Dec. 9, 1952 H. S. ROSENBAUM 2,620,867

VENETIAN BLIND STRUCTURE

Filed Dec. 20, 1950

Fig. 1.

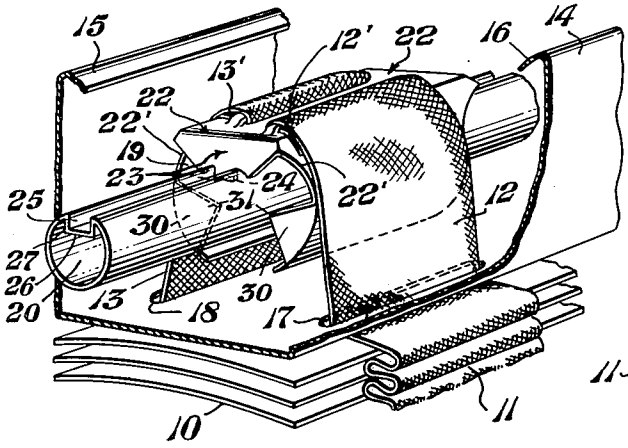


Fig. 2.

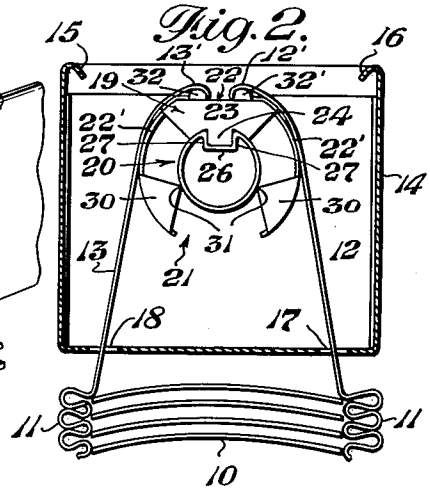
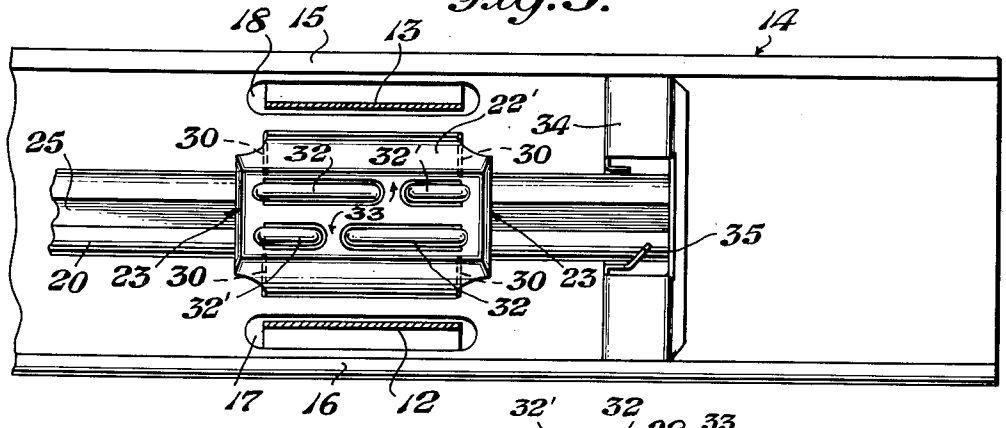


Fig. 3.



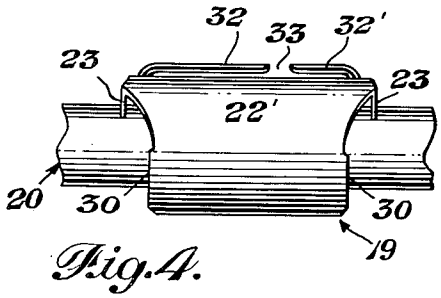


Fig. 4.

