Aug. 6, 1935. P. E. JOSEPH 2,010,396

VENETIAN WINDOW SHADE

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Fig. 1

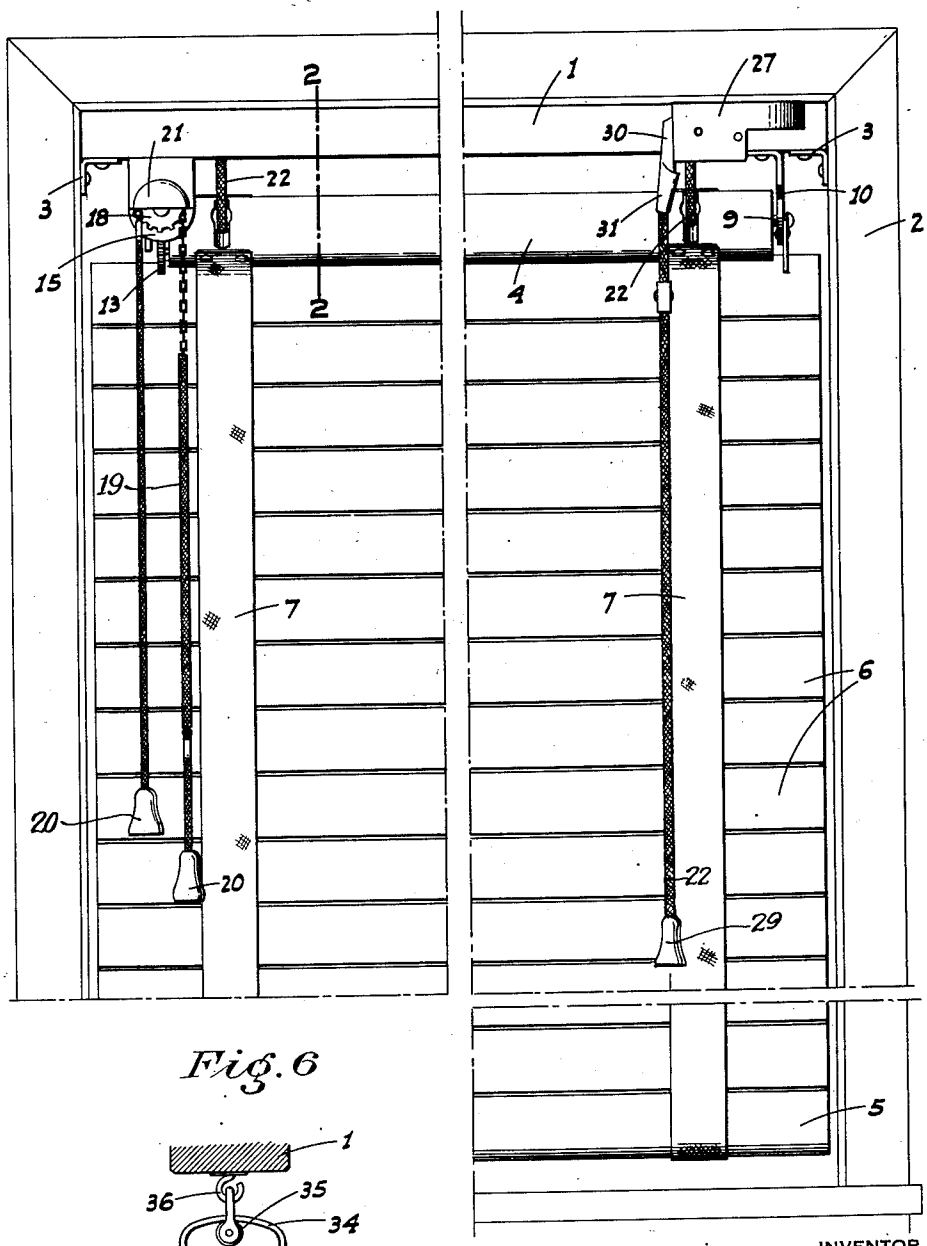


Fig. 6

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Fig. 2

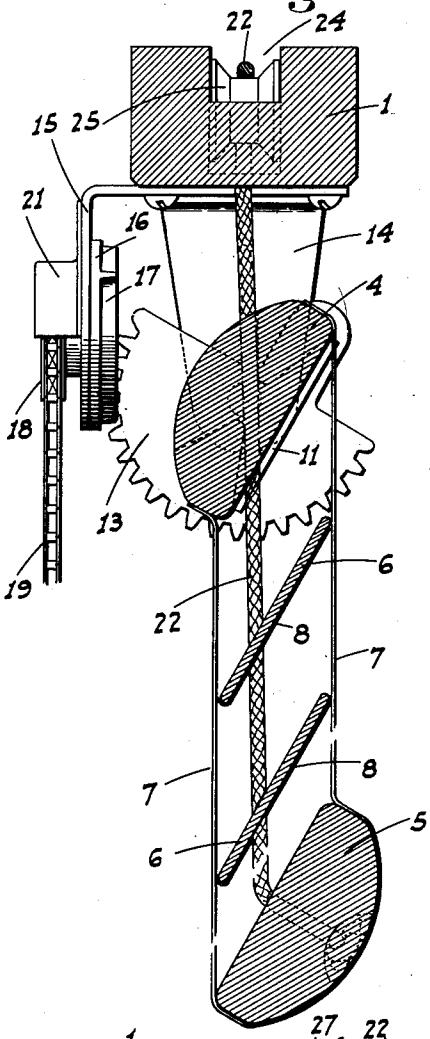


Fig. 3

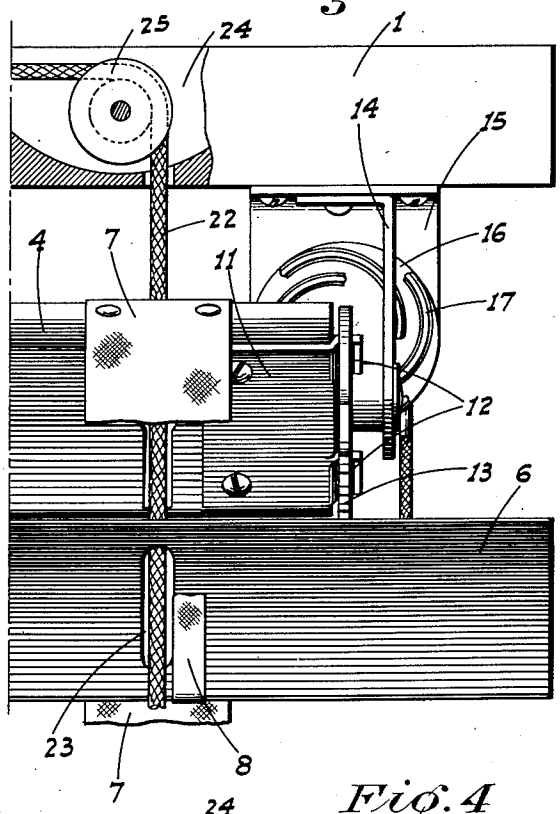


Fig. 4

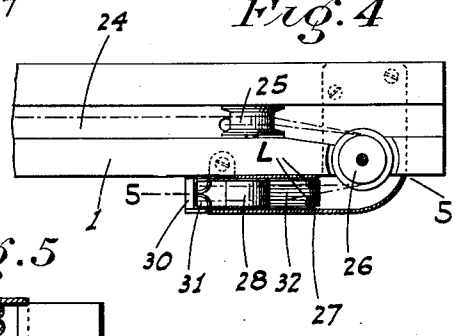
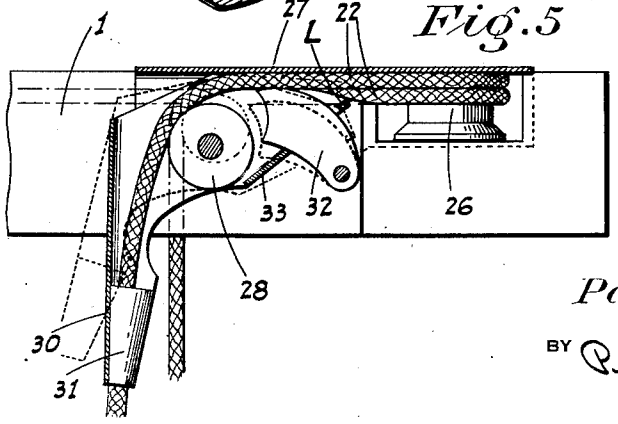


Fig. 5



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VENETIAN WINDOW SHADE

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Application May 7, 1934, Serial No. 724,298

7 Claims. (Cl. 156—17)

This invention relates to Venetian window shades, my principal object being to refine and improve the construction and operation of the control means of the shade, both as to the raising and lowering of the same and the shifting of the slats of the shade to different angular positions transversely.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a front view of the shade partly broken away.

Figure 2 is an enlarged fragmentary cross section on the line 2—2 of Figure 1.

Figure 3 is an enlarged fragmentary back view of the shade at one upper corner showing the means to shift the slats transversely.

