Dec. 30, 1952 H. NELSON 2,623,581

VENETIAN BLIND BAR ORGANIZATION

Filed Aug. 30, 1948 2 SHEETS—SHEET 1

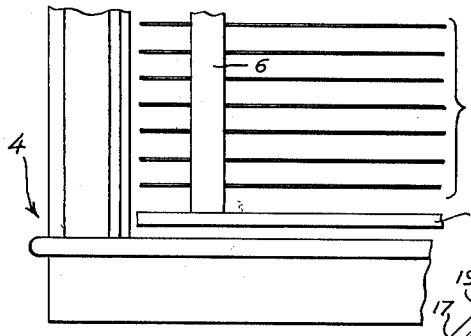
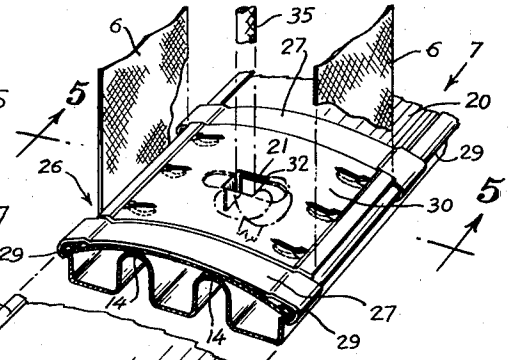


FIG. 1



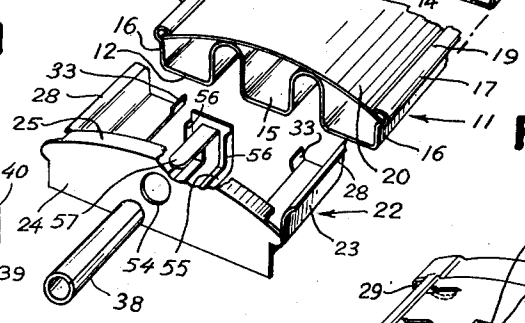


FIG. 2

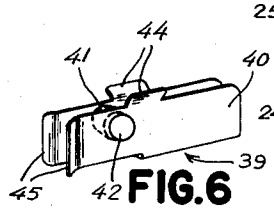


FIG. 6

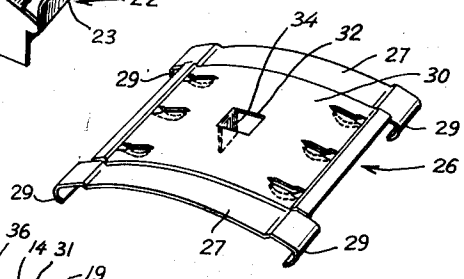


FIG. 3

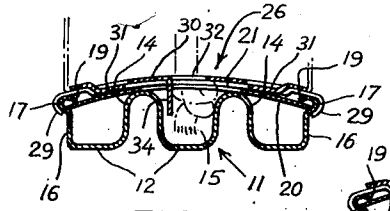


FIG. 5

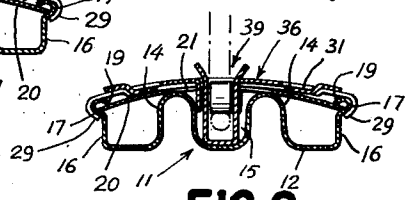


FIG. 8

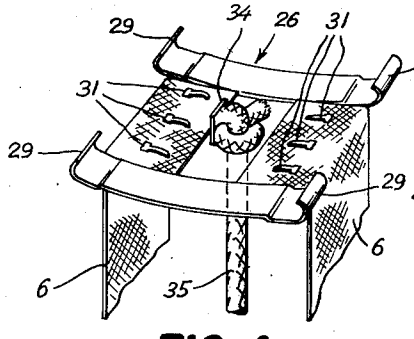


FIG. 4

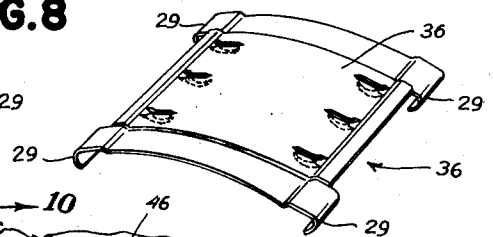


FIG. 7

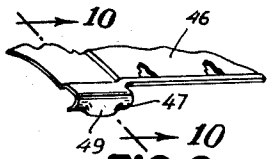


FIG. 9

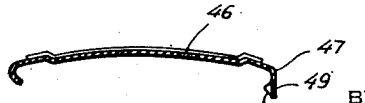


FIG. 10

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VENETIAN BLIND BAR ORGANIZATION

