

May 31, 1949.

C. ADLER

2,471,710

VENETIAN BLIND

Filed May 7, 1946

2 Sheets-Sheet 1

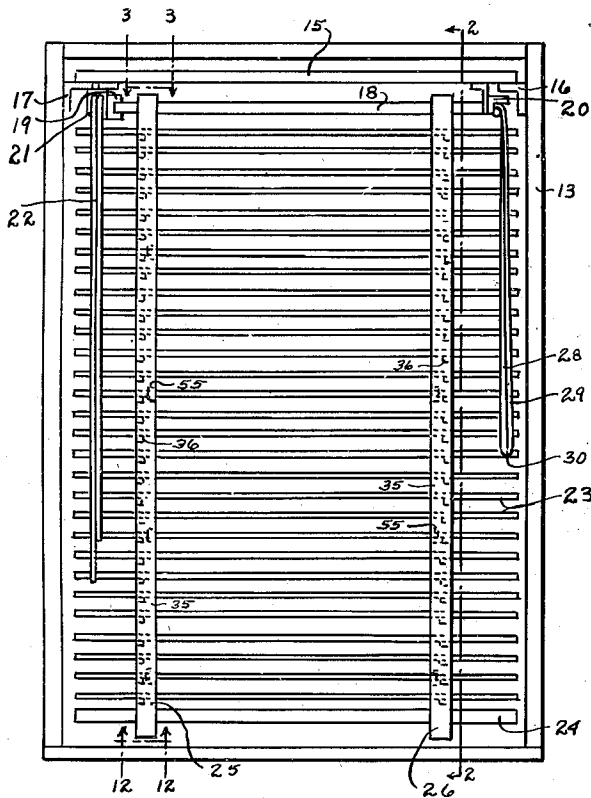


Fig. 1

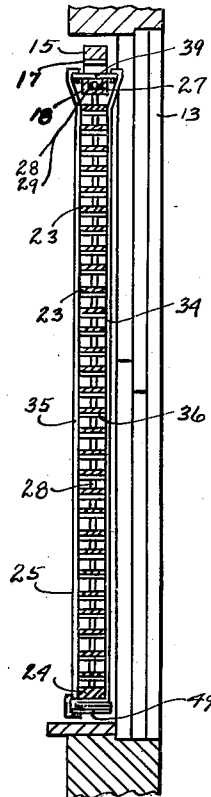


Fig. 2

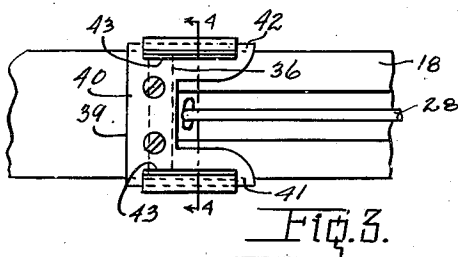


Fig. 3

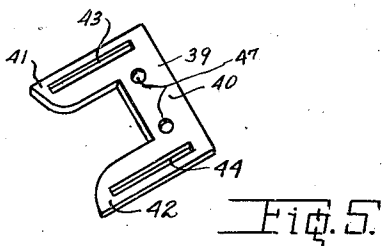


Fig. 5

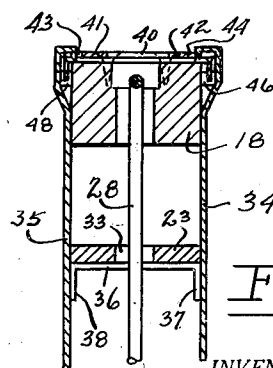


Fig. 4

INVENTOR.
CHARLES ADLER

BY

Joseph A. Rave
Attorney

May 31, 1949.

