



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.10.2005 Bulletin 2005/42

(51) Int Cl.7: **E06B 9/58, E06B 9/54**

(21) Application number: **05007773.4**

(22) Date of filing: **08.04.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

• **ETNA ALLUMINIO S.p.A.**
95047 Paterno' (CT) (IT)

(72) Inventor: **Mingrone, Pietro**
40024 Castel S.Pietro Terme (BO) (IT)

(30) Priority: **08.04.2004 IT MO20040079**

(74) Representative: **Luppi, Luigi**
Luppi Crugnola Bergamini & Partners S.r.l.
Viale Corassori, 54
41100 Modena (IT)

(71) Applicants:
• **Medal S.r.l.**
40023 Castel Guelfo di Bologna (BO) (IT)

(54) **Locking means**

(57) Locking means, in particular locking means (1) for mosquito-net uprights (2) comprises base means (4) suitable for interacting between an upright end (7) and a surface (3) of a window or door aperture, cursor means (5) engaging in a groove (17) of said uprights (2) and suitable for regulating a preliminary position (A) of said base means (4), a cam element (6) suitable for regulating a final position (B) of said base means (4), said cursor means (5) being provided inside itself with a coupling seat (15) suitable for receiving said cam element (6).

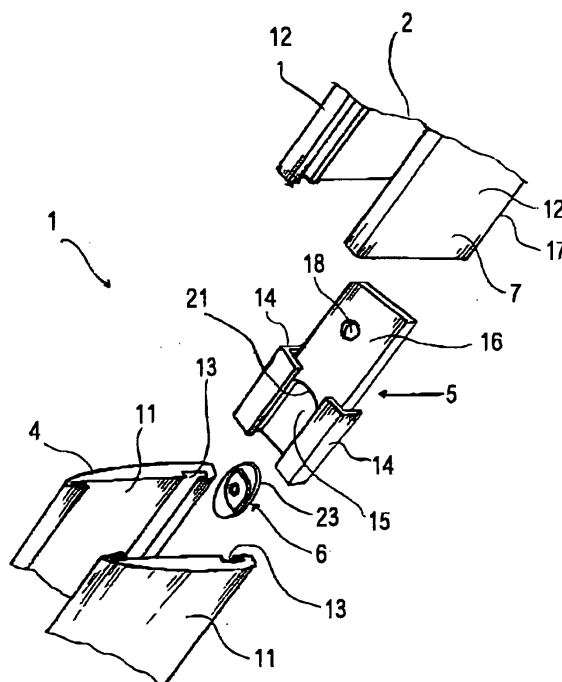


Fig. 1

Description

[0001] The invention relates to locking means, in particular locking means for fixed frames of mosquito nets.

[0002] Locking means is known that is used to firmly connect uprights of mosquito nets to building products. Each upright is arranged along an abutment of a window or door aperture such that it extends between a sill or threshold and a mosquito net box arranged underneath a crosspiece of the aforementioned aperture. The locking means is fitted to an end of each upright, generally at a bottom end of the upright that is positioned on the sill or threshold. The locking means comprises a base by means of which the upright rests on the sill or threshold. From the base an appendage projects that is shaped in such a way as to be received in a groove obtained on a side of the upright intended to be positioned against the vertical abutment of the aforementioned aperture. This appendage is provided with a first concave surface facing upwards and opposite the base. It is possible to vary the position of the appendage in relation to the upright by making it run along a longitudinal axis of the groove. With the aforementioned locking means there is associated a cursor arranged inside the groove, positionable along the longitudinal axis and provided with a pressure screw to firmly fix the cursor to the upright. The cursor comprises a second concave surface downwards arranged facing the first concave surface. There is provided a cam element that is positioned in the groove of the upright and is provided with an elliptic profile and with a hexagonal through hole, or with a square hole, or with a slot seat. Before the upright is positioned on the abutment of the aperture, the cursor is fixed in a suitable position inside the groove by the pressure screw and after inserting the cam element into the groove the base is connected to the upright by inserting the appendage into the groove. The appendage is inserted by an amount that is such as to interact with the cam element such that the latter comes into contact with the cursor, and the cam element is subsequently arranged in a first position such that its greater axis is perpendicular to the longitudinal axis. In this way the cursor and the appendage are distant by a quantity that is the same as the length of a minor axis of the cam element, the total length of the upright united with the locking means being less than the length of the abutment. In this way, the upright can easily be located on the abutment of the aperture and is initially free to move in the direction of the longitudinal axis. Once the upright is positioned on the abutment by arranging the base on the sill or threshold, the cam element is adjusted that is accessible thanks to a slot obtained in a wall of the groove parallel to the abutment. In this way the cam element is rotated into a second position by an allen tool or a screwdriver in such a way that its greater axis is aligned on the longitudinal axis, forcing the cursor, which is fixed to the upright, to move away from the appendage. In this way a first force is generated that forces the