Filed Aug. 30, 1948 2 SHEETS—SHEET 2

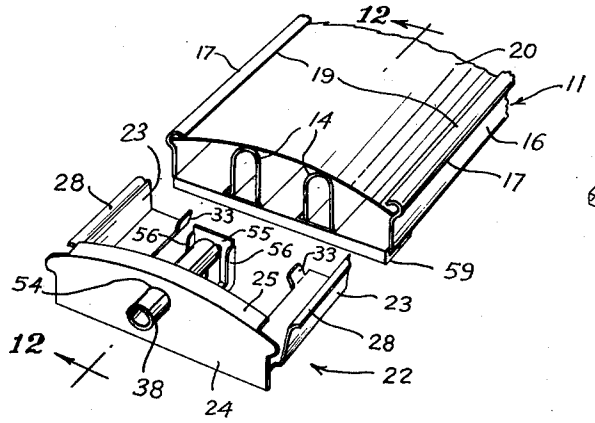


FIG. 11

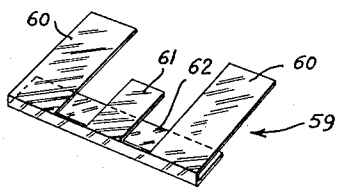


FIG. 13

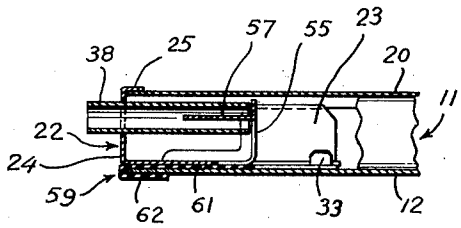


FIG. 12

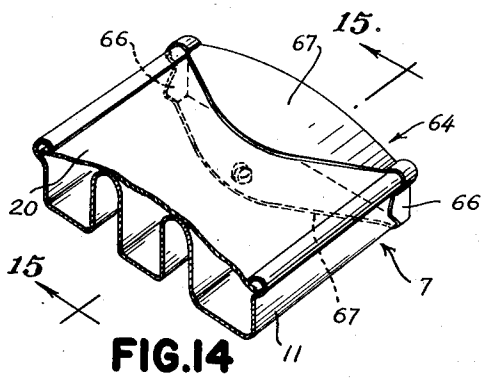


FIG. 14

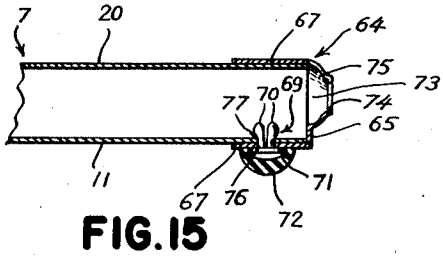


FIG. 15

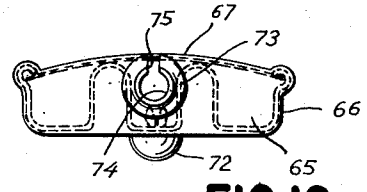


FIG. 16

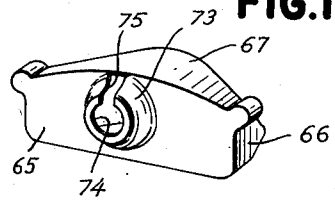


FIG. 17

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UNITED STATES PATENT OFFICE

2,623,581

VENETIAN BLIND BAR ORGANIZATION

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Application August 30, 1948, Serial No. 46,737

5 Claims. (Cl. 160—173)

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This invention relates to Venetian blinds. The invention includes a new and improved form of bar for such blinds, as well as a bar organization and parts therefor. The bar, with little or no change, is usable as a bottom bar, head bar or tilt bar.

