

April 12, 1938.

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2,114,057

VENETIAN BLIND CONSTRUCTION

Filed July 10, 1936

2 Sheets-Sheet 1

Fig. 1.

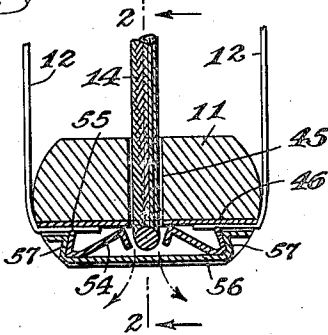


Fig. 2.

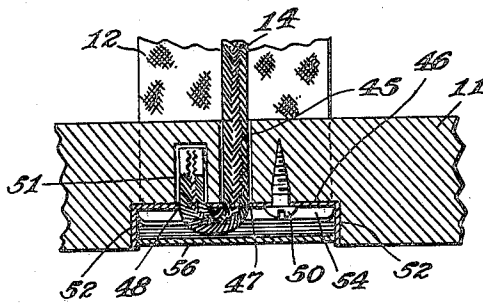


Fig. 3.

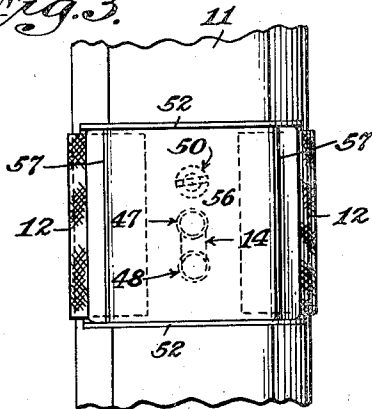


Fig. 4.

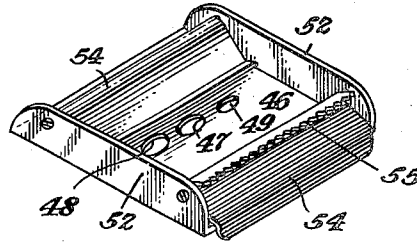


Fig. 5.

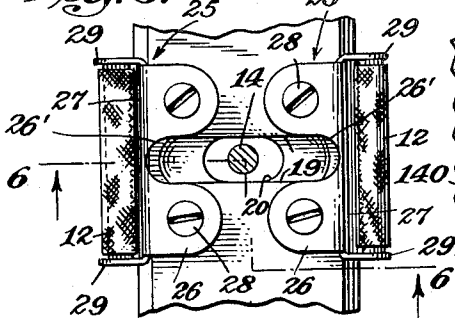


Fig. 7.

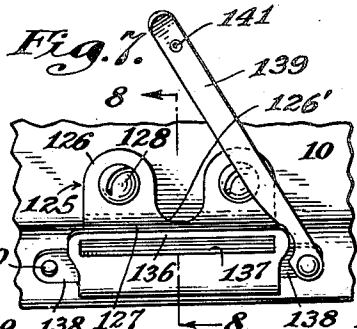


Fig. 8.

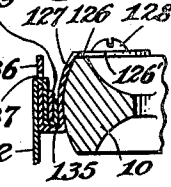


Fig. 6.

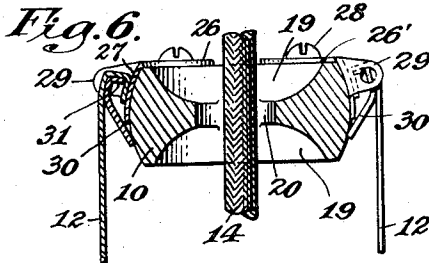


Fig. 9.

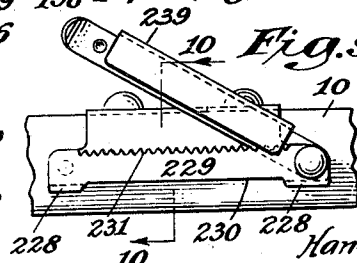
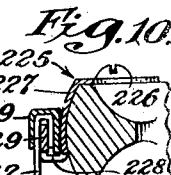


Fig. 10.



