Jan. 11, 1938. J. E. JOHNSON 2,105,082

VENETIAN BLIND

Filed Feb. 9, 1935

FIG. 1a

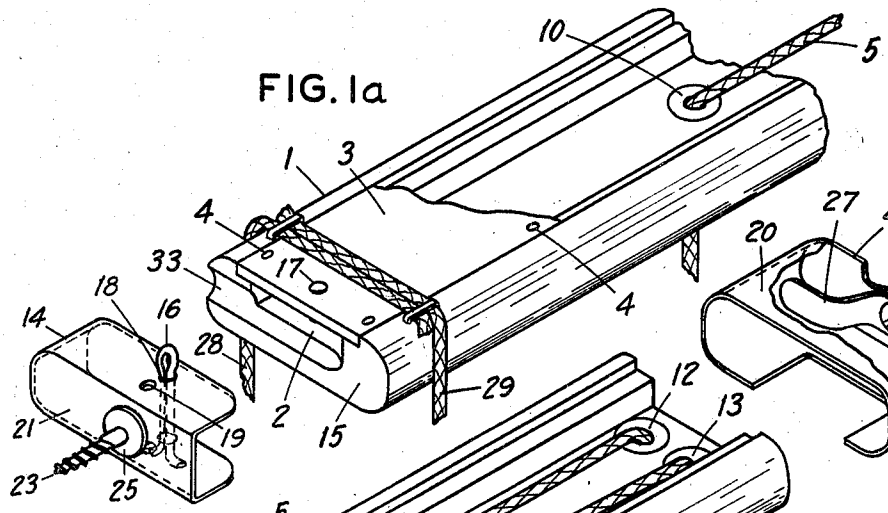



FIG. 2




FIG. 3

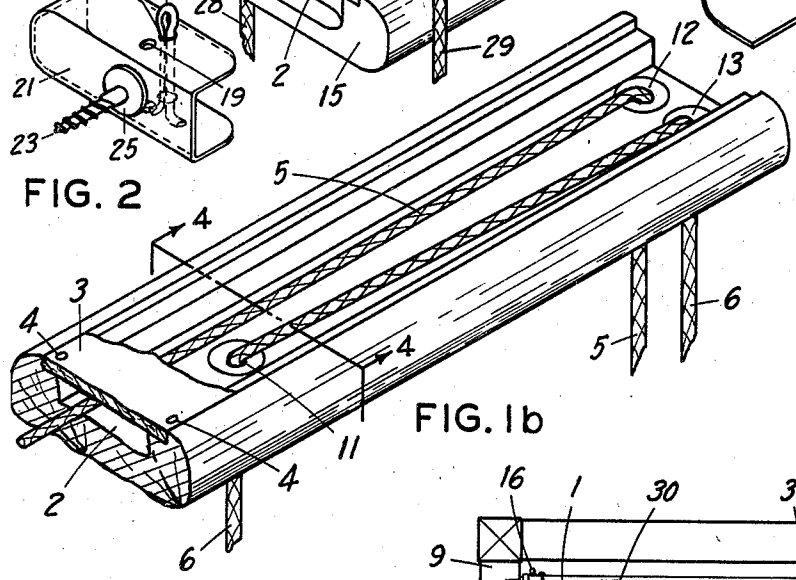



FIG. 1b

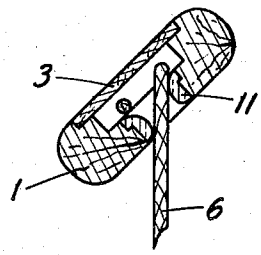



FIG. 4

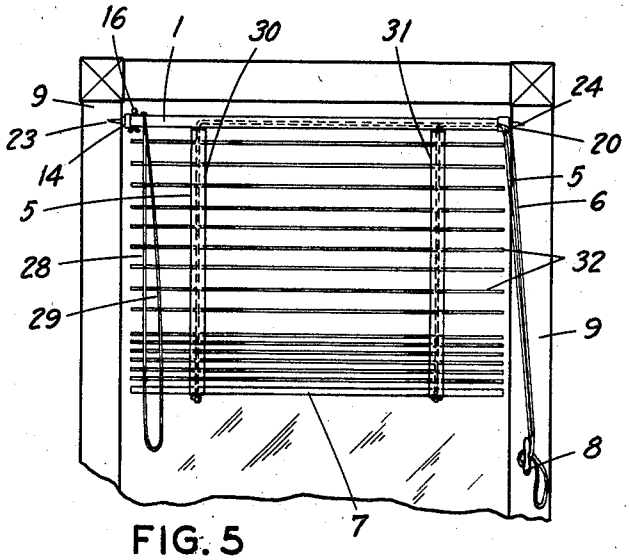



FIG. 5

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## VENETIAN BLIND

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11 Claims. (Cl. 156—17)

The present invention relates to Venetian blinds, and particularly to that type of blind in which no head rail is employed.

Venetian blinds are in general well known in the art. They are generally provided with a tilt rail from which are suspended on ladder tapes a series of slats. Means are also provided for raising and lowering the slats, usually by means of two or more cords passing through them which makes it possible to gather the slats together in a stack near the top of the window. In addition means are also provided for tilting the slats so that they assume a contiguous relation to each other thereby substantially preventing the passage of light between the slats.

In some types of Venetian blinds the raising and lowering cords are passed through a head rail which is rigidly mounted at the top of the window casing and from which the tilt rail and slats are supported. These types are usually expensive to manufacture and frequently leave an objectionable light transmitting space between the head rail and the tilt rail when the blind is closed.

Other types of Venetian blinds do not use a head rail, but have the operating cords passed through and over the tilt rail if solid, or into and through the rail if hollow. The tilt rail itself is supported by some type of brackets mounted on the window frame. This type often is expensive to manufacture or difficult to install. In many cases, too, the operating cords do not stay in place in the pulley grooves.

According to the present invention an improved tilt rail cooperating with the blind operating cords and improved brackets for mounting the tilt rail between the sides of a window casing are provided.