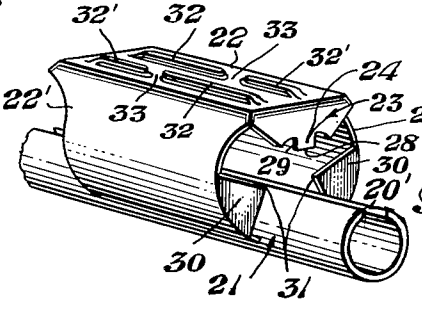


Fig. 5.

INVENTOR

Harry S. Rosenbaum

BY Flocks and Simon

ATTORNEYS

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VENETIAN BLIND STRUCTURE

Harry S. Rosenbaum, Baltimore, Md., assignor to The Eastern Venetian Blind Company, Baltimore, Md., a corporation of Maryland

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8 Claims. (Cl. 160—177)

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This invention relates to tape holders or rockers for Venetian blinds and more particularly to a holder or rocker for securing the upper ends of the tape ladders to the tilting mechanism for tilting the slats of Venetian blinds.

In Venetian blinds of the so-called enclosed head bar type, the head bar is provided with a tilt shaft or rod. This is an oscillatory shaft or rod which extends lengthwise within the head bar and which has mounted thereon two or more tape holders or rockers. To each holder there is attached the front and rear upper ends of one of the vertical tapes of the blind. Thus, rotary movement imparted to the shaft or rod is effective to tilt the slats of the blind, as is well understood in the art.

It is essential that the tapeholder rotate with the tilt shaft without angular lost motion between the tilt shaft and the tape holder, and that the holder must not slide axially of the tilt shaft. In the prior structures proposed, it is customary for the tape holder to be provided with openings therethrough for passage of the tilt shaft. In most prior types of enclosed head bar, the tilt shaft is of non-circular cross section and is inserted through holes of corresponding cross section that are punched in depending skirt portions of the tape holders or rockers. Since the tilt rod is usually cut from cold rolled steel stock of the proper nominal size and cross section, there is apt to be considerable angular lost motion between the tilt shaft and the tape rockers. Further, additional structure is necessary to prevent axial sliding movement of the tape holder on the tilt shaft.

It is an object of the present invention to provide a one piece tape holder which can be formed from a strip of flat sheet metal readily and inexpensively as a sheet metal stamping.

It is a further object of the present invention to provide a tape holder which can be easily attached and removed from the tilt shaft without moving the tilt shaft.

It is a further object of the present invention to provide an improved tape holder to which the ends of the tape ladder can be easily attached and removed.

It is a still further object of the present invention to provide a tilt shaft of improved cross section to which a readily detachable tape holder can be snapped off and on as desired.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

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Figure 1 is a fragmentary perspective view of a portion of a Venetian blind illustrating the improved tape holder;

Fig. 2 is an end view thereof;

Fig. 3 is a plan view thereof;

Fig. 4 is a side elevation view of the tape holder attached to the tilt shaft; and

Fig. 5 is a perspective view of the tape holder and tilt shaft before the former has been snapped onto the latter.

Referring to the drawings, a portion of a Venetian blind is illustrated including a plurality of slats 10 suitably supported upon tape ladders indicated generally at 11, each of the tape ladders comprising a pair of vertically extending tapes 12 and 13, between which extend a plurality of cross bars upon which the slats 10 rest, as is conventional in the construction of Venetian blinds. The upper ends of the tapes 12 and 13 extend upwardly to a head bar 14 which as illustrated herein, is formed as a channel member made of metal, the upper ends of the side flanges of the channel being turned inwardly as indicated at 15 and 16 to form a substantially box-like structure in which the tilting mechanism, pulleys, cord locks and other apparatus required for the manipulation of the blind may be housed. The upper ends of each of the tapes 12 and 13 extend through openings 17 and 18 respectively in the bottom of the head bar 14 and over the exterior surface of a tape securing device indicated generally at 19. This tape holder or rocker 19 is the subject of the present invention. It should be understood that at least two ladder tapes are used in each blind even though only one is illustrated. The tape holder 19 is attached to a tilt shaft 20 which is operated by a tilter mechanism, not shown, which oscillates the shaft so as to effect a corresponding oscillation of the tape holder with the consequent tilting of the slats of the blind.