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*Fig. 11.*

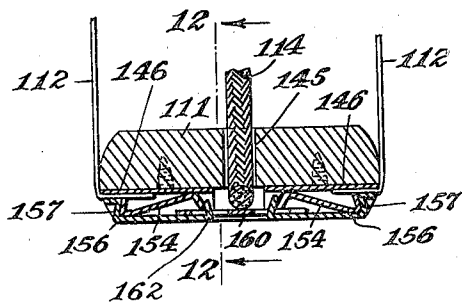


*Fig. 12.*

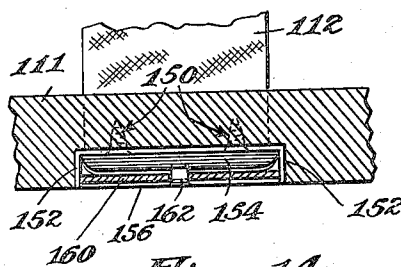


*Fig. 13.*

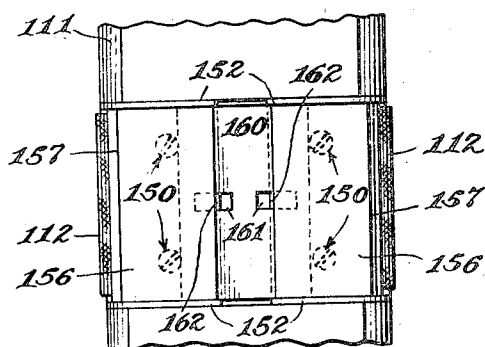


Fig. 14.

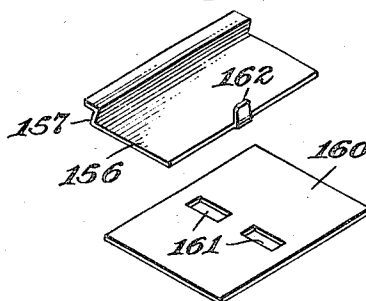


Fig. 17.

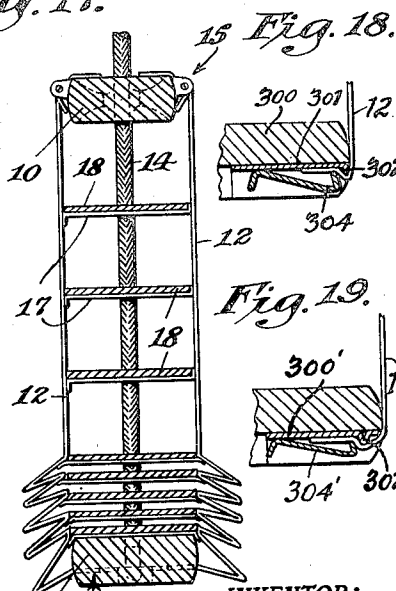


*Fig. 15.*

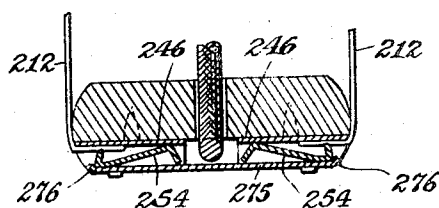
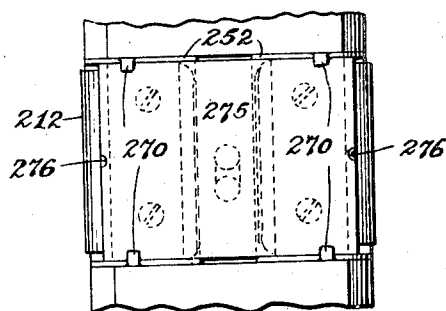


*Fig. 16.*



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## UNITED STATES PATENT OFFICE

2,114,057

## VENETIAN BLIND CONSTRUCTION

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Application July 10, 1936, Serial No. 89,885

5 Claims. (Cl. 156—17)

This invention relates to improvements in Venetian blinds and to similar structures.

Venetian blinds generally are made up in part of a tilt bar, a bottom bar, and ladder-like webbing secured between the two bars and serving as support for intermediate slats. Heretofore, it has been customary to secure the ends of the webbing permanently to the two bars. Difficulties have been encountered in such practice, since extreme care is necessary to so secure the ends of the webbing to the two bars that the surfaces of the two bars and the surfaces of the slats will be in parallelism when the bars and the slats are in horizontal planes. Moreover, it has been customary to secure the upper ends of the webbing to the top surface of the tilt bar and the other ends of the webbing to the bottom surface of the bottom bar. Since these bars are of relatively considerable thickness and have rounded edges over which expanses of the webbing pass, it follows that, when the bars are tilted, inequalities in the length of the vertical expanses of the webbing result and consequently it will be found that the bars and the slats, if in parallelism when horizontal, are moved out of parallelism when tilted.

