Feb. 24, 1953 H. NELSON 2,629,434

VENETIAN BLIND SUPPORTING AND ACTUATING STRUCTURE

Filed Oct. 4, 1947 4 Sheets-Sheet 1

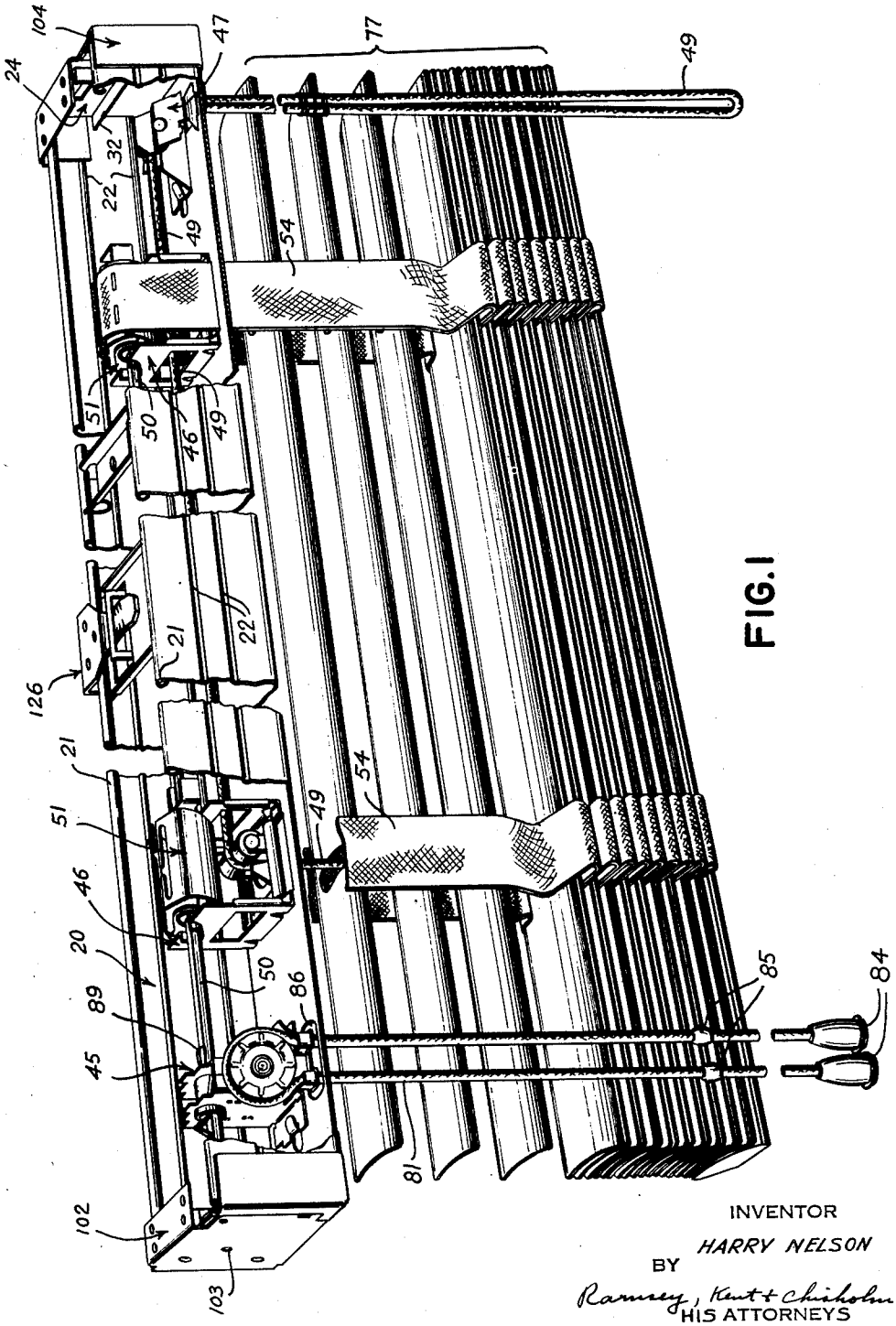

FIG. 1

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Filed Oct. 4, 1947 4 Sheets-Sheet 2

