May 5, 1942. A. F. WALTZINGER 2,282,272

VENETIAN BLIND TILTING MECHANISM

Filed Dec. 31, 1941 4 Sheets-Sheet 1

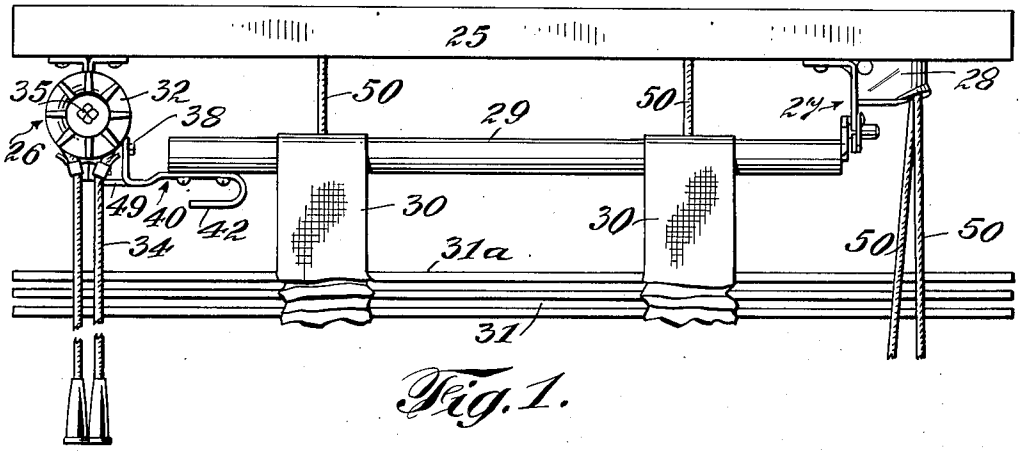


Fig. 1.

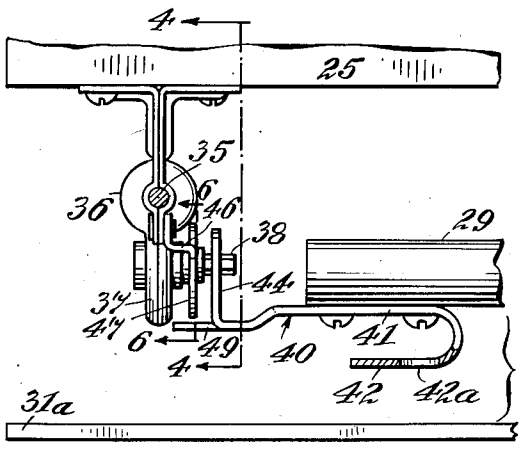


Fig. 2.

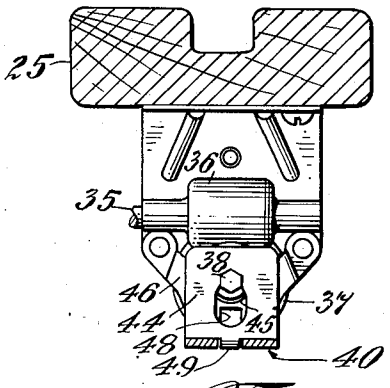


Fig. 4.

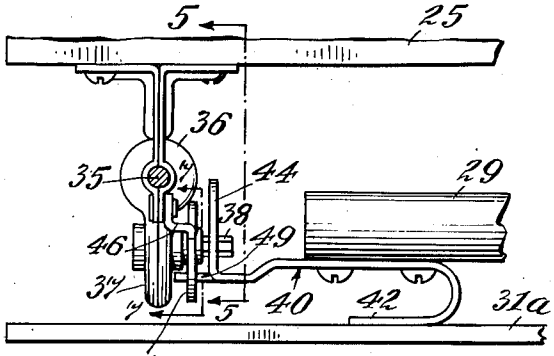


Fig. 3.

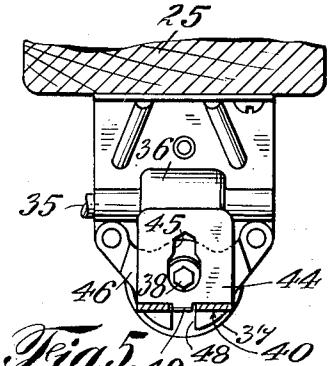


Fig. 5.

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VENETIAN BLIND TILTING MECHANISM

Filed Dec. 31, 1941 4 Sheets-Sheet 2

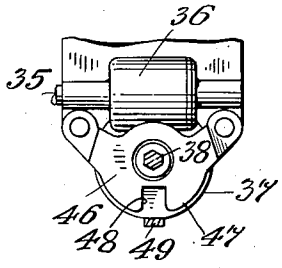


Fig. 6.

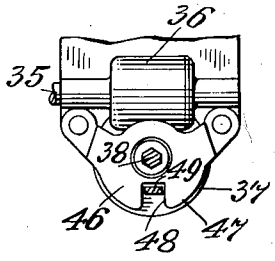


Fig. 7.

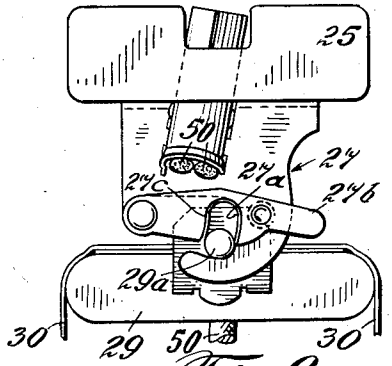


Fig. 8.

