

Aug. 19, 1958

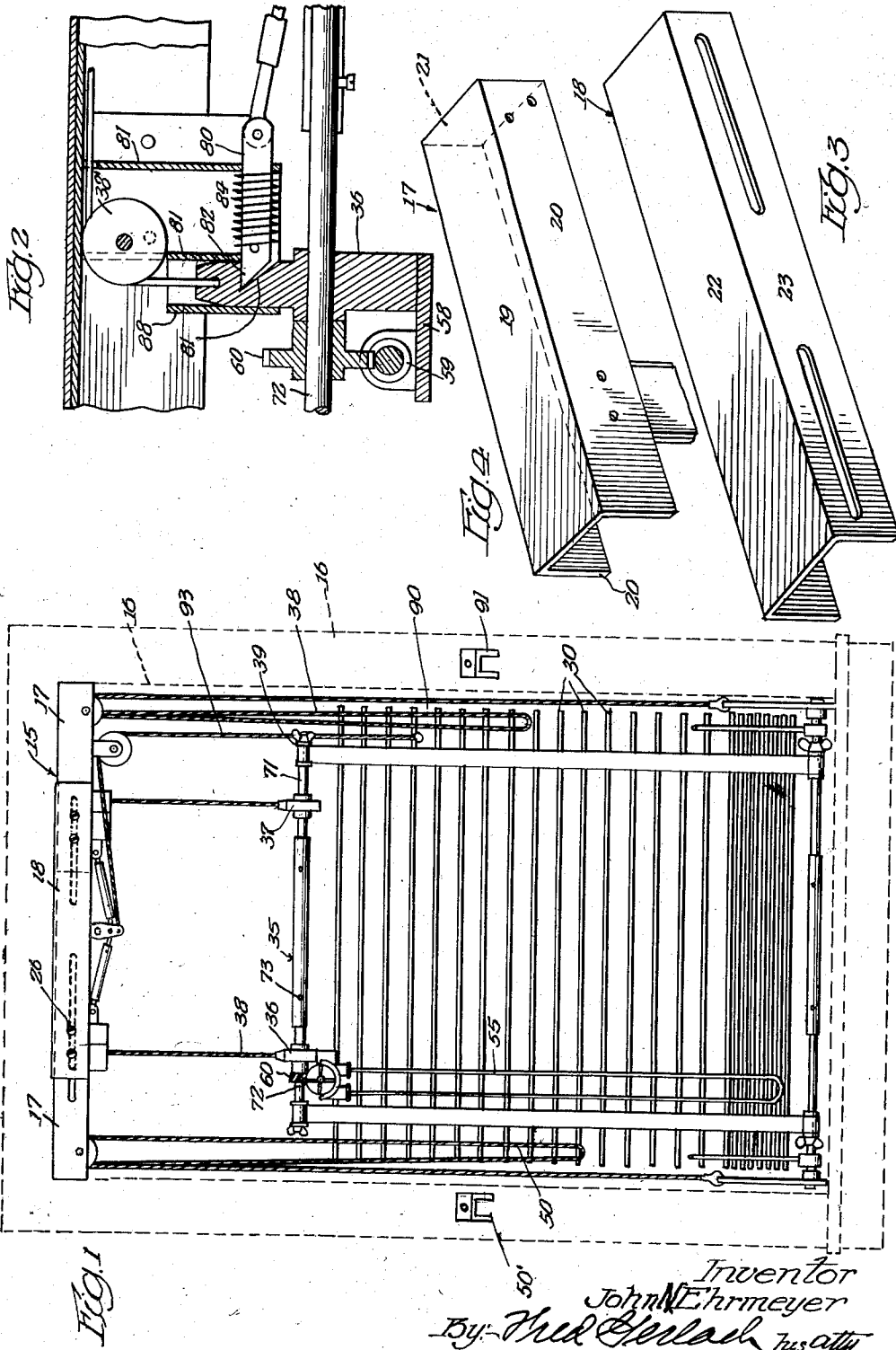
J. N. EHRMEYER

2,848,044

VENETIAN BLIND

Filed Feb. 17, 1955

2 Sheets-Sheet 1



Inventor
John N. Ehrmeyer
By: *Mark C. ...* *Att'y*

Aug. 19, 1958

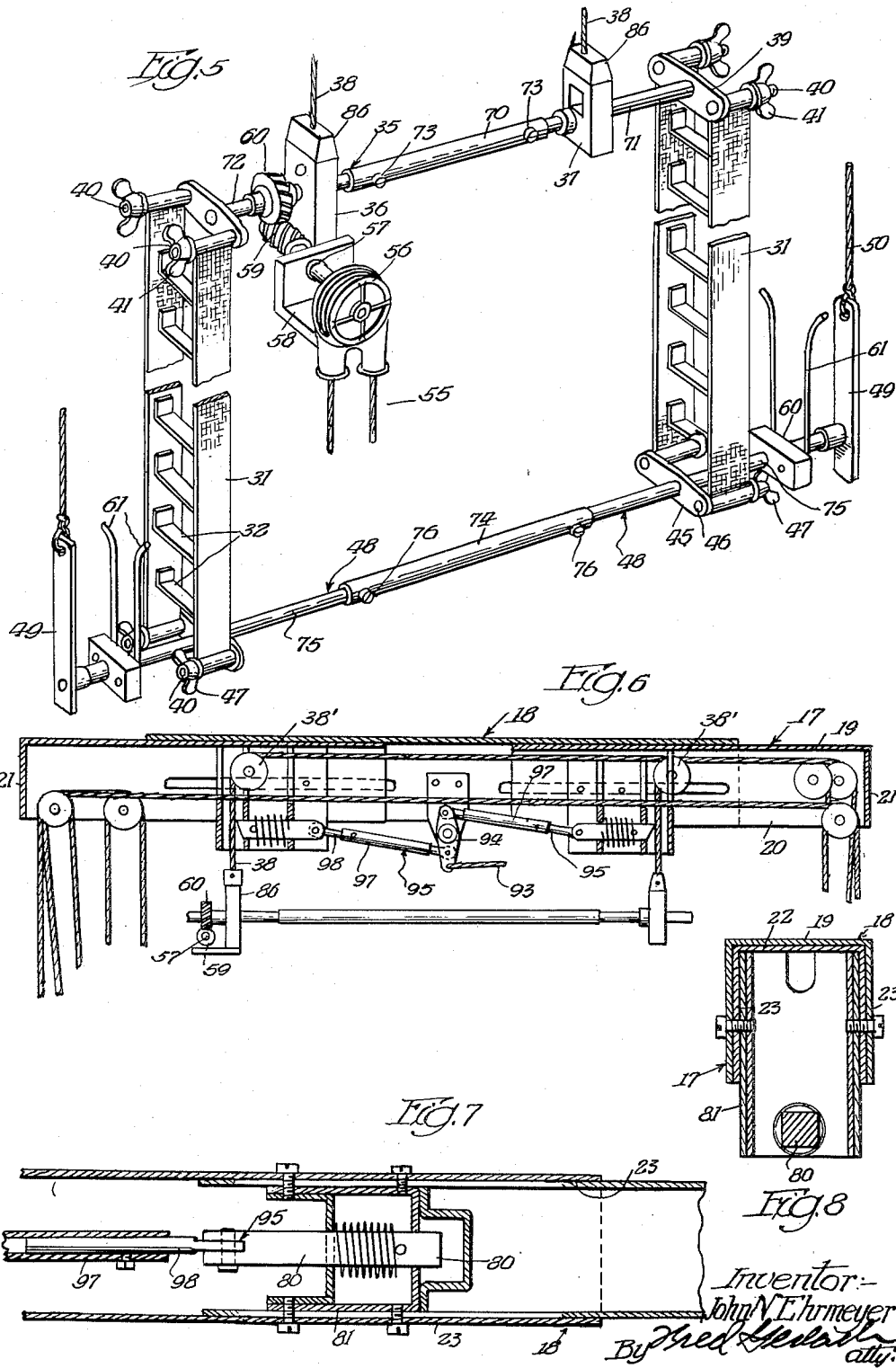
J. N. EHRMEYER

2,848,044

VENETIAN BLIND

Filed Feb. 17, 1955

2 Sheets-Sheet 2



Inventor:
John N. Ehrmeyer
By *Phed...*
att'y.

1

2,848,044

VENETIAN BLIND

John N. Ehrmeyer, Chicago, Ill.

Application February 17, 1955, Serial No. 488,945

7 Claims. (Cl. 160—167)

The invention relates to Venetian blinds.

One object of the invention is to provide improved means for adjustably supporting the slats to provide an open space above the blind for the free passage of light or unobstructed ventilation.

