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PATENT SPECIFICATION

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- (21) Application No. 19921/78 (22) Filed 16 May 1978
(31) Convention Application No. 2 726 516
(32) Filed 11 June 1977 in
(33) Fed. Rep. of Germany (DE)
(44) Complete Specification published 21 Jan. 1981
(51) INT CL³ E06B 9/30
(52) Index at acceptance E1J DV



(54) END PIECE FOR THE BOTTOM STRIP OF A VENETIAN BLIND

(71) We, HUNTER DOUGLAS INDUSTRIES BV., a Dutch Body Corporate of Piekstraat 2, 3071 Rotterdam, The Netherlands do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a venetian blind and to an end piece for the bottom strip of a venetian blind, the slats of which are guided at the side of the blind and for the operation of which a flexible lifting element and a flexible positioning element are provided, both these elements extending down to the bottom strip and engaging therewith.

In a known design of this type, the positioning elements engage with the individual slats at certain points along the length of the slats, so that the slats can be brought into the particular desired pivoting position by means of the positioning element. Since the positioning elements are guided down to the bottom strip and are joined thereto, the latter carries out a corresponding pivoting motion when the positioning element is operated.

Frequently, the lifting element is also guided down to the bottom strip through apertures provided in the slats. However, there are also designs in which the lifting element is guided within a vertically extending hollow profile at the side of the blind, the lifting element engaging in the profile with an end piece joined to the bottom strip.

It is a disadvantage of the known designs that some parts of the operating elements are guided so that they are still openly visible and that the joining thereof to the bottom strip still requires a relatively expensive assembly step.

According to the present invention, there is provided a venetian blind, comprising, on each side, a flexible positioning element and a flexible lifting element, a plurality of slats mounted for tilting motion on said positioning elements, and a bottom strip having, at each axial end, an end piece including a portion engaged in the bottom strip, a peg shaped extension extending axially outwardly on the

bottom strip, a first zone of said extension engaging the lifting element and a second zone of said extension axially separate from the first zone around which the positioning element is guided.

Such a construction makes it possible to join the lifting element and the positioning element to the bottom strip in a simple manner, during manufacture and assembly, whilst covering the guide for the two elements. Thus, both the operating elements are guided laterally adjacent to the slats and can be covered, for example, by means of a profile which serves at the same time to guide the slats. It is not necessary that the bottom strip is also forced to take part in the pivoting motion of the slats, effected by operating the positioning element, since the positioning element is guided to slide around the peg-shaped extension of the end piece.

It is a particular advantage that it is now possible simply to join not only the lifting element to the bottom strip, but also to join at the same time the positioning element to the bottom strip by means of the end piece in one and the same assembly region. The assembly of the venetian blind is thus facilitated.

The invention also provides an end piece for the bottom strip of a venetian blind, the slats of which are guided on the side of the blind and for the operation of which a flexible lifting element and a flexible positioning element are provided, both of these elements extending down to the bottom strip and engaging with the latter, such end piece comprising a portion engageable in one end of the bottom strip of the blind, a peg shaped extension adapted to extend axially outwardly from the bottom strip, a first zone on said extension to engage the lifting element and a second zone which is axially separate from the first zone and around which the positioning element can be guided.

In the end piece designed according to the invention, the first zone, serving to engage the lifting element, of the extension can either be designed to be hung in a loop forming the end of the lifting element, or it can have a

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slide surface, the lifting element being guided to slide likewise around the latter.

Advantageously, the peg-shaped extension is subdivided in the axial direction by radial flanges into a first outer zone serving to engage the lifting element and a second inner zone serving to guide the positioning element. This results in closely adjacent but clearly separate engagement zones for the two elements.

Furthermore, it is proposed to secure the lifting element and/or the positioning element by means of at least one bridge, a stop or pin, starting from a flange, or the like. This prevents the particular elements from leaving their engagement surfaces or slide surfaces on the extension of the end piece, when a weight load originating from the bottom strip is counterbalanced, for example by lifting the bottom strip.

A securing device of this type can be designed in such a way that the pin is guided through apertures provided in the flange and that the flange is extended in the radial direction at least in the zone of the pin. This extension is intended to provide the flange area necessary to make the apertures therein, whereas the remaining parts of the flanges can be of less radial extent.

