Feb. 28, 1939. R. K. HOLLINGSWORTH 2,148,812

VENETIAN BLIND

Filed March 26, 1938 2 Sheets-Sheet 1

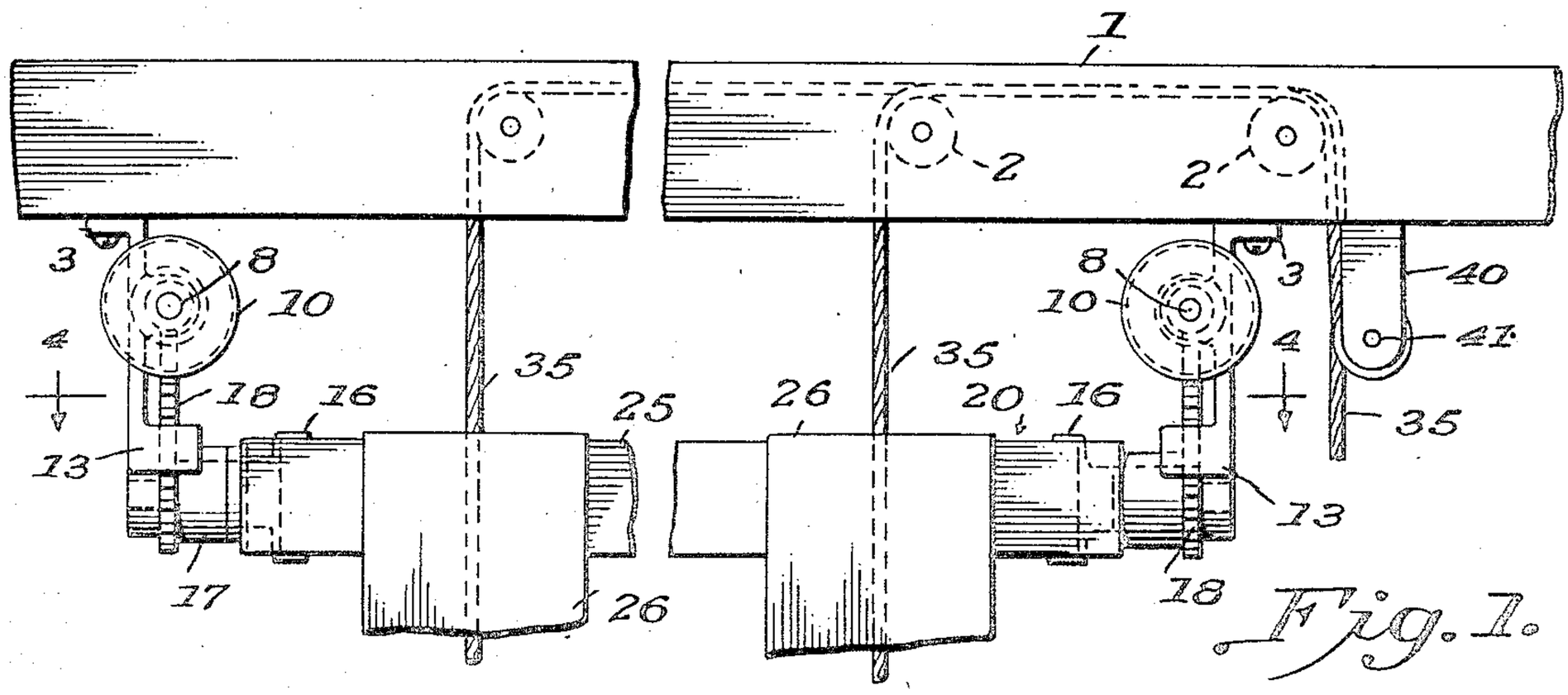

Fig. 1.