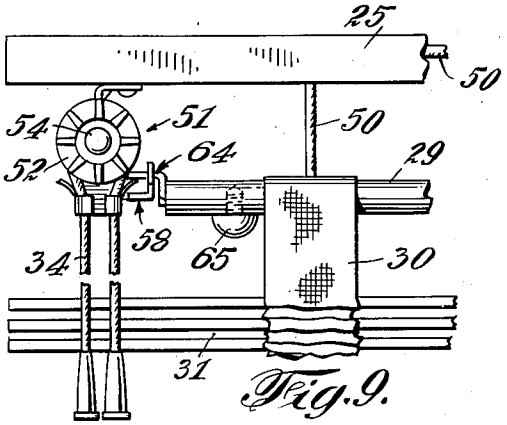


Fig. 9.

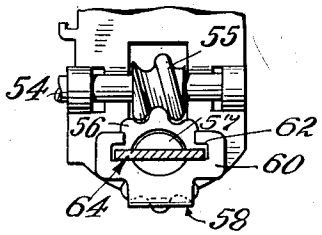


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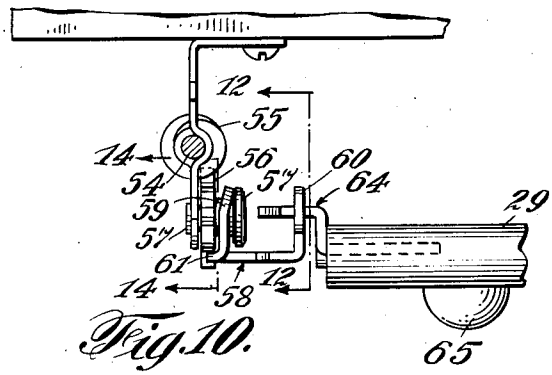


Fig. 10.

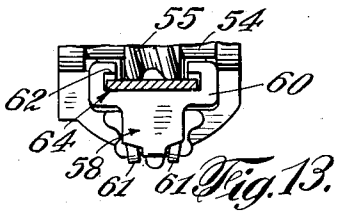


Fig. 13.

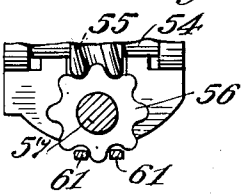


Fig. 14.

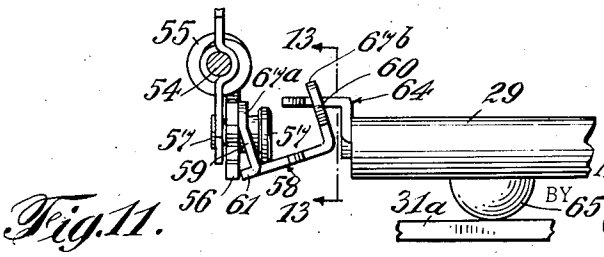


Fig. 11.

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VENETIAN BLIND TILTING MECHANISM

Filed Dec. 31, 1941 4 Sheets-Sheet 3

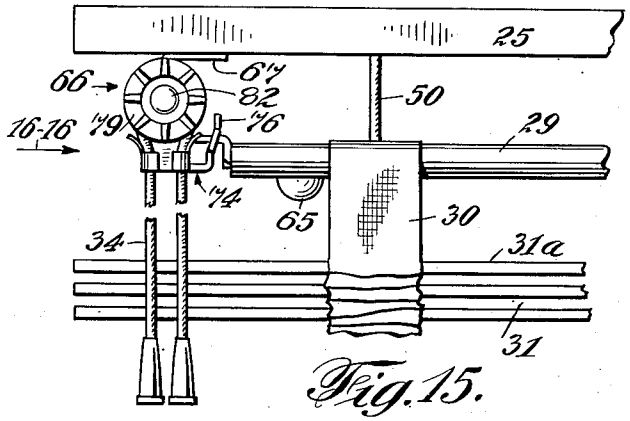


Fig. 15.

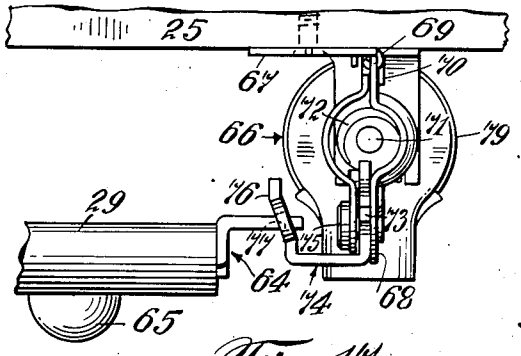


Fig. 17.

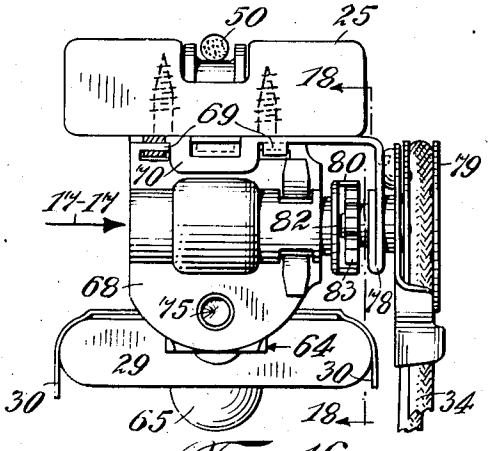


Fig. 16.

