(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 312 746 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.05.2003 Bulletin 2003/21

(51) Int Cl.[7]: **E06B 9/165**

(21) Application number: **01126532.9**

(22) Date of filing: **14.11.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **Baruffaldi, Mauro**
44100 Ferrara (IT)

(72) Inventor: **Baruffaldi, Mauro**
44100 Ferrara (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(54) Extraction-preventing retainer for roll-up blinds

(57) An extraction-preventing retainer for roll-up blinds constituted by a plurality of slats (1), each provided with a first flattened longitudinal edge (2) that has a hook-shaped cross-section and is adapted to be inserted in a corresponding engagement seat (3) formed along the second complementary longitudinal edge of the adjacent slat; the retainer comprises at least one deformable flap (5) that is provided in the second edge (3a) of the slat and is adapted to be folded towards the inside of the slat and to enter a corresponding opening (6) formed in the first longitudinal edge (2) of the adjacent slat in order to prevent the mutual sliding of the two slats (1a, 1b); the flap (5) forms, at its sides, teeth (10a, 10b) adapted to cooperate with corresponding complementary teeth (11a, 11b) of the second edge of the slat to keep the flap (5) stably inserted and retained in the opening (6).

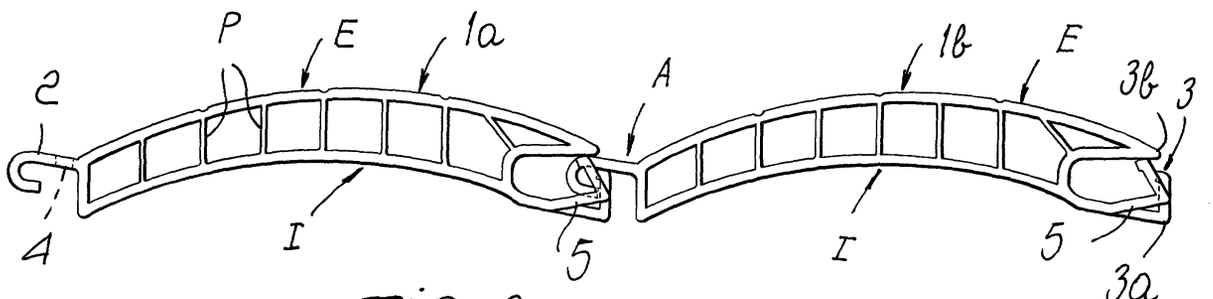

Fig. 2

EP 1 312 746 A1

Description

[0001] The present invention relates to an extraction-preventing retainer for roll-up blinds.

[0002] Roll-up blinds or roller shutters have long been used consisting of a plurality of slats constituted by profiled elements made of plastics, aluminum or steel and produced by extrusion, which are conveniently mutually engaged and articulated.

[0003] In particular, each one of said slats commonly has a first flattened longitudinal edge that has a hook-like cross-section and is designed to enter loosely a corresponding engagement seat formed along the second complementary longitudinal edge of the adjacent slat.

[0004] Usually, furthermore, the slats have, at said first hook-shaped edge, a succession of longitudinally aligned slots for allowing partial passage of light when the roll-up blind is not fully lowered.

[0005] In order to prevent the mutual disengagement by extraction of the slats during transport or after installation of the roll-up blind, the slats have appropriately provided extraction-preventing retainers executed according to various systems, such as the draw-formation of a recess on the hook-shaped edge, the insertion of a nail or the use of end plugs.

[0006] These retention systems have drawbacks that limit their effectiveness in use or have a disadvantageous effect on the characteristics of the roll-up blinds.

[0007] More particularly, the provision of the retainer by forming an appropriate recess by means of a drawing process is quick and effective, but requires slats to have no slots in the region where such recess is formed. Otherwise, i.e., if the recess lies in one of the slots already present in the slats, the retention system is ineffective. Moreover, it should be noted that frequently the installer purchases pre-perforated profiled bars, on which he performs cutting to size and then provides the extraction-preventing retainer.

[0008] The drawback noted in retainers provided by means of a nail is due to the fact that the nail can loosen during the use of the blind; in many cases this system is therefore not accepted.

