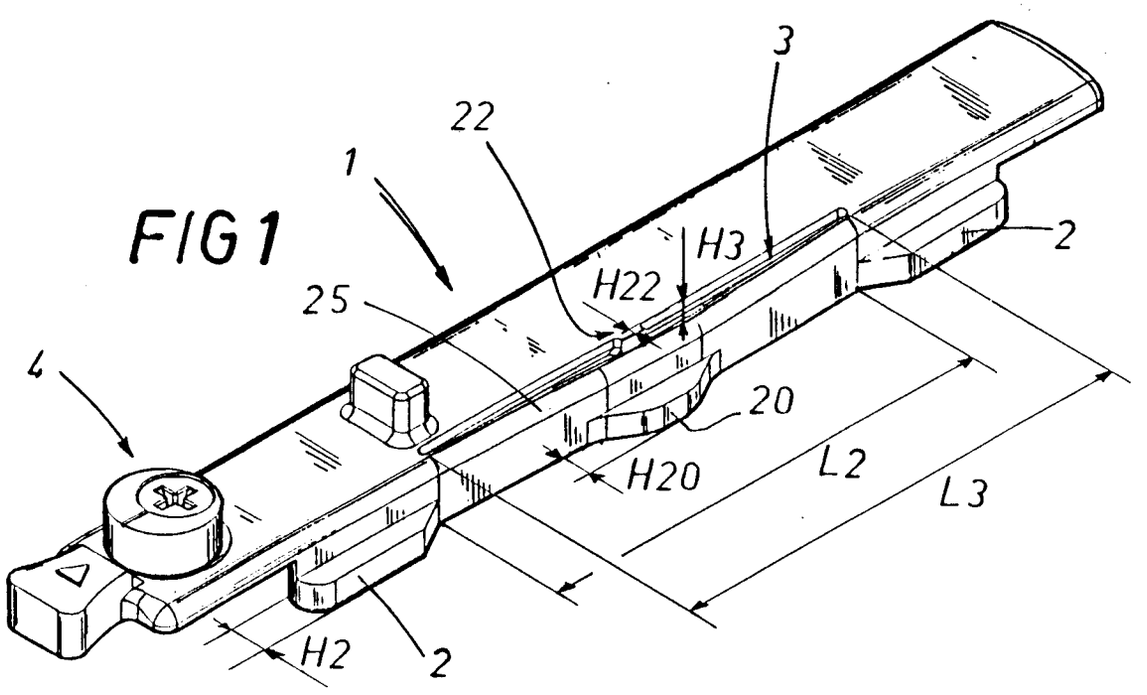
(72) Inventor: **Lambertini, Marco**
40068 San Lazzaro di Savena (Bologna) (IT)

(74) Representative: **Lanzoni, Luciano**
c/o BUGNION S.p.A.
Via dei Mille, 19
40121 Bologna (IT)

(54) A locking element for metal door and window frames

(57) The lock (1) for metal door and window frames is of the type which extends substantially longitudinally, having a series of projections (2) which may be inserted in a corresponding seat or guide on the mobile frame of a door or window, the lock consisting of a single body and having at least one slot (3) which extends longitudinally and, thanks to the reaction of the material used for the lock (1), compensates any play between the projections (2) and the guide.

FIG 1



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Description

The present invention relates to a lock in particular for use on metal door and window frames.

The description hereinafter refers to a door or window with tilt-and-turn twin opening, although the present invention may also be used on doors or windows with conventional opening which have guides for rods and similar items.

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 which tilt, that is to say, with a horizontal axis of rotation and the mobile part of the window producing an opening at the top. Doors and windows with tilt-and-turn opening, are increasingly found in this sector; however, for this purpose, both the fixed and mobile parts of the doors and windows 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.

Amongst these components, the locks are of great importance, for example the end bolt or flush bolt which consists of a slide (preferably metal to render it more resistant), which slides within longitudinal seats at the front of the mobile frame, positioned at the lower corner of the upright on the side opposite that with the hinge. The exterior of this end bolt has a locking pawl designed to engage (as the door or window is closed) with a corresponding fixed seat on the fixed frame, the base of the end bolt tapering to a point, so that when the door or window is used with the tilt function, it engages in a corresponding lower seat located on the lower crosspiece of the fixed frame, thus acting as a "second hinge" with horizontal axis. Given that it must support considerable weights, the end bolt is made of metal, usually cast in zamak; moreover, for correct operation, there must be the right amount of play between the bolt and its seats or sliding guides. To reduce noise during the closure and movement of a wing, conventional solutions were fitted, at the projections or support-sliding tabs, with small flexible elements in various shapes which fulfilled the triple function of guide - play compensator - silencer: this solution inevitably raised the final costs of the assembly of the various parts of the end bolt.

