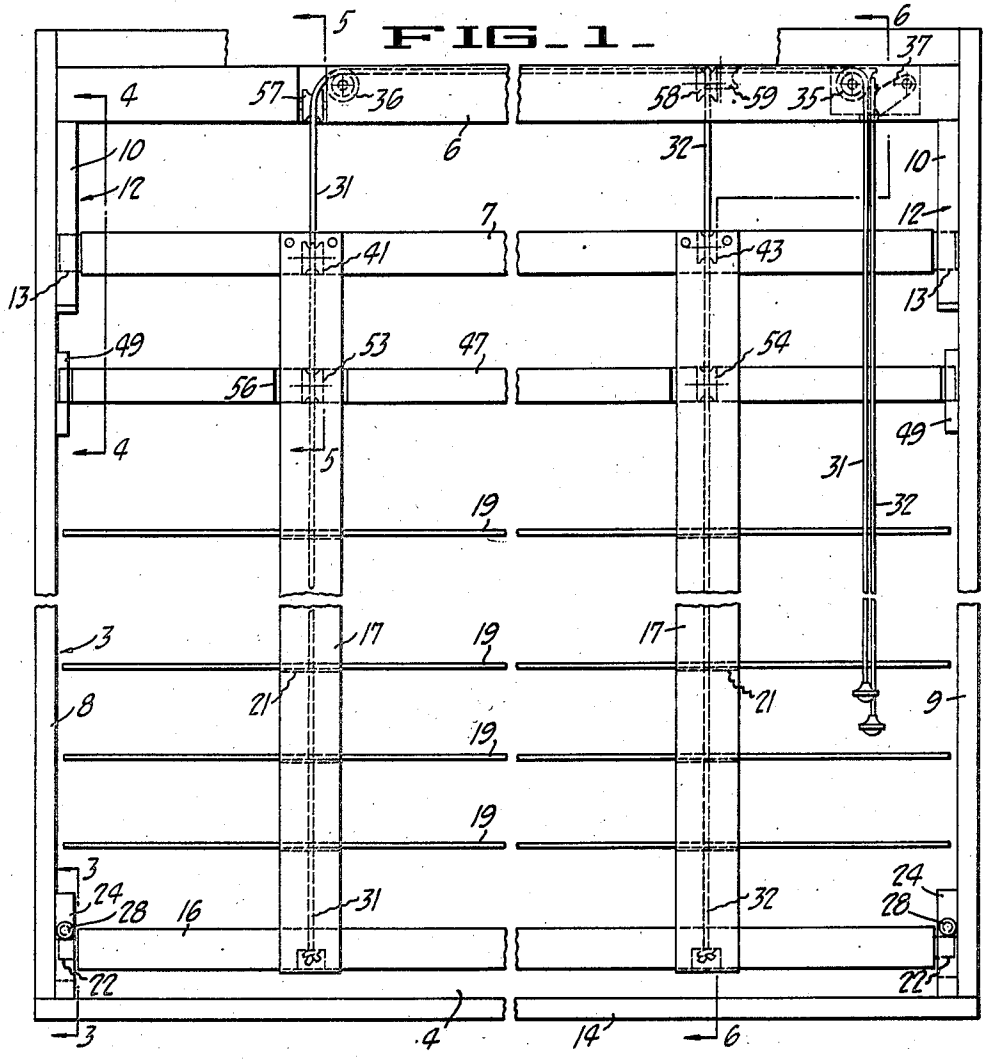
Dec. 7, 1943. C. H. WOOD 2,335,892

VENETIAN BLIND

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FIG_1_



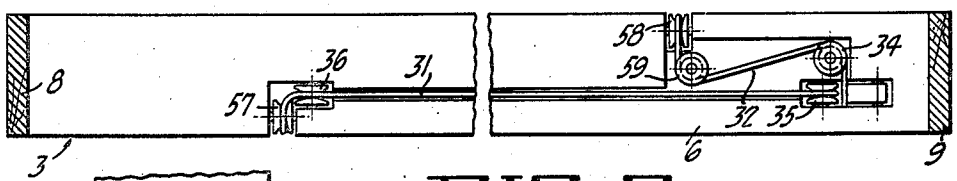


FIG_2_

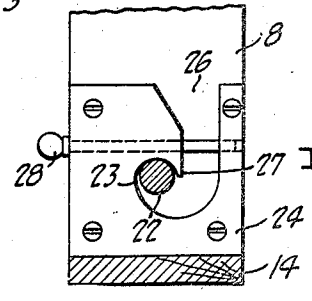


FIG_3_

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VENETIAN BLIND

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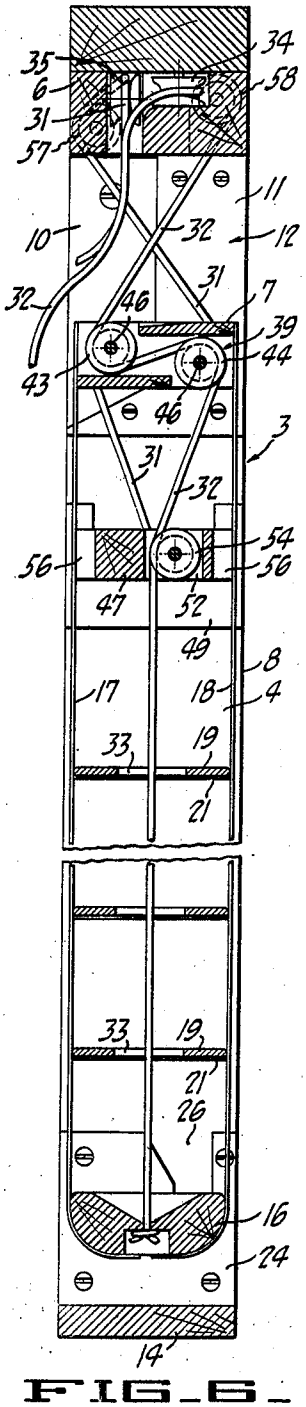