Venetian blinds are customarily provided with a bottom bar extending for the width of the blind and to which the lower ends of the ladder tapes, and usually the lift cords, are attached. This bar is usually thicker and heavier than the intermediate blind slats, and in the past has, in most instances, been made of wood even though the intermediate slats have often been made of metal.

In the form shown of the present invention, the bottom bar of the blind is formed of an assembly of rolled and stamped sheet metal parts consisting principally of a channel-shaped body and a resilient transversely-arched sheet metal cover for the open side of the body. Preferably, the intermediate slats of the blind are made of metal and the lowermost slat constitutes the cover for the bottom bar. The assembly is also useful as a metal tilt bar or head bar. This invention is in some respects an improvement over that shown in my copending application Serial No. 780,653, filed October 18, 1947.

Various fittings, such as fittings for closing the ends of the channel-shaped body and anchors for securing the ends of the ladder tapes and lift cords of the blind to the bottom bar, complete the bottom bar assembly. The component parts of the bar are held in assembled relation by the interfitting of the parts, separate fastening devices or welding of the parts of the assembly being unnecessary.

An object of the present invention is to provide an improved rigid, durable, easily-assembled bottom bar for a Venetian blind.

Another object is to provide a Venetian blind bar that may be fabricated economically of rolled and stamped sheet metal parts.

A further object is to provide an improved channel-shaped body suitable for use in a Venetian blind bottom bar, head bar or tilt bar.

A further object is to provide improved end fittings and ladder tape fittings for Venetian blind bars.

A still further object is to generally improve Venetian blind bars.

Further objects and objects relating to details and economies of construction and assembly will more definitely appear from the detailed description to follow.

My invention is clearly defined in the appended claims. Where parts are, for clarity and convenience, referred to on the basis of their oriented position shown in the accompanying drawing, no limitation as to positioning of the structure is to be implied, since it will be understood that the structure may be inverted. Also in both the description and the claims, parts at times may be identified by specific names for clarity and convenience, but such nomenclature is to be understood as having the broadest meaning consistent with the context and with the concept of my invention as distinguished from the pertinent prior art. The best form in which I have contemplated applying my invention is illustrated in the accompanying drawing forming part of this specification, in which:

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Fig. 1 is an elevation of a portion of a Venetian blind embodying the present invention, the adjacent portion of the window casing also being shown.

Fig. 2 is a fragmentary perspective view of the bottom bar assembly of a first form of the invention, an end fitting being shown in exploded relation, portions of the bottom bar being cut away and portions of the ladder tape and lift cord being indicated diagrammatically.

Fig. 3 is a perspective view of a lift cord and ladder tape anchor for the assembly shown in Fig. 2.

Fig. 4 is a perspective view of the anchor shown in Fig. 3 with lift cord and ladder tape attached, this organization being shown in inverted position.

Fig. 5 is a vertical cross section of the bottom bar assembly taken on the line **5—5** of Fig. 2 the lift cord and ladder tape being indicated in dot-dash lines.

Fig. 6 is a perspective view of a pulley fitting for incorporation in a second form of the invention for use in four-lift cord blinds.

Fig. 7 is a perspective view, similar to Fig. 3, of a ladder tape anchor for use in a third form of the invention.

Fig. 8 is a section similar to Fig. 5 of the bottom bar according to the second form of the invention.

Fig. 9 is a fragmentary perspective view of an alternative form of lift cord anchor for use in any of the forms of the invention and having specially shaped resilient fingers.

Fig. 10 is a vertical section of the alternative form of ladder tape anchor, taken on the line 10—10 of Fig. 9.

Fig. 11 is a fragmentary perspective view of the bottom bar and end fitting assembly shown in Fig. 2, certain parts being shown in exploded

relation and a rubber bumper having been added to the assembly.

Fig. 12 is a vertical section of the structure shown in Fig. 11 with the parts in assembled relation, taken on the line 12—12 of Fig. 11.

Fig. 13 is a perspective view of the rubber bumper shown in Figs. 11 and 12.

Fig. 14 is a fragmentary perspective view of a bottom bar equipped with an alternative end fitting which may be used to replace the end fitting shown in Figs. 2 and 11.

Fig. 15 is a vertical section taken on the line 15—15 of Fig. 14.

Fig. 16 is an end view of the bottom bar and end fitting shown in Figs. 14 and 15.

