Sept. 15, 1953 B. WALKER 2,652,111

VENETIAN BLIND

Filed Jan. 23, 1950

Fig. 1.

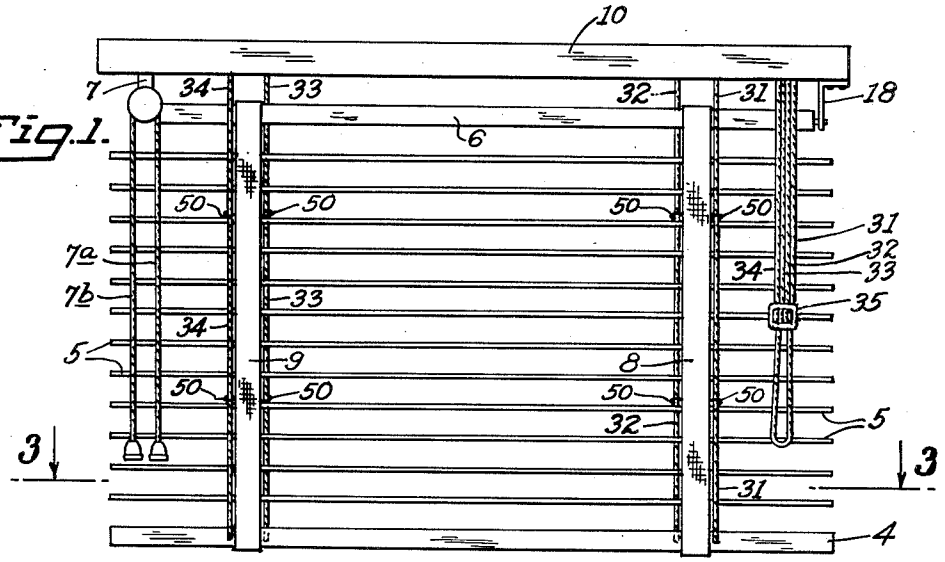


Fig. 2.

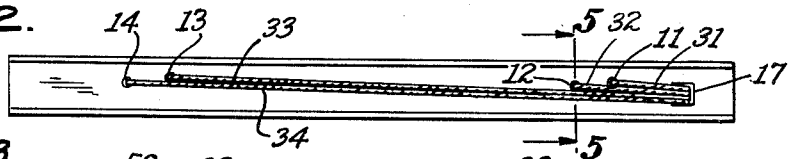


Fig. 3.

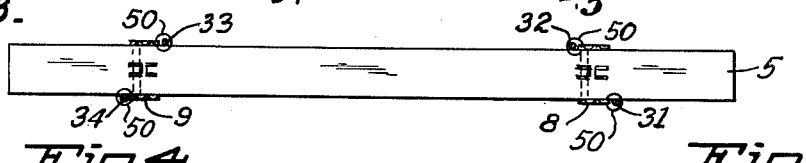


Fig. 4.

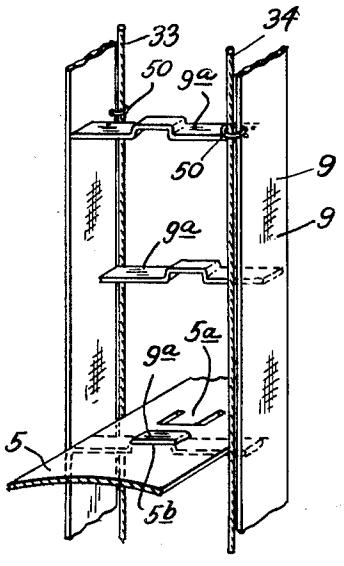
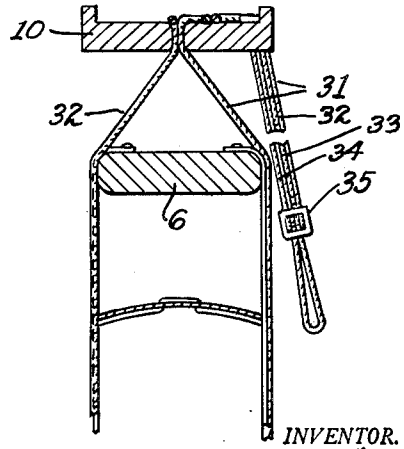


Fig. 5.



INVENTOR.

