Oct. 13, 1936. E. H. CARROLL 2,057,608

CORD ANCHORING DEVICE

Filed Jan. 14, 1935

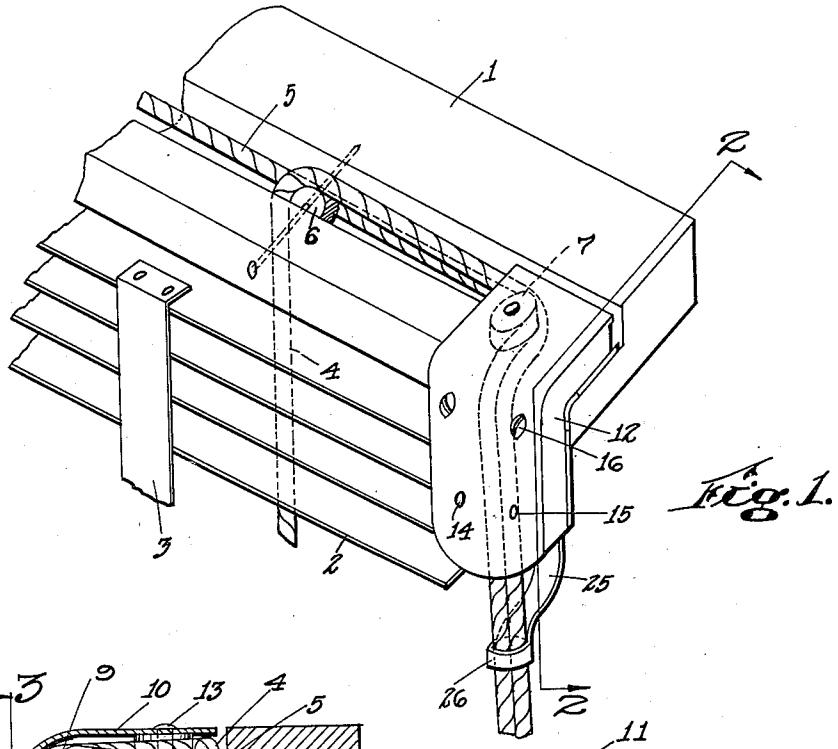


Fig. 1.

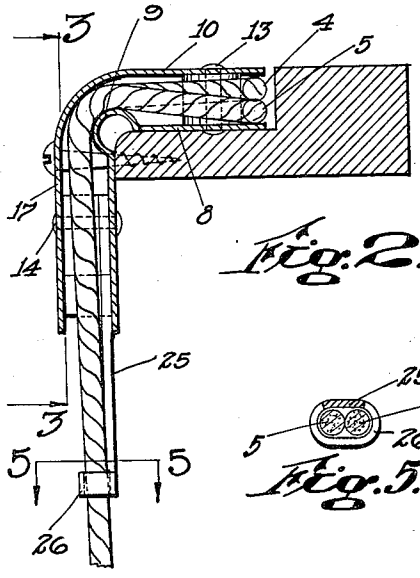


Fig. 2.

Fig. 5.

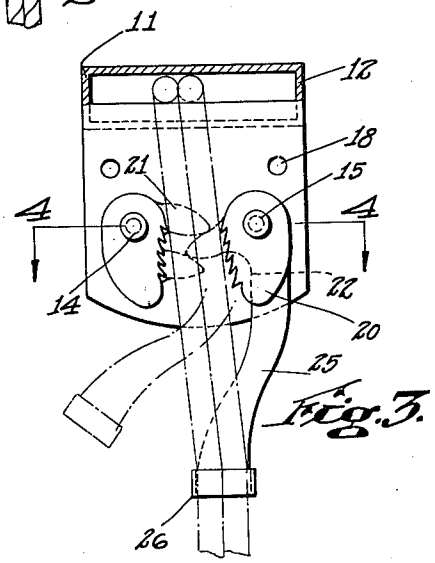


Fig. 3.

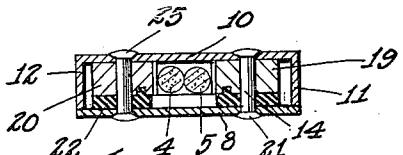


Fig. 4.

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Patented Oct. 13, 1936 2,057,608

UNITED STATES PATENT OFFICE

2,057,608

CORD ANCHORING DEVICE

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Application January 14, 1935, Serial No. 1,640

10 Claims. (Cl. 156—17)

The present invention relates to a cord anchoring device particularly applicable for the gripping of a plurality of cords, such device being especially useful in supporting and guiding the cords used for raising and lowering Venetian blinds.

