May 21, 1957 K. P. MAYER 2,792,880

VENETIAN BLIND CONSTRUCTION

Filed Jan. 13, 1956 3 Sheets-Sheet 1

Fig. 1

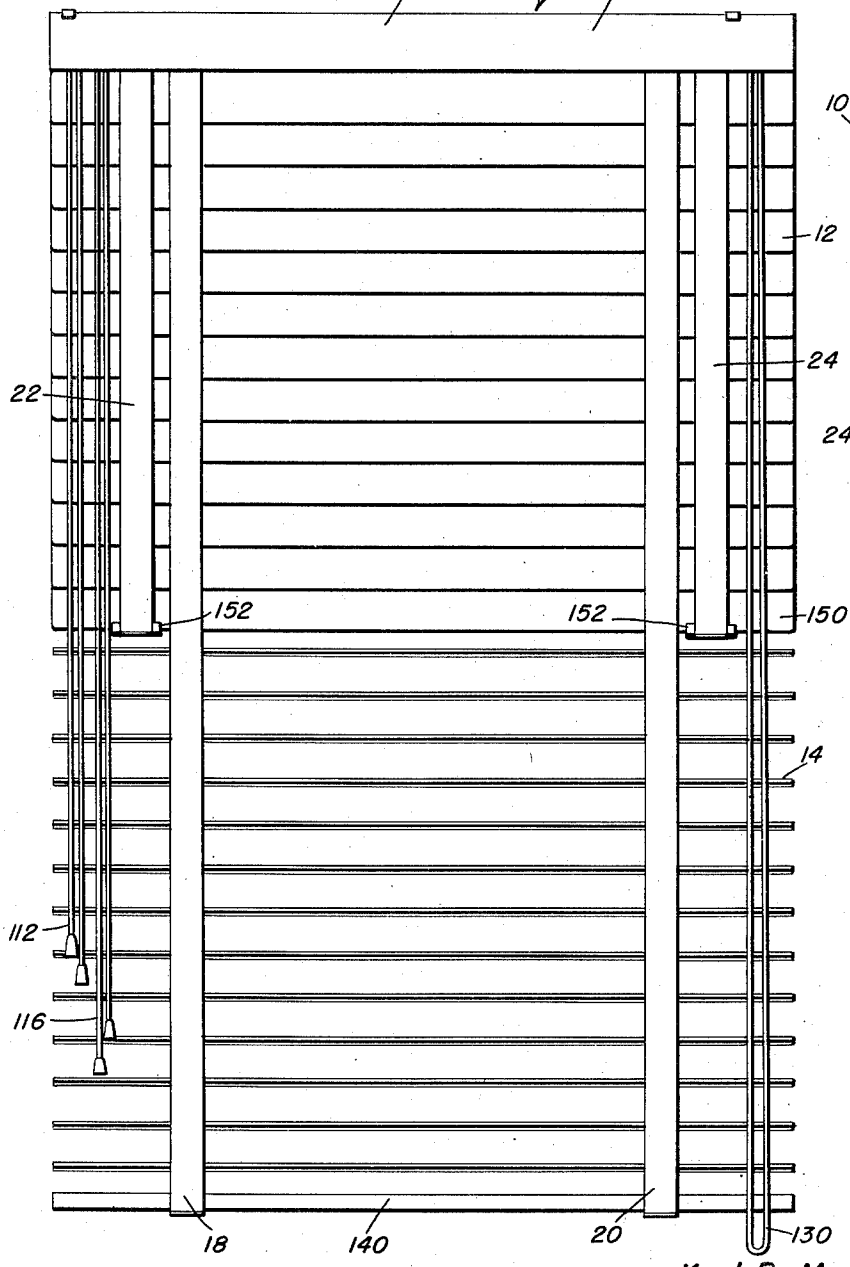
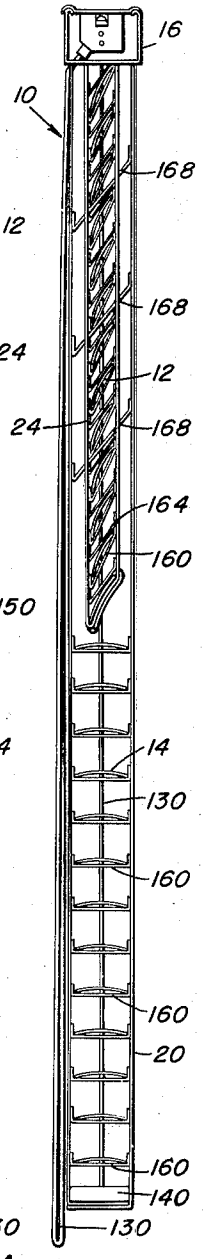