FIG_6_

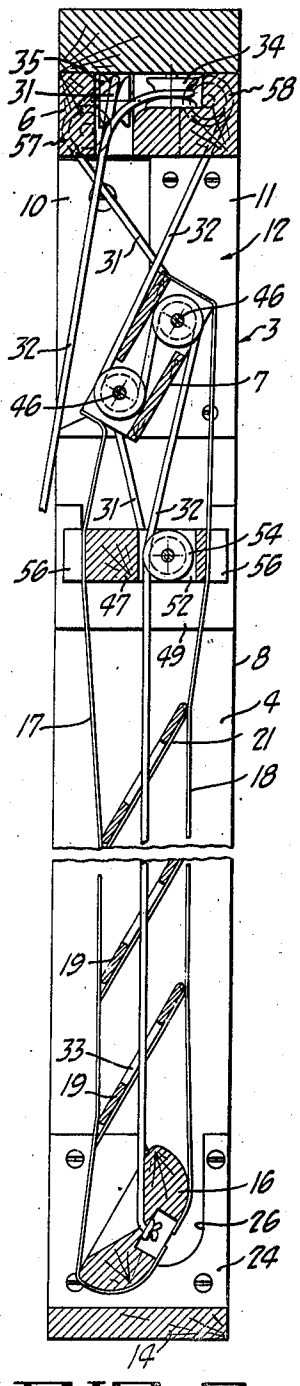


FIG_7_

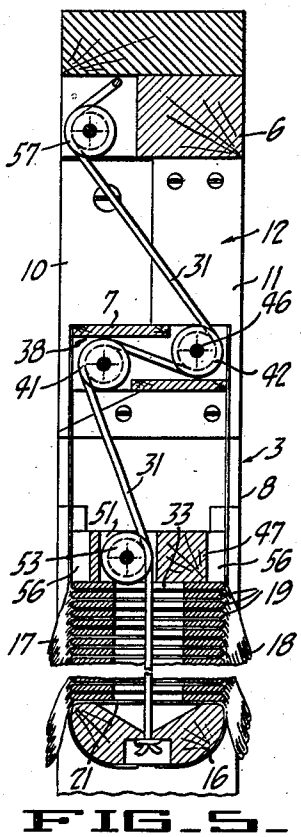


FIG_5_

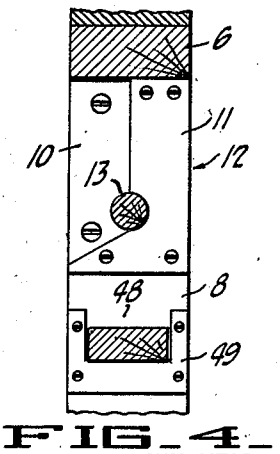


FIG_4_

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Patented Dec. 7, 1943 2,335,892

UNITED STATES PATENT OFFICE

2,335,892

VENETIAN BLIND

Charles H. Wood, Oakland, Calif.