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VENETIAN BLIND

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Application January 23, 1950, Serial No. 139,981

1 Claim. (Cl. 160—168)

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This invention pertains to improvements in Venetian blinds and, particularly, the Venetian blinds employing tapes made of plastic or material that is too stiff to fold at each ladder station which is usually required when the lifting cords go between the side members of the ladder tape and the edge of the slats as is shown in my Patent No. 2,200,349 which allows the slats to be removed without unlacing the lift cords. In this invention, it is proposed that the lift cords be placed outside of the ladder tapes but adjoining the ladder tapes so as to tend to keep the ladder tapes in alignment with the lift cords. The slats are preferably secured to the ladder tapes by tongues cut in the slats which engage the cross rungs of the ladder tape or some similar satisfactory method.

Another object of this invention is to provide the ladder tape with an offset portion in the stiff or semi-stiff cross member so as to properly position the slat relative to the cross member when the substantially stiff cross member is engaged by the tongue in the slat.

Another object of the invention is to provide means whereby the tape in a blind may be readily removed without unlacing the lift cords from the slats.

Further objects of the invention will be more clearly pointed out in the accompanying specifications and claim.

I have illustrated my invention by way of example in the accompanying figures, in which:

Figure 1 illustrates a front view of a Venetian blind incorporating one form of the invention.

Figure 2 is a plan view of the cord arrangement in the head rail of the construction shown in Figure 1.

Figure 3 is a sectional view taken above one of the slats in the blind shown in Figure 1.

Figure 4 is an enlarged view partly cut away showing in greater detail the construction of the ladder tape, lift cords, cross rungs, and slat engagement.

Figure 5 is a partial view partly cut away showing the construction of the lift cords, head rail, tilt rail and upper portion of the ladder tape.

In all views, like numerals of reference refer to corresponding parts.

In Figures 1 through 5, I have shown a Venetian blind in which there is a head rail **10** and tilt rail **6**. The tilt rail is supported on a pivot bracket **18** at the right hand end as shown in Figure 1 and is tilted by the usual tilt mechanism **7** shown on the left hand side of Figure 1. The tilt mechanism is tilted by tilt cords **7***a* and **7***b* in a conventional manner. Slats may be of the curved metal type or of plastic, wood or other suitable material, and are supported in spaced relationship by ladder tapes **8** and **9**. These ladder tapes are preferably of the plastic type with thread inserts in the side member to prevent stretching and with metal inserts in the cross members **9***a* which can be permanently deflected as shown in Figure 4 to properly mesh and nest with the tongues **5***a* and **5***b* of the slat **5** as shown in Figures 4 and 5. However, any other type of tape with a reasonably stiff cross member may be used with the offset in the cross member to properly position the slat relative to the cross rungs and relative to the tape as well as making the problem of connecting the slat to the cross rung easier than if a stiff cross member is used without the offset, in connection with slats having tongues.

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With plastic type of tape, the side members are often somewhat stiffer than with a fabric type of tape and some resistance has been found to the tape having to fold at every slat level when the cord passes between the slats and the side members of the ladder tape as is shown in my issued Patent No. 2,200,349. In order to avoid this and to allow the tape side members to fold in the conventional manner with one fold away from the slats and two slats in between and then a fold inside of the edges of the slat pile with one slat over and one slat under the fold between the slats, and then an outside fold around two slats in the slat pile so that the tape actually folds only once for each two slats rather than once for every slat as is the case when the cord runs between the edge of the slats and the side members of the ladder tape, preventing the folding of the tape in between the slats in the slat pile, the cord is disposed externally of the slats and beyond the opposite edges of the side members of the ladder tape. In order to make the slats removable and not have the lifting cord go between the slats, I have provided a lifting cord arrangement in which four lifting cords are used with two lifting cords at each ladder tape, lifting cords **34** and **31** being on the room side of the slats and preferably on the outside relative to the center of the blind edge of the ladder tape, that is, as viewed in Figure 1, lift cord **34** is to the left of ladder tape **9** and lift cord **31** is to the right of ladder tape **8**. Two other lift cords, **33** and **32**, are at the back of the blind, **33** being to the right of ladder tape **9** and **32** being to the left of ladder tape **8**. By this location of the lift cords as shown in Figures 1 and 3, it is seen that there is no interference with the folding of