Another object is to provide adjustable means for supporting, tilting and lifting the slats which is readily adjustable for use with windows of different widths and slots of different lengths.

Other objects will appear from the detail description.

The invention consists in the several novel features hereinafter described and more particularly pointed out in the claims at the conclusion hereof.

In the drawings:

Fig. 1 is a side elevation of a Venetian blind embodying the invention, the upper slats being lowered;

Fig. 2 is a section taken on line 2—2 of Fig. 7;

Fig. 3 is a perspective of the central section of the adjustable supporting-head;

Fig. 4 is a perspective of one of the end-sections of the supporting head;

Fig. 5 is a perspective of the vertically adjustable structure for supporting and tilting the slats, the slats being omitted;

Fig. 6 is a vertical longitudinal section of the supporting head mounted therein;

Fig. 7 is a section taken on line 7—7 of Fig. 2; and

Fig. 8 is a section taken on line 8—8 of Fig. 6.

The invention is exemplified with a supporting-head 15 which fits under the top rail and between the sides of a window frame 16 as indicated by dotted lines in Fig. 1. This head 15 comprises slidably fitting end-sections 17 and a central section 18, which are adjustably connected together to span windows of different widths. Each end-section 17 is formed of sheet metal and channel shape in cross-section and comprises a top-wall 19, depending side-flanges 20 and an end-flange 21 at its outer end. The central-section is formed of sheet metal, channel-shaped in cross-section and comprises a top-wall 22 and depending side flanges 22. The side-flanges 20 of the end-sections and flanges 23 of the central section, are overlapped and slidably fitted, and the top-walls 19 of the end-sections overlap and slidably fit the top-wall 22 of the central section 18. Bolts 26 threaded to the sections 17 extend through slots 27 in side-flanges 23 of section 18 and adjustably secure the sections together in horizontal alignments. When the bolts 26 are loose, the end-sections may be extended or moved together to span windows of different widths, and when the bolts are tightened, the sections will be rigidly secured together in the assigned longitudinal relation to span windows of different widths. This exemplifies a head-structure composed of slidably connected sections which can be readily extended to span windows of different widths.

A series of slats 30 are supported on ladder-tapes which include cross-members 32 on which the slats are

2

individually supported, and vertical members 31 to which members 32 are attached.

The supporting and adjusting means for the upper ends of tapes 31 and the slats thereon, comprises: a pair of suspension elements, such as flexible cords or chains 38; hanger blocks 36 and 37 attached to the lower ends of elements 38; an upper shaft generally designated 35 journaled in blocks 36 and 37 adapted to be raised or lowered by said elements; a pair of centrally pivoted levers 39 fixed on the outer ends of shaft 35; and a pair of outwardly projecting studs 40 which are fixed to the distal ends of each lever 39, and to which the upper ends of the vertical members 31 of the ladder are detachably connected by nuts 41. The shaft 35 when moved vertically and bodily by the elements 38 raises or lowers the upper slats of the series to shade or clear the upper portion of the window. Supporting and adjusting means for the lower ends of tapes 31 and the lower slats, comprises: a lower shaft 48 secured to a pair of centrally pivoted levers 45 to the distal ends of which the lower ends of the vertical members 31 are detachably connected by studs 46 on the levers and wing-nuts 47; a shaft 48 journaled in levers 45; hangers 49 pivotally supported on the outer ends of shaft 48; and suspension elements such as cords or chains 50 connected to the upper ends of hangers 49. The hangers 49 are adapted to rest on the window sill and arrest the downward movement of shaft 48 when the upper shaft 35 is lowered to lower the upper slats for clearing the upper portion of the window. Hangers 49 are adapted to raise the lower shaft 48 and the lower slats to clear the lower portion of the window. Stirrups, each of which includes a cross-bar 60 secured to a hanger 49 and a pair of upstanding legs 61 secured in the cross-bar and having flared upper ends, are adapted to stack the lower shafts when the upper shaft 35 is lowered relatively to shaft 48, or when the lower shaft 48 is raised relatively to said lower shaft. The vertical members 31 of the ladder-tapes are movable in opposite directions for angularly changing the cross-members 32 of said tapes on which the slats are individually supported, as well understood in the art. The tilting of the slats is selectively controlled by the pivotal movement of shaft 35 which operates levers 39 to simultaneously shift tape members 31 in opposite directions. The lower ends of tape members 31 swing levers 45 and shaft 48 correspondingly to upper shaft 35 to tilt the lower slats when they are not stacked in the stirrups.

