June 24, 1958 H. K. LORENTZEN 2,840,157

LIFT CORD SEPARATOR FOR VENETIAN BLINDS

Filed April 1, 1955

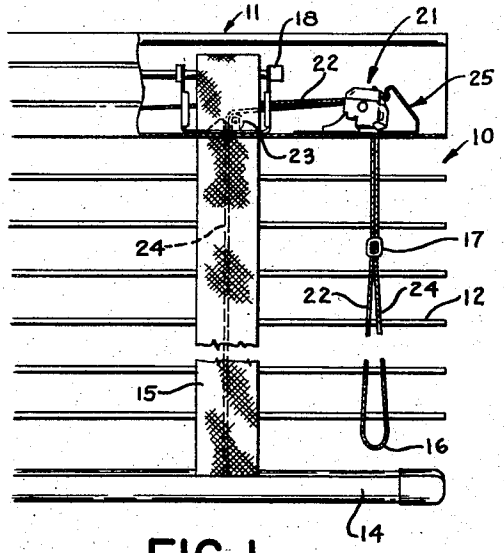


FIG. 1

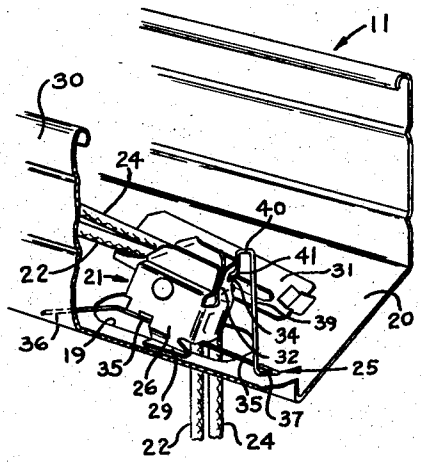


FIG. 2

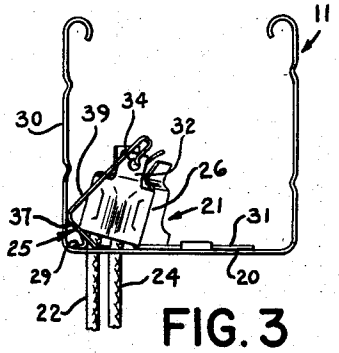


FIG. 3

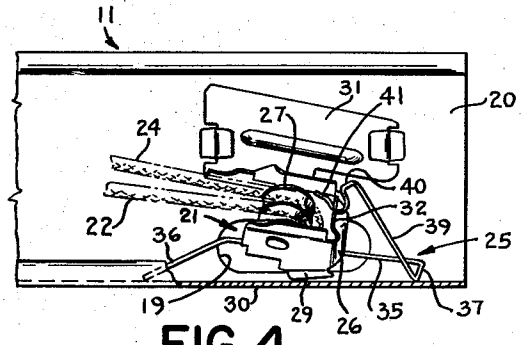


FIG. 4

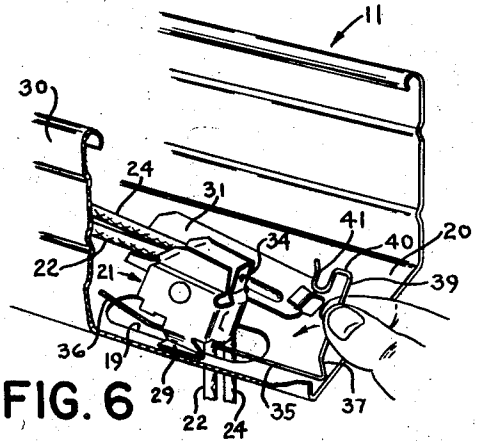


FIG. 6

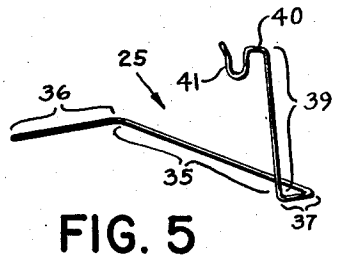


FIG. 5

INVENTOR
HANS K. LORENTZEN
BY
Ramsay, Chisholm & Wilder
HIS ATTORNEYS

United States Patent Office 2,840,157
Patented June 24, 1958

2,840,157

LIFT CORD SEPARATOR FOR VENETIAN BLINDS

Hans K. Lorentzen, Montclair, N. J., assignor to Levolor Lorentzen, Inc., Hoboken, N. J., a corporation of Delaware

Application April 1, 1955, Serial No. 498,555

7 Claims. (Cl. 160—173)

This invention relates to a lift cord separator for blinds, and more particularly to a lift cord separator for Venetian blinds of the enclosed head type. Embraced within the invention are a head channel assembly and a lift cord separator for such an assembly.