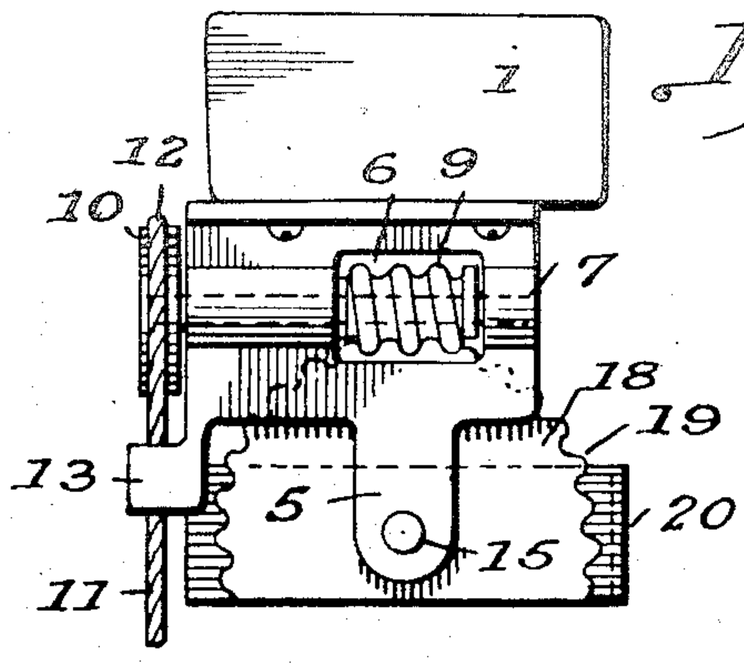

Fig. 2.