Application July 28, 1942, Serial No. 452,657

4 Claims. (Cl. 160—168)

The invention relates to closures for windows and other openings of the type comprising a series of tiltable horizontal slats and commonly referred to as Venetian blinds or shades.

An object of the invention is to provide a blind of the character described in which the operating mechanism for tilting the slats as well as that for raising or lowering the blind, is practically entirely concealed from view.

Another object of the invention is to provide a blind of the character described in which the operating mechanism of the blind and mounting means therefor are so formed and arranged that practically all of the parts thereof can be made of wood or other material in place of metal without reducing the efficiency of operation of the blind or decreasing the facility with which the blind may be mounted in position.

A further object of the invention is to provide a blind of the character described in which the possibility of the slat-tilting mechanism becoming out of order due to rough or careless operation of the control members, will be reduced to a minimum.

A still further object of the invention is to provide a blind with the above advantages in which both the raising and lowering of the shade and the tilting of the slats may be effected by the same control members, instead of as in the conventional Venetian blind, a separate control means is required for each of said operations.

The invention possesses other objects and features of advantage, some of which with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

Figure 1 is a front view of the shade of my invention operatively mounted in a frame opening, parts being removed to reduce the side of the figure.

Figure 2 is a top plan view of the shade.

Figure 3 is a fragmentary detail sectional view of the bottom retaining bracket of the shade mounting, the plane of the section being indicated by the line 3—3 of Figure 1.

Figure 4 is a view corresponding to Figure 3 but showing the upper mounting brackets, the plane of the section being indicated by the line 4—4 of Figure 1.

Figure 5 is a vertical longitudinal sectional view taken on the line 5—5 of Figure 1 showing the shade in raised position.

Figures 6 and 7 are views taken on the line 6—6 of Figure 1, showing the shade in extended or lowered position, with the slats in horizontal and tilted positions respectively.

In the drawings I have shown the blind as of the type disclosed in Patent No. 2,181,412 previously granted to me. This type of blind differs in an important respect from the conventional type in that instead of having one set of control cords or other means for tilting the slats of the blind and another and independent set of cords or other means for raising and lowering the slats, the mechanism for effecting such operations is such that both the tilting of the slats and the raising or lowering thereof may be accomplished by one and the same set of control cords or means.

As illustrated, the blind 2 is mounted in a frame 3 defining an opening 4 of a window or the like. At the top of the frame is provided a head member or rail 6 which is firmly fixed in position and from which is suspended the movable parts of the blind. Immediately under the head rail is positioned what is usually termed a tilt rail 7, which extends horizontally between the side members 8 and 9 of the frame and is mounted for rotation in bearing blocks 12 which are secured to the side members. The blocks 12 may be formed of wood and the shaft portions 13 of the rail, which engage in the blocks may be likewise formed of wood as is preferably the rail and the head member 6.

In order to facilitate the mounting or removal of the blocks and of the shafts therein, the blocks as will be clear from Figure 4, are split into sections 10 and 11 along a vertical line intersecting the center of the bearing, and desirably the abutting edges of the sections below the bearing are on a tangent extending downwardly and forwardly to the front side of the blind. With the blocks formed in this manner the shafts of the rail 7 may be readily mounted in position by first securing the section 11 in place and then inserting the shafts and then placing and securing the section 10 in position. To release the shafts, it is merely necessary to remove the section 10. This arrangement as will be clear, readily permits the removal or replacement of the tilt rail and the structure supported thereby. An application, Serial No. 502,233, filed September 13, 1943, for Letters Patent on the foregoing subject matter is now pending.

Arranged for normal positioning in the frame

opening adjacent the body member 14 thereof is a lower tilt rail 16, which is connected to the upper tilt rail 7 by means of tapes 17 and 18 at the opposite sides of the blind. The tapes are preferably fixedly secured to the upper rail but may if desired be loosely secured to the lower rail so as to simply provide a cradle therefor. Positioned between the rails are a plurality of slats 19 which are supported upon cross strips 21 secured to and extending between the tapes. By reason of the support and attachment provided by the tapes and cross strips the lower rail and the slats will partake of the rotative movement of the upper rail 7.