In the accompanying drawing Fig. 1*a* shows the left end and Fig. 1*b* the right end of the tilt rail, the middle portion of which is broken away and not shown in the drawing; Figs. 2 and 3 show the left and right mounting brackets respectively; Fig. 4 shows a section through the tilt rail along the line 4—4 in Fig. 1*b* and Fig. 5 illustrates the manner in which the entire blind is mounted between the sides of a window frame.

As will be seen from Figs. 1*a* and 1*b*, my tilt rail is formed of an oval-shaped wooden bar 1, in one face of which is cut a longitudinal groove 2. This groove is closed by a cover plate 3, which is made to fit flush with the external surface of the bar 1 as shown, and is secured by means of small nails 4. When the assembled tilt rail is suitably finished, the cover plate is practically invisible.

The slats of the blind are raised and lowered by means of cords 5 and 6, which, as can be seen in Fig. 5, have one end knotted below the bottom slat 7, and pass upwards through all the slats into the tilt rail, out at one end of the latter and preferably are joined together in a single cord which may be secured to a cleat 8 on the window frame 9. For convenience in description it will be assumed that there are two individual cords.

After passing through the slats, the cords 5 and 6 pass through one side of the bar 1 through apertures 10 and 11 therein, which extend through to the groove 2. The cords pass along the groove to two further apertures 12 and 13 arranged side by side. Through the latter the cords pass out of the tilt rail so that they can be gripped by the operator.

Each of the apertures 10, 11, 12 and 13 in the bar 1 are provided with smooth hard bearing surfaces which are formed by inserts in the wood. They may be made of any suitable material, such as glass, agate or metal, or they may be moulded from a plastic material such as a phenolic condensation product.

The inserts are shaped to flare toward their outer diameter so that their inside diameter is larger at the groove 2 than at the external surface of the bar 1. A suitable shape for the inserts is clearly shown in Fig. 4. By this means the cords 5 and 6 can easily make the bend from the vertical to the horizontal, which is the position of the tilt rail, in whatever angular position the latter may be tilted, thereby reducing friction to a minimum and preventing undue wear of the cords.

