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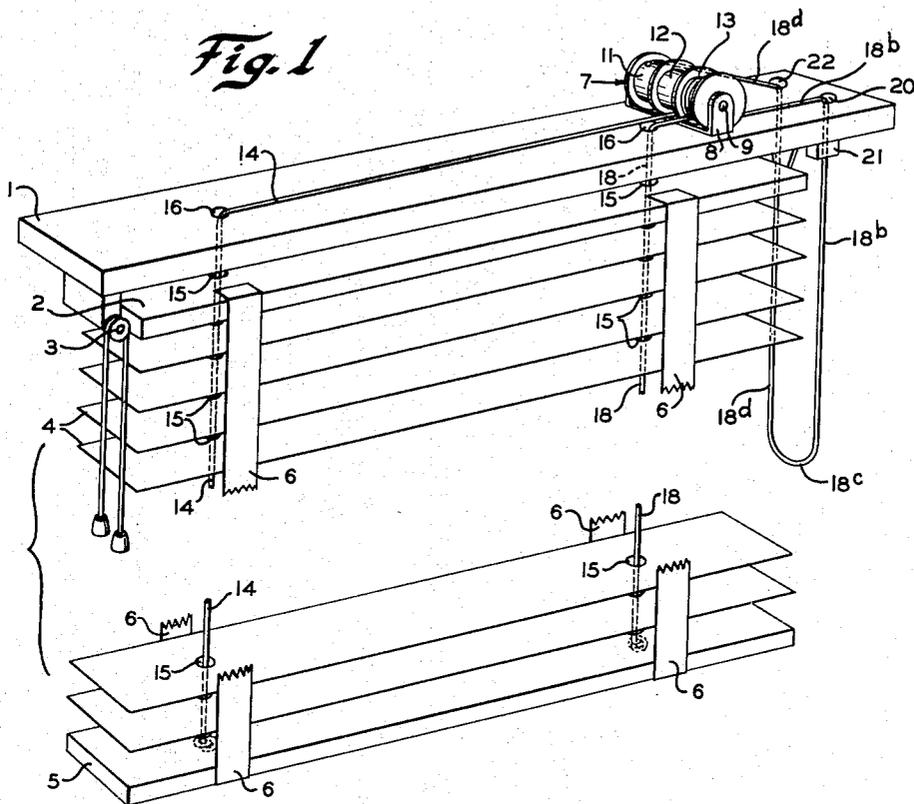
M. A. GERSHUNY  
VENETIAN BLIND

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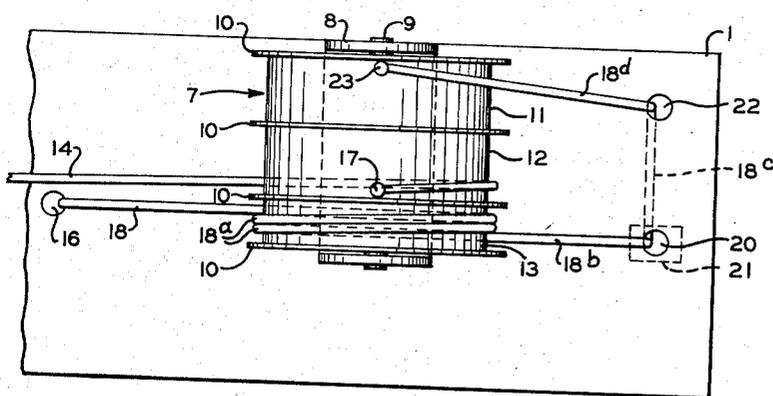
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3 Sheets-Sheet 1

