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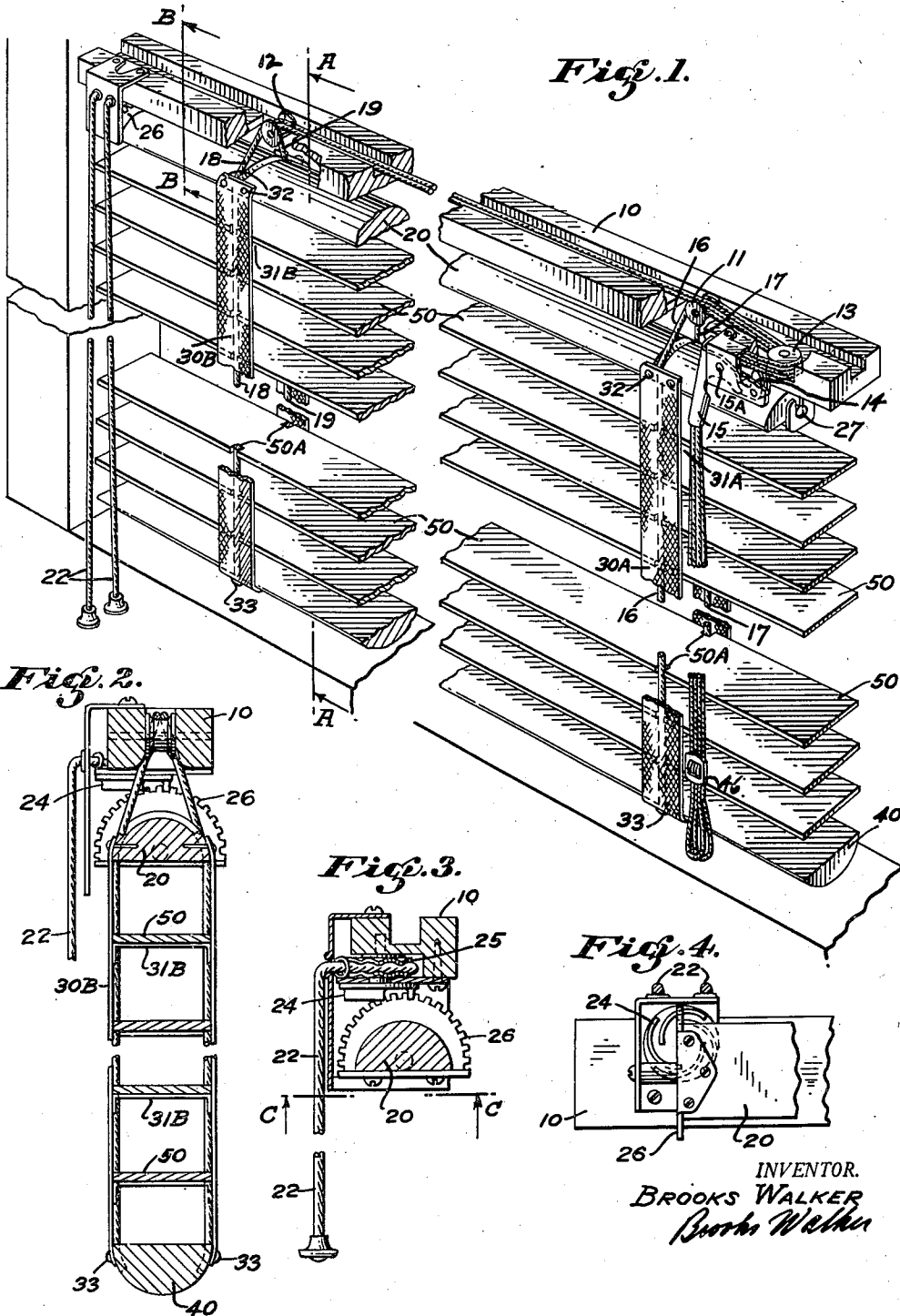
B. WALKER

2,200,349

VENETIAN BLIND

Filed May 23, 1936

2 Sheets-Sheet 1



May 14, 1940.