In the usual enclosed head type Venetian blind, the blind is raised by branches of a lift cord which extend upwardly from a depending loop, through an opening in the bottom of the head channel, through a cord lock within the channel, and thence in separate horizontal runs partially across the width of the blind to respective cord-guiding means at locations spaced along the width of the blind, and then downwardly through the slats to the bottom bar.

Provision is made in the cord lock and in the further cord-guiding means for changing the direction of travel of the cord from vertical to horizontal, or vice versa, and also for preventing the cord from moving sidewise out of its intended horizontal line of travel. In order that the raising and lowering may proceed satisfactorily, the branches of the lift cord should track accurately through the cord lock and the further cord-guiding means in the channel, and the two branches of the lift cord should enter and leave the cord lock in generally parallel side-by-side relationship. In the usual installation, lowering of the blind with the lift cord branches initially twisted together or crossed below the cord lock causes the twisted or crossed portions to enter the cord lock and tend to become jammed against the locking dog. If the twist or cross passes through the cord lock and into the head channel, then the branches are diverted from their normal paths of travel in the head channel and also wear against each other at the twist or cross.

To avoid these difficulties some cord locks for Venetian blinds have been provided with cord separators which prevent the twist or cross from entering the cord lock by separating the cords as they run into the cord lock. Such separators have usually been a permanent part of the cord lock, fixedly positioned across the lift-cord-receiving opening through the lock. With a cord lock having a permanently attached cord separator it is necessary to thread the lift cord branches separately upwardly through the cord lock, a time-consuming operation requiring the temporary disabling of the cord lock dog; whereas without the separator the looped cord may be threaded downwardly through the cord lock with one simple movement.

An object of the present invention is to provide an enclosed head organization for Venetian blinds in which a cord separator can be facilely installed after the lift cord has been threaded through the cord lock, and can be facilely removed and reinstalled when replacement of the lift cord is required.

Among other objects of the invention are to provide a lift cord separator which may be conveniently installed in a blind after the threading of the loop in the lift cord through the cord lock, to provide a lift cord separator which can be rapidly and inexpensively manufactured on a quantity production basis, to provide a lift cord separator which can be manually installed in and removed from the head of a Venetian blind in a simple manner without the use of tools, and to provide a lift cord separator which is strongly and stably held in place in the enclosed head of a Venetian blind.

Further objects, and objects relating to economies of manufacture and use of the lift cord separator of the invention, will appear in the following description.

My invention is clearly defined in the claims. In the claims, as well as in the description, parts may at times be 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 fragmentary front elevation of a Venetian blind having an enclosed head in accordance with the present invention, the view showing the end of the blind containing the cord lock and a portion of the front wall of the head channel of the blind being broken away.

Fig. 2 is a fragmentary perspective view of the head channel of the blind of Fig. 1 at the location of the cord lock, a portion of the front wall of the head channel being broken away.

Fig. 3 is an end view of the head channel of the blind, taken in a direction from right to left in Figs. 1 and 2.

Fig. 4 is a fragmentary plan view of the head channel at the location of the cord lock, a portion of the bead which extends along the upper edge of the front wall of the channel being broken away.

Fig. 5 is a perspective view of the cord lock separator.

Fig. 6 is a view similar to Fig. 2 but with the separator shown in the process of being mounted on the head channel.

The Venetian blind **10** is of the enclosed head type, having a head bar **11** formed of a sheet metal channel of U-shaped cross section. Depending from the head channel **11** are a plurality of vertical ladder tapes **15** (one shown) which support the slats **12** and the bottom bar **14**. Operating mechanism (not shown) for tilting the slats and the bottom bar of the blind, is mounted within the channel **11**. Operating mechanism (partially shown) for lifting the slats and bottom bar of the blind includes a lift cord having the depending loop **16**, the equalizer **17** connecting the branches **22** and **24** of the lift cord, and the cord lock **21** mounted within the channel.