An object of the present invention is to provide a structure as before described, in which the ends of the webbing are adjustably secured to both the tilt bar and the bottom bar.

Another object of the invention is to provide fastening means adapted to be secured to the two bars to permit such adjustability of the webbing.

Another object of the invention is to provide a structure as before described, in which the upper ends of the webbing are adjustably secured to the tilt bar in such fashion that the vertical expanses of the webbing are spaced from the edges of the tilt bar.

An additional object of the invention is to provide a structure as before described, in which attaching means or members are seated in recesses in the lower surface of the bottom bar for adjustably securing the lower ends of the webbing to the bottom bar in such fashion that inequalities in the space between the edges of the bottom bar and the intermediate slats are eliminated when the bottom bar and the intermediate slats are tilted.

A further object of the invention is to provide attaching members to be seated in recesses in the lower surface of the bottom bar, such attaching members being so formed and shaped as to be included substantially wholly within such recesses.

A still further object of the invention is to provide attaching members for a tilt bar, such members being so constructed as not to interfere with the action of the elevator cords when the tilt bar is tilted.

Other objects, features and advantages of the invention will become apparent by reference to the following detailed description of the accompanying drawings illustrating the same, wherein

Fig. 1 is a vertical section through a bottom bar with one form of webbing securing means attached thereto;

Fig. 2 is a section taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a bottom view of the arrangement shown in Fig. 1;

Fig. 4 is a perspective view of the clip plate having clips pivotally secured between the side walls thereof, such device being used in the arrangement shown in Fig. 1;

Fig. 5 is a top view of a fragment of the tilt bar showing the preferred form of web attaching means secured thereto;

Fig. 6 is a section taken substantially on the line 6—6 of Fig. 5;

Fig. 7 is a corner view of a fragment of the tilt bar showing a modified form of web attaching means secured thereto;

Fig. 8 is a section taken substantially on the line 8—8 of Fig. 7;

Fig. 9 is an edge view of a still further modification of tilt bar web attaching means;

Fig. 10 is a section taken substantially on the line 10—10 of Fig. 9;

Fig. 11 is a view similar to Fig. 1 of the modified form of bottom bar web attaching means;

Fig. 12 is a section taken substantially on the line 12—12 of Fig. 11;

Fig. 13 is a bottom view of the device shown in Fig. 11;

Fig. 14 is a perspective form of the spacer plate and locking member utilized in the arrangement of Figs. 11 to 13, inclusive;

Fig. 15 is a view similar to Fig. 11 of a still further embodiment of the invention;

Fig. 16 is a bottom view of the arrangement shown in Fig. 15;

Fig. 17 is a vertical section of a completed blind having embodiments of the invention attached thereto; and

Figs. 18 and 19 illustrate modifications.

Referring now to the drawings, a Venetian blind is made up in part particularly as shown in Fig. 17, wherein the construction consists of a tilt bar 10, a bottom bar 11, ladder-like webbing

12, and an elevator cord 14. The webbing 12 is adjustably secured to both the tilt bar 10 and the bottom bar 11. The mechanism for securing the adjustment is represented generally at 15 in connection with the tilt bar, and generally at 16 in connection with the bottom bar. The webbing 12 is provided with cross straps 17 serving to support intermediate slats 18 through which the elevator cord passes; such cord also passing through the tilt bar 10 and through the bottom bar 11. The tilt bar 10, shown more clearly in Figs. 5 and 6, is routed to provide slots 19 extending from a central aperture 20, through which the elevator cord 14 passes, to a point close to the lateral edges of the bar. The purpose of such slots is to permit the elevator cord to remain in substantially straight line position, even when the bar 10 is tilted.

