Nov. 5, 1940. W. D. CLARK, JR 2,220,064

VENETIAN BLIND

Filed May 10, 1940 2 Sheets-Sheet 1

FIG. 1.

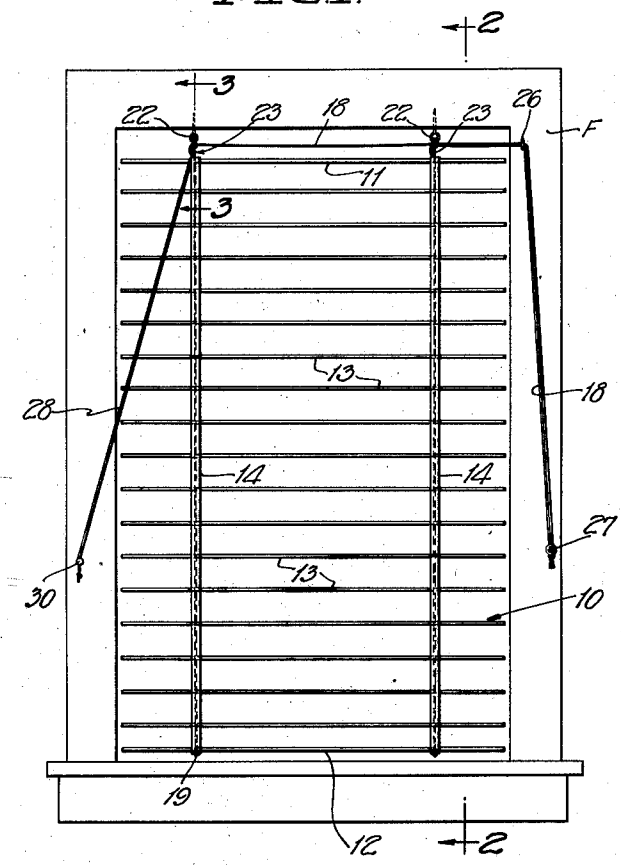


FIG. 2.

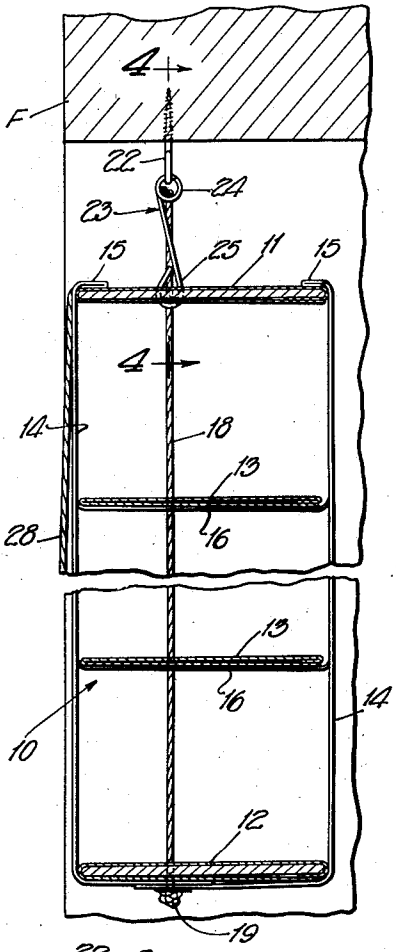


FIG. 3.

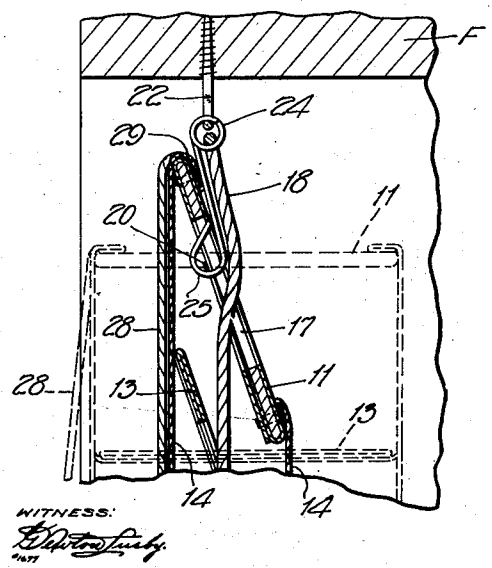
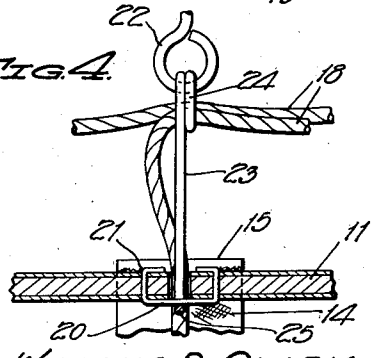


FIG. 4.