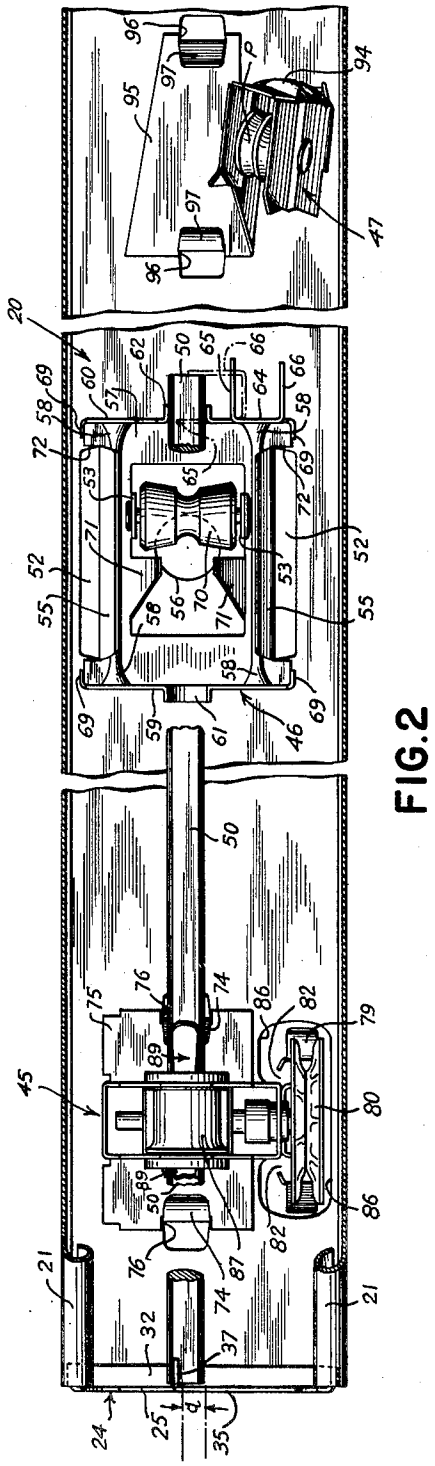

FIG.2

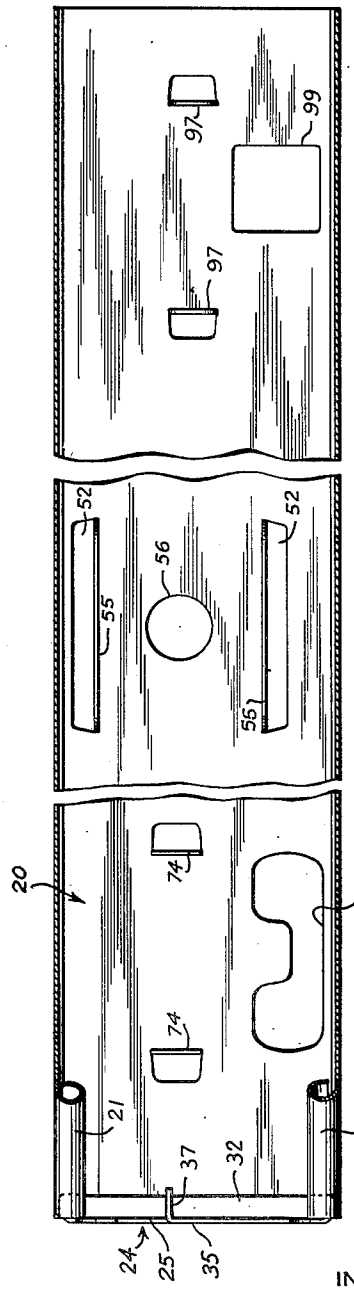

FIG.3

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VENETIAN BLIND SUPPORTING AND ACTUATING STRUCTURE

Filed Oct. 4, 1947 4 Sheets-Sheet 3

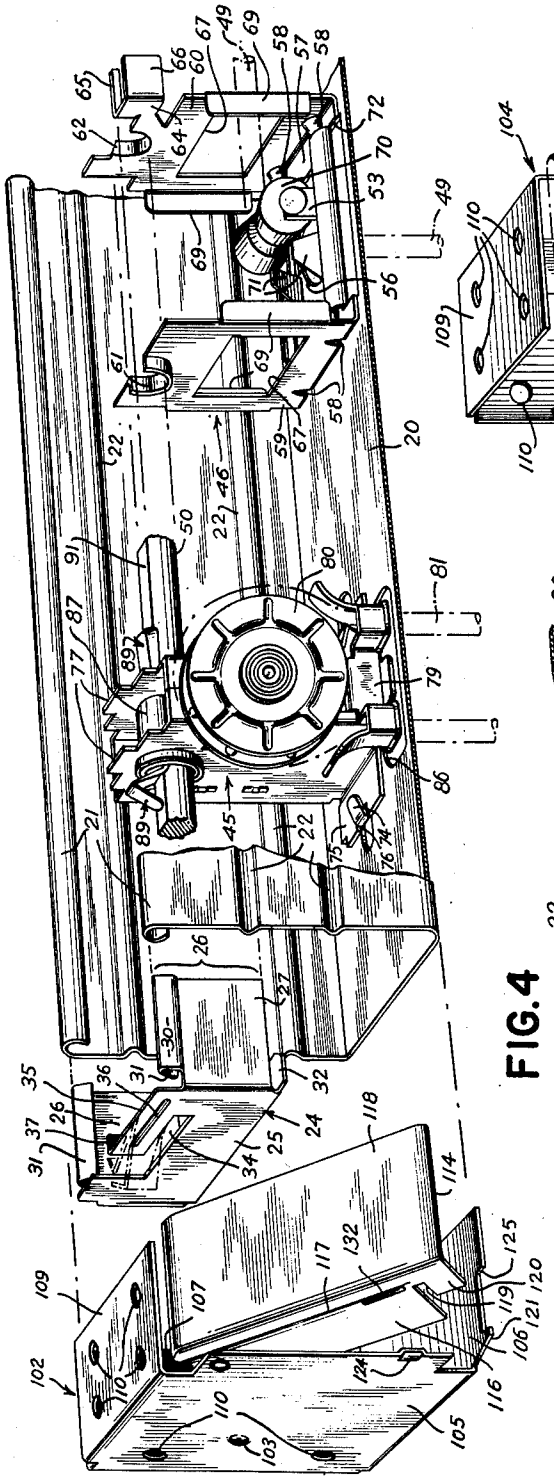

FIG.4

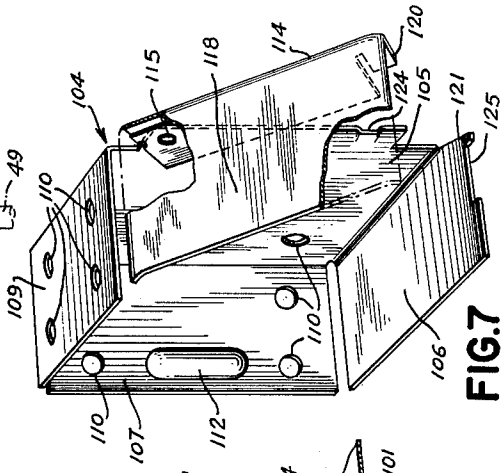

FIG.7

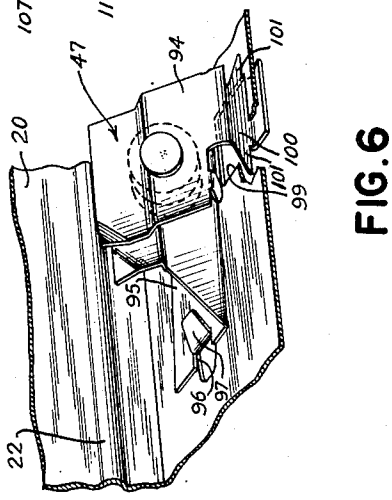

FIG.6

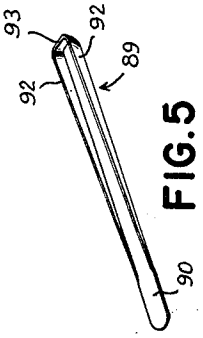

FIG.5

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VENETIAN BLIND SUPPORTING AND ACTUATING STRUCTURE

Filed Oct. 4, 1947 4 Sheets-Sheet 4

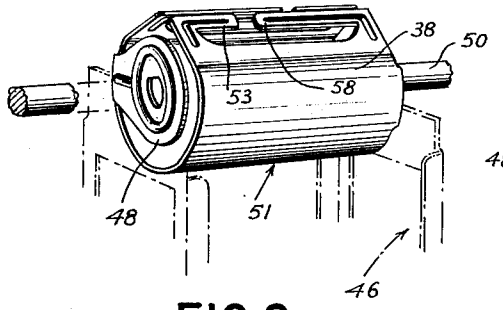

FIG. 8

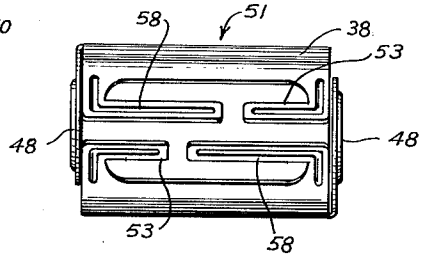

FIG. 9

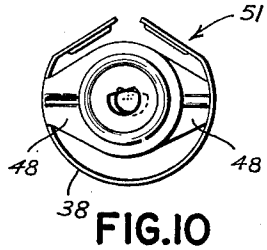

FIG. 10

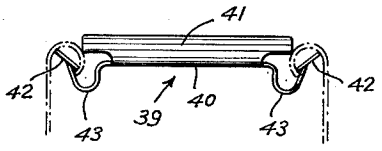

FIG. 11

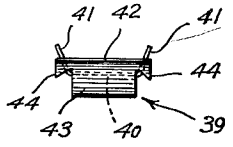

FIG. 12

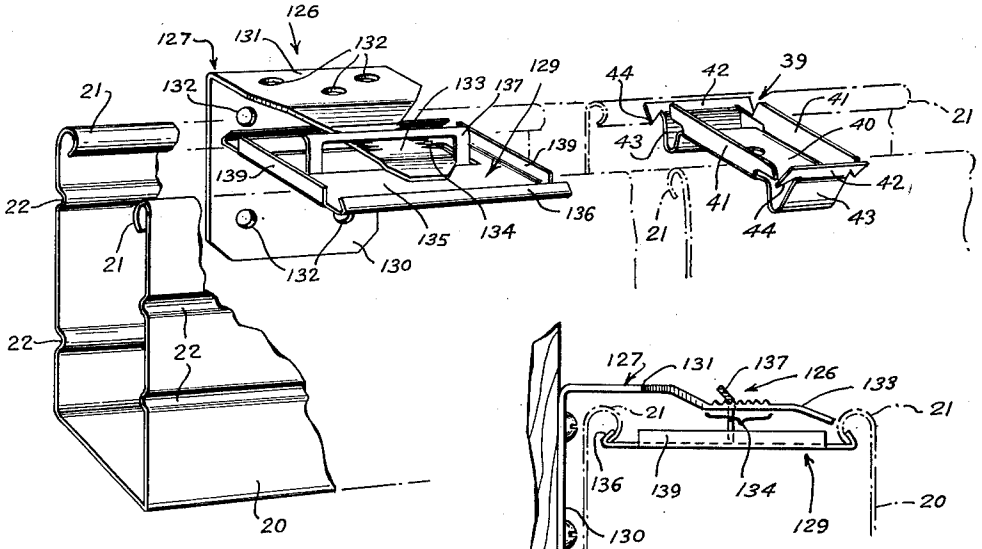

FIG. 13

FIG. 14

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Patented Feb. 24, 1953

2,629,434

UNITED STATES PATENT OFFICE

2,629,434

VENETIAN BLIND SUPPORTING AND ACTUATING STRUCTURE

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Application October 4, 1947, Serial No. 778,002

11 Claims. (Cl. 160—177)

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This invention relates to Venetian blinds, and more particularly to Venetian blind head-bar organizations and associated parts. Certain features of the invention are applicable to various types of head bars, but the invention as a whole is particularly applicable to metal head-bar organizations of the type known in the trade as "enclosed metal heads."