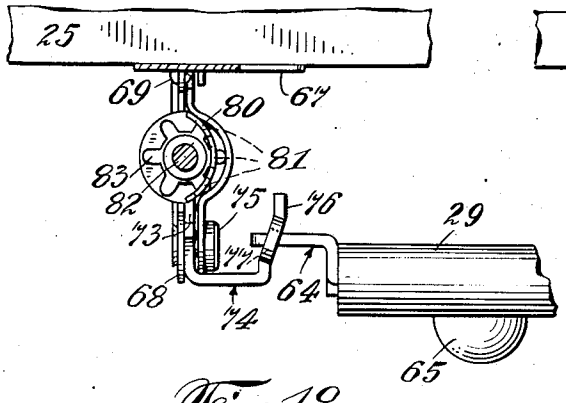


Fig. 18.

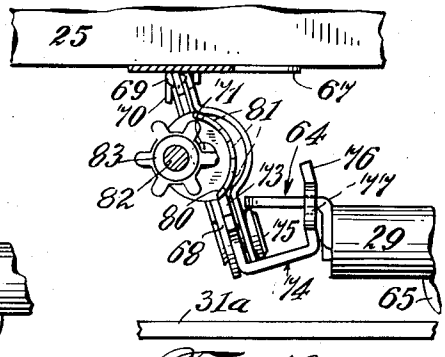


Fig. 19.

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VENETIAN BLIND TILTING MECHANISM

Filed Dec. 31, 1941 4 Sheets-Sheet 4

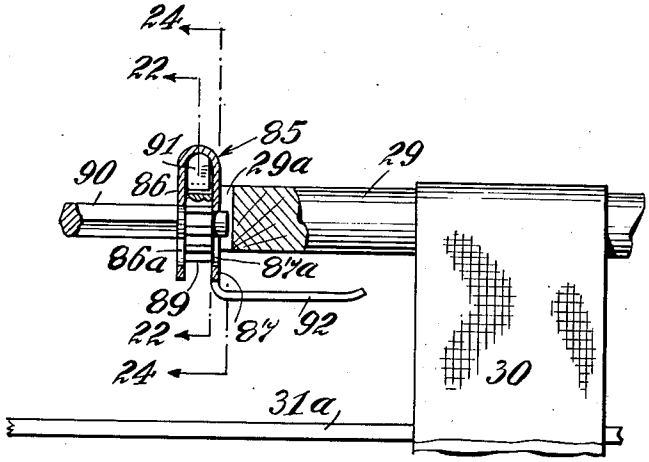


Fig. 20.

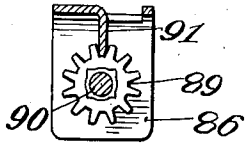


Fig. 22.

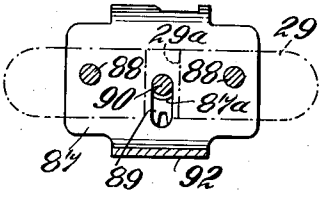


Fig. 24.

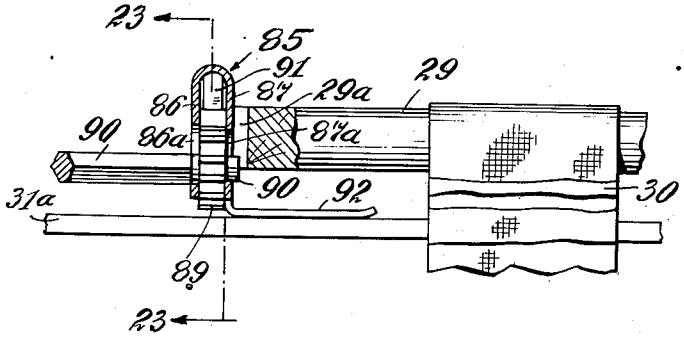


Fig. 21.

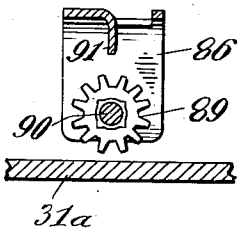


Fig. 23.

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Patented May 5, 1942 2,282,272

UNITED STATES PATENT OFFICE

2,282,272

VENETIAN BLIND TILTING MECHANISM

August F. Waltzinger, Elmhurst, Long Island, N. Y., assignor to Lorentzen Hardware Mf'g. Corp., New York, N. Y., a corporation of New York

Application December 31, 1941, Serial No. 425,074

20 Claims. (Cl. 156—17)

This invention relates to Venetian blinds and particularly to the tilting mechanism that is used to tilt the tilt-bar of the blind and thereby tilt the whole series of slats which are suspended from the tilt-bar and articulated therewith by means of the conventional ladder tapes.

A tilting mechanism is most commonly actuated by a tilt-cord, the cord passing over a pulley and having its ends hanging freely beneath the pulley. The pulley is operatively connected to the tilt-bar by mechanism which functions to tilt the tilt-bar when the tilt-cord is pulled. Despite various attempts which have been made to prevent slippage of the tilt-cord on the pulley, some cumulative slippage gradually takes place in actual practice, with the result that eventually one end of the tilt-cord gets too high and the other end gets too low. If no special means are provided for equalizing the tilt-cord, i. e., for readjusting it with respect to the tilt of the tilt-bar, then it is necessary to manually lift the cord from the pulley and readjust it thereon. This is inconvenient for the usual Venetian blind user, since the pulley is located at the top of the blind and the user has to climb up to reach it.