Mechanism for rocking shaft 35 in hangers 36 and 37 and to operate levers 39 to tilt the slats, comprises an endless flexible element 55 such as a cord or chain; a pulley 56 operable by said element and fixed to a shaft 57; a bracket 58 on hanger 36 in which shaft 57 is journaled; a worm 59 on shaft 57; and a gear 60 meshing with said worm and fixed to shaft 35. A selective pull on the depending reaches of cord 55 will rotate pulley 56, shaft 57 and worm 59 which will rotate gear 60 and shaft 35 to rock levers 39 and operate tape-members 31 to rock lower levels 45 and the lower shaft 48 for tilting all of the slats which are free to be tilted.

The devices for raising, lowering and tilting the slats, as well as the head 15 are adjustable for slats of different lengths and windows of different widths. For this purpose, upper shaft 35 and lower shaft 48 are extensible and composed of telescopically connected sections. Shaft 35 comprises a central tubular section 70 and end-sections 71 and 72 which are slidable and adjustably secured in section 70 by screws 73. Lower shaft 48 comprises a tubular central section 74 and end-sections 75 which are slidable and adjustably secured by screws 76 in section 74. When the supporting and shifting devices for the slats are to be used with a wide window and long slats, the end-sections 71 and 72 of shaft 35 are extended out-

wardly and secured in section 70 and end-sections 75 are extended outwardly and secured in section 74 until the hangers 49 are disposed adjacent the sides of the window and the ends of the slats. This adjustment of shaft-sections 71 and 72, and 74 and 75 positions the ladder-tapes for raising and lowering and tilting of different lengths of slats. Inward adjustment of said end-sections of shafts 35 and 43 positions the ladder-tapes for raising and lowering and tilting slats for narrower windows.

Mechanism for locking the hanger-blocks 36 and 37 in raised position for supporting the slats to shade the upper portion of the window, comprises a pair of bolts 80, each of which is slidably mounted in a bracket 81 which is fixedly supported by bolts 26 in an end-section 17 of head 15. The inner faces of hanger-blocks 36 and 37 are each provided with a V-shaped notch 81 to receive a latch tooth 82 on the outer ends of a bolt 80 for locking the hanger-blocks in their raised position under the head 15, as shown in Fig. 2. Springs 84 normally hold the bolts 80 in their operative position. The upper end 86 of each of the hanger-blocks 36 and 37 is tapered and slidable into a U-shaped bracket 83 which is fixedly secured on one end of a bracket 81 for confining said block in operative relation with the teeth 82 on bolts 80. When the elements 38 are pulled and raise the hanger-blocks 36 and 37, the tapered ends 86 of the hanger-blocks will be slidably guided by and confined in brackets 83 so that the teeth 82 on bolts 80 will snap into notches 81 and lock the hanger-blocks in the head 15. The shaft 35 and the tilting means for the slats will then be locked in their raised position for rendering the slats usable to shade the upper portion of the window. The suspension elements 38 are adapted to raise and lower hanger-blocks 36 and 37. Elements 38 are suitably guided by sheaves 33' and others mounted in the head 15, and terminate in a loop 90 which is adapted to be secured to a bracket 91 on the window frame for supporting the upper shaft 35 in any of its lowered positions.

The bolts 80 are retractable against the force of springs 84 by a chain 93 which is connected to a lever 94 which is pivotally supported on section 18 of head 15, and links 95 between said lever and the inner ends of bolts 80. The chain 93 is guided from lever 94 by a roller 96 to depend at one side of the window. Each link 95 is composed of a tubular section 97 and a shaft-section 98 which are slidably adjustable to vary the length of the link to compensate for the adjustment of the end-sections of the head 15 when they are adjusted for use with slots of different lengths. Screws 97' are adapted to secure the sections of each link in their adjusted position.

The elements 50 for raising and lowering the lower hangers 49 and lower shaft 43 are suitably guided by rollers mounted in the head 15 and terminate in pendant loop 99 by which both hangers may be selectively and simultaneously raised or lowered. Said loop 99 may be secured to a bracket 50' to support said hangers and shaft 43 at different heights.