In prior devices of this character where a plurality of cords are handled by a single anchoring device as in Venetian blinds, where each end of said blind is supported by a separate cord, the cords lie side by side, and each is individually and independently clamped or gripped between the two opposed clamping surfaces of the device. Although a device of this type is satisfactory when both cords are of precisely the same diameter, it will be apparent that if one cord is even slightly smaller than the other, the holding or clamping members will operate satisfactorily only on the larger of the cords, and the smaller will not be positively held in the device. An important object of the present invention is to avoid this objection by the provision of a clamping device which can hold a plurality of cords notwithstanding the fact that said cords may differ slightly or even substantially in diameter.

Where a pair of clamping members are provided for engagement with one or more cords on opposite sides thereof, the relative movement between the clamping surfaces of the members as said members move into and out of clamping relation produces an appreciable amount of wear on said cords. A further object of the present invention is to avoid such wear by providing a pair of clamping members which are interconnected so that both of said members move at the same rate.

According to the present invention, a plurality of cords are supported in the clamping device so that a plane passing through the axes of the two cords will coincide substantially with the direction of the clamping action by the holding members. By this arrangement, the several cords are urged against each other and will all be held securely regardless of variations in size of the several cords.

Other and further objects and advantages of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawing, in which:—

Fig. 1 is a perspective view of the device embodying the invention as applied to the conventional Venetian blind.

Fig. 2 is a sectional view substantially along the line 2—2 of Fig. 1.

Fig. 3 is a sectional view along the line 3—3 of Fig. 2.

Fig. 4 is a sectional view along the line 4—4 of Fig. 3.

Fig. 5 is a sectional view along the line 5—5 of Fig. 2.

Like reference characters refer to like parts in the different figures.

The device of the invention is shown as applied to the end of the head rail 1 of a conventional Venetian blind having the usual parallel slats 2 held in spaced relation to each other by fabric strips 3 on opposite sides thereof. Said slats are arranged to be raised and lowered by a pair of cords 4 and 5, the former being connected to the lowermost slat adjacent one end thereof and extending upwardly through alined openings, not shown, in the several slats and in the head rail to a pulley 6 positioned on said head rail. The cord 5 is similarly located in the opposite ends of the slats and passes over a pulley, not shown, positioned on the head rail at the end opposite to the pulley 6. Said cords are brought horizontally in parallel relation along the top of the head rail toward the end thereof where they pass around a pulley 7 positioned in the holding device hereinafter described. The cords are brought forwardly from said pulley and downwardly within the device between the holding members which, by their clamping action on the cords, support the blind in the desired position.

The device of the invention, as shown in Fig. 2, comprises an inner plate 8 centrally bent to form a right angle engageable over the corner of a head rail of the blind, said plate being provided at the corner thereof with an inwardly extending offset 9, the inner surface of which supports the cords away from the inner plate as they pass over said offset. An outer plate 10 is centrally bent to form an angularly shaped cover having depending side flanges 11 and 12 engageable with the inner plate at opposite sides thereof to form a closure for the device. Said plates are held together by a pin 13 on which the pulley 7 is rotatable, and by a pair of spaced rivets 14 and 15 positioned in the vertical portions of said inner and outer plates and in horizontal alinement. The device is suitably secured in any desired manner to the head rail of the blind, as by screws 16 passing through alined openings 17 and 18 in the outer and inner plates, respectively.

Referring now to Fig. 3, the clamping members comprise correspondingly shaped holding dogs 19 and 20 pivoted on the rivets 14 and 15, respectively. The clamping surfaces of the dogs are serrated for a more positive grip, and said surfaces are eccentric to the pivotal axis of the dogs, so that as said dogs rotate on their respective pivots the surfaces are brought toward each other to obtain the clamping action. Movable with the dogs 19 and 20 are gear segments 21 and 22 respectively, the former having a pair of teeth cooperating with a single tooth on the segment 22. The cooperating gear segments

cause the dogs each to rotate at the same rate of speed and in opposite directions. Integral with the gear segment 22 is a depending arm 25 having a flat loop 26, Fig. 5, on the lower end thereof. Said loop is of a sufficient size to permit the two cords 4 and 5 from the blind to pass downwardly therethrough in close parallel relation to each other, and said loop supports said cords in a common plane perpendicular to the axes about which the holding dogs 19 and 20 oscillate.