Fig. 2



Karl P. Mayer
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

May 21, 1957 K. P. MAYER 2,792,880

VENETIAN BLIND CONSTRUCTION

Filed Jan. 13, 1956 3 Sheets-Sheet 2

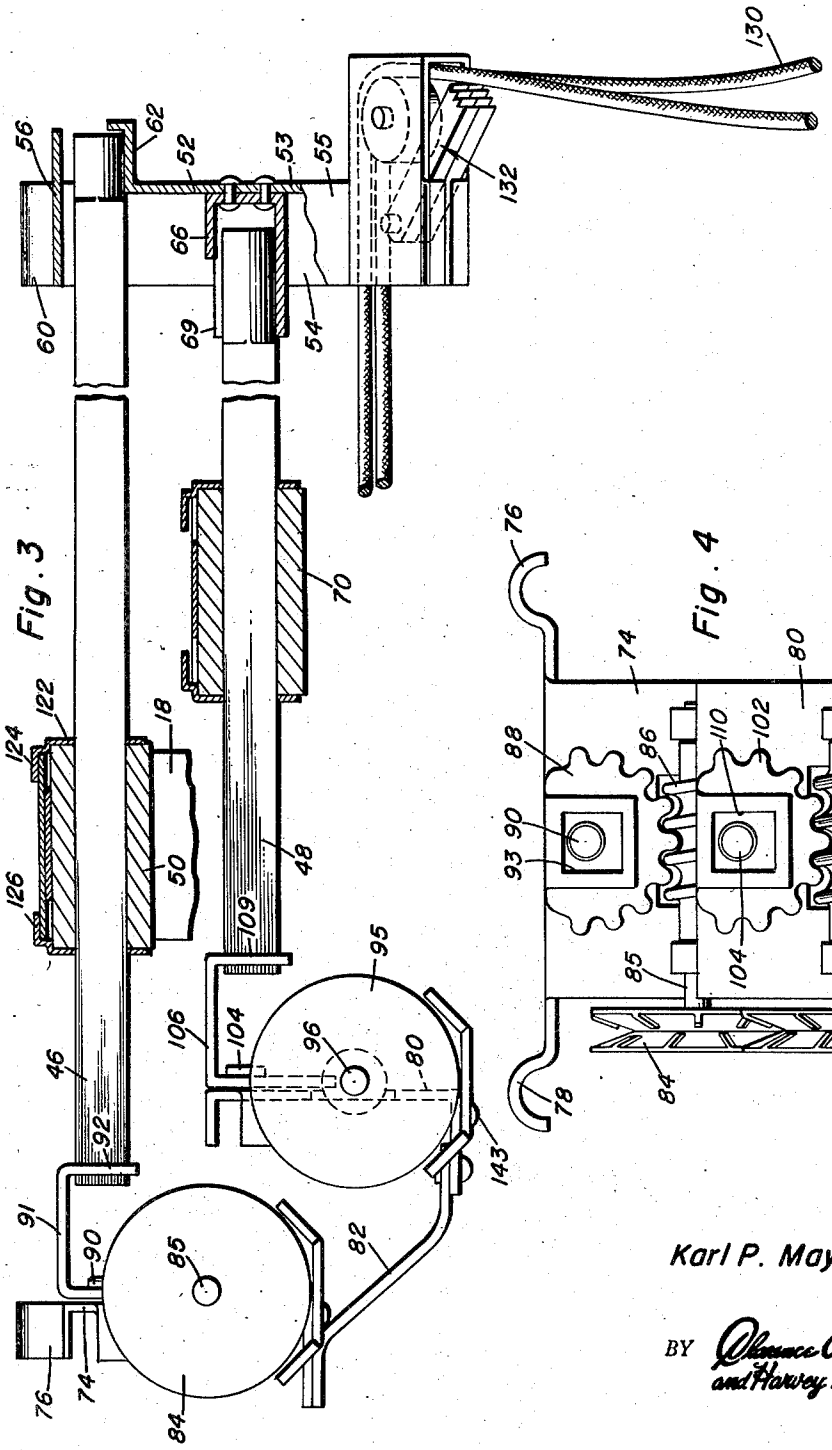


Fig. 3

Fig. 4

Karl P. Mayer
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

May 21, 1957 K. P. MAYER 2,792,880

VENETIAN BLIND CONSTRUCTION

Filed Jan. 13, 1956 3 Sheets-Sheet 3

