

Dec. 23, 1952

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2,622,673

VENETIAN BLIND HEAD BAR ORGANIZATION

Filed Aug. 16, 1949

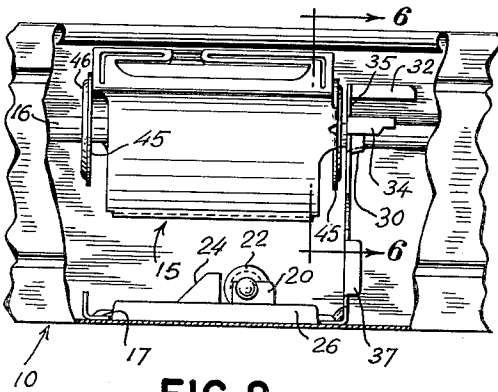


FIG. 2

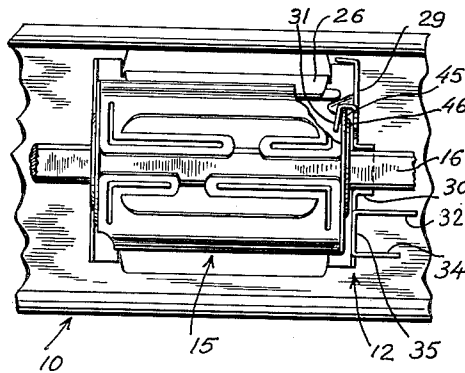


FIG.3

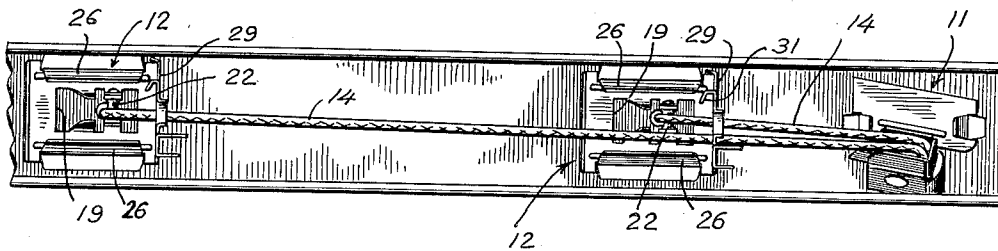


FIG. 1

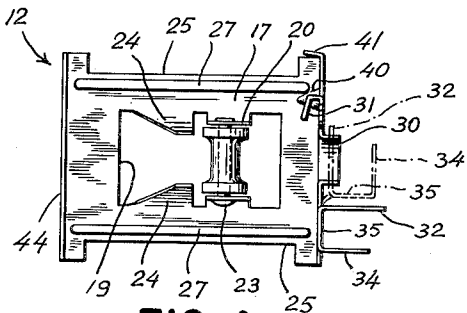


FIG. 4

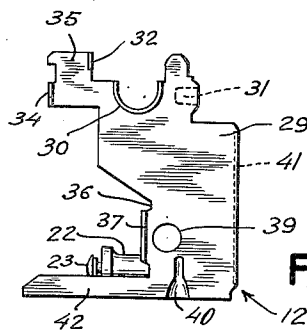


FIG.5

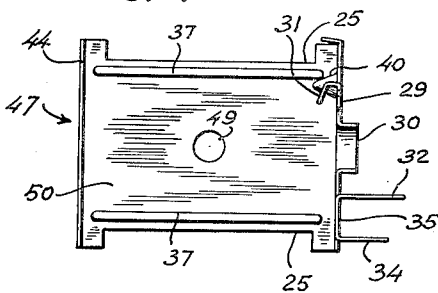


FIG.7

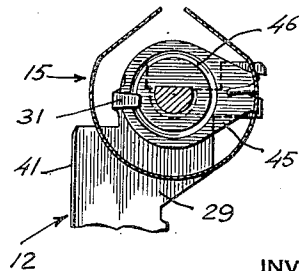


FIG. 6

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2,622,673

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Application August 16, 1949, Serial No. 110,517

5 Claims. (Cl. 160—173)

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This invention relates to Venetian blinds of the so-called "enclosed head" type in which the blind-operating mechanism is contained within a more or less enclosed or boxlike head bar. The invention is directed to an improved tilt rod support or cradle for use in the headbar assembly of such blinds.

