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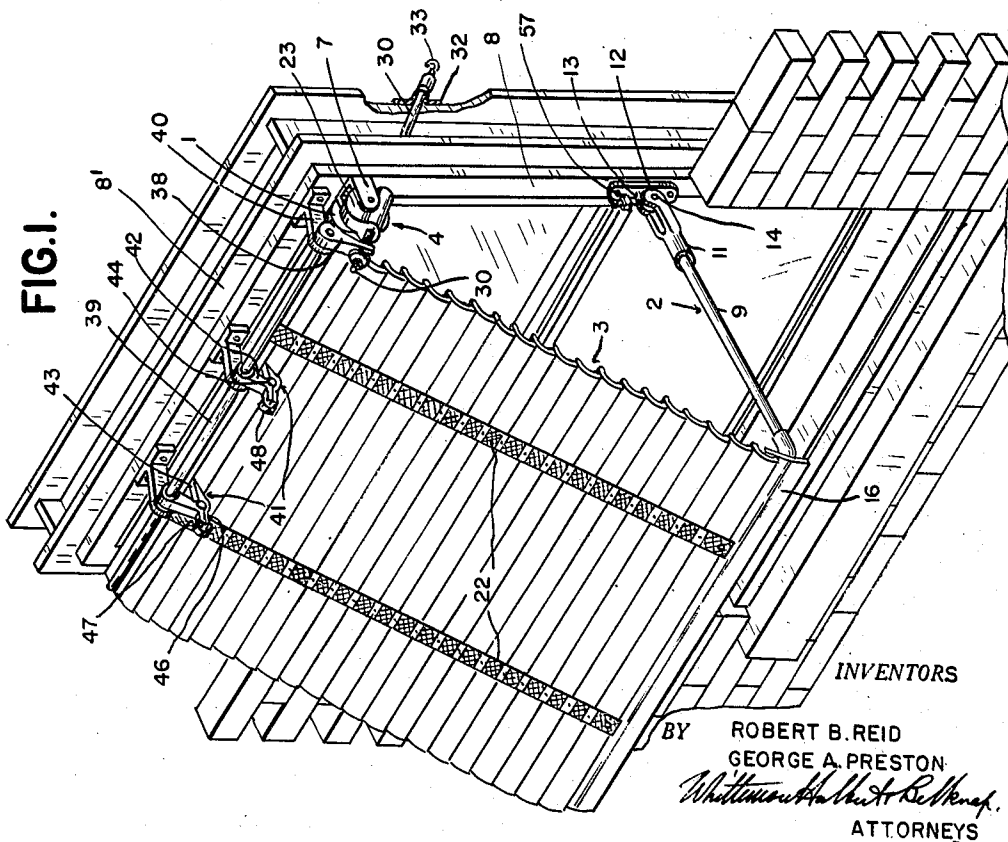
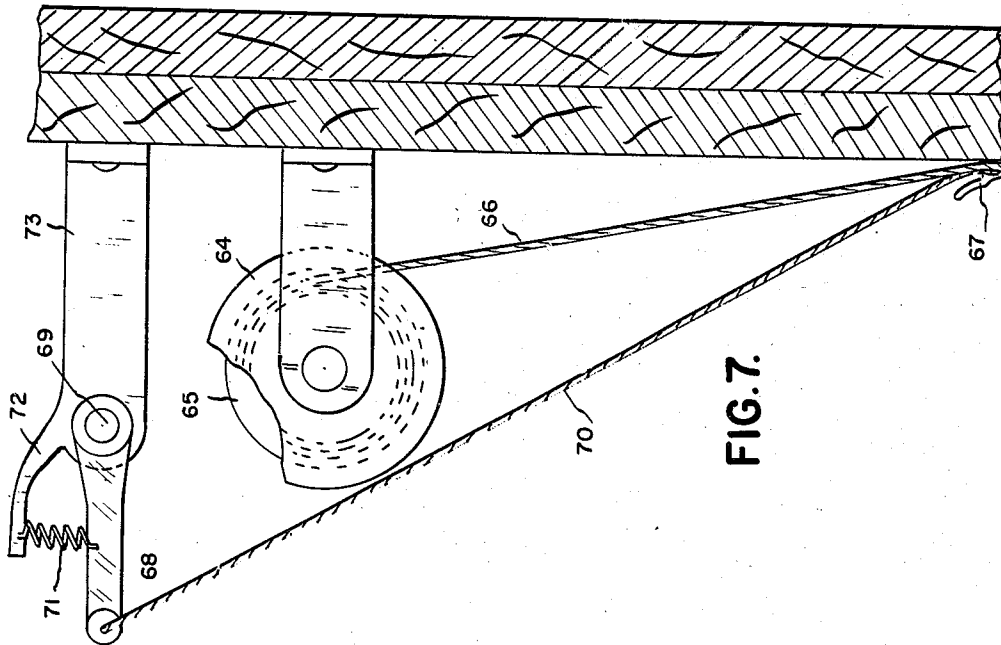
R. B. REID ET AL