The preferred means for adjustably securing the upper ends of the webbing 16 to the tilt bar is shown clearly in Figs. 5 and 6. Such means comprises two similarly shaped members engaged generally at 25. Each member 25 is made from a sheet of relatively thin metal, formed to have a flat portion 26 to rest on the flat top of the tilt bar and to have a curved portion 27 to rest against a part of the curved edge of the tilt bar. The flat part 26 of the member 25 is bisected by a slot 26' positioned to be substantially in alignment with the routed slot 19 of the bar. Suitable apertures may be provided in the opposite portions of the flat part 26 for the passage of screws 28 which serve to secure the member 25 to the tilt bar. Extending outwardly from the curved part 27 of the member 25 are two ears 29 between which is pivotally secured a clip member 30. This member as shown in the drawings is of substantially modified L-shape for purposes to be explained later. The shorter expanse of the member 30 indicated at 31 has the free edge thereof provided with saw teeth to aid in retaining the webbing in place.

The operation and use of this arrangement is substantially as follows: An end of the webbing 12 is passed upwardly outside of the clip member 30 and then downwardly against the curved part 27 of the member 25. When properly adjusted the end of the webbing can be locked in place by moving the clip member to the position shown in Fig. 6, wherein the roughened edge of the part 31 grips the webbing between such edge and the portion 27 to prevent withdrawal thereof. In this position the longer part of the clip 30 has its end resting against the edge of the tilt bar. Due to this arrangement as will be apparent from the drawings, the vertically extending expanse of the webbing 12 is spaced from the curved edge of the tilt bar so that when this bar is tilted, the vertical expanse actually depends from the bend of the clip and does not pass around the curved edge of the bar as is customary in conventional constructions. The advantage of such arrangement resides in the fact that the opposite vertical expanses of the webbing are more equally maintained in parallelism throughout their length so that an intermediate slat which is parallel to the tilt bar in a horizontal position thereof remains substantially parallel to the tilt bar, even when this bar is tilted. Moreover, since any stress applied to the webbing by the weight of the bottom bar and the intermediate bars is communicated to the locking arrangement in a manner tending to press the longer end of the clip more firmly against the edge of the tilt bar. Such stress serves to enhance the locking

effect of the clip. Since the flat part 26 of the member 25 is bisected by a slot, it follows that the member 25 does not interfere with the maintenance of substantially straight line condition of the elevator cord 14 at any position of the tilt bar. Since the provision of the two locking arrangements on a tilt bar permits of quick adjustment of the webbing relative to the tilt bar and the locking thereof to the tilt bar, it follows that the webbing can be quickly adjusted so that the cross straps thereof are definitely positioned in parallelism with the lower surface of the tilt bar when the parts are horizontal.

Alternative locking arrangements are shown in Figs. 7 to 10, inclusive. In Figs. 7 and 8 the arrangement comprises a member 125 having a flat portion 126 bisected by a slot 126' and a curved portion 127 resting against the edge of the bar. This member 125 is secured to the bar by screws 128 in the same manner previously described in connection with Figs. 5 and 6. The portion 127 has an extension bent back to provide a bottom part 135 and an upstanding wall part 136. A slot 137 is provided in this wall part near the top thereof. Two ear portions 138 extend outwardly from the curved portion 127, and a blade member 139 is pivotally secured to one of these end portions. The other end portion has a detent or aperture 140 therein, in which can be seated a knob 141 near the end of the blade.

The use in operation of this modification is as follows: The end of a webbing 112 is inserted through the slot 137 from the exterior of the member 136 while the blade 139 is in elevated position. When the desired amount of the webbing has been passed through the slot, and over the top of the tilt bar, the webbing can be locked in place by moving the blade 139 about its pivotal connection until the webbing is wedged in position as shown in Fig. 8. The blade is maintained in position partly by the engagement of the knob 141 with the recess or detent 140. This arrangement permits of quick assembly and quick adjustment of the webbing relative to the tilt bar for the same purposes previously described.

The modification shown in Figs. 9 and 10 comprises a member 225, the flat top portion 226 of which is formed in the same manner as that shown in the two previous embodiments. The curved portion 227 has an extension formed with a bottom 228 and with an upstanding part 229. A recess 230 is provided in the bottom part 228, and the upper edge of the portion 229 is roughened as indicated at 231. A substantially U-shaped blade 239 is pivotally secured to the member 225, as shown, in position to cause the parts thereof to extend on each side of the upstanding portion 229.