A general object of the present invention is to provide a Venetian blind structure that permits ready and easy equalization or readjustment of the tilt-cord when accumulated slippage of the cord on the pulley has occurred.

Another object is to provide tilt-cord equalizing means which can be readily incorporated into various tilting mechanisms now in common use.

Another object of the invention is to provide inexpensive Venetian blind tilting mechanism which includes in it means for conveniently breaking the driving connection between the cord pulley and the tilt-bar, so that the pulley can undergo an idle rotative movement to thereby permit equalization or readjustment of the tilt-cord with respect to the tilt of the tilt-bar.

A further object of the invention is to provide a Venetian blind tilting mechanism in which the driving connection between the cord pulley and the tilt-bar can be broken by merely raising the blind.

A still further object of the invention is to provide means in the form of an attachment which can be used with conventional Venetian blind tilters to provide for breaking of the driving connection between the cord pulley and the tilt-bar.

Various additional objects of the invention will be apparent to those skilled in the art from the following disclosure.

Fig. 1 of the drawings is a fragmentary front elevation of a Venetian blind embodying one form of the present invention.

Fig. 2 is a fragmentary front elevation, on a larger scale, showing the upper left-hand portion of the blind shown in Fig. 1 but with the tilt-cord and cord pulley eliminated to better show the tilting mechanism. This view shows the parts in normal position, in which there is driving connection to the tilt-bar.

Fig. 3 is a fragmentary front elevation showing the same structure as in Fig. 2 but with the parts in the position they occupy when the driving connection to the tilt-bar is broken.

Fig. 4 is a fragmentary vertical section taken in general on the line 4—4 of Fig. 2, the parts being in normal or driving position.

Fig. 5 is a fragmentary vertical section taken in general on the line 5—5 of Fig. 3. The view is similar to Fig. 4, but shows the parts in the position where the driving connection to the tilt-bar is broken.

Fig. 6 is a detail view taken in general on line 6—6 of Fig. 2, showing the parts in normal or driving position.

Fig. 7 is a detail view taken in general on line 7—7 of Fig. 3. The view is similar to Fig. 6, but shows the parts in the position where the driving connection to the tilt-bar is broken.

Fig. 8 is a fragmentary end elevation looking toward the right-hand end of Fig. 1, the view being on a larger scale than Fig. 1.

Fig. 9 is a fragmentary front elevation of a tilting mechanism and portions of the blind adjacent thereto, the view showing a second form of the invention.

Fig. 10 is a fragmentary front elevation, on a larger scale, showing the tilting mechanism as in Fig. 9 and certain adjacent parts of the blind, but with the tilt-cord and pulley eliminated to better show the tilting mechanism. This view shows the parts in normal or driving position.

Fig. 11 is a fragmentary front elevation similar to Fig. 10 but with the parts in the position where the driving connection to the tilt-bar is broken.

Fig. 12 is a detail view taken in general on line 12—12 of Fig. 10, the parts being in normal position where there is driving connection to the tilt-bar.

Fig. 13 is a fragmentary detail view taken in general on line 13—13 of Fig. 11. The view is similar to Fig. 12, but the parts are in the posi-

tion where driving connection to the tilt-bar is broken.

Fig. 14 is a fragmentary detail view taken in general on the line 14—14 of Fig. 10, the parts being in normal or driving position.

Fig. 15 is a fragmentary front elevation of a tilter and adjacent parts of a Venetian blind, embodying a third form of the invention.

Fig. 16 is a fragmentary view, on a larger scale, showing the tilter and certain parts of the blind as viewed from the direction of the arrow 16—16 in Fig. 15.

Fig. 17 is a fragmentary elevation from the rear of Fig. 15, or viewed from the direction of the arrow 17—17 in Fig. 16.

Fig. 18 is a fragmentary vertical section taken in general on the line 18—18 of Fig. 16, the parts being in normal position where there is driving connection to the tilt-bar.

Fig. 19 is a fragmentary sectional view similar to Fig. 18 but with the parts in the position where driving connection to the tilt-bar is broken.

Fig. 20 is a fragmentary front elevation, partly in section, showing a fourth form of the invention. This view shows the tilt-bar of a blind and a tilter connector member which can be used as an attachment with conventional tilters, to break the driving connection to the tilt-bar and thereby permit equalization or readjustment of the tilt-cord. In this view the parts are in normal or driving position.

Fig. 21 is a fragmentary front elevation partly in section. This view is similar to Fig. 20 but the parts are in the position where driving connection to the tilt-bar is broken.

Fig. 22 is a fragmentary vertical section taken in general on the line 22—22 of Fig. 20, the parts being in normal position where driving connection to the tilt-bar exists.

Fig. 23 is a fragmentary vertical section taken in general on the line 23—23 of Fig. 27. This view is similar to Fig. 22 but the parts are in the position where driving connection to the tilt-bar is broken.

Fig. 24 is a fragmentary vertical section taken in general on the line 24—24 of Fig. 20.

Figures 1 through 8

Affixed to a suspension or head-bar 25 is a tilter 26 and a supporting bracket 27. Attached to bracket 27 is a known type of cord-lock unit 28. Pivotally supported by the tilter 26 and the bracket 27 is a tilt-bar 29 from which depend conventional ladder tapes 30, 30 that support and articulate a series 31 of conventional blind slats. The top slat of the series is designated by 31*a*.

