May 5, 1953 H. NELSON 2,637,382

VENETIAN BLIND BAR ORGANIZATION AND FITTING

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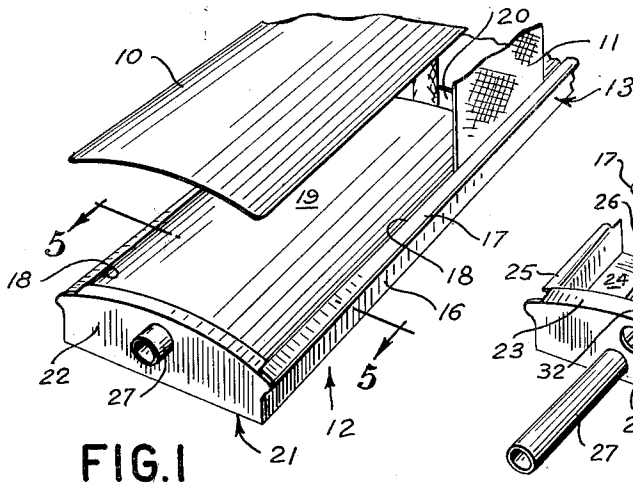


FIG.1

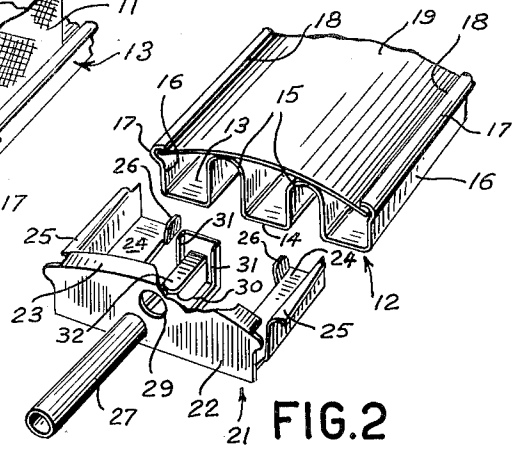


FIG.2

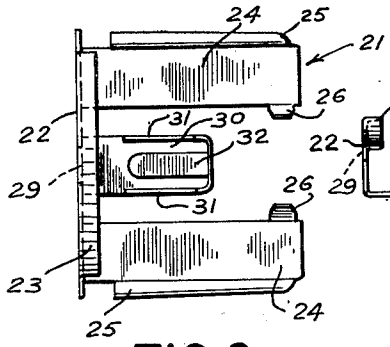


FIG.3

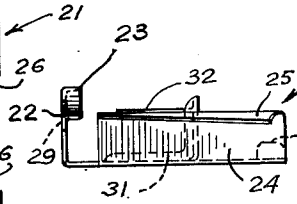


FIG.4

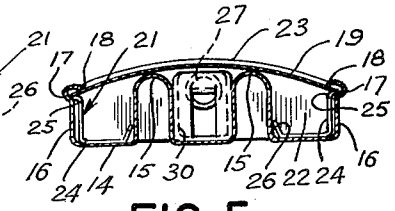


FIG.5

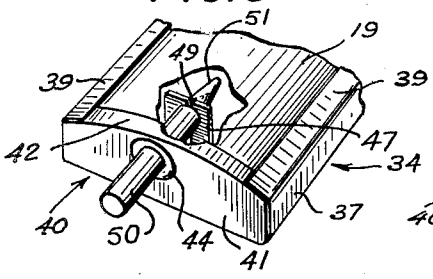


FIG.6

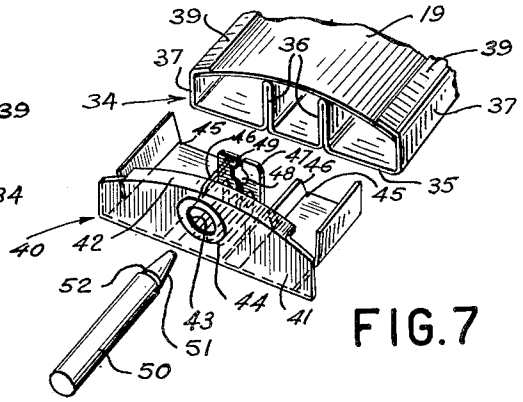


FIG.7

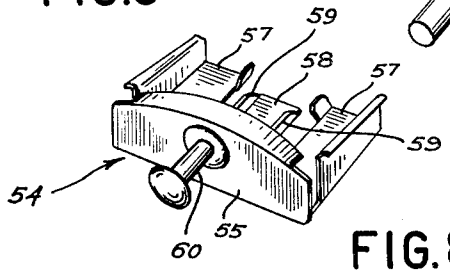


FIG.8

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UNITED STATES PATENT OFFICE

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VENETIAN BLIND BAR ORGANIZATION AND FITTING

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13 Claims. (Cl. 160—178)

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This invention relates to Venetian blinds, and, more particularly, to a new and improved bottom bar organization and parts therefor. This application is a continuation in part of application S. N. 46,737 (now Patent 2,623,581), filed August 30, 1948, and a continuation in part of application S. N. 780,653 (now Patent 2,618,329), filed October 18, 1947.

Venetian blinds are customarily provided with a bottom bar which extends 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 often been made of wood even though the intermediate slats have often been made of metal.

In the forms of the present invention shown, 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, which cover may be formed of metal Venetian blind slat stock.

Various fittings, such as end fittings for 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 present invention is particularly concerned with the end fittings for the channel-shaped body and cover. The end fittings are held in assembled relation with the bottom bar by the interfitting of portions of the end fitting with the channel-shaped body and, in turn, hold the cover in position in the channel, separate fastening devices or welding of the parts of the bottom bar assembly being unnecessary.

Among the objects of the present invention are to provide an improved Venetian blind bottom bar assembly that is of pleasing appearance, that may be easily assembled, that is held in assembled relation merely by the interfitting of the parts without the necessity of special fastening means, and to provide an end fitting for such assembly which may be easily and cheaply manufactured and which may be used interchangeably in blinds either with or without hold-down brackets.