The use and operation of this modification is substantially as follows: The end of a webbing 212 is passed downwardly in the space between the portions 227 and 229 (while the blade is elevated) with the actual end of the webbing extending through the slot 230, if necessary. When the webbing has been properly adjusted it may be locked in place by pressing the plate downwardly. Such plate assumes the position of Fig. 10, at which time the webbing is effectively locked against withdrawal. This modification also permits easy adjustment and quick attachment of the ends of the ladder-like webbing to the tilt bar.

In order that the lower ends of the webbing can be easily attached to the bottom bar and easily adjusted so that the bottom bar is in par-

allelism with the intermediate slats and with the top bar, use may be made of any of the arrangements shown in Figs. 1 to 4, inclusive, or Figs. 11 to 16, inclusive. The preferred form of this arrangement is shown in Figs. 1 to 4, inclusive, wherein the bottom bar 11 has a recess cut in the under surface thereof substantially symmetrically disposed relative to the aperture 45 through which the elevator cord 14 passes. A part of the attaching mechanism comprises a flat plate 46 adapted to rest against the flat bottom wall of the bar recess. In the construction shown plate 46 is provided with three apertures, 47, 48 and 49. One of the apertures, 48 or 49, is provided for the passage of a screw 50 which fastens the plate in the recess. The central aperture 47 is aligned with the aperture 45 for the passage of the elevator cord 14. The third aperture is positioned in alignment with a hole 51 in the tilt bar, which hole serves to receive the end of the double-back elevator cord 14. As shown in Fig. 2, preferably a sleeve of metal or some other inflexible material surrounds the end of the cord so that it cannot be withdrawn from the hole by an upward force exerted on the main part of the cord 14.

The plate 46 has opposite side walls 52 dimensioned and shaped to fit against the side walls of the bar recess so that the outer edges of the walls 52 are substantially flushed with the bottom of the bar 11 and with the curved edges thereof. Pivotaly secured between the walls 52 are two clip members 54. These clip members are of substantially Z-shape with one edge of each thereof roughened or provided with saw teeth, as shown at 55. The remaining part of the locking arrangement comprises a locking plate 56, the major portion of which is flat, as shown, with the end portions of substantially Z-shape, as shown at 57.

The operation and use of this attaching construction is substantially as follows: Assuming that the locking plate 56 has been disengaged from the arrangement, the ends of the webbing 12 may be secured in place by introducing them between the roughened edges 55 of the clips 54 and the plate portion 46. When the ends of the webbing have been properly adjusted so that the bottom bar is parallel to the intermediate slats and the tilt bar, the webbing can be locked in place by pivotally moving the clips into the position shown in Fig. 1, at which time the roughened edges grip the webbing. Accidental unlocking of the clips can then be precluded by attaching the locking plate 56. The material of this plate, while preferably of metal, is made of some material possessing the desired degree of resiliency. Due to this resiliency it is possible to snap the ends 57 of the plate 56 into the position shown in Fig. 1, wherein portions of the ends 57 rest against the expanses of the clips 54 having the roughened ends 55. All of the parts of this construction are dimensioned and shaped so that when the construction is completely assembled with the webbing as shown in Fig. 1, the entire construction lies substantially completely within the recess in the bottom bar. Consequently, no parts extend outwardly to be engaged with any objects which might cause adventitious unlocking of the webbing from the bottom bar.

With this arrangement it is possible to quickly secure ends of the ladder-like webbing to the bottom bar, and also to quickly adjust the webbing so that the bottom bar can be positioned

in parallelism to the intermediate slats and the tilt bar. Moreover, since the attaching mechanism is located in a recess in the bottom bar, it follows that the vertical expanse of webbing on each side of the bottom bar actually starts closer to the mid section of the bar edges so that when the bottom bar is tilted, the tendency of the webbing to be wrapped around one edge while relieved from the other edge is to a large extent overcome. Parallelism between the bottom bar and the intermediate slats in all positions thereof is thereby more truly maintained.

In the modification shown in Figs. 11 to 14, inclusive, provision has been made for compensating for variations in width of bottom bars, so that one construction can be utilized for bars of various width. In this embodiment the bottom bar 111 again is provided with a recess in the lower surface as before explained. The bar is apertured as at 145 for the passage of the elevator cord 114. Instead of a single plate 46, use is made of two plate members 146 of similar shape and configuration. These plates are apertured for the passage of attaching screws 150. As shown in Fig. 11, the plates when in position have their inner ends spaced apart so that the doubled-back end of the cord 114 can be introduced into a hole in the bottom bar without passing through apertures in a metallic plate.

