Nov. 10, 1964 F. VECCHIARELLI ETAL 3,156,295

TILTING MECHANISM FOR VENETIAN BLINDS, OR THE LIKE

Filed Jan. 30, 1963 2 Sheets-Sheet 1

FIG. 1

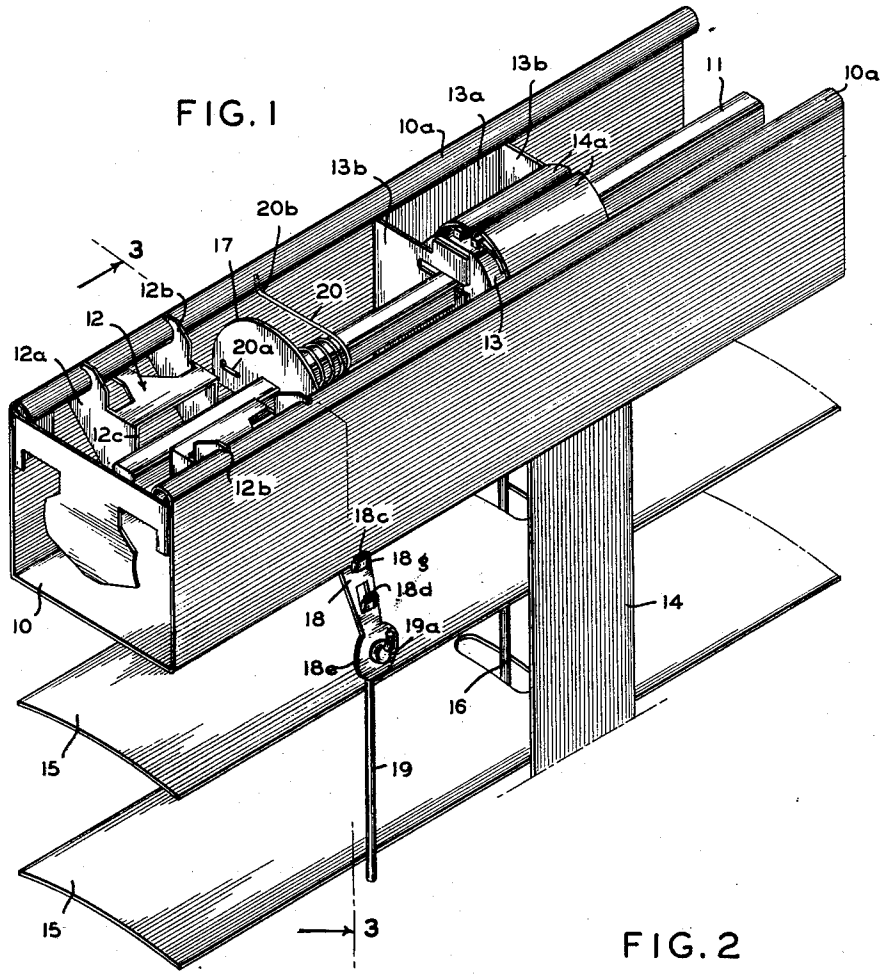
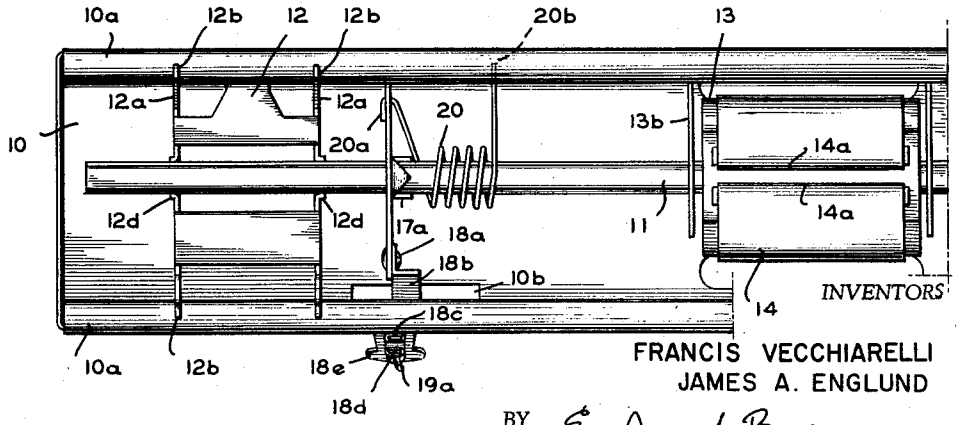


