

April 15, 1952

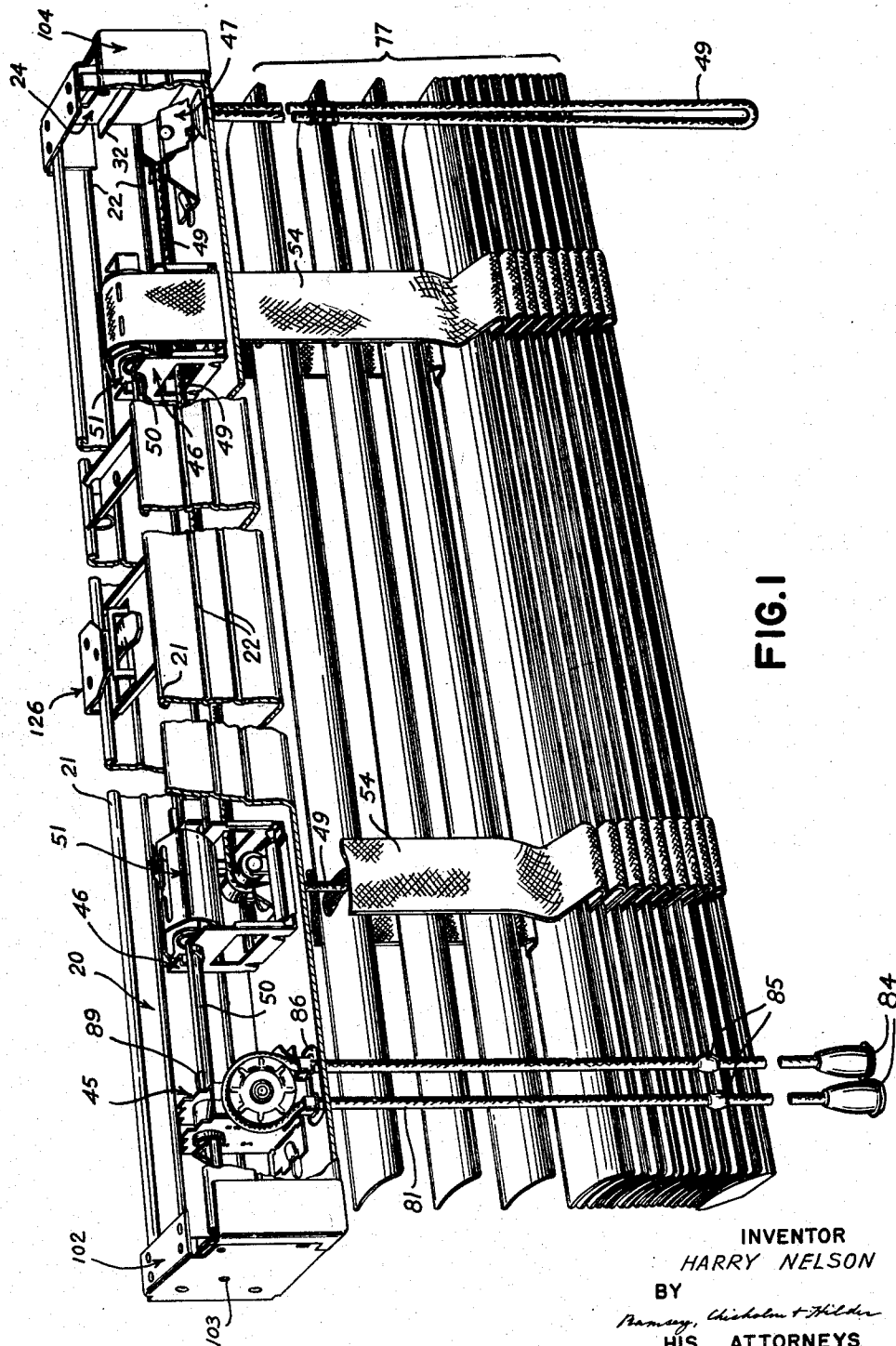
H. NELSON

2,593,048

VENETIAN BLIND HEADBAR CONSTRUCTION

Original Filed Oct. 4, 1947

2 SHEETS—SHEET 1



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VENETIAN BLIND HEADBAR CONSTRUCTION