Fig. 17 is a perspective view of the end fitting shown in Figs. 14, 15 and 16.

The general organization of a Venetian blind is shown in Fig. 1. The window frame 4 is of a usual type and the Venetian blind is mounted therein, only a lower corner of the blind being shown. The blind comprises a series of intermediate slats 5 supported in the customary manner by two or more ladder tapes 6 (one shown). A bottom bar 7 is secured to the lower end of the ladder tapes 6, as is usual.

Referring to Fig. 2, the bottom bar organization there shown includes a channel-shaped sheet metal body designated as a whole by 11. This body is formed of relatively rigid sheet metal and may conveniently be formed by rolling. The body 11 has a uniform cross section throughout its length, the cross-sectional shape being seen in Figs. 2 and 5. The bottom wall 12 of the body 11 is generally flat except for two spaced rounded corrugations 14—14 extending for the length of the body, which project vertically upward as shown. The corrugations 14—14 are open, being formed with spaced vertical walls; and the corrugations are located symmetrically with respect to the longitudinal center line of the body 11 so as to leave a central passage 15 extending for the length of the body.

The sides 16—16 of the body 11 extend vertically upward for a short distance and at their tops are provided with outwardly-projecting beads 17—17 from which edges 19, 19 extend inwardly. The corrugations 14—14 extend upwardly slightly higher than the inturned edges 19—19 of the body.

The edges 19—19 of the body 11 may be turned downwardly in addition to extending inwardly to partially conceal the extreme terminal portions of the edges. This configuration is shown in Figs. 2 and 5. This configuration is particularly desirable if the body 11 is formed of strip metal which is painted when in flat form prior to rolling into the shape shown, since in the rolling process some of the paint may be scraped from the extreme terminal edge portions.

A cover strip 20 is provided for closing the open side of the channel-shaped body. This cover strip is formed of resilient sheet material such as metal and is preferably formed of a resilient transversely-arched intermediate slat of the blind having an opening 21 formed for the passage of each lift cord. The cover strip 20 may be and desirably is in all respects similar to the other intermediate blind slats.

The body 11 and cover strip 20 are so proportioned that the cover strip may be telescoped or otherwise fitted into the body, the lateral edges of the cover strip being received within the inside of the beads 17—17 and immediately below the inturned edges 19—19. In order to prevent fortuitous movement of the cover strip 20 relative to the body 11, the corrugations 14—14 are formed sufficiently high so that as the cover strip 20 is placed within the body, it is necessary to slightly increase the transverse arch of the cover strip, the resilience of the cover strip biasing its lateral edges into frictional engagement with the undersides of the inturned edges of the body and also biasing its central portion into frictional engagement with the tops of the corrugations 14—14.

The cover strip 20 may be assembled with the body 11 by forcibly arching the cover strip upwardly until both edges thereof may be entered into the beads 17—17 at some point along the length of the strip. Then, by running a suitable tool, such as a knife, along the remainder of the strip, the strip may be sprung into engagement with the body, the cover strip 20 assuming the same position as it would if telescoped endwise into the body 11.

Each open end of the channel-shaped body 11 may be closed by an end fitting 22, this fitting being somewhat similar to the end fitting disclosed in my above-mentioned copending application Serial No. 780,653. In the fitting shown herein, the end plate 24 of the end fitting 22 extends outwardly to cover the end of the body 11 at the beads 17—17. Also, a curved top flange 25 overlies the end of the cover strip 20, the end fittings further serving to prevent fortuitous displacement of the cover strip.

The base portion of the end fitting 22 (Fig. 2) includes a pair of spaced flanges 23, 23 generally L-shaped in cross section and telescoped within the body 11 between the sides 16—16 and the corrugations 14—14 to frictionally engage the body 11 and hold the fitting against displacement. The upper edge of each flange 23 preferably is provided with an outwardly-directed flange 28 for engaging a side 16 of the body 11, and the inner edge of each flange 23 is preferably provided with a terminal inwardly-directed lug 33 for engaging a side of one of the corrugations 14—14.