*Fig. 1*



*Fig. 2*



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3 Sheets-Sheet 2

Fig. 3

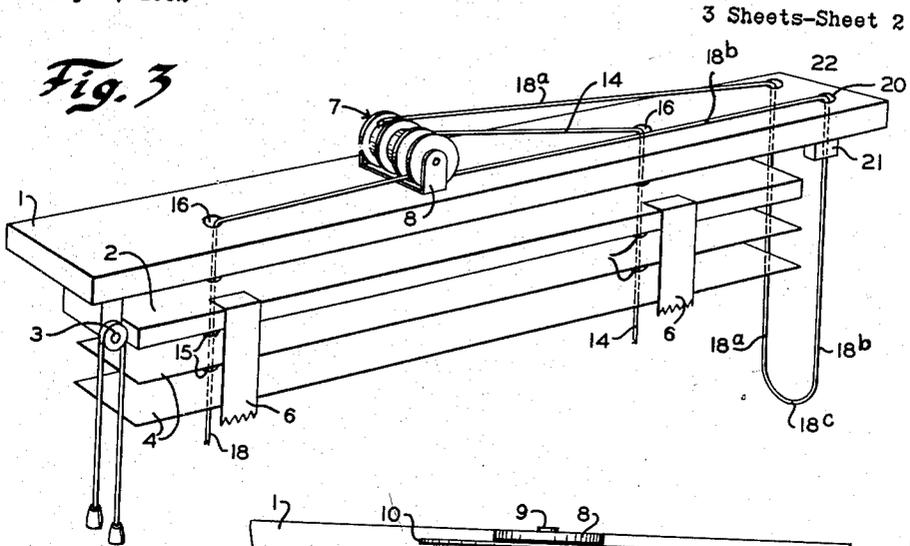


Fig. 4

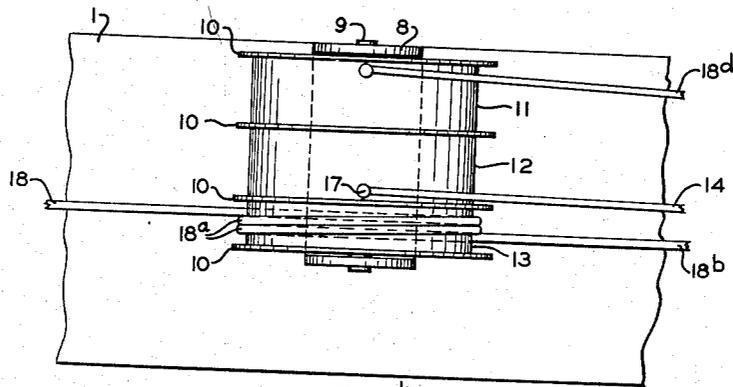


Fig. 9

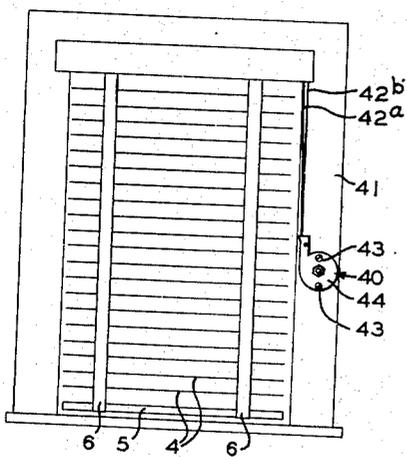
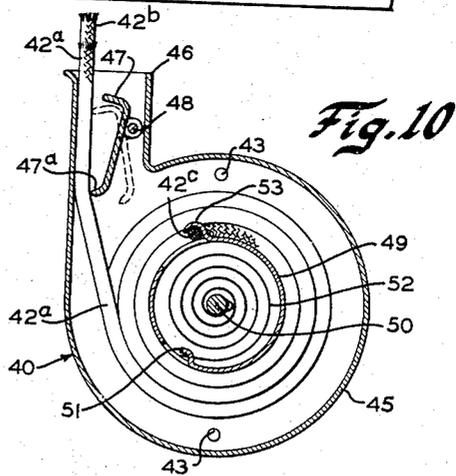