The tilter 26 includes a usual cord-pulley 32 adapted to be rotated by the usual tilt-cord 34. The pulley 32 is affixed to and drives a shaft 35 that carries and rotates a worm (not shown) located in housing portion 36 of the tilter bracket. Meshing with the worm is a gear (not shown) located in housing portion 37 of the tilter bracket. Projecting axially from the worm is a hexagonal stub shaft 38. It will be apparent that by pulling upon cord 34 movement is transmitted in a conventional manner from cord 34 to pulley 32, shaft 35, the worm in housing portion 36, the gear in housing portion 37, and to stub shaft 38.

A stamped sheet-metal connector 40 is screwed to the left-hand end of tilt-bar 29 and connects with stub shaft 38, so that the left-hand end of the tilt-bar is supported by shaft 38 and tilting movement of shaft 38 may be transmitted through connector 40 to the tilt-bar. Integral with and positioned below the body portion 41 of the connector 40 there is an abutment portion 42 for a purpose that will be described later. This abutment portion 42 may be provided with a hole 42*a* so that a screw-driver can be passed through it to facilitate attachment of the connector 40 to the tilt-bar. Adjacent to the tilter, connector 40 has an upwardly extending vertical leg 44 which is provided with a slot 45 (Figs. 4 and 5) that is pierced by the stub shaft 38. This slot has a narrow portion with which, in the position shown in Fig. 4, the stub shaft 38 makes driving connection. Also this slot 45 has a wide portion which, in the position shown in Fig. 5, allows the stub shaft 38 to rotate freely without movement being imparted to the connector 40. For convenience I designate any such slot as a keyhole slot, regardless of the particular contour of the slot. Also the stub shaft 38 is but one form of male member which may cooperate with such a slot. Welded or otherwise secured to the housing of tilter 26 is a stationary guard member 46 having a curved edge 47 (particularly Figs. 6 and 7) interrupted by a vertical slot 48. Struck out from the metal of connector 40 is a horizontal finger 49 which extends beneath guard 46 and is adapted to move adjacent to the curved edge 47 as the tilt-bar tilts.

With the weight of the blind hanging on tilt-bar 29, the bar is biased into its lowermost, or normal, position in which the stub shaft 38 is in driving engagement with the small end of keyhole slot 45. This condition is shown in Figs. 1, 2, 4 and 6; and when the tilt-bar is in such normal position, movement of tilt-cord 34 tilts the tilt-bar in the conventional manner. However, when the blind is raised to its usual upper limit by pulling upon the conventional lift-cords 50, 50, the top slat 31*a* strikes the bar 29, or abutment 42 which is considered to be a part of the bar for this purpose. Thereupon, slight excess lifting movement by means of lift-cords 50, 50 causes an upward force to be exerted on tilt-bar 29, and particularly the left-hand end of the tilt-bar. If the tilt-bar be in tilted position, i. e., in other than horizontal position, this upward force cannot move the tilt-bar upwardly because finger 40 will be stopped by guard 46. However, if the tilt-bar be in non-tilted or horizontal position, the upward force upon the tilt-bar 29 exerted by the top slat 31*a* of the blind will lift the tilt-bar, particularly the left hand end thereof. Thus, the blind itself and the lift-cords 50, 50 constitute a means to raise the tilt-bar above normal position. When the tilt-bar moves upwardly, finger 49 enters slot 48 and the vertical portion 44 of the connector 40 moves into the position shown in Figs. 3 and 5, in which driving connection from stub shaft 38 to the connector 40 is broken. The cord-lock at 28 may be utilized, if desired, to hold the tilt-bar in this above normal position while tilt-cord 34 is pulled to readjust or equalize it. During such equalizing movement the pulley 32 rotates idly with respect to the tilt-bar, since the driving connection to the tilt-bar is broken at the keyhole slot 45. Upon the cord-lock at 28 being released, the weight of the blind is restored to tilt-bar 29, so that the tilt-bar moves downwardly and again brings keyhole slot 45 into driven connection with the stub shaft 38. Thus, driving connection between the pulley 32 and the tilt-bar 29 is reestablished so that further movement of the

tilt-cord tilts the tilt-bar in the usual manner.

In addition to providing for upward movement of the left-hand end of tilt-bar **29**, I prefer to also provide for upward movement of the right-hand end of the tilt-bar. As shown in Fig. 8, the supporting bracket **27** is provided with an elongated slot **27***a* which receives the pintle **29***a* extending from the right-hand end of the tilt-bar. Pivoted keeper **27***b* is notched, as shown at **27***c*, so that when the keeper is in retaining position space is left for upward movement of pintle **29***a*. With this arrangement the whole tilt-bar **29** may move bodily upward above normal position, when upward force is exerted thereon by extreme raising of the blind. Nevertheless, it is only essential that the end of the tilt-bar adjacent to the tilter move upward to break the driving connection to the tilt-bar; and for convenience I refer to upward movement of the tilt-bar regardless of whether the entire bar or only one end thereof moves upward in breaking the driving connection.