So-called enclosed heads may be handled and installed as a unit. They include a tilter, a tilt rod, tape rockers, a cord lock, and tilt rod cradles that have cord guides, all enclosed within the head bar and usually mounted along the base of a channel-shaped head bar. Thus, there is no occasion to use a valance to conceal the various fittings by which the blind is supported and adjusted. A head-bar organization of this type is shown in my Patent No. 2,455,135 issued November 30, 1948, the present invention being in some respects an improvement over the construction there shown.

Heretofore the tilter, tilt rod, etc. have been centered on the longitudinal center line of the head bar channel. In the form shown of the present invention, these parts are centered on a line parallel to the longitudinal center line of the channel and positioned to the rear of such longitudinal center line, the "rear" of the channel being the side which is located away from the room when the blind is mounted in a window frame. Thus, the assembly of slats which compose the blind hangs with the central vertical plane of the assembly in a rearwardly offset position with respect to the longitudinal center line of the head bar channel. This permits the tilter-operating cord and the manually-grasped portion of the lift cords to pass downwardly through the bottom of the head bar channel in such position as to effectively clear the top slat of the blind, thereby affording free manual manipulation of these cords without their scraping the front edge of the top slat of the blind and thereby angularly displacing this slat from its proper position as determined by the tilter and ladder tape. Further, since these cords will hang clear of the top slat, they will not bind and interfere with operation of the cords themselves or the tilting movement of the top slat. The elimination of such scraping is particularly advantageous in metal slat blinds, since cords may become rapidly worn by scraping on the edge of a metal slat.