FIG. 2



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Filed Jan. 30, 1963 2 Sheets-Sheet 2

FIG. 3

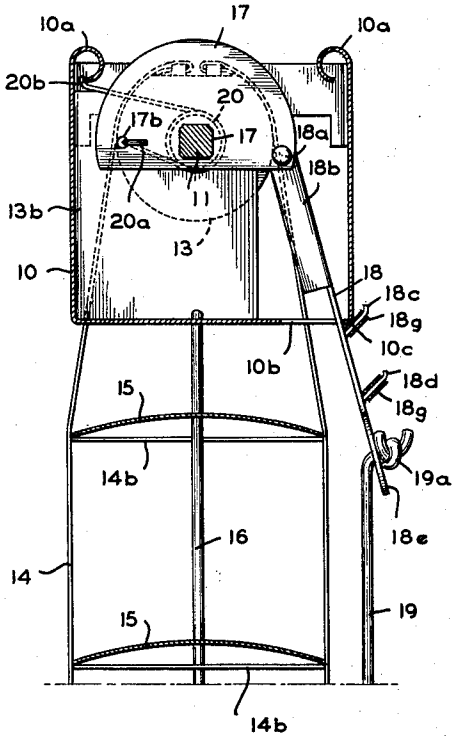


FIG. 4

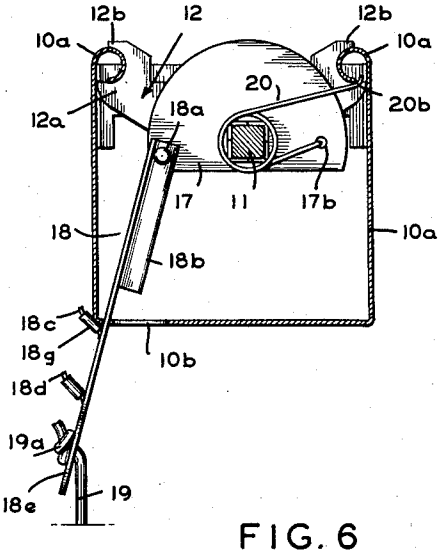


FIG. 5

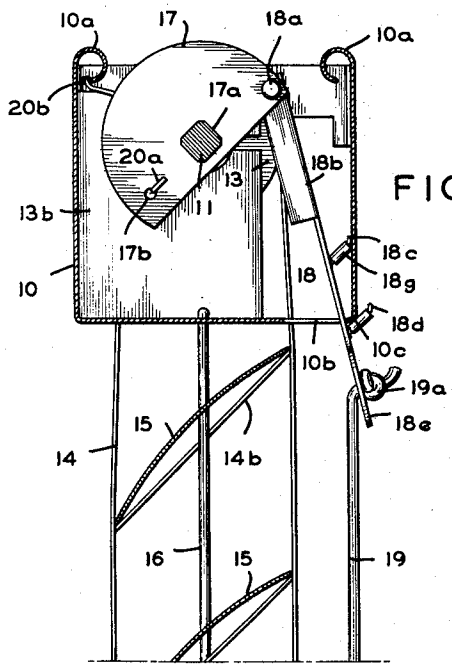
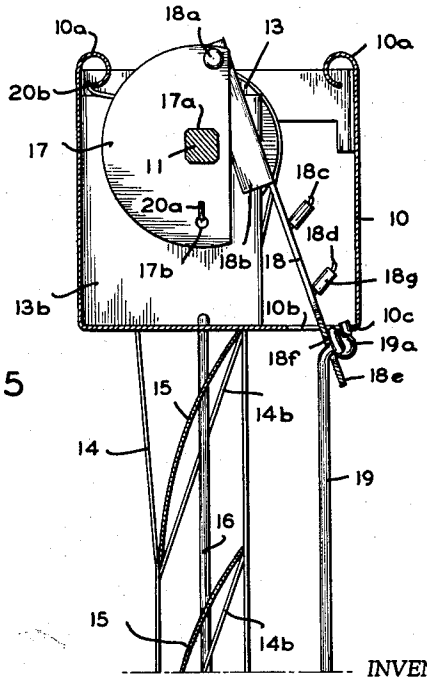


FIG. 6



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TILTING MECHANISM FOR VENETIAN BLINDS, OR THE LIKE

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This invention relates to Venetian blinds and more specifically to tilt rod mechanism for controlling the adjustability of the slats of the blind insofar as angular relationship is concerned.