Fig. 10



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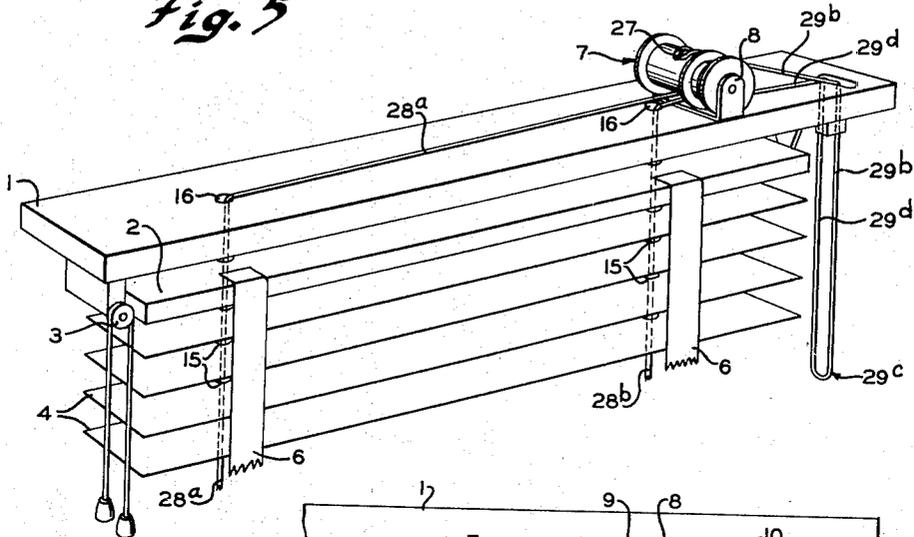
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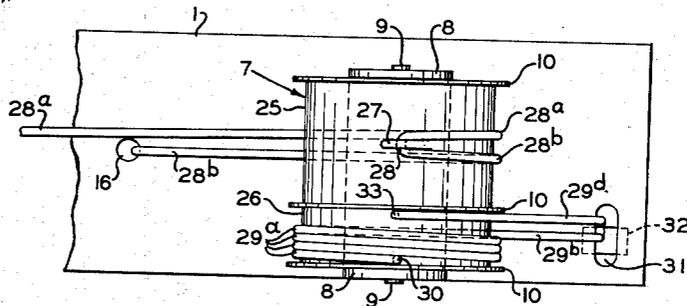
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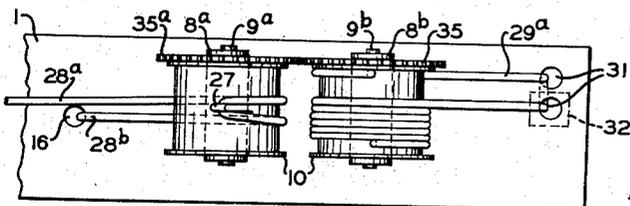
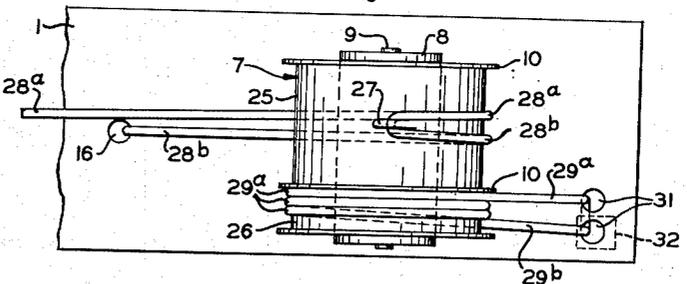
*Fig. 5*



*Fig. 6*



*Fig. 7*



*Fig. 8*

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# UNITED STATES PATENT OFFICE

2,687,769

## VENETIAN BLIND

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Application May 9, 1952, Serial No. 287,011

1 Claim. (Cl. 160—170)

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This invention relates to pulley shades including Venetian and roll-up blinds employing at least two cords for raising and lowering the shade and relates more particularly to certain new and useful improvements in lifting and lowering cord systems for such shades.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the combinations and improvements pointed out in the appended claim.

The invention consists in the novel parts, constructions, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate various embodiments of the invention and, together with the description, serve to explain the principles of the invention.

The conventional form of Venetian or roll-up blind is provided with a manually operated lifting and lowering cord system of which a section constitutes a hauling part extending downwardly from the head of the blind at its right hand side.

The hauling part is ordinarily in the form of a free-hanging loop whose length, as measured from the head of the blind, varies from a minimum in the lowered position of the blind to a maximum in the raised position. In the maximum length condition of the hauling part, a portion may be below the window or on the floor beneath the blind and, in its loop form in particular, presents a definite safety hazard in that individuals, particularly children, are likely to become entangled in it and suffer injury. It is a matter of record that children have been caught in such hauling parts and strangled. Various efforts to solve this problem, including the provision of individual tassels for the hauling part, have been made but have not been successful.