The branches **22**, **24** of the lift cord pass upwardly through the elongated longitudinally extending opening **19** in the bottom **20** of the channel **11**, through the cord lock **21**, and then pass along the channel **11** to guiding means, usually a pulley mounted in a cradle. One such pulley is shown at **23** in Fig. 1 located above the vertical run of the lift cord branch **24** which extends downwardly through the slats to the bottom bar. As shown, branches **22**, **24** of the lift cord pass upwardly from loop **16** into the cord lock in generally parallel side-by-side relationship. The branch **22**, nearer the reader in Figs. 1 and 2, passes along a major part of the length of the channel **11** to a guiding means (not shown) at the left hand end of the blind; and the cord branch **24**, further from the reader in Figs. 1 and 2, extends in a short run from the cord lock to the guiding pulley **23** at the right-hand end of the blind.

The cord lock **21** is in this instance somewhat similar to that shown in Nelson U. S. Patent No. 2,587,752, and is secured within the head channel **11** on the bottom **20** thereof in a position above the opening **19** in the bottom of the channel. The body **26** of the cord lock is generally U-shaped in plan, having two parallel sides connected

by an end wall. Adouble-grooved pulley 27 is journalled on a pintle pin which spans the space between the parallel sides of the cord lock body. The cord-locking dog (not shown) is pivotally mounted on the pin carrying the double-grooved pulley and grips the cord branches 22, 24 by jamming them between the teeth of the dog and the end wall of the cord lock body when the loop 16 is swung toward the center of the blind and is then allowed to make a slight upward movement in response to the weight of the blind.

The cord lock is so positioned in the head channel 11 that the cord lock body straddles opening 19 in the bottom of the channel. It is affixed in this position by tabs bent over slots in the ends of the large flange 31, which is integral with the cord lock body and which rests upon the bottom of the channel. The other side of the cord lock is supported by the narrow flange 29 which rests upon the ledge on the channel bottom 20 bordering the opening 19 and adjacent the front wall 30 of the channel.

The cord separator of the invention, designated as a whole by 25, is made of springy wire and may be facilely inserted in the head channel 11. When installed, the intermediate portion 35 of the separator extends longitudinally across the opening 19 in the bottom of the channel, substantially centrally of opening 19. The portion 35 also extends substantially centrally between the sides of the cord lock body and vertically beneath and parallel to the annular rib between the two grooves of the pulley 27. The branches 22, 24 of the lift cord are effectively separated by portion 35 of the separator, which prevents them from being crossed as they move upwardly into the cord lock. As a consequence, the branches 22, 24 are maintained in the desired side-by-side relationship not only as they enter the cord lock in an upward direction but also as they run horizontally in the channel 11.

The separator 25, shown per se in Fig. 5, is made of suitable wire, preferably spring wire and usually steel that is plated or coated to prevent rusting. It has the intermediate portion 35, a first terminal portion 36 which is bent out of alignment with intermediate portion 35 and which lies generally in contact with the inner bottom surface of the channel 11. The separator 25 and the various portions thereof are of such size and shape relative to the channel 11 and the cord lock 21, and are retained in the channel in such manner, that the free end of portion 36 strongly contacts the inner surface of the forward corner of the channel that is formed by the meeting of the forward side wall 30 with the bottom 20 of the channel.

Separator 25 has a third portion 37 disposed on that end of intermediate portion 35 which is opposite to terminal portion 36. When the separator is installed, portion 37 extends diagonally across the forward lower corner of the channel 11 as shown in Fig. 3, at an angle of approximately 45°. One end of portion 37 strongly contacts the channel bottom 20 and the other end strongly contacts the channel front wall 30. From portion 37 the wire forming the separator rises in a fourth portion 39 which extends upwardly and rearwardly of the head channel (see Fig. 3), more or less perpendicular to the extent of portion 37. The upper end of portion 39 of the separator lies generally above and somewhat rearwardly of the center of the cord lock. From the upper end of portion 39 the wire forming the separator extends in a short portion 40 that inclines downwardly, and toward the far end of the head channel. From portion 40 the wire extends into a sixth, upwardly open hook-like formation 41. Such hook-like portion is adapted to be engaged in the hole 34 in the upstanding tab 32 on the top of the end wall of the cord lock body.

The length of portion 39 of the separator is such, relative to the size of the channel, the height of the cord lock body, etc., that when the separator is mounted in final position, tab 32 exerts a strong pull downwardly on the hook-like formation 41. The separator 25 is strongly

and stably held in installed position. This results from the bearing of portion 36 generally on the bottom of the channel, the forcible contact between the free end of portion 36 and the inner surface of the forward lower corner of the channel, the spanning across the forward corner of the head channel by the portion 37, and the forcible contact between the ends of portion 37 and the bottom and forward walls of the channel.