The operation will be as follows: When the hanger-blocks have been raised and bolts 80 are interlocked with notches 81 in said blocks, shaft 35 and the slat-tilting mechanism and the upper ends of the ladder tapes will be supported in raised position to shade the entire window. The slats may be tilted as desired by the manipulation of loop 55 to open or close the spaces between the slats. When it is desired to clear the lower portion of the window, a pull on the loop of element 50 will raise the hangers 49 off the window sill and lift shaft 43 and the lower slats until the lower area of the window is cleared to the extent desired. The loop of elements are then fastened to the bracket 50' and the lower slots will then be retained in the position to which they have been raised. During this raising of shaft 43, the slats will be progressively stacked on cross-bars 60 and between the legs 61 of the stirrups on said shaft. The tilting devices

will be operative to tilt the slats above those which are stacked in said stirrups.

When it is desired to lower the upper slats for clearing the upper portion of the window, a pull on chain 93 will rock lever 94 and withdraw the bolts 80 from and release hanger-blocks 36 and 37. The loop 93 of elements 38 will then be released from bracket 91 and lowered to drop the journal blocks 36 and 37 to the extent desired. This may be done while the lower slats are in their lowered position, or while the hangers 49 are raised partially. When the hangers 49 are lowered as shown in Fig. 1 and rest on the window sill, elements 38 are lowered, the upper slats will clear the upper portion of the window and the lower slats will be progressively dropped and stacked in the stirrups composed of cross-bars 60 and upstanding legs 61. If desired, the elements 50 can be manipulated to clear a lower portion of the window while the upper portion is clear, and to support the lower slats above the window sill while the upper slats are partially lowered. During this manipulation of elements 50, any stacked slats in the stirrups and shaft 43 will be raised. The tilting mechanism is operative at all times to tilt the slats which are not stacked in the stirrups.

After the blind has been installed in a window of one width, it is adapted to be installed and operative in a window of different widths. By adjustment, the sections 17 and 18 of the head 15 may be extended or moved to correspond to the inside of the window frame. The bolts 26 and slots 27 telescopically fit between said sections and readily permit the variation of the length of the head. The brackets 81, bolts 80, upper ends of elements 38 and sheaves 38' are adjusted with the end-sections 17 of the head 15. The sections 71 and 72 of upper shaft 35 are slidably adjusted in the tubular section 70 and the sections 75 of lower shaft 43 are slidably adjusted in tubular section 74 of the lower shaft, to position and support the ladder-tapes, the slat-tilting means, the hangers 49 and stirrups 60, 61 and the journal blocks for the upper shaft in spaced relation to the sides of the window frame. The sections 97 and 98 of links 95 for releasing bolts 80 are adjusted in length to compensate for the adjustment between the sections 17 and 18 of head 15. This construction provides for easy and expeditious adjustment of the operating means and supporting structure for installation in windows of different widths.

The invention exemplifies an improved construction for adjusting the slats to selectively clear or shade upper and lower portions, or to shade all or part of the window and devices which are operative to tilt the slats in any portion of the slats when they are used for shading openings.

The invention exemplifies a Venetian blind of improved construction which is adapted to be adjusted to selectively clear or shade upper or lower portions, or all portions of a window, and provided with devices for selectively tilting the slats. The invention also exemplifies a blind of this type which is readily adjustable for installation and use with bolts for windows of different widths.

The invention is not to be understood as restricted to the details described since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

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

1. A Venetian blind comprising a stationary supporting head adapted to be secured in a window frame, ladder-tapes for individually supporting the slats, a rock-shaft having tilting means to which the tapes are connected and for supporting and operating the tapes to tilt the slats, hangers in which the shaft is journaled and by which it is supported, flexible suspension elements between the hangers and the head for supporting and

5

lifting the hangers, shaft and tapes, means between one of the hangers and the shaft for rocking the shaft to tilt the slats and retain them in tilted positions, and locking-devices mounted on the head for supporting the shaft and releasably engageable with the hangers, for raising the shaft.

2. A Venetian blind comprising a stationary supporting head adapted to be secured in a window frame, ladder-tapes for individually supporting the slats, a rock-shaft having arms at its ends to which the tapes are connected and for supporting and operating the tapes to tilt the slats, hangers in which the shaft is journaled and by which it is supported, flexible suspension elements between the hangers and the head for supporting and lifting the hangers, shaft and tapes, means between one of the hangers and the shaft for rocking the shaft to tilt the slats and retain them in tilted positions, and locking-devices mounted on the head for supporting the shaft and releasably engageable with the hangers for raising the shaft.