If one of the two flanges adjacent to the positioning element or the lifting element has a bridge extending over the positioning element or the lifting element, the end of the bridge may be spaced from an adjacent flange to form an introduction slot for the positioning element or the lifting element. Thus, one of the two elements or both together can be secured in this manner, if required.

According to a further proposal of the invention, it is conceivable that the positioning element and/or the lifting element, if they are guided to slide on the end piece, are held and guided on the peg by means of a roll. A torque which may still act on the bottom strip during sliding, can be reduced in this way when required, in the same way as wear can quite generally be reduced.

As far as the fixing of the lifting element to the end piece is concerned, it is proposed, furthermore, that the peg component serving this purpose has a slot-like recess which widens from the circumference towards the centre of the peg and interacts with a locking element which is wider than the narrowest point of the recess and serves to lock a loop, introduced into the recess, on the end of the lifting element.

This makes a particularly simple fixing of the lifting element to the peg of the end piece possible. Since the recess extends in the axial direction up to the end of the peg, the locking element can be inserted from the end into the loop of the lifting element. It is also a particular advantage that it is not absolutely

necessary that the loop end running back upwards is firmly joined, for example sewn or tacked, to the part of the lifting element which comes from above. The clamping action, which is achieved by means of the locking element and the shape of the recess, is sufficient for fixing, and it is possible in an advantageous manner to readjust the lifting element.

In order that the invention will more readily be understood, the following description is given, by way of example only, reference being made to the accompanying drawings in which:—

Figure 1 is a perspective view of one embodiment of end piece according to the invention, joined to a bottom strip, and the elements engaging thereon;

Figure 2 is a side elevation of a modified embodiment of end piece;

Figure 3 is an end view of the free end of the end piece of Figure 2; and

Figure 4 shows a diagrammatic section through a peg-like component of a further embodiment of end piece.

In the arrangement shown in Figure 1, the end of a bottom strip 10 is joined to an end piece 11 which has a peg-shaped extension 12 projecting from the side. Two axial zones are divided off from the outer shell surface of the extension by flanges 13, 14 and 15, the inner zone thereof being designed as a slide surface 16. A cord serving as the positioning element 17 is guided to slide around this surface.

The outer zone 18, between the radial flanges 13 and 14, of the peg-shaped extension 12 is intended to be hung in a loop forming the lower end of a lifting element 19.

To secure the positioning element 17 in its assembled position, a bridge 20 is cantilevered from flange 15 and extends axially over the slide surface 16 and the positioning element 17. The other end of the bridge is spaced from the flange 14 and a further bridge 21 cantilevered thereon, to leave an introduction slot 22.

The free end of the bridge 21 in turn forms, together with the flange 18, a further introduction slot 23. The end faces of the bridges 20 and 21, facing the introduction slots 22 and 23, are chamfered in such a way that it becomes possible easily to introduce the positioning element 17 and the lifting element 19.

The peg-shaped extension 12 of the end piece 11 is guided inside a slot 24 which is formed in a profile 25, which extends over the entire height of the venetian blind and serves to guide the individual slats and the bottom strip 10. At the same time, the positioning element 17 and the lifting element 19 are also covered by the profile 25 since they run in the interior thereof. The part of the peg-shaped extension 12, located in the zone of

the slot 24, is larger in the longitudinal direction of the slot 24 than the width of the slot 24 so that, due to these dimensions, a rotation of the end piece 11 and hence also of the bottom strip 10 about a horizontal axis is prevented.

Thus, if a turning moment acts on the peg-shaped extension 12 at the slide surface 16, for example as a result of operating the positioning element 17, this does not lead to pivoting or rotation of the bottom strip 10.

The positioning element 17 and the lifting element 19 can be joined to the end piece 11 solely by guiding them around or hanging them in the zone of the slide surface 16 or the component 18 so that assembly or a possible replacement takes place very easily and rapidly.