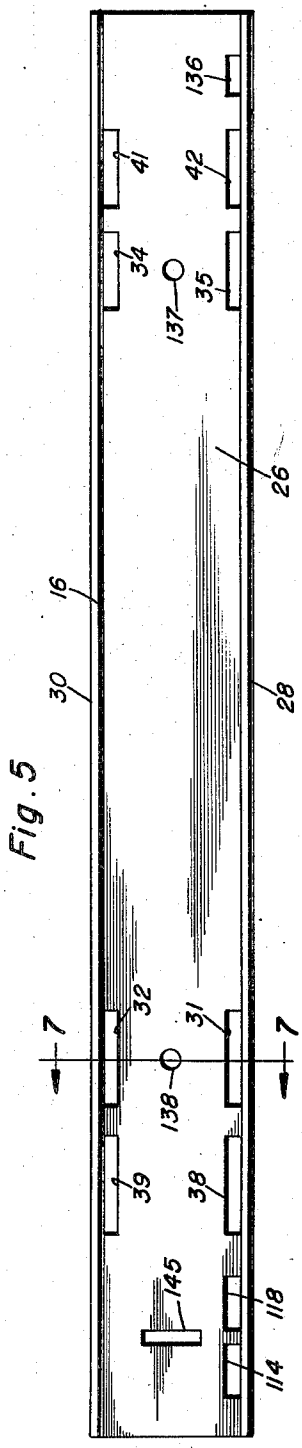


Fig. 5

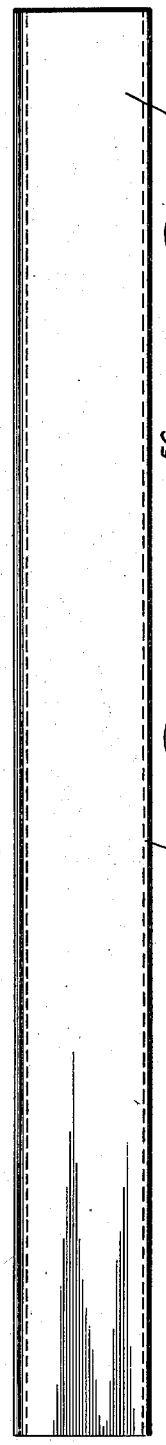


Fig. 6

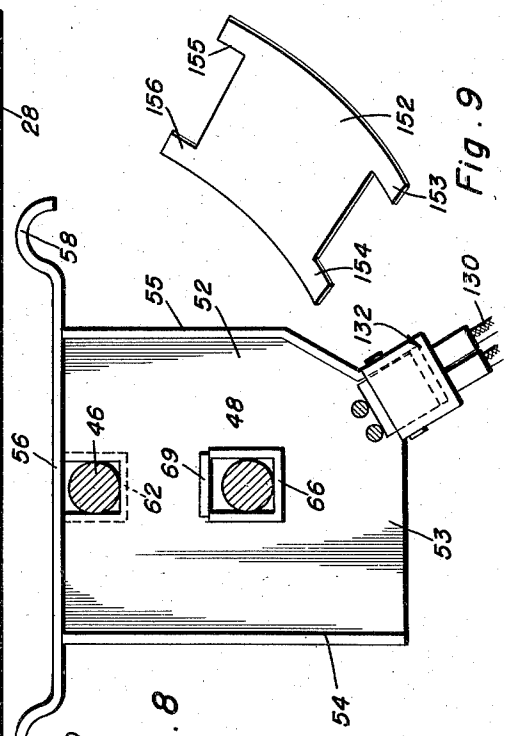


Fig. 8

Fig. 9

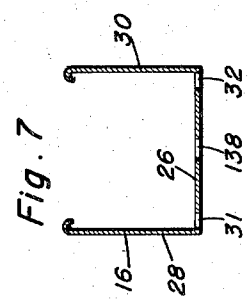


Fig. 7

Karl P. Mayer
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

United States Patent Office 2,792,880
Patented May 21, 1957

2,792,880

VENETIAN BLIND CONSTRUCTION

Karl P. Mayer, Philadelphia, Pa.