In certain forms of enclosed heads, the headbar is formed of a sheet metal channel having openings formed in its bottom wall for passage of ladder tape branches, lift cords and tilt cords of the Venetian blind. The ladder tapes of the blind are suspended from tape rockers which are mounted at intervals along a tilt rod, running lengthwise of the head bar, one tape rocker being provided for each ladder tape of the blind.

Tilt rod cradles are provided to support the tilt rod adjacent each tape rocker. The tilt rod cradles for the ladder tapes which have a lift cord associated therewith are also provided with a cord guide pulley to permit leading the lift cord along the headbar and to a cord lock fitting adjacent an end thereof. This general type of headbar assembly is more fully disclosed in my copending application S. N. 778,002, filed October 4, 1947.

In the form shown of the present invention, the tilt rod cradle comprises a base having a single upstanding leg provided with a bearing to receive and support the tilt rod. This leg is also provided with a spaced parallel portion or tab to restrain lateral movement of the tape rocker relative to the cradle so as to maintain the ladder tape branches alined in their passage through slots provided in the headbar therefor.

In the form shown of the invention, the lift cord or cords are received in a slot or notch formed in the upstanding leg of the cradle, this construction facilitating reeving of and providing greater clearance for the lift cords.

Among the objects of the present invention are to provide a tilt rod cradle that is lighter and requires less metal, that facilitates the reeving of the lift cords in the headbar assembly that provides greater clearance for the lift cords; and to generally improve tilt rod cradles and headbar assemblies in which the cradles are used.

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

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

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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 top plan view of a Venetian blind headbar assembly utilizing the tilt rod cradle of the present invention, the tilter end of the headbar and the tilt rod and tape rockers being omitted, and lift cords being included.

Fig. 2 is an enlarged side elevation of the portion of the headbar assembly of Fig. 1 adjacent one of the tilt rod cradles, the front wall of the headbar being partially broken away to show interior construction. The lift cords have been omitted and the tilt rod and tape rocker included.

Fig. 3 is a top plan view of the portion of the headbar assembly as shown in Fig. 2, a portion of the tape rocker being broken away to show details of construction.

Fig. 4 is a top plan view of one of the tilt rod cradles shown in Fig. 1 and shown in greater detail in Figs. 2 and 3.

Fig. 5 is an end elevation of the tilt rod cradle shown in Fig. 4.

Fig. 6 is a fragmentary vertical section of the tilt rod cradle, tilt rod and tape rocker, taken on the line 6—6 of Fig. 2.

Fig. 7 is a top plan view of a modified form of tilt rod cradle for use in multiple-lift-cord blinds or blinds in which a ladder tape is used without an associated lift cord.

Referring to Fig. 1, the headbar assembly there shown comprises a channel-shaped sheet metal headbar 10 which is provided with fittings spaced along its bottom wall. These fittings include a cord lock 11, a pair of tilt rod cradles 12, 12 and a tilter, not shown. The headbar assembly shown in Fig. 1 is for use in a two lift cord blind having two ladder tapes. Lift cords 14, 14 are shown reeved in the usual manner through the cord lock 11 and tilt rod cradles 12, 12. The lift cords pass through the bottom wall of the headbar near its forward side (the side towards the operator of the blind).

Referring now to Figs. 2 and 3 in conjunction with Fig. 1, a tape rocker 15 is provided within the headbar 10 for receiving the ladder tape branches of each ladder tape, the tape rockers being spaced along a tilt rod 16 extending longitudinally within and for most of the length of the headbar.