2,339,878

SHADE

Filed May 11, 1942

3 Sheets-Sheet 1



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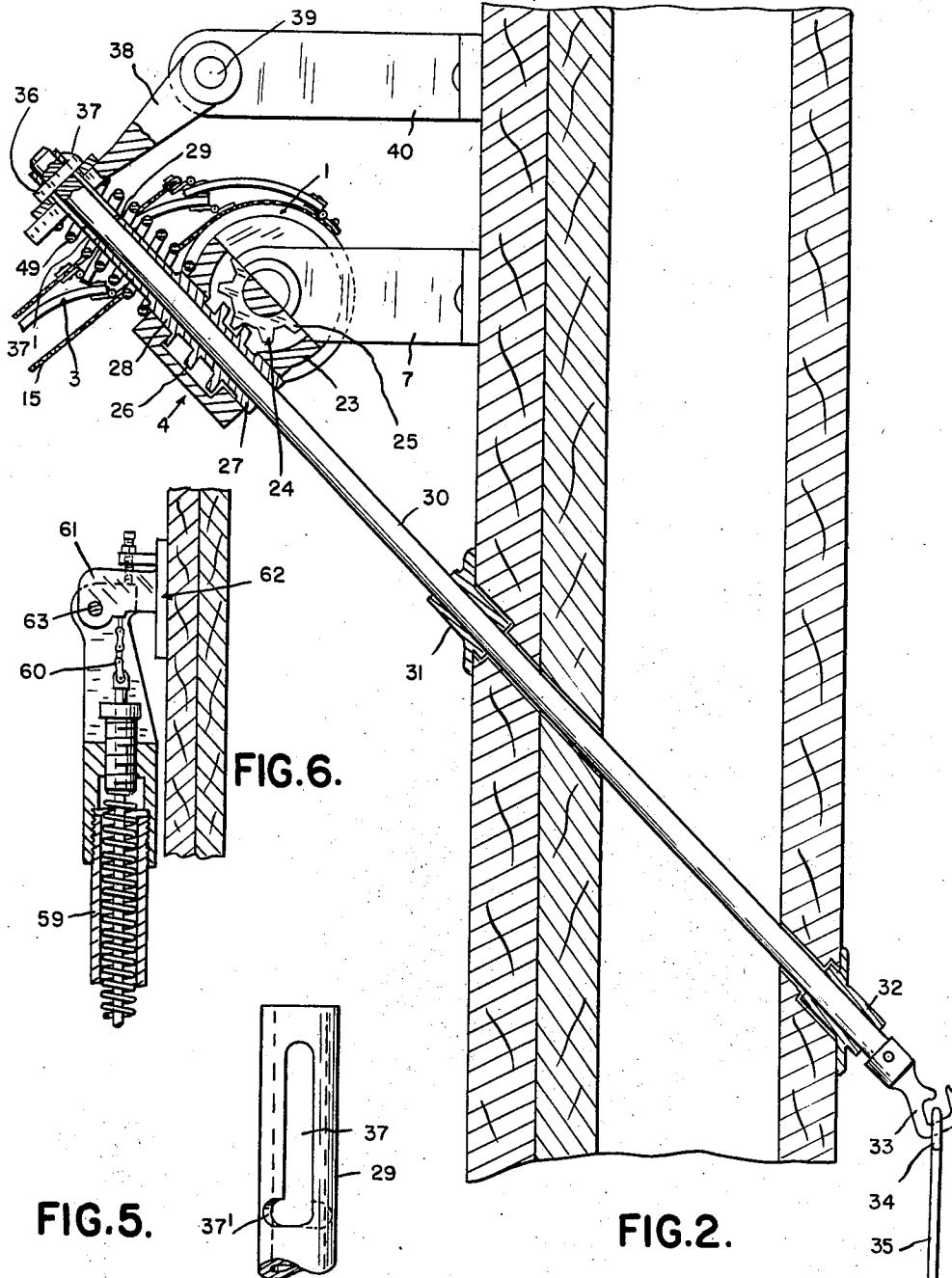
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SHADE