In present day architectural practices, and particular reference is had to commercial structures such as office buildings, hotels, high rise apartment buildings, and the like, the constantly increasing tendency is toward the utilization of maximum window space and under such conditions sheet or other glass structural elements constitute the greater portion of wall surface.

Buildings so constructed are of extremely pleasing appearance and provide greatest opportunities for minimizing the actual necessity for continued use of artificial interior illumination. To control entry of sunlight, as well as to provide a requisite measure of privacy, Venetian blinds generally are employed.

It has been found that in relatively large structures of the character under discussion, where there is complete freedom of angular adjustment of the slats of the Venetian blinds the aesthetic appearance of the building becomes marred to a tremendous extent through random adjustment of slat angularity.

The present invention is concerned with the prevention of indiscriminate adjustment of blind slats and it is a particular object thereof to provide novel tilter mechanism in a Venetian blind whereby slat adjustment is predetermined and angular variation may be accomplished to certain fixed positions only.

It is a further object of the invention to provide a novel Venetian blind wherein the normal position of the slats will be in upwardly directed and in closed relationship.

It is a still further object of the invention to provide novel tilt mechanism in a Venetian blind whereby angular adjustment of the slats may be accomplished only in a single direction, from a normally closed position to a fully opened position, with one or more predetermined positions therebetween.

It is a further object of the invention to provide a novel tilt cord and tilt rod assembly for use in a Venetian blind, or the like, whereby angular adjustment of the slats may be accomplished only through a predetermined range and only to certain fixed positions therein.

It is a still further object of the invention to provide a novel tilt cord and tilt rod assembly for use in a Venetian blind, or the like, where but a single cord is required, as distinguished from conventional or standard Venetian blind structures where two cords are needed, or a loop at the tilter, to bring about angular adjustment of the blind slats.

It is a further object of the invention to provide novel Venetian blind structure including means for selectively retaining angular adjustment of the blind slats in one of a plurality of predetermined positions and automatically

returning the blind slats to a position of full closure upon release of the tilt cord.

Further objects and advantages of the invention will be readily apparent from the following description, taken in connection with the accompanying drawings, wherein:

FIGURE 1 is a perspective view of the upper portion of a Venetian blind constructed in accordance with the present invention, the slats thereof being illustrated in substantially horizontal, fully opened position;

FIGURE 2 is a top plan view of the portion of the blind illustrated in FIGURE 1, parts being broken away;

FIGURE 3 is a transverse sectional view taken on the line 3—3 of FIGURE 1, the tilter assembly and slats being illustrated in fully opened position;

FIGURE 4 is a fragmentary transverse sectional view, similar to FIGURE 3 and illustrating the reverse side of the tilter assembly;

FIGURE 5 is a transverse sectional view, similar to FIGURE 3 and illustrating the tilter assembly and slats in intermediate, partially opened position; and

FIGURE 6 is a transverse sectional view, similar to FIGURE 3 and illustrating the tilter assembly and slats in normal, upwardly directed, completely shut or closed position.

As shown in the drawings, the Venetian blind per se may be of conventional construction and includes the usual head rail **10** of inverted U-shaped configuration, the side walls of which desirably terminate in beaded portions **10***a*. A tilt rod **11**, which may be of rectangular cross-sectional configuration, extends lengthwise of the channel-shaped head rail and is mounted, adjacent each extremity thereof, for partial rotative movement, within a tilt rod cradle **12** which will be described more fully hereafter.

A tape roll **13**, of conventional design, is mounted on the tilt rod **11** adjacent each cradle **12** and the upper extremities **14***a* of the ladder tape **14** are secured to the tape roll **13** as is well known in this art. Articulated slats **15** are supported upon the rungs **14***b* of the ladder tape **14** and the usual lift cords **16** are provided for raising and lowering the bottom rail (not shown) and slats.

