April 26, 1932. H. D. FORSE 1,855,346

VENETIAN BLIND

Filed March 16, 1931 2 Sheets-Sheet 1

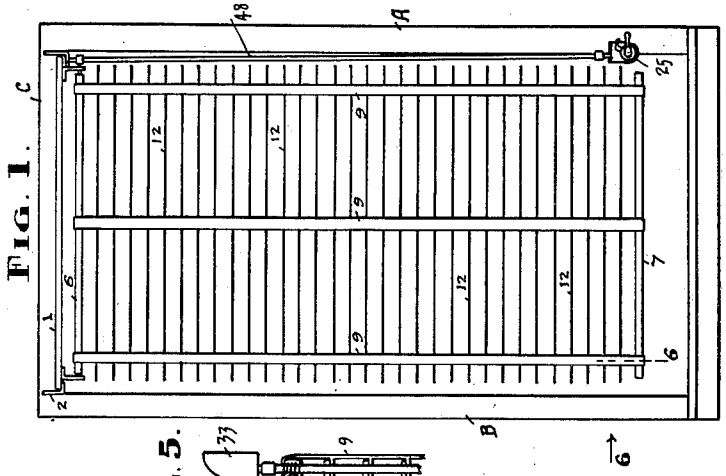


FIG. 1.

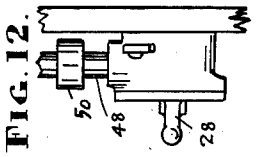


FIG. 12.

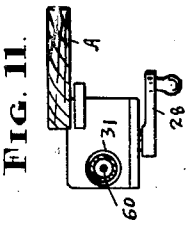


FIG. 11.

FIG. 5.

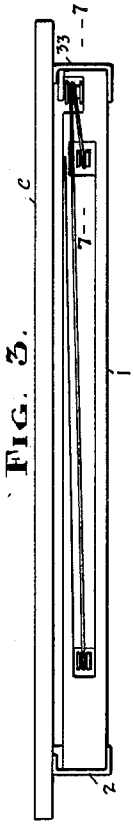


FIG. 3.

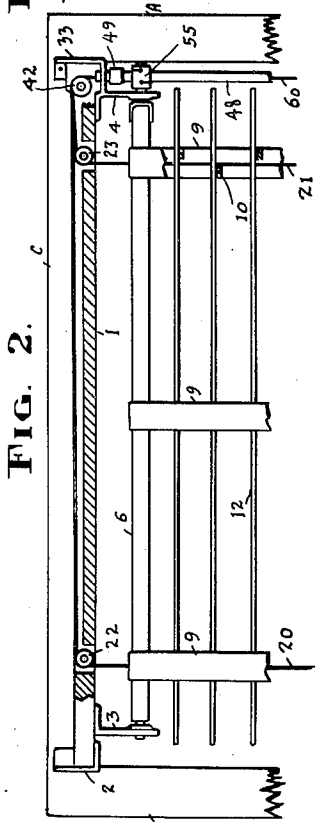


FIG. 2.

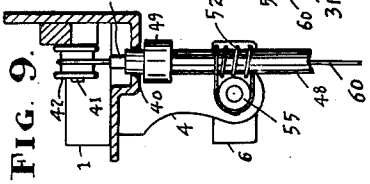


FIG. 9.

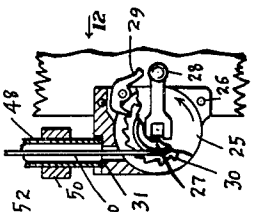


FIG. 10.

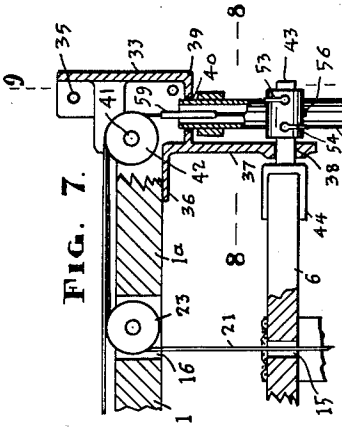


FIG. 7.

