May 1, 1934. P. H. KUYPER 1,957,272

VENETIAN BLIND CONSTRUCTION

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Fig. 1.

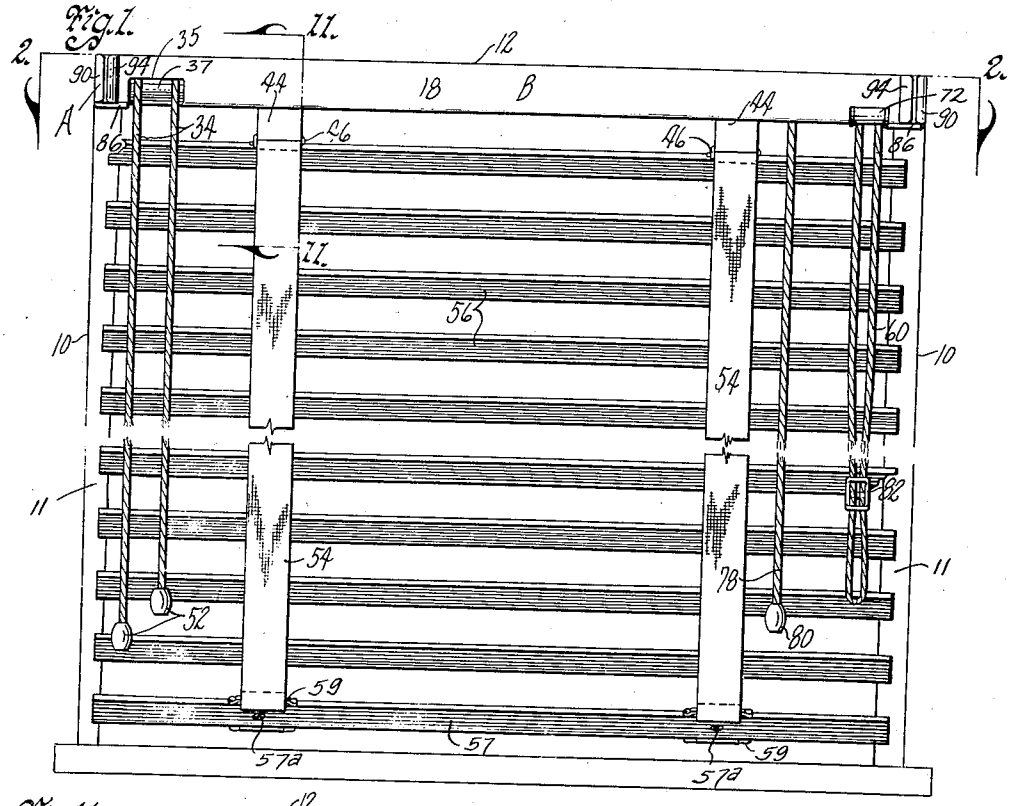


Fig. 11.

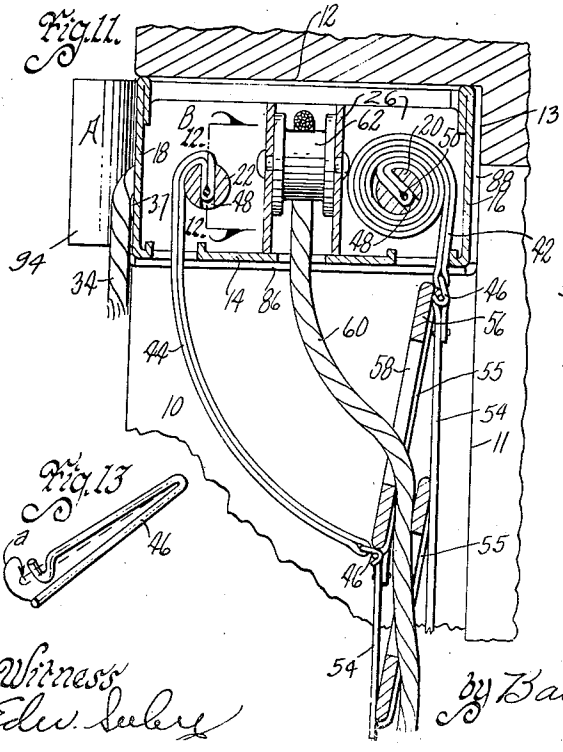


Fig. 10.