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2 SHEETS—SHEET 2

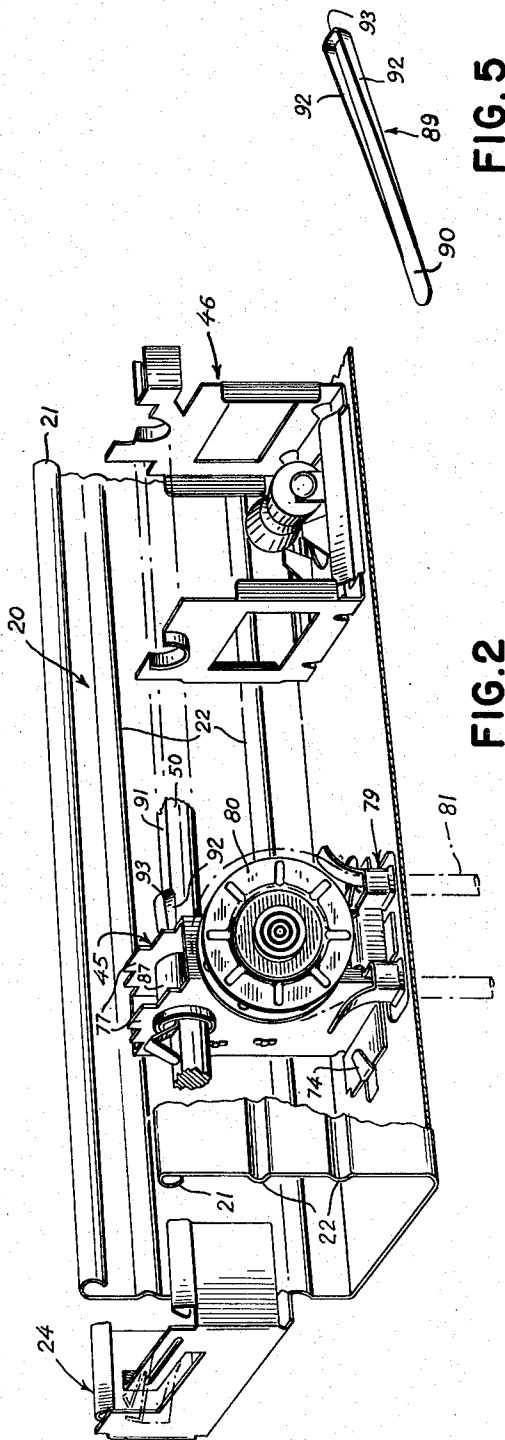


FIG. 2

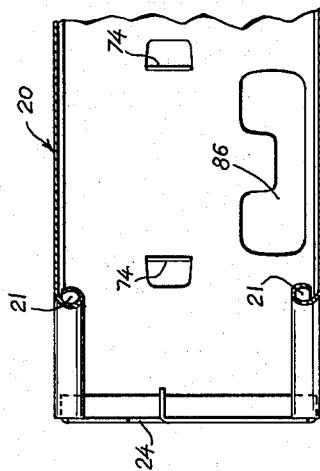


FIG. 4

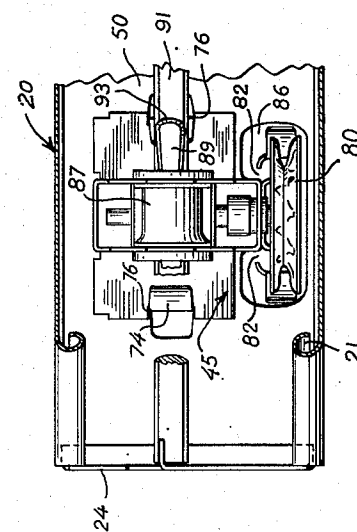


FIG. 3

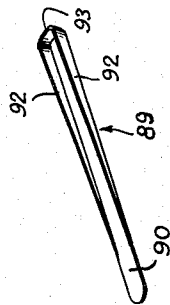


FIG. 5

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UNITED STATES PATENT OFFICE

2,593,048

VENETIAN BLIND HEADBAR
CONSTRUCTION

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Original application October 4, 1947, Serial No.
778,002. Divided and this application April 27,
1949, Serial No. 89,882

2 Claims. (Cl. 160—177)

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This invention relates to Venetian blinds, and more particularly to Venetian blind headbar organizations and associated parts. Certain features of the invention are applicable to various types of headbars but the invention as a whole is particularly applicable to metal headbar organizations of the type known in the trade as "enclosed metal heads." The present application is a division of my copending application S. N. 778,002, filed October 4, 1947.

