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

(11) Publication number: **0 413 443 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **90308024.0**

(51) Int. Cl.5: **E06B 9/388**

(22) Date of filing: **23.07.90**

(30) Priority: **16.08.89 GB 8918719**

(43) Date of publication of application:
20.02.91 Bulletin 91/08

(84) Designated Contracting States:
AT BE DE DK ES FR GB IT NL SE

(71) Applicant: **HUNTER DOUGLAS INDUSTRIES B.V.**
Piekstraat 2
NL-3071 EL Rotterdam(NL)

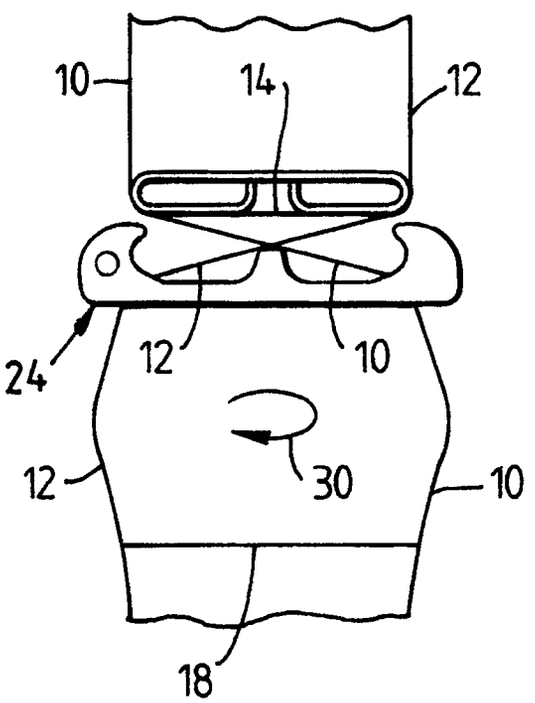
(72) Inventor: **Van der Zanden, George Christiaan**
Scholeksterpad 3
NL-2623 LV Delft(NL)

(74) Representative: **Allen, William Guy Fairfax et al**
J.A. KEMP & CO. 14 South Square Gray's Inn
London WC1R 5EU(GB)

(54) Venetian blinds.

(57) A method of mounting a bottom rail on a venetian blind, and a venetian blind so formed as well as a clip for use in the method, in which the clip (24) is engaged with a rung (16) of the ladder, is twisted about an axis parallel to the flexible elements (10), (12) of the ladder means so that the ladder means twist. The clip is then forced upwardly to engage the bottom rail and the ladder means is then cut below the bottom rail.

Fig. 2.



EP 0 413 443 A1

VENETIAN BLINDS

The present invention relates to venetian blinds.

Conventionally, venetian blinds consist of a head rail, at least two ladder means, each consisting of spaced generally longitudinally extending flexible elements such as tapes or cords and a plurality of transversely extending rungs, slats being mounted on the rungs, and a bottom rail being provided, this usually being supported by two or more lift cords. When it is decided what length of blind one wishes to manufacture, the flexible elements of the ladder cords are cut and are secured together, for example by means of a cleat or by forming a knot and then a clip is used to push the cleated or knotted ends through an aperture in the lower surface of the bottom rail. This has been found to be rather a time consuming operation which is not very economic.

It is now proposed, according to one aspect of the present invention, to provide a method of mounting the bottom rail on a venetian blind which includes a head rail, at least two ladder means, each consisting of spaced generally longitudinally extending flexible elements and a plurality of transversely extending rungs, with slats mounted on said rungs, said method comprising passing the bottom rail through an aperture between adjacent rungs in each ladder means, with a least one further rung of the ladder means being positioned below the bottom rail, engaging a clip with said rung and flexible elements of the ladder means, rotating the clip, and with it the ladder means, about an axis parallel to the longitudinal flexible elements by an angle of at least 180° to a particular orientation whereby the ladder means is twisted and engaging each clip on the bottom rail so that the clip is retained thereon at that particular orientation.

Such a method can be carried out very simply without the need of any knotting or cleating, it simply being necessary to cut the flexible elements immediately below the rung of the ladder means engaged by the clip.

Each clip may be retained at that particular orientation by means of an upstanding shank having a head on the upper end this being engaged in an associated aperture in the lower surface of the bottom rail, whereby the head retains the clip in place. The head may be chamfered and the shank resilient so that the head and shank may simply be pushed upwardly into the bottom rail to be snap fitted into the associated aperture.

Advantageously the clip includes arms which are sprung over front and rear portions of the bottom rail to assist in this securing of the clip to the bottom rail.

According to a further aspect of the present invention there is provided a venetian blind including a head rail, at least two ladder means, each consisting of spaced generally longitudinally extending flexible elements and a plurality of transversely extending rungs, slats mounted on said rungs and a bottom rail, a clip associated with each ladder means, each clip having means engageable with a rung and the flexible elements of the ladder means, enabling the clip, and with it the ladder means, to be rotated about an axis parallel to the longitudinal flexible elements by an angle of at least 180° to a particular orientation whereby the ladder means is twisted and means associated with each clip, enabling the clip to be engaged on the bottom rail at, and to be retained at, that particular orientation.