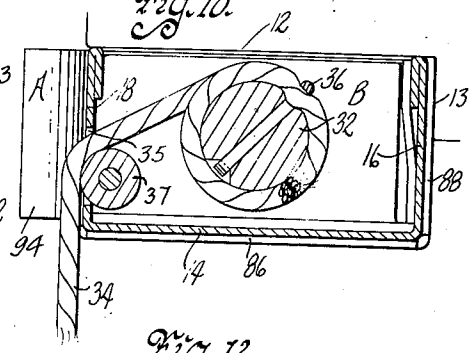


Fig. 12.

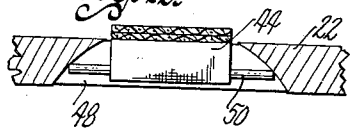


Fig. 13.

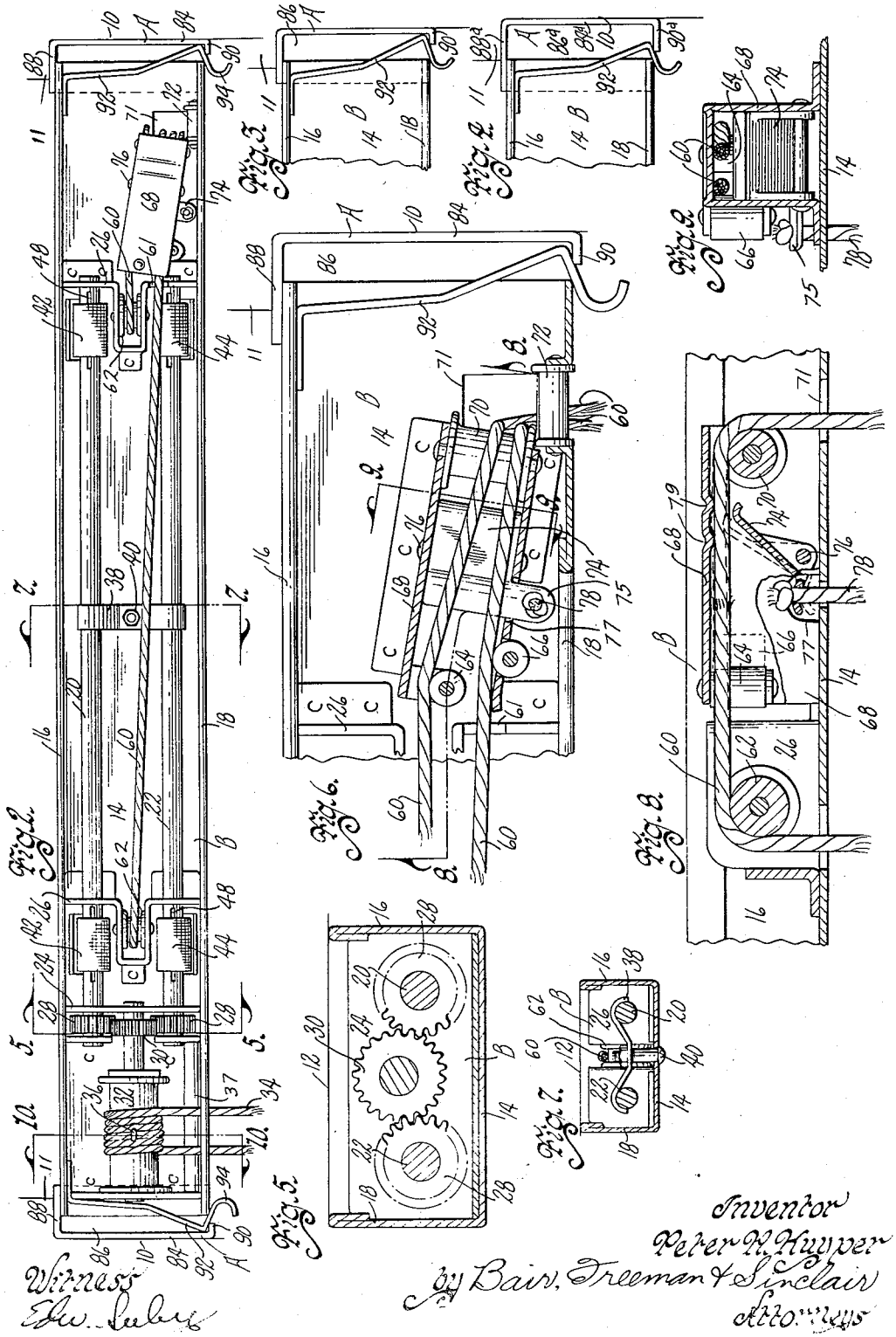
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UNITED STATES PATENT OFFICE

1,957,272

VENETIAN BLIND CONSTRUCTION

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Application January 15, 1934, Serial No. 706,631

12 Claims. (Cl. 156—17)

REISSUED

The object of my invention is to provide a venetian blind construction which is simple, durable and comparatively inexpensive to manufacture.