Figure 4 is a fragmentary top plan view at the opposite upper corner of the shade.

Figure 5 is an enlarged fragmentary longitudinal section on the line 5—5 of Figure 4.

Figure 6 is a fragmentary cross section of the shade at the top and center showing the means to prevent sagging of the topmost slat of the shade.

Referring now more particularly to the characters of reference on the drawings, the shade comprises a head rail 1 adapted to fit closely under the top rail of the window casing 2 and to be supported on brackets 3 secured to the stiles of the casing. The shade which depends from this rail comprises as usual tilt rail 4 and bottom rail 5, with a plurality of thin slats therebetween. Ladder tapes 7 connect and extend on both sides of the rails 4 and 5, the slats 6 resting on the flexible tapes 8 which are connected to and extend between the inner faces of the tapes 7.

The rail 4 on one end has a centrally disposed pin 9 turnably seated in a bracket 10 depending from the rail 1. The rail 4 at its opposite end has a plate 11 secured to the under side of the same which is provided with ears 12 projecting into a segmental spur gear 13. The gear is turnably mounted on a bracket 14 so that its axis is in alinement with the pin 9, said bracket in turn being mounted on an angular bracket 15 secured to the rail 1 and which depends in front of the bar and the gear as plainly shown.

The teeth of the gear engage what is in effect a worm journaled in the bracket 15 and projecting from the inner face of the same. This worm comprises a disk 16 having a plurality of circumferentially separate spirally extending ridges 17 projecting from its inner face. The ridges overlap for a certain portion of their length and are spaced radially of the disk along their overlapping portions a distance equal to the pitch of the gear teeth, so that the latter project between adjacent ridges. As the disk rotates therefore the gear will be rotated, turning the rail 4 and consequently causing the angular setting of the same and of the slats to be altered in a transverse plane to any desired extent. At the same time there is no tendency for the rail slats to move from such adjusted position of themselves, since the gear and worm form a non-reversible connection as far as the gear turning the worm is concerned.

Fixed with the worm disk in front of the bracket 15 is a sprocket wheel 18 engaged by a chain 19 depending from both sides and having pull knobs 20 on its ends. A housing 21 mounted on the bracket 15 covers and closely surrounds the upper portion of the sprocket wheel so that there is no chance for the chain to leave the wheel. Also the movement of the chain is limited by the knobs engaging the housing, which permits rotation of the sprocket wheel and worm sufficient only to turn the gear and feed through the desired arc. Such arc is sufficient to shift the slats from an angle of substantially 60° to the vertical in one direction, to a similar angle in the opposite direction.

The shade is raised and lowered by cords 22 which are secured to the bottom rail 5 and extend through slots 23 in the slats 6 and through the tilt rail 4 into a slot 24 cut lengthwise in the bar 1 from the top. The cords pass over suitable direction changing pulleys 25 in the slot 24 and extend along said rail 1 to adjacent the end thereof opposite the angle controlling device.

The cords then pass over a vertically disposed pulley 26 mounted on and arranged to deflect the cords into a housing 27 secured to the outer face of the rail 1 at the corresponding end. The cords then extend a short distance toward the opposite end of the rail on the outside of the same and inside the housing 27.

Said cords then pass down over a transversely disposed roller 28 mounted in the housing 27 and terminate at a common pull knob 29. Upon this knob being pulled therefore an upward pull is exerted on the lower shade rail 5 which causes

the shade as a whole to be raised with a folding action in the usual manner.

A simple and effective means to lock the cords at any position and thus prevent the weight of the shade from being effective to lower and unfold itself, is mounted in the housing in connection with the cords. Such means comprises a hollow inverted L-shaped arm member 30 which straddles the roller 28 and is pivoted intermediate its ends in the housing 27 in common with the roller. The lower vertical portion of the arm depends from the end of the housing opposite the pulley 26. The cords 22 also project through the arm and at the lower end of the latter will pass through guide sleeves 31 formed in said arm.

Disposed in the housing between the roller 28 and the pulley 26 is a dog 32 pivoted at its lower end in the housing 27 and projecting upwardly and toward the roller between the sides of the arm. The dog is shaped so that its upper surface is convexly curved and slopes in the direction of the roller or of the pulling movement of the cords, or so as to include an acute angle with the cords in the direction of the pulley 26. Said dog is arranged to engage the under side of both cords simultaneously and press the same against the top of the housing.

