Dec. 22, 1953 H. K. LORENTZEN 2,663,367

VENETIAN BLIND BOTTOM BAR

Filed Sept. 13, 1949 2 Sheets-Sheet 1

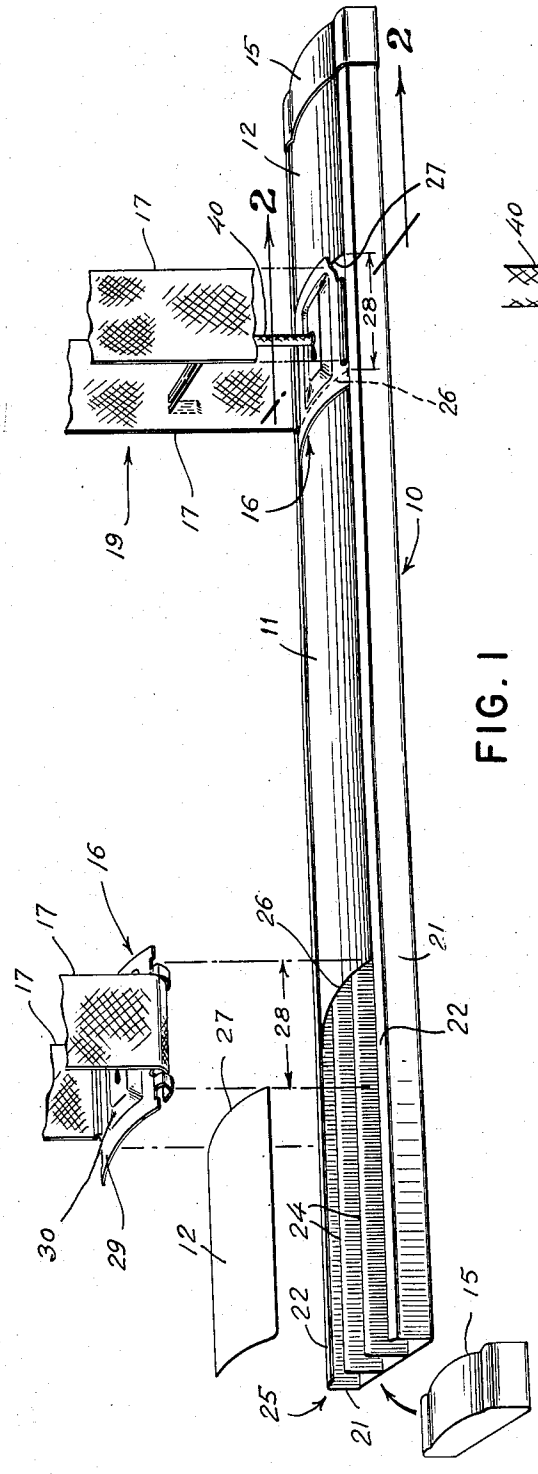


FIG. 1

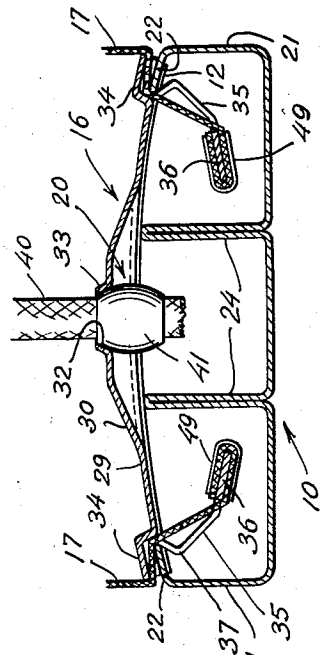


FIG. 2

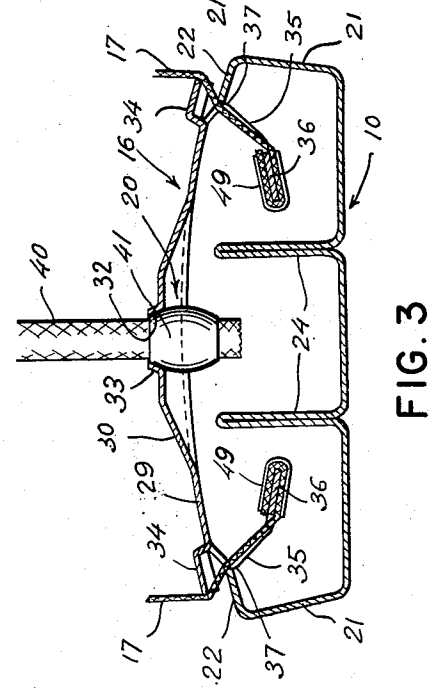


FIG. 3

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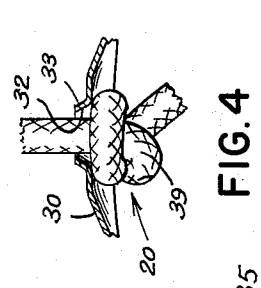