Each tape roll **13** may be housed within a suitable bracket **13***a* which is fixedly secured in the head rail or bar **10** against displacement, each bracket **13***a* including side wall portions **13***b* which provide support and bearing surfaces for the tilt rod **11**.

The tilt cradle **12** may be in the form of a bracket produced from sheet metal or the like, by a simple stamping process, and includes spaced parallel side members **12***a* which terminate in recessed or hook-like extremities **12***b* which are intended to engage the opposed beaded portions **10***a* of the head rail **10** and thus securely lock the tilt cradle in position. Each side member **12***a* is recessed centrally, or slotted, as indicated at **12***c* for the convenient reception of the tilt rod **11**, the lower extremity of each recess being turned or rolled outwardly as at **12***d* to provide a bearing surface for the tilt rod.

A tilt disk **17**, which may be of segmental configuration, is mounted upon the tilt rod **11** adjacent the tilt cradle and, for convenience of assembly, the tilt disk is provided with an aperture and hub portion **17***a* of rectangular configuration complementary to that of the tilt rod which is received therein. Thus, when rotative force is applied to the tilt disk, the tilt rod will be turned therewith.

A pull tab or strap **18** is pivotally attached to the upper extremity of the tilt disk, as by a rivet or the like

18*a*, the pull tab being provided with an angularly directed ear 18*b* through which said rivet extends. The pull tab is provided on its outer surface with a plurality of outwardly directed fingers or stops, two such elements 18*c* and 18*d* being illustrated, and extends downwardly projecting through an aperture 10*b* provided for such purpose in the bottom wall of the head rail 10. As illustrated more particularly in FIGURES 1 and 2 of the drawings, the lower extremity 18*e* of the tilter pull tab may be enlarged and is provided with an aperture 18*f* within which the upper extremity of the tilt cord 19 is received, the tilt cord being knotted as at 19*a*, or otherwise enlarged, to prevent inadvertent disengagement between the tilt cord and the pull tab.

Suitable means is provided for urging or biasing the tilt disc in a counter-clockwise direction toward the normal position illustrated in FIGURE 6 of the drawings wherein the slats 15 are in fully closed position. One embodiment of such means has been illustrated as a coil spring 20, the convolutions of which surround the tilt rod 11. One extremity 20*a* of the coil spring is engaged within an aperture 17*b* provided in the tilter disk for this purpose; the other hooked extremity 20*b* of the coil spring is engaged beneath the adjacent bead 10*a* of the head rail 10, all as clearly illustrated in FIGURE 3 of the drawings.

It will be understood that angular adjustment of the blind slats from the normally closed position shown in FIGURE 6 of the drawings is accomplished by exerting a downward pressure upon the tilt cord 19. As the tab or strap 18 is pulled downwardly therewith, rotative force in a clockwise direction is imparted to the tilt rod 11 through the tilt disk 17 against the torsion imparted by the coil spring 20.

As the pull tab 18 is drawn downwardly through the aperture 10*b* in the bottom wall of the head rail 10, the finger or stop 18*d* passes beyond the bottom edge 10*c* of the head rail to the position illustrated in FIGURE 5 of the drawings and will engage therewith and remain locked in this position through action of the spring 20 as pressure upon the tilt cord is released.

The precise location of the stop 18*d* will determine the angular relationship of the slats in this initial partially opened positon and it has been found in practice that a desirable positioning, or angular relationship, is with the slats at an angle approximating 45° at which point the blind will be half open.

Continued downward pressure upon the tilt cord will further advance the pull tab 18 until the finger or stop 18*c* will have passed beyond the edge 10*c* of the aperture 10*b* and will engage therewith, as illustrated in FIGURES 3 and 4 of the drawings, upon release of the tilt cord. At this time the tilt disk 17 will have approached the limit of its rotative movement and the slats will lie in a substantially horizontal plane, maximum opening of the blind having been achieved.

It will be understood that while the pull tab has been illustrated as having but two stops, whereby the blind may be adjusted from the closed to either the fully opened or one intermediate position in the preferred embodiment of the invention, a greater or lesser number of stops may be provided with a correspondingly increased or decreased number of fixed adjustments possible.

