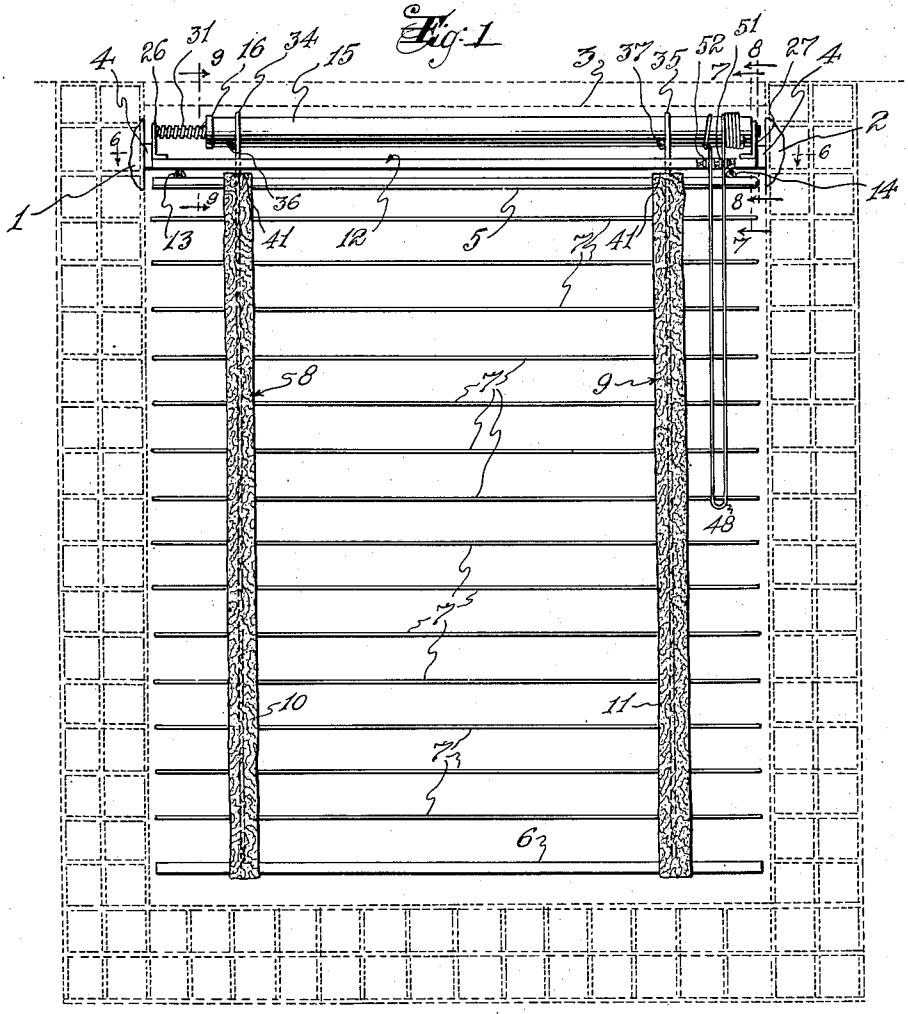
Aug. 29, 1950 J. ESPOSITO 2,520,629

AUTOMATICALLY OPERATED VENETIAN BLIND

Filed April 22, 1948 3 Sheets-Sheet 1

Fig. 1



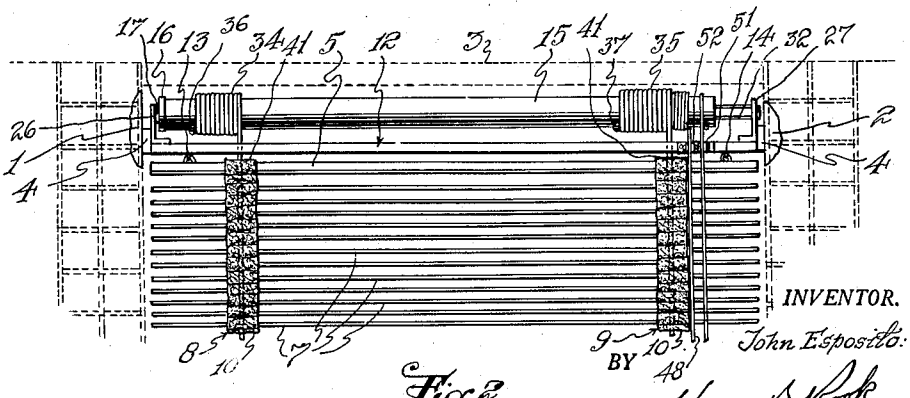


Fig. 2

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AUTOMATICALLY OPERATED VENETIAN BLIND