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

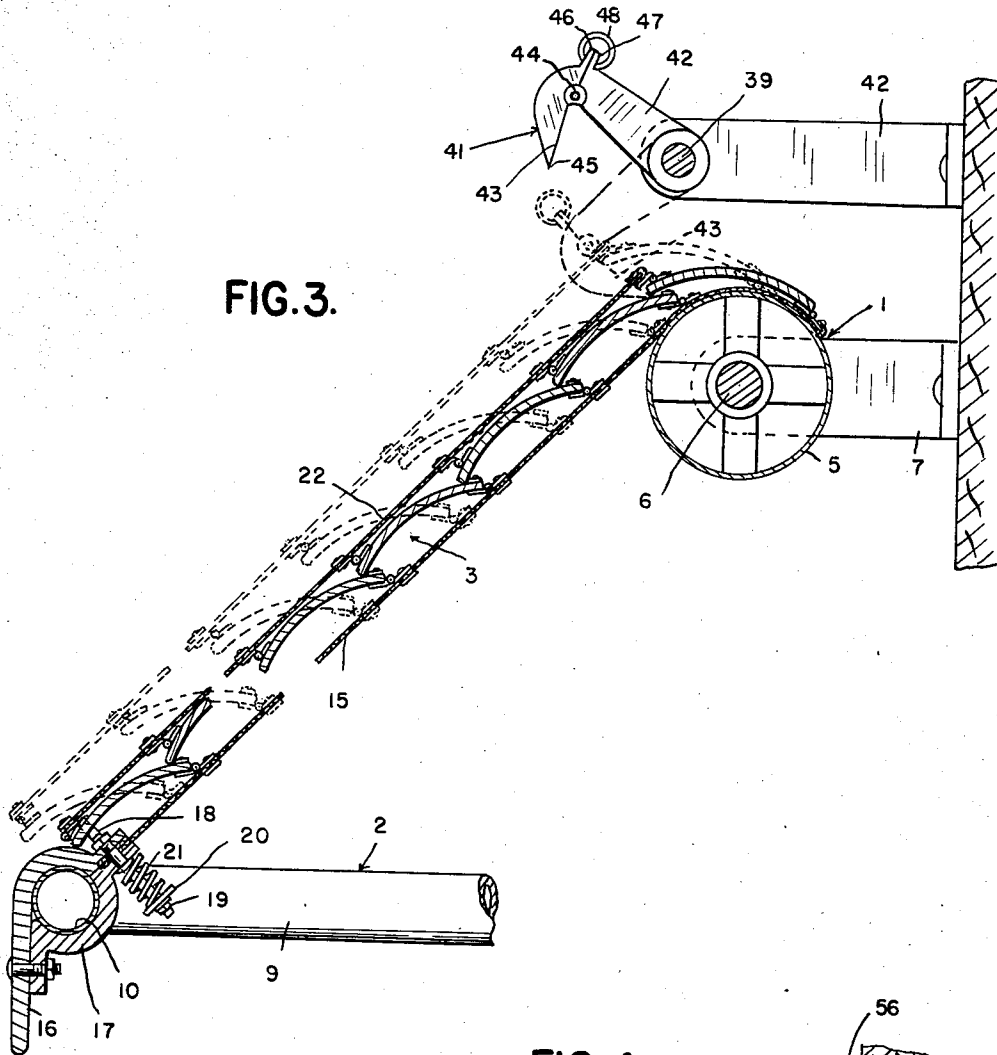


FIG.3.

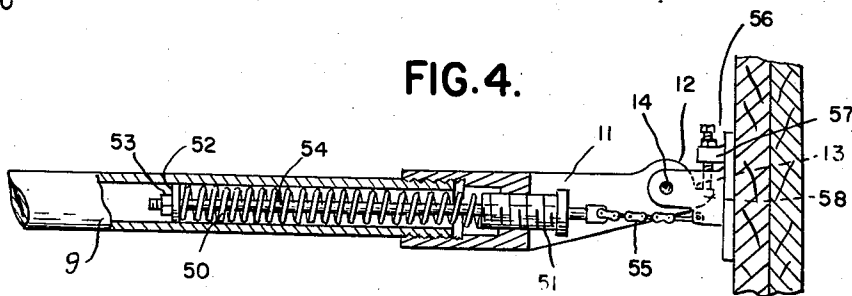


FIG.4.

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2,339,878

SHADE

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Application May 11, 1942, Serial No. 442,500

9 Claims. (Cl. 160-61)

The invention relates to shades and refers more particularly to shades adapted for use outside a building.

The invention has for some of its objects to provide an improved shade which is so constructed that it has long life; to provide a shade which may operate as an awning or a blind; to provide a shade which is adjustable to prevent passage of light therethrough or to allow passage of light therethrough and prevent the passage of direct sun rays; and to so construct the shade that it may be readily operated from inside the building to which it is attached.

The invention has for other objects to construct the shade of slats which may be wound on a reel; to construct the shade that the slats may occupy either closed or open positions, as desired, to prevent or allow passage of light therethrough; and to construct the shade that the slats are operatively connected to the reel by flexible strap means which is maintained taut by a resilient force cooperating with the reel.

The invention has for further objects to provide a shade with means for holding the slats in closed position; to provide the shade with a simple means for holding the slats in open position when they are unwound from the reel; to provide the shade with gearing for rotating the reel; and to provide the shade with an operating rod for actuating the means for holding the slats in open position and also for rotating the gearing.

With these as well as other objects in view, the invention resides in the novel features of construction and combinations and arrangements of parts as more fully hereinafter set forth.

In the drawings—

Figure 1 is a perspective view of a shade embodying the invention;

Figure 2 is a sectional view through the operating mechanism of the shade;

Figure 3 is a sectional view through the shade illustrating its construction;

Figure 4 is a sectional view through a portion of the swinging frame member of the shade;

Figure 5 is an elevation of a portion of the operating mechanism;

Figure 6 is a view similar to Figure 4 showing another embodiment of the invention;

Figure 7 is an end view showing still another embodiment of the invention.

The shade, as illustrated in Figures 1 to 5, inclusive, is outside a building and attached to a window frame of the building. The shade comprises the reel 1, the swinging frame member 2 below the reel, the series of slats 3 operatively

connected to each other and also operatively connected at the opposite ends of the series to the reel and the frame member, and the operating mechanism 4. The slats are capable of being wound on the reel and are also capable of occupying closed and open positions to prevent light from passing therebetween and to allow light to pass therebetween, respectively.

The reel 1 comprises the cylindrical shell 5 secured to the axial shaft 6 which is journaled at its ends in the brackets 7 secured to the upper end portions of the side bars 8 of the window frame.