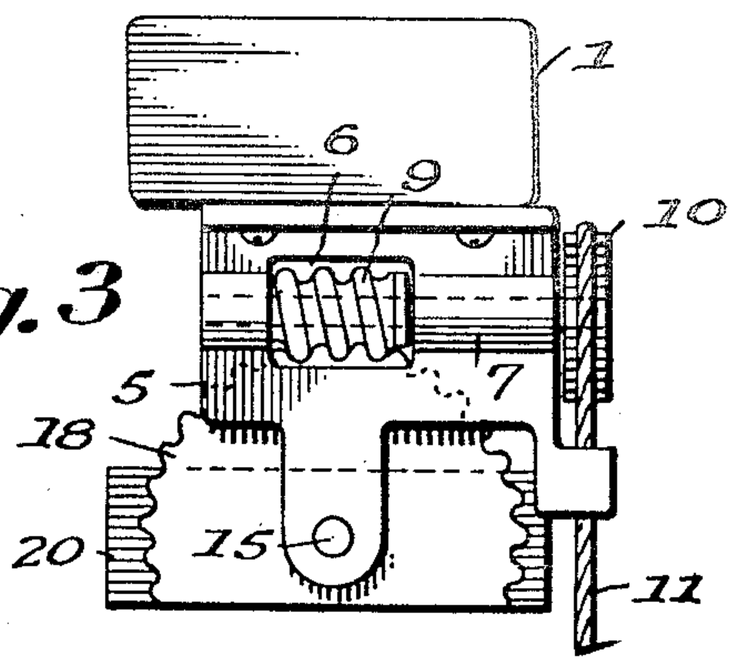

Fig. 3

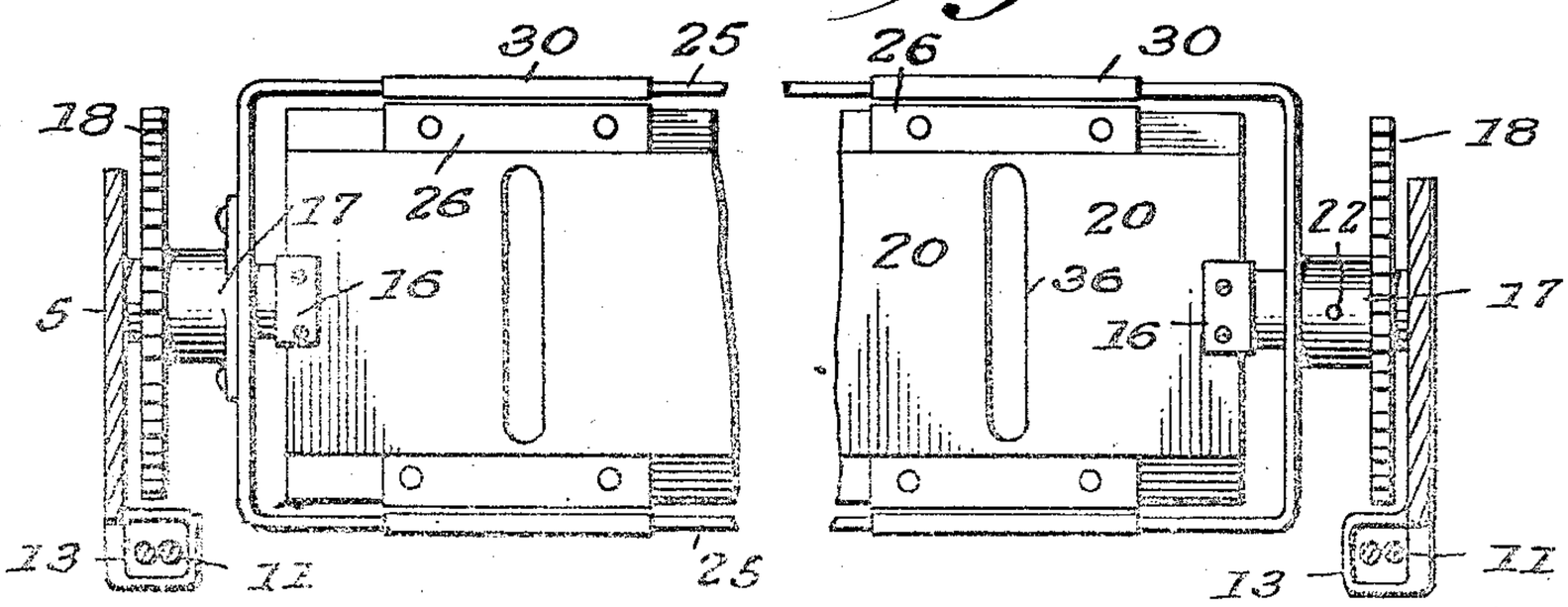

Fig. 4.

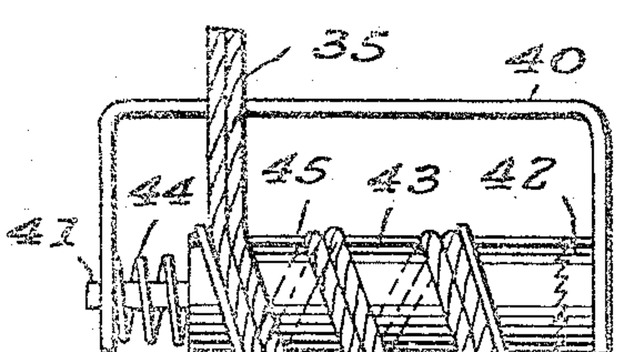

Fig. 5.

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Fig. 6.

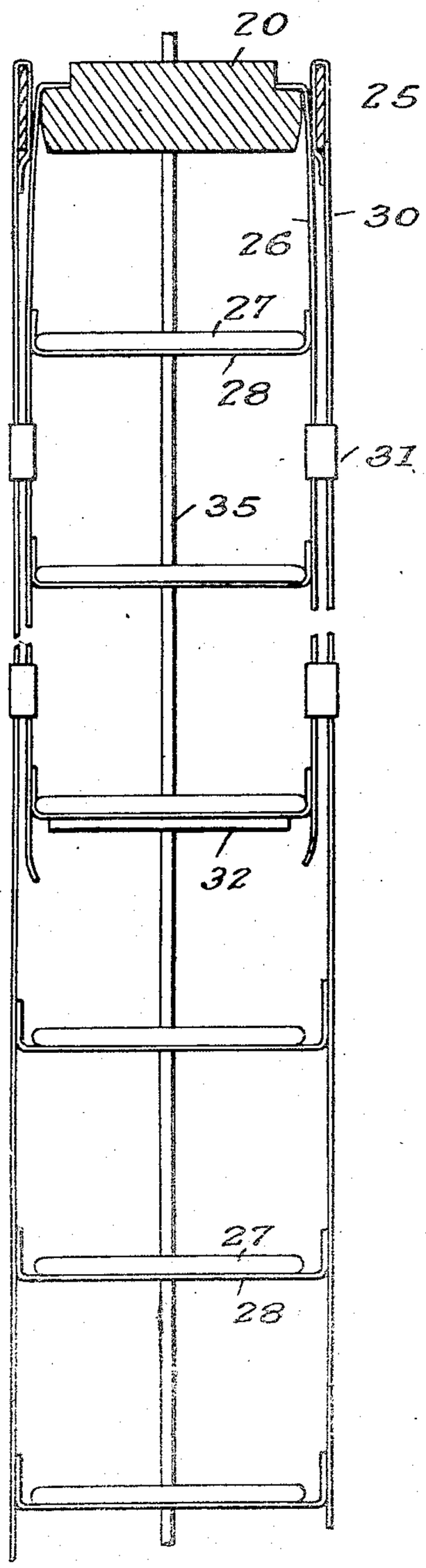


Fig. 7.