Filed April 22, 1948 3 Sheets-Sheet 2

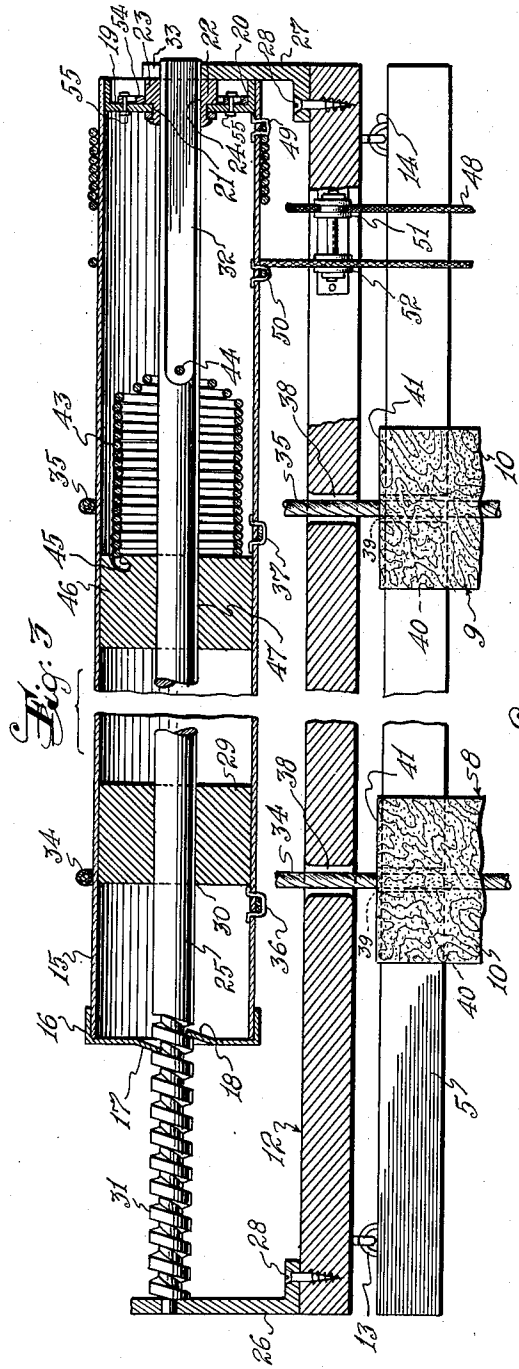


Fig. 3

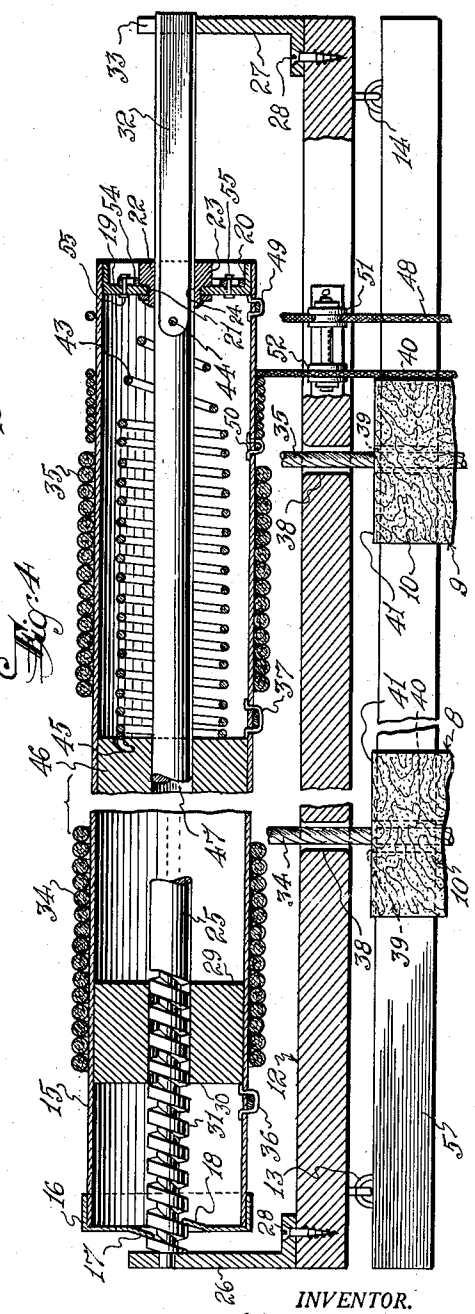


Fig. 4

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Filed