FIG. 4

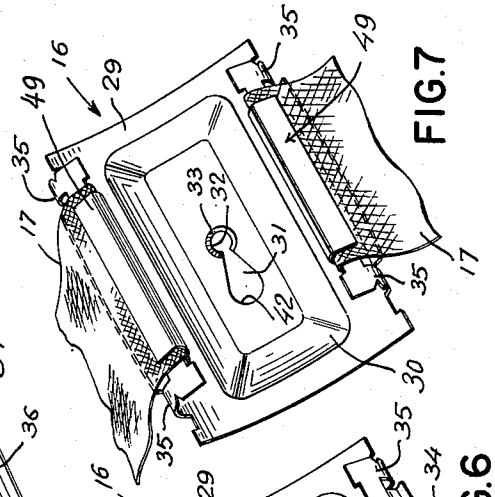


FIG. 7



FIG. 8

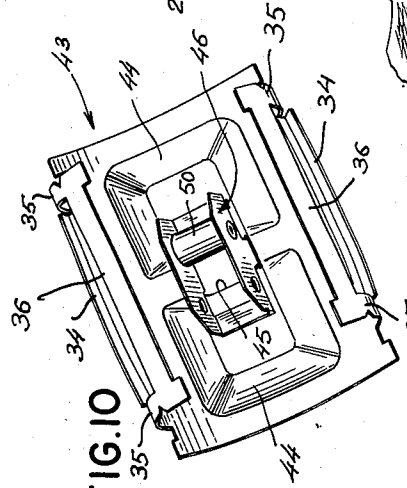


FIG. 10

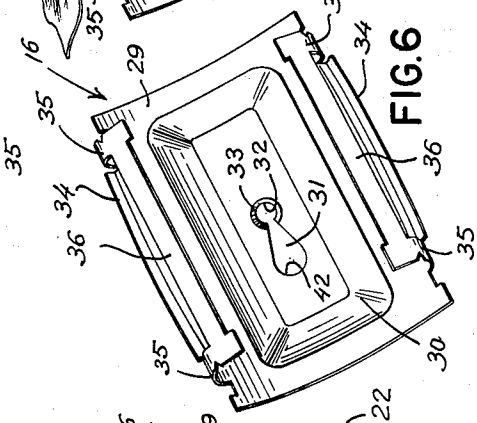


FIG. 6

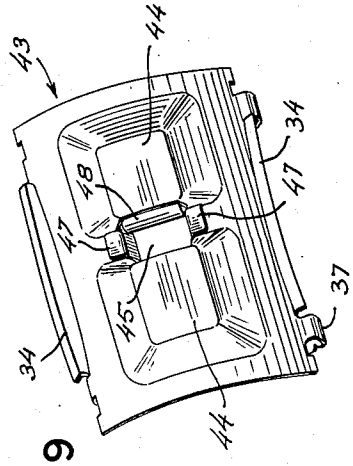


FIG. 9

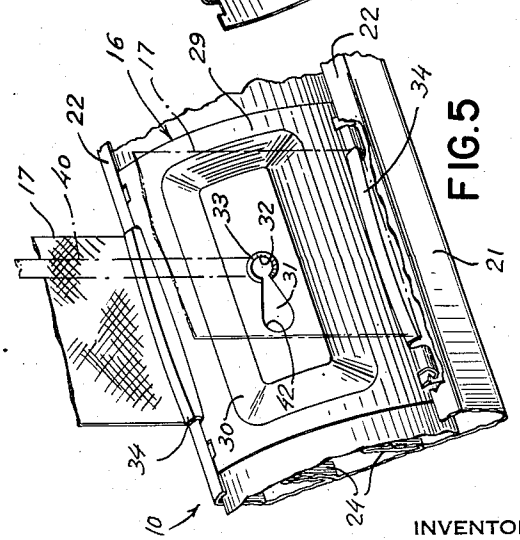


FIG. 5

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2,663,367

VENETIAN BLIND BOTTOM BAR

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Application September 13, 1949, Serial No. 115,407

9 Claims. (Cl. 160—173)

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This invention relates to Venetian blinds, and more particularly to a bottom bar organization therefor.