A further object is to provide a venetian blind construction in which a casing is removably associated with a window frame and supports a venetian blind as well as its raising and tilting or adjusting mechanism, so that the casing can be readily removed for the purpose of cleaning or painting the blind, or cleaning, repairing or oiling the operating mechanism for the blind, the removable feature also being desirable so that blinds of different characteristics or color designs can be interchanged readily at will.

Still a further object is to provide casings which may be supplied by the manufacturer in successive lengths, for instance in one inch steps, and to provide supporting brackets of different sizes to compensate for fractions of an inch, whereby a blind of one length may accommodate window frame widths of any range within a quarter and an inch and a quarter greater than the length of the venetian blind casing itself, thus facilitating installation and keeping the dealer's stock on hand to a minimum.

Still a further object is to provide a venetian blind having a novel tipping mechanism comprising a pair of rotatable elements with the straps of a ladder tape wound thereon, one clockwise and the other counterclockwise, the tipping or adjusting control comprising means for simultaneously rotating the rotatable elements in the same direction so that one strap winds up while the other one unwinds.

Still a further object is to arrange the straps so that the speed of the one which winds up increases with respect to the speed of the one which unwinds so that the blind slats will be shifted toward the window when adjusting the slats to closed position, resulting in better closure of the slats with respect to the window and also with respect to each other, the latter result being due to the slats in their finally adjusted position and the entire venetian blind itself being supported on one strap only.

A further object is to provide raising means for the venetian blind having a novel locking arrangement to prevent lowering of the blind, the lock being in the form of a cam, a manual control being provided for the cam to lock it and it being movable to unlocked position by a slight raising of the blind.

A further object is to provide novel characteristics such as latches for the casing with respect to the brackets which support it, pulley arrangements for the raising ropes, a brake for the rotatable elements, a disconnecting means between the ladder tapes and the supporting casing and the like.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is an inside elevation of a venetian blind structure embodying my invention.

Figure 2 is a plan view of the same on the indicating line 2—2 of Figure 1.

Figure 3 is a view similar to the right hand end of Figure 2 illustrating a different adjustment of the blind mechanism casing with respect to its supporting bracket.

Figure 4 is a similar view showing a different bracket.

Figure 5 is an enlarged sectional view on the line 5—5 of Figure 2.

Figure 6 is an enlarged plan view of the right hand end of Figure 2 showing part of the structure broken away and in section.

Figure 7 is a sectional view on the line 7—7 of Figure 2.

Figure 8 is a sectional view on the line 8—8 of Figure 6, showing a locking arrangement for the blind raising mechanism.

Figure 9 is a sectional view on the line 9—9 of Figure 6.

Figure 10 is an enlarged sectional view on the line 10—10 of Figure 2 showing an adjusting drum.

Figure 11 is an enlarged sectional view on the line 11—11 of Figure 1 showing the ladder tape supporting and adjusting mechanism.

Figure 12 is a detailed sectional view on the line 12—12 of Figure 11 showing a connection between one of the straps of the ladder tape and a rotatable element on which it is wound; and

Figure 13 is a perspective view of a connecting device between the supporting casing and the ladder tapes of the venetian blind.

On the accompanying drawings, I have used the reference numeral 10 to indicate the side jamb of a window frame. The head jamb thereof is indicated at 12. Brackets A are adapted for support with respect to the window frame and in turn support a venetian blind mechanism casing B.

The casing B comprises a bottom wall 14, a back or outer wall 16 and a front or inner wall 18. Within the casing 18, rotatable elements 20 and 22, such as rods or shafts, are journalled in trans-

verse brackets 24 and 26. Each rotatable element 20 and 22 has thereon a pinion 28.

The pinions 28 mesh with a pinion 30 which is non-rotatably associated with a drum 32. A cord or other flexible element 34 has its center secured as by a cotter key 36 to the drum 32. The ends of the cord 34 depend from the drum after passing through a slot 35 and over a roller 37 and are provided on their lower ends with knobs 52. The knobs 52 are preferably of metal or other heavy material to maintain the cords taut and also to indicate by their comparative elevations which end of the cord is to be pulled downwardly in order to adjust the slats of the venetian blind as desired.