The form shown of the present invention provides for more facile installation of the tilt cord in an enclosed head bar. Also it embodies an

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improved end brace and an improved top brace which may be installed with increased facility.

Among the objects of the invention are to eliminate scraping of the tilt and lift cords on the front edge of the top slat of the blind, to provide adequate operating clearance for such cords without increasing the front-to-rear dimension of the head bar, to provide for more facile installation of the tilt cord in an enclosed head, to provide an improved end brace for enclosed metal heads, to provide an improved top brace for enclosed metal heads, to improve the speed of assembly of enclosed metal heads, to provide an enclosed metal head and parts therefor which can be rapidly and economically manufactured as rolled or stamped sheet metal parts, and to generally improve enclosed metal heads and the parts therefor from the standpoints of manufacture, assembly, use, and durability.

Further objects, and objects relating to details and economies of construction, manufacture, 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 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 perspective view of a Venetian blind embodying the present invention, portions of the head bar and one ladder tape being cut or broken away to show details of construction.

Fig. 2 is a top plan view of the head-bar organization, portions being in section or broken away for convenience of illustration.

Fig. 3 is a top plan view of the head bar channel including an end brace, portions of the bar being in section or broken away for convenience of illustration.

Fig. 4 is a perspective view of one end of the head-bar organization, certain parts being in section or broken away and the end brace and installation bracket being shown in exploded position.

Fig. 5 is an inverted perspective view of the tilt rod wedge.

Fig. 6 is a fragmentary perspective view, show-

ing the cord lock and the adjacent portion of the head bar.

Fig. 7 is a perspective view, with certain portions broken away, of an installation bracket for use with the head-bar organization, this bracket being of opposite hand to that shown in Fig. 4.

Fig. 8 is a perspective view of a tape rocker and the adjacent portion of the tilt rod, portions of the tilt rod cradle being indicated in dot-dash lines.

Fig. 9 is a top plan view of the tape rocker shown in Fig. 8.

Fig. 10 is an end elevation of the tape rocker shown in Fig. 8.

Fig. 11 is a side elevation of a top brace for the head bar channel, portions of the channel being indicated in dot-dash lines.

Fig. 12 is an end elevation of the top brace shown in Fig. 11.

Fig. 13 is a perspective view showing a so-called intermediary support for the head bar, together with the top brace shown in Figs. 11 and 12. Portions of the head bar channel are either shown or are indicated in dot-dash lines.

Fig. 14 is a side elevation of the so-called intermediary head bar support in mounted position, parts of the head bar channel being indicated in dot-dash lines.

Reference will first be had to Figs. 1, 2 and 3. The head bar channel **20** of the Venetian blind is formed of a length of channel-shaped sheet metal severed from a piece of indeterminate length. By making head bars which vary in length in increments of 1'' windows of all widths between the shortest and longest head bar can be provided for, as will be pointed out later.

The channel **20** is provided with round, inwardly-turned, open marginal beads **21**, **21** formed along the upper edges of the channel. The channel **20** may also be provided with longitudinal inwardly-pressed beads or corrugations **22** on both the front and back sides of the channel, the front side being considered as the side toward a person operating the blind. The beads **21**, **21** and the corrugations **22** are preferably formed in the indeterminate length of channel stock, in advance of severing to form the head bar channel **20**. These beads and corrugations add to the appearance of the head bar and stiffen it against bending.

The operating mechanism of the blind is located within the channel **20**, the individual parts thereof being spaced along its length and secured to the inside bottom portion of the channel. This mechanism is secured to the channel by bending over tabs which have previously been struck up from the bottom of the channel, this securing means being generally similar to that shown in the above-mentioned Patent No. 2,455,135. A detailed description of the operating mechanism and its attachment to the head bar channel will be given later.

The channel **20**, which is formed of relatively light gauge sheet metal, preferably steel, is reinforced at its open ends by end braces **24**, **24**, one of these braces being shown in detail in Fig. 4. The braces for both ends are identical, no "lefts" or "rights" being required.

Each end brace **24** is formed as a sheet metal stamping having a flat plate portion **25** adapted to span the space between the upstanding sides of the channel **20**. Inwardly-projecting channel-engaging portions **26**, **26** are provided at the ends of the plate portion **25**, each consisting of a flat plate **27** adapted to lie against the back of one

of the beads or corrugations **22** of the head bar. The upper portion of the plate **27** has a slightly outwardly offset face **30** adapted to lie against the inside vertical face of a side of the channel **20** adjacent the bead **21** thereof and also has a doubled-over extending flange **31** adapted to lie wholly within the bead **21**, and frictionally engage the same, when in applied position on the head bar. The flange **31**, which may be slightly tapered towards its free end of channel-engaging portion **26**, when in applied position extends diametrically across the interior of the bead **21**, tightly engaging the inner surface of the bead so as to retain the end brace **24** in applied position. This frictional engagement is enhanced by the resiliency of the bead **21** which is expanded somewhat by the telescoping of portions **30** and **31** into the bead. The frictional engagement may be further increased by serrating or roughening the portions of flange **31** which engage the bead **21**.

The end brace **24** is provided with an inwardly-directed stiffening flange **32** extending along the lower edge of the plate portion **25**. This flange, when the brace is in applied position, spans the space between the sides of the channel **20**. In addition, an L-shaped slot **34**, which extends to the upper edge of the plate portion **25**, defines a transversely-extending finger **35** which may be reinforced by a stiffening bead **36**. The finger **35** is preferably formed with an inturned end **37**. Finger **35** may subsequently be bent outwardly as required, as indicated in dot-dash lines in Fig. 4, to prevent end play of the head bar **20** within its mounting brackets. The end braces **24**, **24** may be applied by hand pressure alone or may be pressed into position by suitable tools, such as a hand- or foot-operated press.

