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CORD LOCK FOR VENETIAN BLINDS

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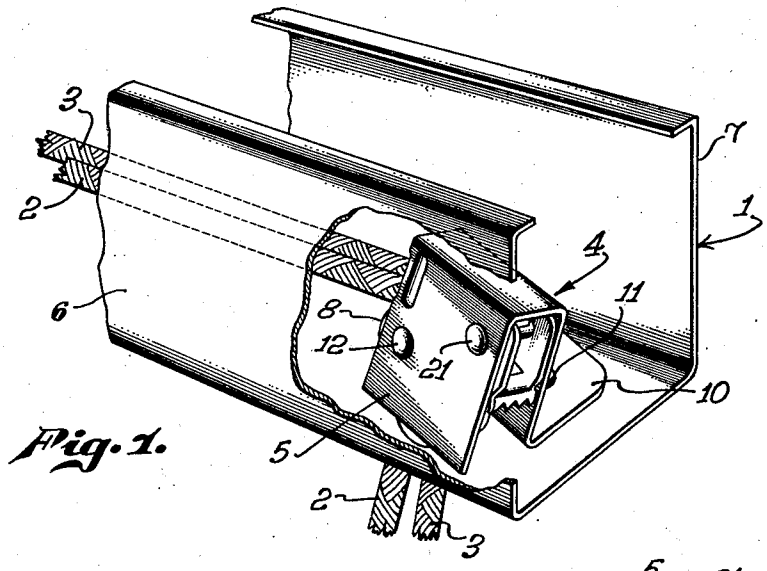

Fig. 1.

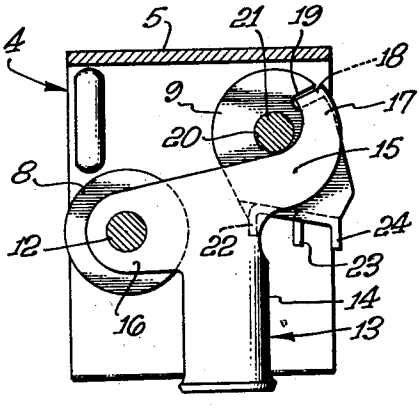

Fig. 2.

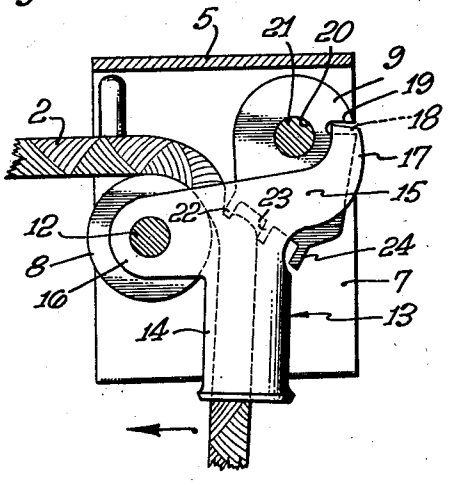

Fig. 3.

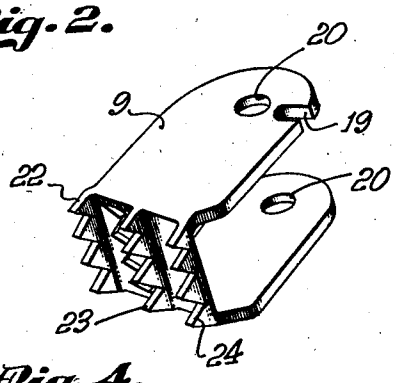

Fig. 4.

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CORD LOCK FOR VENETIAN BLINDS

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1 Claim. (Cl. 24—134)

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My invention relates to cord locks for Venetian blinds and has particular reference to a self-operating locking mechanism for holding the blind raising and lowering cords in any elevated position of adjustment of the blind.

In Venetian blind constructions it is the common practice to employ a blind structure which includes a plurality of vertically spaced slats suspended upon web ladders, the lower ends of which are secured to a bottom rail structure and the upper ends of which are suspended from suitable tilting mechanism located adjacent to or within a head rail structure. To raise and lower the blind it is the usual practice to employ suspending cords trained over pulleys in the head rail structure, one end of each of the cords being secured to the bottom rail, the other ends of the cords extending down and being suspended from the head rail adjacent one end thereof where they may be readily grasped by the hand.