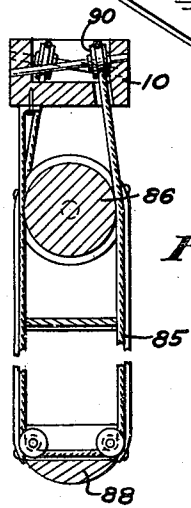
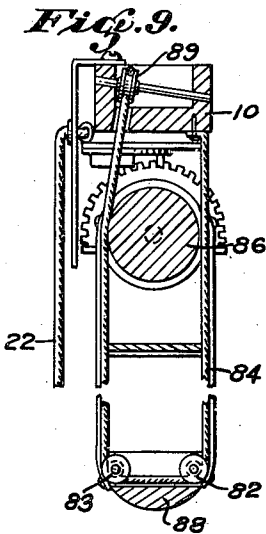
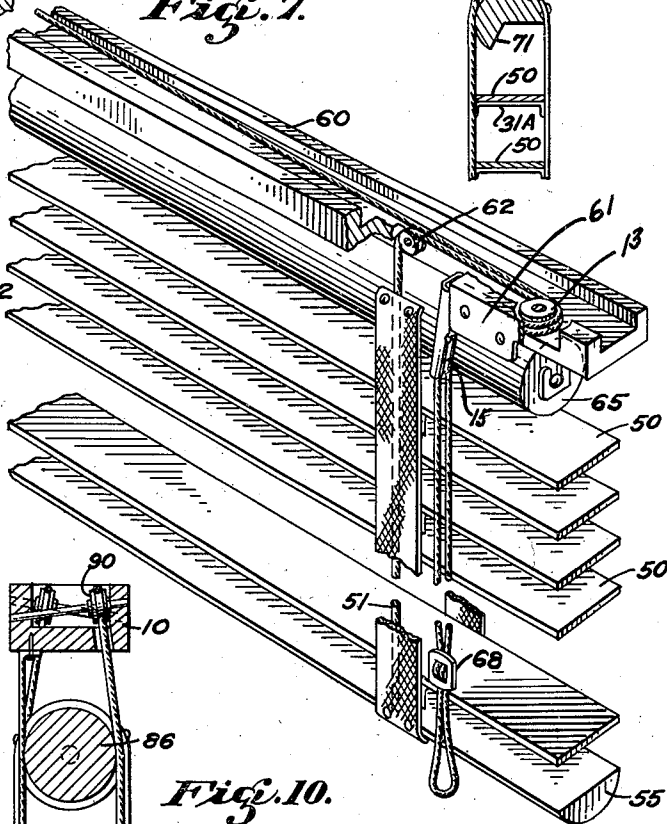
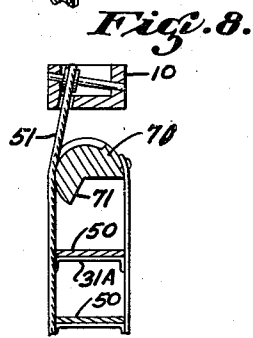
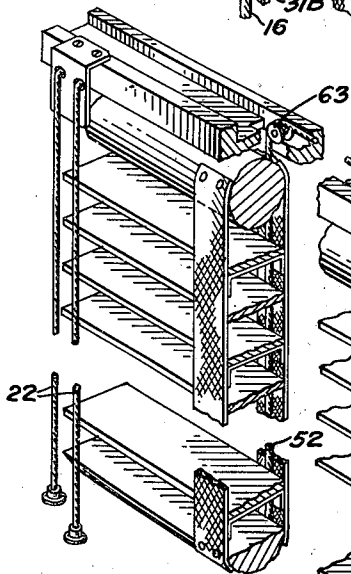
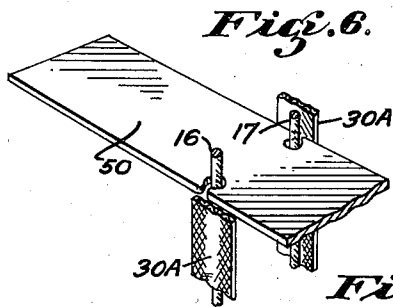
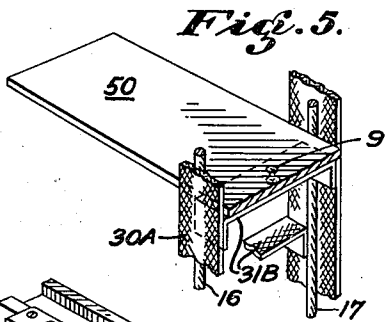
B. WALKER