WITNESS:

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FIG. 5.

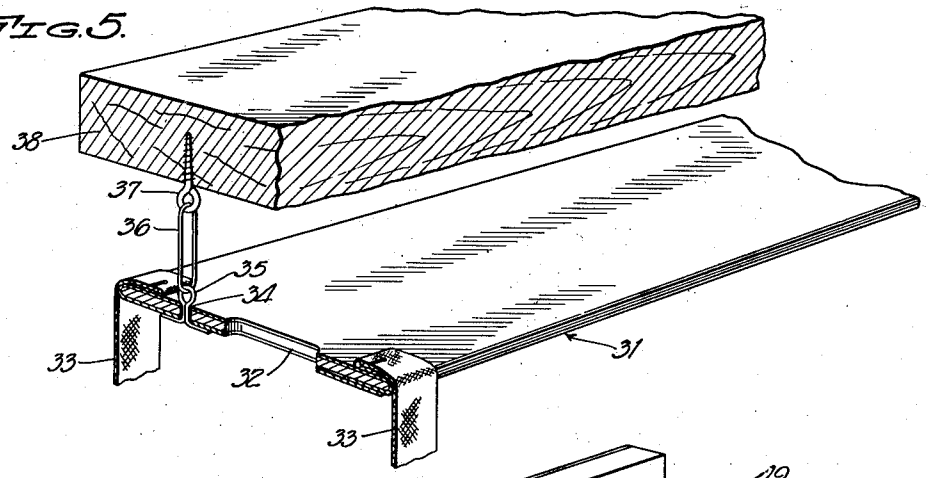


FIG. 6.

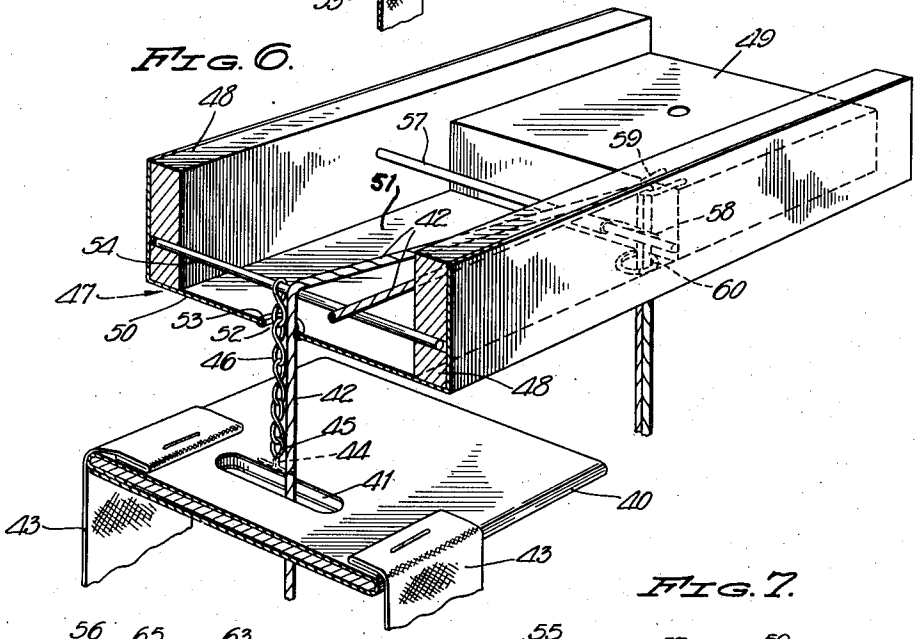
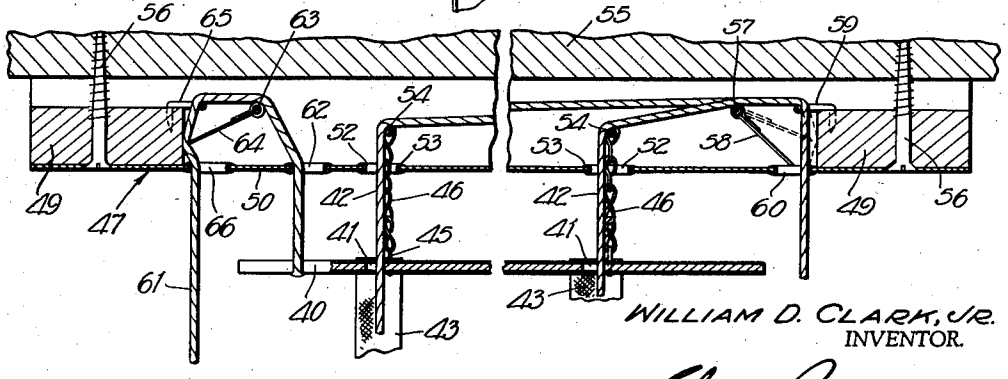