It is, therefore, an object of this invention to minimize the hazards and disadvantages attendant upon the presence in Venetian and roll-up blinds of such a variable length hauling part, through the provision of a new and improved form of lifting and lowering cord system for use in such blinds which will automatically maintain a fixed safe length of hauling part below the head of the blind, is capable of being installed simply and efficiently at a low cost per blind and will improve the appearance of the blind, is more convenient, and will enable a reduction in the length of cord required and also of the

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size of the cord. The reduction in length and size of the cord subject to abrasion of the cord lock thus permits of improvement in the most vulnerable part of the blind; namely, the cord, at a minimum cost per blind.

In accordance with this invention, the lifting and lowering cord system of the pulley shade embodies a hauling part of fixed length and a reeling device coacting with the hauling part, the reeling device being disposed in fixed relation to the head of the blind and the construction and arrangement of the parts of the system being such that a length of cord may be payed into the hauling part at its upper or head end, and an equal length of cord payed out of the hauling part at its lower end and wound onto the reeling device. It will be understood that in the case of Venetian blinds the blind may be characterized by the provision of a movable head bar, or a closed head construction employing a U-shaped head member. However, it will be understood that the present invention is not intended to be restricted to the aforesaid particular forms of head construction, but is applicable to other forms as well.

Of the drawings:

Figure 1 is a broken perspective view of a Venetian blind in lowered position embodying a typical and illustrative form of lifting and lowering cord system in accordance with this invention, wherein the reeling device is disposed at the hauling part end of the head bar;

Figure 2 is a fragmentary view in plan of the embodiment of Figure 1, the view showing details of the cord system and its reeling device;

Figure 3 is a fragmentary view in perspective of a Venetian blind in lowered position embodying a modified form of cord system in accordance with this invention wherein the reeling device is disposed centrally of the head bar;

Figure 4 is a fragmentary view in plan of the embodiment of Figure 3, the view showing details of the cord system and its reeling device;

Figure 5 is a fragmentary perspective view of a Venetian blind in lowered position embodying another form of raising and lowering cord system in accordance with this invention wherein separate cord units are employed for the hauling part and the lifting and lowering part respectively;

Figure 6 is a fragmentary view in plan of the embodiment of Figure 5, showing details of the construction and arrangement of the cord units and reeling device;

Figure 7 is a fragmentary view in plan corresponding generally to that of Figure 6 but

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showing a modified arrangement of the reeling section of the cord system;

Figure 8 is a fragmentary view in plan corresponding generally to that of Figure 6 but distinguished therefrom in the provision of a two section reeling device;

Figure 9 is a view in elevation of a Venetian blind installation embodying still another modification of a lifting and lowering cord system in accordance with this invention, wherein the reeling device is secured to the molding of the window in which the blind is installed; and,

Figure 10 is a somewhat enlarged view in vertical section of the reeling device of Figure 9 showing details of the reeling and cord locking mechanism.

Referring now more particularly to Figures 1 and 2 of the drawings, there is depicted a Venetian blind comprising the usual head bar 1, tilting bar 2 and associated cord-pulley tilting mechanism 3, slats 4, bottom or elevating bar 5 and ladder tapes 6.

A reeling device comprising a cylindrical reel 7 of suitable dimensions journaled for rotation on its cylinder axis by means of a shaft 8 supported at its ends in a suitable fitting 9, is mounted as shown on the head bar 1 to which the fitting 9 is fixedly fastened in any convenient fashion as by bolts, screws or other suitable fastening means (not shown).

Advantageously, the reel 7 is provided with axially outstanding circular guide members 10 serving to partition the reel surface into a number of independent reeling sections. Three such reeling sections 11, 12 and 13, respectively, are depicted in Figures 1 and 2.