The mounting brackets for the tilt rail, which supports the whole blind, are shown in Figs. 2 and 3 positioned each adjacent its corresponding end of the tilt rail. It will be understood of course that it is immaterial whether the bracket in Fig. 2 or that in Fig. 3 forms the left or the right bracket, but it is necessary that each bracket be fitted to the proper end of the tilt rail as will presently appear.

As will be noted from the drawing both brackets are socket-like or cup-like members which are shaped to correspond to the shape of the bar 1 and to fit closely over the ends of the same. The brackets may be made of thin sheet metal, moulded phenolic condensation material or the like. The member 14, Fig. 2, is not completely closed, but is open at one side so that the end

15 of the bar 1 may be slid into it. The tilt rail is held in place by the cotter pin 16 which passes through holes 18 in the member 14 and corresponding holes 17 in the bar 1 and cover plate 3. In order to provide adjustment for different window frame widths, which is of value to reduce the number of sizes of blinds which must be carried in stock, a second set of holes 18 is provided in the bracket 14.

The supporting bracket for the opposite end of the tilt rail is shown in Fig. 3. This bracket, consisting of member 20 is substantially closed except at one end which fits over the corresponding end of the tilt rail. One side of the member 20 has, however, a rectangular cut out portion as shown, permitting the cords 5 and 6 to pass directly downwards without coming in contact with the bracket.

Both brackets 14 and 20 have a single hole drilled in the center of their bases 21 and 22 respectively through which pass the wood screws 23 and 24 respectively. The latter then pass through thin washers 25 and 26 respectively and are screwed directly into opposite sides of the window casing as shown in Fig. 5. It will also be noted that the tilt rail bar 1 is provided with a shallow groove 33 at the end 15 in order to clear the head of screw 23.

In side member 20 near the base a flat leaf spring 27 is mounted. This is held in place by the screw 24. The tilt rail, after the brackets have been mounted on the window frame, is thrust by one end into bracket 20, and its opposite end 15 is slid into bracket 14 and held by cotter pin 16. It is thus securely held in position. The spring acts against the thicker portions of the tilt rail and presses it against the cotter pin which presses the member 14 against the washer 25, and the latter against the window frame. In this manner sufficient friction is readily provided to hold the tilt rail in any desired angular position when turned by the cords 28, 29 fastened to member 1 to open and close the blind.

The spring 27 in addition provides a considerable degree of adjustment over and above that provided by the two sets of holes 18 and 19 in bracket 14. In place of a leaf spring as shown in Fig. 3, I may use two or more spiral springs inserted in shallow holes in the thick portions of the end of member 1 and pressing against the base of bracket 20.

It should be noted that the wood screws 23 and 24 must not be screwed up tight, but must allow sufficient looseness to permit the brackets 14 and 20 to rotate easily. The required friction is provided by the pressure of the spring 27 as above described.

As has previously been mentioned, Fig. 5 shows an assembly of the complete blind mounted between the sides of a window frame by means of the brackets 14 and 20 screwed into the frame and fitted over the ends of the tilt rail 1. To the latter are secured the web ladder tapes 30 and 31 which support the series of slats 32, the bottom slat 7 being customarily made somewhat heavier than the others. The tilting cords 28 and 29 for opening and closing the blind are fastened to one end of the tilt rail 1 while the raising and lowering cords 5 and 6 pass through the same and out at the right hand end and may be held in any desired position by means of cleat 8. The mounting brackets neatly cover the ends of the tilt rail so that the whole assembly has a very neat appearance.

Having now described my invention, I claim:

1. In a Venetian blind the combination of a tilt rail and means for rotatably supporting the same between the sides of a window casing comprising cup-like metallic members shaped to fit closely over the ends of said tilt rail and substantially cover its ends and means for rotatably mounting said members one to each side of the window casing including a screw adapted to pass through the center of the end of each member and to be screwed into the window casing.

