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VENETIAN BLIND CONSTRUCTION

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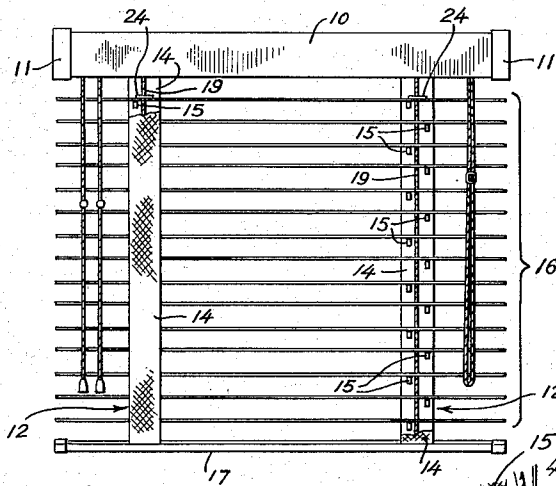


FIG. 1

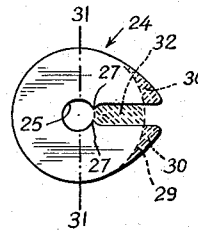


FIG. 3

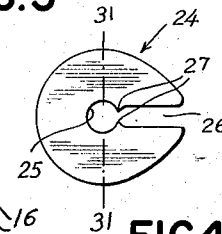


FIG. 4

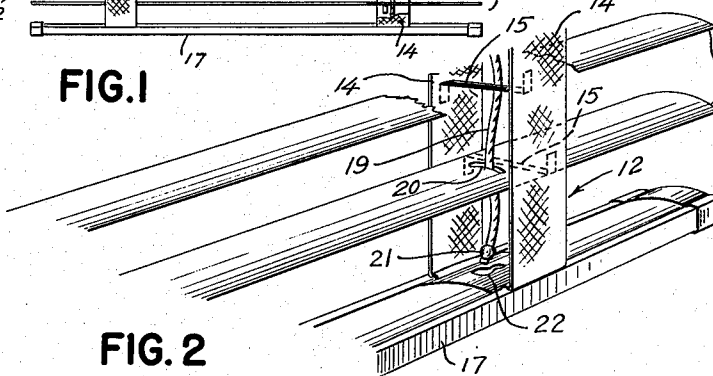


FIG. 2

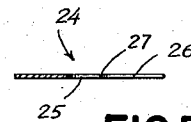


FIG. 5

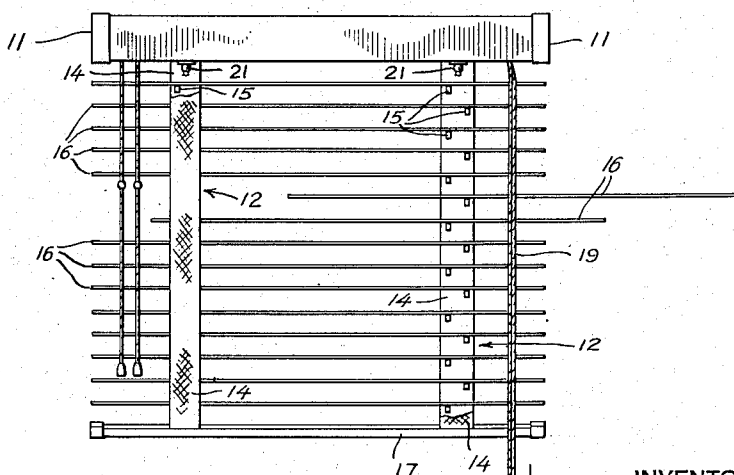


FIG. 6

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VENETIAN BLIND CONSTRUCTION

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8 Claims. (Cl. 160—173)

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This invention relates to a Venetian blind in which the removal and reinsertion of the slats of the blind are facilitated.

Venetian blinds are difficult to clean properly. The parallel slats of the blind tend to collect dust and dirt and proper cleaning of the slats has always presented a problem. In recent years, specific constructions have been devised in order to facilitate removal of the slats for cleaning or replacement of one or more damaged slats and reinsertion of the slats. In one type of construction, the ends of the lift cords are provided with a quick-detachable attachment to the bottom bar. In such a construction, the ends of the lift cords are released from the bottom bar and the portions of the lift cords depending from the cord lock are pulled as in raising the blind in order to withdraw the lift cords from the slats. Then, the slats may be removed individually from the ladder tapes for cleaning.