In the embodiment shown in Figures 2 and 3, the peg-shaped extension 12 is likewise again provided with a slide surface 16 and a zone 18 which serves to guide a lifting element 19 around, these parts being now delimited by flanges 26, 27 and 28. The latter are extended downwards in the radial direction and are provided with mutually aligned bores in the zone of the extension. After the positioning element 17 and the lifting element 19 have been placed around the slide surface 16 or the zone 18 of the peg-shaped extension 12 respectively, a pin 29 can be introduced through the bores in the flanges 26 to 28 and onwards into the adjacent part of the end piece 11 so that the positioning element 17 and the lifting element 19 are secured in this manner in their position on the peg-shaped extension 12.

In the representation according to Figure 4, a round peg component 30 is used to fix the lifting element 19, and this has a recess 31 which extends diametrically through the latter and expands downwards. This recess can be open towards the free end face of the peg component 30, and this represents an alternative so that a locking element 32 can also be introduced from the side into the recess 31 and into a loop formed by the lower end of the lifting element 19. If desired, the recess can then be closed on the underside. In any case, the locking element 32 is wider than the narrowest point of the recess 31 in the upper zone thereof.

Of course, it is also within the scope of the invention to join the lifting element to a corresponding part of the end piece 11 in another suitable manner, for example by gluing, tacking or the like.

WHAT WE CLAIM IS:—

1. A venetian blind comprising, on each side, a flexible positioning element and a flexible lifting element, a plurality of slats mounted for tilting motion on said positioning elements, and a bottom strip having, at each axial end,

an end piece including a portion engaged in the bottom strip, a peg shaped extension extending axially outwardly on the bottom strip, a first zone of said extension engaging the lifting element and a second zone of said extension axially separate from the first zone around which the positioning element is guided.

2. A venetian blind according to claim 1, wherein the lifting element is formed in a closed loop which is hung on said first zone.

3. A venetian blind according to claim 1, wherein the lifting element is guided to slide around said first zone.

4. A venetian blind according to claim 3, wherein a roller is provided at said first zone for the lifting element to slide on.

5. A venetian blind according to claim 1, 2 or 3, wherein the positioning element is guided to slide around said second zone.

6. A venetian blind according to claim 5, wherein said second zone is provided with a roller for said positioning element to slide around.

7. An end piece for the bottom strip of a venetian blind, the slats of which are guided on the side of the blind and for the operation of which a flexible lifting element and a flexible positioning element are provided, both these elements extending down to the bottom strip and engaging with the latter, such end piece comprising a portion engageable in one end of the bottom strip of the blind, a peg shaped extension adapted to extend axially outwardly from the bottom strip, a first zone on said extension to engage the lifting element and a second zone which is axially separate from the first zone and around which the positioning element can be guided.

8. A venetian blind or end piece according to any preceding claim, wherein the circumferential surface of the peg shaped extension is subdivided into the first zone and the second zone by radial flanges.

9. A venetian blind or end piece according to claim 8, wherein a bridge is cantilevered out from at least one of said flanges to provide a positioning and/or lifting element locking means in at least one of said first and second zones.

10. A venetian blind or end piece according to claim 8, wherein a pin is releasably passable through at least one of said flanges, to hold the lifting element and/or positioning element in said zone.

11. A venetian blind or end piece according to claim 9, wherein a gap is left adjacent one end of the or each bridge for insertion of the associated positioning or lifting element.

12. A venetian blind or end piece according to any preceding claim, wherein the end of the peg shaped extension is provided with a transverse locking slot which is wider near

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the slot 24, is larger in the longitudinal direction of the slot 24 than the width of the slot 24 so that, due to these dimensions, a rotation of the end piece 11 and hence also of the bottom strip 10 about a horizontal axis is prevented.

Thus, if a turning moment acts on the peg-shaped extension 12 at the slide surface 16, for example as a result of operating the positioning element 17, this does not lead to pivoting or rotation of the bottom strip 10.

The positioning element 17 and the lifting element 19 can be joined to the end piece 11 solely by guiding them around or hanging them in the zone of the slide surface 16 or the component 18 so that assembly or a possible replacement takes place very easily and rapidly.