FIG. 7.



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UNITED STATES PATENT OFFICE

2,220,064

VENETIAN BLIND

William D. Clark, Jr., Belleville, N. J.

Application May 10, 1940, Serial No. 334,401

21 Claims. (Cl. 156—17)

This application constitutes a continuation-in-part application of my pending application for Venetian blinds, filed May 17, 1939, Serial No. 274,081.

This invention relates to improvements in Venetian blinds and more specifically to a tilting suspension means therefor.

One of the important features of the invention resides in suspending the Venetian blind off center so that the normal tendency of the slats is to assume a closed angular lapped relation, there being an actuating pull cord attached to the uppermost slat by which the slats of the blind may be moved to open or partially open position, and held in such positions against closing by attaching the free end of the pull cord to a fixed anchorage or by a cord lock.

Another feature of the invention is to provide a suspension means for Venetian blinds which eliminates the use of expensive and complicated tilting mechanisms which represent a costly part of the conventional Venetian blind installations.

A further feature of the invention is the provision of a Venetian blind having the usual tilting and slat raising and lowering means which is simple in construction, inexpensive of manufacture, and which may be installed by a purchaser unskilled in the art of hanging Venetian blinds.

A still further feature of the invention is to provide a novel hollow head rail from which the Venetian blind is suspended and within which the horizontal leads of the pull cords, cord locks, and parts of the suspension means are housed and concealed when the blind is in hung position.

Other features of the invention will be apparent as the following specification is read in conjunction with the accompanying drawings, in which:

Figure 1 is a front elevational view of my improved Venetian blind mounted within a window casing, the slats being in fully open position.

Figure 2 is a fragmentary vertical transverse sectional view on the line 2—2 of Figure 1.

Figure 3 is an enlarged detail vertical transverse sectional view on the line 3—3 of Figure 1, showing the slats in closed position in full lines and in fully open position in dotted lines.

Figure 4 is an enlarged detail vertical sectional view on the line 4—4 of Figure 2.

Figure 5 is a sectional perspective view illustrating a modified form of Venetian blind suspension means.

Figure 6 is a sectional perspective view of a further modified form of Venetian blind suspension means.

Figure 7 is a vertical longitudinal sectional view through the head end of a Venetian blind constructed in accordance with the form illustrated in Figure 6.

Referring to the drawings by reference characters, the numeral 10 designates my improved Venetian blind in its entirety and which comprises a top or head slat 11, a bottom or base slat 12 and a plurality of intermediate slats 13. Whereas these slats may be of any construction, I have illustrated them in accordance with the novel Venetian blind slat construction set forth in my Letters Patent No. 2,169,873 granted August 15, 1939. A pair of ladder suspension tapes 14—14 are fixedly connected to the top slat 11 as at 15 whereas the lower end of the ladder tapes are secured together and provide a cradle for the lower slat 12. The usual rung tapes 16 serve to support the intermediate slats 13. Each of the slats is provided with a pair of transversely disposed slots 17 through which the pull cords 18—18 respectively pass, the lower ends of the pull cords being knotted as at 19 beneath the bottom slat 12, and in Figure 2 of the drawing the knot 19 is disclosed beyond the overlapping end of the suspension tapes. The pull cords 18—18 extend upwardly through the slots 17 in the slats and the free ends of the cords are threaded through guide members hereinafter to be explained. The cords 18—18 serve to facilitate raising and lowering of the Venetian blinds and the slots 17 being disposed in alinement with the suspension tapes, the said cords are concealed from view when looking at the front of the blind as shown in Figure 1 of the drawings.