The swinging frame member 2 comprises the side rods 9, the cross rod 10 at the outer ends of the side rods, and the yokes 11 threaded on the inner ends of the side rods and pivoted to the brackets 12 which are secured to the side bars 8 of the window frame intermediate their ends. The furcations of each yoke are at opposite sides of the lateral projection 13 of the associated bracket and these furcations are pivotally connected to the projection by the pin 14 extending therethrough.

The series of slats 3 extend substantially parallel to the axis of the reel 1 and are pivotally connected at their upper and inner edges to the pair of laterally spaced flexible straps 15. The upper ends of these straps are fixedly secured to the shell 5 of the reel by suitable means, such as rivets, and the lower ends of these straps are operatively connected to the swinging frame member 2 by being clamped to the bar 16 which is rotatable on the rod 10. As shown, the bar 16 extends partially around the rod 10 and is rotatably secured thereto by the caps 17 extending around the opposite side of the rod 10 and clamped at their upper and lower ends to the bar 16, the lower ends of the flexible straps 15 being clamped between the upper ends of the caps and the upper edge of the bar. The slats normally occupy a closed position with the lower edge of the lowermost slat overlying and engaging the bar 16 and the lower edges of the remaining slats overlying and engaging the adjacent lower slats. It is apparent that when these slats are in closed position they prevent light from passing therebetween.

For resiliently holding the slats in closed position, there are the headed rods 18 extending transversely through the lowermost slat and the caps and having their heads abutting the outer side of the lowermost slat. Each rod extends transversely through the upper edge portion of the bar 16 and the upper end portion of a cap

17 and has secured to its opposite end the nut 19 abutting the washer 20. 21 is a compression coil spring abutting each washer and the upper end portion of each cap. With this arrangement, the coil springs serve through the headed rods to resiliently hold the lower edge of the lowermost slat against the bar. The remaining slats are operatively connected or tied to the lowermost slat by the pair of laterally spaced flexible straps 22 which are preferably hinged to the outer sides of the lower edges of all of the straps and, as a result, the remaining slats are also resiliently held in closed position.

The operating mechanism 4 comprises the gear housing 23 located between one end of the reel shell 5 and the adjacent bracket 7 and journaled on the reel shaft 6 so that the housing is bodily swingable. The operating mechanism also comprises the irreversible gearing 24 within the housing and made up of the worm gear 25 secured to the reel shaft 6 as by being keyed thereto and the worm 26 meshing with the worm gear 25. The worm 26 is formed with the bearing portions 27 and 28 which are journaled in the gear housing and with the extension 29. The worm 26, its bearing portions 27 and 28 and its extension 29 are hollow and slidably engaged by the cylindrical operating rod 30. In operative position the operating rod extends at an angle to the window frame and extends there-through and is suitably journaled in the bearings 31 and 32 secured to the window frame. The lower end of the operating rod is formed with the hook 33 for detachable engagement by the eye 34 of a manually operable rod 35. The operating rod 30 is non-rotatably secured to the worm 26 by means of the pin 36 which extends through the upper end portion of the operating rod 30 and also through the diametrically opposite longitudinally extending slots 37 formed in the upper end portion of the extension 29 of the worm 26. With this arrangement it will be seen that the operating rod 30 through the worm 26 positions the gear housing 23 and that upon rotation of the operating rod 30 the worm 26 can be rotated to thereby rotate the reel in a direction to either wind the series of slats 3 on the reel shell or unwind these slats from the reel shell.

For the purpose of moving the series of slats 3 to open position, as shown by the dotted lines in Figure 3, the operating rod 30 extends through the end furcations of the lever 33 which is secured to one end of the shaft 39. This shaft is journaled in the brackets 40 which are secured to the top bar 8' of the window frame. 41 are dogs also secured to the shaft 39 and positioned to engage one of the slats 3 between the flexible straps 22. Each dog comprises the arm 42 fixed to the shaft 39 and the latch 43 pivoted to the free end of the arm by the pin 44. The latch has the nose 45 for engaging one of the slats 3 and the abutment 46 at the opposite end normally held against the abutment 47 upon the arm by the spring 48. 49 is a coil spring encircling the extension 29 of worm 26 and located between and abutting the gear housing 23 and the lever 33 to resiliently urge this lever upwardly and thereby resiliently urge the dogs 41 upwardly and away from the slats 3. The slats 3 unwound from the reel 1 are adapted to be moved to open position by pulling longitudinally and downwardly on the operating rod 30 which through the pin 36, the washer 36' between the pin 36 and the lever 33, the lever 33 and the shaft 39