The rods 20 and 22 may have a tendency to rotate too freely and to counteract this tendency I provide a brake means in the form of a strip of metal or the like 38 frictionally engaging the rotatable elements. To adjust the frictional effect of the strip 38, I provide a bolt 40 which can be tightened to increase the friction or loosened to decrease it in an obvious manner.

Wound on the rod 20 is a pair of doubled tapes 42 while wound on the rod 22 in an opposite direction is a pair of doubled tapes 44. The tapes 42 and 44 are adapted to support straps 54 of a ladder tape, the rungs of which are indicated at 55. The tapes 42 and 44 are connected with looped upper ends of the straps 54 by fasteners 46, such as shown in Figure 13, which can be inserted in the looped upper ends of the straps and through the looped tapes 42 and 44 and then fastened together by adjustment to the dotted line position of Figure 13 as indicated by the arrow *a*.

The particular arrangement of the doubled straps 42 and 44 (which however can be single with looped ends if desired) accomplishes a very desirable result, especially when associated with the adjusting rods 20 and 22 as disclosed. When the slats 58 are adjusted to their closed position as shown in Figure 11, the rod 22 is unwound and the rod 20 is wound, both at the same speed. The diameter of the tape 44 on the rod 22, however, decreases, while the diameter of the tape 42 on the rod 20 increases so that in the final position, the right hand strap 54 only is supported and supports the strap 54, the rungs 55, the slats 56 and the ropes 60. This places the slats 56 in the closest possible overlapping position—that is, as close as the ropes 60 between them will permit, as is obvious by a minute inspection of Figure 11.

Furthermore, it will be noted that the entire blind is supported under the rod 20 rather than in a central position below the rods 20 and 22, thus placing the slats 56 as near as possible to the portion 11 of the window frame, which portion is usually in the form of a flange surrounding the window itself, the numeral 13 indicating a similar flange at the head of the window.

The tapes 42 and 44 themselves are secured to the rods 20 and 22 by pins 50 (see Figure 12) drawn into slots 48 formed in the rods.

The venetian blind itself includes a plurality of slats 56 made of wood or the like in the ordinary manner and having slots 58 for raising ropes 60 to extend through. The lower slat, indicated at 57, I prefer to make of metal so that it has the same thickness as the lighter slats 56, yet has greater weight so as to keep the blind in taut position when it is lowered without providing an unslightly much thicker bar as would be necessary when making it of wood.

The ropes 60 have their lower ends secured to the metal slat 57 as at 57*a* and extend upwardly through the slots 58 of the successive slats 56. The ropes then extend over pulleys 62 and then around pulleys 64 and 66. The pulleys 64 and 66 are housed in a channel-shaped bracket 68 in which is also journaled a pulley 70. The ropes 60 extend over the pulley 70 and then downwardly through an opening 71 in the bottom 14 of the casing B.

A pulley 72 is provided under which the ropes 60 may be swung outwardly from the window frame when raising the venetian blind without unduly chafing the ropes or causing them to jump off the pulley 70.

The right hand bracket 26 is provided with a notch 61 for one of the ropes to extend through before it reaches the pulley 66.

I provide a novel locking means for the raising ropes 60 in the form of a cam 74 pivoted at 76 (see Figure 8) and having an arm 75 extended through a notch 77. The blind can be adjusted by the ropes 60 to any desired position and a rope 78 attached to the arm 75 may then be pulled downwardly to swing the locking cam to its dotted line position, thereby forcing its upper end against the ropes 60 and confining the ropes between the cam and locking grooves 79 formed in the bracket 68. The ropes 60 may then be released and the weight of the blind will tend to keep the cam 74 engaged.

Subsequently, whenever it is desired to either raise or lower the blind, the ropes 60 may be pulled which will unlock the cam and may then be further pulled for raising the blind or slackened to lower it.

On the locking rope 78, I provide a weighted knob 80, while on the ropes 60 I provide a rectangular buckle-like element 82 having a cross bar so that the ropes 60 may be adjusted relative thereto to facilitate equal draft on the ropes 60 when raising the blind and thereby keeping its lower end level.

The brackets A comprise webs 84 which may be secured by screws or the like to the side jambs 10 or may be secured to the head jamb 12 if desired adjacent its ends. Each bracket A has a supporting flange 86 on which the ends of the casing B rest. A back flange 88 is provided to limit outward movement of the casing B when it is inserted past inner flanges 90. The flanges 90 are provided for spring latches 92 to snap behind when the casing is in supported position.