April 22, 1948 3 Sheets-Sheet 3

Fig. 5

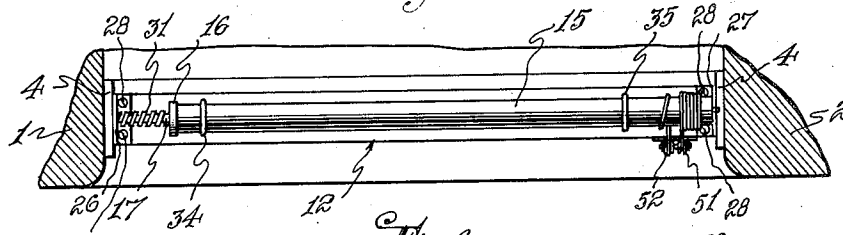


Fig. 6

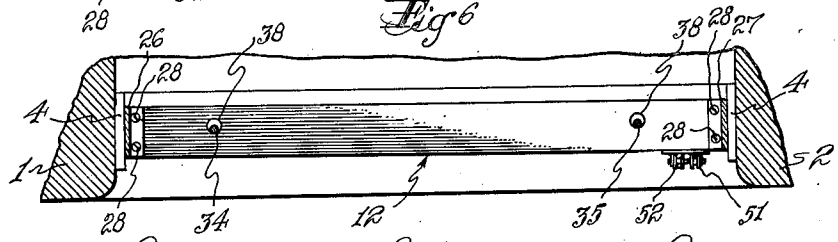
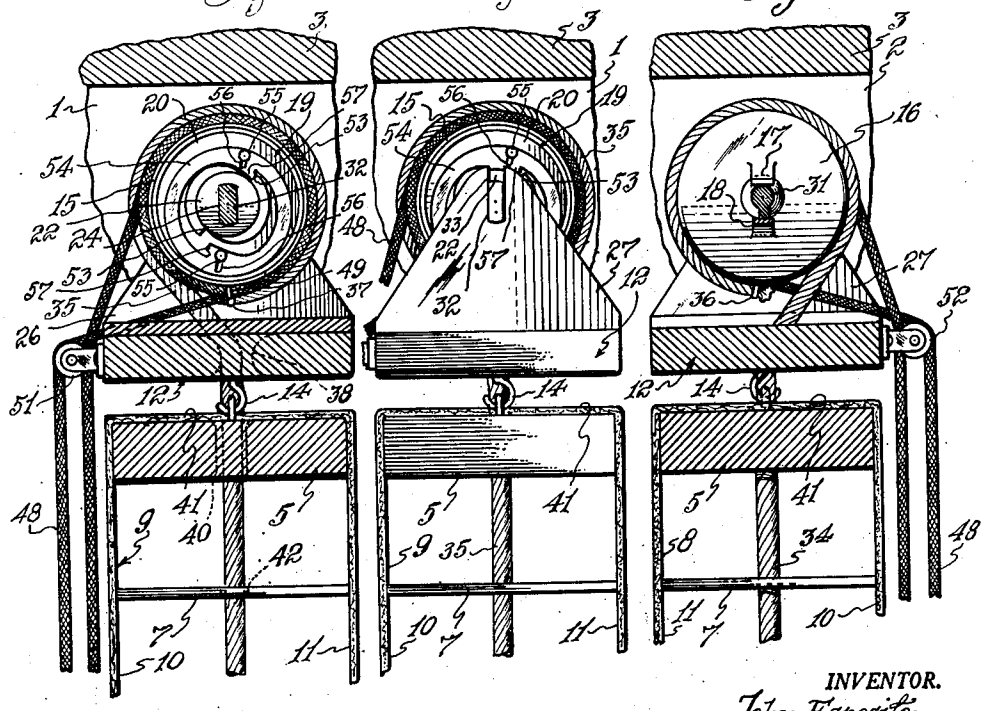