Application January 13, 1956, Serial No. 558,934

6 Claims. (Cl. 160—115)

This invention relates to Venetian blinds and particularly to a Venetian blind which is capable of providing independent upper and lower adjustments of the slats.

An object of the present invention is to provide a simplified Venetian blind having an upper and lower group of slats, the upper and lower group of slats being independently adjustable and being capable of being raised and lowered, there being means provided for the purpose of preventing the front and rear strands of tapes at the top from separating and bulging objectionably when the Venetian blind is elevated.

Another object of the invention is to provide a simplified improved means of attaching the tapes to the lower tilt slat of the upper group of slats.

Another object of the invention is to provide a practical Venetian blind of the type which has upper and lower groups of slats that are independently adjustable, there being separate means for tilting the two groups of slats and a common device for elevating both groups of slats, the entire construction appearing very similar to one of the commonly available types of Venetian blinds but possessing the above mentioned additional advantages.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an elevational view of a Venetian blind made in accordance with the teachings of the present invention;

Figure 2 is a side view of the Venetian blind in Figure 1;

Figure 3 is an enlarged elevational view with parts broken away in section showing the upper tilt bars that are adapted to be located in the header box, there being a single tilt bar for each group of slats of the Venetian blind;

Figure 4 is an end view of the structure in Figure 1;

Figure 5 is a plan view of the header box with the structure removed therefrom;

Figure 6 is an elevational view of the header box Figure 5;

Figure 7 is a transverse sectional view taken on the plane of line 7—7 in Figure 5;

Figure 8 is a side view of the structure of Figure 5 with parts being shown in section; and

Figure 9 is a perspective view of the clip for attaching the tapes to the lower slat of the upper group of slats.

In the accompanying drawings there is a Venetian blind **10** which illustrates the principles of the invention. This blind comprises an upper group **12** of slats together with a lower group **14** of slats. These slats are suspended from header box **16** by means of a first and second tape **18** and **20** respectively for the lower group **14** of slats, and a third and fourth tape **22** and **24**, respectively, for the upper group **12** of slats.

Header box **16** consists of a generally U-shaped housing having a bottom **26** together with sides **28** and **30** which rise from the bottom **26**. Bottom **26** has a first pair of slots **31** and **32** for the front and rear strands of tape **18**; a second pair of slots **34** and **35** for the front and rear strands of tape **20**; a third pair of slots **38** and **39** for the front and rear strands of tape **22**; and finally a fourth pair **41** and **42** of slots for the front and rear strands of tape **24**. The strands of these tapes pass through their respective slots that are formed in the bottom **26** of header box **16** near the junction of the bottom with the sides **28** and **30**.