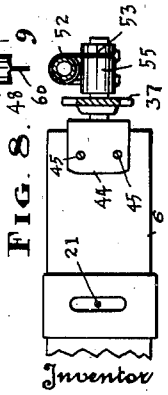


FIG. 8.

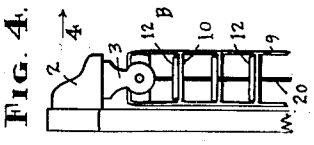


FIG. 4.

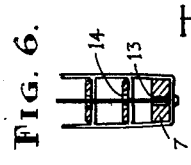


FIG. 6.

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VENETIAN BLIND

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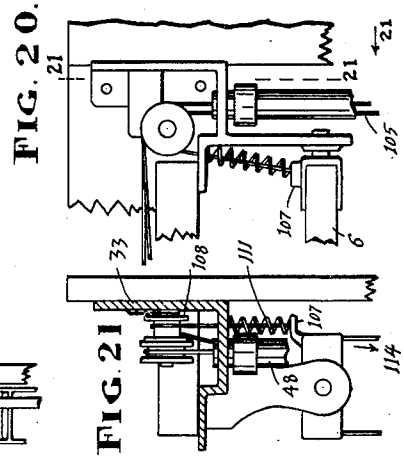


FIG. 20.

FIG. 21

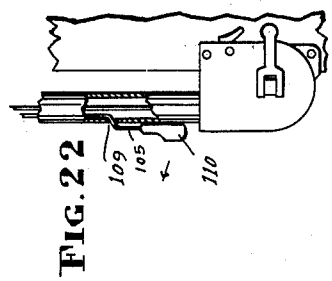


FIG. 22

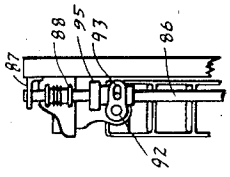


FIG. 16.

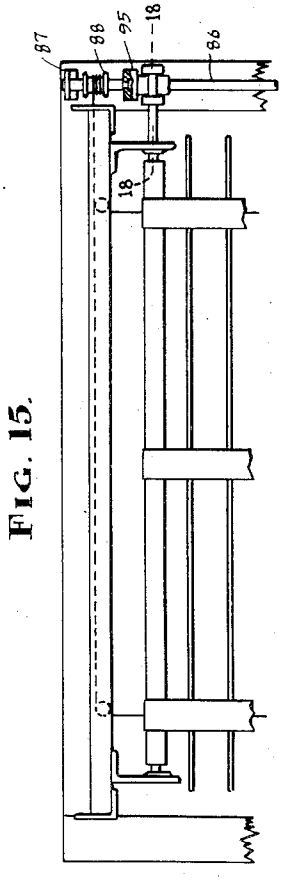


FIG. 15.

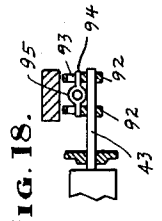


FIG. 18.

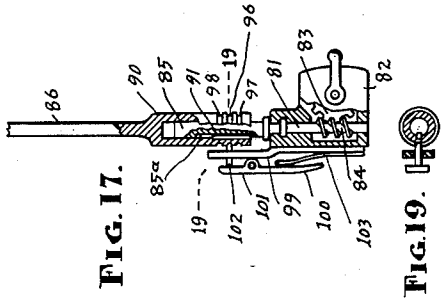


FIG. 17.

FIG. 19.

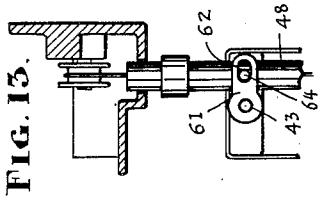


FIG. 13.

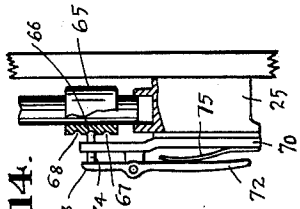


FIG. 14.