In order that the present invention may more readily be understood the following description is given merely by way of example reference being made to the accompanying drawings in which:-

Figures 1, 2 and 3 are each schematic illustrations showing the method of the present invention being carried out;

Figure 2 is a cross-section through one embodiment of clip according to the present invention and

Figure 5 is a section along the line V-V of Figure 4.

Referring first to Figure 1 there is illustrated the lower part of a venetian blind ladder means, this consisting of two flexible elements 10, 12 and there are also illustrated three rungs 14, 16, 18. Mounted on the uppermost of these rungs 14 is a bottom rail 20 which is shown very schematically as including an aperture 22 in its lower surface. Shown equally schematically is a clip 24 having an upstanding shank 26 and side arms 27, 28 shaped to conform to the outer surface of the bottom rail 20. As illustrated in Figure 1, the clip 24 is shown mounted on the intermediate rung 16 and the clip is then rotated about a vertical axis as indicated by the arrow 30. As a result of this twisting, the flexible elements 10, 12 are twisted so that they cross over, as illustrated above the clip in Figure 2.

The next step, as shown in Figure 3, is to push the clip upwardly so that it engages the bottom rail 20 thereby securing the ladder 10, 12 to the bottom rail 24. The flexible elements 10, 12 are then cut as shown by the scissors 32 and the mounting of the bottom rail is then complete.

The actual structure of the clip 24 is illustrated in greater detail in Figures 4 and 5. The clip includes a body 34 having two side arms 36, 38

each having grooves 37, 39 in the lower surface and inturned end portions 40, 42, respectively, shaped to spring over front and rear portions of the bottom rail 20. The end portions 40, 42 are each formed as two spaced members defining recesses 41, 43 between them. When the clip is engaged on intermediate rung 16, the rung engages in grooves 37, 39 and the flexible elements 10, 12 in the recesses 41, 43. The grooves and recesses act, therefore, as means engageable with a rung and the two flexible elements of the ladder, enabling the clip, and with it the ladder, to be rotated about a vertical axis.

The upstanding shank 26 has a head portions 44, 48 having chamfered surfaces 50, 52 respectively. It will be seen, in fact, that the shank 26 is formed with two spaced apart portions of a resilient nature carrying the heads 44, 48. Thus, when the clip 24 is pushed upwardly, the chamfered parts 50, 52 engage an aperture in the lower surface of the bottom rail and flex inwardly and then spring outwardly so that the head engages over the edges of this aperture to assist in the end portion 40, 42 of the arms engaging with the bottom rail to hold the clip in place.

It will be appreciated that the above arrangement can make for very speedy mounting of the bottom rail and requires no tying or cleating of the flexible elements of the ladder means.

Claims

1. A venetian blind including a head rail, at least two ladder means (10-18), each consisting of spaced generally longitudinally extending flexible elements (10,12) and a plurality of transversely extending rungs (14,16,18), slats mounted on said rungs and a bottom rail (20), and a clip (24) associated with each ladder means, characterised in that each clip has means (37,39,41,43) engageable with a rung (16) and the flexible elements (10,12) of the ladder means, enabling the clip (24), and with it the ladder means, to be rotated about an axis parallel to the longitudinal flexible elements by an angle of at least 180° to a particular orientation whereby the ladder means is twisted and means associated with each clip, enabling the clip to be engaged on the bottom rail (22) at, and to be retained at, that particular orientation.

2. A venetian blind according to claim 1, characterised in that the bottom rail (24) includes a vertical aperture (22) for each ladder means and in that each clip (24) includes an upstanding shank (26) with a head (44,48) on the upper end of the shank adapted to engage in the aperture in the bottom rail to retain the clip in place.

3. A venetian blind according to claim 2, characterised in that the head (44,48) is chamfered (at 50,52) and the shank is resilient whereby the shank will flex to enable the head to be snap fitted into its associated aperture.

4. A venetian blind according to claim 1, 2 or 3, characterised in that the clip includes arms (40,42) shaped to spring over front and rear portions of the bottom rail.

5. A venetian blind according to claim 4, characterised in that the outer end faces of the arms are provided with recesses (41,43) to receive the flexible elements of the associated ladder means.

6. A method of mounting the bottom rail (24) on a venetian blind which includes a head rail, at least two ladder means (10-18), each consisting of spaced generally longitudinally extending flexible elements (10,12) and a plurality of transversely extending rungs (14-18), with slats mounted on said rungs, said method comprising passing the bottom rail (20) through an aperture between adjacent rungs in each ladder means, with a least one further rung (16) of the ladder means being position below the bottom rail, engaging a clip with said rung (16) and the flexible elements (10,12) of the ladder means, rotating the clip (24), and with it the ladder means, about an axis parallel to the longitudinal flexible elements by an angle of at least 180° to a particular orientation whereby the ladder means is twisted and engaging each clip on the bottom rail (20) so that the clip is retained thereon at that particular orientation.

7. A method according to claim 6, characterised in that each clip (24) is retained at that particular orientation by means of an upstanding shank (26) having a head (44,48) on its upper end being engaged in an associated aperture (22) in the lower surface of the bottom rail whereby the head retains the clip in place.