C. ADLER
VENETIAN BLIND

2,471,710

Filed May 7, 1946

2 Sheets-Sheet 2

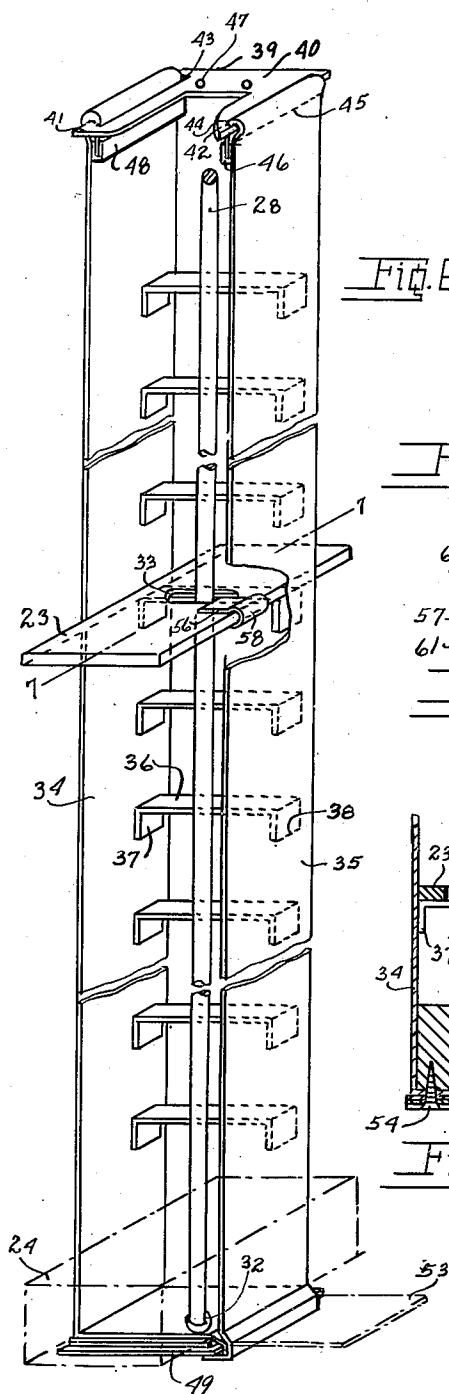


Fig. 6.

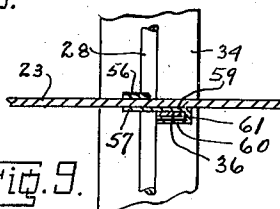


Fig. 9.

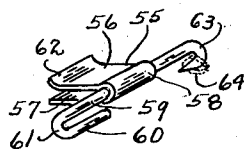


Fig. 11.

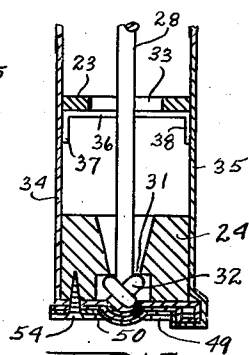


Fig. 13.

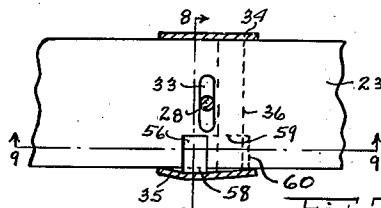


Fig. 7.

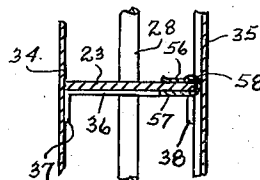


Fig. 8.

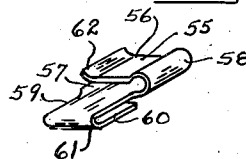


Fig. 10.

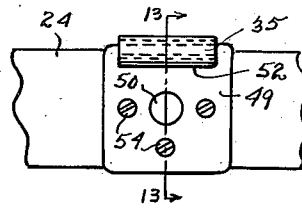


Fig. 12.

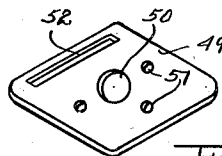


Fig. 14.

INVENTOR.
CHARLES ADLER

BY

Joseph A. Rave
Attorney

UNITED STATES PATENT OFFICE

2,471,710

VENETIAN BLIND

Charles Adler, Cincinnati, Ohio

Application May 7, 1946, Serial No. 667,870

7 Claims. (Cl. 160—178)

1

This invention relates to improvements in Venetian blinds and particularly to improvements in the so called "ladder tapes" used to support the slats of the Venetian blinds in spaced apart relation.

The disclosure in this application is an improvement over that of co-pending application 609,069, filed August 6, 1945.

It is the principal object of this invention to provide a ladder tape for Venetian blinds which can be secured to the blind without completely dismantling the various parts thereof.