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 headbar and usually mounted along the base of a channel-shaped headbar. Thus, there is no occasion to use a valance to conceal the various fittings by which the blind is supported and adjusted. A headbar organization of this type is shown in my Patent 2,455,135, issued November 30, 1948, the present invention being in some respects an improvement over the construction there shown.

The tilter of the above-described type of headbar construction usually has a cord pulley rotatably mounted for revolution in a plane parallel to and a short distance behind the front wall (wall towards the operator of the blind) of the headbar. The bottom wall of the headbar is in part cut away below the pulley to permit downward passage of the ends of a tilt cord reeved about the pulley.

It is customary to mount a cord guide on the tilter body so as to project below the pulley, the cord guide having one or more cord-engaging portions to aid in maintaining the tilt cord reeved on the pulley and provide a smooth bearing to prevent fraying of the tilt cord ends in their passage through the bottom wall of the headbar channel. In the usual method of assembly of a headbar embodying such construction, the two ends of the tilt cord are threaded downwardly one on each side of the pulley and through the cord guide and bottom wall of the headbar channel. Inasmuch as the tilt cord pulley is usually located quite close to the front wall of the headbar channel and space within the channel is very restricted, threading the tilt cord in this manner is a time-consuming operation. Further, the tassels cannot be assembled on the ends of the tilt cord until after the tilt cord has been assembled in the headbar. Additionally, if it is desired at any time to remove the tilt cord from the headbar, one or both of the tassels must first be removed.

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In the form shown of the present invention, the construction and arrangement of the tilter and headbar is such that the looped midportion of the tilt cord may be threaded upwardly through the opening in the bottom wall of the headbar, between the cord pulley and the front wall of the headbar, and engaged about the cord pulley. The individual ends of the tilt cord may then be engaged within the cord guide, thus facilitating assembly of the tilt cord with the headbar assembly and permitting the tilt cord tassels to be assembled on the two ends of the tilt cord prior to engagement of the tilt cord with the cord pulley.

The above is obtained in the structure herein shown by providing a single opening in the bottom wall of the headbar rather than a pair of openings, this opening extending forwardly of the pulley sufficiently to permit the looped end of the tilt cord to be passed upwardly between the pulley and the front wall of the headbar to engage the cord about the pulley. The opening in the headbar wall is also extended to permit engagement of the ends of the tilt cord in the cord guide, an opening being provided in the cord guide to permit each of the tilt cord ends to be slipped sideways within the cord guide rather than threaded through from a free end of the cord.

A further feature of the present invention is the elimination of a substantial amount of lost motion in the tilting mechanism of the blind so as to facilitate angular adjustment of the slats and prevent angular movement of the slats from adjusted position. This lost motion may occur in a Venetian blind headbar assembly of the general type shown due to clearance between the worm and pinion or gear sector, to clearance between the hub of the pinion or gear sector and the tilt rod or to clearance between the tilt rod and the tape rockers.

The tilt rod is usually formed of a cold rolled steel rod with a relatively wide range of dimensional tolerance so that it is not feasible to attempt to maintain a close fit between the tilt rod and the hub of the pinion or gear sector. The lost motion has been in large part eliminated by the use of resilient tape rockers which resiliently grip the tilt rod, and by the use of a sheet metal wedge introduced within the pinion hub so as to remove any lost motion between the gear and the tilt rod. This wedge is formed of metal which may be easily deformed to hold it in position.

Among the objects of the invention are to fa-

cilitate installation of a tilt cord in an enclosed headbar assembly, to provide a structure in which tassels may be mounted on the tilt cord before the tilt cord is assembled with the head, to increase the speed of assembly of enclosed metal heads, to decrease lost motion in the blind-tilting mechanism, and to generally improve enclosed metal heads and parts therefor from the standpoint of manufacture, assembly, use and durability.

Further objects and objects relating to 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 headbar and one ladder tape being cut or broken away to show details of construction.

Fig. 2 is a perspective view of the tilter end of the headbar organization, certain parts being in section or broken away and an end brace being shown in exploded relation.

Fig. 3 is a top plan view of the tilter end of the headbar organization, portions of the bar being in section or broken away for convenience of illustration.