3. A Venetian blind comprising a stationary supporting head adapted to be secured in a window frame, ladder-tapes for individually supporting the slats, upper and lower rock-shafts having tilting means at their ends to which the tapes are connected and for supporting and operating the tapes to tilt the slats, hanger in which the upper shaft is journaled and by which it is supported, flexible suspension elements between the hangers and the head for supporting and lifting the hangers, shaft and tapes, means between one of the hangers and the shaft for rocking the shaft to tilt the slats and retain them in tilted positions, flexible suspension devices between the lower shaft and the head for raising the lower shaft, and locking-devices mounted on the head for supporting the upper shaft, releasably engageable with the hangers for raising the upper shaft.

4. A Venetian blind comprising a supporting head adapted to be secured in a window frame, a series of slats, ladder-tapes for individually supporting the slats, a rock-shaft having means for supporting and operating the tapes to tilt the slats, hangers in which the shaft is journaled, flexible suspension-elements between the hangers and the head for supporting and lifting the hangers and the shaft, means between one of the hangers and the shaft for rocking the shaft to tilt the slats and retain them in tilted position, locking-devices including brackets having sockets therein and mounted on the head, bolts slidably mounted in the brackets and extensions on the hangers fitting in said sockets, and means for disengaging said bolts from said extensions including a lever pivotally mounted on and adjacent the longitudinal center of the head and operatively connected to said bolts.

5. A Venetian blind comprising a supporting head adapted to be secured in a window frame, a series of slats, ladder-tapes for individually supporting the slats, a rock-shaft having means for supporting and operating the tapes to tilt the slats, hangers in which the shaft is journaled, flexible suspension-elements between the hangers and the head for supporting and lifting the hangers and the shaft, means between one of the hangers and the shaft for rock-

6

ing the shaft to tilt the slats and retain them in tilted position, locking-devices mounted on the head including brackets having sockets therein and mounted on the head, bolts slidably mounted in the brackets, and extensions on the hangers fitting in said sockets, and means for disengaging said bolts from said extensions including a lever pivotally mounted on the head, and links between the lever and the bolts.

6. A Venetian blind comprising a supporting head adapted to be secured in a window frame and including slidably and extensibly connected center and end-sections, a series of slats, ladder tapes for individually supporting the slats, a rock-shaft including a center and end-sections telescopically and extensibly connected, having means for operating the tapes to tilt the slats, hangers in which the end-sections of the shaft are journaled and supported, flexible suspension elements between the hangers on the end-sections of the shaft and the end-sections of the head for supporting and lifting the hangers and shaft, means between one of the hangers and an end-section of the shaft for rocking the shaft to tilt the tapes, locking-devices for supporting the hangers in fixed relation to the head, releasable for lowering the hangers and the shaft, including bolts slidably mounted on the end-sections of the head, and extensions on the hangers releasably engageable by said bolts, a lever mounted on the center-section of the head and a telescopic connection between the lever and bolts for releasing the bolts from said extensions.

7. A Venetian blind comprising a supporting head adapted to be secured in a window frame and including slidably and extensibly connected center and end-sections, a series of slats, ladder-tapes for individually supporting the slats, a rock-shaft including a center and end-sections telescopically and extensibly connected having means to operate the tapes and tilt the slats, hangers in which the end-sections of the shaft are journaled and supported, flexible suspension-elements between the hangers and the end-sections of the shaft and the end-sections of the head for supporting and lifting the hangers and shaft, means between one of the hangers and an end-section of the shaft for rocking the shaft to tilt the tapes, locking-devices for supporting the hangers in fixed relation to the head, releasable for lowering the hangers and the shaft, including bolts slidably mounted on the end-section of the head, and extensions on the hangers releasably engageable by said bolts, a lever mounted on the center section of the head, and telescopic links between the lever and the bolts for releasing the bolts from said extensions.

References Cited in the file of this patent

UNITED STATES PATENTS

12,695	Rose	Apr. 10, 1855
1,910,335	Hopp	May 23, 1933
1,949,653	Moore	Mar. 6, 1934
2,141,502	Ajouelo	Dec. 27, 1938
2,242,697	Duca	May 20, 1941
2,266,479	Stahl	Dec. 16, 1941