June 5, 1951 G. L. SHERWOOD 2,555,709

VENETIAN BLIND

Filed April 23, 1948 2 Sheets-Sheet 1

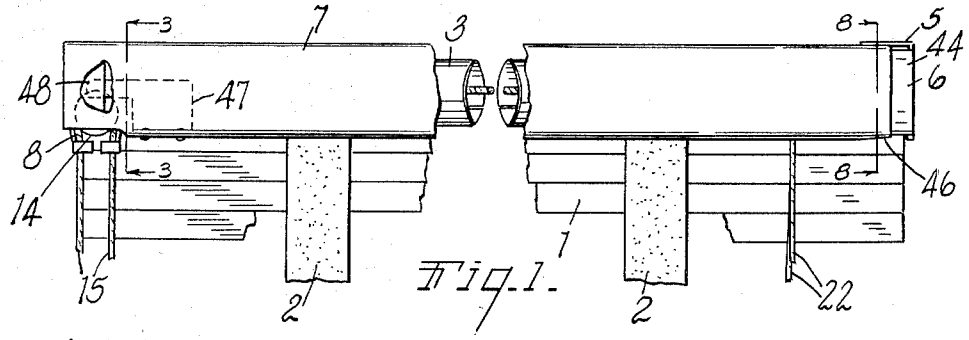


Fig. 1.

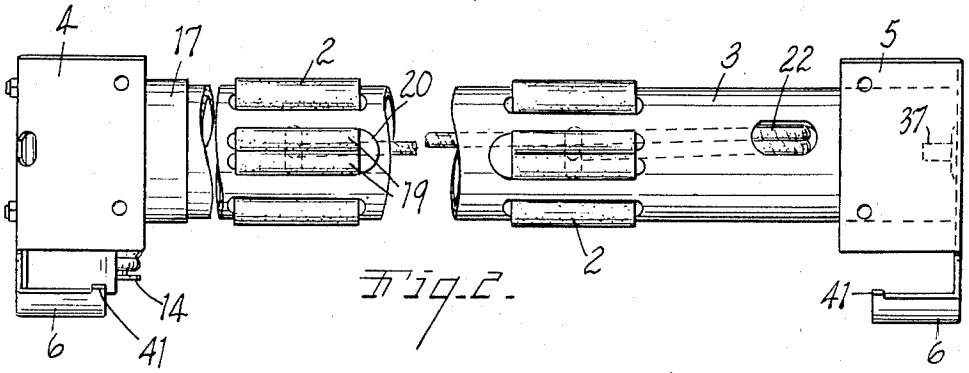


Fig. 2.

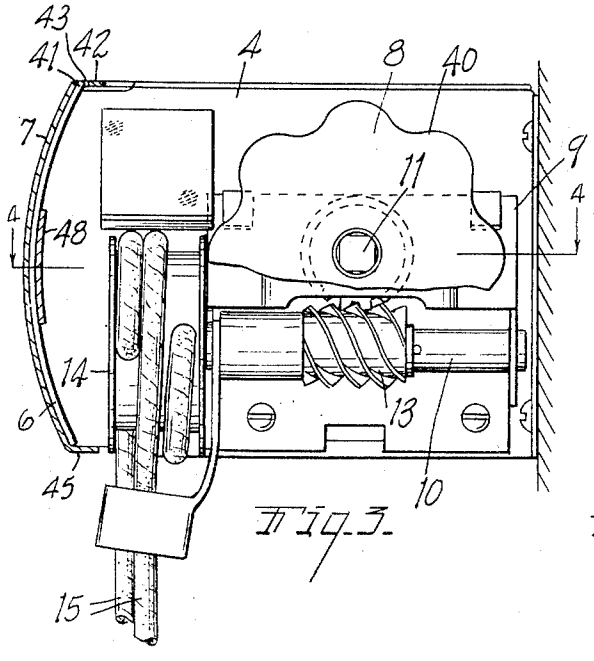


Fig. 3.