Fig. 4 is a top plan view of the tilter end of the headbar channel and end brace, portions of the bar being broken away or shown in section for convenience of illustration.

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

In describing the construction, assembly and operation of the tilting mechanism, certain portions of the entire headbar assembly which are not closely related to the tilting mechanism will be described briefly or omitted entirely from this description, these parts being described in more detail in the above-mentioned application S. N. 778,002.

Referring to the drawings, a headbar channel 20 for a Venetian blind is formed of a length of channel-shaped sheet metal severed from a piece of indeterminate length. By making headbars which vary in length in increments of one inch, windows of all widths between the shortest and longest headbar can be provided for.

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 on both the front and back sides of the channel, the front side being considered as the side towards the person operating the blind, which side is usually placed towards the interior of the room. 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 headbar channel 20. These beads and corrugations add to the appearance of the headbar 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 been previously 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 more detailed description of certain parts of the operating mechanism and their attachment to the headbar 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. 2. The brace for both ends of the headbar are identical, "no lefts or rights" being required.

A tilter 45 is mounted adjacent one end of the headbar channel 20, usually the left end. This tilter may be of more or less conventional design having an intermeshed worm and pinion, the worm being rotated by a cord pulley 80 which is operated by a tilt cord 81 reeved about the pulley. The pinion is formed for engagement with a tilt rod 50 which extends lengthwise of the headbar channel 20. The pinion and the tilt rod will be described in more detail later.

The tilter 45 is mounted in the headbar channel 20 by bending over a pair of upstanding tabs 74, 74 previously struck from the bottom of the channel. These tabs are bent downwardly upon a horizontally-extending flange and are received in notches 76, 76 formed in the edge portion of the flange. For convenient and economical stamping of the tilter, projecting portions 77, 77 (Fig. 2) at the top of the tilter body may nest with the notches 76, 76 in the mounting flange of the adjacent tilter body in blanking out the tilter bodies.

From a study of Fig. 4, it will be noted that the center line of tabs 74, 74 lies to the rear of the center line of the headbar channel 20. This arrangement is such that the axis of the tilt rod 50 is offset rearwardly of the center line of the channel 20 so as to offset the blind slats to the rear of the center line of the headbar channel. This feature of construction is described in detail and claimed in the above-mentioned parent application.

The tilter 45 is provided with a cord guide 79 which has provision for lateral insertion of the tilt cord and may be generally similar to that described in my Patent 2,430,579, issued November 11, 1947. This cord guide is mounted directly beneath the tilt cord pulley 80 and serves to retain the tilt cord 81 which is reeved about the pulley 80, in correct operative relationship to the pulley and to prevent fraying of the tilt cord in its passage through the headbar. This cord guide (see Fig. 3) has openings 82, 82 on the back side of the cord-engaging portions of the guide for lateral insertion of the cord 81 within the guide, as explained in detail in said Patent 2,430,579. In the mounted position of the tilter 45 in the headbar channel 20, the lower edge of the cord guide is approximately in the plane of the bottom wall of the channel.

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 of the self-adjusting type described in my Patent 2,430,774, issued October 3, 1939. The tilt cord 81 depends downwardly from the pulley 80 through the cord guide 79 and through a slot or opening 86 formed in

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the bottom of the headbar channel 20. A particular advantage in reeving the tilt cord 81 flows from the present construction in that the slot 86 runs not only beneath the cord guide 79, but also in front of and beside the cord guide so as to connect the openings 82, 82 thereof and form a passage for the lift cord along the outside of the cord guide. For a cord guide of the form shown having two separate rearwardly-opening parallel portions, the slot 86 may be of the rearwardly-opening C-form shown in Fig. 4.

In reeving the tilt cord 81 on the pulley 80 of the tilter, the first step is to pass the doubled back or looped midportion of the cord upwardly through the slot 86 in the bottom wall of the headbar and in front of the cord guide 79, the loop being inclined forwardly as it is passed upwardly through the slot. The looped midportion of the tilt cord 81 is passed upwardly between the pulley 80 and the front wall of the headbar until the cord can be engaged over the top of the pulley. Then, the two branches of the cord 81 are individually moved laterally along the slot 86 and beside the cord guide 79 until the cord branches reach the openings 82, 82 at the rear of the cord guide, the cord being introduced within the cord guide laterally from the rear thereof. 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 headbar organization and permitting removal of the tilt cord without prior removal of any of the tassels or stops.