The tilt rod 16 is a relatively small straight metal rod which is preferably of D-shaped or other non-circular cross section. For tilting the blind slats, the tilt rod 16 is oscillated by means of the tilter, not shown, and is supported at intervals along its length by the tilter and the tilt rod cradles 12. The overall organization described in this and the preceding paragraph is

generally similar to that shown in my copending application S. N. 778,002.

Referring now particularly to Figs. 2, 4 and 5, my improved tilt rod cradle 12 comprises a sheet metal stamping having a generally flat base 17. The base 17 is provided with an opening 19 shaped generally as indicated in Fig. 4 and provided with cord guide means; e. g., a pair of upstanding marginal ears 20, 20 receiving a rivet or other pivot member 23 rotatably supporting a cord pulley 22 between the ears. A pair of diagonally-extending guides 24, 24 project inwardly and upwardly from the margin of opening 19 and are shaped to direct and maintain the lift cord 14 on the pulley 22.

The base 17 of the tilt rod cradle may also be provided with a shallow elongated notch 25 on two opposite sides thereof for reception of a pair of tabs 26, 26 of corresponding width struck upwardly from the bottom wall of the head bar 10 and adapted to be bent inwardly and down against the cradle 12 to retain it in position and to furnish a smooth bearing for passage of the ladder tape branches through the bottom wall of the headbar. Longitudinally extending raised corrugations or beads 27, 27, one arranged just inside of each of the notches 25, 25 aid in reinforcing the base 17 and serve to provide an elevated surface against which the tabs 26, 26 of the head bar 10 may be bent for firmly clinching the tilt rod cradle.

The cradle 12 is provided with an upstanding leg 29 at one end of the base 17, this leg being wholly contained within the headbar 10 and serving to support the tilt rod 16 and retain the tape rocker 15 against endwise movement. The leg 29 extends upwardly at right angles from the base 17 and is provided with a tilt rod bearing 30 in its upper portion. The bearing 30 is generally semicircular in outline but somewhat increased in depth in order to retain and rotatively support the tilt rod 16. In forming the bearing 30, some of the displaced metal may be formed into an outwardly-extending bearing surface. The bearing 30 is directly above the longitudinal center-line of the cradle base.

The upper part of the leg 29 adjacent the bearing 30 is provided with a rigid tab 31 which is bent inwardly and back upon itself in generally parallel spaced relation to provide a slot opening towards the tilt rod bearing. This tab is provided to limit endwise movement of the associated tape rocker 15, as will be explained.

The front upper portion of leg 29 is provided with a pair of initially outwardly-extending generally parallel tabs 32 and 34, the tab 32 being somewhat longer and located a little higher than the bearing 30 and the tab 34 being located opposite the bearing 30. The locations and proportions of tabs 32 and 34 are such that, after insertion of the tilt rod 16 in the cradles 12, 12, the forwardly-projecting portion 35 of the leg 29, including tabs 32 and 34, may be bent outwardly through 90°, thus rotating tab 32 into position extending across the top of the bearing 30 and the tab 34 into position across the end of the tilt rod 16, the tilt rod terminating just to the right of the right-hand cradle 12. The bent position of the portion 35 together with the tabs 32 and 34 is indicated in dot-dash line in Fig. 4.

Since the tilt rod 16 is commonly received within the tilter, it is usually unnecessary to restrain the tilt rod 16 from displacement upwardly from the bearing 30 except at the cradle 12 farthest removed from the tilter, and it is only at such

cradle that the tilt rod end stop tab 34 can function. However, the tab 32 of any of the other cradles 12 may be bent independently of the tab 34 to position overlying the bearing 30 if desired.

A large, forwardly opening notch 36 of the form indicated in Fig. 5 may be cut in the forward portion (towards the operator of the blind) of the leg 29, this notch extending more than half way across the width of the leg and past the longitudinal center line of the cradles. The notch 36 is formed to provide ample clearance for passage of the lift cords 14, 14 so as to permit their free running in raising and lowering the blind and prevent fraying of the lift cords.