A Venetian blind is essentially an assembly of superimposed articulated slats which are suspended from a head bar extending across the top of the blind and on which is mounted mechanism for raising and tilting the slats of the blind. This mechanism includes a tilt bar from which ladder tapes depend, the ladder tapes carrying the slats. Attached to the bottoms of the ladder tapes there is a bottom bar, and lift cords are attached to the bottom bar for raising the bottom bar and thereby picking up the slats to raise the blind.

Venetian blinds are made in large numbers and it is desirable to have a bottom bar thereon which can be economically manufactured on a quantity production basis. It is equally desirable that the bottom bar organization be one which can be incorporated into the blind with facility without the use of special tools or equipment. Also it is important that the bottom bar be securely attached to the ladder tapes and lift cords, since these attachments are subject to high stress when the blind is allowed to drop from fully closed position to fully open position.

A general object of the invention is to provide a Venetian blind bottom bar organization which can be rapidly and economically manufactured on a quantity production basis and which can be satisfactorily incorporated into the blind in a facile manner.

Other objects of the invention are to provide such a bottom bar organization in which the parts thereof are adapted for manufacture by rolling or stamping from sheet metal, to provide such a bottom bar which affords secure attachment to the lift cords and ladder tapes, to provide such a bottom bar which can be quickly attached to and detached from the lift cords and ladder tapes, to provide such a bottom bar which can be incorporated into the blind and removed therefrom without the use of special tools or equipment, and to provide such a bottom bar which can be used in both two-lift-cord blinds and four-lift-cord blinds.

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

In the form shown of the present invention a rolled sheet metal channel member is adapted to extend along the length of the bottom of a Venetian blind. The channel has parallel vertical side walls the top portions of which are rolled inwardly, forming inwardly-extending flanges. A cover member of lesser length than the channel is centrally located thereon. At each end of the central cover member arched fittings are secured to the channel by snap-in engagement with the channel. These fittings are adapted to secure both the lift cords and the ladder tapes. End cover members are secured to the channel and extend from the outward ends of the aforesaid fittings to the ends of the channel. A cap member is telescoped over each end of the channel and the adjacent end portion of the cover member. In blinds having four lift cords two additional arched fittings are utilized and, therefore, additional cover members are required.

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My invention is clearly defined in the appended claims. 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:

Fig. 1 is a fragmentary isometric view illustrating a bottom portion of a Venetian blind, some parts being in exploded relationship to facilitate understanding of the structure.

Fig. 2 is a section, on a larger scale, taken generally on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view similar to Fig. 2 but showing the parts in transient position during assembly.

Fig. 4 is a fragmentary sectional view illustrating a knotted lift cord attached to the fitting shown in Figs. 2 and 3.

Fig. 5 is a fragmentary isometric view, showing a fitting-attached portion of the bottom bar.

Fig. 6 is an isometric view of the fitting per se that is shown in Fig. 5, the fitting being inverted.

Fig. 7 is a view similar to Fig. 6, showing the two branches of a ladder tape attached to the fitting.

Fig. 8 is an isometric view of one of the U-shaped tape-securing clips that are shown in Fig. 7.

Fig. 9 is an isometric view of a modified fitting for use where the Venetian blind has four lift cords.

Fig. 10 is an isometric view showing the fitting of Fig. 9 in inverted position.

Reference will now be had to the drawings, and more particularly to Fig. 1 which shows a channel 10 for extending along the bottom of a Venetian blind (not shown). Attached to the top of the channel are centrally located cover member 11 and end cover members 12, 12, all of which are transversely arched. End caps 15, 15 are adapted to be telescoped over each end of the channel 10 and the adjacent end of the end cover member 12. Fittings, designated as a whole by 16, 16, are adapted to overlie adjacent portions of the cover members 11 and 12, 12 and to be attached to the top of the channel 10 by snap-in engagement therewith. Vertical branches 17, 17 of a ladder tape, designated as a whole by 19, and an end of a lift cord 40 are attached to each fitting 16 before the fitting is secured to the channel 10.