Figures 9 through 14

The general arrangement of the blind is the same as previously described in connection with Fig. 1, and, therefore, will not be described in detail. A tilter **51** has a cord pulley **52** adapted to be rotated by the tilt-cord **34**. The pulley drives shaft **54**, which carries worm **55**, and in turn drives gear **56**. Thus movement of the tilt-cord is transmitted to gear **56**. Gear **56** is freely mounted upon stationary pivot stud **57** which also pierces and makes loose supporting connection with a rocking member **58**, having vertical legs **59** and **60**. Rocking member **58** has projecting therefrom a pair of clutch fingers **61**, **61** adapted to straddle any one of the teeth of gear **56** as shown in Figs. 10 and 14. However, if the rocking member be canted upwardly as shown in Fig. 11, the clutch fingers **61**, **61** are withdrawn from engagement with gear **56**. Leg **60** of the rocking member is slotted at **62** to loosely receive a flat offset connector member **64** (of known type) which projects from the end of tilt-bar **29**. If desired, the lower surface of the tilt-bar **29** may be provided with a rubber button or abutment **65**, which is considered to be part of the bar for the purpose of raising the bar by lifting of the blind.

In normal position, the weight of the blind hanging upon rocking member **58** holds the rocking member in the position indicated in Figs. 9, 10, 12, and 14, in which position driving connection to the tilt-bar is established through gear **56** and clutch fingers **61**, **61** which straddle a tooth of the gear. Thus, if the tilt-cord **34** be pulled, the tilt-bar **29** is tilted in the usual manner. By raising the blind to an extreme upward position as described in connection with Figs. 1 through 8, the top slat **31***a* of the blind engages the tilt-bar **29** (or the rubber bumper **65** thereof) and moves the tilt-bar upwardly to the position shown in Fig. 11. This movement takes place the more readily if the tilt-bar be in horizontal or non-tilted position when the blind is raised. Such upward movement of the tilt-bar cants the U-shaped rocking member **58**, withdrawing the fingers **61**, **61** from engagement with gear **56** (see Figs. 11 and 13) so that the driving connection to the tilt-bar **29** is broken. The tilt-cord **34** can then be pulled to equalize or readjust it, the pulley **52** rotating idly with respect to the tilt-bar. Upon the blind being lowered slightly, the weight of the blind is again placed upon tilt-bar **29** and the parts return to the position shown in Fig. 10, in which driving connection between the pulley and the tilt-bar is reestablished. Thus further movement of the tilt-cord **34** tilts the blind in the usual manner.

Figures 15 through 19

The general arrangement of the head-bar **25**, tilt-bar **29**, the series of blind slats **31**, top slat **31***a*, ladder tapes **30**, lift-cord **50**, and tilt-cord **34** is the same as in Fig. 1. Also the tilt-bar may include a rubber button or bumper **65** as in Fig. 9. The bracket of the tilter **66** has a horizontal leg **67** secured to the head-bar **25** and has a depending leg **68** which is hinged to the horizontal leg at **69**. Integral with the horizontal leg **67** is a depending detent **70** which keeps the depending bracket leg **68** from swinging out of vertical in a direction away from the tilt-bar **29**. However, the bracket leg **68** may swing away from vertical toward the tilt-bar **29** as will soon be explained.

Rotatably mounted on depending bracket leg **68** is a shaft **71** carrying a worm **72** (Fig. 17) which meshes with a gear sector **73** formed on one of the vertical legs of a U-shaped rocking member **74**. A stationary stud **75** pivotally attaches the U-shaped rocking member **74** to the depending bracket leg **68**; and the rocking member has an upstanding vertical leg **76** slotted at **77** to loosely receive the flat end of the known type of connector member **64** that projects from the head-bar **29**. It will be apparent that the arrangement is such that upon shaft **71** being rotated, worm **72** actuates gear sector **73** to rock the rocking member **74** and in turn tilt the tilt-bar **29**. Shaft **71** terminates between the front edge of bracket leg **68** and cord pulley **79**; and the front end of the shaft is provided with an arcuate clutch member **80** having a series of holes **81**. Clutch member **80** is fixedly secured to the end of shaft **71** so that if this clutch member be driven, shaft **71** will be driven also.

Depending from the front of horizontal bracket leg **68** is a stationary support **78** in which is journalled a separate shaft **82**; and on the forward end of this shaft there is secured the cord pulley **79** that is adapted to be rotated by the tilt-cord **34**. Fixedly secured to the rear end of shaft **82** there is a clutch member **83** in the form of a gear. When the parts are in the position shown in Figs. 15, 16, 17, and 18, the teeth of gear-like clutch member **83** pierce the holes **81** in arcuate clutch member **80**, so that shaft **82** is operatively coupled to shaft **71**. Thus when the tilt-cord **34** is pulled, movement is transmitted from the pulley **79** to the tilt-bar **29** to tilt the bar. Arcuate clutch member **80** is so coordinated with the rocking member **74** that when the tilt-bar is in horizontal or non-tilted position, the clutch member **80** is in the rotative position shown in Figs. 16 and 18, i. e., toward the tilt-bar **29**. In this rotative position, raising of the blind to an extreme upward position as previously described causes slat **31***a* to engage the tilt-bar **29** (or rubber bumper **65** thereof) and thereby elevate the tilt-bar **29** above normal position. This swings depending bracket leg **68** in a counter-clockwise direction (as viewed in Figs. 15, 18, and 19), the fit of connector member **65** in slot **77** being sufficiently loose to permit this movement. Thus bracket leg **68** is swung from the position shown in Fig. 18 to the position shown in Fig. 19, withdrawing arcuate clutch member **80** from the gear-like clutch member **83** and thereby breaking the driving connection from the pulley to the tilt-bar. The tilt-cord **34** can then be pulled to readjust or equalize

it, the pulley 79 undergoing an idle rotation with respect to the tilt-bar. When the blind is lowered sufficiently to remove the upward pressure thereof from the tilt-bar 29, the weight of the blind is restored to the tilt-bar and to bracket leg 68, so that leg 68 swings to normal position in which driving connection is reestablished between the clutch members 80 and 83. Then further movement of the tilt-cord 34 causes tilting of the tilt-bar 29 in the usual manner.