My invention is clearly defined in the appended claims. In the claims, as well as in the description, parts are at times 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 drawings forming part of this specification, in which:

Fig. 1 is a fragmentary perspective view of the bottom portion of a Venetian blind, including a

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bottom bar with an end fitting according to the first form of the invention.

Fig. 2 is a fragmentary perspective view of the bottom bar and end fitting assembly of Fig. 1, certain of the parts being shown in exploded relation.

Fig. 3 is a top plan view of the end fitting of Figs. 1 and 2.

Fig. 4 is a side elevation of the end fitting of Fig. 3.

Fig. 5 is a vertical section of the bottom bar taken generally on the line 5—5 of Fig. 1.

Fig. 6 is a fragmentary perspective view of a bottom bar assembly incorporating a second form of end fitting, portions of the bottom bar cover and of the top flange of the end fitting being broken away for clarity of illustration.

Fig. 7 is a fragmentary perspective view of the bottom bar and end fitting assembly of Fig. 6, certain of the parts being shown in exploded relation.

Fig. 8 is a perspective view of a third form of end fitting according to the present invention.

A portion of a Venetian blind, including the lowermost intermediate slat 10 supported in the customary manner by two or more ladder tapes 11 (one shown), is illustrated in Fig. 1. A bottom bar assembly 12 according to the present invention is secured to the lower end of the ladder tapes 11, as is usual.

Referring to Fig. 2, the bottom bar assembly there shown includes a channel-shaped sheet metal body designated as a whole by the reference character 13. This body is formed of relatively rigid sheet metal and may conveniently be formed by rolling. The body 13 is formed of a channel of uniform cross section throughout its length, the cross-sectional shape being shown in Figs. 2 and 5. The bottom wall 14 of the body 13 is generally flat except for two spaced rounded folds or corrugations 15, 15 extending for the length of the body, which project vertically upward as shown. The corrugations or folds 15, 15 of the first form of bottom bar body are open, being formed with spaced vertical walls, and are located symmetrically with respect to the longitudinal center line of the body 13 so as to leave a central passage extending for the length of the body.