The object of the present invention is to overcome the afore-mentioned disadvantages by producing a metal end bolt which requires no further working or assembly operations after its production, although functioning perfectly and practically silently.

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 top view of a possible embodiment of the invention disclosed;
- figure 2 is a partial schematic perspective view of a possible application of the invention disclosed;
- figure 3 is a perspective top view of a conventional end bolt.

Figure 3 illustrates a conventional lock, represented by an end bolt la or flush bolt.

As already said, the end bolt la preferably consisting of a cast metal slider, has flexible elements 21a at the projections or support-sliding tabs 2, said flexible elements fulfilling the afore-mentioned triple function of guide - play compensator - silencer.

The present invention, which in figures 1 and 2 is represented by an end bolt 1, can be used, for example, as a rod in a tilt-and-turn system, as shown in figure 2.

The element extends substantially longitudinally, having a series of projections which may be inserted in a corresponding seat or guide on the mobile frame of a door or window (not illustrated).

In the embodiments illustrated, the exterior of the lock 1 has a locking pawl 4 designed to engage (as the door or window is closed) with a corresponding fixed seat 5 on the fixed frame.

The base of the lock 1 tapers to a point, so that when the door or window is used with the tilt function, it engages in a corresponding lower seat 6 located on the lower crosspiece of the fixed frame, thus acting as a "second hinge" with horizontal axis.

As already said, the metallic lock extends substantially longitudinally; the lock 1 has a series of two-sided projections 2, arranged in pairs on at least one side (figure 1 shows one pair).

The lock 1 consists of a single body and has at least one slot 3 which extends longitudinally near one edge of the lock and close to at least one pair of projections.

The slot 3 allows a transversal flexing of the lock, so that when it is inserted in the guide, the play between the projections 2 and the guide is compensated.

The slot 3 extends for the length L3 substantially equal to the distance L2 between the pair of projections, thus forming a leaf spring 25.

Another projection 20 is envisaged at the centre of the slot 3, with an upper transversal projection H20 (when the lock is in its home position) greater than the corresponding transversal projection H2 of the projections 2. Moreover, at the additional projection 20, the slot 3 has a projection 22 which extends transversally, its width H22 being less than that of the transversal extension H3 of the slot 3, so that it forms an end stop for the flexing of the leaf spring 25.

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 replaced with technically equivalent

parts.

Claims

1. A metal lock for metal door and window frames, of the type which extends substantially longitudinally and has a series of two-sided projections which can be inserted in a corresponding guide or seat on the mobile frame of a door or window, arranged in pairs on at least one side, characterised in that it consists of a single body and at least one slot (3) which extends longitudinally near one edge of the lock and close to the pair of projections, the slot being designed to allow transversal flexing of the lock so that when the lock is inserted in the guide, the play between the projections (2) and the guide is compensated.

2. The lock as described in claim 1, characterised in that the slot (3) extends for a length (L3) substantially equal to the distance (L2) between the said pair of projections, thus defining a leaf spring (25), and in that another projection (20) is envisaged at the centre of the slot (3), with an upper transversal projection (H20), when the lock is in its home position, greater than the corresponding transversal projection (H2) of the projections (2) .

3. The lock as described in claim 2, characterised in that at the additional projection (20) the slot (3) has a projection (22) which extends transversally, its width (H22) being less than the corresponding transversal extension (H3) of the slot, thus defining an end stop for flexing of the leaf spring (25).