Another object of this invention is the provision of improved means for securing the ends of a ladder tape to the Venetian blind.

A further object of the invention is the provision of improved means for retaining the Venetian blind ladder tape in proper position thereby prohibiting its movement relative to the blind in between its attached upper and lower ends.

A still further object of this invention is the provision of a ladder tape to accomplish the above objects but which is economical to manufacture or produce and simple to operate or apply to the blind.

Other objects and advantages of the present invention should be readily apparent by reference to the following specification considered in conjunction with the accompanying drawings forming a part thereof and it is to be understood that any modifications may be made in the exact structural details there shown and described, within the scope of the appended claims, without departing from or exceeding the spirit of the invention.

In the drawings:

Fig. 1 is an elevational view of a window having the Venetian blind mounted relative thereto.

Fig. 2 is a vertical sectional view of the Venetian blind and window as seen from line 2—2 on Fig. 1.

Fig. 3 is an enlarged fragmentary plan view of a portion of the tilt board as seen from line 3—3 on said Fig. 1.

Fig. 4 is a vertical sectional view through a portion of the upper end of the Venetian blind as seen from line 4—4 on Fig. 3.

Fig. 5 is a perspective view of a plate or bracket forming the attaching means of the ladder tape to the tilt board.

Fig. 6 is an enlarged fragmentary perspective view of a ladder tape showing same in its operative extended position.

2

Fig. 7 is a view partly in section and partly in elevation taken on line 7—7 on Fig. 6.

Fig. 8 is a transverse sectional view through one of the slats of a Venetian blind taken on line 8—8 on Fig. 7.

Fig. 9 is a fragmentary sectional view taken at right angles to that of Fig. 8 as seen from line 9—9 on Fig. 7.

Fig. 10 is an enlarged perspective view of a clip utilized for holding the ladder tape in operative position.

Fig. 11 is a perspective view of a modified form of clip.

Fig. 12 is a fragmentary enlarged bottom plan view of a portion of the bottom board or rail of a Venetian blind showing the means of securing the lower end of a ladder tape.

Fig. 13 is a fragmentary cross sectional view of bottom attaching plate as seen from line 13—13 on Fig. 12.

Fig. 14 is a perspective view of the said bottom attaching plate.

Throughout the several views of the drawings similar reference characters are employed to denote the same or similar parts.

A Venetian blind comprises a top or head board 15 secured in any suitable or desirable manner, as by brackets 16 and 17, in the opening of a window, door, or the like, and which opening is indicated in the drawing by framing 13. Below the head board 15 is a tilt board 18 mounted in place relative to the head board by suitable brackets 19 and 20 depending from the said head board. The brackets 19 and 20 connect the tilt board in such a manner that it may be oscillated about, substantially, its longitudinal axis through a suitable tilting mechanism indicated in general by the reference numeral 21. Ropes or other flexible members 22 are employed for actuating the tilt mechanism 21 and thereby tilt or oscillate the tilt board 18.

Spaced below the tilt board 18 are the slats 23 which vary in number depending upon the area to be covered thereby and the width of the individual slats, since, fewer slats would be required if the individual slats were wider and more slats would be required if the individual slats were narrower. Below the lowermost slat 23 is the bottom board or rail 24 and the said rail is considerably heavier than the slats so that weight is given to the blind as a whole for the purpose of extending the slats supporting means for their full length.

The individual slats 23 and rail 24 are held in spaced apart relation from and below the tilt

board 18 by flexible members or tapes individually indicated as a whole in the drawings by reference numerals 25 and 26. These flexible members or tapes, as they will be hereinafter called, 25 and 26 have their upper ends secured to the tilt board 18 and their lower ends secured to the bottom board or rail 24. As is well known the tapes 25 and 26 have a length on each side of the blind and are connected to one another by cross members simulating ladder steps whereby the trade name or designation "ladder tape." In order to remove the slats from the opening, that is completely uncover the opening, the various slats are adapted to be brought into surface contact with one another with the upper surface of each slat in contact with the lower surface of the next slat there above and with the upper surface of the bottom rail engaging the lower surface of the lowermost slat. In order to do this use is made of a raising or lowering rope or ropes, or other flexible members, which extend longitudinally of the tilt board on its upper surface or, preferably, within a channel 27, see Figs. 2 and 4, let into the upper surface of the tilt board and which ropes 28 and 29 respectively pass between the front and back layers of tapes 25 and 26. The said ropes 28 and 29 pass beyond one end of the tilt board 18 and are disposed on the inner surface of the Venetian blind and depend to a point within reach of the operator and the said ropes are frequently joined as indicated at 30 wherefore they are actuated together to raise and lower both sides of the Venetian blind slats equally and simultaneously.