[0009] End plugs made of aluminum or steel in turn have the drawback of entailing long assembly times and greater manipulation of the profiled elements, with a consequent cost increase; moreover, such end plugs are generally fixed precariously.

[0010] The aim of the present invention is to solve the above mentioned problems, by providing an extraction-preventing retainer for roll-up blinds that allows easy and quick assembly of the pre-processed rods and ensures durable efficiency in use.

[0011] Within this aim, another object of the present invention is to provide an extraction-preventing retainer that is simple in concept, very sturdy, safely reliable in operation, and versatile in use.

[0012] This aim and these and other objects are achieved, according to the invention, by the present extraction-preventing retainer for roll-up blinds constituted by a plurality of slats, each provided with a first flattened longitudinal edge that has a hook-shaped cross-section and is suitable to be inserted in a corresponding engagement seat provided along the second complementary longitudinal edge of the adjacent slat, characterized in that it comprises at least one deformable flap that is formed in said second edge of the slat and is suitable to be folded towards the inside of said slat and to enter a corresponding opening formed in said first longitudinal edge of the adjacent slat in order to prevent the mutual sliding of the two slats, said flap forming, at its sides, teeth that are suitable to cooperate with corresponding complementary teeth of the second edge of the slat in order to keep said flap in a configuration in which it is stably inserted and retained in said opening.

[0013] Further characteristics and advantages of the present invention will become better apparent from the detailed description of a preferred but not exclusive embodiment of the extraction-preventing retainer for roll-up blinds according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a front view, taken from the inside, of a pair of slats of the roll-up blind according to the invention;
Figure 2 is a side view of a pair of slats of the blind;
Figures 3a and 3b are front views of one of the edges of a slat, respectively in the configuration for insertion in the other edge of the other slat and in the configuration for coupling in said other edge;
Figures 4a and 4b are front views of one of the edges of a slat, respectively in the configuration for insertion in the other edge of the other slat and in the configuration for coupling to the other edge of the other slat, in a version that is an alternative to the one shown in Figures 3a and 3b.

[0014] With reference to the figures, the reference numeral 1 designates the slats of a roll-up blind P provided with the extraction-preventing retainer A according to the invention: in particular, the numerals 1a and 1b designate two adjacent slats.

[0015] The slats 1 are constituted, in a known manner, by extruded profiled elements made of a material such as plastics or aluminum: the slats comprise an outer face E and an inner face I that are mutually connected by bridges P; the slats have, along their first edge (i.e., the upper one), a flattened longitudinal portion 2 having a hook-shaped cross-section and, along their second edge (i.e., the lower one), a groove-like complementary engagement seat 3 formed between a wing 3a of the inner face of the slat that is folded outwardly at right angles and a wing 3b of the outer face of the slat, which forms an acute angle.

[0016] The hook-shaped portion 2 of each slat 1 is suitable to be inserted in a corresponding engagement

seat 3 of the adjacent slat so as to provide a sort of full-length continuous hinge.

[0017] At the hook-shaped edge 2, the slats 1 further have a plurality of aligned slots 4 that allow a partial passage of light when the slats do not rest completely on each other.

[0018] The extraction-preventing retainer A has at least one deformable flap 5, which is formed in the wing 3a of the second edge of the slat and is meant to be folded towards the inside of the seat 3 and to engage, by interlocking, a corresponding opening 6 provided in the first longitudinal edge of the adjacent slat.

[0019] The flap 5 is provided with a pair of mirror-symmetrical notches 7a and 7b that affect the wing 3a and extend for respective mutually parallel portions 8a and 8b along the edge of the inner face I of the slat.

[0020] Each one of the notches 7a and 7b forms one (Figures 4a and 4b) or two (Figures 3a and 3b) dovetail teeth; the opening 6 has a substantially rectangular shape and is slightly wider than the flap 5.

[0021] The flap 5 is folded toward the inside of the seat 3 only after the slats have been coupled one another and is inserted in the opening 6 provided in the shaped edge 2 to accommodate the flap so as to prevent the respective sliding of the hook 2 in the seat 3.