Formed with the arm 30 below its pivot and under the dog above the pivot of the same is a cross bar 33. This is arranged so that when the arm is turned on its pivot so that the lower portion thereof moves toward a vertical position in the direction of the adjacent side of the window casing, said bar engages and forces the dog upwardly, causing it to exert sufficient pressure against the cords to hold them clamped against the housing. This holding of the cords is aided by the position of the dog relative thereto, since with any tendency of the cords to move toward the pulley 26 (which is the direction of the lowering movement of the shade) the frictional contact of the cords with the dog tends to turn the latter upwardly and increase the clamping action of the same. When however the arm is swung slightly away from the adjacent side of the window casing, the bar 33 is lowered from the dog and the latter drops of its own weight from pressing engagement with the cords, thus allowing the latter to run free.

To positively cause the dog to be disengaged from the cords when the arm 30 is swung away from a vertical position, the sides of the arm above the dog but below the adjacent horizontal runs of the cords are formed with lugs L which overhang the dog. As the arm is swung to withdraw the bar 33 from under the dog, the lugs bear down on the same and positively depress the dog from the cords, as indicated in dotted lines in Figure 5.

When raising the shade therefore it is only necessary to pull on the knob 29, while holding the cords and consequently the arm 31 which is connected thereto, slightly beyond a vertical position as above stated so that little resistance is offered by the dogs against the pulling action. When the shade has been raised the desired amount the cords are pulled to one side to straighten the arm which immediately causes the dog to be shifted to a cord clamping position, as above explained.

With wide shades there is a tendency for the heavy top slat to sag between its pivoted ends. I overcome this tendency by mounting a transversely extending arcuate loop 34 on top of the tilt rail 4 centrally of its length. This loop is engaged on its under side by a roller 35 swivelly hung from an eye 36 mounted on and depending from the rail 1. The tilt rail can therefore turn to any desired angular position with perfect freedom but cannot sag to any appreciable extent when in any such position.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. In a Venetian shade, means to raise and lower the shade, such means comprising cords connected to the lowest rail and projecting freely through the slats of the shade, means to direct the cords above the shade horizontally to adjacent one end of the same, a roller fixed above and in front of the shade and over which the cords pass and from which they depend for manipulation, and means functioning with a pulling movement of the depending portion of the cords to a vertical position to clamp the cords beyond the roller against movement in a shade lowering direction.

2. In a Venetian shade, means to raise and lower the shade comprising cords connected to the lowest rail of the shade and projecting freely through the slats thereof to a point above the shade, means to direct the cords above the shade horizontally toward one end of the same, a roller fixed above and in front of the shade and over which the cords finally pass and from which they depend for manipulation, cord clamping means mounted adjacent and beyond the roller, and means to operate said clamping means by a pulling movement of the corresponding portion of the cords to a vertical position.

3. In a Venetian shade, means to raise and lower the shade comprising cords connected to the lowest rail of the shade and projecting freely through the slats thereof to a point above the shade, means to direct the cords above the shade horizontally toward one end of the same, a roller fixed above and in front of the shade and over which the cords finally pass and from which they depend for manipulation, a housing in which said roller is mounted and adjacent the top of which the cords pass, an arm member straddling the roller pivoted in and depending from the housing, the cords below the roller having slidable connection with the arm, a clamping dog pivoted in the housing below the cords and beyond the roller for engagement with the under side of the cords, and means on the arm to engage and force the dog upwardly to cause the cords to be clamped between the dog and the top of the housing only when the depending portion of the arm is turned toward a directly vertical position.

4. In a Venetian shade, means to raise and lower the shade comprising cords connected to the lowest rail of the shade and projecting freely through the slats thereof, to a point above the shade, means to direct the cords above the shade horizontally toward one end of the same, a roller fixed above and in front of the shade and over which the cords finally pass and from which they

depend for manipulation, a housing in which said roller is mounted and adjacent the top of which the cords pass, an arm member straddling the roller pivoted in the housing in common with the roller and depending from the housing, the cords below the roller having slidable connection with the arm, a clamping dog pivoted at its lower end in the housing below the cords and beyond the roller for engagement with the under side of the cords, the side of the dog facing the roller sloping upwardly toward the roller, and a cross element on the arm below its pivot and above that of the dog engaging the sloping side of the same.

5. A structure as in claim 3, in which the side of the dog farthest from the roller has an upward slope in the direction of said roller and includes an acute angle with the adjacent portion of the cords.

6. A structure as in claim 3, with additional means on the arm to engage and lower the dog from a cord clamping position with a movement of the arm away from said vertical position.

7. A structure as in claim 3 with additional means functioning with the movement of the arm out of a vertical position to lower the dog.

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