lowers the dogs 41 so that the noses 45 of their latches engage the lower edge of the adjacent slat and compel this edge to ride upwardly over the latches when the operating rod is further rotated in an unwinding direction. By reason of the straps 22, the corresponding edges of the remaining unwound slats are moved outwardly and upwardly to open position. To hold the dogs in engagement with the adjacent slat against the retracting force exerted by the spring 49, the extension 29 is provided with the lateral diametrically opposite slots 37' opening into the lower ends of the slots 37 and adapted to receive the pin 36 after the operating rod 30 has been pulled downwardly and rotated in an unwinding direction. It is apparent that the rotation of the reel in an unwinding direction takes place only after the pin contacts with the ends of the lateral slots and upon continued rotation of the operating rod in an unwinding direction.

To resiliently maintain the straps 15 taut, spring devices carried by the swinging frame member 2 are provided to exert a force which operates, in addition to gravity to swing the outer end portion of the frame member downwardly. Owing to the fact that the gearing 24 is irreversible, it is apparent that the portions of the straps unwound from the reel and the series of slats connected thereto will be maintained in taut condition. Each spring device comprises the compression spring 50 within each side rod 9 abutting the tubular plug 51 threaded into the bottom of the associated yoke 11 and the washer 52 secured by the nut 53 upon the tension rod 54. The plug 51 is adjustable to vary the compression effect of the spring 50. The tension rod extends through the plug 51 and is connected by the flexible linear member 55 to the bracket 12 below the lateral projection 13 of the bracket. The linear member during swinging movement of the frame member is adapted to extend around the lateral projection 13 and, as shown, is a sprocket chain. With this arrangement, it will be seen that the compression spring 50 serves to resiliently force the outer ends of the side rods 9 downwardly. To limit the downward swinging movement, the stop 56 is provided. This stop is in the nature of a set screw threaded into the lateral projection 57 of the bracket 12 and adapted to abut the lateral projection 56 upon the inner furcation of the associated yoke 11. With this arrangement of stop, the shade is adapted to function as an awning.

As shown in Figure 6, the construction is such that the swinging frame member 59, which corresponds to the swinging frame member 2, is adapted to swing downwardly in a counterclockwise direction to assume a substantially vertical position so that the shade may function as a blind completely closing the window opening. In this case the flexible linear member 60 which corresponds to the flexible linear member 55 is connected to the lateral projection 61 of the bracket 62 laterally inwardly of the pivot pin 63 for pivotally connecting the associated side rod of the swinging frame member to the lateral projection of the bracket. With the exception of this stop arrangement, the shade is constructed in the same manner as the shades of Figures 1 to 5, inclusive.

Figure 7 discloses another modification in which the mechanism for rotating the reel and the mechanism for operating the dogs which

move the series of slats to open position is operable from outside the building instead of from inside, as shown in the previous modifications. In detail, 64 is a sheave fixed to an end of the reel 65 and 66 is a flexible linear member, such as a rope, wound upon the sheave and extending therefrom to a position where it may be attached to the cleat 67 preferably secured to the lower end portion of the adjacent side bar of the window frame. The rope preferably has one end secured to the sheave, the arrangement being such that by pulling upon the rope the reel is rotated to wind the slats thereon and by playing out the rope the reel is rotated to unwind the slats therefrom. The unwinding force is exerted by the compression springs in the side rods of the swinging frame member and gravity acting upon the swinging frame member to swing its outer end downwardly. For operating the dogs, which are constructed and arranged in the same manner as the dogs 41, there is the lever 68 secured upon the shaft 69 to which the dogs are fastened. This lever is connected at its free end to the flexible linear member 70, such as a rope, which extends therefrom and is also adapted to be secured to the cleat 67. For resiliently maintaining the dogs in their upper position, there is the coil spring 71 connected to the lever 68 and to the arm 72 which projects outwardly and upwardly from one of the brackets 73 in which the shaft 69 is journaled.