To reassemble the blind, the slats are first reinserted in the ladder tapes and the lift cords are then threaded downwardly through the slats and reattached to the bottom bar. A blind of this type is disclosed in Lorentzen application S. N. 115,407, in which detachment of the lift cords is facilitated by a construction in which a small sheet metal bead is crimped on each lift cord adjacent its lower end, the beaded ends of the lift cord being received within a so-called "key-hole" slot in the bottom bar, the bead passing through the larger end of the slot and being retained within the smaller end.

When removing the slats of such a blind, care must be taken that the ends of the lift cords are not retracted within the head bar, particularly in a blind of the enclosed head bar type in which the operating mechanism is contained within a more or less enclosed or box-like head bar. There is a tendency for the lift cords to be so retracted, either by carelessness in withdrawing the lift cords of the slats; e. g., by pulling the cords too far, or by the lift cords being retracted due to the overbalancing weight of the portion of the cords depending from the cord lock. If the ends of the lift cord are retracted into the head bar or pulled through the cord lock, it is necessary to remove the head bar from the installation brackets in order to retrieve the cords. Particularly in the instance of an enclosed head bar, there is a likelihood that an inexperienced person will reeve the lift cords incorrectly so as to preclude proper operation of the blind.

It is an object of the present invention to provide an improved Venetian blind of the type in

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which the lift cords are readily detachable from the bottom bar. Another object is to provide such a Venetian blind in which the lower ends of the lift cords are positively restrained from retraction into the head bar when the lift cords are withdrawn from the slats. Another object of the present invention is to provide an improved cord retainer for restraining passage of the ends of the lift cords into the head bar of a Venetian blind. Further objects and objects relating to economies of manufacture, assembly, and use will more definitely appear in the detailed description to follow.

The present invention is embodied in a Venetian blind having an enclosed head bar, two lift cords, and two ladder tapes, the lift cords passing downwardly through holes in each slat of the blind and being more or less concealed by the ladder tapes. The lower end of each lift cord is provided with a small metal bead or other terminal enlargement which is detachably received within a keyhole slot in the bottom bar. The beads on the lift cords are sufficiently small to pass through the holes in the slats, the lift cords being readily withdrawn from the slats by a downward pull on the portion of the lift cords depending from the cord lock of the blind.

According to the present invention, a cord retainer for the end of each lift cord normally rests on the upper side of the top slat of the blind, the lift cord passing through the retainer. In raising or lowering of the blind, the retainers offer no substantial resistance to passage of the cords and, being located on the upper side of the top slat and above eye level in the normal blind installation, are seldom visible. The lift cord passage through each of the retainers is slightly smaller than the beads so that, upon withdrawal of the lift cords from the slats, the bead on the end of each lift cord engages the cord retainer and carries the retainer upward against the bottom wall of the head bar, the over-all dimension of the retainer being too large to pass through the holes in the head bar provided for passage of the lift cords. The retainers serve to secure the ends of the lift cord against passage into the head bar during the time that the slats are being withdrawn from the ladder tapes and until they have been replaced; after which time the lift cords can be restrung through the slats, the cord retainers again resting on the upper side of the top slat.

In the form shown, the cord retainer is formed of a generally ovoid-shaped flat sheet metal plate having a central hole for passage of the lift cord

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and a slot extending from the hole outward to the marginal edge. The lift cord hole is located at the center of gravity of the plate, taking into account the removal of metal in forming the slot. Such a retainer has much less tendency to tilt and bind on the lift cord as the blind is raised or lowered.

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 drawings forming part of this specification, in which:

Fig. 1 is a somewhat diagrammatic front elevation of a Venetian blind, portions of the ladder tapes being broken away.

Fig. 2 is a fragmentary perspective view of the lower portion of a Venetian blind, including the bottom bar and one of the lift cords and ladder tapes. The end of the lift cord is shown disengaged from the bottom bar.

Fig. 3 is an enlarged top plan view of one of the cord retainers. Portions of the cord retainer and of the slot within the retainer have been cross-hatched to show the relationship whereby the cord-receiving hole of the retainer is maintained at the center of gravity.

Fig. 4 is a view similar to Fig. 3 of the retainer with the cross-hatching omitted.

Fig. 5 is a vertical section of the retainer taken on the line 5—5 of Fig. 4.

Fig. 6 is a view similar to Fig. 1, the lift cords having been disengaged from the bottom bar and withdrawn from the slats and several of the slats having been displaced on the ladder tapes.