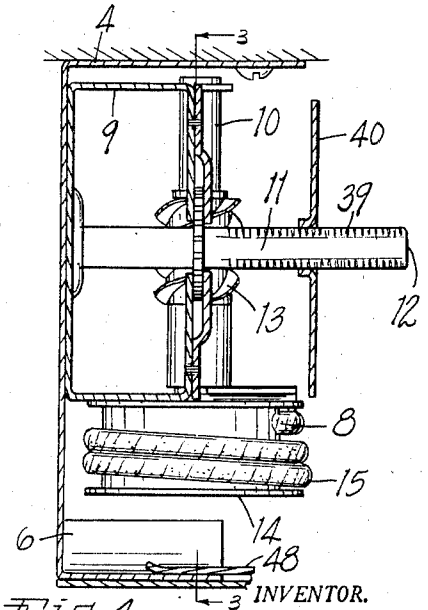


Fig. 4.

INVENTOR.
Glenn L. Sherwood
BY
ATTORNEY.

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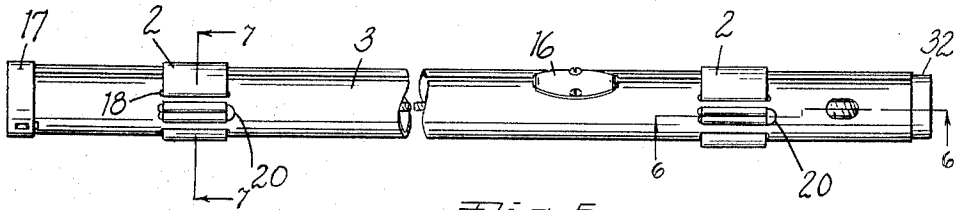


Fig. 5.

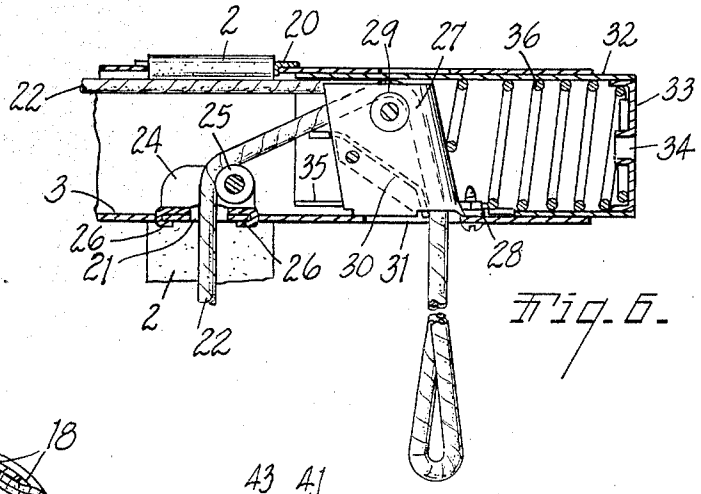


Fig. 6.

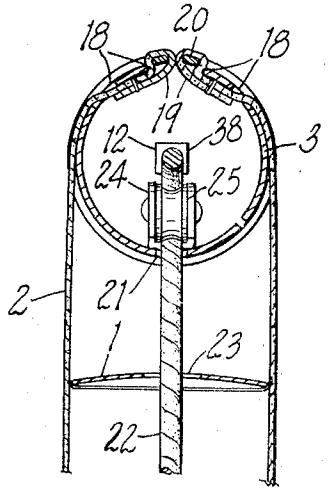


Fig. 7.

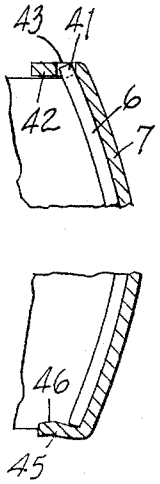


Fig. 8.

INVENTOR.
Glenn L. Sherwood
BY
ATTORNEY.

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VENETIAN BLIND

Glenn L. Sherwood, Benton Harbor, Mich.

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17 Claims. (Cl. 160—168)

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This invention relates to improvements in Venetian blind.

The principal objects of this invention are:

First, to provide a head bar and mounting for a Venetian blind which will occupy a minimum of vertical and transverse space at the top of the blind.

Second, to provide a head bar and mounting for Venetian blinds which is linearally adjustable permitting a few standard lengths of blinds to be fitted to windows having a wide variety of widths.

Third, to provide a combination head bar and tilt rail for a Venetian blind which can be manufactured at a minimum of expense and which will tilt and support the blind lifting mechanism in any of the tilted positions of the blind.