The end fitting 22 is adapted for reception of a hollow tube or pin 38 when the bar is to be used as a bottom bar in conjunction with hold-down brackets such as shown (for example) in my U. S. Patent 2,402,769, issued June 25, 1946, or when the bar is used as a tilt bar as shown (for example) in my above-referred-to application Serial No. 780,653. The vertical plate portion 24 is provided with a centrally-located round hole 54 for reception of the pin 38.

Beneath the hole 54, a central base flange 55 projects inwardly from the lower edge of the end plate 24 between the flanges 23, 23. The flange 55 is turned upwardly at its free end to provide a vertical portion spaced from and parallel to the plate 24. The integral gussets 56, 56 may be turned up from the flange 55 (Fig. 2) to reinforce the flange against bending. A prong 57 is struck from the flange 55 to extend from a point near the free end of the flange towards the hole 54, the proportions of the prong being such that it will enter tightly within the pin 38 so as to hold the inner end of the pin in alignment and frictionally engage the pin to retain it against fortuitous displacement.

In conjunction with the end fitting 22, a bumper 59 (Figs. 11–13) may be used to prevent marring the window sill by the end of the bottom bar 7. The bumper 59 may be molded or otherwise formed of a rubber, including soft, yield-

able material such as artificial rubber and plastic. This bumper has a plurality of thin flanges, 60—60 and 61 proportioned to lie on the inside bottom wall of the body 11 between and on each side of the corrugations 14—14. The bumper also has an exterior flange 62 extending parallel to and slightly spaced from flanges 60—60 and 61 to extend along the bottom outer surface of the bar 11 for a short distance. The bumper 59 furnishes an elastic yielding end portion for the body 11 and, in addition, the flange 62 covers the end of the bottom 12 of the body 11 (the only portion of the end of body 11 not covered by the fitting 22); and the flanges 60—60 and 61 form a yieldable packing between the body 11 and the flanges 23—23 and 55 of the end fitting to aid in retaining it within the body.

Figs. 2, 3 and 4 show the ladder tape anchor 26 used in the first form of the invention. This ladder tape anchor is preferably formed of resilient sheet metal and has two marginal bands 27—27, one at each end of the anchor and shaped to conform closely with the cover strip 20. Resilient fingers 29, one at each end of each of the bands 27—27 serve as extensions of the bands and conform to the contour of the beads 17—17 of the body 11.

The central portion 30 of the anchor 26, lying between the bands 27—27, is correspondingly curved to conform with the top surface of the bottom bar 7, including the cover strip 20 and the inturned edges 19—19 of the body 11. The entire central portion 30 is displaced upwardly slightly from the bands 27—27 to provide a space between the central portion of the anchor 26 and the top surface of the cover strip 20 for reception of the tape branches of ladder tape 6, as shown in Fig. 4. A series of prongs 31 projecting inwardly generally parallel to the under surface of the central portion 30 are struck downwardly therefrom and serve to impale the ends of the ladder tape branches as shown in Fig. 4. If desired, the prongs 31 may be flattened or clinched toward the under surface of the central portion 30 after the ladder tape branches have been impaled thereon.

The central portion 30 of each ladder tape anchor 26 is provided with a centrally-located hole 32 which is preferably rectangular in outline. The hole 32 is formed to receive a lift cord of the blind, the lift cord in the first form of the invention then being knotted in a simple overhand knot as shown in Fig. 4 in order to prevent withdrawal of the lift cord from the anchor. The metal struck from the central portion 30 of the anchor 26 in forming the hole 32 in this form of the invention is preferably left as a downwardly-projecting tab 34, the purpose of this tab being hereinafter explained.

In the assembling of the bottom bar embodying the first form of the present invention, the body 11 and cover strip 20 may first be assembled and the end fittings 22 inserted at that time or at any later time. The lower ends of the two branches of each ladder tape 6 are secured to a ladder tape anchor 26 as above described and an end of a lift cord 35 is threaded through the hole 32 of the anchor, the lift cord having already been reeved through the rest of the blind. The lift cord 35 is then knotted as described to retain the cord within the anchor 26. It will be understood that the separate anchors 26 are used for the several ladder tapes of the blind.