[0022] The male dovetail teeth (10a, 10b) of the sides of the flap, and complementarily shaped female dovetail teeth (11a, 11b) located on either side in the wing 3a of the profiled element, are formed with an identical narrow cut: when the flap 5 is deformed, in practice the male teeth (10a, 10b) are made to snap into the seats constituted by the complementarily shaped female teeth (11a, 11b) that lie closest to the wing of the outer face 3b.

[0023] The narrow cut that forms the teeth and the complementary teeth is provided by punching, cutting or incision which do not remove material or remove it to a minimal extent so that when the flap is folded the dovetail teeth are in a configuration that achieves rigid and solid seating in the respective seats formed by the complementarily shaped teeth.

[0024] In addition to the dovetail teeth 7, on the two sides of the flap it is possible to provide small mutually opposite crescent-shaped teeth 9a and 9b to prevent more effectively the extraction of the slats.

[0025] The assembly of the roll-up blind is performed in a conventional manner, by inserting the hook-shaped edges 2 of the slats (for example 1b) in the complementarily shaped engagement seats 3 of the adjacent slats (for example 1a); the flaps 5 are aligned with the respective openings 6, and then the flaps 5 are pressed toward the outer face of the slats so as to make the male dovetail profiles engage the female dovetail profiles: in this manner, the flaps 5 are assuredly kept in a configuration in which they interfere with the openings 6 so as to avoid the mutual sliding of the slats.

[0026] In summary, the described extraction-preventing retainer allows easy and quick assembly of the slats of roll-up blinds.

[0027] In particular, the device can be assembled in a very short time and does not entail complicated manipulation of the slats.

[0028] The fact is stressed that the device can be used advantageously with slats that are pre-machined in the factory: the folding flaps 5 can engage openings 6 that are all provided and distributed with a constant pitch in the slats during their production.

[0029] This allows the installer to purchase bars of already-prepared profiled elements to be cut to size at the time of use, installing the extraction-preventing retainer subsequently, during assembly of the slats.

[0030] The flaps 5 remain interlocked rigidly, teeth against complementary teeth, and therefore the effectiveness of the retainer throughout the period of use of the roll-up blind is also ensured.

[0031] The device is further very sturdy and has a proportionally very low cost.

[0032] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0033] All the details may further be replaced with other technically equivalent ones.

[0034] In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the protective scope of the appended claims.

[0035] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An extraction-preventing retainer for roll-up blinds constituted by a plurality of slats (1, 1a, 1b), each provided with a first flattened longitudinal edge (2) that has a hook-shaped cross-section and is adapted to be inserted in a corresponding engagement seat (3) provided along the second complementary longitudinal edge of the adjacent slat, **characterized in that** it comprises at least one deformable flap (5) that is formed at said second edge (3a) of the slat and is adapted to be folded towards the inside of said slat and to enter a corresponding opening (6) formed at said first longitudinal edge (2) of the adjacent slat in order to prevent the mutual sliding of the two slats (1a, 1b), said flap (5) forming, at its sides, teeth (10a, 10b) adapted to cooperate with corresponding complementary teeth (11a, 11b) of the second edge of the slat in order to keep said flap (5) in a configuration in which it is stably inserted and retained in said opening (6).

2. The device according to claim 1, **characterized in that** said flap (5) is provided with a pair of mirror-symmetrical notches (7a, 7b) and **in that** said opening (6) is substantially rectangular.

3. The device according to one or more of the preceding claims, **characterized in that** said notches (7a, 7b) form at least one pair of substantially dovetail teeth (10a, 10b).

4. The device according to one or more of the preceding claims, **characterized in that** said notches (7a, 7b) form two crescent-shaped teeth (9a, 9b).