the tape by the lift cords and that the slats can be removed and that the lift cords, because of their location, will hold the slat pile in alignment during lifting operations so that it cannot spill over to the right or the left at either ladder tape which would be the case if only one lift cord were used at each ladder tape, such as **31** and **33** respectively. These lift cords on both sides of the ladder tape tend to keep the ladder tapes in line with the lift cords which tend to maintain a vertical position due to the loading on them during the lifting operation. The lift cords preferably pass through cord lock **17** and head rail **10**, and then down through drilled and reamed holes **11**, **12**, **13**, and **14** as shown in Figure 2. After passing through the center holes **11**, **12**, **13**, and **14**, the cords then pass around the tilt rail **6** and down along the edges of the slat at the edges of the ladder tapes **8** and **9** respectively. Lift cords **31**, **32**, **33**, and **34** are attached to the bottom rail **4** in a suitable manner as by a tack or by going into a drilled hole with an enlargement suitable for receiving the knot, or any other suitable manner. The ladder tapes **8** and **9** are suitably looped over the top of the tilt rail **6** and the bottom rail **9**, and are either secured so that the two side members of the ladder tapes are attached together by stapling, sewing, cementing, or other suitable manner, or they may be tacked or stapled to the tilt rail and head rail. If they are merely looped over and the two side members are attached together, then the ladder tapes may be removed from the blind for cleaning or replacement without having to thread the lifting cords through all of the slats in order to replace the ladder tapes—it merely being necessary to detach the lift cord on the outside of the ladder tape where it is attached to the bottom rail so that the ladder tapes may be removed. If the method of attaching the bottom of the ladder tape sides together is a detachable form, such as by a snap, pins, clips, hooks, etc. so that the two sides of the bottom of the ladder tape may be separated, then it will not be necessary to disconnect either of the lift cords at either ladder tape in order to remove the ladder tapes for replacement, cleaning, or other purposes. The lift cords may be of the usual Venetian blind cord type, or two of the lift cords may be of this type and the other two (preferably the ones at the front **34** and **31**) may be of wire, like piano wire, and joined with the other cord lifts at the equalizer **35**. Another construction that would be possible in case there were objection to the size of fabric lift cords would be the use of four wire lift cords joined together at the equalizer **35** and then a fabric cord dropped from the equalizer with the equalizer **35** moved up near the cord stop **17** when the blind is in the fully lowered position, so that the manual raising of the blind would be by the fabric drop cord from the equalizer **35**. Under certain conditions, it may be desirable to have the lift cords pass through loops, such as **50**, secured to the ladder tapes, preferably near the slats, where the side

members of the ladder tapes will not move in or out appreciable during the folding operation when the blind is lifted. There clips may be firmly attached to the side members of the ladder tape by passing through a hole in the edge of the ladder tape, or they may be detachably fastened to the ladder tape as shown in my copending application Serial No. 1,720. With the offset portion of the semi-stiff cross members of the ladder tape, it may be feasible to use slats with tongues in as shown in Figures 4 and 5 and with cords at the opposite edges of the ladder tapes, or it may be possible to use lift cords at the edge of the slats going between the staggered ladder rungs, such as **9***a*, and passing through a notch at the edge of the slat near the tongues **5***a* and **5***b* in order to avoid excessive friction between the lift cords and the side members of the ladder tape. In this instance, the ladder tapes would not be removable but the offset stiffened cross members would suitably mesh with the tongues of the slats and the clearance at the edge of the slats would provide free movement of the lift cord next to the side members of the ladder tape. The side members of the ladder tape would, of course, have to fold at every slat position which is feasible with very flexible side members in the ladder tapes.

While I have shown some modifications of this invention, I do not wish to be limited to the structures as shown and the advantages of the invention will be more clearly pointed out in the accompanying claim.

I claim as my invention:

In a Venetian blind comprising a head rail, a tilt rail, a bottom rail, and ladder tapes including opposed side members and intervening slat supporting cross rungs; the improvement comprising a pair of flexible lifting elements disposed adjacent each ladder tape, said flexible lifting elements being disposed outwardly of the planes of the opposite edges of said side members, one of said flexible lifting elements being disposed contiguous to an edge of one side member and substantially in the plane thereof, the other flexible element being disposed contiguous to the opposite edge of the other side member and substantially in the plane thereof, loop members secured to said edges of said side members in vertical positions adjacent predetermined ones of said cross rungs and through which said flexible elements extend.

BROOKS WALKER.

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