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Patented Apr. 26, 1932 1,855,346

UNITED STATES PATENT OFFICE

HARRY D. FORSE, OF ANDERSON, INDIANA

VENETIAN BLIND

Application filed March 16, 1931. Serial No. 522,964.

This invention relates to improvements in flexible slatted blinds of the type used in interiors, such as offices, hotel rooms, sleeping porches and the like.

An equipment of the above description, commonly known as a venetian blind, and in connection with which my present invention is shown, comprises a head rail which is secured in suitable position related to the window, a tilt rail supported pivotally at its ends in connection with said head rail, a bottom rail, pairs of opposed tapes connecting said rails and having spaced transverse tabs therebetween, slats retained in parallelism by said tapes and upon said tabs, and cords extending from said bottom rail and through perforations provided therefor in the slats, tilt rail and head rail, and being operable over pulleys or other devices, the said cords having extensions depending from the upper portions of the blind and being provided with handle grips.

Whereas it is possible by use of the depending cords, in connection with various usual sheave pulley and latch devices, to raise and lower the blind, and also to tilt the slats, there are the objections that the cords are not easy to manipulate, are unsightly in appearance, and are liable to get disarranged and out of order, and to become impracticable of use. To overcome the above objections, and to provide simple and efficient means for conveniently raising or lowering of the blind, and for the easy and positive tilting of the slats, and for the retention thereof in adjusted tilted position, are the general objects of this invention.

The above named general purposes, and also more specific aims of the invention, as will presently appear, are accomplished by and the invention is embodied in the new construction, combination and arrangement of parts described in the following specification and illustrated in the accompanying drawings. The several parts of the invention as they appear in the different views of the drawings are identified by suitable characters of reference applied to them.

In the drawings:

Figure 1 is a front view of my invention as it appears in connection with a flexible slatted blind of typically standard construction.

Figure 2 is an enlarged front view of the upper portion of the blind, the head rail thereof being shown in cross section.

Figure 3 is a top plan view of Figure 2.

Figure 4 is an end view taken in the direction of arrow 4 in Figure 2.

Figure 5 is an end view taken in the direction of arrow 5 in Figure 2.

Figure 6 is an enlarged end view of the bottom portion of the blind as seen in direction of the arrow 6 in Figure 1.

Figure 7 is an enlarged upright cross sectional view taken on the line 7—7 in Figure 3.

Figure 8 is a sectional top plan view taken on line 8—8 in Figure 7.

Figure 9 is a transverse cross sectional view taken on the line 9—9 in the direction of arrow 9 in Figure 7.

Figure 10 is a front view of the windlass.

Figure 11 is a top plan view of Figure 10.

Figure 12 is an end view taken in the direction of arrow 12 in Figure 10.

Figure 13 is a detail view of the upper portion of the tubular column and its connected parts in a modified form of construction.

Figure 14 is a detail view of the lower portion of the tubular column and its connected parts, in a modified form of construction.

Figure 15 is a front view of the invention in a form of embodiment, in which the operating cord of the blind is operated directly by an upright shaft or rod, which in turn is operable to tilt the slats of the blind.

Figure 16 is an end view of Figure 15.

Figure 17 is a view of the lower portion of the rod shown in Figure 15, and its associated parts.

Figure 18 is a sectional top plan view on the line 18—18 in Figure 15.

Figure 19 is a sectional top plan view on the line 19—19 in Figure 17.

Figure 20 is an enlarged detail view of the upper portion of the tubular column and its associated parts, in a modification wherein the tilt rail is controlled by a member passed through the column.

Figure 21 is a vertical transverse sectional

view on the line 21—21, and in direction of the arrow 21 in Figure 20.

Figure 22 is an enlarged detail view of the lower portion of the tubular column illustrated in Figure 20, the lower portion of the tilt rail cord being shown.

My invention lends itself to being embodied in and constituted a part of the blind as an entirety; also it is capable of being practicably applied to blind construction already in use.

Broadly stated, the invention consists of a tubular member mounted for movement, adjacent to the blind and through which the operating cord of the blind may be passed, and connections between the tubular member and the blind whereby when the tubular member is moved, there is a tilting of the shade.