The channel 10 has parallel vertical side walls 21, 21, the top portions of which are provided with inwardly extending flanges 22, 22. Parallel spaced vertical webs 24, 24 are positioned as shown between the walls 21, 21 and extend slightly higher than the walls 21, 21, the tops of the walls 21, 21 and webs 24, 24 defining an arch. The channel 10 may be rolled from sheet metal and may be the same as the channel disclosed in my copending application S. N. 780,653 filed October 18, 1947.

The cover member 11, which is of lesser length than the length of the channel 10, and which has ends 26, 26, is secured to the top of the channel 10 centrally thereof. End cover members 12, 12, are also secured to the top of the channel 10. These end cover members have inner ends 27, 27, and they extend outwardly to the ends 25, 25 of the channel. The confronting ends 26, 27 and 26, 27 of the three cover members define gaps 28, 28 for the mounting of the fittings 16, 16 as indicated in Fig. 1.

Each of cover members 11 and 12, 12 may be telescoped into the channel 10 from one of the ends of the channel, being inserted with the inwardly-extending flanges 22, 22 of the channel overlying the longitudinal edges of the cover members. The webs 24, 24 abut the bottom surface of the cover member as shown in Fig. 2.

Each cover member may also be put in place by in inserting one of its longitudinal edges under an inwardly-extending flange 22, and temporarily arching the cover member sufficiently to permit the opposite longitudinal edge of the cover member to be inserted under the other flange 24. The three cover members are of the same cross section and they may be cut from Venetian blind slat stock of standard form. Preferably the original curvature of the cover members is not as great as that defined by the tops of the webs 24, 24 in conjunction with the bottom surface of the inwardly-extending flanges 22, 22. Therefore as the cover member is inserted its transverse curvature is increased and, due to the resilience of the cover, its longitudinal edges yieldingly hug the flanges 24, 24.

The cap members 15, 15, which are telescoped onto the ends of the bar, may be made from any suitable material such as plastic or sheet metal. Preferably, the skirt of the cap has substantially the same cross sectional configuration as the outside outline of channel 10 with cover 12 in place, the skirt being of such size as to make a frictional holding fit on the bottom bar.

Fittings 16, 16 are first attached to a Venetian blind by attaching each fitting to a ladder tape and its companion lift cord.

Each fitting 16 is a one-piece sheet metal stamping of generally rectangular form, having an arched plate portion 29 adapted to span across the channel 10. The center portion 30 of the plate 29 is embossed upwardly and is provided with a keyhole slot 31 (see Figs. 5–7). The metal bounding the small end 32 of the slot 31 is further elevated to form a downwardly-facing socket 33.

An enlarged lift cord end 20, which may be formed by securing a metal bead 41 to the lift cord (Figs. 2 and 3), is inserted in the large end 42 of the keyhole slot 31. The lift cord 40 is then shifted to the small end 32 of the slot and the enlarged end 20 of the lift cord 40 is seated within the downwardly facing socket 33 (see Figs. 2, 3 and 8). The small end 32 of the slot is of such diameter that the enlarged end of the lift cord is not subject to fortuitous disengagement. The bead 41 may be the same as, and attached in the same manner as, the cord stop bead disclosed in the copending Nelson Patent 2,565,983 issued August 28, 1951. If desired, instead of using a bead 41, the cord can be threaded through the slot 31 and a knot 39 tied in the end of the cord to retain it in the fitting.

Central side portions 34, 34 of the plate 32 are elevated, so that when the fitting 16 is secured to the channel 10 there will be clearance for the vertical branches 17, 17 of the ladder tape 19 between the sides of the plate 32 and the flanges 22, 22 of the channel.

Four extensions 35, one adjacent each corner of the plate 32, extend downwardly and inwardly; and bridge members 36, 36 integrally connect the two extensions on the respective sides of the fitting. Each extension 35 is provided with a resilient nose portion 37.

The bridge members 36, 36 which integrally connect the extensions 35, 35 of the respective sides of the fitting 16 are adapted to receive and have secured thereto the vertical branches 17, 17 of a ladder tape. The vertical branches extend down past the upraised central side portions 34, 34 and thence between the extensions 35, 35 on the respective sides of the fitting. The ends of the branches 17, 17 are then folded back upon themselves around the bridge members 36, 36, and U-shaped clips 49, 49 (see also Fig. 8) are telescoped over the folded portions of the vertical branches of the ladder tape securing them to the bridge members as shown in Figs. 2, 3 and 7. The clips 42 are stamped from sheet metal, and they resiliently clasp the ladder tape.