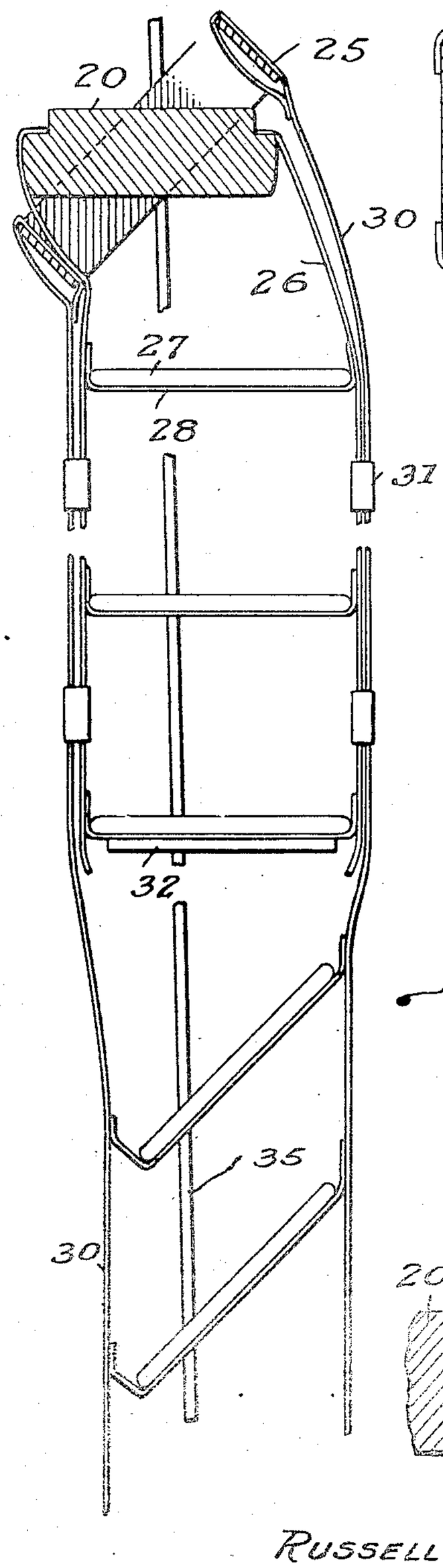


Fig. 10.

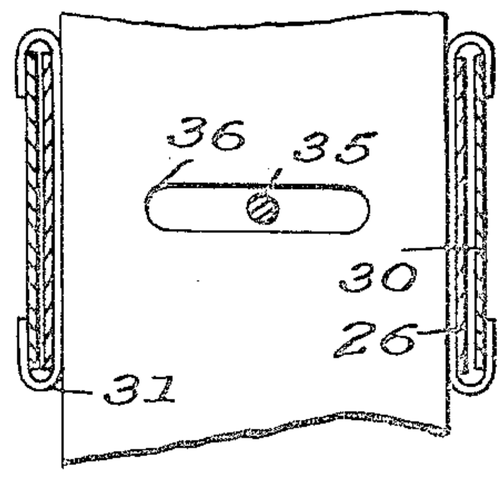


Fig. 9.