Two or more tilt rod cradles 46 are mounted within the headbar channel 20, one such cradle being provided for each ladder tape 54 of the blind. These cradles are somewhat similar to those disclosed in my above-mentioned Patent 2,455,135 and provide bearings for the tilt rod 50. The cradles, which are described in more detail in my application S. N. 778,002, will not be described in detail herein.

The tilt rod 50 mounts two or more tape rockers 51, 51 (Fig. 1), one such tape rocker being provided for each ladder tape 54. The tape rockers 51, which are formed generally similar to those described in my copending application S. N. 771,981 filed September 3, 1947, which issued as Patent 2,589,846 March 18, 1952, ore of the resilient type so as to resiliently and tightly engage the tilt rod 50 and prevent any lost motion between the tape rockers and the tilt rod.

The tilter 45 is provided with a worm-driven gear 87 for rotating the tilt rod 50 to effect tilting of the blind slats. The gear 87 has an axial hole of noncircular cross section extending there-through for receiving and driving the tilt rod 50, the cross section of the tilt rod and axial hole in this instance being D-shaped.

The tilt rod 50 is conventionally formed of a cold rolled steel rod and in practice there is some variation or manufacturing tolerance in the cross section of the rod. Accordingly, it is necessary in order to facilitate assembly of the headbar to form the tilt-rod-receiving hole of the gear 87 sufficiently large to receive any tilt rod of the proper nominal size. However, this results in some lost motion between the gear 87 and the tilt rod 50. To remove this lost motion, a wedge 89 may be inserted through the hole in the gear 87 and beside the tilt rod 50, as best shown in Figs. 2 and 3. This wedge lies along the flat side 91 of the tilt rod 50 and serves to maintain the tilt rod 50 in tight engagement at

all times within the tilter gear 87, thus effectively removing 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 the flat side 91 of the tilt rod 50. Inclined flange portions 92, 92 of gradually increasing width are formed on each side of the base 90 adjacent to an end thereof, these flange portions being connected by an end flange 93 which merges with side 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 the flanges 92, 92 and 93 engage the flat side 91 or it may be so proportioned that flanges 92, 92 lie outside of the flat side 91 and nest with the rod. The wedge 89 is slid forwardly and the small end of the wedge passed through the tilter gear 87, the wedge being forced in tightly by hand. The projecting small end of the wedge may be given an inverted V-form, as shown in Fig. 2, to prevent fortuitous 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 a portion of the cradle 46 farthest from the tilter while longitudinal movement of the rod in the other direction is prevented by the end brace 24 adjacent the tilter, as best shown in Fig. 3.

I claim:

1. In an enclosed headbar assembly for a Venetian blind, a headbar of rectangular cross section having front and bottom walls and a tilter mounted on the bottom wall of the headbar and provided with a tilter pulley spaced from the front wall of the headbar to permit passage of a lift cord therebetween and a cord guide below said pulley, the cord guide having a pair of barrel-like, cord-receiving portions terminating at their lower ends substantially in the plane of the bottom wall of the headbar and provided with rearwardly-directed openings for lateral insertion of the tilt cord, and the bottom wall of the headbar having a rearwardly-directed C-shaped slot extending beneath and in front of the cord guide and forming a passage for the cord along the outside of the cord guide and communicating with the cord guide openings, said slot being adapted to permit the passing of a looped portion of the tilt cord upwardly through the slot and in front of the cord guide and tilter pulley and the insertion of the tilt cord laterally into the cord guide.

2. In an enclosed headbar assembly for a Venetian blind, a headbar of rectangular cross section having front and bottom walls and a tilter mounted on the bottom wall of the headbar and provided with a tilter pulley spaced from the front wall of the headbar to permit passage of a lift cord therebetween and a cord guide below said pulley, the cord guide having a pair of barrel-like, cord-receiving portions provided with rearwardly-directed openings for lateral insertion of the tilt cord, and the bottom wall of the headbar having a rearwardly-directed C-shaped slot extending beneath and in front of the cord guide and forming a passage for the cord along the outside of the cord guide and communicating with the cord guide openings, said slot being adapted to permit the passing of a looped portion of the tilt cord upwardly

through the slot and in front of the cord guide and tilter pulley and the insertion of the tilt cord laterally into the cord guide.

HARRY NELSON.

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The following references are of record in the file of this patent:

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