The sides 16, 16 of the body 13 extend vertically upward for a short distance and at their tops are provided with outwardly projecting beads 17, 17 from which the edges 18, 18 extend inwardly. The corrugations 15, 15 extend upwardly slightly higher than the inturned edges 18, 18 of the body.

The edges 18, 18 of the body 13 may be turned downwardly in addition to extending inwardly in order to partially conceal the extreme terminal portions of the edges, as shown in Figs. 2 and 5. This configuration is particularly desirable if the body 13 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 19 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 29 formed for the passage of each lift cord. The cover strip 19 may be and desirably is in all respects similar to the other intermediate blind slats.

The body 13 and cover strip 19 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 18, 18. To aid in preventing fortuitous movement of the cover strip 19 relative to the body 13, the corrugations or folds 15, 15 are formed sufficiently high so that as the cover strip 19 is placed within the body, it is necessary to increase slightly 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 18, 18 of the body and also biasing its central portion into frictional engagement with the tops of the corrugations 15, 15.

The cover strip 19 may be assembled with the body 13 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 19 assuming the same position as it would if telescoped endwise into the body 13.

Each open end of the channel-shaped body 13 is closed by an end fitting 21. In the fitting shown herein, a generally flat end plate portion 22 of the end fitting 21 is shaped so as to cover the entire end of the bottom bar assembly 12. A top marginal flange 23 extending along the top edge of the end plate portion 22 overlies the end of the cover strip 19 to further serve in preventing fortuitous displacement of the cover strip, the curvature of this flange matching the curvature of the cover 19. Preferably, the flange 23 terminates somewhat short of the ends of the end plate portion 22 so as to fit between the inturned edges 18, 18 of the body 13.

The base portion of the end fitting 21 (Fig. 2) includes a pair of spaced flanges 24, 24 which are generally L-shaped in cross section. The flanges 24, 24 are adapted to be telescoped within the body 13, one flange fitting in each of the side channels between the folds or corrugations 15, 15 and the sides 16, 16 of the channel and the flanges frictionally engaging the inner surfaces of the channel so as to hold the fitting against fortuitous displacement. To this end, the horizontal portion of each of the L-shaped flanges 24 lies against the bottom wall 14 of the channel-shaped body 13, and the vertical portion of each of the flanges lies adjacent the inner surface of a vertical wall 16 of the body. The upper edge of each of the flanges 24, 24 preferably is provided with an outwardly turned flange 25 for engaging the inner surface of the channel. Preferably, the flanges 24, 24 and 25, 25 are somewhat wedge shaped as indicated in the drawings, tapering slightly towards the end of the fitting 21 removed from the plate portion 22 so as to firmly wedge within the channel-shaped body 13 upon application thereto. The inner edge of each of the flanges 24, 24 is preferably provided with a terminal, upwardly, inwardly directed lug 26 for frictionally engaging a side of one of the folds or corrugations 15, 15.

The end fitting 21 may be adapted for the reception of a hollow tube or pin 27 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, June 25, 1946. For this purpose, the plate portion 22 is provided with a centrally located round hole 29 for reception of the pin 27.

Beneath the hole 29, a central base flange 30 projects from the lower edge of the plate portion 22 between the flanges 24, 24. The flange 30 is turned upwardly at its free end to provide a vertical portion spaced from and generally parallel to the plate portion 22. Integral gussets 31, 31 may be turned up from the flange 30 along the sides thereof (Fig. 2) to reinforce the flange against bending. Preferably, a prong 32 is struck from the flange 30 to extend from a point near the free end of the flange towards the hole 29 in the plate portion 22, the proportions of the prong being such that it will enter tightly within the tubular pin 27 so as to hold the inner end of the pin in alignment and frictionally engage the pin to retain it against fortuitous displacement.