The anchor 26 may then be attached to the rest of the bottom bar assembly by placing the

anchor on the top surface of the assembly and pressing downwardly on the central portion of the anchor so as to temporarily flatten the anchor somewhat and slightly spread the resilient fingers 29, causing them to pass over and make snap engagement with the longitudinal beads 17 of the body 11 and retain the anchor in position. When attaching the anchor 26, the knot in the end of the lift cord 35 is first pressed through the opening 21 in the cover strip 20 and then, as the anchor is pressed into position, the tab 34 of the anchor is engaged within the opening 21 of the cover strip as indicated in Figs. 2 and 5. The opening 21 serves the dual purpose of initially locating the anchor 26 in proper position and thereafter preventing fortuitous displacement of the anchor 26 along the bottom bar.

The ladder tape anchor 36 of the second form of my invention is shown in Figs. 7 and 8. This anchor is the same as the anchor 26 previously described except that in forming the hole 37 for the lift cord the metal is entirely removed rather than being struck down to form a downwardly-projecting tab such as tab 34 of the anchor 26.

For the second form of the invention, which is employed for four-lift cord blinds, the cord is reeved in the usual way for such blinds, passing downwardly through the slats of the blind adjacent to one of the ladder tapes, along the bottom bar of the blind and upwardly through the slats of the blind adjacent another ladder tape. Such a construction requires a pulley or other friction-reducing cord guide on the bottom bar adjacent to each ladder tape.

In the form of the invention shown, a cord guide assembly 39 is provided which is best shown in Figs. 6 and 8. This cord guide assembly consists of a U-shaped metal body 40 adapted to fit within the central passage 15 of the body 11 of the bottom bar. A roller or sheave 41 is pivotally mounted within the body 40 by a rivet 42 passing through the body, the roller reducing the friction upon operation of the lift cord. The base of the U-shaped formation comprising the body 40 may be cut away beneath the roller 41 to provide additional clearance for the lift cord.

The body 40 of the cord guide assembly 39 is provided with a pair of upwardly-projecting diverging ears 44 which serves as bearing surfaces to prevent fraying of the lift cord. As shown in the assembly of Fig. 8, these ears also project upwardly through the opening 21 of the cover strip 20 and the hole 37 of the ladder tape anchor 36, thereby serving to prevent movement of both the pulley assembly 39 and the ladder tape anchor 36 longitudinally of the bottom bar. The end of the body 40 adjacent to the roller 41 is also provided with slightly diverging flanges 45 to prevent fraying of the lift cord.

In the assembly of this second form of the invention, the lift cord is preferably reeved through the blind, including the cover strip 20, the cord guide assembly 39 and the ladder tape anchor 36, before the body 11 is engaged with the cover strip. After the lift cord has been so reeved, the body 11 may be engaged with the cover strip 20, the cord guide assemblies 39 being inserted within the passage 15 in the body at this time. After assembly of these parts, the ladder tape anchors 36, to which the ladder tape branches have been already attached, may be clipped on to the bottom bar as described above, one anchor being used for each ladder tape. The end fittings 22 may, of course, be inserted in the

ends of the body 11 at any time after the body and cover strip are assembled.

The ladder tape anchors 26 and 36 may each be provided with resilient fingers of the form shown in Figs. 9 and 10. The anchor 46 shown in part in these figures is similar to the anchors above described except that the resilient fingers 47 project vertically downward at their midportion 49 so as to provide an opening 50 between the finger and the outer surface of the body 11 after assembly. This opening facilitates the insertion of the blade of a screw driver or any other hand tool for prying the ladder tape anchor from the body 11, for disassembling the bottom bar for any reason. It is contemplated that the resilient fingers 47 might be provided on one side only of the ladder tape anchor to aid in disengaging that side, the other side being provided with resilient fingers 29.

A second form of end fitting 64 is shown in Figs. 14 to 17 which may be utilized in any of the above-described assemblies to replace the end fitting 22. The end fitting 64 comprises a drawn sheet metal stamping having a generally flat end wall 65 the outline of which conforms generally with the cross section of the bottom bar 7. Peripheral flanges 66—66 and 67—67, which may be unitary and extend continuously about the end wall 65, overlie the sides of the bottom bar 7 to retain the fitting 64 in telescoped position over an end of the bottom bar. The flanges 66—66 and 67—67 may be given the outline shown for appearance and ease of manufacture.