Fig. 7 Fig. 8 Fig. 9



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# UNITED STATES PATENT OFFICE

2,520,629

## AUTOMATICALLY OPERATED VENETIAN BLIND

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Application April 22, 1948, Serial No. 22,638

3 Claims. (Cl. 160—171)

1

This invention relates to a Venetian blind and more particularly to an automatically operated Venetian blind.

Most Venetian blinds now commonly in use have lift cords which must be manually pulled for lifting the slats. In such ordinary blinds, in order to retain the slats in adjusted or raised position, it is also necessary to tie the pull cord to a cleat or other holding device.

It is a prime object of the present invention to provide a Venetian blind that overcomes the foregoing difficulties.

Another object of the present invention is to provide a Venetian blind with improved means for automatically raising the slats.

A further object is to provide a blind of this type with means for automatically stopping and retaining the blind in any adjusted or raised position without the necessity of tying the pull cord to a lock or the like.

A still further object is to provide a blind of this type with a pull cord that is self-equalizing.

A specific object of the present invention is to provide an improved roller unit that can readily be adapted to any of the ordinary Venetian blinds now in use without regard to the material of which such blinds are made and without the necessity of altering the construction of such blinds.

Still another object is to provide a Venetian blind that is simple and inexpensive in construction and highly efficient in operation.

Other objects and advantages of the invention will be apparent from the description thereof to follow taken in connection with the accompanying drawings in which:

Figure 1 is a front elevational view of a Venetian blind embodying my invention shown on a window and in fully lowered condition.

Figure 2 is a similar view showing the blind in raised condition.

Figure 3 is an enlarged longitudinal sectional view of the roller unit with the parts in the condition of Figure 1.

Figure 4 is a similar view showing the parts in the condition of Figure 2.

Figure 5 is a top plan view of the blind shown in Figure 1.

Figure 6 is a sectional view taken on the plane of the line 6—6 of Figure 1.

Figure 7 is an enlarged sectional view taken on the plane of the line 7—7 of Figure 1.

Figure 8 is an enlarged sectional view taken on the plane of the line 8—8 of Figure 1.

2

Figure 9 is an enlarged sectional view taken on the plane of the line 9—9 of Figure 1.

The invention is illustrated as applied to a window frame or casing which may be of any suitable construction including side members 1 and 2 and a top or upper cross piece 3. On the inner surfaces of the side members adjacent their upper ends are brackets 4 for supporting the Venetian blind structure. This blind structure comprises a top bar 5 and a bottom bar 6 and a vertical series of spaced slats 7 supported by flexible ladder tapes 8 and 9 which extend between and over the top and bottom bars forming front and rear reaches or portions 10 and 11, respectively, as viewed in Figure 7. The slats extend across the space between the reaches of the tapes and have their edges secured to the inner surfaces thereof so that they are maintained in uniform registry and are positively responsive to the movements of the tapes.

