

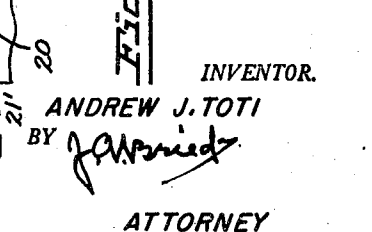
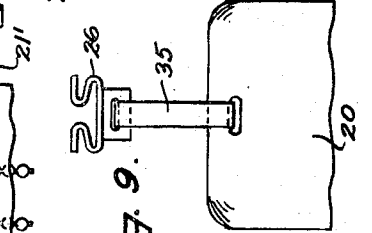
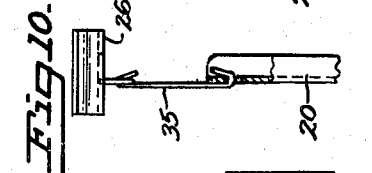
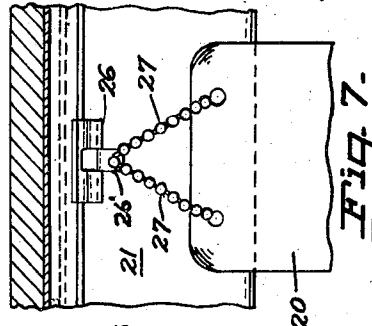
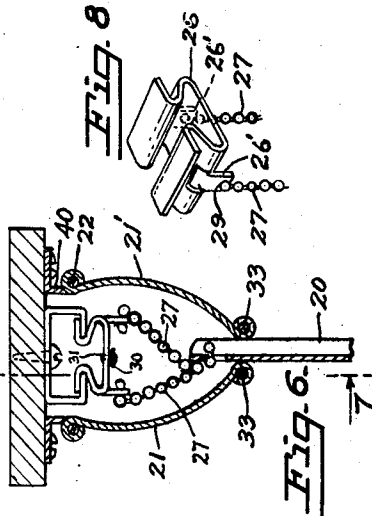
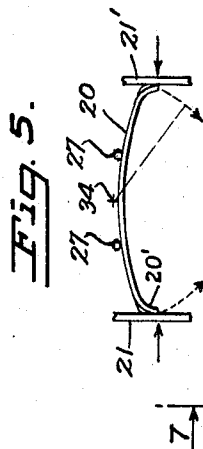
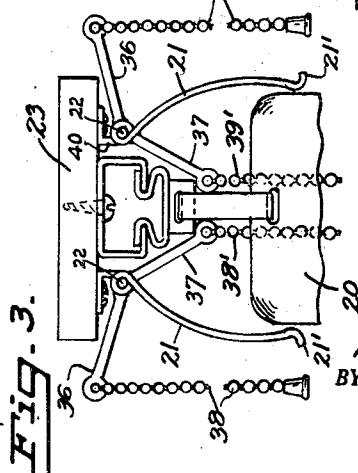
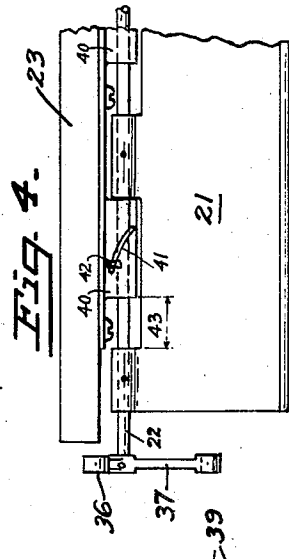
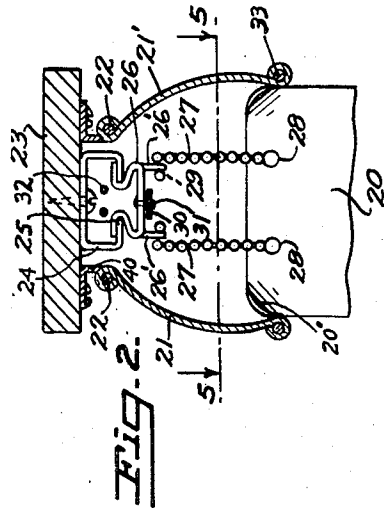
Sept. 30, 1958

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2,854,071

VERTICAL SLAT BLIND MOUNTING

Original Filed July 21, 1952



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2,854,071

VERTICAL SLAT BLIND MOUNTING

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Original application July 21, 1952, Serial No. 300,064, now Patent No. 2,785,745, dated March 19, 1957. Divided and this application May 26, 1955, Serial No. 511,346

7 Claims. (Cl. 160—176)

This invention relates to Venetian blinds of the type in which the slats each hang vertically suspended solely from its upper end in a manner so that they may be turned on vertical axes to open and close the spaces between them, and with the slats suspended from track means for moving bodily along to stack against the side of the window the blind normally extends across.