The end fitting 64 may be positively retained on the bottom bar 7 by a snap-in button 69 of conventional design. The button 69 is retained within aligned holes 76 and 77 in the bottom flange 67 of the end fitting and the bottom wall of the body 11 by diverging resilient legs 70—70. The head 71 of the button may be covered with a rubber pad 72 to serve as a bumper and prevent marring of the window sill by the bottom bar 7.

The end fitting 64 may be adapted for use with a hold-down bracket of the type in which the bracket has a horizontally-projecting pin that engages the bottom bar. To this end, the wall 65 is provided with an outwardly-pressed central portion 73 of generally conical form provided with a round central hole 74 and slot 75 opening upwardly from the hole through the portion 73 to permit introduction of the pin of the hold-down bracket.

If desired, the end fitting 64 may be molded to shape and formed of rubber or preferably soft rubberlike plastic, in which case the button 69 may be eliminated.

This second form of end fitting completely covers the ends of the body and cover slat of the bottom bar 7, thus concealing any rough or unpainted ends resulting from the cutting to proper length of the bottom bar body stock and slat stock.

I claim:

1. In the art of Venetian blinds, a bar suitable for a bottom bar or tilt bar, said bar comprising a generally rectangular hollow sheet metal body having an outwardly-projecting longitudinal bead formed on each lateral side adjacent the top face of the bar, and anchors for attaching ladder tape ends to the bar, each of said anchors comprising a resilient sheet metal stamping adapted to overlie the top face of the bar and having resilient fingers shaped to extend about the longitudinal beads to retain the anchor in position, said anchors having means to engage the ends of the ladder tape branches.

2. In the art of Venetian blinds, a bar suitable for a bottom bar or tilt bar, said bar comprising a generally rectangular hollow sheet metal body having an outwardly-projecting longitudinal bead formed on each lateral side adjacent the top face of the bar, and anchors for attaching ladder tape ends to the bar, each of said anchors comprising a resilient sheet metal stamping adapted to overlie the top face of the bar and having terminal pairs of spaced resilient fingers shaped to extend about the longitudinal beads to retain the anchor in position, each anchor having a central portion provided on its underface with inwardly-projecting deformable prongs adapted to pierce and retain the ends of ladder tape branches.

3. In the art of Venetian blinds, a bottom bar having a transversely-arched upper face and a ladder tape anchor for said bar, said ladder tape anchor comprising a resilient transversely-arched sheet metal stamping adapted to overlie the upper face of the bar and having downwardly-projecting resilient fingers adapted to engage the sides of the bar, the upper face of the bar being provided with an opening and the ladder tape anchor having a downwardly-directed projection adapted to be received within said opening.

4. In the art of Venetian blinds, a bottom bar having a transversely-arched upper face and a ladder tape anchor for said bar, said ladder tape anchor comprising a resilient transversely-arched sheet metal stamping adapted to overlie the upper face of the bar and having downwardly-projecting resilient fingers adapted to engage the sides of the bar, the upper face of the bar being provided with a central opening to receive a lift cord and the ladder tape anchor having a downwardly-directed projection adapted to be received within said opening.

5. A bottom bar for a Venetian blind comprising a channel-shaped body having an open side provided with a longitudinal groove, a cord guide assembly fitting within said groove, a cover for closing the open side of the body and covering the groove and a ladder tape anchor overlying the cover and resiliently engaging the sides of the bottom bar, the cord guide assembly being provided with a projection passing through aligned openings in the cover and ladder tape anchor.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
667,567	Page	Feb. 5, 1901
749,391	Lutz	Jan. 12, 1904
1,668,953	Erickson	May 8, 1928
2,079,852	Grassby	May 11, 1937
2,105,082	Johnson	Jan. 11, 1938
2,111,980	Lawson	Mar. 22, 1938
2,114,057	Lorentzen	Apr. 12, 1938
2,123,366	Kehr et al.	July 12, 1938
2,158,826	Lorentzen	May 16, 1939
2,161,414	Hammer	June 6, 1939
2,260,726	Rosenbaum	Oct. 28, 1941
2,405,255	Horton	Aug. 6, 1946
2,573,163	Thomson	Oct. 30, 1951

FOREIGN PATENTS

Number	Country	Date
14,109	Great Britain	1898