The sides of the channel **20** are reinforced by one or more top or intermediary braces **39** located between the ends of the head bar channel. In accordance with the usage in the trade these braces are herein termed "intermediary" braces, regardless of the number applied to a single head bar channel, and regardless of their position along the channel. This brace is shown in greater detail in Figs. 11, 12 and 13, to which reference will now be had.

The intermediary brace **39** comprises a generally channel-shaped sheet metal stamping having a base **40** and outwardly-flaring sides **41**, **41** forming with the base a rigid intermediate portion. The base **40** is bent downwardly and recurved in end zones **43**, **43** for resilience, as best shown in Fig. 11. The base **40** terminates in angularly-extending flanges **42**, **42** having prongs **44**, **44** which project on opposite sides of the base.

The outwardly-flaring sides **41**, **41** extend along the brace **39** and are adapted to span the space between the beads **21**, **21** of the head bar channel **20** when the brace is in applied position. The relationship of the above-described portions of the brace **39** is such that the brace may be inserted within the channel **20** by placing it transversely within the channel and pulling upwardly by finger pressure upon the brace **39**. The U-shaped end portions of the brace provide sufficient resiliency to permit angularly-extending flanges **42**, **42** to enter the open beads **21**, **21** of the head bar channel and assuming an angular position extending diametrically across the interior of the beads, as shown in Fig. 11. At the same time, the ends of the outwardly-flaring sides **41**, **41** have been slid upwardly against the outside surface of the beads **21**, **21** by snap action

to the position shown in Fig. 11 in which these ends bear against the upper portion of the beads, thereby assisting in holding the top brace 39 in applied position. The projecting prongs 44 which bear against the inside surface of the beads 21, 21 also aid in retaining the brace in applied position.

The construction of the intermediary brace 39 is such that, when pulled upwardly against the channel beads 21, 21, the terminal portions of the brace lock with those beads by snap action, and the body of the brace then forms a strut extending between the top edges of the channel 20. In applied position the sides 41, 41 of the brace prevent collapse of the sides of the head bar channel 20 and the flanges 42, 42 of the brace retain the brace in position. The resilient end portions 43, 43 hold the beads 21, 21 of the head bar channel 20 against the tips of sides 41, 41 of the brace.

At two or more locations along the head bar channel 20, the bottom thereof is slotted as at 52, 52 (Figs. 2 and 3) for the passage of the front and rear branches of ladder tapes 54, 54 (Fig. 1). The metal struck from the bottom of the channel 20 in forming the slots 52, 52 is projected upward to form upstanding tabs 55, 55, the lower edges of the tabs being attached to the bottom of the channel. Midway between the slots 52, 52 the bottom of the head bar channel 20 is provided with a hole 56 for passage of a lift cord 49 (Fig. 1).

A tilt rod cradle 46 is mounted within the head bar channel 20 in association with each pair of slots 52, 52, this cradle being somewhat similar to that disclosed in said U. S. Patent No. 2,455,135. These cradles are duplicates. Each is formed as a one-piece sheet metal stamping having a bottom portion 57 and sides 59 and 60. Semicircular bearings 61 and 62 in the top of the sides 59 and 60, respectively, rotatably support a tilt rod 50, the bearings 61 and 62 each having a bearing surface which extends for a substantial distance axially of the tilt rod.

A tilt rod retainer 64 is formed adjacent the bearing 62, this retainer comprising a pair of extended fingers 65 and 66, the finger 66 being of greater width and extending lower than the finger 65. After assembly of the entire head bar, including the tilt rod, the tilt rod retainer 64 of the cradle 46 which is adjacent to the free end of the tilt rod may be bodily bent with pliers to the position shown in dot-dash lines in Fig. 2. In this position the finger 65 overlies the tilt rod 50 so as to retain it within the bearings 61 and 62, and finger 66 lies against the free end of the tilt rod thereby providing an end stop for the tilt rod.

The sides 59 and 60 of the tilt rod cradle 46 are provided with large rectangular openings 67, 67 having coined edges which provide smooth cord-bearing surfaces and prevent fraying of the lift cord 49 passed therethrough. Vertical marginal flanges 69 (four) on the sides 59 and 60 reinforce the sides against bending. The sides 59 and 60 are reinforced against bendng relative to the bottom portion 57 at their lines of juncture by means of inwardly-pressed stiffening beads 58 which merge with the sides 59 and 60 and which may extend for the entire length of bottom 57.

A pulley 70 is mounted on a pair of ears 53, 53 projecting upwardly from the bottom portion 57 of the tilt rod cradle 46, serving as a cord guide for the lift cord 49. Extending beside the

pulley 70 is a pair of upwardly-converging cord deflectors 71, 71 extending upwardly from the open bottom of the tilt rod cradle and maintaining the lift cord 49 within a groove on the face of the pulley 70.

The tilt rod cradle 46 is retained in mounted position in the head bar channel 20 by bending the upstanding tabs 55, 55 (Fig. 3) over the opposite longitudinal edges of the bottom portion 57 of the tilt rod cradle. The spacing of the tabs 55, 55 is such that the tilt rod cradle fits closely between these tabs and receives the tabs in broad notches 72, 72 formed along the sides of the cradle. The bent-over tabs 55, 55 provide smooth bearing surfaces for the branches of the ladder tape 54, which pass through the slots 52, 52.

A tilter 45 is mounted adjacent one end of the head bar channel 20, usually the left end. This tilter may be of more or less conventional design, having a non-circular hole extending axially through a gear 87 for reception of a similarly-shaped tilt rod. In the head bar assembly, the tilter 45 and the tilt rod cradles 46, 46 are aligned, the tilt rod 50 extending lengthwise of the head bar channel 20.

The tilter 45 is mounted in the head bar channel 20 by bending over a pair of upstanding tabs 74, 74 (Figs. 3 and 2) previously struck from the bottom of the channel. These tabs are bent downward upon a horizontal mounting flange 75 of the tilter, being received in notches 76, 76 formed in the edge portion of the flange. For convenient and economical stamping of the body of the tilter, projecting portions 77, 77 (Fig. 4) at the top of the tilter body may nest with the notches 76, 76 of the mounting flange in blanking out the tilter bodies.