Referring to Fig. 1, it will be noted that the lift cords pass through the cord lock 11 and the bottom wall of the headbar 10 at a location somewhat forward (toward the interior of the room) of the center line of the headbar. However, the tilt rod cradles 12, 12 preferably are located slightly rearward of the center line of the headbar in order to displace the ladder tapes and depending slats of the blind rearwardly (toward the window) and permit free operation of the lift cords preventing their contacting the forward edge of the topmost slat. Accordingly, the lift cords 14, 14 do not extend along the center line of the headbar or precisely parallel to the center line but extend at an angle to the center line and directly from the cord lock 11 to the pulley 22 of each tilt rod cradle 12. The angular position of the lift cords 14, 14 within the head bar depend in large measure upon the spacing between the cord lock 11 and the tilt rod cradles 12, 12. However, the notch 36 provides ample clearance for passage of these cords regardless of what spacing is used since the entire portion of the leg 29 forward of the central portion of the pulley 22 is clear for passage of the lift cords. Also reeving the lift cords 14, 14 is facilitated since the cords need not be passed through apertures in upstanding legs of the tilt rod cradles as in some constructions.

An outwardly-extending guide tab 37 may be provided at the rear of the notch 36 to provide a smooth bearing opposite the lift cord so as to prevent any possible fraying of the cords in the event they should at times run against the rear wall of the notch. The leg 29 may be provided with a hole 38 located rearwardly of the notch 36, the purpose of this hole being explained hereinafter.

A short inwardly pressed bead 40 extending into both the base 17 and the leg 29 may be provided to reinforce the junction against bending, while the portion of the leg 29 reduced in width by the notch 36 may be reinforced by an inwardly-directed flange 41 extending along its rear edge.

The lower edge of the notch 36 is so formed as to leave a short flange 42 extending upwardly from the base 17, this flange being a portion of the leg 29. This flange is not high enough to interfere with passage of the lift cords and serves to stiffen the base 17 against bending. A corresponding flange 44, which may be made slightly higher and still not interfere with the lift cords, is located at the opposite end of the base 17.

The cradle 12 is adapted for use with a tape rocker 15 of the general type indicated in Figs. 2, 3 and 6, in which the tape rocker is supported on the tilt rod by a radial, inwardly-extending arm or end flange 45 at each end of the tape rocker forming an end wall thereof, the tilt rod

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extending through openings formed in the arms 45, 45. The portion of the arms 45, 45 surrounding the tilt rod opening may be rounded as indicated in Fig. 6 and provided with an outwardly-pressed marginal bead 46 to serve as a smooth bearing which may from time to time engage the inner face of the leg 29 of the tilt rod cradle 12 herein described. This general type of tape rocker is disclosed in my copending application S. N. 778,002.

The arrangement of the tab 31 of the cradle 12 is such that upon assembly of the tape rocker 15 and tilt rod 16 with the cradle, tab 31 will lie around the edge of the adjacent arm 45 of the tape rocker, as best indicated in Figs. 3 and 6, thus, together with the adjacent face of the leg 29, limiting endwise movement of the tape rocker in both directions so as to maintain the branches of the ladder tape aligned with the slats in the bottom wall of the head bar provided for their passage by striking up the tabs 26, 26.

As indicated in Fig. 6, the tab 31 overlies the arm 45 at a location diametrically opposite from the radially-projecting portion of the arm when the tape rocker is in level-slat position. Hence, the tape rocker 15 may be rotated in excess of 90° in either direction without the tab 31 interfering with its movement, thus permitting rotation of the blind slats to closed position in either direction.