Fourth, to provide mounting brackets and a facia for a Venetian blind which are relatively longitudinally adjustable to fit windows of varying widths.

Fifth, to provide a housing for the head bar of Venetian blinds which can be selectively mounted either on the front side, inner side, or top inner surface of a window casing.

Other objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

The drawings of which there are two sheets illustrate a preferred form of my Venetian blind structure.

Fig. 1 is a fragmentary front elevational view, partly broken away, of my blind structure in erected position.

Fig. 2 is a fragmentary plan view, partly broken away, and the top of the structure with the facia piece removed.

Fig. 3 is a fragmentary vertical cross sectional view taken along the plane of the line 3—3 in Figs. 1 and 4 and illustrating the tilting mechanism for the blind.

Fig. 4 is a fragmentary horizontal cross sectional view taken along the plane of the line 4—4 in Fig. 3.

Fig. 5 is a plan view of the combined head bar and tilt rail with the ladder tapes for the blind installed thereon.

Fig. 6 is an enlarged fragmentary cross sectional view taken along the plane of the line 6—6 in Fig. 5.

Fig. 7 is an enlarged fragmentary cross sectional view taken along the plane of the line 7—7 in Fig. 5.

Fig. 8 is a fragmentary vertical cross sectional view taken along the plane of the line 8—8 in Fig. 1 and illustrating the spring connection between the facia and the right hand mounting bracket.

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My blind consists generally of the familiar slats 1 supported for lifting and tilting adjustment by the usual ladder tapes 2. The tapes are carried by a tubular member 3 which forms a combined tilt rail and head bar and which is in turn supported by the mounting brackets 4 and 5 arranged to be secured to the window casing. The brackets 4 and 5 are provided with forwardly convex front flanges 6 which support a facia piece 7 for enclosing the front of the tubular member 3 and the left hand bracket 4 is provided with mechanism generally indicated at 8 for tilting the head bar and the Venetian blind.

The tilt mechanism 8 is more particularly described and claimed in the copending application of myself and John N. Tiffany, Serial No. 24,858 filed May 3, 1948. Generally, the tilting mechanism consists of a transmission housing 9 carrying the transversely extending worm shaft 10 and the longitudinally extending tilt shaft 11. The transmission housing is removably secured to the left bracket 4 and the tilt shaft 11 is provided with a non-circular end 12 for non-rotatable engagement with the head bar 3. The worm shaft and tilt shaft are operatively connected by the worm and gear 13 and a pulley 14 on the worm shaft is arranged to be driven by the tilt cord 15 for rotating the tilt shaft 11 and head bar 3.

The head bar 3 is tubular in shape being formed of rolled sheet metal of relatively light gauge the adjacent edges of which are secured together by the clip 16 and the end cap 17 (see Fig. 5). The upper surface of the head bar 3 defines two longitudinally spaced sets of three angularly disposed slots 18 (see Fig. 7), through which the upper ends of the ladder tapes 2 are passed for attachment to the head bar. As is most clearly illustrated in Figs. 2 and 7 the ends of the ladder tapes are provided with loops 19 and threaded inwardly through the side slots 18 and upwardly and outwardly through the center slots 18. U-shaped retaining clips 20 are then passed through the loops 19 to span the center slots 18 and retain the ladder tapes on the head bar.

The lower surface of the tubular head bar 20 is apertured at two longitudinally spaced points, preferably directly under the slots 18 as at 21 to pass the lift cords 22 which extend from within the head bar downwardly between the front and rear reaches of the ladder tapes and through the holes 23 in the slats 1 in a well known manner

mounted within the head bar and straddling the openings 21 are a pair of pulley brackets 24 rotatively supporting the cord pulleys 25. The brackets 24 are conveniently locked in place by means of the ears 26 which project through the wall of the head bar and are turned over as illustrated in Fig. 6. Toward the right end of the head bar I have provided a familiar type of lift cord lock mechanism consisting of a generally U-shaped stamping 27 having a laterally extending flange 28 bolted within the head bar to hold the bracket in place. The bracket 27 carries a double cord guide pulley 29 and a pivotally mounted locking arm 30 arranged to guide and engage the two lift cords 22 extending through the head bar from the cord pulleys 25. The ends of the lift cords extend downwardly past the locking bar 30 through a slot 31 in the bottom of the head bar.