The principal object of the present invention is to provide improved suspension or mounting, and control of the movements of the vertical slats in a simpler and more positive manner, and lower cost than heretofore achieved.

Other objects and advantages of the invention will appear in the following description and accompanying drawings.

In the drawings:

Fig. 1 is a front elevation of the vertical slat blind showing the tiltable flap at one or both sides of the slats to turn them.

Fig. 2 is an enlarged vertical cross section of Fig. 1.

Fig. 3 is an end view showing the linkage for operating the tiltable strip or flap at opposite sides of the slats.

Fig. 4 is a side view of a manual or pull-lever control for the tiltable strips or flaps and slats, arranged to move the flap or strip endwise as it is tilted and contacts the slats.

Fig. 5 is a diagrammatic view as along the line 5—5 of Fig. 2 to show the action of the tiltable strips or flaps against the edges of the slats when open.

Fig. 6 is a view similar to that of Fig. 2 but showing the slats closed or turned to substantially at right angles to the slats shown in Fig. 2.

Fig. 7 is a vertical section of Fig. 6 to show the crossing of the slat suspension links and consequent lifting of the slats when in closed position.

Fig. 8 is a perspective view of one of the slat-hangers.

Fig. 9 is a front elevation of a slat showing the modified form of suspension link, or connection of the slat to the hanger.

Fig. 10 is a side view of Fig. 9.

Before describing the drawings in detail it may be stated that instead of turning the slats by pivoted lever connections to their pivots or the pulling of chains or strings attached to their edges, as heretofore the present invention employs as one feature a simple loose vertical suspension of the slats from the slidable slat-hangers and they are stabilized in turned position by a laterally movable overhead bar, rod or rigid strip, which is swung or moved bodily against all of the outer edges or sides of the upper part of the slats to turn them to any desired degree, and which may tightly hold them in closed position.

In the construction shown the overhead strips 23 and track are fixed, and the slats are turned by contact only by one or two long hinged strips or flaps 21, which are swung down to contact and gradually turn or slant the slats as well as to finally clamp against their sides to hold them in closed position.

Optionally the "flap" may be made to also move longi-

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tudinally (as indicated in Fig. 4 against the side edges of the slats to turn them more gradually and finally clamp them in closed position. Also to be noted is that the flaps, or strips, may operate against one side only of the slats or against both sides.

Detailed description of the drawings:

The slats 20 of the blind may be flat or may be the common spring-metal (or plastic) arched variety, or any other, as the showing is made for simplicity only. The numeral 23 indicates the ceiling or lintel above a deep set window, or a horizontal mounting head board suitably secured as by brackets against the wall above a window and against which the slat supporting track 24 and hinged controlling flaps 21 are suitably secured.

The slats 20 are indicated as being of the transversely arched or slightly channeled thin sheet metal variety as best shown in Fig. 5, and one or two pivoted strips or flaps 21 which may be swung down to press against one or both sides of the slats to turn them gradually to any degree from open to flat marginal overlapping conditions, and hold them closed, but the track is fixed.

The controlling flaps or strips 21 are preferably transversely arched as indicated in Fig. 2 to stiffen them and are hinged along one edge preferably each on a rod as at 22 and to the headboard 23 or to the sides of the hollow channel shaped fixed track 24 formed with re-entrant edges 25, in which a plurality of slat hangers 26 are slidably positioned with side grooves engaging the opposite sides of both edges of the track.

The slats 20 are respectively suspended each from one hanger 26 preferably by two flexible links 27 of light gage wires, cords, or small ball chains which are hooked at opposite ends to engage through spaced key-holes or equivalent 28 in the upper ends of the slat, and holes 29 in ears 26' depending from opposite edges of the hanger (as shown best in Figs. 2 and 8) in a manner to normally suspend the slats hanging in planes at right angles to the run of the track or in "open" position of the blind. The movable hangers are limit spaced along the track as by a small flexible tape 30 secured to each hanger as by a pin 31, or otherwise, as this is a well known feature to limit the separation of the slat hangers to less than the width of the slats so as to insure their marginal overlapping when closed. Control cords 32 passing through the hollow track provide for securing to some of the hangers to pull them back and forth to slide the slats together toward the side of the window, as well known in the art.

The lower edges of the strips or flaps 21 are preferably rounded outward as at 21' in Fig. 3 to stiffen them, and if of thin metal may be beaded around a wire as at 33 in Fig. 2 and when either strip is swung downwardly and inwardly to engage the edges of the suspended slats it will force them all to turn on their flexible wire or chain-link suspension until they hang at right angles to their positions shown in Fig. 2, and with the suspension links 27, 27 in quarter turn angular relation as shown in Figs. 6 and 7. In arriving at this final position ("closed") the slats will all be forced to rise up against gravity due to the effective lengths of the links 27 being reduced by twisting, and hence the closed slats by their own weights are all pulling downward and trying to undo this quarter turn to regain their normal lower open position shown in Figs. 1, 2 and 5, and hence they will at once return toward open position as soon as the holding flap 21 or 21' is released or swung outward.