A practicable form of embodiment for carrying my invention into effect, and which said embodiment is hereinafter particularly described, comprises a windlass secured to the window frame at position adjacent to the blind, a tubular column seated in loose relation with said windlass, and which is movable rotatively, its upper end being journaled in a suitable bearing provided therefor, an operating cord extending from the windlass and through the column, and which is connected to the lifting cord or cords of the blind, and connections between the column and the tilt rail of the blind whereby with the movement of said column there is a tilting movement of said tilt rail.

In the blind construction referred to, and which is installed at a window of usual structure having the side plates A and B, and the top plate C, 1 designates the head rail which, in the present instance, is about two and one-half inches wide, one inch thick, and forty-two inches in length. One end of this head rail is supported by a usual bracket 2, and the other is supported by a bracket of the new and improved construction presently to be described. Supported underneath the said head rail upon a usual hanger 3, and by a hanger 4, and which said hanger 4 forms a part of the aforesaid improved bracket presently to be described, is the top tilting rail 6. 7 designates the bottom rail of the blind. Extending from the top tilt rail 6 to and connecting it with the bottom tilt rail 7, are pairs of opposed tapes 9, having spaced interwoven transverse tabs 10 therebetween. Resting upon said tabs 10, are the slats 12. Through suitable perforations 13, 14, 15 and 16 in the bottom rail, the slats, the top tilt rail and the head rail respectively, cords 20 and 21 are passed.

In the head rail 1, a grooved pulley 22 and a grooved pulley 23, are journaled in such positions that the cords 20 and 21 may be readily trained over them. The construction thus far is usual and well known, and is recited here to acquaint the reader with the essential characteristics and features of the blind.

Adapted to be secured to the plate A of the window structure, is a windlass which for the purposes herein, may be of the simple and practicable formation shown in Figures 10, 11 and 12. This windlass, whose cast metal housing 25 is secured by cap screws 26 to the window plate, embodies a drum 27 which is operable by a crank 28. By means of pawl 29 which engages the ratchet 30, the drum is held in the usual manner against reverse movement. The function of the annular seat 31 which is provided in the top of said windlass casing, and as shown in Figures 10 and 11, will presently be referred to.

A bracket 33 which is adapted to be secured to the upper portion of the window casing by cap screws 35, has the horizontal base 36 upon which the end portion 1*a* of the said head rail is seated and secured. Associated with said base 36 is a downwardly extended support arm 37 provided with a journal bore 38. In the bottom portion 39 of said bracket is provided a bore 40. Journaled on a suitable pin 41 therefor embodied in said bracket, is a sheave pulley 42, which is in position with its relatively wide circumferential face in alignment above said bore 40. Journaled in said support arm 37 is a pintle 43 having the integrally formed fork shaped shank, the sides 44 of which are adapted to engage the sides of the end of the top tilting bar 6 of the blind, and to be secured thereto by suitable cap screws 45. The especial function of this pintle will be presently referred to.

A slender casing column 48, which may consist of brass or steel tubing about three-eights of an inch outside diameter, has its lower end to rest loose on the seat 31 of the windlass housing, (see Figure 10), and its upper end to occupy loosely the bore 40 of said bracket 33. The function of a small collar 49 which is secured to the said column near its upper end, and the function of a knurled round handle piece 50 which is secured to the column near its bottom, will presently be referred to.

A stout light cord 52 or cable of predetermined length and which is coiled—say—four times around the said column, has its end portions 53 and 54 brought about on opposite sides of the column. Similarly, they are continued on opposite sides of a cylindrical head piece 55, and are secured in aligned position between said sides. The said head piece is provided with a suitable bore and is reposed on the pintle 43, being secured thereon by a set screw 56. By this simple and effective arrangement and combination of parts, there is the positive actuation of the pintle 43, when the column is moved rotatively. At the same time it is possible to easily install the several parts.

The cords 20 and 21 are united at such

point, as shown in Figure 7, that the knotting or uniting clip 59 thereof may be at location immediately below the plane of the sheave pulley 42, when the blind is in the lowered position as shown in the drawings.