upright to lift up in such a way that its upper end is pressed to the box and simultaneously a further force is generated that is equal to and opposed to the first force that presses the base onto the sill in such a way that the upright is fixedly connected to the aperture.

[0003] A drawback of the locking means disclosed above consists of the fact that it is hardly modifiable geometrically to adapt to different types of upright because of the high production costs. In fact, if an upright is provided with a groove having a section that is different from the envisaged one, the geometrical shape of the cursor, of the cam element and of the appendage has to be modified.

[0004] Another drawback of such locking means consists of the fact that slots suitably obtained on the uprights have to be provided to be able to access the cam elements when the uprights are arranged on the abutments of the apertures of windows or doors.

[0005] A further drawback of the locking means disclosed above consists of the fact that an operator tasked with installing the uprights in the aperture has difficulty in checking that the cam element is correctly arranged in a first position before the uprights are applied to the abutments of the aperture. Furthermore, the operator is unable to check that the cam element is arranged correctly in a second position, after the uprights have been fixed to the aperture.

[0006] An object of the present invention is to improve the locking means for frames of mosquito nets.

[0007] Another object of the present invention is to provide locking means, easily modifiable geometrically to adapt to different types of upright without high production costs.

[0008] A further object of the present invention is to obtain locking means that can be connected to profiled elements of uprights without having to subject the profiled elements to further processing.

[0009] A still further object of the present invention is to provide locking means that enable an operator to be able to install the uprights on a window or door aperture in a rapid and safe manner.

[0010] According to the invention locking means is provided, in particular locking means for mosquito-net uprights comprising base means suitable for interacting between an upright end and a window or door aperture, cursor means engaging in a groove of said uprights and suitable for regulating a preliminary position of said base means, a cam element suitable for regulating a final position of said base means, characterised in that said cursor means is provided inside itself with a coupling seat suitable for receiving said cam element.

[0011] Owing to the invention it is possible to obtain locking means having a simple structure that can easily be modified with limited production costs, in such a way as to enable the locking means to be connected to uprights having sections of any shape.

[0012] Owing to the present invention it is possible to obtain locking means, that enable the processing to be

avoided that is necessary to connect said locking means to profiled elements of uprights. In this way, the uprights can be fixed, thus reducing installation time and costs.

[0013] Owing to the present invention, it is furthermore possible to obtain locking means shaped in such a way as to enable an operator to be able to install the uprights on an aperture in an easy and secure manner.

[0014] The invention can be better understood and implemented with reference to the enclosed drawings that illustrate an embodiment thereof by way of non-limitative example in which:

Figure 1 is an exploded and fragmentary view of locking means for mosquito nets.

Figure 2 is a fragmentary view of the locking means of Figure 1 taken from a first side suitable for being made to face an abutment of an aperture of windows or doors.

Figure 3 is a fragmentary view taken from a second side opposite the first side that shows the locking means of Figure 1 in a first configuration.

Figure 4 is a fragmentary view taken from a second side opposite the first side that shows the locking means of Figure 1 in a second configuration.