2,200,349

VENETIAN BLIND

Filed May 23, 1936

2 Sheets-Sheet 2



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2,200,349

VENETIAN BLIND

Brooks Walker, Piedmont, Calif.

Application May 23, 1936, Serial No. 81,439

1 Claim. (Cl. 156—17)

My invention relates to improvement in Venetian blinds and more particularly to the arrangement of lifting cords, their association with the slats and the methods of attaching the slats to the ladder tapes or cords or both, the construction of a blind that will make possible the removal of slats for cleaning, painting, replacing, and the like, and of a blind that can be more cheaply manufactured by eliminating the slotted holes through the blinds which are expensive to produce, slow to assemble, and make it difficult to replace the slats, to provide means whereby the slats can be raised by two pull cords which do not run through holes through the slats, and to provide means whereby heavy blinds can be lifted by a cord leverage by cords concealed within single tapes.

Other objects and features of novelty of my invention will be either specifically pointed out or will become apparent when referring, for a better understanding of my invention, to the following description in conjunction with the accompanying drawings, etc.

Figure 1 is a side elevation perspective view, partly cut away and partly in section of a Venetian blind embodying one form of my invention.

Figure 2 is an end elevation through section A—A of Fig. 1 partly cut away.

Figure 3 is a view of the lifting mechanism of Fig. 3 through section B—B of Fig. 1 partly cut away and partly in section.

Figure 4 is a bottom plan view at section C—C of Fig. 3 showing the lifting mechanism and part of its associated parts.

Figure 5 is a partial view partly cut away and partly in section of another form of my invention.

Figure 6 is a partial view partly cut away and partly in section of another form of my invention.

Figure 7 is a side elevation perspective view partly cut away and partly in section of another form of Venetian blind embodying my invention.

Figure 8 is a partial view partly in section of an end view of the upper portion of a Venetian blind embodying another form of my invention.

Figure 9 is an end view of a cut away Venetian blind showing a section taken through one of the ladder tapes and illustrating another form of my invention.

Figure 10 is similar to Fig. 9 but taken through the other ladder tape.

Referring to Figures 1, 2, 3 and 4, I have shown a Venetian blind in which there is a head rail 10 to which is pivotally attached the tilting rail 20