The blind in readiness to be installed, has at one end of its head rail 1 the usual bracket 2, and at the other end, my new bracket 33. To install the blind embodying my invention, it is disposed in place, and the brackets are secured in the usual manner to the window casing. Then the windlass is secured at the desired height on the side plate A of the window casing. An extension cord 60, which is wound on the windlass drum 27, is passed through column 48 and is secured to the united ends of the cords 20 and 21 at their juncture or uniting clip 59. The column is then disposed in raised position, the head piece 55 being slipped to position on the spindle 43 and there secured by set screw 56. The column is then eased upwardly, such movement thereof being limited by the collar 49. Its upper end is engaged in the bore 40 of the bracket 33, and its lower end is disposed at rest on the seat 31 of the windlass. The installation is now complete. With a few turns of the crank in the direction of the arrow in Figure 10, the slack in the cord 60 will have been taken up, the blind then appearing in status as shown in the drawings. Obviously a raising of the blind and the retention thereof at desired height is accomplished by operating the windlass. To lower the blind, the pawl 29 is raised, thereby permitting the windlass to move in the reverse or unwinding direction. Tilting of the slats may be had at any stage of operation of the blind. This is accomplished by simply moving rotatively, by means of the handle piece 50, the column. In this movement of the column, in which said column acts as a drum, there is the actuation, through one end or the other of the cord 52, in a rotative direction, of the head piece 55 and pintle 43.

In addition to the advantages of being able to easily raise or lower the blind, and to move the slats to and hold them in tilted position, there is the further and important advantage that the cords are protected and shielded, and are concealed from view, and they are so retained in place, that liability to disorder or disarrangement is practically eliminated. The device in its entirety is neat in appearance, strong and durable and is capable of being economically manufactured, and of being easily installed.

Whereas I have shown the invention herein specifically applied to a blind of a particularly described construction, it will be understood that it is capable of application to use in connection with, or as a part of slatted blind construction of various kinds wherein same are desired to be raised or lowered, and the slats thereof moved to and from tilted position. Also that it may be of right or left formation and may be modified in details and proportions as may be necessary in meeting the various requirements as to size, dimensions and weights of the blinds. The equipment and details as shown are capable of being applied with facility in connection with blinds of most all descriptions and dimensions. Actually true vertical position of the column is not necessary, it being therefore practicable to install the device successfully in all instances by simply the securing of the several parts in place as hereinbefore described. Compensating for variations in heights of window or door frames when the blind is to be installed, involves nothing more than a consideration as to a desirable length for the column.

In the modification shown in Figures 13 and 14, the column and its connections are so arranged that the movement of the column is upwardly or downwardly, instead of rotatively.

A crank 61, which has slot 62, is secured to the pintle 43 of the tilt rail. The said slot 62 engages a stud 64, that projects from the side of the column 48. At the lower portion of the column is secured a cross head 65, in whose face are spaced recesses 66, 67 and 68, one above the other. On a frame plate 70 which may extend from the casing 25, is a lever handle 72 whose head 73 is in engagement with a detent 74. The detent is mounted loose in the frame plate 70 in position with the line of said recesses. A spring 75 which acts against the handle to urge the detent against said cross head 65 is sufficiently yieldable to permit necessary retraction when force of the hand is exerted against the cross head to raise or lower the latter. When spring 75 is of higher tension, it is then desirable to press the handle 72 inwardly when the hand is applied to the cross head to raise or lower it. To operate the invention, the cross head 65 is by the hand either raised or lowered from the neutral status shown in Figure 14. The column is thereby lifted, the crank 61 functioning to turn the pintle 43, thereby tilting the tilt rail. The detent 74 in its engagement with one of the three recesses in the cross head 65, acts to retain the column in the position in which it may be set.