Bridging the slots 17 of the top slat 11 are pivotal members 20, and in this instance, the pivot member is the bight portion of a U-shaped clip or staple 21 which has its legs passing through the top slat and the terminal ends bent inwardly, for I have shown the top slat as being constructed of an outer paper envelope having a cardboard reinforcement. The lower slat 12 is of a similar construction to give added weight at the top and bottom of the Venetian blind structure. The staples 21 are located in offset relation with respect to the longitudinal axis of the slat, whereby the slat will overbalance in a manner to be presently explained.

In the drawings, I have illustrated the Venetian blind 10 as being hung within a window frame F and screwed into the top of the frame F are spaced screw hooks or eyes 22—22, the space between the eyes being substantially the same as the space between the slots 17 of each slat. Connected to each screw eye 22 is a link member 23 which is formed from a single length of wire having its upper end coiled to provide an eye 24 and its lower end bent upwardly to form an eye or loop 25. The eyes 24 of the link members 23 are engaged with the screw eyes or hooks 22, and the eyes or loops 25 receive the pivot members 20, thus the Venetian blind structure is suspended off balance which causes the slats to normally assume a closed overlapping relation as illustrated in full lines in Figure 3 of the drawings. The free ends of the raising and lowering pull cords 18—18 are threaded through the respective eyes 22 and are led to the right side of the window casing where they pass through a guide eye 26 disposed in horizontal alinement with the eyes 24. After passing through the guide eye 26 the raising and lowering pull cords 18 may be wound around or tied to an anchor pin 27 which is driven into the window frame F.

To effect manual tilting of the slats to a fully opened or partially opened position, I provide a pull cord 28, one end of which is fixedly attached to the normally upturned side of the top slat 11 as at 29. The free end of the tilt cord 28 is tied about anchor pin 30 which is driven into the left side of the window frame F. It will be seen that upon pulling of the pull cords 28, the top slat 11 may be moved to a horizontal position as shown in Figure 3 in dotted lines, or various adjusted intermediate positions and the other slats 12 and 13 will assume corresponding parallel positions. The slats may be held in open position by tying the free end of the pull cord 28 on the anchor pin 30.

From the foregoing description, it will be seen that I have constructed a simple and inexpensive tilt mechanism for a Venetian blind, wherein the usual tilt bar and its expensive and complicated actuating mechanism is eliminated. The Venetian blind herein set forth is manufactured with the suspension links 23 connected to the pivot pins 20 of the top slat, and it is only necessary for one unskilled in the art to attach the screw hooks or eyes 22 in the top of the window frame, after which the eyes 24 of the link members 23 may be engaged with the respective hooks 22. The person installing the blind also attaches the guide eye 26 to the window frame and drives in the anchor pins 27 and 30 into the sides of the frame F.

While I have shown and described one form of suspending the Venetian blind off center, other equivalent suspension means may be employed as will be seen by reference to Figures 5 to 7 inclusive.

In Figure 5 of the drawings, 31 designates a head slat similar to the slat 11 which is provided with the usual transverse slots for the passage of the lifting and lowering cords, only one of which has been shown and designated 32. Ladder tapes 33 are attached to the slat 31 in alinement with the slat 32 for supporting the other lower slats of the blind and they also conceal the raising and lowering cords which pass through the slots 32. Secured to the slat 31 beyond each slot 32 and disposed beyond the longitudinal center of the slat is a staple 34 having an eye 35, the eye extending above the top face of the slat. Engaging the eye 35 is one end of an elongated link 36 while the other end of the link engages a screw eye 37 which is threaded into the top of a window frame or other horizontal support 38. I have illustrated the top slat 31 as being in a fully open position, but by reason of the fact that the same is supported off center in the same manner as shown in Figures 1 to 4, the top slat and the other slats supported by the ladder tapes 33 have a normal tendency to move to closing position, but they may be held open by means of a cord similar to the cord 28 hereinbefore mentioned.