The roller unit is supported on a bar 12 which may be detachably supported by the brackets 4 in any suitable manner. The top bar 5 is supported on the bar 12 by hook and eye connections 13 and 14 at the ends of said bars. The roller unit includes a rotatable and shiftable transverse roller or tube 15 one end of which is closed by a cap 16 having a central opening formed by an upper outstruck lug 17 and an opposed lower instruck lug 18, said lugs forming fragments of a screw thread at said end. At its opposite end the tube is fitted with an annular head member 19 having a recessed portion 20 and a central opening 21. A hub member 22 is mounted in the opening 21 and has an enlarged portion 23 extending outwardly of the head member and into the recessed portion thereof. The hub member serves as a bearing for the head member 19 and has a central rectangular slot 24.

Cords 34 and 35 are provided at the ends of the tube for lifting the slats 7. Cord 34 is secured at its upper end to the tube directly above the tape 8 by means of a U-shaped clip 36, and cord 35 directly above tape 9 by a similar clip 37. Each cord is coiled around the tube and extends vertically down through aligned slots 38, 39 and 40 in the bar 12, cross pieces 41 of the tapes and top rail 5, respectively, and then pass downwardly through central slots 42 in the slats 7 to the bottom bar 6 where its bottom end is fastened in any suitable manner.

The tube and lifting cords are operated by a torsional spring 43 positioned inside of the tube. The spring encircles the shaft 25 and has one end anchored thereto as indicated at 44 and

has its other end anchored in a notch 45 formed in an annular bearing member 46 fixed to the inside of the tube and provided with a central opening 47 for the passage of the shaft. The tube is shorter than the distance from bracket 26 to bracket 27 by substantially the length of the threaded portion 31 of the shaft 25 and through the medium of said threaded portion and the lugs 17 and 18 of cap 16 is susceptible of lateral movement, that is to say, a movement in the direction of its axis back and forth according to how it is rotated. This arrangement of the spring and mounting of the tube causes the tube to rotate and move along the shaft 25 when the spring is wound and unwound.

A looped pull cord 48 is provided for actuating the mechanism and has one end secured to the end of the tube opposite the cap 16 by a clip 49. The cord is then wound around the tube and has its other end fastened thereto by a clip 50 positioned inwardly of clip 49. In its travel, the opposite portions of the cord pass over and under aligned guide pulleys 51 and 52 mounted adjacent each other on the front edge of bar 12 as viewed in Figures 1 and 7 in order to facilitate movement thereof and prevent entanglement.

The blind is held in raised or adjusted position by holding means including a detent member formed by providing opposed shoulders 53 on the enlarged portion 23 of the hub member 22. A ring member 54 surrounds the detent member and is movably supported in the recessed portion 20 of the head member 19 by pins 55 protruding from said head member and extending loosely through slots 56 in said ring member. Opposed lugs 57 extending inwardly from the inner periphery of the ring member are adapted to engage the shoulders 53 of the detent member when the tube 15 is turned to permit the ring member to slide on the pins 55 radially of the axis of the detent member for holding the tube against further movement.