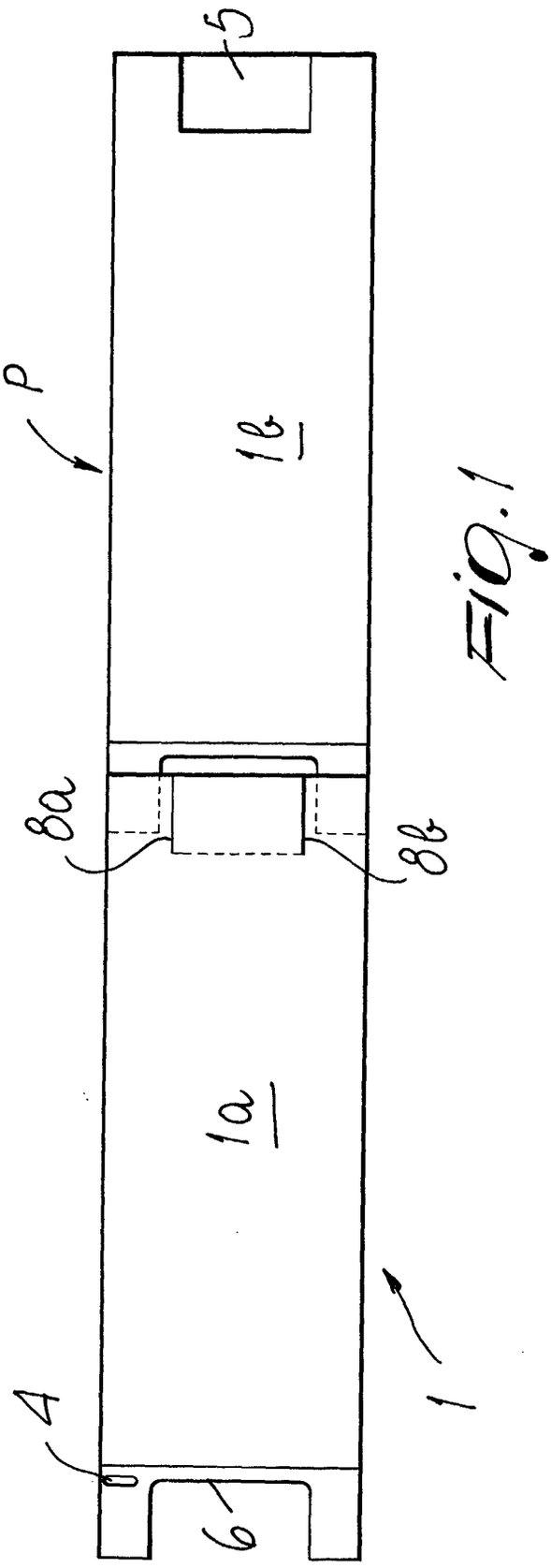

Fig.1

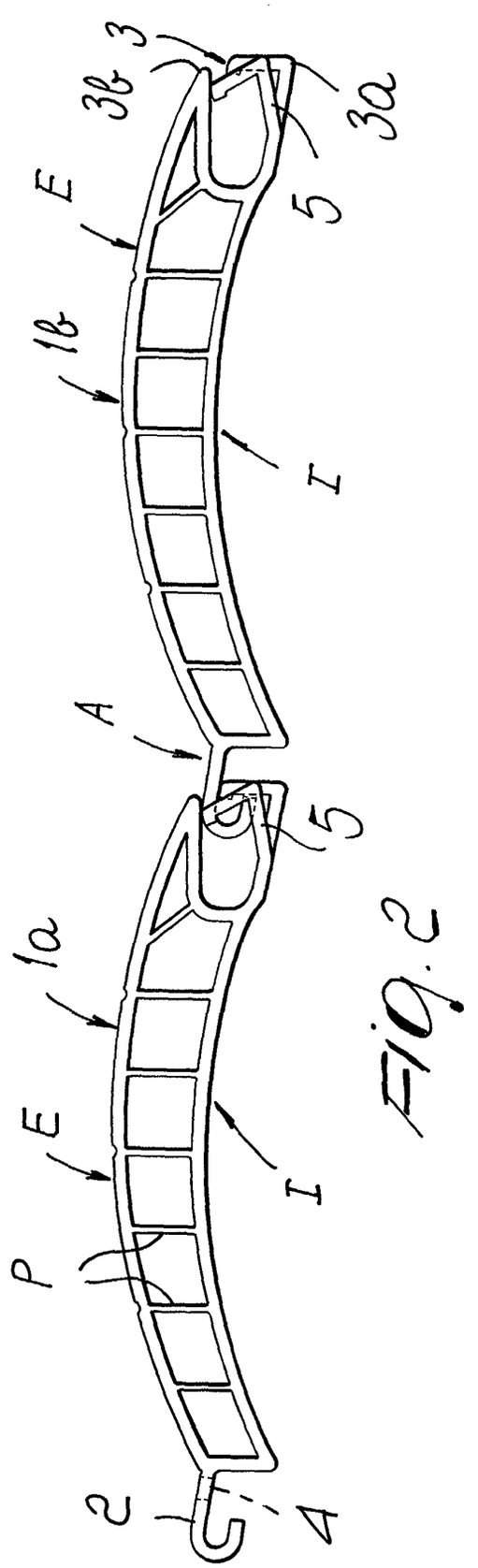

Fig.2

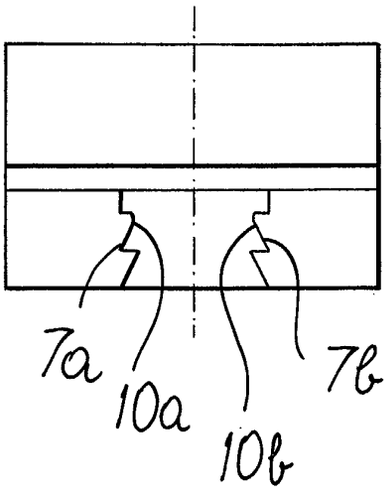

Fig. 3a

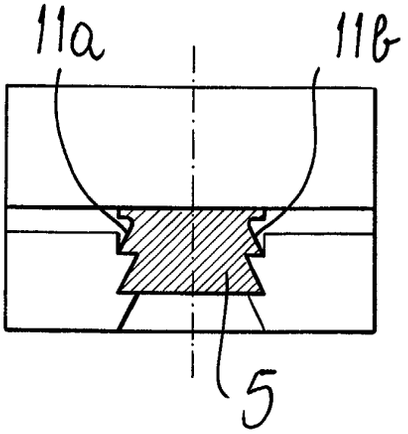

Fig. 3b

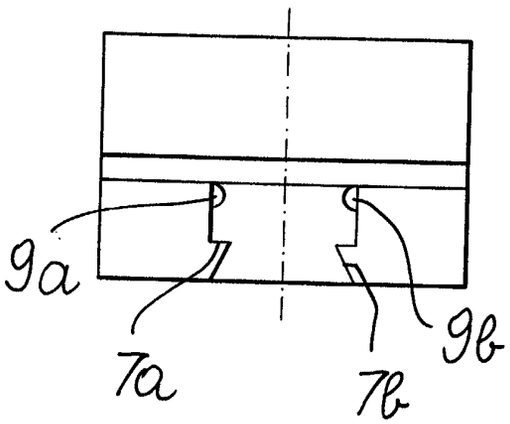

Fig. 4a

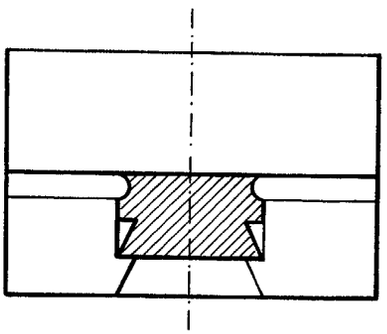

Fig. 4b

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 12 6532

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.7)
X	GB 894 260 A (HENRI MARTINAGE) 18 April 1962 (1962-04-18) * claim 1; figures 3-6 *	1	E06B9/165
X	FR 2 614 929 A (BUBENDORFF RICHARD) 10 November 1988 (1988-11-10) * claims 3,4; figure 3 *	1	
X	FR 1 558 556 A (DOTTI U & U) 28 February 1969 (1969-02-28) * claims 1-3; figures 1,2 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7) E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	28 February 2002	Kofoed, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 12 6532

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-02-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 894260 A	18-04-1962	NONE	
FR 2614929 A	10-11-1988	FR 2614929 A1	10-11-1988
FR 1558556 A	28-02-1969	CH 463757 A	15-10-1968

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82