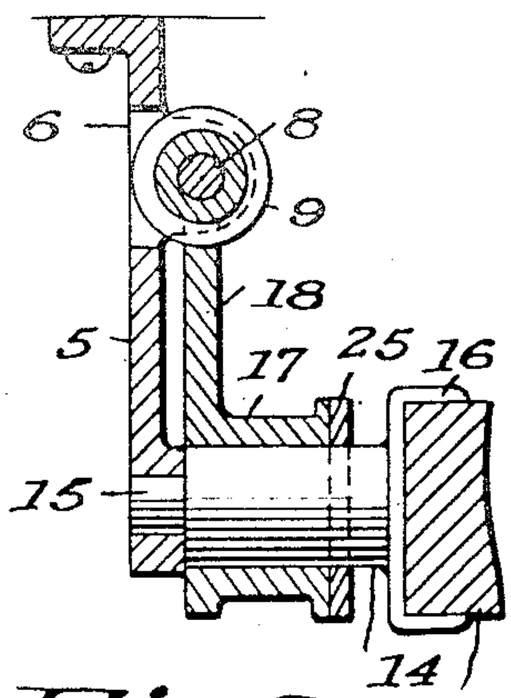
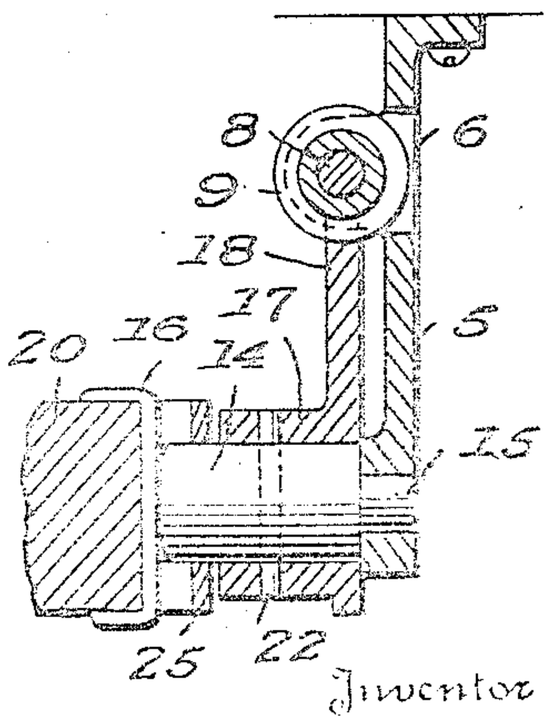


Fig. 8.



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2,148,812

VENETIAN BLIND

Russell K. Hollingsworth, Washington, D. C.

Application March 26, 1938, Serial No. 198,310

8 Claims. (Cl. 156—17)

This invention relates to Venetian blinds and more particularly to a blind of this general type wherein different portions of the slats may be individually adjusted in addition to operating all of the slats simultaneously.

An object of the invention is to provide a Venetian blind with a tilting bar mechanism for control over the blind as a whole and to have an auxiliary tilting mechanism for regulating a portion of the blind slats independently of the main tilting mechanism.

Another object of the invention is to simplify the conventional tilting mechanism now used on blinds of this type to insure that the tilting action of the slats is positive in operation, rugged in construction and readily installable.

In the drawings,

Fig. 1 is a side elevation of the blind supporting bar;

Fig. 2 is a side elevation of the main tilting bar mechanism;

Fig. 3 is a side elevation of the auxiliary tilting bar mechanism;

Fig. 4 is a top plan view of the tilting bars taken on line 4—4 of Fig. 1;

Fig. 5 is a side elevation of a cord lock for the raising and lowering cords;

Fig. 6 is a vertical section of the blind slats in horizontal normal position;

Fig. 7 is a similar view showing some of the blind slats in tilted position;

Fig. 8 is an enlarged detail, partially in section of the main tilting bar mechanism;

Fig. 9 is a similar view of the auxiliary tilting bar mechanism;

Fig. 10 is a top plan view of a portion of the blind slat showing the supporting tapes and tape binder clip in section.

Specifically in the drawings numeral 1 denotes a top horizontal blind supporting bar or member having the requisite number of conventional cord pulleys 2 inleted therein. The bar and pulley mechanism are secured in the top of the window opening in any desired manner.

Attached to the underside of the top supporting bar are a pair of spaced blind supporting brackets 3, with which is combined a tilting mechanism which will be hereinafter described in detail.

Figs. 2, 3, 8, and 9 are detailed illustrations of the main and auxiliary tilting bar mechanism which, as before noted, form an integral part of the supporting brackets 3. While the tilting mechanisms are substantially similar, Figs. 2 and 8 are specific to the bracket shown at the right hand side of the blind, and Figs. 3 and 9 are specific to the bracket and tilting bar mechanism shown at the left of Fig. 1.

