June 14, 1938. H. K. LORENTZEN 2,120,284

TILT BAR STRUCTURE FOR VENETIAN BLINDS

Filed March 27, 1937

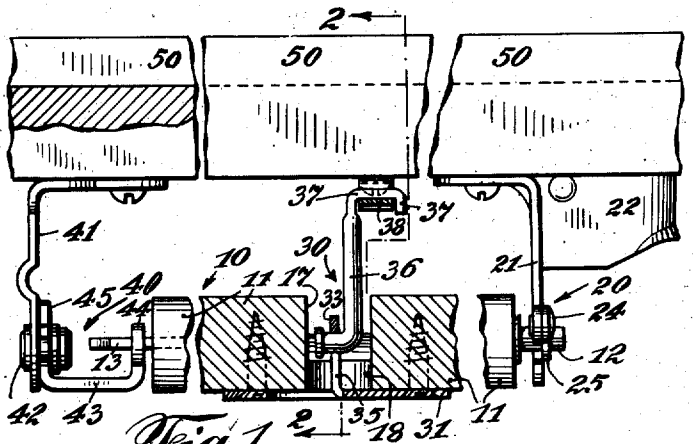


Fig. 1.

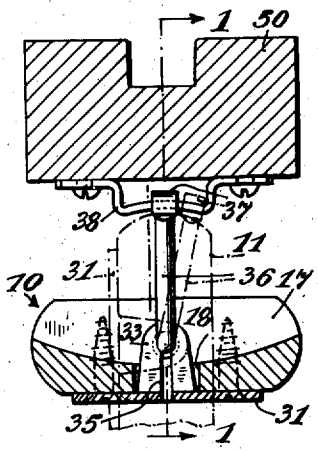


Fig. 2.

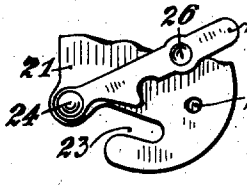


Fig. 3.

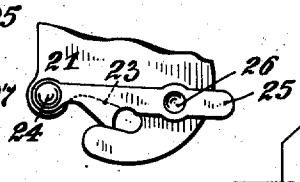


Fig. 4.

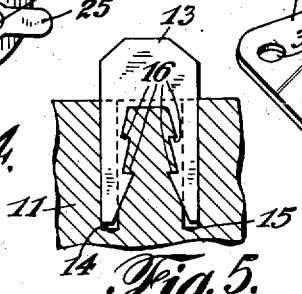


Fig. 5.

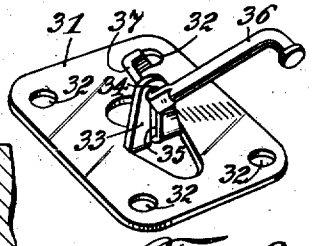


Fig. 6.

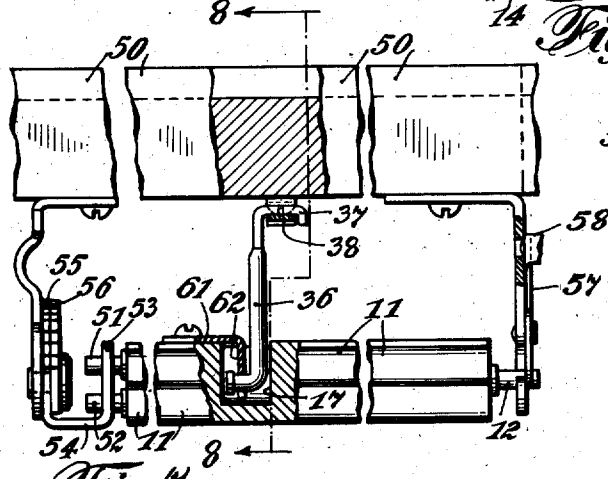


Fig. 7.

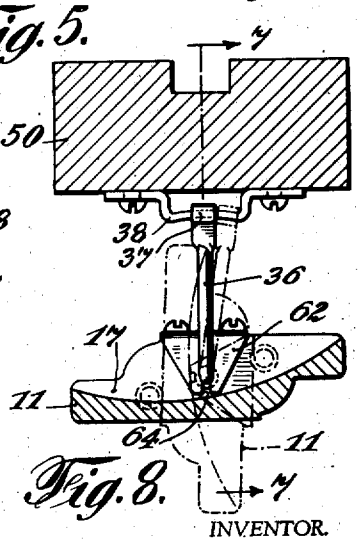


Fig. 8.