The tape holder 19 is formed of a strip of sheet metal bent transversely into a generally U-shaped cross section as best shown in Fig. 2, leaving an opening 21 at the bottom extending the length of the holder. The opening 21 is large enough to permit passage of the tilt shaft therethrough. The top of the tape holder 19 is flattened the entire length of the holder as shown at 22, the flattened portion having a width approximately equal to the width of the opening 21. The tape holder will thus be seen to include a flattened top portion 22 and two curved leg portions 22' extending downwardly therefrom, each running the length of the holder. Extensions 23 are pro-

vided on the flattened portions 22 at each end of the tape holder and are bent downwardly through an angle of 90°. The extensions 23 are each provided with a depending flange 24 having a flat end portion 28 and vertically extending edges 29 which are adapted to engage with the tilt shaft to prevent rotation of the holder with respect to the shaft. The shaft 20 may be provided with a channel 25 extending the length thereof. The flange 24 is adapted to fit into the channel 25. The channel 25, as shown, has a flat bottom 26 with vertically extending side walls 27. The depending flange 24 is similarly shaped with a flat bottom 28 and vertically extending edges 29, so as to fit snugly into the channel 25 of the tilt shaft. In this manner, as the tilt shaft is oscillated, the tape holder will likewise oscillate without lost motion due to the interengaging flange 24 and channel 25. Any suitable means may be provided on the tilt shaft to engage with the flange 24. In Fig. 5, a hollow shaft is shown with a slot 20' extending the length thereof which the vertically extending edges 29 of the flange 24 are adapted to engage.

Each of the curved leg portions 22' of the tape holder 19 is provided with extensions 30 at each end thereof near the lower portion which are bent inwardly at a 90° angle. The extensions 30 are pointed as at 31 and the distance between adjacent points 31 is somewhat less than the diameter of the tilt shaft 20. In this manner, when the tape holder is placed on the tilt shaft 20, the shaft will enter the opening 21 in the holder but will not pass the points 31 until sufficient pressure is exerted to force the curved portions 22' outwardly until the shaft slips between the points. The resilience of the metal of the tape holder permits the necessary outward movement of the two curved legs thereof to permit the shaft to pass through, after which the legs snap back to their original position. The points 31 are suitably spaced from the lower surface 28 of downwardly extending extension 23 so that when the extension has engaged the tilt shaft 20, the points 31 will engage the outer surface of the shaft 20 below the center thereof. The points 31 thus serve a dual function. They retain the tape holder 19 on the shaft 20, and also engage the shaft tightly to prevent axial movement of the holder with respect to the shaft.

The flattened portion 22 of the tape holder has a plurality of fingers 32, 32' struck upwardly therefrom and extending parallel thereto as best shown in Fig. 5. As illustrated, two rows of fingers are provided, one row for each tape. Each row is provided with a relatively long finger 32 extending inwardly from a point near one end of the holder and a shorter finger 32' extending inwardly from a point near the other end of the holder. A space 33 is left between the two fingers 32 and 32' to enable the tape to be attached. The rows of fingers of the adjacent row are shown as being reversed with respect to the fingers on the other row, the long finger 32 of one row being adjacent the short finger 32' of the other row.

The tilt shaft 20 is shown in Figs. 1 to 4 as being a hollow metal tube having the longitudinally extending channel 25 at the upper end thereof. One end of the shaft is inserted into the tilting mechanism (not shown) and the opposite end rests on a bracket 34 and is retained therein by a spring finger 35. The tilt shaft 20 of Fig. 5 is shown as a hollow rod having a slot extending the length thereof. Any cross section of rod either hollow or solid can be used so long as it is provided with a channel or slot to engage with the flange 24.