Each of the brackets 3 comprises a depending plate 5, having a side opening 6 with integral offset horizontal bearings 7 formed therein for the reception of a rotary shaft 8 on which is fastened a worm gear 9. The outer end of the shaft 7 is provided with a drive pulley 10 over which an operating cord 11 is run in a notched periphery groove 12.

The brackets are also formed with an outwardly extending loop 13 through which the operating cords pass for the purpose of retaining the cords in position when adjusting the blind slats. Each bracket plate 5 has an axial opening 15 therein for supporting the reduced diameter of the end of oscillating bar clamping member 16. These clamps have a cylindrical portion 14, which passes axially through the sleeve 17 of tilting gear segments 18 on whose periphery are gear teeth 19 cooperating with worm gear 9.

The oppositely spaced bar clamps 16 retain therebetween a main blind tilting bar 20 and oscillating and tilting movement is given this bar through the mechanism shown at the right hand of Fig. 1 and also in Figs. 2 and 8. As will be seen, the clamping arms of 16 hold opposite sides of the bar 20 and are attached to bearing cylinder 14, which terminates in the reduced diameter axle 15 retained in the outside plate of the bracket. A pin 22 secures the cylinder bearing 14 and sleeve 17 of the right hand bracket together so that when the pulley 10 is operated movement will be given bar 20 to oscillate or tilt the same in either direction and to any degree.

The left hand clamp is of substantially the same construction as the clamp just described, although its purpose is to tilt or oscillate the auxiliary tilting bar or frame 25. As shown in Fig. 4, this auxiliary tilting bar or frame encompasses the main tilting bar 20 and is slightly spaced therefrom, and while it may be constructed of any suitable materials, a simple rectangular metal frame has been found eminently satisfactory.

The auxiliary frame 25 is riveted or otherwise secured to the cylinder portion 14 of the left hand bracket. Thus when the segmental gear plate 18 of the left hand bracket is tilted, it will move the auxiliary frame 25 without affecting the position of the main tilting bar 20.

Conventional slat supporting flexible straps 26 are secured to opposite sides of the main tilting bar 20 and have a desired number of slats 27

hung therebetween on cross straps 28, and, as is well known in the art, the upper, or if preferred, the lower may thus be tilted to obscure light and air when the tilting mechanism controlling the main tilting bar 20 is operated.

Additional flexible straps 30 are secured to opposite sides of the auxiliary tilting frame 25 and hang parallel to and preferably in overlapping relation to the main tilting straps 26. Referring to Figs. 6 and 7, it will be observed that the auxiliary slat straps 30 overlap the entire series of the slats 28 in the blind.

Depending on whether the main bar straps are intended to operate a series of the upper or lower slats, the straps 26 and 30 are loosely bound by clips 31 secured to the main straps 26. These clips are merely for the purpose of keeping the sets of straps in general alignment and, as shown in Fig. 10, they hook over but do not bind the auxiliary straps 30. It is desirable to attach a small flat weight 32 on the bottom slat of the upper series so that this series is always fully open and will not be moved when the auxiliary straps 30 are operated.

The blind illustrated in the drawings shows the main tilting bar 20 connected to the upper series of slats 28, while the auxiliary frame 25 is attached to the lower series of slats, and consequently it is possible for the user to tilt the auxiliary bar 25 to completely block off light in the lower portion of the blind, while leaving the upper portion of the blind open for light and ventilation. Such an arrangement is most desirable in physicians' offices, apartments and the like, as it provides means for ventilation, while maintaining privacy at the lower portion of the blind. This is particularly advantageous as Venetian blinds generally cover the entire window opening. Of course, when complete privacy is desired both tilting bars are operated to tilt all of the slats.

When it is desired to draw up the entire blind and collapse the slats either partially or fully, the user grasps the slat elevating cords 35, which are threaded over pulleys 2 and depend centrally through openings 36 in the series of slats. These cords are usually secured to the bottom slat or rail at the base of the blind so that the entire series may be readily elevated. Many times it is only desirable to raise a portion of the slats, but regardless, it is essential that some means be provided for holding the lifting cords 35 to maintain the adjustment.

Various and sundry devices have been heretofore proposed, such as pivoted spring pressed cams, cleats or anchoring knobs affixed on the window frame, but usually these devices are quite unsatisfactory.