Desirably, each of the fingers or stops 18*c* and 18*d* may be provided with a protective coating, sleeve or the like 18*g*, produced from any suitable material such as rubber, to guard against the marring through friction or otherwise of the bottom edge and front face portion of the head rail 10 with which the stops are selectively engaged as adjustment of slat angularity is accomplished.

Release of the blind is extremely simple; upon disengagement of a stop with the retaining edge of the aperture 10*a*, pull tab and tilt disk will return through influence of the spring 20 to normal inoperative position, as illustrated in FIGURE 6 of the drawings, with the slats at the upward limit of adjustment and the blind fully closed.

A unique feature of the Venetian blind described herein, in addition to the automatic return of the blind to fully closed position upon release of the tilt cord, is that a single tilt cord is required as distinguished from standard or conventional blind structures where two cords are needed, or a loop at the tilter must be provided, to effect angular adjustment of the blind slats.

There has thus been described a novel Venetian blind, and novel tilter assembly and associated mechanism, which in the normal position thereof will be fully closed with the slats thereof upwardly directed and which may be opened only to certain predetermined positions. The operation thereof is particularly simple; random adjustment of slat angularity cannot be accomplished and there are no parts which are susceptible to unusual wear including, particularly, the tilt cord. Moreover, the novel mechanism may be produced and assembled with particular economy.

It will be obvious to those skilled in this art that various changes may be made in the invention without departing from the spirit and scope thereof and the invention therefore is not considered limited by that which is shown in the drawings and described in the specification and reference is had to the claims for summaries of the essentials of the invention including the novel features of construction and novel combinations of parts for all of which protection is desired.

What is claimed is:

1. In a Venetian blind including a head bar having a tilt rod mounted longitudinally thereof for rotative movement, tape rolls mounted upon said tilt rod, ladder tapes depending from said tape rolls, and angularly adjustable slats supported by said ladder tapes, tilting mechanism for normally retaining said slats in closed position and operable for selectively adjusting the angular relationship of said slats to one of a plurality of predetermined positions, said tilting mechanism including a tilt disk secured to said tilt rod, resilient means for urging said tilt disk and tilt rod to a normal position where said slats are closed, a pull tab pivotally attached to said tilt disk for partially rotating said tilt disk and tilt rod to a position where said slats are opened, and stop means for selectively locking said tilt disk when the angular adjustment of said slats will have reached one of said predetermined positions.

2. A Venetian blind as set forth in claim 1 where said resilient means for urging said tilt disk to normal closed position comprises a coil spring surrounding said tilt rod, one extremity of said spring being connected to said tilt disk and the other extremity of said spring engaging against an edge of said head bar.

3. A Venetian blind as set forth in claim 1 where said stop means comprises a plurality of spaced fingers carried by said pull tab.

4. A Venetian blind as set forth in claim 3 where said pull tab is actuated by a tilt cord attached to the lower extremity thereof.

5. A Venetian blind as set forth in claim 4 where said pull tab extends through an aperture in said head bar and one of said stop means is selectively engaged with an edge of said aperture to lock said tilt disk in desired adjusted position.

6. In a Venetian blind including a head bar having a tilt bar mounted longitudinally thereof for rotative movement, tape rolls mounted upon said tilt rod, ladder tapes depending from said tape rolls, and angularly adjustable slats supported by said ladder tapes, a three-position tilting assembly for normally retaining said slats in upwardly directed closed position and operable for selectively adjusting the angular relationship of slats to a predetermined opened position where said slats will be substantially horizontally disposed or to an intermediate angular relationship between said closed and opened po-

sitions, said three-position tilting assembly including a tilt disk adapted to be secured to the tilt rod, resilient means for urging said tilt disk and tilt rod in a counter-clockwise direction to a normal closed position, a pull tab pivotally attached to said tilt disk, a tilt cord for moving said pull tab in a downward direction to rotate said tilt disk in a clockwise direction to open the slats of said blind, and a pair of stops carried by said pull tab and engageable with said head bar to selectively lock said tilt disk in a first position where said slats are partially opened or in a second position where said slats are fully opened and are substantially horizontally disposed.

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