In the second form of tilt rod cradle 47 shown in Fig. 7, the opening 19 and pulley 22 in the base of the cradle 12 have been replaced by a round hole 49 in the base 50. The remainder of the base 50 and the leg 29 and flange 44 may be exactly similar to the corresponding portions of the cradle 12, previously described.

The tilt rod cradle 47 is somewhat cheaper to manufacture than the cradle 12 and may be used when there is no lift cord adjacent the ladder tape as in the middle ladder tape of a two-lift-cord blind having three ladder tapes. It is also useful in the so-called "multiple lift cord" blind in which the ends of the lift cords are secured in the head bar and reeved downwardly through the slats of the blind, along the bottom bar and upwardly through the slats of the blind to the head bar before passing to the cord lock. In such a construction, since no cord pulley is required on half of the tilt rod cradles, the cradle 47 may be used, the end of the lift cord passing upwardly through the hole 49 and being secured as by tying a knot on the end of the cord. However, the tilt rod cradle 12 may also be used in place of the cradle 47 in the head bar of a multiple lift cord blind, the ends of the lift cords being passed through the hole 39 in the leg 29 and secured by being knotted or tied.

I claim:

1. A tilt rod cradle for Venetian blinds of the enclosed head type, said cradle comprising a stamped sheet metal body having a base portion adapted to be mounted on the bottom wall of an enclosed head bar, an upstanding leg at one end of the base and provided at its upper end with a tilt rod bearing, and a short upstanding stiffening flange at the opposite end of the base, the upstanding leg having an open notch formed in the forward wall thereof for reception of lift cords of the blind, and the lower wall of the notch extending parallel to the base to provide a narrow stiffening flange portion of the leg extending upwardly from the base.

2. An enclosed head bar assembly for a Vene-

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tian blind, comprising: a channel-shaped sheet metal head bar, a tilt rod extending longitudinally within the head bar, a tilt rod cradle mounted on the interior bottom surface of the head bar, and a tape rocker mounted on the tilt rod adjacent the cradle, the cradle having a generally flat base mounted on the channel and a vertical, generally flat, upwardly projecting leg adjacent one end of the cradle provided with an upwardly opening bearing for receiving the tilt rod, the tape rocker having an intermediate ladder-tape-engaging portion and generally flat, arcuate end flanges provided with concentric holes for nonrotatively receiving the tilt rod and each end flange being connected with the intermediate portion of the tape rocker by an arm extending from the periphery of said end flange, and the tilt rod cradle having a portion adjacent the tilt rod bearing formed into spaced overlapping relation with the general plane of the tape rocker end flange to provide a slot opening towards the tilt rod bearing for receiving the peripheral portion of an end flange of the tape rocker, said portion of the cradle being located substantially diametrically opposite the junction of the end flange and arm of the tape rocker when the tape rocker is in slat-level position.

3. An assembly as claimed in claim 2, in which the portion of the tilt rod cradle adjacent the tilt rod bearing and formed into spaced relation with the general plane of the tape rocker end flange is spaced horizontally from the tilt rod bearing.

4. A tilt rod cradle for blinds of the enclosed head type, said cradle comprising: a stamped sheet metal body having a generally flat base portion adapted to be mounted on the bottom of an enclosed head bar and provided with cord guide means located in the central zone of the base portion for receiving a lift cord, and having a generally flat, vertical, upstanding flange at one end of the base portion provided with an upwardly opening, arcuate bearing for receiving a tilt rod, the cord guide means of the base being centered beneath the axis of the tilt rod bearing, and the end flange of the cradle being formed to provide a slot extending from one vertical edge of the flange beneath and beyond the axis of the tilt rod opposite the cord guide means to provide clearance for leading a lift cord from the cord guide means in a direction generally parallel to the axis of the tilt rod bearing.

5. A tilt rod cradle as claimed in claim 4, having a portion of the vertical flange adjacent the tilt rod bearing formed into spaced overlapping relation with the general plane of the flange to provide a slot opening towards the tilt rod bearing.

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