In another form of embodiment of my invention, there is the arrangement of an upright member—a rod, mounted in position adjacent to the blind, for rotative movement and also for longitudinal movement and to be retained in raised or lowered position, its upper portion being adapted to have wound thereon the lifting cord of the blind, and connections between said rod and the tilt rail whereby when the said rod is raised or lowered, there is the tilting movement of the tilt rail. Reference is made to Figure 15 to 19 inclusive. The said rod is of divided forma-

tion, the lower section 81 being journaled in a bearing which is embodied in the casing 82. A crank operated gear wheel 83, meshes with a worm 84 which is integral with said shaft section 81.

Integral with said shaft section 81 is a stem 85, having a spline-way 85*a*. The upper section 86, whose upper portion is journaled in a suitable bracket 87, has secured thereon a spool 88. The lower end of said upper section 86 is enlarged to constitute a head 90. A central bore in said head, in which is engaged the stem 85, is provided with a spline 91 which engages the spline-way 85*a* of the latter, the said upper section 86 of the shaft being thereby rotatable with the section 81, but movable longitudinally thereof.

A crank 92 which has a slot 93, is secured to the pintle 43 of the tilt rail. The said slot engages a stud 94, of a collar 95 which is retained on said shaft section 86, against longitudinal movement, but which permits the shaft to move rotatively. On the said head 90, are spaced peripheral grooves 96, 97 and 98. On a frame plate 99 which may extend from the casing 82, is a lever handle 100 whose head 101 is in engagement with a detent 102. This detent is mounted loose in the frame plate, and it is in position to be engaged by one of said grooves 96, 97 or 98. A spring 103 acts against the handle to urge the detent against the head 90 and it is sufficiently yieldable to permit the rod to be moved upwardly or downwardly by the hand.

By the above arrangement it is practicable to raise and lower the blind by rotating the rod 86. To move the tilt rail, the rod is raised or lowered, by the hand, the said rod being retained in the position at which it may be set, by the detent 102 in engagement with one of the three grooves 96, 97 or 98.

In the modification illustrated in Figures 20, 21, and 22, the tilt rail 6 is moved by a member which is passed down through, and is operable from outside the column 48. The said member consists of a cord 105 which has its upper end fastened to an ear 107 provided on one side of the said tilt rail. The said cord is trained over a sheave pulley 108 which is journaled on bracket 33, thence down the interior, and out through an aperture 109 of the said column. On the lower end of said cord 105 is a weight piece 110. A helical spring 111 is positioned between the said bracket 33 and the side of the tilt rail 6. The urge of this spring is downwardly, its function being to resist the tension exerted by the said cord 105, the latter being by the action of the weight piece 110, stayed in cramped status in the aperture 109.

To move the tilt rail from the normal or horizontal status, as it is shown in the drawings, the lower end of cord is moved slightly in the direction of arrow shown in Figure 22. Being thus relieved from its cramped status, it yields to the urge of the spring 111, and the tilt rail is moved in the direction of arrow 114. When the desired angle of inclination of the tilt rail is obtained, the lower end of the cord is disposed as shown in Figure 22, the weight piece 110 again acting to hold the cord in the cramped and stayed status. Obviously, to move the tilt rail in the direction opposite to that indicated by the arrow 114, the manipulation of the lower end of the cord 105 is repeated, a sufficient pull on the said cord being exerted. The lower end of the cord being again cramped in the aperture 109, the urge of spring 111 is resisted.

Whereas I have shown and described the structural features and details considered as being suitable in the carrying of my invention into effect, I wish it to be understood that, within the scope of the invention as same is defined in the appended claims, minor changes may be made without departing from the essence, spirit and the general principles of my invention.

What I claim as my invention, is—

1. In a flexible slatted blind of the kind described, comprising a head rail adapted to be secured to the window casing, a top tilt rail pivotally supported thereunder, lift cords passed upwardly through said head rail and trained over spaced pulleys thereon, and a sheave pulley journaled at position near the end of said head rail, a windlass embodied in a suitable housing which is adapted to be secured to the window casing at its lower portion, a tubular column mounted loose on the windlass housing and having its upper end retained in rotatively movable position adjacent to the end of the tilt top rail, a cable from the windlass and through the said column and having connection united with the meeting end of the lift cords at a point adjacent to said sheave pulley, and power transmitting connections between the said column and the aforesaid top tilt rail, whereby with a rotative movement of the column there is a rotative movement of the top rail.