The right end of the head bar 3 telescopically receives a tubular extension member 32 having an end plug 33 defining the bearing 34. The inner end of the extension member is slotted as at 35 so as to pass inwardly on each side of the bracket 27 and the coil spring 36 is compressed between the end plug 33 and the bracket 27 as illustrated in Fig. 6. The bearing portion 34 is arranged to receive and be supported by a pin 37 carried by the right end bracket 5.

The left end of the head bar 3 is supported by the cap 17 which defines a non-circular aperture 38 receiving the end of the tilt shaft 12 as is most clearly illustrated in Fig. 7. Attention is called to the fact that the inner end of the tilt shaft 12 is threaded as at 39 to engage the hub of the hand wheel 40. The hand wheel 40 can be adjusted linerally on the tilt shaft to bear against the cap 17 and force the head bar 3 laterally with respect to the mounting brackets 4 and 5. This lateral movement of the head bar is accommodated at the hight end of the bar by the telescopic action of the extension member 32. The head bar can thus be centered in space between the mounting brackets and considerable variation in the length of the head bar and therefore the spacing of the brackets is permitted by reason of the extension member 32.

Attention is now directed to the facia piece 7 and the manner of its support on the brackets 4 and 5. As is most clearly illustrated in Figs. 2 and 3 each of the forward flanges 6 is provided with an upwardly extending lug 41 and the facia 7 is provided with a rearwardly turned top flange 42. The ends of the flange 42 define longitudinal slots 43 adapted to pass the lugs 41 in various longitudinally adjusted positions of the brackets.

One or both of the brackets 4 and 5 can thus be moved laterally with respect to the facia and still have the lugs 41 engage the top flange of the facia. As is shown in Fig. 1, one or both of the end brackets may project beyond the end of the facia as at 44 with the flange 6 forming a continuation of the facia.

The lower edge of the facia 7 is provided with a rearwardly turned flange 45 springably engageable with the lower edge of the flange 6 as at 46 in Figs. 1 and 8 and the left end of the facia is provided with a spring clip 47 having a finger 48 engageable with the rear side of the flange 6 on the left bracket 4.

Each of the brackets 4 and 5 is provided with flanges in the three rectangular coordinate planes so that the brackets can be mounted either on the front of a casing as shown in Figs. 3 and 4 or against the inner side surface of the casing or against the top inner surface of the casing.

I have thus described a highly practical commercial embodiment of my blind structure and wish to call attention to the extreme flexibility or adaptability of the structure to windows of different widths. The vertical depth or width of the facia 7 is reduced to a minimum as there is no separate tilt rail and head bar to be concealed and the transverse depth of the structure is reduced to a minimum by the tilt mechanism used which requires a minimum of space both vertically and transversely of the blind.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A Venetian blind comprising a pair of end brackets, tilting mechanism including a tilt shaft removably secured to one of said brackets, a combined head bar and tilt rail of hollow rolled sheet construction, means on one end of said bar defining an aperture non-rotatively receiving the end of said tilt shaft, ladder tapes secured to said bar and depending from each side thereof, the bottom of said bar defining spaced apertures, cord pulleys supported by brackets within said bar and adjacent to said apertures, lift cords for said blind threaded through said apertures, and over said pulleys, said bar defining a slot near the end and in the bottom thereof, another bracket secured to said bar and over said slot, a guide pulley and locking mechanism carried by said other bracket, said lift cords extending over said guide pulley and through said slot in operative relationship to said locking mechanism, a tubular extension member telescopically engaged with the end of said bar and having an end engageable with the other of said brackets, said extension member being longitudinally slotted to pass said lift cords, means urging said extension member toward said other bracket, and an adjusting wheel having threaded engagement with said tilt shaft for lineal adjustment thereon and engageable with the end of said bar to adjust the position of said bar.

2. In combination with a Venetian blind having a longitudinally extensible head bar, mounting brackets for said blind having attaching flanges in three rectangular coordinate planes, forwardly convex front flanges on said brackets having locking lugs on the upper edges thereof, a convex facia piece having a rearwardly turned top flange, said top flange defining slots near the ends thereof adapted to receive said lugs, a rearwardly turned bottom flange on said facia springably engageable with the lower edge of one of said front flanges, and a spring clip secured to the back of said facia and having a finger engageable with the back surface of the other of said front flanges, said front flanges and facia being approximately the same width so that said front flanges form visual continuations of said facia when extended therebeyond.