As will be clear from Figure 3, the lower tilt rail 16 is removably secured in position at the bottom of the opening by means of shafts 22 desirably formed integral with the rail which is preferably of wood, and arranged to engage loosely in seats 23 provided in bearing blocks 24 likewise preferably formed of wood and secured to the side members of the frame at their lower end. The seats are provided in offset ends of slots 26 through which the shafts 22 may be inserted into or removed from operative retention in the blocks. The seats 23 are in such relation to the tilt rail in the bottom position thereof that the shafts 22 will engage in the seats 23, the tapes affording sufficient give to permit the shafts to be slipped under the overhanging portion 27 of the seat when it is desired to insert the shaft into or remove same from the seat. Preferably, the seat portion of the slot is located toward the inner or rear side of the blind so that when a draft is impressed on the outer side of the window, there will be no danger of the shafts 22 becoming released from engagement in the seats. If desired, a pin 28 may be removably positioned across the slot so as to prevent accidental release of the shafts.

As a means of raising and lowering the bottom rail and the slats, there are provided cords 31 and 32 which extend through slots 33 provided in the slats adjacent the tapes and are secured at their lower ends to the rail 16 at the axis of rotation thereof. The upper portion of the cords extend through the upper rail 7 and the head rail 6, the cord 32 which is at the right in Figure 1, passing over a guide pulley 34 and thence vertically over the front of the slats, and the cord 31 which is at the left in Figure 1, passing over a pulley 36 as well as pulley 35 and thence alongside the cord 32 at the front of the slats. As will be clear, by pulling simultaneously and equally on both cords, the lower rail and slats may be readily elevated and upon release of the cords the slats and rail will, due to their own weight be lowered to the extent desired, it being understood of course that during the raising and lowering operation, the shafts 22 are released from the retaining seats 23. A pawl 37 is preferably provided in association with the pulley 34 for releasably locking the cord against the pulley so as to hold the slats and rail 16 at any desired elevation.

The means for rotating or tilting the rail 7 embodies the same general principles as disclosed in my patent aforesaid. However, the arrangement of the parts of the operating mechanism is materially different and provides a much easier and more effective operation and co-action with the raising and lowering operation. As will be clear from the drawings, there is provided on the tilt rail 7 at the points where the cords 31 and 32 extend therethrough, pairs 38 and 39 of pulleys arranged for guiding the cords 31 and 32 respectively through the rail in such manner that upon pulling one or the other of the cords, the rail will be caused to tilt or rotate in one direction or another. The pair 38 associated with the cord 31 comprises pulleys 41 and 42, while the pair 39 associated with the cord 32 comprises pulleys 43 and 44. The pulleys in each pair are mounted at opposite sides of the axis of rotation of the rail and preferably the spacing between the associated pulleys is as large as the width of the rail permits without causing the cord portions engaged with the pulleys to protrude from the sides of the rail. The rail is slotted for the reception of the pulleys and the latter are preferably formed of wood, as may also be the case for all the pulleys on the blind. Since the pulleys are thus arranged to be entirely contained or concealed within the confines of the rail, it will be evident that the use of brackets for mounting the pulleys are not required, and the latter may be amply supported for rotation by means of short pins 46 extending across the slots. The pins 46 and the screws for securing the various bracket blocks in position, are practically the only parts which should be made of metal, and this feature of my device is important when the amount of metal permitted in the construction of the shade is limited for one reason or another.

As will be clear from Figure 5, the cord 31 in passing upwardly through the rail, extends over the pulley 41, then under the pulley 42, and then up to the head rail. In the case of cord 32, the latter passes first over the pulley 44, then under pulley 43, and then to the head rail. The pulleys 42 and 44 are near the same side of the rail, while the pulleys 41 and 43 are adjacent the other side. In both instances, the cords enter and leave the rail 7 at the portions of the pulleys adjacent the sides of the rail, and since the pulleys of each pair are spaced from each other not only at considerable distance apart but at opposite sides of the axis of rotation of the rail, the rail will be caused to readily tilt in one direction or another by a relatively light downward pull on the appropriate cord at the control portions depending loosely from the head member at the right in Figure 1. Preferably, the pulleys are so mounted that when the rail is horizontal or flat, as in Figures 5 and 6, the center of pulleys 41 and 43 will be above the centers of pulleys 42 and 44 so as to further facilitate the tilting operation. It should be noted that while the tapes are secured directly to the rail 7, owing to the fact that all four of the pulleys are located inwardly of the sides of the rail, the full tilting of the rail in both directions will be permitted without requiring the slotting or other material mutilation of the tapes to accommodate cords in the various tilted positions of the rail.