After the ladder tapes and lift cords have been secured to the fittings 16, 16 the fittings are ready to be secured to the bottom bar by snap-in engagement of the fittings into the channel, thus attaching the bottom bar to the blind. The fittings 16, 16 are positioned on top of the channel at the gaps 28, 28 and are then pressed downwardly. The resilient nose portions 37 of extensions 35 make snap-in engagement with the inwardly-extending flanges 22, 22 of the channel, thereby securing the channel 10 to the fittings and to the blind.

With the fittings secured to the channel the ladder tapes are further secured against any possible fortuitous disengagement, since each vertical branch 17, after extending downwardly past the edge 43 of the central side portion 34, turns inwardly between the central side portion 34 of the fitting and the inwardly-extending flange 22

of the channel, then turns downwardly at the inside edge of the flange 22 and then is folded about and secured to the bridge member 36. By the snap-in engagement of the fitting with the channel, the vertical branch of the ladder is drawn taut and displacement of the bottom bar is resisted at the inside edge of the flange 22 and the outside edge of the central side portion 34. This is illustrated by Figs. 2 and 3, Fig. 2 showing the fitting completely engaged and Fig. 3 showing the fitting partially engaged.

The entire construction of the bottom bar is such that it can be adapted to rapid and economical manufacture on a quantity production basis. The parts are of such construction that they lend themselves to such production, being of rolled or stamped sheet metal, and the cover members being lengths of standard slat stock which is widely used in the industry. The bottom bar is also very easy to assemble, and it can be assembled and disassembled without the use of any special tools or devices. Also the construction is one which affords secure attachment of the lift cords and ladder tapes to the bottom bar and prevents fortuitous disengagement of the bottom bar.

For so-called four-lift-cord Venetian blinds, fittings of modified form are provided. The fitting 43 shown in Figs. 9 and 10 is similar in construction to the fitting 16, but the keyhole slot 31 is omitted and there are two raised portions 44, 44 with an opening 45 located between them. As shown in Fig. 10, a pulley assembly 46 is located on the underside of the fitting. Integral tabs 47, 47 and 48 extend from the pulley assembly, up through the opening 45, and are bent over to secure the pulley assembly 46 to the fitting 43. A sheave 50 is rotatably mounted in the assembly 46, adjacent one side of the opening 45.

The fitting 43 is attached to the channel in the same manner as fitting 16, the fitting 43 having the downwardly and inwardly disposed extensions 35 provided with snap-in nose portions 37. Ladder tapes are also secured to the fitting 43 in the same manner as they are secured to the fitting 16, fitting 43 being provided with bridge members 36, 36. The fitting 43 is also provided with the central side portions 34, 34.

In a so-called four-lift-cord blind, a lift cord is passed down through the opening 45, over the sheave 50, thence to a second fitting, over its sheave, and up through the opening in the second fitting, all as is well known in the art. The tab 48 located adjacent the same side of the opening as the sheave 50 acts as a bearing surface for the lift cord, as do side tabs 47, 47. As seen in Fig. 10, the body stamping for the pulley assembly is so made that the sheave 50 can be mounted in either end of the stamping or, if desired, two sheaves could be installed, one in each end of the body stamping.

I claim:

1. In a Venetian blind, a bottom bar organization comprising: a sheet metal channel extending along the bottom of the Venetian blind, a cover member of lesser length than the channel and secured to the channel centrally of its ends, a pair of sheet metal fittings positioned on top of the channel and secured to the channel by snap-in engagement of the fitting with the channel, one of said fittings being located adjacent to each end of the central cover member, a pair of lift cord ends secured to said fittings, vertical branches of ladder tapes extending downwardly adjacent the sides of said fittings, means attaching said branches to said fittings, and end cover members secured to the channel and extending from the outward ends of said fittings to adjacent the ends of the channel, the end portions of the fittings overlying the cover members.

2. For a Venetian blind, a bottom bar, said bottom bar comprising: a sheet metal channel adapted to extend along the bottom of a Venetian blind, the channel having vertical side walls the top portions of which are provided with inwardly-extending flanges; and a pair of generally rectangular sheet metal fittings adapted to span across said channel and having extensions adjacent each corner which extend downwardly and inwardly, the fittings being further provided with bridge members connecting the two extensions on each side of each of said fittings, said bridge members being adapted to receive and have secured thereon vertical branches of ladder tape, the fittings being adapted to be secured to the top of the channel by snap-in engagement of the extensions of the fittings with the inwardly-extending flanges of the channel.