[0015] With reference to Figures 1 to 4, there are shown locking means 1 suitable for locking an upright 2 of a mosquito net arranged vertically in a window or door aperture. The locking means 1 comprises base means 4 having first side walls 11 and being provided below with a support base 8 by means of which the upright 2 is rested on a sill 3 of a window or on a threshold of a door. The base means 4 is shaped to house inside itself a lower upright end 7 in such a way that between the first side walls 11 second side walls 12 of said upright 2 are slidably received. The base means 4 is provided with an appendage 9 that projects from the support base 8 to the upright end 7 and which provides at its top a first concave surface 10 facing the end of the upright 7. On the first side walls 11, on the side inside the base means 4, coupling grooves 13 are obtained arranged along a longitudinal axis X of the upright and suitable for slidably receiving side portions 14 of cursor means 5 that are suitable for regulating the position of the locking means 1 in relation to the upright 2. The cursor means 5 is provided with a coupling portion 16 of a substantially rectangular shape, shaped in such a way as to be able to be inserted in a groove 17 (shown in greater detail in Figure 2) of the upright 2 arranged along the longitudinal axis X. On a surface 20 of the aforementioned coupling portion 16 a threaded through hole 18 is obtained that houses a pressure screw 19. The pressure screw 19 is shaped in such a way as not to protrude substantially from said surface 20 and enables the coupling portion 16 to be fixed in the groove 17 in such a way that the cursor means 5 is firmly connected to the upright 2. Between the side portions 14 and the coupling portion 16 of the cursor means 5 there is obtained a coupling seat

15 suitable for housing a cam element 6 having a coupling profile 23 with a substantially elliptic shape and which is suitable for receiving part of the appendage 9. The coupling seat 15 is delimited at the coupling portion 16 by a second concave surface 21 which, once the locking means 1 has been connected to the upright 2, faces the first concave surface 10, contributing to defining a variable cavity 22 inside which the cam element 6 is located.

[0016] When it is desired to apply the upright 2 to the abutment of the window or door aperture the cursor means 5 is first fixed to the groove 17 of the upright 2 in such a way that the coupling seat 15 is arranged on a side of the cursor means 5 opposite a side in contact with the abutment. The coupling portion 16 of the cursor means 5 is inserted into the groove 17 by a set amount according to the length of the abutment of the aperture and is fixed by acting on the pressure screw 19. After inserting the cam element 6 into the coupling seat 15 and after connecting the base means 4 to the end of the upright 7, the base means 4 is pushed against the cursor means 5 in such a way that the cam element 6 has its greater axis arranged perpendicular to the longitudinal axis X. In this configuration the base means 4 assumes a preliminary position A that enables the upright 2 to be able to be easily placed in the aperture. Subsequently, by means of an allen tool, the cam element 6 can be rotated by making the coupling profile 23 of the latter interact with the first concave surface 10 and the second concave surface 21, forcing the upright 2 to partially project outside the base means 4 to a crosspiece placed above of the aperture. When the greater axis of the cam element 6 is aligned on the longitudinal axis X, the base means 4 is arranged in a final position B and the upright 2 is firmly connected between the crosspiece and the bed or threshold of the aperture. As the cam element 6 is always completely visible, it is possible to ensure that the latter is correctly positioned in such a way that the upright 2 is firmly fixed to the aperture of the window or door. If it is desired to possibly dismantle the upright 2 it will be sufficient to repeat the installation phases disclosed above in reverse order.

Claims

1. Locking means, in particular locking means (1) for mosquito-net uprights (2) comprising base means (4) suitable for interacting between an upright end (7) and a surface (3) of a window or door aperture, cursor means (5) engaging in a groove (17) of said uprights (2) and suitable for regulating a preliminary position (A) of said base means (4), a cam element (6) suitable for regulating a final position (B) of said base means (4), **characterised in that** said cursor means (5) is provided inside itself with a coupling seat (15) suitable for receiving said cam element (6).