The mechanism for raising and lowering and for adjusting the tilt angle of all of the slats is carried in the header box **16**. It consists of two tilt bars **46** and **48**, each being of similar construction and function. The tilt bar **46** is for the lower group **14** of slats and therefore tapes **18** and **20** are secured thereto. The attachment of the tapes is made by placing their upper ends over rollers, for example the tape **18** on roller **50** and holding the tapes fixed to the rollers. The rollers are in turn fixed to the tilt bar **46** so that upon rotation of the tilt bar, the tapes are adjusted in such a manner as to tilt the slats of lower group **14**. A mounting bracket **52** is adapted to be disposed in the header box **16** and includes an end plate **53** together with sides **54** and **55** and a top wall **56**. The top wall has downwardly opening and laterally extending hooks **58** and **60** which seat on the upper edges of the sides **28** and **30** of the header box **16**. This mounts the bracket **52** in the header box. Plate **53** has a bearing **62** formed in it near its top in which one end of the tilt bar **46** is mounted for rotation. A sleeve **66** is fixed, as by being riveted, to a surface of plate **53**. The upper section of sleeve **66** is cut away to form slot **69** in which one end of tilt bar **48** is placed so that tilt bar **48** may be mounted for rotation in sleeve **66**. The tilt bar **48** has tapes **22** and **24** secured thereto, as by being fastened to rollers **70** in a manner identical to the attachment of tape **18** to roller **50**. The means for tilting the bars **46** and **48** are in essence identical to each other. For the bar **46** there is a mounting bracket **74** having at its upper end laterally projecting, downwardly opening hooks **76** and **68** that are placed on the upper edges of sides **28** and **30** of header box **16**. This supports the mounting bracket **74** and also the mounting bracket **80** inasmuch as it is fixed to bracket **74** by means of plate **82**, the latter being spot welded, riveted or otherwise fastened to the two mounting brackets **74** and **80**. Pulley **84** is fixed to a shaft **85**, the latter being mounted in bearings that are carried by bracket **74**. Worm **86** is fixed to shaft **85** and is in mesh with gear **88**. Gear **88** is mounted for rotation on a stub shaft **90**, the latter being supported by bracket **74**. At the upper edge of gear **88** there is an arm **91** whose outer end is provided with a right angular extension **92**. This extension has a non-circular, preferably square or rectangular, opening **93** in which a similarly cross-sectioned end of tilt bar **46** is mounted. Therefore upon rotation of the pulley **84**, the worm and gear is correspondingly actuated in order to rotate extension **92**. The center of opening **93** is in alignment with the axis of rotation of gear **88** so that upon rotation of this gear, the tilt bar **46** will be rotated rather than laterally displaced.

Pulley **95** is secured to shaft **96**, the latter being mounted in bearings **97** and **98** which are secured to bracket **80**. Worm **100** is fixed to shaft **96** and is en-

meshed with the gear **102**. This gear is mounted for rotation on a stub shaft **104** carried by bracket **80**. Plate **106** protrudes from the upper end of gear **102** and has a right angular extension **109** at the end thereof provided with an aperture **110**. Aperture **110** is similar to aperture **93** and functions to drive and support the tilt bar **48**. Tilt rope **112** extends through aperture **114** in the bottom **26** of the header box **16** and is engaged with the pulley **83**. Tilt rope **116** extends through aperture **118** in the header box bottom **26** and is engaged with the pulley **95**. Therefore when the ropes **112** and **116** are manipulated the lower and upper groups respectively of slats are adjusted in view of the displacement of the front and rear strands of the tapes.

These tapes, for example see tape **18** in Figure 3, are fixed to the rollers that are in turn fixed to the tilt bars **46** and **48**. The attachment is made by having a clip for each tape. Clip **122** is a cover for the roller **50** and has tabs **124** and **126** struck therefrom beneath which tape **18** is inserted. After so locating the tape tabs **124** and **126** are bent downwardly to bite into the tape and hold it firmly fixed in place on the roller.

In order to raise and lower the Venetian blind rope **130** is passed through the pawl box **132**, the latter being of standard construction. Lifting rope **130** is passed through aperture **136** in the bottom of the header box and has strands which pass through openings **137** and **138** in bottom **26** of header box **16**. These strands also pass through aligned openings in all of the slats of the Venetian blind and are attached to the lower tilt board **140** of the bottom group **14** of slats. The strands of the rope which pass through the slats of the Venetian blind are concealed behind tapes **18** and **20**. In assembling the Venetian blind, the slat tilt mechanism shown best in Figure 3, is disposed in the header box with the hooks placed over the upper edges of the sides thereof. The rivets **143** are fitted in aperture **145** to help hold the tilt mechanism and assembly in place.

Tapes **18** and **20** are fixed to the tilt board **140** in the customary manner. However, the tapes **22** and **24** are attached to the lowermost slat **150** of the upper group **12** of slats by a very thin and unobtrusive fastening device (Figure 9). This device comprises a curved plate **152** which is shaped to conform to the curvature of the slat cross-section. Two tabs **153** and **154** are formed on one end of the plate **152**, while tabs **155** and **156** are formed on the opposite end thereof. These tabs are bent over opposite marginal edges of the lowermost slat **150** with the tape thereunder.