In Figure 1, the blind is shown in completely lowered position at which time the tube 15 is at its farthermost position to the right on shaft 25 as viewed in Figures 1 and 3, and the spring 43 is fully wound as shown in Figure 3. The pull cord 48 is wound upon the tube with its coils commencing at the end fastened by clip 49 and wound inwardly thereof. The lifting cords 34 and 35 it will be noted are fully unwound. One of the lugs 57 of the ring member 54 is in holding engagement with one of the the shoulders 53 of the detent so that the parts cannot move. A pull or tug on the pull cord 48 will partly turn the tube in order to permit the ring member to slide out of engagement with the detent thereby releasing the hold on spring 43. The force or power in the spring now being free, it forces the tube around and along the shaft whereby the lifting cords 34 and 35 are coiled around the shaft at the necessary speed to coil them as shown in Figures 2 and 4 thereby collapsing the tapes 8 and 9 and serially lifting the slats 7 upwardly commencing with the bottom bar 6 until all the slats have been lifted and brought together into nested position adjacent the top of the window as shown in Figure 2. The turning of the tube 15 causes the pull cord 48 to unwind adjacent its right hand fastened end as viewed in Figure 1 and to wind around the tube adjacent its left hand end a distance unwound. The pull cord is wound and unwound an equal number of coils no matter in which direction the tube is rotated.



To lower the blind, it is merely necessary to tug at the pull cord 48 in order to release the engagement between the ring member and the detent member whereby the slats will fall by gravity, the spring at the same time turning the tube around and along the shaft in the opposite direction, winding the lifting cords around the tube and winding itself up in the meantime.

By manipulating the pull cord 48, the rotation of the tube 15 can be controlled so that the blind can be raised or lowered to any desired position.

Changes in details might be made without departing from the principle or scope of the invention.

What I claim is:

1. In a Venetian blind, a plurality of spaced slats, a plurality of cords for lifting said slats and mechanism for operating said cords including a tube operatively connected to the ends of the cords, a fixed shaft mounting said tube and extending freely therethrough, said shaft having a screw-threaded end, a torsional spring encircling said shaft inside the tube and operatively connected to the shaft and tube, a cap closing one end of said tube and having a central opening with offset edges adapted to coact with the threaded end of the shaft for rotating said tube and shifting same along the shaft upon winding and unwinding of the shaft, a detent member on the shaft and held against rotation thereon, a bodily movable ring member carried by the tube at its other end, integral lugs on the ring member adapted to engage the detent member for releasably holding the spring against movement and a pull cord connected to the tube for releasing the engagement between the lugs and detent member.

2. In a Venetian blind, a plurality of spaced slats, a plurality of cords for lifting said slats and mechanism for operating said cords including a tube operatively connected to the ends of the cords, an annular member fixed inside said tube intermediate its ends and having a central opening, a fixed shaft mounting said tube and extending freely therethrough and through said fixed annular member, said shaft having a screw-threaded end, a torsional shaft encircling said shaft inside the tube and having one end anchored in said shaft and its other end anchored in said annular member, a cap closing one end of said tube and having a central opening with offset edges adapted to coact with the threaded end of the shaft for rotating said tube and shifting same along the shaft upon winding and unwinding of the shaft, a detent member on the shaft and held against rotation thereon, a bodily movable ring member carried by the tube at its other end, integral lugs on the ring member adapted to engage the detent member for releasably holding the spring against movement and a pull cord connected to the tube at both ends for releasing the engagement between the lugs and detent member, said pull cord encircling said tube in coiled formation whereby an equal number of coils is wound and unwound from the tube upon movement of the tube.

3. A roller unit for use with Venetian blinds comprising a flat supporting bar, upstanding brackets at the ends of said bar, a shaft extending between and fixedly supported by said brackets, said shaft having a screw-threaded end, a tubular member rotatably and shiftably supported by said shaft between said brackets, said tubular member being shorter than said shaft, a cap closing one end of said tubular member and

having a central opening with offset edges adapted to coact with said screw-threaded end, an annular member fixed in said tubular member intermediate its ends and having a central opening for passage of the shaft, a torsional spring encircling said shaft and having one end anchored therein and its other end anchored in said annular member, a head member fitted in the other end of the tubular member, a detent member on said shaft adjacent said head member, a bodily movable ring member carried by said head member and lugs on the ring member



adapted to engage said detent member for controlling the action of said spring.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,756,680 | Dodge | Apr. 29, 1930 |
| 2,029,143 | Wicks | Jan. 28, 1936 |