From a study of Fig. 3, it will be noted the center line of tabs 74, 74 passes midway between slots 52, 52, and that this line lies to the rear of the center line of the head bar channel 20. This arrangement is such that the axis of tilt rod 50 is offset rearwardly from the center line of channel 20 by the amount q shown in Fig. 2. The position of the slots 52, 52 in the head bar determines the position of the ladder tapes 54, 54 inasmuch as the ladder tape branches pass upwardly through these slots. Accordingly, disposing these slots rearwardly has the effect of moving the ladder tapes 54, 54 and the assembly of slats 77 carried thereby in the usual manner, rearwardly by the amount q relative to the longitudinal center line of head bar channel 20. The advantages derived from this construction and arrangement will be discussed after the description of the head-bar organization has been completed.

The tilter 45 is provided with a cord guide 79 which is generally similar to that described in my Patent No. 2,430,579, issued November 11, 1947, but which is immovably secured to the frame of the tilter. This cord guide is mounted directly beneath the tilt cord pulley 80 and serves to retain a tilt cord 81 which is reeved about the pulley 80, in correct operating relationship to the pulley. This cord guide (see Fig. 2) has openings 82, 82 on the back side of the guide for lateral insertion of the cord 81 within the guide, as explained in said U. S. Patent No. 2,430,579.

The tilt cord 81 is provided with customary tassels 84, 84, and it may also be provided with stops 85, 85 when the tilter is self-adjusting as described in my Patent 2,174,994, issued October

3, 1939. The tilt cord 81 depends downwardly from the pulley 80 through the cord guide 79 and through a slot 86 formed in the bottom of the head bar channel 20. A particular advantage in reeving the cord flows from the fact that this slot runs around and between the openings 82, 82 of the cord guide 79 and along the sides of and in front of the cord guide.

The first step in reeving the tilt cord 81 on the pulley 80 is to pass the doubled-back or looped mid portion of the cord upwardly through the slot 86 in front of the cord guide 79, the loop being bent forwardly as it is passed upwardly through the slot 86. Then the slot 86 permits the two branches of the cord 81 to be moved laterally around to the rear of the cord guide for lateral insertion through the openings 82, 82 at the rear thereof. The mid portion of the cord loop is, of course, placed on the pulley 80. This construction permits the tassels 84, 84 and the stops 85, 85 to be placed on the tilt cord 81 before the tilt cord is reeved on the pulley 80, thus simplifying assembly of this portion of the head-bar organization.

The tilt rod 50 mounts two or more tape rockers 51 (Figs. 1, 8, 9 and 10), one such tape rocker for each tilt rod cradle 46. As shown in Fig. 1, each tape rocker 51 lies between the sides 61 and 62 of its cradle. These tape rockers may be of any suitable form. The form shown in Figs. 8, 9 and 10 or any of the several forms described in my copending application Serial No. 771,981 may be employed. One feature of these forms of tape rockers is that there is no idle angular movement or play of rockers on the tilt rod 50. This arises from the fact that the body 38 of the tape rocker is resilient, the tilt rod engaging arms 48, 48 thereof being initially out of line but deformable into alignment by constricting the body 38 slightly. Upon releasing the body 38, it tends to resume its original shape, causing the arms 48, 48 to firmly grip the tilt rod 50. Pairs of short and long fingers 53, 53 and 58, 58, respectively, serve to receive terminal loops on the upper ends of the branches of ladder tape 54. The gripping action of the rocker on the tilt rod, and the arrangement of the fingers 53 and 58 is more fully explained in my said application Serial No. 771,981.

The tilter 45 is provided with a worm-driven gear 87 for rotating the tilt rod 50 to effect tilting of the blind slats. Gear 87 has an axial hole of noncircular cross section therethrough for receiving and driving the tilt rod 50, the cross section of the axial hole corresponding to that of the tilt rod. In order to remove any angular play or lost motion between the gear 87 and the tilt rod 50, a wedge 89 is inserted through the hole in the pinion 87 and beside the tilt rod 50, as best shown in Fig. 4. This wedge serves to maintain the tilt rod 50 in tight contact at all times with the tilter gear 87, thus effectively removing all lost motion therebetween.

The wedge 89 may conveniently be formed as a sheet metal stamping, as shown in inverted position in Fig. 5. It has a flat base 90 of approximately the width of a flat side 91 of the tilt rod 50. Inclined flange portions 92, 92 of gradual increasing width are formed on each side of the base 90 adjacent to one end thereof, these flange portions being connected by an end flange 93 which merges with flanges 92, 92.

In applying the wedge 89, it is placed against the flat side 91 of the rod 50. The wedge may be so proportioned that flanges 92, 92 and 93 all engage the flat 91, or it may be so proportioned that flanges 92, 92 lie outside of the flat and nest with the rod. The wedge is then slid forwardly by hand along the rod and the small end of the wedge passed through the gear, the wedge being forced in tightly by hand. The projecting small end of the wedge is given an inverted V form, as shown in Fig. 4, to prevent accidental displacement of the wedge.

The wedge 89 also serves to resist longitudinal movement of the tilt rod 50 relative to the tilter 45 and the tilt rod cradles 46, 46. However, the wedge need not be depended upon for this function, since longitudinal movement of the rod 50 in one direction is prevented by the tilt rod retainer 64 of the remote cradle 46, while longitudinal movement of the rod in the other direction is prevented by the end brace 24 adjacent the tilter as is best seen in Fig. 2.