A lifting and lowering cord element 14 secured at one end to the elevating bar 5 leads upwardly therefrom through a set of the usual aligned cord openings 15 in the slats 4 and tilting bar 2 and through one of a pair of cord openings 16 in the head bar 1 to the central reeling section 12 of the winding reel. The cord element 14 is anchored at its opposite end to the reel 7 by a suitable cord fastener 17. The lie and attachment of the cord element 14 is preferably such that in the lowered position of the blind as in Figure 1, the reel end of the cord will pass between the reel and its fitting 9 and thence to the top of the reel as seen in Figure 2. This arrangement ensures that as the reel 7 is rotated counter-clockwise as viewed in Figure 1, the cord 14 will lie closely along the surface of the head bar 1.

A separate lifting and lowering cord element 18 secured at one end to the elevating bar 5 in the usual manner also leads upwardly therefrom through another set of the cord openings 15 in the slats and tilting bar and through the other of the pair of openings 16 in the head bar 1 to the end section 13 of the winding reel. The cord element 18 is wrapped or snubbed around the reel 7 in at least one and preferably two turns 18a as shown. The cord element approaches and departs from the reeling section 13 in the same direction and advantageously lies between the reel and head bar, as shown in Figure 2. Thus it lies close to the head bar so as to avoid undue angularity of the cord element to the head bar.

Beyond the reel 7 the cord element 18 forms a hauling part 18b and is led downwardly through an opening 20 in the head bar and through a cord lock 21 carried by the head bar beneath the opening. The cord lock 21 may be of the usual construction well known in the art and

serves in known manner releasably to lock the cord element relative to the head bar.

Beyond the cord lock 21 the cord element 18 is directed downwardly for a determined distance to provide a fixed safe length of the hauling part 18b, terminated by a U-shaped loop portion 18c serving to direct the cord element upwardly again through an opening 22 in the head bar to the reel 7 to provide a take-up part 18d. The cord element is fastened at its remaining (other) end to the end reeling section 11 of the reel, by a cord fastener 23. The fastener 23 is disposed on the same side of the reel 7 as the fastener 17.

It will be apparent that with the parts in the position shown in Figures 1 and 2 upon exerting a sufficient downward pull on the hauling part 18b to effect a downward movement thereof, the cord lock 21 will be released and the tension imparted to the cord element 18 will tighten the turns 18a and, by friction, effect a counterclockwise rotation of the reel 7 as viewed in Figure 1. As the reel 7 rotates, equal lengths of the cord elements 14 and 18 are thus caused to be wound onto the reeling sections 12 and 13, respectively, to raise the bottom bar 5 and thus the blind. The pull on the hauling part 18b causes a length of the cord element 18 to be payed out of the turns 18a into the upper or head bar end of the hauling part 18b. An equal length of the cord element 18 is caused to be payed out of the hauling part at its bottom end into the take-up part 18d and wound onto the take-up section 11 of the reel 7. Thus, the hauling part 18b is always maintained at a constant initial fixed length which is selected to ensure that the loop portion 18c will always be at a safe distance above the floor in the installed position of the blind. Manifestly, by manipulation of the hauling part 18b relative to the cord lock 21, the blind may be locked in known manner at any desired elevation. It is also apparent that lowering of the blind is accomplished by gravity action in precisely the reverse manner of operation of the parts.

Referring now to the embodiment shown in Figures 3 and 4 of the drawings, there is depicted a modified arrangement of raising and lowering cord system wherein the reel 7 is mounted centrally at the head of the blind. Such an arrangement is of advantage with particular types of head members used in the art such, for example, as closed U-shaped heads. In accordance with the illustrative embodiment, the reeving of the lifting and lowering cords 14 and 18 is merely reversed to the extent necessary to take account of the fact that the reel 7 is mounted between the cord openings 16 rather than between one of said openings and the end of the head bar as in Figure 1. Thus, the cord element 18 is reeved through the left hand opening 16 as viewed in Figure 3 and the cord element 14 is reeved through the right hand opening. This reversal of the cord elements necessarily requires that the cord element 14 be reeved directly to the cord hook 17 rather than be given a half wrap around the reel 7 as in Figure 2. Reeling of the cord element 14 on the reel commences immediately upon counterclockwise movement of the reel as viewed in Figure 3.

Referring now to the Figures 5 and 6, the reel 7 is divided by the circular flanges 10 into two sections 25 and 26, respectively. The reel is provided with a hook 27 in the section 25 from which a lifting and lowering cord unit 28 extends in separate flights 28a and 28b through the re-

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spective head bar openings 16 and the respective sets of openings 15 to the bottom bar (not shown) of the blind, to which it is anchored at its ends in known manner.