2. In a Venetian blind the combination of a tilt rail and means for supporting the same including a pair of socket-like members adapted to fit closely one over each end of said tilt rail each having an aperture in the center of its extreme end and a single screw for each of said members adapted to pass through said aperture and into the respective side of a window casing, whereby the socket members and tilt rail are rotatably supported between the sides of the window casing.

3. In a Venetian blind the combination of a tilt rail and means for supporting the same including a pair of socket-like members adapted to fit closely one over each end of said tilt rail each having an aperture in the center of its extreme end and a single screw for each of said members adapted to pass through said aperture and into the respective side of a window casing and adjustable means for holding said tilt rail in said socket-like members.

4. In a Venetian blind the combination of a tilt rail and means for supporting the same including a pair of socket-like members adapted to fit closely one over each end of said tilt rail each having an aperture in the center of its extreme end, a pair of washers, a single screw for each of said members adapted to pass through said aperture, through one of said washers and into the respective side of a window casing and spring means contained within one of said members and cooperating with said tilt rail adapted to press said members against said washers respectively and to press the latter against the window casing.

5. In a Venetian blind the combination of a tilt rail and means for supporting the same including a pair of socket-like members adapted to fit closely one over each end of said tilt rail, means for rotatably mounting said members on opposite sides of a window casing and means for holding said tilt rail in said socket members including spring means adapted to exert a pressure between one of said members and the corresponding end of said tilt rail.

6. In a Venetian blind the combination of a tilt rail and means for supporting the whole blind comprising a pair of socket-like supporting brackets rotatably secured one to each side of a window casing and adapted to receive and hold the ends of said tilt rail and shaped to fit closely over them, one of said members being substantially entirely closed whereby the corresponding end of said tilt rail can be thrust into said member, and the other member having a cut-away portion whereby the corresponding end of said tilt rail can be slid into said latter member and means in the latter cooperating with said tilt rail for holding it in place in said second mentioned supporting member.

7. In combination with a Venetian blind having a tilt rail, means for supporting the whole blind comprising a pair of socket-like supporting brackets rotatably secured one to each side of a window casing and adapted to receive and hold the ends of said tilt rail.

8. In combination with a Venetian blind having a tilt rail, means for supporting the whole

blind comprising a pair of cup-like supporting brackets rotatably secured one to each side of a window casing and adapted to receive and hold the ends of said tilt rail and shaped to fit closely over and substantially cover the said ends.

9. In a Venetian blind having a tilt rail, means for supporting the whole blind comprising a pair of socket-like supporting brackets rotatably secured one to each side of a window casing and adapted to receive and hold the ends of said tilt rail and substantially cover said ends, a longitudinal groove in the top face of said tilt rail as viewed with the blind open and apertures in the lower face of said tilt rail through which slat raising and lowering cords can be passed into said groove and out of said groove near one end of the rail.

10. In a Venetian blind having a tilt rail, means for supporting the whole blind comprising a pair of socket-like supporting brackets rotatably secured one to each side of a window casing and adapted to receive and hold the ends of said tilt rail and substantially cover said ends, a longitudinal groove in the top face of said tilt rail as viewed with the blind open and apertures in the lower face of said tilt rail through which slat raising and lowering cords can be passed into said groove and out of said groove near one end of the rail and a cover plate for said groove fitting flush with the external top face of said rail.

11. In a Venetian blind having a tilt rail, means for supporting the whole blind comprising a pair of socket-like supporting brackets rotatably secured one to each side of a window casing and adapted to receive and hold the ends of said tilt rail and substantially cover said ends, a longitudinal groove in the top face of said tilt rail as viewed with the blind open and apertures in the lower face of said tilt rail through which slat raising and lowering cords can be passed into said groove and out of said groove near one end of said rail, said socket-like supporting brackets being shaped to fit closely over the ends of the tilt rail and the bracket fitting over the end of the tilt rail adjacent the exit apertures for said cords having a cut-out portion through which said cords are adapted to pass.

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