While the separator may be installed before the lift cord is threaded, I prefer to install it afterward for the reasons that have been pointed out. In threading the lift cord, I prefer to loop it at 16, then pass the loop downwardly through the cord lock, and then install the separator.

The manner of installing the separator will be more readily understood from a consideration of Fig. 6. It is ordinarily preferred, as there shown, to grasp portion 39 of the separator between the thumb and forefinger. Holding the separator so that portion 39 is generally parallel to the bottom 20 of the channel, the operator inserts the free end of terminal portion 36 downwardly through opening 19 and between the lift cord branches 22, 24. He then tips the separator to bring portion 35 horizontal and then slides the separator longitudinally of the channel so that terminal portion 36 overlies the bottom of the channel as shown in Fig. 6. The operator now turns the separator in the direction of the arrow in Fig. 6 to bring the hook 41 into alignment with the hole 34 in the cord lock body. The operator then shifts his thumb to bring it above the upper end of portion 39 and shifts his forefinger so as to bring it inwardly of such portion. Upon thrusting the thumb downward generally toward the forward corner of the channel while pulling outwardly on portion 39 with his forefinger, the operator can readily flex portion 39 so that the free end of terminal portion 41 may be entered in hole 34. The separator is then released.

The separator is readily removed from the channel when necessary by the reverse of the above operations, that is, by first flexing portion 39 while gradually drawing the separator outwardly of the channel to free terminal portion 41 from the hole 34 in the cord lock body, following which the separator is turned as a whole in the direction opposite the arrow in Fig. 6 to bring portion 39 generally parallel to the bottom of the head channel. The separator may then be finally removed from the head channel by substantially axial movement outwardly thereof.

I claim:

1. In a Venetian blind organization of U-shaped head channel, cord-lock unit mounted in the channel near the front wall thereof and receiving a pair of lift cords passing upwardly through an opening in the bottom of the channel, and separator extending between the cords immediately below the cord-lock unit, the improvement which comprises: the channel and cord-lock unit taken together comprising means for receiving and retaining the separator when the separator is inserted between the cords after the assembly of channel, cord-lock unit and cords has been completed; the separator being insertable between the cords after such assembly has been completed; and the separator comprising quick-attachable means for operatively engaging said first-mentioned means for securing the separator in position.

2. The improvement as in claim 1 in which the separator is a single piece of springy wire, one end of which is resiliently interlocked with the cord-lock unit and the other end of which is resiliently urged against the bottom of the channel.

3. The improvement as in claim 2 in which the wire separator has an intermediate inclined portion bridging the lower front corner of the channel, one end of such inclined portion being resiliently urged against the bottom of the channel and the other end of such inclined portion

being resiliently urged against the front wall of the channel.

4. The improvement as in claim 1 in which the separator is a single piece of springy wire, one end of which is resiliently interlocked with the cord-lock unit and the other end of which is resiliently urged against the bottom of the channel and also toward the front wall of the channel; and the wire separator has an intermediate inclined portion bridging the lower front corner of the channel, one end of such inclined portion being resiliently urged against the bottom of the channel and the other end of such inclined portion being resiliently urged against the front wall of the channel.

5. For a Venetian blind organization of U-shaped head channel and cord-lock unit mounted in the channel near the front wall thereof and receiving a pair of lift cords passing upwardly through an opening in the bottom of the channel, a cord separator which is quickly mountable after the assembly of channel, cord-lock unit and cords has been completed, said separator being composed of a single piece of springy wire having a first portion insertable between the cords beneath the cord-lock unit after the assembly of channel, cord-lock unit and cords has been

completed, and having a second portion extending generally upwardly and provided with a terminal formation for interlocking with the cord-lock unit with the separator in flexed condition for resiliently holding said first portion of the separator in engagement with the channel.

6. A cord separator as in claim 5 in which said first portion of the separator has a terminal formation disposed at an angle to the body of said first portion for engaging the lower front corner of the channel.

7. A cord separator as in claim 5 in which there is an inclined portion, located between said first and second portions, for bridging the lower front corner of the channel and resiliently engaging both the bottom of the channel and the front wall of the channel.

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