To attach the tapes to the holder, they are first inserted through the openings 17 and 18 in the lower surface of the head bar 14. Each tape end is looped over and secured by a seam to form a loop 12' and 13' respectively in the end thereof. One side of each loop is inserted into the space 33 between the fingers and thence around the longer finger 32. The tape is bent and the other side of the loop is then inserted around the shorter finger 32'. The tapes are thus secured to the tape holder in such a manner that they can be readily removed when desired, and while attached thereto will oscillate with the tape holder and tilting shaft.

The tape holder can be readily snapped into place by placing the holder over the tilt shaft with the flange 24 of the holder aligned with the channel 25 or the slot 20' of the shaft. A slight downward pressure on the holder 19 forces the points 31 apart sufficiently to permit the holder 19 to snap over the shaft 20 and bring the flange 24 into engagement with the shaft.

The tape holder as described is a simple one piece device that can be stamped from a strip of sheet metal and bent into shape. In contrast to previously proposed tape holders, the present device can be snapped onto and from the tilt shaft without removing the shaft from the head bar. The tape holder will retain the tape ends in a simple manner, oscillate with the tilt shaft without lost motion, and will retain its position on the tilt shaft without sliding axially thereof.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. In a tape holder for tilting mechanisms of Venetian blinds including a tilting shaft, a holder member of generally U-shaped cross-section wherein the two legs of the U are resilient and adapted to snap over the tilting shaft of said tilting mechanism and wherein said legs of the holder are provided with pointed projections at each end thereof adapted to engage said tilting shaft to retain said holder on said shaft.

2. A tape holder in accordance with claim 1 wherein said holder is provided with a projection adapted to engage with said tilting shaft to provide for concomitant rotation of said holder with said shaft.

3. In a tape holder for tilting mechanisms of Venetian blinds including a tilting shaft, a holder member of generally U-shaped cross section including a flattened portion and two curved legs depending from the sides of said flattened portion, a projection depending from each end of said flattened portion adapted to engage with said tilting shaft to provide for concomitant rotation of said holder with said shaft, and a pointed projection extending inwardly from each end of each of said curved legs adapted to engage said tilting shaft on opposite sides thereof below the center thereof to retain said holder on said shaft, said adjacent pointed projections being spaced apart a distance less than the diameter of said tilting shaft whereby said curved legs must be spread apart to enable the holder to snap onto said tilting shaft.

4. In a tape holder for tilting mechanisms of Venetian blinds, including a tilting shaft of gen-

erally circular cross-section, a readily removable holder member of generally U-shaped cross section including a flattened portion and two curved legs depending from the sides of said flattened portion, means formed on said curved legs movable inwardly to engage said shaft wherein the two legs of the U are resilient and are adapted to snap onto and off of said tilting shaft, said flattened portion being provided with means to engage the ends of a tape ladder.

5. A tape holder in accordance with claim 4, wherein said means formed on said curved legs comprise pointed projections at each end thereof adapted to engage said tilting shaft to retain said holder on said shaft.

6. In a Venetian blind, a tilt shaft of generally circular cross-section having at least one longitudinal opening therein, and a tape holder adapted to be snapped onto and from said tilt shaft, said holder having a depending portion adapted to fit into said opening to permit concomitant rotation of said holder with said shaft.

7. In a tape holder for tilting mechanisms of Venetian blinds including a tilting shaft of generally circular cross-section, a readily removable holder member having a pair of arcuate shaped

curved legs, means formed on said curved legs movable inwardly to engage said shaft, said legs being resilient and adapted to snap over the tilting shaft of said tilting mechanism.

8. In a Venetian blind, a tilt shaft of generally circular cross-section having at least one longitudinal opening therein, and a tape holder adapted to be snapped onto and from said tilt shaft, said holder having a depending portion adapted to fit into said opening to permit concomitant rotation of said holder with said shaft, and a plurality of pointed projections provided on said holder adapted to engage said shaft to retain said holder on said shaft and prevent axial movement of the holder with respect to the shaft.

HARRY S. ROSENBAUM.

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