In order to hold the blind in any of its elevated positions, various securing devices are employed for fastening the suspended ends of the cords in the position they assume when the blind is in any of its elevated positions. One form of securing device is known as a "cord lock" comprising a clamping mechanism located upon the head rail and adapted to permit free downward passage of the suspended ends of the supporting cords but resisting upward movement of them, the cord lock being releasable by certain manipulations of the cord ends.

Most of the cord locks which have been heretofore employed are complicated in structure, difficult to manufacture and to maintain in service, the cord locks after a relatively short period of use tending to permit the cord to slip from the desired adjused positions, either by reason of the wear of the cords or by reason of the wear of the cord engaging clamping devices.

It is therefore an object of my invention to provide a cord lock which is simple and inexpensive to manufacture and install.

Another object of my invention is to provide a cord lock of the character set forth in which the clamping elements are enabled to assume a plurality of clamping positions, in each of which the cord is progressively clamped in a tighter grip.

Another object of my invention is to provide a cord lock of the character described which acts as a combination cord guide and lock, one of the clamping elements comprising a pulley over which the suspended ends of the cords pass.

Another object of my invention is to provide a cord lock of the character described wherein one

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of the clamping elements comprises a dog pivotally mounted relative to the other clamping member and having a plurality of sets of cord engaging teeth disposed at progressively greater distances from the center about which it pivots to thereby provide progressively greater clamping action as successive sets of teeth are brought into contact with the cord.

Another object of my invention is to provide a cord lock of the character described wherein swinging of the suspended ends of the cords to different angular relationship to the head rail of the blind causes a positive engagement or release of the clamping members.

Other objects and advantages of my invention will be apparent from a study of the following specifications, read in connection with the accompanying drawings, wherein

Fig. 1 is a fragmentary perspective view of a portion of a Venetian blind, illustrating my new cord lock in place upon the head rail of such blind;

Fig. 2 is a vertical sectional view through the cord lock shown in Fig. 1 and illustrating the positions of the parts in cord releasing position;

Fig. 3 is a vertical sectional view corresponding to Fig. 2 but illustrating the position of the parts in cord locking position; and

Fig. 4 is a perspective view of the dog clamp illustrated in Figs. 1, 2 and 3.

Referring to the drawings, I have illustrated in Fig. 1 a portion of a Venetian blind comprising a head rail structure 1, from which may be suspended the tape ladder, slats and bottom rail (not shown). The conventional cords 2 and 3 employed to support the bottom rail and to raise and lower the blind to any desired position are illustrated as extending horizontally along the head rail 1 to a position adjacent the end of the head rail where the cords are trained through a cord lock structure indicated generally at 4, whence the cords extend downwardly and are suspended from that end of the head rail.

The cord lock 4 comprises a mounting plate 5 bent upon itself to provide a pair of parallel walls 6 and 7 enclosing and housing a pair of clamping elements 8 and 9. The plate is bent rearwardly as indicated at 10 to provide a foot piece by which the cord lock may be secured to the head rail 1 as by means of screws 11.

While I have illustrated the head rail 1 as comprising a substantially channel-shaped metal member having vertical flanges and a bottom web so formed as to enclose and conceal the cord lock structure, it will be apparent that other

forms of head rail structures may be used and my cord lock is equally adaptable thereto.

It will be noted that one of the clamping elements 8 is constructed in the form of a pulley or roller mounted upon a shaft 12 which extends through the plates 6 and 7 to comprise a guiding pulley over which the cords 2 and 3 pass at the bend of the cords, the cords then extending downwardly through a tubular cord guide 13. The cord guide 13 is preferably formed from sheet metal as a short tubular section 14 from which extends a pair of plates 15 disposed in parallel relation to each other, each of the plates 15 being formed with a laterally projecting ear 16 through which the shaft 12 extends to pivotally mount the cord guide. At least one of the plates 15 is formed with a finger 17 which extends on the opposite side of the tube guide to that of the pivot ears and the extreme end of the fingers 17 is bent inwardly as indicated at 18 to engage in a slot 19 formed in the other of the clamping members 9.