The tapes 25 and 26 as heretofore known had their ladder steps or cross members alternately at opposite vertical edges of the tape layers with the rope 28 or 29 passing between said alternate steps. The lower end of said ropes is connected with the rail 24 by passing through an aperture 31 therein and having a knot 32 formed at the end thereof which had an area greater than that of the aperture 31 wherefore it was prevented from pulling therethrough. In order, therefore, to place a ladder tape on the Venetian blind it was necessary to untie the knot 32, arrange the steps of the ladder tape to permit the rope to pass adjacent and opposed edges of the alternately arranged steps as it passed through the elongated apertures 32 in each slat 23 which was a laborious and tedious task resulting in Venetian blinds using the tape originally supplied therewith even though it became unsightly due to soil or was undesirable from a decorative point of view insofar as the surroundings were concerned.

By the present invention a ladder tape is provided which can be readily applied to a Venetian blind and without in any manner dismantling the parts thereof. The ladder tape is most clearly illustrated in Fig. 6 and as there shown comprises a tape length 34 opposed to a second tape length 35. Joining said tape lengths are the ladder steps or slat supports 36 each of which has its opposite ends 37 and 38, respectively, secured to the inner or opposed surfaces of the tape lengths 34 and 35. This attachment of the ends 37 and 38 may be accomplished in any suitable or desirable manner, such as by stitching, but preferably by the so called loose stitch method whereby it is woven into and made a part of the said tape lengths at the time the tape lengths are woven. It will be noted that each of the ladder steps or slat supports is located along the same edge of each of the tape lengths 34 and 35. It will further be noted that the width of the ladder

steps 36 is of a width less than half the width of the ladder tape, as is usual practice.

With a ladder tape as just described and illustrated in Fig. 6 it will be readily appreciated that the tape may be mounted on the blind with the slats thereof in the positions illustrated in Fig. 1 and with the uppermost slat on the uppermost ladder step or slat support and each succeeding slat on its proper ladder step or support. The tape can then be slid over to its proper position with the rope engaging the said ladder steps or slat supports.

It will be understood of course that the foregoing assumes a Venetian blind in its extended or open position and maintained therein by the tapes 25 and 26 and which it is desired to replace either for decorative purposes or undesirability of the original ladder tapes. Prior to the final positioning of the tape of this invention the upper ends thereof are to be permanently secured to the tilt board for which purpose a bracket as illustrated in Figs. 3, 4 and 5 is employed.

This bracket or plate 39 is a flat member relatively thin and substantially U-shaped in plan including a base 40 and arms 41 and 42 from the ends of said base. The arms 41 and 42 are respectively provided with an elongated rectangular opening 43 and 44 into which the ends of the tape layers 34 and 35 are respectively inserted and secured. It is contemplated that one of said tape layers, 35 for example, is inserted through its elongated aperture, 44 for example, and secured by having the free end fastened to the tape proper, for example by stitches 45. Furthermore the end of the tape has secured to it a metal tip 46 which has a length slightly greater than the length of the aperture 44 wherefore it cannot be pulled through the said aperture by a direct pull. By arranging the bracket 39 to have one of the tape lengths secured thereto, as just described, the said bracket plate may be held on the tilt board 18 after the new tape assembly is arranged with a slat on each of its slats supports whereupon the upper end of the tape layer 34 is inserted into its bracket aperture 43 by having its metal tip 48 passed downwardly therethrough. It will be appreciated that the new tape as well as the old tape are now holding or supporting the slats.

After the bracket plate 39 has been thus positioned the old tape, that is, the one presently on the blind and to be replaced, now has its upper end removed from the tilt board and has its ladder steps or slat supports severed from the tape layers thereby permitting their removal after detachment from the bottom board or rail 24. The top bracket or bracket plate 39 is now slid over to its final position to have the raising and lowering rope 28 or 29 aligned with the space between the arms 41 and 42. The bracket plate 39 is now secured in position by having screws or the like pass through holes 47 in the bracket base 40 into the tilt board 18.