FIG 1

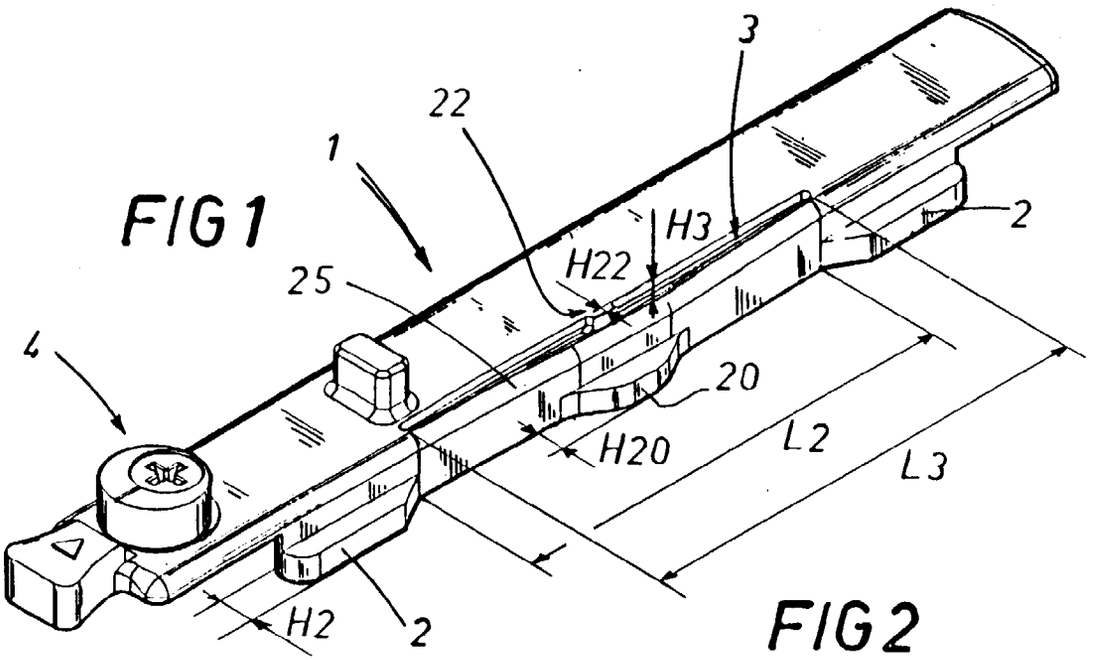


FIG 2

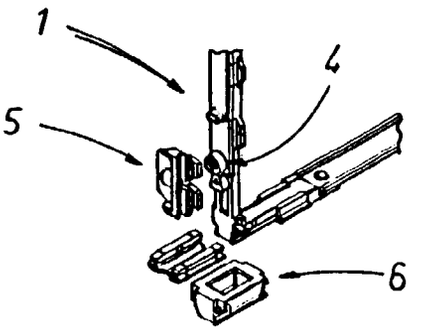
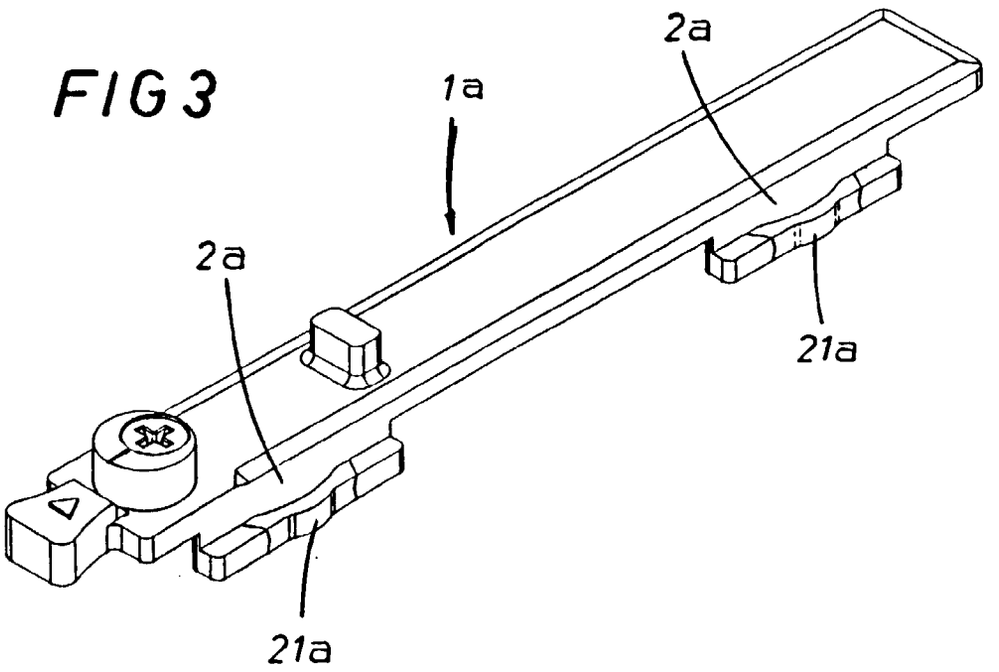


FIG 3



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EUROPEAN SEARCH REPORT

Application Number
EP 96 83 0140

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-34 41 389 (SIEGENIA-FRANK KG) 1 August 1985 * page 6, line 16 - page 7, line 28; figures * ---	1,2	E05C9/00
A	DE-C-34 00 815 (FA. EDUARD HUECK) 22 August 1985 * column 3, line 30 - column 3, line 52; figures * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	23 July 1996	Vacca, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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