After the body 13 and cover 19 are assembled, the end fittings 21 are assembled one on each end of the assembly 12 by entering the flanges 24, 24 of the end fitting into the longitudinally extending side passages between the folds 15, 15 and the sides 16, 16 of the body 13. After substantial insertion of these flanges into the passages, the central base flange 30 of the fitting will then enter the central passage lying between the folds 15, 15. The end fitting may be telescoped into position within the assembly of channel and cover by a steady pressure, or by driving it inwardly, the end fitting 21 being forced inwardly until the end plate portion 22 thereof lies in contact with the end of the channel-shaped body 13. When the end fitting 21 has been so positioned, the curved top marginal flange 23 of the end fitting overlies the end of the cover strip 19 and lies between the inturned edges 18, 18 of the body 13. If desired, the pin 27 may be inserted into the end fitting 21 either before or after assembling the end fitting into the bottom bar assembly 12, the inner end of the pin receiving the prong 32 as above described so as to frictionally retain the pin.

A second form of Venetian blind bottom bar and end fitting organization according to the present invention is shown in Figs. 6 and 7 of the drawing. In this embodiment of the invention, the channel-shaped body 34 is generally similar to the body 13 previously described, with the exception that the bottom wall 35 of the channel is folded upwardly to form two spaced folds 36, 36 in which the metal is folded back upon itself as indicated in Fig. 7 rather than the open fold or corrugations 15, 15 of the body 13. Also, the longitudinal edges of the channel are folded upwardly to form the sides 37, 37 of the body and then are inwardly directed to form the edge portions 39, 39, there being no portions corresponding to the beads 17, 17 of the body 13.

A metal cover strip 19 formed of Venetian blind slat stock and similar in all respects to the cover 19 of the first form of the invention is engaged with the body 34 in a similar manner to that

above discussed in connection with the first form of the invention.

The ends of the assembly of body 34 and cover strip 19 are closed by end fittings 40, 40, the end fittings 40 being in general similar to the end fittings 21 previously described. Each end fitting 40 comprises a generally flat end plate portion 41 corresponding in outline to the assembled body and cover of the second form of the invention, this portion being generally similar to the end plate portion 22 of the end fitting 21. The end plate portion 41 is likewise provided with a top marginal flange 42 and is provided with a central hole 43 for reception of a pin as will be explained. The plate surrounding the hole 43 may be embossed to form a raised circular rib or bead 44 if desired.

The base portion of the end fitting 40 (Fig. 7) likewise includes a pair of spaced flanges 45, 45, which are generally L-shaped in cross section, these flanges interfitting with one end of the body 34 between the folds 36, 36 of the sides 37, 37 of the channel-shaped body and frictionally engaging the inner surfaces of the body so as to hold the fitting against fortuitous displacement. The flanges 45, 45 may be exactly similar to the flanges 24, 24 previously described, or the outwardly turned flanges 26, 26 may be omitted if desired, each entire flange 45 being slightly tapered away from the plate portion 41 to firmly wedge within the end of the assembly of body 34 and cover 19 when applied thereto. A lug 46, generally similar to the lug 26 may be provided on the inner edges of these flanges for engagement against the folds 36, 36.

Beneath the hole 43 of the plate portion 41, a central base flange 47 extending centrally between the spaced flanges 45, 45 is provided, this flange being generally similar to the flange 30 of the first form of the invention and adapted to fit between the folds 36, 36 of the body 34. A flange 47 is turned upwardly at its free end to provide a vertical portion spaced from and generally parallel to the plate portion 41 and is provided with a hole 48 coaxial with the hole 43 in the plate portion. Also, a centrally located kerf or slot 49 extending longitudinally of the flange 47 and into the base of the flange bisects the hole.

The central base flange 47 is adapted to cooperate with a pin 50, the pin being generally cylindrical except for a tapered end 51 which may be of truncated conical shape. A circumferential groove is provided at the junction of the cylindrical end tapered portions of the pin 50, the pin being so proportioned that upon being entered within the hole 48 the tapered inner end 51 of the pin will spread the slot 49, the margins of the hole 48 in the flange 47 entering within the circumferential groove 52 of the pin so as to retain the pin against displacement, as indicated in Fig. 6. If no pin is required in the end fitting 40, the pin can of course be omitted and the central hole 43 and base flange 47 may also be omitted if desired.