3. In combination with a Venetian blind having a longitudinally extensible head bar, mounting brackets for said blind, front flanges on said brackets having locking lugs on the upper edges thereof, a facia having a rearwardly turned top flange, said top flange defining slots near the ends thereof adapted to receive said lugs, a rearwardly turned bottom flange on said facia springable engageable with the lower edge of one of said front flanges, and a spring clip secured to the back of said facia and having a finger engageable with the back surface of the other of said front

flanges, said front flanges and facia being approximately the same width so that said front flanges form visual continuations of said facia when extended therebeyond.

4. A combined tilt rail and head bar for a Venetian blind comprising a tubular body member of rolled sheet metal construction, an end cap retaining one end of said member in rolled condition and defining a non-circular aperture adapted to receive a tilt shaft, a clip securing the adjacent edges of said member in fixed relationship and spaced from said end cap, a tubular extension member telescopically engaged within the other end of said body member and having an end plug defining a bearing engageable with a supporting pin, spring means urging said extension member axially away from said tubular body member, a bracket secured within said body member and having a guide pulley and locking arm mounted therein, said bracket forming one abutment for said spring means, and cord pulleys secured in said body member at longitudinally spaced intervals for guiding lift cords operatively associated with said locking arm, said body member defining longitudinally spaced sets of three angularly displaced slots, said slots being located in the opposite wall of said body member from said cord pulleys and being adapted to receive ladder tapes for attachment to said head bar, said extension being slotted in its inner end to pass said bracket.

5. A combination tilt rail and head bar for a Venetian blind comprising a tubular body member of rolled sheet metal construction, an end cap retaining one end of said member in rolled condition and defining a non-circular aperture adapted to receive a tilt shaft, a clip securing the adjacent edges of said member in fixed relationship and spaced from said end cap, a tubular extension member telescopically engaged within the other end of said body member and having an end plug engageable with a supporting bracket, spring means urging said extension member axially away from said tubular body member, a bracket secured within said body member and having a guide pulley and locking arm mounted therein, and cord pulleys secured in said body member at longitudinally spaced intervals for guiding lift cords operatively associated with said locking arm, said body member defining longitudinally spaced sets of three angularly displaced slots, said slots being located in the opposite wall of said body member from said cord pulleys and being adapted to receive ladder tapes for attachment to said head bar.

6. A combined tilt rail and head bar for a Venetian blind comprising a tubular body member of rolled sheet construction, an end cap on said member and defining a non-circular aperture adapted to receive a tilt shaft, a clip securing the adjacent edges of said member in fixed relationship and spaced from said end cap, a tubular extension member telescopically engaged with the other end of said body member and having an end engageable with a supporting pin, spring means urging said extension member axially away from said tubular body member, a bracket secured within said tubular body member and having a guide pulley and locking arm mounted therein, and cord pulleys secured in said body member at longitudinally spaced intervals for guiding lift cords operatively associated with said locking arm, said body member defining longitudinally spaced sets of slots located in the opposite wall of said body member from said cord pulleys and being adapted to receive ladder tapes for attachment to said head bar.

7. A combined tilt rail and head bar for Venetian blind comprising a tubular body member of rolled sheet construction, an end cap on said member and defining a non-circular aperture adapted to receive a tilt shaft, a tubular extension member telescopically engaged with the other end of said body member and having an end engageable with a supporting pin, spring means urging said extension member axially away from said tubular body member, a bracket secured within said tubular body member and having a guide pulley and locking arm mounted therein, and cord pulleys secured in said body member at longitudinally spaced intervals for guiding lift cords operatively associated with said locking arm, said body member defining longitudinally spaced sets of slots located in the opposite wall of said body member from said cord pulleys and being adapted to receive ladder tapes for attachment to said head bar.

8. A combined tilt rail and head bar for a Venetian blind comprising a tubular body member, one end of said body being adapted to engage a rotatable support, a tubular extension member telescopically engaged with the other end of said body member and having an end adapted to rotatably engage a second support, spring means urging said extension member axially away from said body member, a bracket secured within said tubular member and having a guide pulley and locking arm mounted therein, said bracket forming one abutment for said spring means, and cord pulleys secured in said tubular member at longitudinally spaced intervals for guiding lift cords operatively associated with said locking arm, said body member defining longitudinally spaced slots adapted to pass said lift cords into and out of said body.

