March 15, 1960 J. H. BARRETT 2,928,461

VENETIAN BLINDS

Filed March 28, 1957

FIG. 1

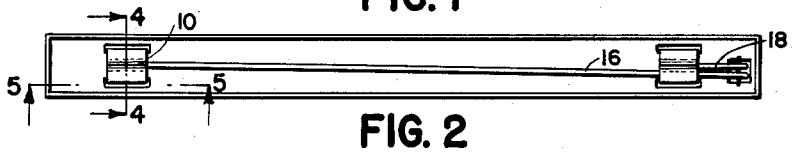


FIG. 3

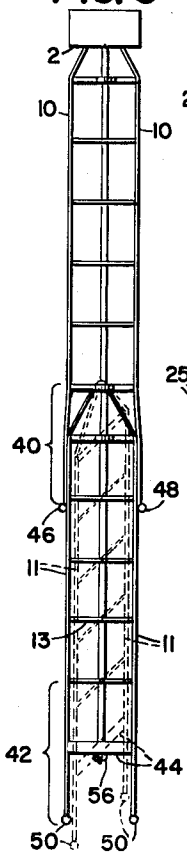


FIG. 2

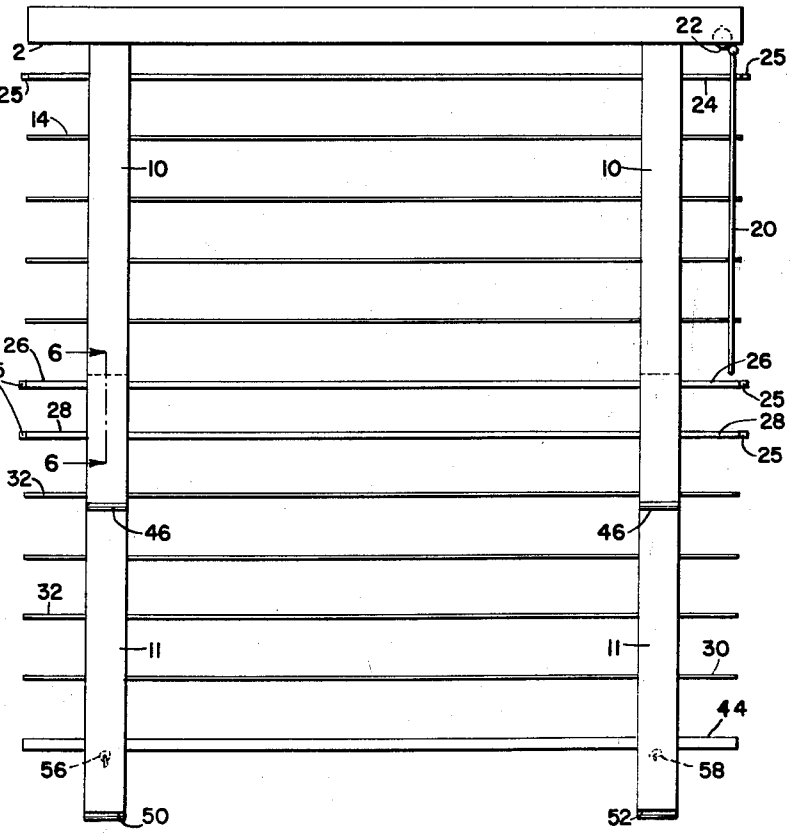


FIG. 4

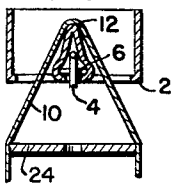


FIG. 7

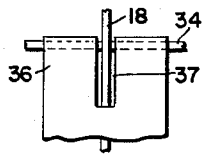


FIG. 5

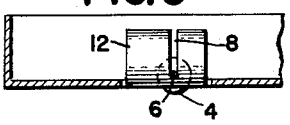


FIG. 6

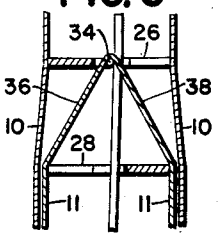
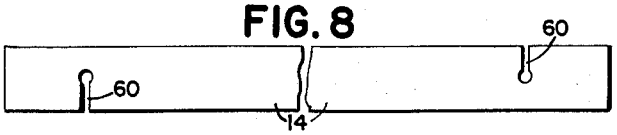


FIG. 8



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VENETIAN BLINDS

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1 Claim. (Cl. 160—115)

My invention relates to Venetian blinds suitable for use in the control of the light and air admissible through a window, and more particularly to a mechanism which can control the tilt of separate groups of slats in such blinds.

In the prior art devices the tilting of the slats has been controlled by the use of cords and a tilt bar which have been limited to turning all of the slats simultaneously.

It is an object of this invention to provide means whereby the slats may be controlled in groups smaller than the whole.

It is a further object of this invention to provide a mechanism which does away with the necessity of cords to tilt the slats.

It is another object of this invention to eliminate certain components which have previously been considered necessary in the construction of Venetian blinds.