Means are provided for keeping the cords in centralized position in the slats and at the same time guide the cords smoothly between the rails 7 and the slats. Such means as here shown comprises a horizontal bar 47 positioned between the upper slat and rail 7 and having its ends removably seated in recesses 48 formed in wooden brackets 49 secured to the side members of the frame. In the bar are formed openings 51 and 52 in which are mounted pulleys 53 and 54 arranged for engagement with the cords 31 and 32 respectively, which extend through the openings. The pulleys are positioned so that when the cords are operatively engaged therewith the portion of each of the cords below the bar will be held

and guided to extend centrally through the slats and there will be no danger of the cords or slats interfering with each other. At the same time the portions of the cords above the bar will be better maintained in taut position and smoother movement of the cords to and from the rail will be provided. Preferably the sides of the bar are formed with recesses **56** which serve to accommodate the tapes and retain them in proper position.

In order to facilitate the movement of the cords between the rail **7** and the head member, pulleys **57** and **58** are mounted on the member in alignment with and arranged for rotation on axes parallel to the pulleys in the rail, as viewed in Figure 1. The cord **31** passes from the pulley **57** to pulley **36** and **35**, while cord **32** passes from pulley **58** to pulley **34** after being guided around a pulley **59**.

I claim:

1. In a blind of the character described, a head member, an upper tilt rail mounted below said head rail for rotation about a horizontal axis, a lower tilt rail, slats between said tilt rails connected thereto for rotative movement therewith, separate cords each secured at one end to said lower rail and extending through said slats and upper rail, pairs of guide pulleys mounted in said upper rail for engagement with said cords, the pulleys in each of said pairs being positioned at opposite sides of the axis of rotation of said upper rail, the cord on one pair of the pulleys being extended thereover reversely of the cord over the other pair, and means on said head member for guiding said cords from said pulleys.

2. In a blind of the character described, a head member, an upper tilt rail mounted under said member for rotation about a horizontal axis, a lower tilt rail, slats between said rails connected thereto for rotative movement therewith, separate cords each having an end portion secured to said lower rail at horizontally spaced points and extending through said slats and the upper rail and member, guide means for said cords in the upper rail comprising cord engaging portions positioning said cords adjacent the opposite sides of the rail, and means fixedly positioned between the upper rail and slats for holding the cords centrally of the slats, said means providing a stop to limit the elevation of slats.

3. In a blind of the character described, a head member, an upper tilt rail mounted under said member for rotation about a horizontal axis, a lower tilt rail, slats between said rails connected thereto for rotative movement therewith, separate cords each secured at one end portion to said lower rail and extending through said slats and upper rail and member, pairs of guide pulleys mounted in said upper rail, the pulleys in each pair being positioned at opposite sides of the axis of rotation of said upper rail and arranged to hold the engaged cord portions adjacent the opposite sides of the rail, the cord on one pair of pulleys being extended thereover reversely of the cord extended over the other pair, means on the head member for guiding thereover the cord portions thereon comprising pulleys mounted in said member for rotation about an axis parallel to the axis of rotation of the tilt rail and arranged for guiding the cords to and from said rail, and a pulley mounted in said member for rotation about a horizontal axis at right angles to the axis of rotation of the other said pulleys on the member and over which both said cords are engaged.

4. In a blind of the character described, a head member, an upper tilt rail mounted under said member for rotation about a horizontal axis, a lower tilt rail, slats between said rails connected thereto for rotative movement therewith, separate cords each secured at one end portion to said lower rail and extending through said slats and upper rail and member, pairs of guide pulleys mounted in said upper rail, the pulleys in each pair being positioned at opposite sides of the axis of rotation of said upper rail and arranged to hold the engaged cord portions adjacent the opposite sides of the rail, the cord on one pair of pulleys being extended thereover reversely of the cord extended over the other pair, means on the head member for guiding thereover the cord portions thereon comprising pulleys mounted in said member for rotation about an axis parallel to the axis of rotation of the tilt rail and arranged for guiding the cords to and from said rail, and a pulley mounted in said member for rotation about a horizontal axis at right angles to the axis of rotation of the other said pulleys on the member and over which both said cords are engaged, and cord guide means fixedly positioned between the upper rail and slats for guiding the cords centrally through said slats from the pulleys in the upper tilt bar, said last mentioned means providing a stop to limit the elevation of the slats.

CHARLES H. WOOD.