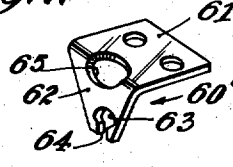


Fig. 9.

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TILT BAR STRUCTURE FOR VENETIAN BLINDS

Hans K. Lorentzen, Montclair, N. J.

Application March 27, 1937, Serial No. 133,314

12 Claims. (Cl. 156—17)

This invention relates to Venetian blinds and particularly to a tilt bar structure therefor; and this application for patent is a continuation in part of my prior application on which Patent 2,075,214 issued on March 30, 1937.

The conventional Venetian blind includes a series of superimposed spaced slats, suspended as a group by two or more ladder tapes. The upper ends of the tapes are fixed to a bar (really a top slat), which bar is mounted for limited oscillation (tilting) about its longitudinal axis. This bar and its mounting constitutes the "tilt bar structure". When the bar is tilted, corresponding tilting movement is imparted by the ladder tapes to each of the slats of the blind. Various tilt bar structures have heretofore been proposed; and while some of them are satisfactory in many respects, their characteristics have been such that flimsy or unreliable blinds have often resulted when the parts were made and assembled on a high speed quantity production basis.

A general object of the present invention is to provide a tilt bar structure which makes it easy to achieve an adequately supported and readily detachable bar with inexpensive parts made on a quantity production basis.

Another object of the invention is to provide a tilt bar structure which can be readily assembled into a rigid reliable construction without requiring the use of a bar which is per se heavy and especially rigid.

Other objects of the invention are to improve the assembly of the tilt bar structure, to reduce to a lower degree the skill and care that is required to make the assembly, to reduce the cost, and to provide a construction which better lends itself to high speed quantity production of parts.

Various detailed objects of the invention will be apparent to those skilled in the art from the disclosure herein.

In the following description, references to "right hand end" and "left hand end" refer only to the showings in the accompanying drawing, as the invention may be constructed with end-to-end reversal of the structure shown.

Fig. 1 of the drawing is a front view, partly in elevation and partly in section, illustrating a tilt bar structure embodying the present invention. Portions of the structure are broken away to make a compact figure, and the sectional showing is approximately on the line 1—1 of Fig. 2.

Fig. 2 is a vertical cross section showing the center portion only of the tilt bar structure, and taken approximately on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary detail view showing in end elevation the support for the right hand end of the bar. This support includes a locking lever which is shown in position permitting insertion and removal of the bar.

Fig. 4 is a view similar to Fig. 3, but with the locking lever in the position for retaining the bar.

Fig. 5 is a fragmentary view in horizontal section showing a coupling member which is affixed to the left hand end of the bar and forms a part thereof.

Fig. 6 is a perspective view showing the center support for the bar.

Fig. 7 is the same type of view as Fig. 1, but showing a modified construction. The sectional showing is approximately on the line 7—7 of Fig. 8.

Fig. 8 shows the modified construction and is the same type of view as Fig. 2. The view is taken approximately on the line 8—8 of Fig. 7.

Fig. 9 is a detail perspective view showing an element which may be used in the center support shown in Figs. 7 and 8.

Reference will first be had to Figs. 1 to 6 inclusive. The tilt bar structure includes a bar designated as a whole by **10**, a support for the right hand end of the bar designated as a whole by **20**, a support for the center of the bar designated as a whole by **30**, and a support for the left hand end of the bar designated as a whole by **40**. The supports **20**, **30** and **40** are all attached to a conventional suspension bar **50**.

The bar **10** is built up from a heavy wooden slat **11**, which is provided at its right hand end with a conventional pintle **12** that is axially located and driven into the end of the slat. The left hand end of the bar has a flat coupling member **13** driven as shown in Fig. 5 into two symmetrically located holes **14** and **15** which are drilled into the left hand end of the slat **11**. The coupling member **13** is a sheet metal stamping and is provided with a series of integral saw-toothed formations **16** (four shown) which make barbed engagement with the wood and firmly secure the coupling member **13** to the slat. At its center the slat **11** is provided with an arcuate transverse slot **17**, from the lowest point of which a vertical hole **18** extends to the bottom of the slat.