8. A method according to claim 7, characterised in that the head (44,48) is chamfered and the shank resilient, and in that the head and shank are simply pushed upwardly into the bottom rail to be snap fitted into the associated aperture.

9. A method according to claim 6, 7 or 8, characterised in that the clip includes arms and in that these arms are sprung over front and rear portions of the bottom rail.

Fig. 1.

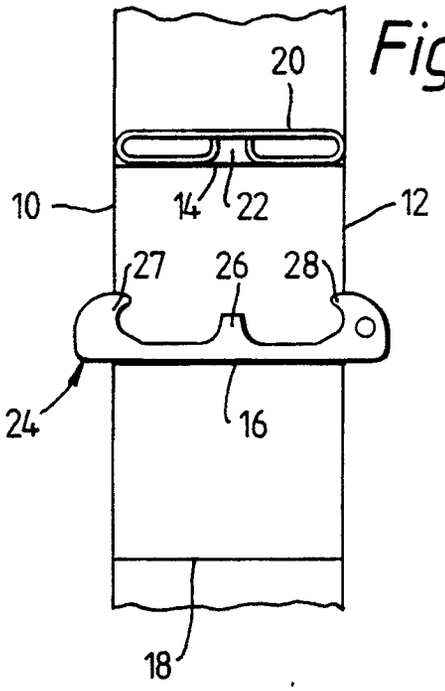


Fig. 2.

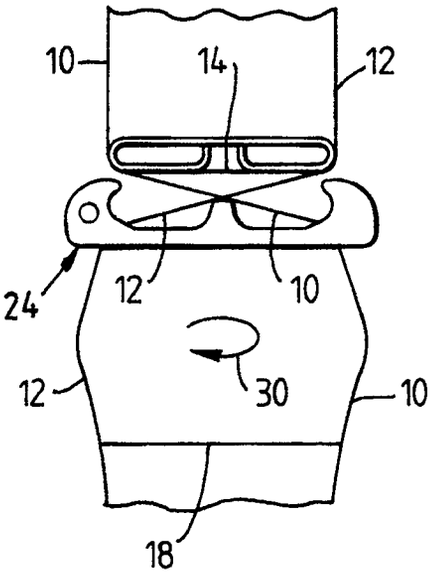


Fig. 3.

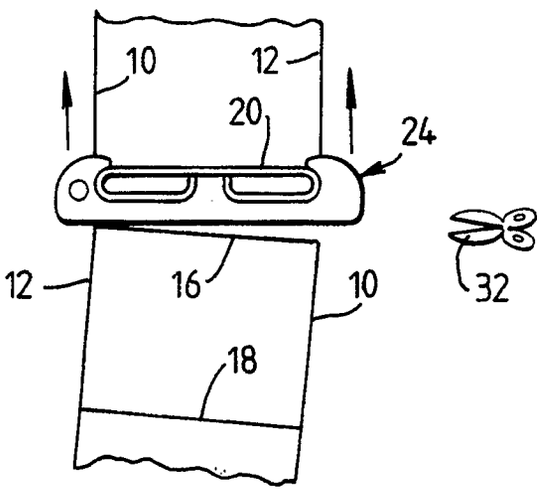


Fig. 4.

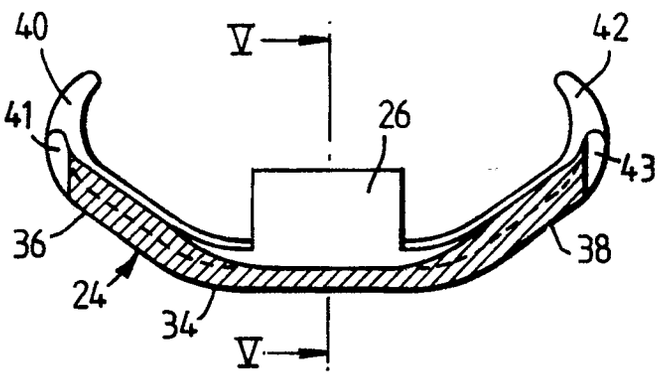
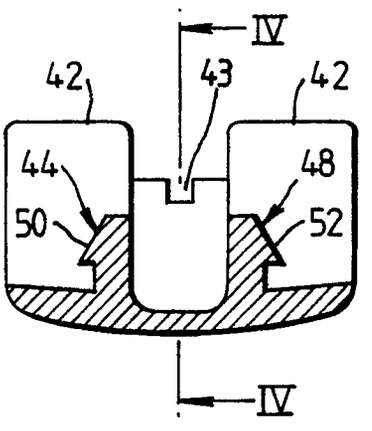


Fig. 5.



European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 30 8024

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.5)
A	US-A-2 627 917 (LIND) * the whole document *	1-9	E 06 B 9/388
A	US-A-2 079 852 (GRASSBY) * the whole document *	1-9	
A	US-A-2 086 461 (BOGAN) * the whole document *	1-9	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 06 B

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	07 November 90	KUKIDIS S.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same catagory
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