Customary cross tapes **160** are secured to and extend between the front and rear strands of all of the tapes. The slats are disposed on these cross tapes **160**. However, for the upper group **12** of slats there is an improvement due to the dissimilarity of adjustments of the upper and lower groups of slats. This improvement consists of in addition to the customary cross tapes **160**, additional cross tapes **164** which are located close to the cross tapes **160**. This means that each slat is supported at the top surface as well as the bottom surface so that the proper angularity in the adjustment is always maintained, regardless of wind conditions and other disturbances. In addition the tapes **18** and **20** have slightly longer cross tapes **168** which extend across and which are secured to the front and rear strands thereof. These cross tapes **168** constitute means for preventing the strands of the tapes **18** and **20** from spreading objectionably when the lower group **14** of slats is elevated together with the upper group **12**. Accordingly, the objectionable bulging and spreading of the upper tapes is completely avoided by having several cross tapes **168** which extends between the slats of the upper group **12** and which are preferably at an angle while the cross tapes **160** are horizontal.

In operation the ropes **112** and **116** are used to adjust the upper and lower groups of slats to the desired

angularity. Rope **130** is pulled in order to elevate the entire Venetian blind, the lower group of slats being first elevated and then the upper group.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A Venetian blind comprising an upwardly opening header box provided with a bottom and side walls, a first and a second tilt bar in said box, a first and a second tape, two pairs of passageways in said bottom through which said tapes pass, said tapes being secured to one of said tilt bars, a lower group of slats carried by said tapes, an upper group of slats disposed between said tapes, a third and a fourth tape supporting said upper group of slats, two additional pairs of passageways in said header box bottom through which said third and fourth tapes pass, means securing said third and fourth tapes to the other of said tilt bars, and means secured to the front and rear strands of said first and second tapes and passed between the slats of said upper group of slats for preventing the front and rear strands of said first and second tapes from spreading when the blind is raised.

2. A Venetian blind comprising an upwardly opening header box provided with a bottom and side walls, a first and a second tilt bar in said box, a first and a second tape, two pairs of passageways in said bottom through which said tapes pass, said tapes being secured to one of said tilt bars, a lower group of slats carried by said tapes, an upper group of slats disposed between said tapes, a third and a fourth tape supporting said upper group of slats, two additional pairs of passageways in said header box bottom through which said third and fourth tapes pass, means securing said third and fourth tapes to the other of said tilt bars, means connected to said first and said second groups of slats for raising and lowering said slats, and means secured to the front and rear strands of said first and second tapes and passed between the slats of said upper group of slats for preventing the front and rear strands of said first and second tapes from spreading when the blind is raised.

3. In a Venetian blind which includes an upper and a lower group of slats, tapes for said upper group of slats connected therewith, tapes for said lower group of slats connected therewith and including front and rear strands which are disposed respectively on the front and rear of said upper group of slats, and cross tapes on said strands secured thereto and passed through the slats of said upper group in order to prevent said tapes for said lower group of slats from bulging when the Venetian blind is elevated.

4. In a Venetian blind which includes an upper and a lower group of slats, tapes for said upper group of slats connected therewith, tapes for said lower group of slats connected therewith and including front and rear strands which are disposed respectively on the front and rear of said upper group of slats, cross tapes on said strands secured thereto and passed through the slats of said upper group in order to prevent said tapes for said lower group of slats from bulging when the Venetian blind is elevated, said tapes supporting said upper group of slats including cross tapes on which said upper group of slats are disposed, and additional cross tapes located adjacent to the last mentioned cross tapes and overlying the slats of said upper group of slats in order to hold said slats of said upper group of slats captive while they are being tilted.

5. In a Venetian blind, an upper and lower group of slats, tapes having front and rear strands provided with

cross tapes supporting said lower group of slats and extending on the front and rear sides of said upper group of slats, additional tapes having cross tapes supporting said upper group of slats, and means including tapes which extend between the front and rear strands of the first mentioned tapes and which extend between slats of said upper group of slats for preventing the strands of said first mentioned tapes from spreading at the top thereof when the Venetian blind is elevated.

6. The Venetian blind of claim 5 wherein said additional tapes between said front and rear strands are longer than said cross tapes.

References Cited in the file of this patent

UNITED STATES PATENTS

2,148,812	Hollingsworth	Feb. 28, 1939
2,156,150	French	Apr. 25, 1939
2,706,522	White	Apr. 19, 1955
2,719,586	Graham	Oct. 4, 1955