A third form of end fitting according to the present invention is disclosed in Fig. 8. This end fitting 54 is adapted to be used with the channel-shaped body 34 and cover 19 of the second form of the invention and has an end plate portion 55 and top marginal flange similar to the corresponding parts of the end fitting 40. The spaced flanges 57, 57 may have the general form of flanges 24, 24 of the end fitting 21 but are so proportioned as to fit between the folds 36, 36 and sides 37, 37 of the channel-shaped body 34 rather than the body 13. In this instance, a central base flange 58 may be provided which lies substantially in a horizontal plane and likewise fits between the folds 36, 36 upon application of the fitting to the body 34, the flange 58 having upturned side edges 59, 59 if desired.

The end plate portion 55 of fitting 54 may be provided with a headed stud or rivet 60, the inner end of the rivet being swaged to hold it within the plate portion.

While the end fittings 21 and 54 have been shown and described in conjunction with one form of bottom bar body and the end fitting 40 in conjunction with a somewhat different form of bottom bar body, it is obvious that by merely slightly changing the proportions of the interfitting parts either form of end cap may be used with either bottom bar body, and that features of one form of end fitting may be applied to one of the other forms.

I claim:

1. In the art of Venetian blinds, a hollow metal bar of uniform cross section suitable for a tilt bar or bottom bar, and an end fitting for closing the end of said bar, said fitting comprising a generally flat plate having an outline generally similar to the cross section of said bar and having a hole therein and a projecting prong directed towards the hole to enter within and retain a hollow gudgeon pin passed through the hole.

2. In the art of Venetian blinds, an end fitting for a hollow metal bar of uniform cross section suitable for a tilt bar or bottom bar, said fitting comprising a metal body having a plate of outline generally similar to the cross section of the bar and having a round hole therein and a projecting prong directed towards the hole to enter within and retain a hollow gudgeon pin passed through the hole.

3. In the art of Venetian blinds, an end fitting for a hollow metal bar of uniform cross section suitable for a tilt bar or bottom bar, said fitting comprising a metal body having a vertical plate for closing the end of the bar and having a round hole therein, and a flange spaced from the plate and having a projecting prong directed towards the hole to enter within and retain a hollow gudgeon pin passed through the hole.

4. An end fitting for a hollow Venetian blind bottom bar, said fitting comprising: a generally flat end plate corresponding in outline to the cross section of the bar and having a pair of mounting flanges projecting from the bottom edge of the end plate in spaced parallel relation on one side of said end plate, the flanges being generally L-shaped in cross section and tapering slightly away from the end plate, one leg of each flange lying in a common horizontal plane with the bottom edge of the end plate and the other leg of said flanges extending generally vertically from the outside edges of the horizontal flanges.

5. An end fitting for a hollow Venetian blind bottom bar, said fitting comprising: a generally flat end plate corresponding in outline to the cross section of the bar and having a pair of mounting flanges projecting from the bottom edge of the end plate in spaced parallel relation one one side thereof, the mounting flanges being generally L-shaped in cross section and tapering slightly away from the end plate, and a top flange projecting from the top edge of the end plate above the mounting flanges.

6. An end fitting for a hollow Venetian blind bottom bar, said fitting comprising: a generally

flat end plate corresponding in outline to the cross section of the bar and having a pair of mounting flanges projecting from the bottom edge of the end plate in spaced parallel relation on one side thereof, the flanges being generally L-shaped in cross section and tapering slightly away from the end plate.

7. In the art of Venetian blinds, a hollow metal bar assembly, comprising: a channel-shaped body having upwardly and inwardly directed longitudinal edges and two parallel ribs upfolded from the base and dividing the body into three parallel channel portions; a springy sheet cover strip for the body, said strip having its edges engaged beneath the inturned lateral edges of the body and the mid-portion of the cover strip engaging the tops of the upfolded ribs; and an end fitting, said end fitting comprising a plate portion of outline corresponding to the cross section of the bar and closing the end of the bar, and a pair of mounting flanges projecting from the plate portion of the end fitting, said mounting flanges being received one within each of the side channel portions of the body and frictionally engaging the inner walls of said channel portions to hold the fitting against displacement.