Referring now to Figs. 1 and 2, the Venetian blind there shown has an enclosed head bar 10 which is adapted to be supported by installation brackets 11, 11 located at the ends of the head bar. Ladder tapes 12, 12 depend from the head bar 10, each ladder tape comprising a pair of longitudinal tapes 14, 14 connected by a series of cross tapes or rungs 15.

The slats 16 of the blind are supported by the ladder tapes 12, 12, each slat resting on a rung 15 of each tape. A bottom bar 17, which is substantially heavier than the slats 16, is secured to the lower end of the ladder tapes 12, 12.

The blind shown is of the two-lift-cord type, in which the ends of the lift cords 19, 19 are reeved through the head bar 10 and passed downwardly through holes 20, 20 in each slat, the ends of the lift cord being secured to the bottom bar 17. The lift cords 19, 19 pass through a cord lock fitting, not shown, within the head bar 10 and depend from the cord lock adjacent one end of the blind. The lift cords 19, 19 are, in fact, formed, as is customary, of a single length of cord, the looped end of which depends from the cord lock.

The bottom wall of the head bar 10 is provided with holes for passage of the lift cords 19, 19 and the longitudinal tapes 14 of the ladder tapes, these openings being only sufficiently large to provide for free passage of the cord and tapes. This construction is shown generally in Nelson Patent 2,455,135, issued November 30, 1948.

The lower end of each lift cord 19 is provided with a sheet metal bead 21 crimped thereabout

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to form a somewhat enlarged end of the cord which is received within a keyhole slot 22 of the bottom bar. The size relationship of the cord and bead to the slot is such that the bead may be entered within the larger end of the slot and the cord moved to the smaller end of the slot, which is smaller than the diameter of the bead so as to retain the end of the lift cord. This type of quick-detachable connection for a lift cord is shown and described more fully in the application of Hans K. Lorentzen S. N. 115,407.

A cord retainer 24 is located on each lift cord 19 above the top slat 16 and normally rests on the upper surface of the slat. The construction of the cord retainers 24, 24 is such that, in normal operation of the blind, the lift cords 19, 19 pass freely through the cord retainers. These retainers are shown in detail in Figs. 3, 4, and 5.

Each cord retainer 24 is formed of a flat sheet metal plate, preferably having the generally ovoid shape shown in Figs. 3 and 4. Essentially, the retainer 24 consists of a stamped sheet metal plate whose outside dimensions (minor axis 31—31) are sufficient so as to prevent the retainer from passing upwardly into the head bar through the lift cord openings, or downwardly through the lift cord holes 20 in the slats. The over-all dimension of the retainer is such that it will not project beyond the edges of the slat.

A hole 25 is provided in the central portion of the retainer for receiving the lift cord 19, this hole being of suitable diameter to provide for free passage of the cord but being somewhat smaller than the bead 21. A slot 26 extends outwardly from the hole 25 to the margin of the retainer to provide for placing the retainer on the lift cord without detaching the cord from the bottom bar 17 of the blind. Preferably, the inner end of the slot is narrower somewhat at 27, 27 as indicated in Figs. 3 and 4 to prevent accidental dislodgement of the retainer from the cords.

The hole 25 is located substantially at the center of gravity of the retainer 24. This design can be obtained by locating the hole 25 at the center of a circular area represented in part by the outline of the retainer and in part by the broken line 29 of Fig. 3. The portions of the retainer 24 on each side of the slot 26 are then extended somewhat as indicated in Fig. 3 to make up for the weight of the metal removed in forming the slot. The combined moment about the minor axis 31 of the retainer represented by the added metal of the shaded areas 30, 30 is substantially equal to the moment about the axis of the shaded area 32 representing the metal removed from the circular disc in forming the slot. Accordingly, the hole 25 is located at the center of gravity of the completed retainer.

The retainer of the present invention may be placed in position on a blind at any time. However, in the initial assembly of a Venetian blind, the lift cords with terminal beads in place are often reeved within the head bar before assembling the ladder tapes and slats. This is particularly true in the case of certain enclosed-metal-headbar blinds such as shown in the present application. It is often advantageous to insert the cord retainers on the lift cords immediately after reeving the lift cords in the head bar to prevent the cords from unintentionally becoming retracted into the head bar.