A separate cord unit 29 is attached at one end to the top of the reel 7 within the driving section 26 by a suitable fastener 30 and is wrapped helically within the reeling section 26 to provide a number of turns 29a. The number of turns required will depend upon the diameter of the reeling section 26 but must be sufficient to provide a length of cord in the reeling section at least equal to the distance the bottom bar of the blind must move in traveling from its lowermost to its uppermost position. A hauling part 29b of the cord element 29 leads outwardly from the bottom of the reel 7 as an extension of the final turn to a suitable opening 31 adjacent the right hand end of the head bar, as viewed in Figure 5. The opening 31 in the head bar is aligned with a cord lock 32 carried by the head bar and the hauling part 29b passes downwardly through both for a determined distance and terminates in a U-shaped loop portion 29c serving to direct the cord element upwardly again through the opening 31 back to the reeling section 26 thus providing a take-up part 29d. The cord element is fastened at its other end to the top of the reel within the reeling section 26 by a suitable fastener 33.

It will be apparent from the foregoing that a downward pull on the hauling part 29b will effect a counterclockwise rotation of the reel 7, thus winding the cord flights 28a and 28b on the winding section 25 to raise the blind. As in the embodiment of Figure 1, the pull on the hauling part causes a length of the cord element 29 to be payed out of the turns 29a into the upper or head bar end of the hauling part 29b. At the same time, an equal length of the cord element is payed out of the hauling part at its bottom end into the take-up part 29d and wound onto the driving section 26. Thus, the hauling part 29b is always maintained at a constant initial fixed safe length.

In the modification shown in Figure 7, the pull cord 29 is continuous instead of double ended as in the embodiment of Figure 6. This arrangement offers the advantage that no more than one or two wraps of the pull cord need be employed in order to drive the reel 7 frictionally. The driving section 26 can be shorter axially since it is required to accommodate fewer turns as is apparent from a comparison of Figures 6 and 7. The mode of operation is otherwise analogous in all material respects to the operation of the embodiment depicted in Figure 6.

Figure 8 depicts a form of the reeling device wherein the reeling sections are in the form of separate gear coupled units. In the embodiment shown, reel sections 7a and 7b, respectively, are mounted in side-by-side relation on the head board 1 by means of fittings 8a and 8b, respectively. The reel shafts 9a and 9b of the respective sections are parallel to each other to effect proper meshing of a pair of spur gears 35a and 35b attached to the reels 7a and 7b, respectively. The arrangement of the cord 29 is the same as in the embodiment of Figure 6 whereas the hook 27 and hence cord 28 are reversed for obvious reasons. However, it will be apparent that the greater axial length of the reel section 7b relative to the length of the corresponding section 26 in Figure 6 enables a greater number of turns of cord to be wound on this section. Hence, the

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diameter of the reel sections may be less, which is of particular advantage in connection with closed U-shaped heads and certain blind assemblies where space is at a premium between the head bar and the window molding. It will be apparent that as the hauling part 29b is pulled downwardly, the driving section 7b will be rotated counterclockwise causing the gear 35b to drive the gear 35a and the reeling section 7a, clockwise. The clockwise movement of the latter will effect a raising of the blind in obvious manner as the cord 28 is wound onto the section 7a.

In accordance with the embodiment shown in Figures 9 and 10, a reeling device 40 is affixed to the molding 41 of a window in which the blind is installed. The cord system of the blind is not altered from the conventional arrangement and comprises the usual looped hauling part 42 having the separate cord flights 42a and 42b which terminate at the lower end in the usual connecting loop portion 42c.

The reeling device 40 is removably secured in convenient fashion to the molding at a determined distance below the top of the window as by screws 43 which pass through a removable cover member 44 and a hollow casing member 45, into the molding. The casing member 45 is preferably of generally circular contour and is provided with a cord lock section 46 in which a cord lock member 47 is pivotally mounted on a pivot shaft 48 for pivotal movement in a relatively limited arc from the full line cord locking position to the dotted line cord released position shown in Figure 10. The cord lock member normally tends to lie in the dotted line position with its locking end 47a out of engagement with the cord sections 42a and/or 42b which lead through the cord lock section 46 to a reel member 49.