The clamping member 9, which may be referred to as a "dog," is formed as indicated in Fig. 4 from a piece of sheet metal bent upon itself into a substantially U-shape, the sides of the U extending parallel to each other and having aligned apertures 20 formed therethrough to pass a pivot pin 21 by which the dog 9 is pivotally mounted between the plates 6 and 7.

The base of the U is deformed as indicated in Fig. 4 to provide a plurality of rows of serrated teeth 22, 23 and 24, each of these sets of teeth extending transversely of the dog 9 and the teeth 23 and 24 being disposed at progressively greater distances from the pivot pin 21.

Thus when the cord is trained over the pulley 8 and through the cord guide 13, swinging the cord ends 2 and 3 to the right, as viewed in Figs. 1 and 3 will cause a lifting of the finger 17 which in turn, due to the engagement in the slot 19 of the dog 9, will positively swing the dog about its pivot to disengage the teeth 22, 23 or 24 from the cords, the position of the parts then being as illustrated in Fig. 2, completely releasing the cords for free vertical movement in either direction.

When the cords have been drawn downwardly to dispose the blind in any of its elevated positions in which it is desired to hold the blind, a swinging of the cord ends 2 and 3 to the left, as viewed in Figs. 1, 2 and 3, will positively move the cord guide 13 about its pivot in a clockwise direction and by the engagement of the finger 17 in the slot 19 the dog 9 will likewise be moved in a clockwise direction to engage the teeth 22 with the cord. Release of the cords after engagement of the teeth 22 therewith will, by reason of the fact that the row of teeth 22 now lies to the left of the pivot 21, cause the dog 9 to attempt to rotate further in a clockwise direction to clamp the cords between the teeth 22 and the pulley 8 with an increasing pressure due to the weight of the blind structure suspended upon the cords.

While I prefer to dispose the row of teeth 22 sufficiently close to the pulley 8 that a positive clamp is obtained therebetween, the second row of teeth 23 will be disposed ready to grip the cords in the event the cords are not sufficiently tightly clamped by the engagement of the teeth 22. The teeth 22 thus act to aid in the swinging of the dog 9 in its clamping direction to bring the teeth 23 into engagement with the cord and secure a further clamping pressure.

The third row of teeth 24 may be termed a "safety gauge" since should the cords break and the blind start to descend with any degree of rapidity, the cords may be so crushed by the teeth 22 and 23 as to permit slippage of the cords. In such event, however, the third row of teeth 24 will be brought into action, this row of teeth being so spaced from the pivot 21 as to substantially engage the pulley 8 and will grip the cord with sufficient force to insure the positive arrest of the descent of the blind.

It will also be noted that the cord guide 13, being suspended upon the shaft 12 by the laterally extending ears 16, always has a tendency by gravity to move in a clockwise direction so that the cord lock is self-setting upon release of the cords independent of whether or not the cords had been swung to the left prior to their release.

From the foregoing it will be apparent that I have provided a cord lock which is simple and inexpensive to manufacture from a few metal stampings and that the structure provides both for self-locking and for positive locking and release by swinging the cords 2 and 3 to different angular positions relative to the head rail to provide a positive movement of the cord guide 13 with the resultant positive movement of the dog 9.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown and described herein, except as defined in the appended claim.

I claim:

A cord lock for Venetian blinds comprising a rotatable cord guiding roller, a horizontal shaft on which said guiding roller is rotatable, a pivot pin disposed in parallel relation to said shaft and outside the periphery of said guiding roller, a clamping dog pivotally mounted on said pivot pin, said clamping dog having a cord engaging portion which is movable toward and from the periphery of said guiding roller during pivotal movement of said dog to respectively clamp and release a cord disposed on the periphery of said guiding roller, a plate having one of its ends mounted on said shaft for pivotal movement thereon independently of rotation of said guiding roller and having its opposite end in interlocking engagement with a portion of said clamping dog lying beyond said pivot pin, a cord guide tube depending from said plate intermediate the ends thereof in position for passage therethrough of a downwardly extending portion of a cord trained over said guiding roller, whereby angular movement of the downwardly extending portion of the cord will cause pivotal movement of said plate about said shaft with consequent pivotal movement of said clamping dog about said pivot pin.

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