It is an additional object of this invention to provide a simple, economical construction for Venetian blinds which will provide effective means for tilting the slats, and for raising the slats to remove the blinds from an obstructing position in the window.

The foregoing objects and others ancillary thereto will be more clearly pointed out in the attached specification and claim.

A preferred embodiment of the invention is set forth in the accompanying drawings, in which:

Fig. 1 is a top view of the blind,

Fig. 2 is an elevation showing the blind extended,

Fig. 3 is a side view showing the independent action of various slats,

Fig. 4 is an enlarged section of Fig. 1 taken along the lines 4—4,

Fig. 5 is a partial section, enlarged, of Fig. 1 along the lines 5—5, with the ladder tapes removed,

Fig. 6 is an enlarged section taken from Fig. 2 along the lines 6—6,

Fig. 7 is a view of Fig. 6 taken perpendicular to the side of the ladder tape 11 along the section 36 showing the slot 37, and

Fig. 8 is an elevation of a slat showing slots.

The blind is supported on the headrail or support 2 in which are mounted pulleys, such as 4, journaled on pins 6, which ride in slots 8 provided in the headrail. The headrail in the preferred embodiment is composed of sheet metal which may be stamped, crimped or otherwise formed into a support for the pulleys, ropes, pins and ladder tapes.

The ladder tapes 10 are supported on the headrail by the bearing surfaces 12 which provide support for the tapes, and at the same time, provide sufficient friction with the tapes so that the slats 14 will be restrained from turning, except when a small turning force is applied to them by hand or other means.

The pulleys 4 and pins 6 may preferably be single units which can be placed in open slots 8 by the simple expedient of dropping them in place.

The bearing surfaces 12 may consist simply of bent portions of the headrail 2 with an opening 8 cut in them

for the pulleys. This construction is preferable in those instances in which the support for the ladder tapes is provided by a pin supported below the headrail, such as is described below.

The lift cords or ropes 16, 18, and 20 are provided to make it possible to raise and lower the blind in the conventional manner over the pulleys 4 and 22. Cord 20 is attached to cords 16 and 18 by a ring or other conventional means so that only one cord need be pulled to raise the blind.

The slats designated as 24, 26, 28 and 30 may be of a more rigid construction than the slats 14 and 32. Such construction provides greater strength in the structure of the blind and also provides a number of readily accessible control elements which may be turned to tilt the slats 14 or the slats 32. In the embodiment shown, the tilt of slats 14 is controlled by slats 24 and 26; the tilt of slats 32 is controlled by slats 28 and 30.

In order to single out the rigid slats, so that they may be identified by the user, an extension such as extensions 25 on slats 24, and 28 may be applied at either or both ends. If desired, the rigid slats may be colored or otherwise made identifiable.

The rigid slats 24, 26, 28 and possibly slat 30 are fastened directly to the ladder tapes by any conventional means which is appropriate, such as by an adhesive, nails, screws, brackets or the like. The connection to 30 may be eliminated in case it is deemed unnecessary to make 30 a rigid slat in a particular blind.

The supporting members 34 may be pins placed in grooves in the slat 26. They may preferably be formed of metal much like the bearing surfaces 12 but they need not be as large nor do they require slots such as 8. They may be integral with the slat 26.

The supporting members 34 may be placed below the plane of the slat 26 if desired. A supporting member, such as 34, might also be placed below the headrail 2 in lieu of units 12. In the latter case, openings would be placed in the support tapes 10 above slat 24 in order to provide space for cords 16 and 18.

The supporting members 34 will generally be of small diameter. The diameter and length are determined by the width of the ladder tapes, the weight of the blinds and considerations as to the amount of friction necessary to maintain the blinds at any desired tilt without making the unit too hard to operate. A supporting member with a diameter of approximately 1/16" was found to function properly with a standard tape in one instance.

The control of the lower part of the blind is through slats 28 and 30. As shown, slat 28 is supported by supporting members 34 recessed in openings in slat 26, with the ladder tapes 11 passing over the pins. The relationship, as shown in Fig. 6, between the various supporting elements is such that sides 36 and 38 of the ladder tape are approximately the same length as the slat 28 when the slat is horizontally oriented. It was found by experiment, that if these sides 28, 36 and 38 comprise an equilateral triangle in the rest position, or position with the slats horizontal, that the blind will function more satisfactorily than otherwise. It should be noted the same relationship of equal sides is used on the upper supporting members as shown in Fig. 4. A slot or opening 37 is provided in the portions 36 and 38 of the ladder tapes 11 so that the supporting cords 16 and 18 may pass therethrough. The slot in portions 36 and 38 is, of course continuous, as indicated.

It is clear from the construction shown in Figs. 3 and 6 that the ladder tape 10 hangs freely from slat 26 and that ladder tape 11 hangs freely from slat 30. The areas marked 40 and 42 in Fig. 3 are intended to illustrate the freely hanging parts of the tapes. This construction is provided so that, when the slats are tilted, the areas 36

and 38 on tape 11, and the bottom slat 44 will not be exposed. To further assure that these areas and the slat 44 will not be exposed, weights may be provided at 46, 48, 50 and 52.