Finger engaging portions 94 are provided on the latches 92 which can be pulled toward each other when it is desired to remove the casing B from its supported position on the flanges 86.

In Figure 2, the casing B is shown supported between side jambs 10 which are as close together as this length of casing will permit and yet allow room between the ends of the front wall 18 and the flanges 90 for the latches 92 to pass when installing or removing the casing B.

In Figure 3 I have shown the same bracket A in a window frame of slightly greater width. The spring latches 92 take up the difference and close the space between the flanges 90 and the ends of the front wall 18 as clearly shown. Also the resiliency of the latches 92 tends to center the casing B with respect to the brackets A supporting its ends.

In Figure 4, I have shown the same casing B installed in a still wider window frame, a bracket A' being provided in this case. It is similar to the bracket A except that the flanges indicated at 86*a*, 88*a* and 90*a* are wider. Thus it will be ob-

vious that a range of dimensions over an inch or so can be taken care of by a casing of one length and brackets of different sizes.

When interchanging, cleaning, painting, oiling or the like, it will be obvious that my construction facilitates any of the operations mentioned. The casing and therefore the entire blind structure is removable from the supporting brackets A and can be placed on a work bench where the parts of the blind are much easier to get at than when trying to perform any operations on them while in installed position.

The various features disclosed go to make up a very efficiently operable blind and one which has many novel features.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a venetian blind structure, a pair of rotatable elements, a tape ladder, one strap thereof being wound on one of said rotatable elements and the other strap thereof being wound on the other of said rotatable elements and means for rotating said rotatable elements.

2. In a venetian blind structure, a pair of rotatable elements, a tape ladder, one strap thereof being wound on one of said rotatable elements and the other strap thereof being wound on the other of said rotatable elements and means for simultaneously rotating said rotatable elements.

3. In a venetian blind structure, a pair of rotatable elements, a tape ladder, one strap thereof being wound on one of said rotatable elements and the other strap thereof being wound on the other of said rotatable elements and means for rotating said rotatable elements, said means comprising a drum geared to said rotatable elements and a flexible element having its center wound on said drum and its ends depending therefrom.

4. In a venetian blind structure, a pair of rotatable elements, a tape ladder, one strap thereof being wound clockwise on one of said rotatable elements and the other strap thereof being wound counterclockwise on the other of said rotatable elements and means for simultaneously rotating said rotatable elements in the same direction.

5. In a venetian blind structure, a casing, a pair of rotatable elements therein, a tape wound on each rotatable element, a tape ladder, the straps thereof being respectively detachably connected with said first mentioned tapes and means for rotating said rotatable elements.

6. In a venetian blind structure, a rotatable element, a ladder tape having a strap wound thereon, said rotatable element having a slot, said strap having a loop extending through said slot and a pin through said loop.

7. In a venetian blind structure, a rotatable element, a ladder tape having a strap wound thereon, said rotatable element having a V-shaped slot, said strap having a loop extending through said slot and a pin through said loop and drawn into said slot.

8. In a venetian blind structure, a pair of rotatable elements, supporting tapes, one tape being wound on one of said rotatable elements and the other tape being wound on the other of said rotatable elements and means for rotating said rotatable elements.

9. A venetian blind comprising a support in the form of a housing, means carried by the support and concealed therein for suspending a venetian blind therefrom, said means being adjustable for varying the angle of inclination of the venetian blind as and for the purposes stated.

10. In a venetian blind structure, a pair of rotatable elements, supporting tapes, one tape being wound on one of said rotatable elements and the other tape being wound on the other of said rotatable elements and means for rotating said rotatable elements for winding one tape and unwinding the other one.

11. A venetian blind comprising a support in the form of a housing, means carried by the support and concealed therein for suspending a venetian blind therefrom, said means comprising a pair of rotatable elements, supporting tapes, one tape being wound on one of said rotatable elements and the other tape being wound on the other of said rotatable elements and means for rotating said rotatable elements.

12. A venetian blind comprising a support in the form of a housing, means carried by the support and concealed therein for suspending a venetian blind therefrom, said means comprising a pair of rotatable elements, supporting tapes, one tape being wound clockwise on one of said rotatable elements and the other tape being wound counterclockwise on the other of said rotatable elements and means for rotating said rotatable elements in the same direction.

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