Figures 20 through 23

The device shown in these figures is intended to be used with a conventional Venetian blind. It is intended to be driven by a known type of worm-and-gear tilter, in which the gear has an axial hexagonal hole to receive and support a hexagonal tilt-bar connector.

A U-shaped sheet metal stamping 85 has a relatively narrow vertical leg 86 and a relatively wide vertical leg 87. Screws at 88, 88 pass through the wide leg 87 and secure the stamping to the end of the tilt-bar 29. In this instance the end of the tilt-bar is provided with a vertical notch 29*a*. Positioned between the legs 86 and 87 there is a gear-like clutch member 89 that is affixed to a hexagonal stub shaft 90. The shaft passes through the vertical slots 86*a* and 87*a* in legs 86 and 87 respectively, and projects into notch 29*a*. Thus, the gear-like clutch member 89 is rotatably positioned between legs 86 and 87, and it is also vertically slideable with respect to stamping 85. Struck from the metal of stamping 85 and projecting downwardly between legs 86 and 87 is a clutch finger 91 (or more than one) that is adapted to engage between the teeth of the gear-like clutch member 89. The left-hand or free end of shaft 90 is adapted to telescope into and be in driven engagement with a hexagonal opening in the gear of a known worm-and-gear tilter that is actuated by a cord and pulley.

When assembled in a complete blind, the tilt-bar 29 will be supported from shaft 90 and a pintle at the other end of the tilt-bar, after the general arrangement shown in Fig. 1. With the weight of the blind hanging upon the tilt-bar 29, finger 91 will be positioned between the teeth of the gear-like clutch member 89 as is shown in Figs. 20 and 22. However, upon the blind being elevated to an extreme upward position, as previously referred to, the top slat 31*a* of the blind will exert upward pressure on the tilt-bar and the tilt-bar will move upwardly carrying with it stamping 85. This withdraws finger 91 from the gear-like clutch member 89. In this condition, which is shown in Figs. 21 and 23, the driving connection from the cord pulley of the tilter to the tilt-bar is broken so that the tilt-cord can be readjusted or equalized, as previously pointed out. To facilitate the application of adequate upward pressure to the tilt-bar by top slat 31*a* of the blind, stamping 85 may be provided with an integral horizontal abutment 92 positioned as shown in Figs. 20, 21, and 24, this abutment being operatively part of the tilt-bar for the purpose of raising the bar. Upon the blind being lowered sufficiently to remove the upward pressure from the tilt-bar 29, the weight of the blind causes the tilt-bar to move downwardly to normal position in which finger 91 is reengaged with gear-like clutch member 89 to thereby reestablish the driving connection between the cord pulley of the tilter and the tilt-bar.

In compliance with the patent statutes, I have disclosed the best forms in which I have contemplated applying my invention, but it will be apparent that the invention may be realized by means of constructions other than those herein specifically disclosed. Accordingly, the disclosure is to be considered as illustrative rather than limiting the scope of the invention.

I claim:

1. In a Venetian blind having a tilt-bar, a cord pulley, a cord passing over the pulley to rotate the pulley, and mechanism operatively connecting the pulley with the tilt-bar to tilt the bar in response to rotation of the pulley; the improvement which comprises: the tilt-bar being mounted for upward movement above normal position by pressure exerted by extreme raising of the blind, and means included in said mechanism and responsive to said upward movement for breaking the operative connection between said pulley and said tilt-bar, whereby the pulley may be rotated independently of the tilt-bar for adjustment of the cord passing over said pulley.

2. In a Venetian blind having a tilt-bar, a cord pulley, a cord passing over the pulley to rotate the pulley, and mechanism operatively connecting the pulley with the tilt-bar to tilt the bar in response to rotation of the pulley; the improvement which comprises: the tilt-bar being mounted for upward movement above normal position, means to raise the tilt-bar above normal position, and means included in said mechanism and responsive to said upward movement for breaking the operative connection between said pulley and said tilt-bar, whereby the pulley may be rotated independently of the tilt-bar for adjustment of the cord passing over said pulley.

3. In a Venetian blind having a tilt-bar, a cord pulley, a cord passing over the pulley to rotate the pulley, and mechanism operatively connecting the pulley with the tilt-bar to tilt the bar in response to rotation of the pulley, the improvement which comprises: the tilt-bar being mounted for movement abnormal to its tilting movement when pressure is exerted thereon by extreme raising of the blind, and means included in said mechanism and responsive to said abnormal movement for breaking the operative connection between said pulley and said tilt-bar, whereby the pulley may be rotated independently of the tilt-bar for adjustment of the cord passing over said pulley.