Since the two complementary portions including plates 146 are identical in construction, description of one thereof will suffice. The plate 146 has side flanges 152, between which is pivotally secured a clip member 154 of substantially Z-shape, being similar to the clip 54. An auxiliary or spacer plate 160 is provided in this arrangement, such plate having two aligned slots 161 therein. Instead of using a single locking plate 56, use is made of two plates 156, each of which has an end portion 157 of substantially Z-shape. The inner edge of the plate 156 has an angularly extending tongue 162.

The operation and use of this arrangement is substantially as follows: The two plates 146 are fastened against the bottom wall of the recess with the outer edge of the plate aligned with the recess extremity in the bottom bar edge. The ends of the webbing 112 may then be locked in place in the same manner as shown in Fig. 1, such locking being illustrated clearly in Fig. 11. The two clips may then be locked against accidental displacement by positioning the spacer plate 160 against the upstanding ends of the clips, as shown, after which the two plates 156 may be assembled. This assembly is accomplished by passing the angular ear 162 through one of the slots 161 into engagement with the upstanding end of a clip 154. The outer end 157 of the plate 156 may then be snapped over the downwardly extending end portion of the clip to lock the plate in position. This arrangement has the advantage of being adaptable for use with bottom bars of various widths, since the parts thereof are so made as to permit the assembly thereof and the locking thereof in any of a number of positions. The locking plates 156 are dimensioned entirely in proportion to the clips 154, and since the slots 161 are of considerable length, it follows that locking can be accomplished, within limits, regardless of the distance between the inner ends of the plates 146. Again, quick attachment and adjustability of the webbing relative to the bottom bar can be accomplished.

In the modification shown in Figs. 15 and 16, use is made of plate members 246 similar in all

respects to the plates 146 with one exception; that is, that the side walls 252 thereof have inwardly extending tongues 270. In this arrangement, the spacer plate 160 and the separate locking plates 156 are dispensed with. In their stead use is made of a single flat plate 275 having detents 276 positioned substantially midway of the opposite ends thereof. With the ends of webbing 212 locked in place by the clips 254, the clips can be locked by sliding the plate 275 underneath the tongues 270, over the inner upstanding edges of the clips and over the bend near the ends of these clips. When the plate has been properly positioned the detents 276 engage the bent parts of the clips to resiliently hold the plate in position. In this arrangement the feature of quick attachment of the webbing and quick adjustment thereof is again incorporated.

From the foregoing, it will be seen that the present invention provides a Venetian blind construction of such character that the webbing supporting the intermediate slats can be quickly attached both to the tilt bar and to the bottom bar and can be quickly adjusted so that the intermediate slats, the tilt bar and the bottom bar are arranged in parallelism. The construction also has the advantage of providing an arrangement whereby parallelism of the tilt bar, bottom bar and the intermediate slats is substantially maintained in all positions of these members. The means by which these results are accomplished are of simple construction, efficient in operation, and inexpensive to manufacture. The attachment devices utilized in connection with the tilt bar also make possible the use of a tilt bar of less width than the bottom bar, since the vertical expanses of the webbing are spaced from the edges of the tilt bar. These devices do not interfere with the operation of the elevator cords as before explained. The attaching devices associated with the bottom bar, in addition to possessing the advantages of quick attachment and adjustability of the webbing, also include the advantage that they can be enclosed or seated entirely within a recess in the bottom bar. Another advantage residing in the attaching devices associated with the bottom bar and particularly with those shown in Figs. 1 to 4, inclusive, and 11 to 14, inclusive, resides in the ease with which webbing can be manipulated to separate the locking plates from the clips. Since the locking plates, whether of unitary construction or of plural construction, have Z-shaped end pieces, portions of which rest directly against the webbing, these plates can be disengaged from the clips by exerting a downward force on the webbing, which force is communicated to the portions of the locking plates contacting with the webbing so that the plates are sprung out of engagement with the clips.