The action of the hinged strips or flaps 21 in turning the slats is shown by the diagram Fig. 5 in which the suspension links 27—27 are on the outer or convex side of the arched slat 20 and its vertical center or axis of rotation when turned to cross the links would be about at

the point 34, whereas the point of contact of either flap 21 or 21' with the inwardly curved vertical edges or upper corners 29' of the slat is offset laterally from the vertical axis 34, so the slat will obviously be turned in direction indicated by the small arrows pointing downwardly on the drawing adjacent the respective flaps, and as flap 21' tends to turn the slat to the right or clockwise, and flap 21 tends to turn it to the left or contra-clockwise, it will be seen either flap must be used alone or one moved against the slat before the other so as to swing the opposite edge in reverse direction beyond the center 34 so that when the second flap is used against the slat it will also urge it to turn in the same direction it was going and thus the slats when closed may be clamped between both flaps. The same result will be achieved with straight or flat slats by keeping the suspension links offset well over beyond one side of the slats and particularly if the upper corners only of the flats slats are bent or curved slightly similar to the curved edges of the slat shown in Figs. 5, and 2 at 20'.

A modified form of slat suspension is shown in Figs. 9 and 10 wherein a single flat flexible and twistable link 35 is used instead of the two chain links of Fig. 2. The flat link would have to be of flexible material, or very thin flexible spring metal with inherent power to always return from one-quarter twist to original untwisted position with slats in open position.

To operate the flaps (of Fig. 3) each rod 22 may have a double ended lever 36, 37 secured to it and to the opposite ends of which pull cords 38, 38', 39, 39' are attached, or a single ended lever with pull-push rod. The friction of the hinge sections 40 along the rods 22 may be made high enough to hold the flaps in any position of adjustment, or any additional braking means may be applied. One of the rods turns the slats one way, and the other rod turns them the opposite way, and the pulling of one cord after the other will clamp the closed slats between the flaps, as shown in Fig. 6.

To pull the slats along bodily toward the side of the window, pull cords are attached to the end slat hangers in the manner well understood in the art. A side view of the pull cords for so moving the slats is shown in Fig. 1 at 32, and the pull cords or chains for tilting the side flaps 21 are shown at the opposite end of Fig. 1 at 39, also in Fig. 3 at 38 attached to the operating levers 36 and 37.

In Fig. 4, the side view, the double lever 36, 37 of one of the flaps 21 is shown as secured to the hinge rod 22 to which the flap is secured, and optional additional means is provided to secure a longitudinal movement of the flap 21 as it is swung downward against the slats to aid in turning them in the proper direction. The means may be an angular slat 41 in the side of one of the fixed hinge sections 40 with a pin 42 projecting into the slot from the hinge pin or shaft 22. If this optional feature is used there will be clearance provided between the hinge sections as at 43 to permit of such longitudinal movement of the flaps in swinging.

Having thus described my improved vertical slat blind mounting involving a laterally swingable overhead strip for controlling the turning of the slats, and some of its

modifications, what I claim in this divisional application is:

1. In combination with a vertical slat blind in which the slats are wholly suspended at their upper ends, a fixed horizontally extending overhead track, slat hangers; one for each slat; engaging said track for moving therealong and each hanger provided with means for suspending its slat for turning on a vertical axis and biased to normally urge the slat to open position, and an elongated substantially rigid member extending horizontally adjacent and past the upper part of all of the slats, means pivotally mounting said member in a manner to swing against the upper margins of the slats to contact them adjacent their suspension means when open and forcibly turn them all to closed position, and means for so swinging said member and holding it at any desired degree of movement, the biasing of the means for suspending each slat from its hanger being such as to automatically return the slats toward open position as said member is swung away from said slats.

2. In the combination set out in claim 1, the margins of the slats where contacted when open by said member being laterally offset from said vertical axis to afford a leverage to start the turning movement when the member is swung toward the slats.

3. In the combination set out in claim 1, there being two of said rigid members arranged respectively to contact opposite sides of the slats and turn them in opposite direction.

4. In the combination set out in claim 1, there being two of said rigid members arranged respectively to contact opposite sides of the slats and clamp the slats together when in closed position.

5. In the combination set out in claim 1, means automatically moving said rigid member longitudinally also as it is swung to turn the slats.

6. In the combination set out in claim 1, the means automatically restoring the slats to open position comprising a pair of spaced links connecting each slat with its hanger and adapted to be twisted as the slat is turned to thereby raise the slat bodily so that the weight of the slat tends to untwist the links and restore the slats to normal open position.

7. In the combination set out in claim 1, the means automatically restoring the slats to open position comprising a pair of spaced chains connecting each slat with its hanger and adapted to be twisted as the slat is turned to thereby raise the slat bodily so that the weight of the slat tends to untwist the chains and restore the slats to normal open position.

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