The cord lock illustrated in Fig. 5 comprises a U-shaped bracket or strap member 40 fastened on the underside of the top supporting bar 21 just below the end cord pulley 2. A horizontal shaft 41 is mounted between the depending arms of the U-shaped member and is freely rotatable therein.

A toothed or notched cylindrical segment 42 surrounds one end of the shaft 41, and is secured to a depending arm of the member 40, the teeth thereof cooperating with teeth formed on the end of the freely rotatable cylinder 43 also carried on the shaft 41. Between the end of the shaft 41 and the opposite arm of the U-shaped member is a coil spring 44 urging the teeth on members 42 and 43 into engagement.

The lift cords 35 are preferably spirally arranged around the cylinder 43 in double spiral grooves 45 to insure that they have ample frictional contact with the cylinder.

Assuming that the blind is in lowered position and the user desires to elevate the slats, he first grasps the free depending ends of the cords 35 and draws them toward him to disengage the teeth of the cord lock and thereupon continues pulling on the cords to elevate the blinds. When the slats have been raised to the proper heights the user slackens on the cords whereupon the spring 44 will force the teeth into engagement and thus lock the entire assembly.

What I claim is:

1. In a Venetian type blind, a top supporting bar, spaced depending brackets fastened thereto, a pair of slat supporting tilting bars pivoted therebetween, and operating mechanism forming part of each bracket for individually tilting said bars.

2. In a Venetian type blind, a top supporting bar, spaced apart depending brackets fastened to the underside of said bar, a main tilting bar pivotally mounted between said brackets, an auxiliary tilting bar also pivoted between said brackets, tilting mechanism forming part of each of said bracket, the main and auxiliary bars receiving tilting movement from opposite brackets.

3. In a Venetian blind, a top supporting bar therefor, depending brackets secured to each end thereof, a pair of slat supporting tilting bars pivoted between the said end brackets, a horizontal worm gear forming part of each bracket, and an arcuate toothed plate affixed to each of said tilting bars and meshing with the said worms.

4. A slat adjusting device for Venetian blinds comprising a pivoted bar having flexible slat straps fastened thereto, a pivoted frame slightly spaced from and enclosing said bar, flexible slat straps fastened thereto, a gear segment secured to one end of both the said bar and the said frame, and worms meshing with gears for adjusting the position of the bar and the frame.

5. In a Venetian type blind, a horizontal supporting member, spaced depending brackets secured thereto, a pivoted bar held therebetween, flexible looped slat holding straps depending from the said pivoted bar, a rectangular frame encompassing said bar and also supported by said spaced brackets, flexible looped slat holding straps depending from said frame, said first mentioned straps terminating at approximately half the distance of the second mentioned straps and means forming part of the depending brackets for tilting the pivoted bar or the rectangular frame.

6. In a Venetian type blind, a top horizontal supporting member, spaced depending brackets secured thereto, and a pivoted bar held therebetween, a pivoted frame surrounding said bar and also secured to said brackets, sets of flexible looped straps depending from both said bar and said frame, clips fastened to one of said sets of straps and loosely encompassing the other of said sets of straps, a series of spaced slats positioned between the sets of straps and means for tilting either said bar or said frame.

7. A plural tilting mechanism for Venetian blinds comprising a horizontal top supporting bar, a pair of spaced brackets depending therefrom, each of said brackets having gears mounted in horizontal relation to said supporting bar, horizontal tilting bars pivoted between said brackets, each bar being oscillated by one of said gears

and depending slat supporting loops secured to the said tilting bars.

8. In a Venetian blind, a top horizontal blind supporting bar, a pair of spaced depending brackets secured thereto, horizontally mounted shafts carrying worm gears mounted on said brackets, a tilting bar pivoted between said brackets, a gear secured to one end thereof and meshing with the worm gear carried on one of said brackets, a rectangular frame enclosing said tilting bar, said frame being pivoted between said brackets on the same horizontal axis as said tilting bar, a gear secured to one end of said frame and meshing with the other of said worm gears carried on the other of said brackets, and pairs of parallel slat supporting loops depending from the said tilting bar and the said frame, the loops depending from one of said members being of less length than the loops depending from the other of said members and slat raising and lowering cords suspended from the said top supporting bar.

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