An important advantage residing in the structures used for attaching webbing to the bottom rails of the blinds is found in the arrangement whereby the elevator cords are arranged for removal without interference with the web attaching clips. As shown in the drawings, the elevator cords pass through openings in the bottom bar, and the ends of the cords having metallic sleeves therearound are introduced into spaced openings adjacent the through openings. These openings are all positioned between the web attaching clips. Should it be desired at any time to remove any or all of the intermediate slats for cleaning or for any other purpose, it is only necessary to remove the locking plates in the

manner before described, after which the elevator cords can be detached from the bottom bars and removed from the assembly. Once the elevator cords have been so removed any or all of the intermediate slats can be removed for cleaning or for other purposes without in any way disturbing the attachment of the webbing either to the bottom bar or to the tilt bar.

Figures 18 and 19 show modifications of the invention so far as the same relates to attaching means adapted to be fastened to the bottom bar of a Venetian blind assembly. In this Figure 18, 300 represents a fragment of a bottom bar, while 301 represents a portion of the plate to be fastened in a recess in the bottom bar. This plate 301 may be a single plate, as shown in Fig. 1, or may be a part of a pair of plates, as shown in Figs. 11 and 15. The outer edge of the plate 301 is turned up, as shown at 302, to provide a flange spaced a short distance from a part of the attaching clip 304 secured to the side walls of the plate 301 in the manner previously described. In the use of this modification the webbing 12 passes over the upstanding edge of the flange 302 and is locked in place by a part of the clip 304.

In the arrangement shown in Fig. 19 the parts are similar to those shown in Fig. 18, with the exception that the flange 302 has been omitted, and in lieu thereof the plate 300' has an integrally formed rib 302' spaced inwardly a short distance from the edge thereof. Due to this arrangement it follows that the clip 304' must be pivotally mounted further from the outer edge than the mounting shown in Fig. 18.

The advantages of the constructions shown in Figs. 18 and 19 reside in the provision of an ancillary holding means for preventing the web from becoming separated from the plate, such ancillary holding means serving to take part of the strain normally applied to the clips. In each of these arrangements the webbing passes over an upstanding member (whether this member be a flange or rib) and is then securely held by the clip juxtaposed to the upstanding part. Since the upstanding part serves to relieve the clip of some of the strain normally present, it follows that the metal used in making the plate and its integral side portions can be made of lighter gauge than would be possible if the upstanding portion should be eliminated.

It is to be understood that the invention is not to be limited to the illustrated embodiments, since it is capable of further modification, but is to be limited only by the scope of the following claims.

I claim:

1. A webbing securing device for attachment wholly within a recess in a bar of a Venetian blind or similar arrangement, said device comprising a flat metallic plate, side walls extending from said plate, a clip pivotally mounted between said side walls, and a locking plate resiliently engaging and covering said clip.

2. A webbing securing device for attachment wholly within a recess in a bar of a Venetian blind or similar arrangement, said device comprising a flat metallic plate extending substantially across said bar in said recess, side walls extending from said plate toward the extremities of said bar, a pair of substantially Z-shaped clips pivotally mounted between said side walls near the ends thereof, and a locking plate having the ends thereof bent into substantially Z-

shape for resiliently engaging portions of said clips and for covering said clips.

5 3. A webbing securing device for attachment wholly within a recess in a bar of a Venetian blind or similar arrangement, said device comprising a pair of similarly shaped flat plates having side walls, a substantially Z-shaped clip pivotally mounted between the side walls of each plate, and means for locking said clips in position in which the ends of webbing are secured thereby.

10 4. A webbing securing device for attachment wholly within a recess in a bar of a Venetian blind or similar arrangement, said device comprising a pair of similarly shaped flat plates having side walls, a substantially Z-shaped clip pivotally mounted between the side walls of each plate, means for locking said clips in position in which the ends of webbing are secured thereby, said means being made up of a slotted spacer

plate adapted to rest against the inner ends of said clips, and a pair of plates, each having one end of substantially Z-shape, and each having a depending finger at the other end thereof, said Z-shaped ends and said fingers being adapted to resiliently engage the outer and inner portions respectively of said clips with the fingers extending through the slots in the spacer plate.

5 5. A webbing securing device for attachment wholly within a recess in a bar of a Venetian blind or similar arrangement, said device comprising a pair of plates, each having side walls, a substantially Z-shaped clip pivotally mounted between the side walls of each plate, said side walls being provided with inwardly extending tongues at the edges thereof, and means for locking said clips comprising a flat metallic plate insertable under said tongues and over said clips.

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