The bottom rail or slat 44 is weighted and is supported at points 56 and 58 by cords 16 and 18, respectively. This construction has the advantage that the member 44 will remain stationary when the slats are tilted, since there is no direct connection to the ladder tapes 11.

An additional feature of the invention, which has proven successful in tests, is the provision of a slot, such as 60, in each end of the slats at the points where the supporting cords pass through. These slots may be on the same side of each slat or they may be placed on alternate sides as illustrated in Fig. 8.

Transverse connecting tapes as indicated at 13 are placed between the inner faces of the ladder tapes 10 and 11 at appropriate intervals to support the slats 14 and 32. The connecting tapes are not fastened to slats 14 and 32, but merely act as a base upon which the slats may rest.

The operation of the blind is simple and straightforward. Cords 16 and 18 run on pulleys 4 and 22 to enable the operator to pull the slats together at the top, or to pull them up part way, and fasten them. Locking in position is by means of a conventional latching device which, in the interest of simplicity, has not been illustrated.

The process of tilting the slats is even simpler, since the user need only twist one of the rigid slats to tilt the other slats which are supported by the same ladder tape. For instance, a twist of either slat 24 or 26, when the blind is extended as in Fig. 2, will cause all of the slats 14 to turn in the same direction. Likewise, a twist of slat 28, or slat 30 if it is also made rigid, will cause the slats 32 to turn a corresponding degree. The slats 28, 30 and 32 may be turned independently of the upper slats as shown in dotted lines on Fig. 3.

The blind may be shipped in cartons for assembly by the user. In such a case, the pulleys 4 may be dropped into position through the slots 8. The cords 16 and 18 may be placed in position over the pulleys and the ladder tapes may be slipped over the bearing surfaces 12. The slats may then be placed in position through their slots 60 and the blind will then be ready to use.

The slots 60 make it possible to clean the slats easily by removing them from the blind individually. This may be accomplished by turning each slat to disengage the slots from the cords 16 and 18.

The foregoing embodiment of my invention provides a simple, economical Venetian blind which may be used to tilt a portion of the slats in one direction, and to tilt another portion of the slats in a different direction. This independence of action is shown by the dotted lines in Fig. 3.

The tilting of the slats is accomplished without the use of cords, gears or other apparatus and, in fact, the invention eliminates the necessity for two of the cords, and much of the gearing previously found necessary.

The construction provides a bottom bar which remains level when the slats are tilted and when the blind is closed, since this bar has no connection to the ladder tapes.

The embodiment shown further makes it possible to remove all or any of the slats, thereby making it a simple matter to clean the slats.

It will be recognized that the foregoing described embodiment of the invention is illustrative only and that many variations are possible without going outside the spirit of the invention. Therefore the invention is not limited except in so far as is necessitated by the prior art and the appended claim.

I claim:

In a Venetian blind, the combination comprising a headrail, supporting means integral with said headrail and disposed above said headrail, said supporting means including an upper portion comprising an upper bearing surface curved about its major axis and a lower portion comprising a support for said upper bearing surface, a pulley, slot means in said supporting means cutting at right angles through the major axis of said upper bearing surface and ending in said lower portion, said slot means providing support for said pulley below said upper bearing surface, a first supporting tape, a first plurality of slats having first and second long edges, said first plurality of slats being disposed vertically from a top position to a bottom position and separated by selected equal spacing, said first supporting tape passing over said upper bearing surface and hanging in first and second long strips on either side of said slats, means connecting the first of said long strips to each of the first long edges of said first plurality of slats, means connecting the second of said long strips to each of the second long edges of said first plurality of slats, said first plurality of slats including first and second rigid slats, the first of said rigid slats being located at the top position and the second of said rigid slats being located at the bottom position of said first plurality of rigid slats, said bottom slat including a cylindrical bearing surface integral therewith, said long strips hanging freely below said second rigid slat for a distance greater than said selected spacing, a second supporting tape, a second plurality of slats having first and second long edges, said second plurality of slats being disposed vertically from a top position to a bottom position and separated by selected equal spacing, said second supporting tape passing over said cylindrical bearing surface and hanging in first and second long strips on either side of said slats, means connecting the first of said long strips to each of the first long edges of said second plurality of slats, means connecting the second of said long strips to each of the second long edges of said second plurality of slats, said second plurality of slats including third and fourth rigid slats, said third rigid slat being located at the top position and the fourth rigid slat being located at the bottom position of said second plurality of slats, said first and second long strips hanging freely below said fourth rigid slat for a distance greater than said selected spacing, a plurality of openings passing in vertical alignment through said first plurality of slats through a portion of said second supporting tape and through said second plurality of slats, means for pulling said slats together under said headrail including a lift cord passing over said pulley and through each of said plurality of openings to fasten below said fourth rigid slat, said first and second rigid slats providing means for tilting said first plurality of slats, said third and fourth rigid slats providing means for tilting said second plurality of slats, and said lift cord, said supporting tapes and said bearing surfaces supporting said slats to hang them freely from said headrail.

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