In removing the slats from a blind equipped with cord retainers 24, 24 of the present invention, the lower ends of the lift cords 19, 19 are

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first detached from the bottom bar. The lift cords are then withdrawn from the slats 16 of the blind by pulling downwardly on the portions of the lift cords depending from the cord lock as in raising the blind. After the head 21 on the end of each lift cord passes through the slot 26 of the top slat, it will engage the cord retainer 24 and carry it upward into contact with the under surface of the head bar so as to restrain the ends of the lift cords against passage into the head bar. The slats 16 of the blind may then be removed from the ladder tapes 12 for cleaning or replacement.

After reinsertion of the slats 16 in the ladder tapes, the lift cords 19, 19 may again be reeved through slats and attached to the bottom bar 17, the cord retainers 24 again resting on the top side of the top slat 16.

During normal operation of the blind, the cord retainers 24, 24 remain on the top side of the top slat and do not restrict free passage of the lift cords. Since the cord-passage hole 25 of each retainer is located at the center of gravity of the retainer, there is a greatly reduced tendency of the retainer to tilt and bind upon the lift cord upon raising or lowering of the blind.

I claim:

1. A Venetian blind, comprising: a head bar, a plurality of slats suspended in parallel relation from the head bar, a bottom bar located below the slats, lift cords reeved through the head bar, the ends of the lift cords extending downwardly through holes in the head bar and slats and having an enlarged end attached to the bottom bar, and a cord retainer located on each lift cord between the top slat and the head bar, the enlarged ends of the lift cords being free to pass upwardly through the slats of the blind and the cord retainers providing for free passage of the intermediate portion of the lift cords but engaging the enlarged bottom ends thereof to prevent their passage into the head bar.

2. A Venetian blind, comprising: a head bar, a plurality of slats suspended in parallel relation from the head bar, a bottom bar located below the slats, lift cords reeved through the head bar, the ends of the lift cords extending downwardly through the holes in the head bar and slats, a sheet metal bead crimped to the end of each lift cord and detachably engaging the end of the lift cord with the bottom bar, the bead being sufficiently small to pass freely through the holes of the slats, and a cord retainer located on each lift cord between the top slat and the head bar, the cord retainer having a cord-receiving hole permitting free passage of the lift cord but sufficiently small to engage the bead and prevent passage of the end of the lift cord into the head bar.

3. A Venetian blind as claimed in claim 2, in which the cord retainer comprises a generally flat sheet metal plate having a cord-receiving hole located centrally thereof and a slot extending from the cord-receiving hole to an edge of the plate for entering the cord within the passage, the minor dimension of the plate being greater than the major dimension of the lift cord holes in the slats and head bar.

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4. A cord retainer for preventing the enlarged lower end of a lift cord of a Venetian blind from passing into the head bar through which it is reeved, said retainer comprising: a generally flat plate having a cord-receiving passage and a slot extending from the passage to an edge of the plate for entering the cord within the passage, the portion of the plate diametrically opposite the slot being semi-circular about the cord-receiving passage as a center and the remainder of the plate being extended from a semi-circular form along the sides of the slot to place the cord-receiving passage at the center of gravity of the plate.

5. A cord retainer for preventing the enlarged lower end of a lift cord of a Venetian blind from passing into the head bar through which it is reeved, said retainer comprising: a generally flat sheet metal plate having a cord-receiving passage and a slot extending from the passage to an edge of the plate for entering the cord within the passage, plate having a regular geometric shape about the cord-receiving passage as a center except for an extended portion thereof at each side of the slot for maintaining the passage at the center of gravity of the plate.

6. A cord retainer for preventing the enlarged lower end of a lift cord of a Venetian blind from passing into the head bar through which it is reeved, said retainer comprising: a generally flat plate having a cord-receiving passage and a slot extending from the passage to an edge of the plate for entering the cord within the passage, the cord-receiving passage being located at the center of gravity of the plate.

7. A cord retainer for preventing the enlarged lower end of a lift cord of a Venetian blind from passing into the head bar through which it is reeved, said retainer comprising: a generally flat ovoid-shaped plate having a cord-receiving passage and a slot extending from the passage to an edge of the plate for entering the cord within the passage, the cord-receiving passage being located at the center of gravity of the plate.

8. A cord retainer for preventing the enlarged lower end of a lift cord of a Venetian blind from passing into the head bar through which it is reeved, said retainer comprising: a flat generally ovoid-shaped sheet metal plate having a cord-receiving passage and a slot extending from the passage to an edge of the plate at the small end thereof for entering the cord within the passage, the cord-receiving passage being located at the center of gravity of the plate.

JOSEPH A. ANDERLE.

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