which is pivoted at 27 and is tilted by the gear 26 which gear is attached to the tilting rail 20 and meshes with gear 24. Gear 24 is rotatably connected to pulley 25 on which runs the tilting cord 22 so that a pull on either end of cord 22 will rotate pulley 25 gear 26 and rotate the tilting bar 20 through a limited rotation. While I have preferred to show this form of tilting device, any other suitable tilting mechanism may be used within the scope of this invention. Ladder tapes 30A and 30B are attached to the tilting bar by nails 32 or other suitable means, and support slats 50 on the ladder rungs 31A and 31B. These rungs are preferably woven into the side tapes and are staggered so that one is at one side of the side tapes and the next rung is at the opposite side with a little space between that will clear a lifting cord as 16, 17, 18 and 19. The rungs are of course attached to the tapes at both sides of the slats so that when the tilting rail is in the neutral position as shown the rungs 31A and 31B will support the slats 50 in an approximate level position as shown but when the tilting rail is tilted the slats will be tilted likewise. The bottom rail 40 is attached to the bottom of the ladder tapes in any suitable manner. So far my description covers a conventional construction. The lifting cords 16, 17, 18 and 19 however, are quite different. These cords may be cramped in a common clamp 46 to keep them together and may be composed of only two cords as 16 and 17 having a common loop below the clamp 46 so that they are the same cord, as 18 and 19 can be continuous in a like manner. These lifting cords 16, 17, 18 and 19 pass through guide 15 which is pivoted at 15A on which pivot may be located a pulley over which the cords pass to pulley 13 pivoted to the head rail 10 from where cords 16 and 17 pass around pulley 11 and around the tilting bar 20 and down past the side of the slats 50 and between the ladders 30A and inside the sides of the ladder 30A to where the cords 16 and 17 are anchored to the bottom rail by a nail 33 common to the ladder tapes and cords or by other suitable fastenings. The other two lifting cords 18 and 19 pass through the groove in the top of the head rail to pulley 12 and down past the slats 50 between the rungs 31B to be fastened properly to the bottom rail as by nails 33. Pulleys 11 and 12 may be wider or divided in two to reduce the angle of the cords in passing the tilting bar 20, but where the ladder tapes are fastened as at nails 32 it is probably advisable to compromise the pulley position between the best position of the cords when the tilting

rail and the slats are horizontal as shown in Figs. 1 and 2 and the best position for the cords when the slats are at the greatest angle for closing off the light when gear 26 has been fully rotated in either direction.

As a matter of fact these pulleys 11 and 12 might each be divided in two and each pulley be floating on its pivot to take up the best position relative to the lead hole in the tilt bar 20 inside the ladder tape sides.

From the foregoing it may be seen that I have provided a construction whereby the blind slats may be tilted by the cords 22 and may be folded by cords 16, 17, 18 and 19 which are locked in any desired position by changing the lead angle of guide 15 toward the vertical position which will cause the clamps 14 to be raised so as to catch the cords 16, 17, 18 and 19 to prevent a further lowering of the bottom rail 40 from any desired position. To lower the bottom rail pull the cords 16, 17, 18 and 19 or any one of them toward cords 22 and the catch 14 will be freed and the bottom rail can be lowered.

While I have preferred to show this type of haul up cord clamp construction any other suitable construction may be employed within the scope of this invention.

To position the slats, grooves may be cut in the sides of the slats 50 as at 50A in Fig. 1, however, if a more positive grip is desired between the slats and the lifting cords 16, 17, 18 and 19 the slots in the slats may be undercut as in Fig. 6 where the slots are wider toward the center of the slot than at the opening but are wide enough at the opening to allow the cords to pass freely through the opening.

In Figure 5 I have shown a method of attaching the slat to the ladder rung by a tack 9 which may be a rivet staple or projection which fits through a button hole in the ladder or may be a clip or snap on both the slat and the tape rung which forms a permanent or detachable fastening of any desired type.

In Figure 6 I have shown a preferred form of slot for the pull up cables 16 and 17 to run through to more securely anchor the slots against dislodgement.

In the construction where the slots are notched for the cords it is desirable to have the rungs about the same length as the slat width so as to cause the sides of the ladder tapes to hold the lifting cords in the slots in the slat, whereas in Fig. 5 it is desirable to have the rungs a little longer than the slot width so that the cords will not bind on the ladder tapes or slats.

In Figure 7 I have shown a construction similar to Figures 1, 2, 3 and 4 except for the lifting cord arrangement. In this construction the cord 22 operates the tilting bar 65 in the same manner as in Figs. 1, 2, 3 and 4, the ladder tapes support the bottom rail 55 and the slats 50 in the same manner, but there are only two lifting cords 51 and 52 located at the opposite sides of the slats at each ladder tape.

I have found by experiment that this lifting cord arrangement accomplishes the desired horizontal lift of the slats 50 and bottom rail regardless of whether they are horizontal or inclined at the time of pick up or let down by reason of the tilting of the tilting rail 65 particularly if lifted by pulling on both cords evenly as below the clamp 68 which is preferably adjusted for lifting the bottom rail 55 horizontal and even, that is, so that when the cords 51 and 52 are pulled below clamp 68 the cords 51 will always equal in

length cord 52 below their respective pulleys 62 and 63.