8. In the art of Venetian blinds, a hollow metal bar assembly, comprising: a channel-shaped body having upwardly and inwardly directed longitudinal edges and at least one parallel rib upfolded from the base and dividing the body into at least two parallel channel portions; a springy sheet cover strip for the body, said strip having its edges engaged beneah the inturned lateral edges of the body and the midportion of the cover strip engaging the top of the upfolded ribs; and an end fitting, said end fitting comprising a plate portion of outline corresponding to the cross section of the bar and closing the end of the bar, and a pair of mounting flanges projecting from the lower edge of the plate portion of the end fitting, said mounting flanges being received one within each of two channel portions of the body and frictionally engaging the inner walls of said channel portions to hold the fitting against displacement.

9. In the art of Venetian blinds, a hollow metal bar assembly, comprising: a channel-shaped body having upwardly and inwardly directed longitudinal edges and two parallel ribs upfolded from the base and dividing the body into three parallel channel portions; a spring sheet cover strip for the body, said strip having its edges engaged beneath the inturned lateral edges of the body and the midportion of the cover strip engaging the tops of the upfolded ribs; and an end fitting, said end fitting comprising a plate portion of outline corresponding to the cross section of the bar and closing the end of the bar, and a pair of mounting flanges projecting from the lower edge of the plate portion of the end fitting, said mounting flanges being slightly tapered in a direction away from the plate portion, received one within each of the side channel portions of the body, and frictionally engaging the inner walls of said channel portions to hold the fitting against displacement.

10. A bar assembly as claimed in claim 9 in which a top flange on the plate portion of the end fitting overlies the end of the cover strip.

11. In the art of Venetian blinds, a hollow metal bar assembly, comprising: a substantially rigid, channel-shaped body having upwardly and inwardly directed longitudinal edges; a springy sheet cover strip for the body, said strip being transversely arched and having its edges engaged beneath the inturned lateral edges of the body; and an end fitting, said end fitting comprising a plate portion of outline corresponding to the cross section of the bar and closing the end of the bar, at least one mounting flange projecting from an edge of the plate portion of the end fitting, said mounting flange being slightly tapered in a direction away from the plate portion and received within and frictionally engaging inner surfaces of the body to hold the fitting against displacement and a laterally projecting flange extending from the top edge of the plate, overlying and following the curve of the cover strip and extending between the inwardly directed edges of the body, the end portions of the flange being in edge-to-edge relation with the inwardly directed edges of the body.

12. In the art of Venetian blinds, a hollow metal bar assembly, comprising: a substantially rigid, channel-shaped body having upwardly and inwardly directed longitudinal edges and at least one parallel rib upfolded from the base and dividing the body into at least two parallel channel portions; a springy sheet cover strip for the body, said strip being transversely arched and having its edges engaged beneath the inturned lateral edges of the body and the midportion of the cover strip engaging the top of the upfolded rib; and an end fitting, said end fitting comprising a plate portion of outline corresponding to the cross section of the bar and closing the end of the bar, at least one mounting flange projecting from an edge of the plate portion of the end fitting, said mounting flange being slightly tapered in a direction away from the plate portion and received within and frictionally engaging inner surfaces of the walls of the body to hold the fitting against displacement and a laterally projecting flange extending from the top edge of the plate overlying and following the curve of the cover strip and extending between the inwardly directed edges of the body, the end portions of the flange being in edge-to-edge relation with the inwardly directed edges of the body.

13. In the art of Venetian blinds, a hollow metal bar assembly, comprising: a substantially rigid, channel-shaped body having upwardly and inwardly directed longitudinal edges; a springy sheet cover strip for the body, said strip being transversely arched and having its edges engaged beneath the inturned lateral edges of the body; and an end fitting, said end fitting comprising a plate portion of outline corresponding to the cross section of the bar and closing the end of the bar, a portion of the end fitting projecting generally normal to the plate portion thereof and received within and frictionally engaging inner surfaces of the body to hold the fitting against displacement, and a laterally projecting flange extending from the top edge of the plate, overlying and following the curve of the cover strip and extending between the inwardly directed edges of the body, the end portions of the flange being in edge-to-edge relation with the inwardly directed edges of the body.

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