The ladder tape is now fastened to the bottom rail 24 which cannot get out of position as it is held by the knot 32 engaging a portion thereof as above described. In order to mount or secure the lower ends of the tape layers 34 and 35 in position a fastening or bracket plate 49, as illustrated in Figs. 12, 13 and 14, is employed. The fastening plate 49 is substantially rectangular in area provided centrally with an aperture 50 and radially thereof with apertures or holes 51. The plate 49 is further provided along one edge with an elongated aperture 52. In operation, the

5

lower end of tape layer 34 is brought under the bottom rail 24 to meet the lower end of tape layer 35 and with the mounting plate or bracket 49 in the position illustrated in phantom lines at 53 in Fig. 6 the said ends of tape layers 34 and 35 are passed through the elongated aperture 52. The said lower ends of the tape layers 34 and 35 are drawn to substantially tension or extend said layers whereupon the bracket plate 49 is actuated from its phantom line position 53 to a position beneath the bottom rail 24 as illustrated in solid lines in Figs. 6 and 12 to 14 inclusive. This operation of the bracket or plate 49 properly tensions or draws taut the tape layers 34 and 35 to their fully extended position with the ends of said tape layers between itself and the lower surface of the bottom rail 24. The plate or bracket 49 is then secured in position by screws 54 passing through the radial apertures 51.

Sometimes the knot 32 at the ends of the slats raising and lowering ropes projects below the under surface of the bottom rail and it is to accommodate this knot that the plate or bracket 49 is provided with the central aperture 50 as seen clearly in Fig. 13.

The foregoing clearly described the improved ladder tape of this invention and the method of applying it to a Venetian blind while said Venetian blind is mounted relative to the opening it covers. Venetian blinds having ladder steps or slat supports alternating with respect to the longitudinal edges of their layers utilize said alternate ladder steps or slat supports in preventing displacement of the ladder tape to either side of the raising and lowering ropes. To accomplish this function in the present device use is made of a clip clearly illustrated in Figs. 7 to 10 inclusive. This clip is made of material having an inherent spring with its body portion 55 substantially U-shaped in cross section and comprising arms 56 and 57 joined to one another by a base 58 shown as in the nature of a bead. Extending from one of the arms, preferably the lower one when mounted in position, is a U-shaped hook including arms 59 and 60 joined to one another by a base 61.

In practice the clip 56 is mounted on a slat 23 by forcing one edge of said slat between the arms 56 and 57 and to assist in mounting the clip on the slat the upper arm, 56 for example, is slightly upwardly turned as at 62. The clip is mounted behind one of the tape layers and in such position that the ladder step or slat support adjacent thereto is received in the hook between arms 59 and 60 all as clearly illustrated in Fig. 9.

With the clip mounted as illustrated in the drawings the ladder tape is prevented from shifting in one direction by the engagement of its ladder steps or slat supports with the raising and lowering rope and is prevented from moving in the other direction by the base 61 of the hook engaging said ladder step or slat support.

A separate clip 55 may be mounted on each slat 23 but it is believed sufficient that one of said clips on each of a selected few of the slats is all that is required, for example, one clip on each seventh slat as illustrated in Fig. 1.

It has been found that the ladder tape layers, in some instances, have a tendency to transversely bow, that is, the edge of the ladder tape layer remote from that to which the ladder steps or slat supports is fastened tends to gape away from the slats. To overcome this the clip may be provided with means for holding this edge of the ladder tape layer adjacent its slat. A modified

6

clip for accomplishing this purpose is illustrated in Fig. 11 wherein the hook is formed of wire impinged in the beadlike base 58 of the clip proper 56 with the wire projecting from the opposite side of said clip from that which carries the hook to provide a second hook 63 much smaller than the hook which embraces the ladder step or slat support. Furthermore this hook points outwardly with respect to the slat clip and may have its end pointed to pin itself into the fabric of the ladder tape layer but preferably is designed to enter a loop 64 formed integral with the ladder tape layer and may be no more than several threads or loose stitches in the tape layer.