A cord lock 47, including a cord pulley or guide, is mounted within the head bar channel 20, usually adjacent to the right end thereof. The cord lock 47 is generally similar to that disclosed in my copending application Serial No. 731,392 with the exception of its mounting. The cord lock 47 has a body 94 (Figs. 2 and 6) from the rear edge of which a large flat mounting flange 95 projects. The mounting flange 95 is provided with a pair of notches 96, 96 on opposite sides thereof which receive bent-over tabs 97, 97 previously struck up from the bottom of the head bar channel 20. The mounting flange 95 projects at an acute angle to the cord lock body 94, so as to incline the cord lock rearwardly as indicated in Figs. 1 and 2. The cord lock has a double groove pulley P. When the blind is installed one lift cord runs directly from one groove of pulley P to the groove of the pulley of one cradle 46, and another lift cord runs directly from the other groove of pulley P to the groove of the pulley of the other cradle 46.

A relatively large hole 99 is provided in the bottom of the channel 20 for passage of the manually-grasped portion of lift cords 49 (see Fig. 3). This hole is formed near the front of the head bar channel 20 and permits sidewise movement of the lift cords 49 in the usual way for actuation of the cord lock 47.

A tongue 100 (Fig. 6) which projects from the bottom front edge of the cord lock body 94, is passed through the hole 99 and aligned against the under side of the head bar channel 20 at the front margin of the hole before tabs 97, 97 are clinched. The tongue 100 is preferably shaped in advance and merely inserted through the hole 99, the tabs 97, 97 preventing the cord lock body 94 from shifting. Projecting prongs 101, 101 on the tongue 100 lies immediately above the bottom of the head bar channel 20 and engages the margin of the hole 99. The tongue 100 serves the dual purpose of providing a more rigid mounting for the cord lock 47, particularly resisting upward or downward pull on the cord lock by the lift cords 49 upon operation of the blind, and also furnishing a smooth bearing at the front side of the hole 99, preventing fraying of the lift cords.

In the above-described head bar assembly, the tilt cord 81 projects through the slot 86 in the bottom of the channel 20, and the lift cords 49 project through the hole 99 in the channel. The slot 86 and the hole 99 are placed as far forward in the channel 20 as practicable. To prevent contact of the cords depending through these openings with the topmost of the blind slats

77, the ladder tapes (and consequently the assembly of slats) have been moved backwardly relative to the head bar channel 20 by the distance q of Fig. 2, as already pointed out. This construction prevents interference by the cords with tilting of the top blind slat 77 as well as promoting easy operation of the blind.

The head bar assembly herein described may be mounted in position adjacent a wall opening by means of the mounting brackets 102 and 104 (see Figs. 1, 4 and 7). The mounting brackets 102 and 104 are similar in construction and used in pairs, one being a right-hand bracket and the other being a mirror reversal or left-hand bracket. For convenience of description, only one bracket will be described, similar parts being denoted by the same reference numeral.

The bracket 102 or 104 (Figs. 4 and 7) comprises a flat metal plate 105 having a bottom flange 106, a back flange 107 and a top flange 109. An outwardly projecting bump 103 may be provided on plate 105 to act as a separator during electroplating. Screw holes 110 are provided in the plate 105 and the back and top flanges 107 and 109, to receive screws or other fasteners for mounting the bracket on the lintel of a window frame or on the side of the jamb for a so-called "inside" mounting of the blind, or on a vertical wall or on the front of a window jamb for a so-called "outside" mounting of the blind. In addition, a forwardly-projecting filler or spacer 112 may be provided in the back flange 107 so that the head bar 20 will be tightly retained within the bracket without necessity for counter-sinking, and whether round or flat head screws be used, or whether no screws be used in the back flange as in an "inside" mount. In this connection see my U. S. Patent No. 2,526,393.

A retainer 114 is swingably mounted on the front top corner of the plate 105 by a rivet 115, the retainer when in closed position serving to retain the head bar within the bracket. The retainer 114 is generally L-shaped in transverse cross section, one leg or flange 116 of the retainer lying closely against the inside of the plate 105. The flange 116 of the retainer is offset slightly along its front edge to provide a narrow shoulder at 117 adapted to close against the front edge of the plate 105.

A slot 119 formed in the lower portion of the retainer flange 116 defines a projection 120 of length somewhat shorter than the retainer flange 116. The projection 120 cooperates with an inclined surface 121 formed on the bottom flange 106, the surface 121 engaging the end of the projection 120 and forcing the flange 116 of the retainer sidewise tightly against the plate 105 upon closing movement of the retainer. The other leg or flange 113 extends laterally from the plate 105 of the bracket, retaining an end of the head bar in position on the bottom flange 106 when the retainer 114 is in closed position.

A latch is provided between the retainer 114 and the plate 105. This latch includes a depression 122 formed adjacent the shoulder at 117 of the retainer, which depression makes snap engagement with a projection 124 formed on the front edge of the plate 105. The sidewise movement of the retainer 114 against the plate 105 upon closing movement of the retainer causes firm engagement of the latching elements above described, as well as maintaining the retainer tightly against the plate at all times, even after normal wear over a long period of use has occurred. A notch 125 is provided in the front edge of the bottom flange 106 to receive the blade of a screw driver or other prying instrument for opening the retainer 114.

By making flanges 106 and 118 a little over 1" wide, the head bar can have a tolerance of 1" in length without danger of dropping out of the brackets 102 and 104. Thus, by making the head bars in standard lengths in increments of 1", all width windows between the shortest and longest head bar can be taken care of. Where the head bar is shorter than the spacing of plates 105, 105 of the two mounting brackets 102 and 104, the excess space is filled up, and the head bar centered with respect to the brackets, by bending outwardly as required fingers 36 (Fig. 4) of the braces 24 at the opposite ends of the head bar.

One or more intermediary head bar supports 126 (Figs. 1, 13 and 14) may be used for supporting the head bar along its length. Such supports are not ordinarily required for shorter head bars, but are often required or desirable where the blind is wide and the head bar correspondingly long.

The intermediary support 126 comprises a bracket 127 and a head bar engaging member 129. The bracket 127 may be formed as a sheet metal stamping having a vertical flange 130 and a forwardly-projecting horizontal flange 131 at top of the vertical flange. Flanges 130 and 131 are provided with a plurality of holes 132 for receiving mounting screws or other fasteners, the flange 130 being used for mounting on a vertical surface and the flange 131 being used for mounting on the under side of a horizontal surface. A substantially horizontal tongue 133 projects forwardly from the flange 131, being slightly offset downwardly from the plane of this flange. The tongue 133 serves to carry the head bar engaging member 129 of the support, having transverse serrations at 134 to prevent accidental disengagement of these parts.