When the device is in use, the holding dogs and depending arm are normally in the dot-dash line position of Fig. 3, the dogs urging the cords against each other as shown in Fig. 4, and holding both of said cords against sliding movement, said cords being retained in the plane shown by the flat loop above referred to, and also by the hump 9 on the inner plate which causes said cords as they pass thereover to be positioned in a plane perpendicular to the pivotal axes of the dogs. By this arrangement the dogs exert a clamping action on the cords in a plane including the axes of both cords, so that the latter are positively held against movement independently of variations in diameter of the several cords.

In raising the blind a downward pull on the cords below the loop swings the latter to the right and causes a counterclockwise oscillation of the dog 20 and a corresponding clockwise oscillation of the dog 19, thereby withdrawing the serrated surfaces of said dogs from the cords to allow the latter to pass freely therebetween for the raising or lowering of the blind. When the blind has been raised or lowered to the desired position, the cords are moved to the left to reposition the arm 25 into the dot-dash line position of Fig. 3 where the dog teeth grip the cords and crowd them close together; with the cords so gripped, tension of the cords resulting from the weight of the blinds causes the depending arm 25 to swing even further to the left, bringing the holding surfaces of the dogs into closer contact with the cords. The cords having been engaged by the dogs, the latter are held in clamping position by the weight of the blinds, and said cords are positively held until subsequently intentionally released by a downward vertical pull on said cords. Obviously, the blind is lowered by allowing the cords to move vertically through the loop while the depending arm is held in the full line position of Fig. 3.

From the foregoing, it will be apparent that the device procures its holding action by clamping the cords in a plane including the axes of the several cords, so that the latter are all uniformly clamped independently of variations in size thereof. Furthermore, by the eccentric configuration of the serrated clamping surfaces of the dogs relative to their pivotal axis, the clamping action is increased as the dogs oscillate about their axes, said dogs being so inter-connected as to both oscillate at the same rate of speed, thereby eliminating objectionable wear on the cords.

I claim,

1. In a cord anchoring device, a clamping dog having an oscillatory movement into and out of clamping position, and means for directing a plurality of cords into clamping position with the centers of said cords in a plane substantially perpendicular to the pivotal axis of the dog.

2. In a cord anchoring device, a pair of clamping dogs each having an oscillatory movement into and out of clamping position, and means for supporting a plurality of cords as they pass between said dogs with the centers of said cords in a plane substantially perpendicular to the pivotal axes of said dogs.

3. In a cord anchoring device, a clamping dog having an oscillatory movement into and out of clamping position, said dog having a serrated surface eccentric to its pivotal axis, and means for directing a plurality of cords past said dog with the centers of said cords in a plane substantially perpendicular to the pivotal axis of the dog.

4. In a cord anchoring device, a pair of clamping dogs each having an oscillatory movement into and out of clamping position, said dogs having serrated clamping surfaces eccentric to the pivotal axes thereof, and means for supporting cords as they pass between the dogs in a plane substantially perpendicular to the pivotal axes of said dogs.

5. In a cord anchoring device, a pair of clamping dogs each having an oscillatory movement into and out of clamping position, means for supporting a plurality of cords as they pass between said dogs with the centers of said cords in a plane substantially perpendicular to the pivotal axes of said dogs, and means controlled by the position of said cords as they pass beyond said dogs for shifting the latter into and out of clamping position.

6. In a device for clamping a plurality of cords, a pair of clamping members between which the cords are positioned, said members being spaced apart when in open position a distance greater than the total diameters of the several cords.

7. In a device for clamping a plurality of cords, a pair of pivotally mounted clamping dogs which in open position are spaced apart a distance greater than the total diameters of the several cords, and means for supporting said cords substantially in a plane perpendicular to the pivotal axes of said dogs.

8. In a device adapted for holding the supporting cords of a Venetian blind, a casing adjustable to said blind, a journalled clamping dog in said casing, a support in said casing for directing cords past said dog perpendicular to the axis thereof, and means supported by the casing and positioned on the side of the dog opposite to said support for holding the cords in a plane perpendicular to the axis of the dog.

9. In a device adapted for holding the supporting cords of a Venetian blind, a casing adjustable to said blind, a journalled clamping dog in said casing, a support in said casing for directing cords past said dog in a plane perpendicular to the axis thereof, an arm connected to said dog for oscillation thereof and a loop in said arm through which said cords pass.

10. In a device adapted for holding the supporting cords of a Venetian blind, a casing adjustable to said blind, a journalled clamping dog in said casing, a support in said casing for directing cords past said dog perpendicular to the axis thereof, an arm connected to said dog for oscillation thereof and a loop in said arm through which said cords pass, said loop being flat and supporting said cords in a plane perpendicular to the axis of the dog.

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