In the embodiment shown in Figures 2 and 3, the peg-shaped extension 12 is likewise again provided with a slide surface 16 and a zone 18 which serves to guide a lifting element 19 around, these parts being now delimited by flanges 26, 27 and 28. The latter are extended downwards in the radial direction and are provided with mutually aligned bores in the zone of the extension. After the positioning element 17 and the lifting element 19 have been placed around the slide surface 16 or the zone 18 of the peg-shaped extension 12 respectively, a pin 29 can be introduced through the bores in the flanges 26 to 28 and onwards into the adjacent part of the end piece 11 so that the positioning element 17 and the lifting element 19 are secured in this manner in their position on the peg-shaped extension 12.

In the representation according to Figure 4, a round peg component 30 is used to fix the lifting element 19, and this has a recess 31 which extends diametrically through the latter and expands downwards. This recess can be open towards the free end face of the peg component 30, and this represents an alternative so that a locking element 32 can also be introduced from the side into the recess 31 and into a loop formed by the lower end of the lifting element 19. If desired, the recess can then be closed on the underside. In any case, the locking element 32 is wider than the narrowest point of the recess 31 in the upper zone thereof.

Of course, it is also within the scope of the invention to join the lifting element to a corresponding part of the end piece 11 in another suitable manner, for example by gluing, tacking or the like.

WHAT WE CLAIM IS:—

1. A venetian blind comprising, on each side, a flexible positioning element and a flexible lifting element, a plurality of slats mounted for tilting motion on said positioning elements, and a bottom strip having, at each axial end,

an end piece including a portion engaged in the bottom strip, a peg shaped extension extending axially outwardly on the bottom strip, a first zone of said extension engaging the lifting element and a second zone of said extension axially separate from the first zone around which the positioning element is guided.

2. A venetian blind according to claim 1, wherein the lifting element is formed in a closed loop which is hung on said first zone.

3. A venetian blind according to claim 1, wherein the lifting element is guided to slide around said first zone.

4. A venetian blind according to claim 3, wherein a roller is provided at said first zone for the lifting element to slide on.

5. A venetian blind according to claim 1, 2 or 3, wherein the positioning element is guided to slide around said second zone.

6. A venetian blind according to claim 5, wherein said second zone is provided with a roller for said positioning element to slide around.

7. An end piece for the bottom strip of a venetian blind, the slats of which are guided on the side of the blind and for the operation of which a flexible lifting element and a flexible positioning element are provided, both these elements extending down to the bottom strip and engaging with the latter, such end piece comprising a portion engageable in one end of the bottom strip of the blind, a peg shaped extension adapted to extend axially outwardly from the bottom strip, a first zone on said extension to engage the lifting element and a second zone which is axially separate from the first zone and around which the positioning element can be guided.

8. A venetian blind or end piece according to any preceding claim, wherein the circumferential surface of the peg shaped extension is subdivided into the first zone and the second zone by radial flanges.

9. A venetian blind or end piece according to claim 8, wherein a bridge is cantilevered out from at least one of said flanges to provide a positioning and/or lifting element locking means in at least one of said first and second zones.

10. A venetian blind or end piece according to claim 8, wherein a pin is releasably passable through at least one of said flanges, to hold the lifting element and/or positioning element in said zone.

11. A venetian blind or end piece according to claim 9, wherein a gap is left adjacent one end of the or each bridge for insertion of the associated positioning or lifting element.

12. A venetian blind or end piece according to any preceding claim, wherein the end of the peg shaped extension is provided with a transverse locking slot which is wider near

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one side of the extension than the axis of the extension to receive a loop on the lifting element.

5 13. A venetian blind substantially as hereinbefore described, with reference to and as illustrated in Figure 1 of the accompanying drawings.

10 14. A venetian blind according to claim 13, modified substantially as hereinbefore described with reference to Figures 2 and 3 or Figure 4 of the accompanying drawings.

15. An end piece for the bottom strip of a venetian blind, such end piece being substantially as hereinbefore described with reference

to and as illustrated in Figure 1 of the accompanying drawings.

16. An end piece according to claim 15, modified substantially as hereinbefore described, with reference to and as illustrated in Figures 2 and 3 or Figure 4 of the accompanying drawings.

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Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1981.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