2. In blinds of the kind described, a device for raising and lowering same and for tilting the slats thereof, consisting of a windlass embodied in a suitable housing which is adapted to be secured to the upright plate of the window casing, an upright tubular column seated on said housing for rotative movement, a journal bearing for the upper end of said column, a cylindrical head piece combined with the pintle of the top tilt rail, a cable extending from the windlass and through the said column, and power transmitting connections between the column and the said pintle head piece.

3. In blinds of the kind described, a device for raising and lowering same, and for moving the slats to and retaining them in ad-

justed slanted position, comprising a windlass embodied in a housing which is adapted to be secured to the upright plate of the window casing, an upright tubular column seated on said housing for rotative movement, a bracket constituting a support for the head rail and the top tilt rail, a pintle structure for the said top tilt rail embodying a cylindrical head piece, a flexible cord coiled on the column and having its ends to embrace the opposite sides of, and which are secured to said head piece, and a cable extending from the windlass and through the said column.

4. A control apparatus for Venetian blinds, comprising a tube retained loose in position adjacent to the blind, and through which said tube the operating cord of the blind may be passed, and connections between the tube and the blind whereby when the tube is moved the slats of the blind are tilted.

5. In blind construction of the kind described, a hollow column mounted at position related to said blind and movable, and through which the lift cord of the blind may be passed, and connections between the hollow column and the blind whereby with a movement of the column there is movement of the tilt rail.

6. In blind construction of the kind described, a hollow column mounted at position adjacent to the tilt rail of the blind and movable rotatively, and power transmitting connections between said column and the tilt rail whereby with a rotative movement of the column there is rotative movement of the tilt rail.

7. In blind construction of the kind described, a sheave pulley journaled at position adjacent to the head rail, a hollow column mounted at position related to the said sheave pulley and movable rotatively, a cable passed through the column and over the sheave pulley and being connected to the lift cord of the blind, and power transmitting connections between the column and the tilt rail of the blind whereby with a rotative movement of the column there is rotative movement of the said tilt rail.

8. In control apparatus for Venetian blinds comprising a flexible cord and raising and lowering mechanism, a tubular casing for the cord, and connections between the tubular casing and the blind whereby with a movement of the tubing, there is a tilting of the blind.

9. A control apparatus for Venetian blinds comprising a rod member mounted in position adjacent to the blind and movable rotatively and longitudinally, and connections between the blind and the said rod member whereby with a rotative movement of the said rod member the blind is raised or lowered, and by the longitudinal movement of said rod member the slats of the blind are tilted.

10. Apparatus for the control of Venetian blinds comprising an upright member mounted in position adjacent to the blind for rotative movement, and for longitudinal movement and adapted to be retained in raised or lowered status, and the upper portion being adapted to have wound thereon the lifting cord of the blind, connections between the said upright member and the tilt rail whereby when the said upright member is raised or lowered, there is a tilting movement of the slats.

11. In control apparatus for Venetian blinds, a hollow column mounted at position related to the blind and through which said column the operating cord of the blind may be passed, a member passed through the said column, and operable from outside the said column, and connections between the said member and the blind whereby when the said member is moved the slats of the blind are tilted.

12. In control apparatus for Venetian blinds, a hollow column mounted at position related to the blind and through which said column the operating cord of the blind may be passed, the said column having an aperture in its wall, a cord passed into the column, its one end being fastened to one side of the tilt rail, and its other end being passed through the aperture in the column and provided with a weight piece, and a spring between the tilt rail and the blind structure to resist the tension exerted by said cord.

13. In Venetian blind construction of the kind described, comprising a flexible cord and a raising and lowering mechanism, a tubular casing for the said cord and having an aperture in the wall thereof, a sheave pulley journaled at position above said tubular casing, a spring between the blind support structure and one side of the tilt rail, and a cord connected to one side of the tilt rail and trained over said pulley and thence through the tubular casing and out through the aperture thereof, and a weight piece on the lower end of said cord.

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