From the foregoing it is believed now evident that there has been provided a replaceable ladder tape for Venetian blinds which accomplishes the objects initially set forth.

What is claimed is:

1. In a Venetian blind a ladder tape comprising a pair of flexible members each of a length of the Venetian blind when extended located one on each side of the blind and in transverse alignment, slat supports, one for each slat, joining said members, said slat supports all being located outwardly of the median line of said members, means above the uppermost slat for supporting the ladder tape and slats; and means for securing the upper ends of said flexible members to the support, comprising a separate member extending across said supporting means from one side of the blind to the other and coacting means between said flexible members and said separate member for detachably securing the said flexible members and said separate member together.

2. In a Venetian blind a ladder tape comprising a pair of flexible members each of a length of the Venetian blind when extended located one on each side of the blind and in transverse alignment, slat supports, one for each slat, joining said members, said slat supports all being located outwardly of the median line of said members, means above the uppermost slat for supporting the ladder tape and slats, and means for securing the upper ends of said flexible members to the support, comprising a plate extending across said supporting means from one side of the blind to the other and provided with elongated aperture means, with each of said flexible members detachably secured in said aperture means and serving to retain said plate centralized on said supporting means.

3. In a Venetian blind a ladder tape comprising a pair of flexible members each of a length of the Venetian blind when extended located one on each side of the blind and in transverse alignment, slat supports, one for each slat, joining said members, said slat supports all being located outwardly of the median line of said members, means above the uppermost slat for supporting the ladder tape and slats, and means for securing the upper ends of said flexible members to the support, comprising a bracket independent of and resting upon the support and having an elongated aperture adjacent opposed edges thereof for receiving, respectively, one of the flexible members, and a metal tip on each flexible member of a length greater than the length of the aperture to engage the bracket on each end of its aperture to prevent disassociation of the bracket and flexible members.

4. In a Venetian blind a ladder tape comprising a pair of flexible members each of a length of the Venetian blind when extended located one on each side of the blind and in transverse align-

7

ment, slat supports, one for each slat, joining said members, said slat supports all being located outwardly of the median line of said members, means above the uppermost slat for supporting the ladder tape and slats, and means for securing the upper ends of said flexible members to the support, comprising a bracket independent of and resting upon the support and having an elongated aperture adjacent opposed edges thereof for receiving, respectively, one of the flexible members, a metal tip on one flexible member of a length greater than the length of the aperture to engage the bracket on one end of its aperture to prevent disassociation of the bracket and flexible members, and means for permanently securing the other of said flexible members end to itself around the bracket.

5. In a Venetian blind a ladder tape comprising a pair of flexible members each of a length of the Venetian blind when extended located one on each side of the blind and in transverse alignment, slat supports, one for each slat, joining said members, said slat supports all being located outwardly of the median line of said members, means above the uppermost slat for supporting the ladder tape and slats, means for securing the upper ends of said flexible members to the support comprising a separate member extending across said supporting means from one side of the blind to the other and coacting means between said flexible members and said separate member for detachably securing the said flexible members and said separate member together, a rail below the lowermost slat, and means for securing the lower ends of said flexible members to the rail.

8

6. In a Venetian blind a ladder tape as claimed in claim 2 wherein said plate is loosely resting on said support.

7. In a Venetian blind a ladder tape comprising a pair of flexible members each of a length of the Venetian blind when extended located one on each side of the blind and in transverse alignment, slat supports, one for each slat, joining said members and all outwardly of a median line thereof, means above the uppermost slat for supporting the ladder tape and slats carried thereby, and means for securing the upper ends of said flexible members to the support, comprising a plate extending across said supporting means from one side of the blind to the other and provided with elongated aperture means, with each of said flexible members detachably secured in said aperture means and serving to retain said plate centralized on said supporting means.

CHARLES ADLER.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,686,830	Mason	Oct. 9, 1928
1,861,606	Mackin	June 7, 1932
2,111,978	Lawson et al.	Mar. 22, 1938
2,114,057	Lorentzen	Apr. 12, 1938
2,123,817	Warren	July 12, 1938
2,153,893	Johanson	Apr. 11, 1939
2,166,301	Konen	July 18, 1939
2,311,716	Walker	Feb. 23, 1943