In Figures 6 and 7, I have illustrated a further modified form of my invention in which the top or head slat is designated 40 and which has two or more transverse slots 41 therein for the passage of the raising and lowering cords 42. Ladder tapes 43 are attached to the slat 40 in alinement with the slots 41 and which support the lower slats of the blind. To one side of each slot 41 I attach a staple 44 to the slat which has an eye 45 extending above the top surface thereof to which one end of a length of chain 46 is connected. The staples 44 are arranged off center in longitudinal alinement in order that the slat 40 may be suspended in overbalanced condition from a support, which may be the top of the window frame as hereinbefore described, but in Figures 6 and 7 I have suspended the blind from a hollow head rail 47.

The head rail 47 is U-shape in cross section and includes a wood frame consisting of parallel longitudinal wood strips 48—48 which are rigidly connected together at their ends by blocks 49—49. Bridging the underside of the strips 48—48 and secured to the outer faces thereof is a sheet of stiff cardboard 50 which provides a bottom wall 51 for the hollow head rail 47. The bottom wall 51 is provided with spaced openings 52 which are reinforced by grommets 53. The openings 52 are in substantially vertical alinement with the slots 41 of the slats 40 and bridging the strips 48 and disposed directly above the openings 52 are transversely arranged rods 54 to which the other ends of the chains 46 are connected. It will therefore be seen that the slat 40 is suspended from the rods 54 in overbalanced position to normally assume a closed position. The head rail 47 is attached to the top rail 55 of a window frame by screws 56 which pass upwardly through the blocks 49—49 and thread into the rail 55.

The raising and lowering cords 42 pass upwardly through the openings 52 and extend over the rods 54 toward the right end of the head rail 47 and over a rod 57 on which a cord lock 58 is pivoted, the cord therein passing through a guide eye 59 mounted on the adjacent block 49, and down through an opening 60 in the bottom wall 50.

The tilt cord is designated 61 and has one of its ends connected to the under balanced side of the slat 40 and which extends upwardly through an opening 62 provided in the bottom wall 50 adjacent the left end of the head rail, and thence over a cross rod 63 on which a cord lock 64 is pivotally mounted, thence over and down through a guide eye 65, and through an opening 66 in the bottom wall 50. The free ends of the cords 42 and 61 are disposed along opposite ends of the slats of the blind and are held in a locked position by the gravity locks 58 and 64 respectively.

While I have illustrated the hollow head rail 47 as being used in connection with the chain suspension means, I wish it to be understood that

the same may also be employed in connection with the link suspension means illustrated in Figures 1 to 5, inclusive, for in such instances, the link members 23 and 36 may be connected with the rods 54.

From the foregoing, it will be manifest that I have illustrated several methods by which a Venetian blind may be suspended off center from a horizontal support, and a pivotal connection between the top or head slat and the horizontal supporting structure.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a Venetian blind having a plurality of slats supported by ladder tapes, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, suspension elements adapted to have one end of each attached to a support, and means on the top slat inwardly of the ends thereof and to one side of the longitudinal center thereof to which the other ends of said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position.

2. In a Venetian blind having a plurality of slats supported by ladder tapes, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, suspension elements adapted to have their upper ends attached to an overhead support, and means on the top slat inwardly of the ends thereof and to one side of the longitudinal center thereof to which the lower end of said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position, and a pull cord attached to the top slat at one side of the longitudinal center thereof for turning the top slat against its overbalanced tendency to cause all the slats to be moved to an open position.

3. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having spaced transversely disposed slots therein for the passage of raising and lowering cords, spaced suspension members having their lower ends pivotally connected to the top slat to one side of its longitudinal center thereof and extending upwardly therefrom, and means for connecting the upper ends of said suspension members to an overhead support.

4. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, spaced suspension members pivotally connected to the top slat intermediate its ends, the pivotal connections being disposed at one side of the center of gravity of the top slat, and hanger means to which said suspension members are connected, whereby all of the slats assume a normal closed tilted lapped relation.

5. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, spaced suspension members pivotally connected to the top slat intermediate its ends, the pivotal connections being disposed at one side of the center of gravity of the top slat, hanger means to which said suspension members are connected, whereby all of the slats assume a normal closed tilted lapped relation, and a pull cord having one of its ends attached to one side of the top slat to effect manual turning of the same to an open horizontal position or to a partially open position to cause all of the other slats to assume corresponding positions in substantially parallel relation.

6. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by and bridging the slots of the top slat and being disposed at one side of the longitudinal center thereof, hanger means for receiving the pivot members whereby all of said slats assume a normal closed tilted lapped relation, and a pull cord having one of its ends attached to the raised side of the top slat to effect manual turning of the same to an open horizontal position or to a partially open position to cause all of the other slats to assume corresponding positions in substantially parallel relation.

7. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by and bridging the slots in the top slat and being disposed at one side of the longitudinal center thereof, a pair of attaching elements adapted to be secured to the top of a window casing in vertical alinement with the slots in said slats, and link members connected to said attaching elements and said pivot members for pivotally supporting the top slat in a normally tilted overbalanced position with the other slats in substantially corresponding tilted spaced parallel relation, and a pull cord attached to the upwardly tilted side of the top slat to facilitate manual turning of said slats to various angular positions of adjustment.

8. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by and bridging the slots in the top slat and being disposed at one side of the longitudinal center thereof, a pair of eye members adapted to be secured to the top of a window casing in vertical alinement with the slots in said slats, a pair of links having loop portions at opposite ends and respectively connected to the pivot members and eye members to pivotally support the top slat off center to cause all the slats to normally assume a closed tilted lapped relation, and a flexible pull element having one of its ends secured to the upwardly tilted side of the top slat to facilitate manual turning of the slats to various angular positions of adjustment.

9. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by and bridging the slots in the top slat and being disposed at one side of the longitudinal center thereof, a pair of eye members adapted to be secured to the top of a window casing in vertical alinement with the slots in said slats, a pair of link members, each link member having eyes at the ends thereof, the upper eyes of the link members being connected to said eye members and the lower eyes being connected to the pivot members whereby to pivotally support the top slat off

its longitudinal center to cause all of the slats to normally assume a closed tilted lapped relation, and a flexible pull element having one of its ends secured to the upwardly tilted side of the top slat to facilitate turning of the slats to various angular positions of adjustment.

10. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by and bridging the slots in the top slat and being disposed at one side of the longitudinal center thereof, a pair of eye members adapted to be secured to the top of a window casing in vertical alinement with the slots in said slats, a pair of link members, each link member having eyes at the ends thereof, the upper eyes of the link members being connected to said eye members and the lower eyes being connected to the pivot members whereby to pivotally support the top slat off its longitudinal center to cause all the slats to normally assume a closed tilted lapped relation, a flexible pull element having one of its ends secured to the upward tilted side of the top slat to facilitate turning of the slats to various angular positions of adjustment, and a pair of raising and lowering cords having one of their ends fastened to the lowermost slat and respectively passing upwardly through the slots therein, the free ends of said raising and lowering cords being respectively threaded through the upper eyes of said link members for guiding purposes during the raising and lowering movements of the blind.

11. In combination, a window casing, spaced attaching members secured to the top of said casing, a Venetian blind including ladder tapes and slats carried by said ladder tapes, a head slat to which the upper ends of said ladder tapes are fixedly secured, means for pivotally supporting the head slat from said spaced attaching members so as to normally assume an overbalanced position to cause all the slats to normally assume a closed tilted overlapped relation, said means comprising link members having eyes, a flexible pull element having one of its ends secured to the upwardly tilted side of the top slat adjacent one end thereof to facilitate manual turning of the slats to various angular open positions of adjustment, and an anchor element on one side of the window casing to which the free end of the pull element may be secured, raising and lowering cords attached to the bottom slat and extending through slots in said slats, the free ends of said raising and lowering cords freely passing through the eyes of the link members and extending to that side of the window casing opposite to which the pull element extends, a guide eye on the side of the window casing in horizontal alinement with the eyes of the links and through which the free ends of the raising and lowering cords freely pass and depend, and an anchor member secured to the window casing below said guide eye to which the free ends of the raising and lowering cords may be secured.

12. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by the top slat and bridging the slots therein, a pair of attaching elements adapted to be secured to the top of a window casing in vertical alinement with the slots in said slats, link members connected to said attaching elements and said pivot members for pivotally supporting the top slat, said pivot members being located intermediate the ends and to one side of the longitudinal center of the top slat thereby causing the top slat to normally assume a tilted position, and a pull cord attached to the upwardly tilted side of the top slat to facilitate manual turning of the top slat to various angular posiions of adment.

13. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, each of said slats having a pair of transversely disposed slots therein for the passage of raising and lowering cords, pivot members carried by and bridging the slots in the top slat, a pair of eye members adapted to be secured to the top of a window casing in vertical alinement with the slots in said slats, a pair of link members, each link member having eyes at the ends thereof, the upper eyes of the link member being connected to said eye members and the lower eyes being connected to the pivot members whereby to pivotally support the top slat, means causing the top slat to normally assume a tilted position, a flexible pull element having one of its ends secured to the upwardly tilted side of the top slat to facilitate turning of the slats to various angular positions of adjustment against the action of said means, and a pair of raising and lowering cords having one of their ends fastened to the lowermost slat and respectively passing upwardly through the slots therein, the free ends of said raising and lowering cords being respectively threaded through the upper eyes of said link member for guiding purposes during the raising and lowering movement of the blind.

14. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, spaced alined eyes on the top slat disposed to one side of its center of gravity, hanger members adapted to be secured to an overhead support in substantially vertical alinement with the respective alined eyes, and link members connecting the eyes with the hanger members whereby to pivotally suspend the top slat off center to cause all the slats to normally assume a closed tilted position, and a flexible pull element having one of its ends secured to the top slat to facilitate turning of the slats to various positions of angular adjustment.

15. In a Venetian blind having a plurality of slats supported in superposed relation by ladder tapes, spaced alined eyes on the top slat disposed to one side of its center of gravity, hanger members adapted to be secured to an overhead support in substantially vertical alinement with the respective alined eyes, and short lengths of chain connecting the eyes with the hanger members whereby to pivotally suspend the top slat off center to cause all the slats to normally assume a closed tilted position, and a flexible pull element having one of its ends secured to the top slat to facilitate turning of the slats to various positions of angular adjustment.

16. A Venetian blind comprising in combination a head rail of substantially U-shape in cross section having spaced openings in the bottom wall thereof, link elements connected to the head rail and depending therefrom, ladder tapes, a top slat to which the top ends of the ladder tapes are fixedly connected, slats supported by said ladder tapes, alined connecting elements on said top slat

to which the lower ends of the link elements are pivotally connected, said connecting elements being disposed to one side of the center of gravity of the top slat whereby to cause all the slats to normally assume a closed tilted position, all of the slats having slots therein in vertical alinement with the openings in the head rail, raising and lowering cords having one of their ends fastened to the lowermost slot and respectively passing upwardly through the slots in the slats thereabove and through the openings in the head rail, guide means within said head rail for leading the free ends of the pull cords to a position to hang clear of the ends of the slats to facilitate the raising and lowering of the blind by manual manipulation of the pull cords, and a flexible pull element having one of its ends connected to the top slat to facilitate the turning of the slats to various angular positions of adjustment to open position against the normal tilting action thereof.

17. In a Venetian blind having a plurality of slats supported by ladder tapes, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, suspension elements adapted to have one end of each attached to a support, means on the top slat inwardly of the ends thereof and to one side of the longitudinal center thereof to which the other ends of the said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position, and the said means being in alinement with the ladder tapes.

18. In a Venetian blind having a plurality of slats supported by ladder tapes, each of said slats having transversely disposed slots therein with corresponding slots in each slat in vertical alinement with one another for the passage of raising and lowering cords, suspension elements adapted to have one end of each attached to a support, and means on the top slat inwardly of the ends thereof and to one side of the longitudinal center thereof to which the other ends of said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position, said means being in alinement with the vertically alined slots of the slats.

19. In a Venetian blind having a plurality of slats supported by ladder tapes, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, suspension elements adapted to have one end of each attached to a support, and means on the longitudinal surface of the top slat to one side of the longitudinal center thereof to which the other ends of said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position.

20. In a Venetian blind comprising a plurality of coextensive slats, no less than two ladder tapes for supporting the slats, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, suspension elements adapted to have one end of each attached to a support, and means on the top slat inwardly of the ends thereof and to one side of the longitudinal center thereof to which the other ends of said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position.

21. In a Venetian blind comprising a plurality of uniformly shaped coextensive slats, no less than two ladder tapes for supporting the slats, each of said slats having transversely disposed slots therein for the passage of raising and lowering cords, suspension elements adapted to have one end of each attached to a support, means on the top slat inwardly of the ends thereof and to one side of the longitudinal center thereof to which the other ends of said suspension elements are pivotally connected to cause overbalancing of the top slat and to normally cause all the slats to assume a closed position, said slots and ladder tapes being in substantial alinement, and said means being in substantial alinement with the slots and the ladder tape.

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