The right hand support **20** includes a stamped sheet metal angle bracket **21**, to which may be attached a cord lock assembly **22** (not illustrated in detail). The lower end of the bracket **21** is provided with an open ended inclined slot **23** clearly illustrated in Figs. 3 and 4. This slot **23** receives the pintle **12**, which normally lies

in the lowermost portion of the slot 23 where it is freely rotatable. Pivoted at 24 to the bracket 21 is a stamped sheet metal locking lever 25 which can be swung from the position shown in Fig. 3 to the position shown in Fig. 4 to prevent accidental displacement of the pintle 12 from the slot 23. Lever 25 is preferably formed with a circular indentation 26 that snaps laterally into a retaining hole 27 when the lever is swung to the position shown in Fig. 4.

The center support 30 includes a metal stamping 31 having holes 32 (four shown) which receive screws to attach the stamping to the under side of the slat 11. Stamping 31 is formed with an integral upright 33 which is provided at its upper end with a bearing hole 34 into which a vertical slot 35 opens. The upright 33 projects through the hole 18 in the slat 11, as shown in Figs. 1 and 2; and pivoted to the upright is a connected link 36 which has a flat hook formation 37 that rides upon an arcuate bearing 38. The arcuate bearing 38 is a single metal stamping which may be attached by screws, as shown, to the suspension bar 50.

The support 40 for the left hand end of the bar 10 includes a sheet metal bracket 41 to which is pivoted at 42 a stamped U-shaped member 43 having two vertical legs 44 and 45. Leg 44 has a transverse slot that detachably receives the flat coupling 13. Leg 45 has its upper edge formed into a segmental gear that is adapted to be driven in a well-known manner by a cord-and-pulley actuated worm. In practice the worm drive is also attached to bracket 41, but is not shown since it is not part of the present invention.

It will be seen that the entire tilt bar structure is composed of only the wooden slat 11 and screws and stamped metal parts. The pintle 12 and the flat coupling 13 are inexpensive and are readily affixed to the wooden slat 11. Fig. 6 shows the manner of assembling the connecting link 36 to the metal stamping 31. The flattened hook end 37 is fished through the slot 35 and then the rounded part of the link is moved into position in the bearing hole 34. With the link 36 thus assembled to the stamping 31, the link is passed upwardly through the hole 18 and the stamping 31 affixed to the bottom of the slat 11. The bar 10 is placed in its supports by simply inserting the coupling member 13 into the slot of leg 44, and swinging the pintle 12 into slot 23 where it is retained by movement of lever 25. The center of the bar 11 can then be flexed upwardly and the flattened hook end 37 of the center support be moved lengthwise of the bar to engage the connecting link 37 with the arcuate bearing 38. It will be seen from Fig. 2 that the bearing surface of the member 38 is spaced from suspension bar 50 a sufficient distance to permit this movement of link 36 to either engage or disengage it from the bearing 38.

Fig. 2 shows in dot-dash lines the position of the slat 11 and the connecting link 36 upon extreme tilting of the slat 11 in one direction. The hook 37 travels on the arcuate bearing 38 and the hole 34 pivots on the lower end of the connecting link. Upon tilting of the slat 11 in the opposite direction, the action is similar, the link 36 swinging in the opposite direction.

The general structure shown in Figs. 7, 8 and 9 is so similar to that already described, that it will suffice to merely point out the differences. In lieu of the flat coupling member, the slat 11 is provided with two coupling pins 51 and 52 which are detachably received by two holes in the leg 53 of the pivoted U-shaped member 54. The leg 55 of the U-shaped member, which is formed as a gear sector, is reenforced by a plate 56 which is welded to the leg 55 and is also formed with gear teeth. Locking lever 57, which holds the pintle 12 in the slot, is of slightly different form from locking lever 25, and is provided with a laterally projecting thumbpiece 58.