All parts of the shade are formed of metal or a plastic material highly resistant to change which might be caused by outside exposure. Preferably, the slats are formed of a plastic material, the straps are formed of metal woven mesh which is flexible and the remaining parts are formed of metal.

What we claim as our invention is:

1. A shade comprising a reel, a series of slats extending substantially parallel to the axis of said reel and operatively connected to said reel to be wound thereon, said slats being operatively connected to each other to occupy closed and open positions alternatively when unwound from said reel, means for resiliently holding said slats in closed position, and other means for holding said slats in open position.

2. A shade comprising a reel, flexible strap means operatively connected to said reel, slats extending substantially parallel to the axis of said reel and operatively connected to said strap means, and means for rotating said reel comprising a gear secured to said reel, a second gear meshing with said first mentioned gear and bodily swingable about the axis of said first mentioned gear, and a rod for rotating said second gear and holding the same from bodily swinging movement.

3. A shade comprising a reel, a series of slats extending substantially parallel to the axis of said reel and operatively connected to said reel to be wound thereon, said slats being operatively connected to each other to occupy closed and open positions alternatively when unwound from said reel, and means for moving said slats to open position comprising a member movable into engagement with one of said slats for moving the same away from an adjacent slat.

4. A shade comprising a reel, flexible strap means operatively connected to said reel to be

wound thereon, slats operatively connected at corresponding edges to said strap means to be wound on said reel with said strap means, means for rotating said reel in a direction to wind said strap means and slats on said reel, and means for moving said slats to open position when unwound from said reel comprising flexible strap means operatively connected to the opposite edges of said slats and a member engageable with one of said slats adjacent said reel for moving the same away from an adjacent slat.

5. A shade comprising a reel, a bar, straps connected at opposite ends to said reel and bar and adapted to be wound on said reel, slats connected at corresponding edges to said straps, other straps connected to the opposite edges of said slats, spring means between said bar and one of said slats for resiliently urging said last mentioned slat toward said bar and to closed position to thereby move the remainder of said slats to closed position through said last mentioned straps, and means engageable with one of said slats adjacent said reel to move the same to open position and the remainder of said slats to open position through said last mentioned straps.

6. A shade comprising a reel, a series of slats operatively connected to said reel to be wound thereon, said slats being operatively connected to each other to occupy closed and open positions alternatively when unwound from said reel, means for yieldably holding said slats in closed position, other means movable into engagement with one of said slats for moving said slats to open position, and means for rotating said reel and moving said last mentioned means comprising a rod rotatable to rotate said reel and movable longitudinally to move said last mentioned means.

7. A shade comprising a reel, a series of slats extending substantially parallel to the axis of said reel and operatively connected to said reel to be wound thereon, said slats being operatively connected to each other to occupy closed and open positions alternatively when unwound from said reel, and means for rotating said reel and moving said slats to open position comprising a common operating member.

8. A shade comprising a reel, a series of slats extending substantially parallel to the axis of said reel and operatively connected to said reel to be wound thereon, said slats being operatively connected to each other to occupy closed and open positions alternatively when unwound from said reel, gearing for rotating said reel, dog means for moving said slats to open position, and a longitudinally movable rotatable rod for operating said gearing and dog means.

9. A shade comprising a reel, slats extending substantially parallel to the axis of said reel, flexible strap means operatively connected to corresponding edges of said slats and to said reel, spring means for resiliently holding said slats in closed position, means movable to a position to hold one of said slats in open position, and other flexible strap means operatively connected to the edges of said slats opposite to those to which the first strap means are connected to hold the same in open position when said holding means is in holding position.

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