The head bar engaging member 129 is formed of a flat plate 135 having a pair of upturned inwardly-directed edge flanges 136, 136. A centrally located bail 137 is struck up from plate 135, this bail being adapted to slip over and be engaged by the serrated portion of the tongue 133 of the bracket 127. Upturned end flanges 139, 139 serve to reinforce the plate 135 against bending.

The spacing of the flanges 136, 136 is such that the head bar engaging member 129 may be placed within the channel 20 and moved upwardly to engage the beads 21, 21, flanges 136, 136 entering within the beads, as shown in Fig. 14. To engage the member 129, the beads 21, 21 must be shifted slightly toward each other, as by hand pressure exerted on the vertical walls of channel 20. After insertion of the flanges 136, 136 into the beads, the collapsing pressure on channel 20 is removed and the inherent resilience of the channel causes the beads 21, 21 to return to initial position and retain the member 129 in position.

The head bar support 126 serves to support equally both sides of the head bar and is readily mounted at any point along the head bar without the use of special tools. It is substantially invisible, occupying a space slightly above and to the rear of the head bar. The member 129 serves the additional purpose of engaging the beads 21, 21 of the head bar channel 20 so as to brace the sides of the channel against inward or outward deflection, thereby performing bracing

functions similar to those of the top or intermediary brace 39.

I claim:

1. In a Venetian blind head bar organization, a channel-shaped head bar having open, inwardly-turned rounded marginal longitudinal beads and an intermediary brace comprising a sheet metal stamping having a rigid intermediary portion extending between opposite exterior surfaces of the beads and terminating in ends contacting said beads, and having resilient terminal portions extending within the beads and terminating in portions extending chordally within the beads, the resilient terminal portions pressing the beads against the ends of the intermediary portion.

2. In the art of Venetian blinds, an intermediary brace for a channel-shaped head bar having open, inwardly-turned marginal longitudinal beads, said brace comprising: an elongated sheet metal stamping having a rigid intermediary portion adapted to be positioned transversely of the head bar and spanning the open side thereof, and resilient U-shaped terminal portions adapted to be entered within the beads to press the exterior surfaces of the beads against the intermediary portion of the brace.

3. In the art of Venetian blinds, an intermediary brace for a channel-shaped head bar having open, inwardly-turned marginal longitudinal beads, said brace comprising: an elongated sheet metal stamping having a rigid intermediary portion adapted to be positioned transversely of the head bar and spanning the open side thereof, and resilient U-shaped terminal portions located at the ends of the intermediary portion and adapted to be entered within the beads to press the exterior surfaces of the beads against the intermediary portion of the brace, the terminal portions being provided with ends for spanning the interior of the beads to aid in retaining the brace in assembled relation with the head bar.

4. In the art of Venetian blinds, an intermediary brace for a channel-shaped head bar having the longitudinal edges of the channel turned inwardly and formed into generally cylindrical marginal beads which are open at their bottoms, said brace comprising: an elongated sheet metal stamping adapted to extend transversely of the head bar, the stamping including a rigid intermediate portion provided with bead-abutting portions for engaging the confronting exterior surfaces of said marginal beads, the stamping also including resilient U-shaped terminal portions adapted to be entered within the beads to hold the beads against said bead-abutting portions of the brace.

5. In the art of Venetian blinds, an intermediary brace as in claim 4 in which the rigid intermediate portion of the brace is channel shaped and the ends of the side walls of the channel constitute the bead-abutting portions of the brace.

6. In the art of Venetian blinds, an intermediary brace as in claim 4 in which the portions adapted to be entered within the beads include lateral projections having reduced cross-section connection to the remainder of the terminal portions.

7. In the art of Venetian blinds, an intermediary brace as in claim 4 in which the rigid intermediate portion of the brace is channel shaped, the ends of the side walls of such channel constitute the bead-abutting portions of the brace, and the portions adapted to be entered within the beads include lateral projections having reduced cross-section connection to the remainder of the terminal portions.

8. In a Venetian blind head-bar organization, a channel-shaped head bar having the longitudinal edges of the channel turned inwardly and formed into generally cylindrical marginal beads which are open at their bottoms, and an intermediary brace comprising: an elongated sheet metal stamping extending transversely of the head bar, the stamping including a rigid intermediate portion provided with bead-abutting portions which engage the exterior surface of said marginal beads, and the stamping also including terminal portions entered within the beads and operative to hold the beads against bead-abutting portions of the brace.

9. In a Venetian blind head-bar organization, a channel-shaped head bar having the longitudinal edges of the channel turned inwardly and formed into generally cylindrical marginal beads which are open at the bottom, and an intermediary brace comprising an elongated sheet metal stamping having a rigid intermediate portion of channel-shaped form extending transversely of the head-bar, the stamping including head-bar-abutting portions in engagement with the sides of the head-bar channel adjacent its upper edges, and resilient retaining portions at the ends of the intermediate portion snapped into said beads of the head bar.

10. In the art of Venetian blinds, an intermediary brace for a channel-shaped head bar having the longitudinal edges of the channel turned inwardly and formed into generally cylindrical marginal beads which are open at their bottoms, said brace comprising: an elongated sheet metal stamping adapted to extend transversely of the head bar, the stamping including a rigid, channel-shaped intermediate portion, the ends of the side walls of which constitute bead-abutting portions for engaging the confronting exterior surfaces of said marginal beads, the stamping also including terminal portions adapted to be entered within the beads to hold the beads against said bead-abutting portions of the brace.

11. In the art of Venetian blinds, an intermediary brace as in claim 10 in which the portions adapted to be entered within the beads include lateral projection having reduced cross-sectional connection to the remainder of the terminal portions.

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