3. For a Venetian blind, a bottom bar, said bottom bar comprising: a sheet metal channel adapted to extend along the bottom of a Venetian blind, the channel having vertical side walls the top portions of which are provided with inwardly-extending flanges; and a pair of sheet metal fittings adapted to span across the top of said channel, and having portions which extend downwardly and inwardly, said portions being adapted to receive and have secured thereto branches of ladder tape, the fittings being adapted to be secured to the top of the channel by snap-in engagement of the downwardly and inwardly-extending portions with the inwardly-extending flanges of the channel.

4. In a Venetian blind, a bottom bar organization comprising: a sheet metal channel extending along the bottom of the Venetian blind, the channel having vertical side walls the top portions of which are provided with inwardly-extending flanges; a pair of generally rectangular sheet metal fittings spanning across the top of said channel, and having extensions adjacent each corner thereof which extend downwardly and inwardly, the fittings being further provided with bridge members integrally connecting the two extensions on each side of each said fitting; and ladder tapes having each vertical branch thereof extending downwardly and then between a side portion of one of said fittings and the top of one of said inwardly-extending flanges of the channel, the tape branch then extending over the free edge of said flange and thence downwardly between the two extensions on that side of the fitting, and the end portion of the tape branch being folded about the adjacent bridge member and secured thereto, said fittings being secured on top of the channel by snap-in engagement of said extensions with the inwardly-extending flanges of the channel.

5. A fitting for facilitating the attachment of a ladder tape and lift cord to a Venetian blind bottom bar, said fitting comprising: a generally rectangular, sheet metal plate adapted to span across a bottom bar, the plate having a centrally located formation for facilitating attachment of the end portion of a lift cord, lateral extensions adjacent each corner of the plate extending downwardly and inwardly, each of said extensions forming a nose portion adapted for resilient, snap-in engagement with an inwardly-extending edge portion of the bottom bar, the central side por-

tions of the plate between the extensions being elevated to provide clearance for the vertical branches of the ladder tape therebeneath; and bridge members integrally connecting the ends of the extensions on the respective sides of the fitting, the bridge members being adapted to have end portions of the vertical branches of the ladder tape secured thereto.

6. A fitting for facilitating the attachment of a ladder tape and lift cord to a Venetian blind bottom bar, said fitting comprising: a generally rectangular, sheet metal plate adapted to span across a bottom bar, the plate having a centrally located formation for facilitating attachment of the end portion of a lift cord, lateral extensions adjacent each corner of the plate extending downwardly and inwardly, each of said extensions forming a nose portion adapted for resilient, snap-in engagement with an inwardly-extending edge portion of the bottom bar; and bridge members integrally connecting the ends of the two extensions on the respective sides of the fitting, the bridge members being adapted to have end portions of the vertical branches of the ladder tape secured thereto.

7. A fitting for facilitating the attachment of a ladder tape and lift cord to a Venetian blind bottom bar, said fitting comprising: a generally rectangular, sheet metal plate adapted to span across a bottom bar, the plate having a centrally located formation for facilitating attachment of an enlarged end portion of a lift cord, lateral extensions adjacent each corner of the plate extending downwardly and inwardly, and bridge members integrally connecting the ends of the two extensions on the respective sides of the fitting, the bridge members being adapted to have end portions of the vertical branches of the ladder tape secured thereto.

8. The combination with a metallic bottom rail having an open top and inwardly projecting flanges on the side walls thereof, of a cord guide and anchor spacer plate spanning the open top, said plate having a cord opening therein, raised, horizontally projecting ears on the ends of said plate for facial engagement with the top side of the inwardly projecting flanges, and horizontally spaced downwardly and inwardly bent projecting legs, rolled at their point of bend, for frictional and resilient engagement with the edge and inner face of the flange when the plate is sprung to assembled position to engage the flanges on the bottom rail.

9. A Venetian blind bottom bar organization comprising: a bottom bar channel having an open top and inwardly directed flanges at the top edges of the side walls thereof, a tape anchor spanning between the flanges of the channel, the anchor having portions overlying the flanges of the channel and terminating on each side of the channel in an edge in substantial alinement with the side of said channel, the anchor having other portions engaged beneath the flanges of the channel to retain the anchor on the channel, and a ladder tape having the lower end portions of its vertical branches extending one between each channel flange and the overlying portion of the anchor and secured to the anchor, said edges of the anchor being at least as long as the width of the longitudinal tapes of the ladder tape.

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