The center of slat 11 is provided with an arcuate transverse slot 17, but hole 18 is omitted. Affixed as shown to the top of slat 11 is a metal stamping designated as a whole by 60. This stamping has a horizontal branch 61 which lies on top of slat 11; and has a vertical branch 62 which projects into slot 17. Vertical branch 62 is provided with a bearing hole 63 out of which a vertical slot 64 opens. This bearing hole and slot permits assembly of the connecting link 36 with the stamping 60 in a fashion analogous to that described in connection with Fig. 6. A hole 65 in stamping 60 provides space for tipping of link 36 in engaging and disengaging it from arcuate support 38. While hole 65 is shown at the center of stamping 60, it may be located adjacent one edge thereof. The hole 65 may be omitted (as shown in Figs. 7 and 8) and then the link 36 may be engaged and disengaged from arcuate support 38 by tipping slat 11 to the extreme position shown in dot-dash lines in Fig. 8.

In compliance with the patent statutes, I have disclosed the best forms in which I have contemplated applying my invention, but it will be understood that the disclosures are illustrative and not limiting.

What is claimed is:

1. A tilt bar structure for Venetian blinds, comprising: a continuous slat having a recess between its ends, a coupling member affixed to one end of the slat, a pintle affixed to the other end of the slat, a fitting projecting into said recess and comprising a supporting bearing, and a tension link pivoted to said fitting and detachably assembled therewith.

2. A tilt bar structure for Venetian blinds, comprising: a slat, and a coupling member non-detachably affixed to one end of the slat, the coupling member being a unitary flat metal stamping having two integral legs projecting into the slat and making a driving fit therewith.

3. For the tilt bar structure of a Venetian blind, a fitting for detachably connecting the bar to a support, the fitting comprising a sheet metal stamping having a body portion and two legs projecting from the body portion to make a driven engagement with the tilt bar.

4. For the tilt bar structure of a Venetian blind, a unitary coupling member of stamped sheet metal, the stamping comprising a flat body portion and an integral barbed prong projecting from the body portion.

5. A center support for Venetian blinds comprising a head board, an arcuate saddle attached to the head board, a tilt bar formed with a transverse groove, a metal fitting having a bearing portion located in the groove, and a support hook engaging the saddle.

6. A center support for Venetian blind comprising a head board, a tilt bar formed with a transverse arcuate groove, a bracket extending into the groove, a support hook having one end pivotally attached to the bracket at the longitudinal central axis of the tilt bar, an arcuate saddle attached transversely of the head board

end supporting the other end of the hook, the curve of the arcuate saddle corresponding to the arc described by the end of the hook in swinging about its pivot.

7. In a Venetian blind, a slat, and a fitting affixed to the end of the slat, the fitting comprising a unitary sheet metal stamping having two spaced prongs projecting into the end of the slat and in driven engagement therewith.

8. A Venetian blind fitting comprising a unitary sheet metal stamping having two spaced prongs, the prongs being flat and having toothed edges.

9. A Venetian blind fitting comprising a unitary sheet metal stamping having two flat prongs spaced apart and lying in the same plane, the inner edges of the prongs having saw tooth formations.

10. In a Venetian blind; a head board; a tilt bar; a metal fitting secured to the tilt bar, the fitting having a bearing hole and a slot intersecting the hole; a link having a flat hook formation at one end and a bearing portion at the other end, the hooked end of the link being insertable through said slot and the link being movable through said fitting to bring the bearing portion of the link into said bearing hole; and an arcuate saddle affixed to said head board, the hooked end of the link being detachably engageable with said saddle.

11. In a Venetian blind, a center support comprising: a fitting having a bearing hole and a slot intersecting the hole; and a connecting link having a flat hook formation at one end and a bearing portion at the other end, the hooked end of the link being insertable through said slot and the link being movable through said fitting to bring the bearing portion of the link into said bearing hole.

12. In a Venetian blind; a head board; a continuous tilt bar having a recess opening through the top surface of the bar, the tilt bar being pivoted on a longitudinal axis; an arcuate saddle attached to the head board; a depending tension link having one end of hooked form, with the hook formation in sliding engagement with said saddle, and having the other end positioned in said recess; and an attachment fitting secured to the tilt bar, the attachment fitting and said link being pivotally connected together coaxially with said tilt bar axis.

HANS K. LORENTZEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,120,284. June 14, 1938.

HANS K. LORENTZEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 67, claim 5, after "hook" insert the words pivoted to said bearing portion and; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of July, A. D. 1938.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

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