This construction shown in Fig. 7 offers the cheapest construction by the reduced length of lifting cord required and the fact that only the same number of lifting cords are required as in the conventional construction where the lifting cords pass through slots in the slats. It is also to be noted that the tilting rail in Fig. 7 is round so that the depth between the cords 51 and 52 will remain constant when the slats and bottom rail are lifted regardless of the initial position of the tilting rail. If a flat tilting rail is used and the rail is tilted the depth between the lifting cords 51 and 52 will be reduced and the blind will be raised diagonally out of the vertical plane relative to the tilting rail 65 and the top rail 60 where only two lifting cords are used. This trouble will not be encountered when four cords are used as in Figures 1, 2, 3, and 4.

The cords may be spliced or fastened together below the guards 15 or in the case of Figures 1, 2, 3 and 4 the cords may be spliced or fastened together at pulleys 11 and 12 to reduce the number of pull up cords to one or to two in place of 4.

In Figure 8 I have shown a different form of top rail 10 with an addition 71 next to lifting cord 51 to give the same spacing effect on the lifting cords 51 and 52 as is obtained with the round tilting bar of Fig. 7. The rest of the blind construction may be the same as Fig. 7. The addition 71 to the lower side of the tilting bar 70, which addition 71 is preferably grooved to secure the lifting cord 51, is located opposite the lifting cord 51 there being an oppositely disposed addition opposite cord 52 at the other ladder tape on the under side of the tilting bar 70.

In Figures 9 and 10 I have shown a method of attaching the lifting cords for a mechanical advantage in lifting the blinds, as in heavy, long or wide blinds, etc. The lifting cord 84 is anchored to the tilting rail 86 or to the head rail 10, the head rail being preferred, as the tilting of the tilt rail 86 will not then lift one end of the bottom rail 88 a little to throw the bottom rail 88 out of parallel with the tilting rail when the bottom rail is supported on the lifting cords.

From the anchored end the cord 84 passes the tilting rail past the slats inside the sides of the ladder tapes around pulleys 82 and 83 pivoted to the bottom rail 88 and up to the pulley 89 from where it goes to the clamp and down pulleys as shown in 61 and 67 of Fig. 7. In a like manner lifting cord 85 is anchored to the head rail 10, goes around pulleys 81 and 82 up and over pulleys 90 in the top rail and on to the top pulleys 13 and clamp 61 of Fig. 7. By anchoring the two lifting cords 84 and 85 at the opposite sides of the top rail it can be seen that they will pull in opposite directions through their pulleys in the bottom rail 88 to equalize the tilting effect of the pulley friction to cause the bottom rail 88 to be lifted straight and one half the distance that the lifting cords 84 and 85 are pulled to decrease the force necessary to lift the blind by about one half as compared to the direct lift provided in Fig. 7.

If the slats are confined by exterior guides or are secured to the ladder tapes or are otherwise secured the lifting cords may be outside of the ladder tapes or to one side of them, but I believe the most desirable construction is as shown.

Other uses will be more particularly pointed out in the claims attached hereto. While the description and drawings illustrate, in a general way, certain instrumentalities which may be em-

played in carrying the invention into effect, it is evident that many modifications may be made in the various details without departing from the scope of the appended claim, it being understood
5 that the invention is not restricted to the particular examples herein described.

The invention claimed is:

A Venetian blind construction comprising a pair of spaced ladder tapes, each ladder tape com-
10 prising a pair of supporting tapes having cross tapes therebetween arranged in staggered rela-

tion, a series of slats jointly supported by said ladder tapes, and a pair of lifting cords providing the sole means for effecting collapse of the Venetian blind structure, one of said cords being associated with each of said ladder tapes, each of said
5 lifting cords being located closely adjacent one of the supporting tapes of each ladder tape and between the staggered cross tapes, said lifting cords being located one on one side and one on the opposite side of said slats.

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