2. Locking means according to claim 1, wherein said base means (4) comprises first side walls (11) suitable for slidably receiving second side walls (12) of said uprights (2) and provided with coupling grooves (13) inside said base means (4) and arranged along a longitudinal axis (X) of said uprights (2). 5
3. Locking means according to claim 2, wherein from a support base (8) of said base means (4) and between said coupling grooves (13) there projects along said longitudinal axis (X) an appendage (9) suitable for engaging in said coupling seat (15). 10
4. Locking means according to claim 3, wherein said cursor means (5) comprises side portions (14) between which there is received said appendage (9) and shaped in such a way as to be received in said coupling grooves (13). 15
20
5. Locking means according to claim 3 or 4, wherein said appendage (9) is provided at its top with a first concave surface (10) facing said upright end (7). 25
6. Locking means according to claim 5, wherein said coupling seat (15) is arranged on a side of said cursor means (5) opposite a further side interacting with said window or door aperture (3) and is delimited by a second concave surface (21) facing said first concave surface (10). 30
7. Locking means according to claim 6, wherein said cam element (6) is provided with a coupling profile (23) with a substantially elliptic shape suitable for interacting with said first concave surface (10) and with said second concave surface (21). 35
8. Locking means according to claim 7, wherein said coupling profile (23) is positionable from a configuration associated with said preliminary position (A), wherein the distance between said base means (4) and said cursor means (5) is minimal, at a further configuration associated with said final position (B), wherein the distance between said base means (4) and said cursor means (5) is maximum. 40
45