9. A combined tilt rail and head bar for a Venetian blind comprising a tubular body member, one end of said body being adapted to engage a rotatable support, a tubular extension member telescopically engaged with the other end of said body member and having an end adapted to rotatably engage a second support, spring means urging said extension member axially away from said body member, a bracket secured within said tubular body member and having a locking arm mounted therein, and cord pulleys secured in said tubular member at longitudinally spaced intervals for guiding lift cords operatively associated with said locking arm, said extension member defining a longitudinal slot adapted to pass said lift cords.

10. Venetian blind structure including a longitudinally extensible head bar, brackets for supporting said bar, tilting mechanism carried on one of said brackets and having a rotatable shaft engageable with one end of said bar to rotatably support said bar, said shaft having a threaded portion, and an adjusting plate threadedly engaged with said threaded portion and engageable with the end of said bar to adjust the axial length of said bar.

11. Venetian blind structure including a longitudinally extensible head bar, brackets for supporting said bar, tilting mechanism carried on one of said brackets and having a rotatable member engageable with one end of said bar to rotatably support said bar, said member having a threaded portion, and an adjusting member threadedly engaged with said threaded portion and engageable with the end of said bar to adjust the axial length of said bar.

12. Venetian blind structure including a longitudinally extensible head bar, brackets for supporting said bar, tilting mechanism carried on one of said brackets and having a rotatable member engageable with one end of said bar to rotatably support said bar, a supporting member on the other of said brackets, one of said members having a threaded portion, and an adjusting plate threadedly engaged with said threaded portion and engageable with an end of said bar to adjust the axial length of said bar.

13. A combined tilt rail and head bar for a Venetian blind comprising, a generally tubular body member formed of a sheet of rolled metal, an end member on one end of said bar retaining said sheet in rolled position and adapted to engage a support, a clip located remotely from said end member and secured to the adjacent edges of said sheet to hold said sheet against radial and longitudinal displacement, brackets secured to said sheet within said tube and carrying cord directing pulleys, and a tubular extension slidably and telescopically engaging the opposite end of said body member from said end member.

14. A combined tilt rail and head bar for a Venetian blind comprising, a generally tubular body member formed of a sheet of rolled material, an end member on one end of said bar retaining said sheet in rolled position and adapted to engage a support, a clip located remotely from said end member and secured to the adjacent edges of said sheet to hold said sheet against radial and longitudinal displacement, and brackets secured to said sheet within said tube and carrying cord directing pulleys.

15. Venetian blind structure including a tubular head bar, brackets for supporting said bar, tilting mechanism carried on one of said brackets and including a tilt shaft having a suporting driving engagement with one end of said bar, a supporting pin on the other of said brackets, a bearing member engageable with said pin and longitudinally slidably engaged within the opposite end of said bar from said shaft, a spring compressed between said bearing member and an interior portion of said head bar to urge said bearing member outwardly toward said other bracket, and an adjusting plate threadably engaged with said tilt shaft for longitudinal adjustment relative to said head bar and engageable with the first end of said head bar in opposition to the pressure of said spring.

16. Venetian blind structure including a tubular head bar, brackets for supporting said bar, tilting mechanism carried on one of said brackets and having a supporting rotary driving engagement with one end of said bar, a bearing member longitudinally slidably engaged within the other end of said bar and having a rotatable supporting and longitudinal thrust connection to the other of said brackets, a spring compressed between said bearing member and an interior portion of said head bar to urge said bearing member outwardly toward said other bracket, and an adjusting plate threadably engaged with said tilting mechanism for longitudinal adjustment relative to said head bar and engageable with the first end of said head bar in opposition to the pressure of said spring.

17. Venetian blind structure including a tubular head bar, brackets for supporting said bar, tilting mechanism carried on one of said brackets and having a supporting rotary driving engagement with one end of said bar, a bearing member longitudinally adjustably engaged with the other end of said bar and having a rotatable supporting and longitudinal thrust connection to the other of said brackets, and an adjusting plate threadably engaged with said tilting mechanism for longitudinal adjustment relative to said head bar and engageable with the first end of said head bar.

GLENN L. SHERWOOD.

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