The reel member 49 of cylindrical contour is journaled on a shaft 50 for rotation concentrically of the casing member 45. A portion of the reel member 49 is displaced circumferentially inwardly to provide a hook 51 to which the outer end of a spiral spring 52 is attached. The spring 52, concentric with the shaft 50, riveted or otherwise, is attached at its other end to the shaft so that clockwise rotation of the reel member 49 will be yieldably opposed by the spring.

Another section of the reel member 49 is outwardly circumferentially displaced to form a cord hook 53 to which the loop portion 42c of the cord hauling part is secured. In attaching the loop portion to the cord hook 53, the blind is placed in its lowered position, the reel member is rotated counterclockwise to tension the spring, and the loop portion 42c then attached to the cord hook 53 as in Figure 10 so that the hauling part 42 is under tension. Hence, a downward pull on the hauling part to raise the blind will cause a length of cord to be payed out of the hauling part at the bottom and automatically wound onto the reel member 49 by the take-up action of the spring 52. The manner in which the cord is stored on the reel in the raised position of the blind is shown in Figure 10 and it will be understood that the circumferential disposition of the cord on the reel member 49 with respect to the hook 53 may be akin to that shown for the cord 28 and hook 27 in the arrangement of Figure 6.

It will be apparent also from Figure 10 that as the hauling part is pulled downwardly, the bottom end 47a of the cord lock member 47 will drop away from the hauling part flights 42a and

42b. The bottom end of the cord lock member may be provided with a toothed or sharpened terminal edge to facilitate gripping of the cord flights by the locking member. As soon as manual pull on the hauling part is discontinued, the cord flights 42a and/or 42b will tend to move to the right as viewed in Figure 10, and bear against the upper end of the cord lock member 47 to move it from the released position shown in dotted lines in Figure 10 to the full line or locked position wherein the greater the upward pull on the hauling part, due to the weight of the blind, the greater the locking action. If desired, the cord lock member 47 may be dispensed with and locking of the cord effected by means of the usual cord lock device with which the head board of the blind is normally equipped.

The cover member 44 may be suitably centrally apertured to permit of the passage of the shaft 50 whose outer end may be threaded to receive a securing nut 54 by which the cover member may be held in place on the casing 45. It will be apparent, moreover, that for reasons of appearance or otherwise, it may be advantageous to locate the reeling device elsewhere than on the window molding as in Figure 9. If desired, the reeling device, with suitable modifications, may be fixedly disposed at the top of the window where, for example, it may be concealed behind the valence board of the blind, and the hauling part actuated, for example, by a suitable ratchet means and bead chain pull cord arrangement, or the hauling part may be run around a pulley mounted on the molding and thence to the reeling device in the head.

Various other means of connecting the reeling device into the cord system will be apparent to those skilled in the art. Thus, the cords 42a and 42b may be coupled in the head prior to entering the cord lock 46. Such an arrangement provides a single flight of cord extending through the cord lock when the blind is in the lowered position.

It will be understood that various combinations of the features shown in the several modifications are within the scope of this invention which is applicable not only to Venetian blinds but also to various pulley shades not having slats placed in ladder tapes, so long as two cords are employed to raise and lower the shade through a cord lock.

The invention in its broader aspects is not limited to the specific mechanisms described, but departures may be made therefrom within the scope of the accompanying claim without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

In a Venetian blind, a lifting and lowering cord system therefor including a cord reeling device attached to the head bar of said blind; a lifting and lowering cord having a loop portion intermediate its ends snubbed on said reeling device, said cord being attached at its one end to the elevating bar of said blind and attached at its other end to said reeling device, said cord in the section thereof between said loop portion and the cord end attached to said reeling device forming a hauling part into and out of which equal lengths of cord are payed simultaneously in the raising and lowering of said blind; said hauling part extending downwardly from the head bar of said blind; a cord lock on said head bar through which said hauling part extends; and a separate lifting and lowering cord attached at its one end to said elevating bar and at its other end to said reeling device.

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