50

55

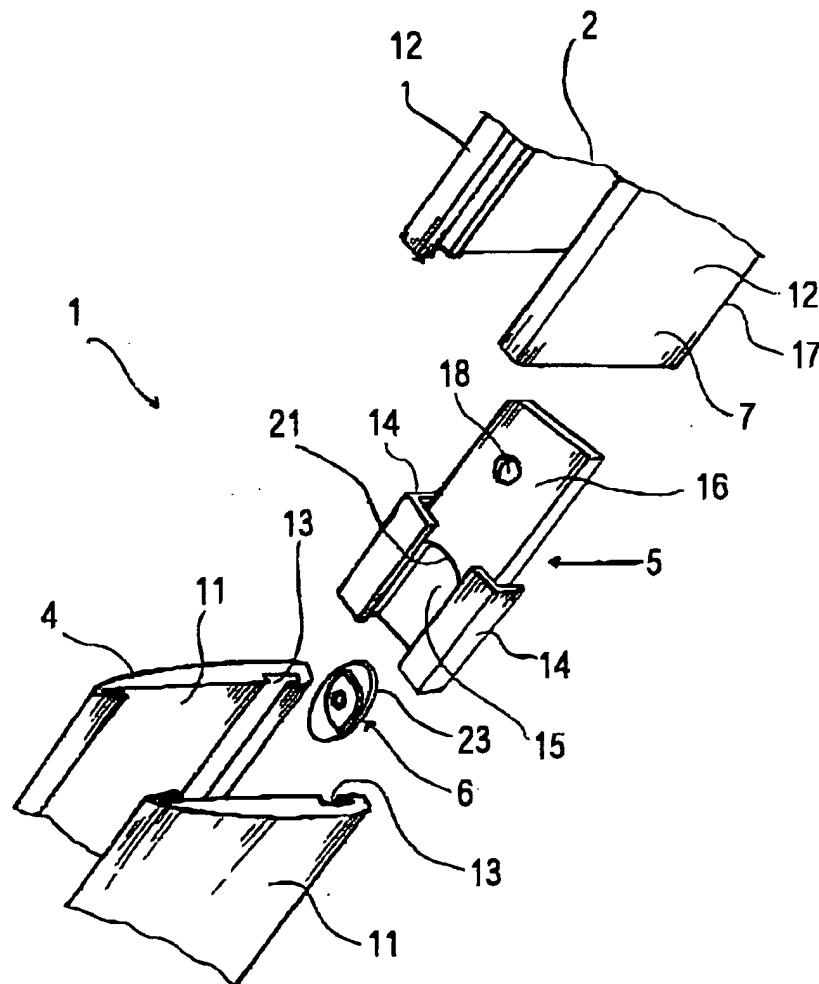


Fig. 1

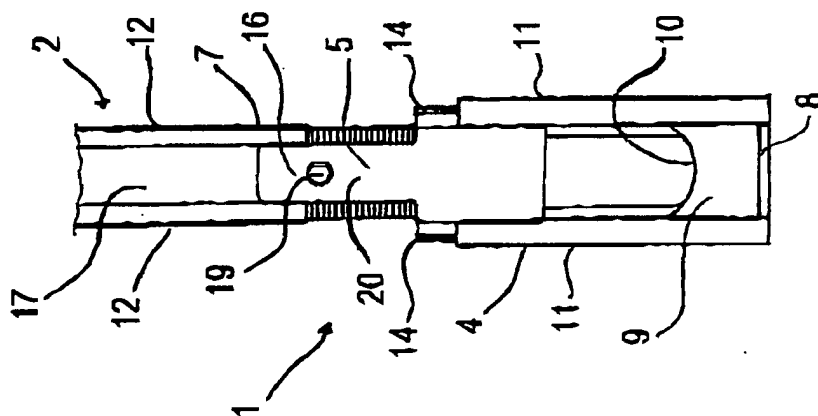


Fig. 2

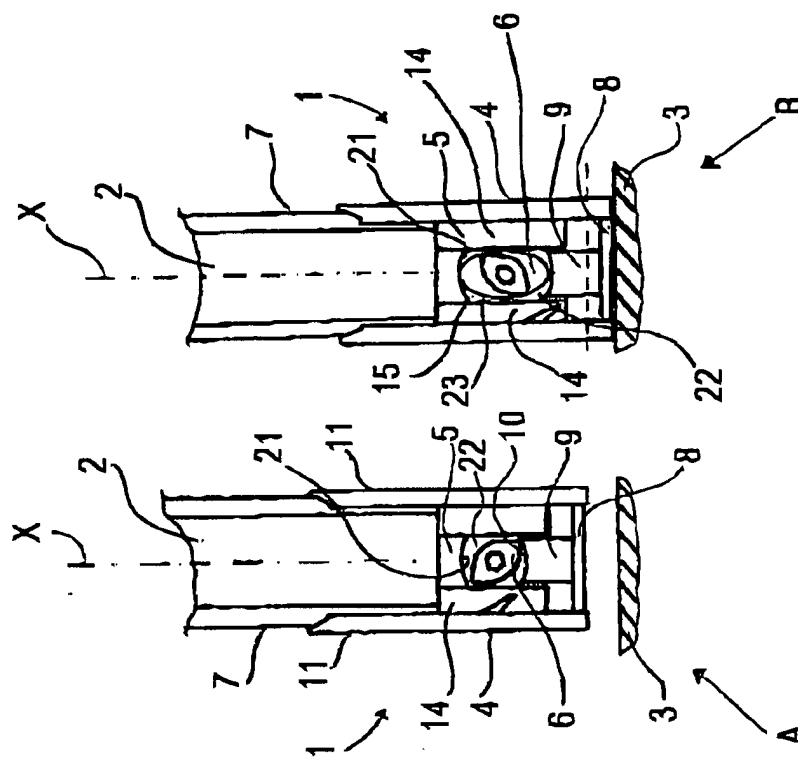


Fig. 3

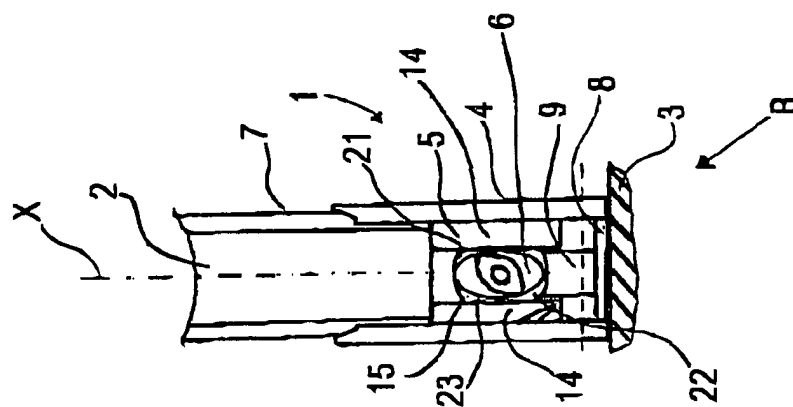


Fig. 4