4. In a Venetian blind having a tilt-bar, a cord pulley, a cord passing over the pulley to rotate the pulley, and mechanism operatively connecting the pulley with the tilt-bar to tilt the bar in response to rotation of the pulley; the improvement which comprises: the tilt-bar being mounted for movement abnormal to its tilting movement, means to impart such abnormal movement to the tilt-bar, and means included in said mechanism and responsive to such abnormal movement for breaking the operative connection between said pulley and said tilt-bar, whereby the pulley may be rotated independently of the tilt-bar for adjustment of the cord passing over said pulley.

5. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a worm-and-gear driven by said cord pulley, and means for operatively connecting the gear to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: said means having normally engaged driving elements which are disengageable in response to extreme raising of the blind, whereby the pulley may be rotated independently of the

tilt-bar for adjustment of a cord passing over said pulley.

6. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a worm-and-gear driven by said cord pulley, and means for operatively connecting the gear to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: said means having normally engaged driving elements which are disengageable in response to extreme raising of the blind, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over said pulley, one of said driving elements being adapted to be attached to the tilt-bar of the blind.

7. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a worm-and-gear driven by said cord pulley, and means for operatively connecting the gear to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: said means having normally engaged driving elements which are disengageable in response to extreme raising of the blind, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over said pulley, one of said driving elements being adapted to be attached to the tilt-bar of the blind, and the other of said elements being in fixed relationship to said gear.

8. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a worm-and-gear driven by said cord pulley, and means for operatively connecting the worm with a tilt-bar to tilt the bar in response to rotation of the cord pulley; the improvement which comprises: said means including a coupling in which a member having a keyhole slot receives a male member, the male member being normally in the small end of the slot to make an operative driving connection between the two members, and the two members being relatively shiftable to temporarily position the male member in the large end of the keyhole slot and thereby break the driving connection, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over the pulley.

9. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a worm-and-gear driven by said cord pulley, and means for operatively connecting the worm with a tilt-bar to tilt the bar in response to rotation of the cord pulley; the improvement which comprises: said means including a two member coupling, one member being driven by the gear and the other being adapted to be attached to the tilt-bar, one member being a male member and the other having a keyhole slot that receives the male member, the male member being normally in the small end of the slot to make an operative driving connection between the two members, and the two members being relatively shiftable by abnormal movement of the tilt-bar to temporarily position the male member in the large end of the keyhole slot and thereby break the driving connection, whereby the pulley may be rotated independently of the tilt-bar for the adjustment of a cord passing over the pulley.

10. A device as in claim 9, in which there is means to prevent the abnormal movement of the tilt-bar when the bar is in tilted position.

11. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a worm-and-gear driven by said cord pulley, and a stub shaft to transmit movement from the worm to the tilt-bar; the improvement which comprises: a connector member for attachment to the tilt-bar, the connector member having a keyhole slot pierced by the stub-shaft and the stub-shaft having a non-circular portion making driving connection with the small end of the keyhole slot, the connector member being shiftable to bring the large end of the keyhole slot in line with the stub shaft to thereby break the driving connection to the tilt-bar connector, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over such pulley.

12. A device as in claim 9, in which there is a curved guard, and the connector member has a projecting finger that moves adjacent to the guard as the tilt-bar is tilted, the guard normally preventing the shifting movement to break the driving connection but being notched to receive the finger and thereby for the shifting movement when the tilt-bar is in a predetermined position with respect to its tilting movement.

13. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley and means to operatively connect the pulley with the tilt-bar of a blind to tilt the bar in response to rotation of the pulley; the improvement which comprises: said means including a connection to the tilt-bar providing for upward movement of the bar above normal position by pressure exerted by extreme raising of the blind, and means included in said tilting device and responsive to said upward movement for breaking the operative connection between said pulley and said tilt-bar, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over said pulley.

14. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a shaft-and-worm driven by said cord pulley, and means for operatively connecting the worm to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: said means having normally engaged driving elements which are disengageable in response to extreme raising of the blind, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over said pulley.

15. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a shaft-and-worm driven by said cord pulley, and means for operatively connecting the worm to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: said means having normally engaged driving elements which are disengageable in response to extreme raising of the blind whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over said pulley, one of said driving elements being adapted to be attached to the tilt-bar of the blind.

16. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a shaft-and-worm driven by said cord pulley, and means for operatively connecting the worm to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: said means having normally engaged driving elements which are disengageable in response to extreme raising of the blind whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over

said pulley, one of said driving elements being adapted to be attached to the tilt-bar of the blind, and the other of said elements being in permanent operative relationship to said worm.

17. In a Venetian blind having a tilt-bar, a cord pulley, a cord passing over the pulley to rotate the pulley, and mechanism operatively connecting the pulley with the tilt-bar to tilt the bar in response to rotation of the pulley; the improvement which comprises: the tilt-bar being mounted for upward movement above normal position by pressure exerted by extreme raising of the blind, means included in said mechanism and responsive to said upward movement for breaking the operative connection between said pulley and said tilt-bar whereby the pulley may be rotated independently of the tilt-bar for adjustment of the cord passing over said pulley, and means to prevent the upward movement of the tilt-bar when the bar is in tilted position.

18. In a device for tilting the tilt-bar of a Venetian blind, said device including a cord pulley, a shaft-and-worm driven by said cord pulley, and means for operatively connecting the worm to the tilt-bar for tilting the bar in response to rotation of the cord pulley; the improvement which comprises: normally engaged driving elements interposed between the pulley and the worm, said elements being disengageable in response to extreme raising of the blind, whereby the pulley may be rotated independently of the tilt-bar for adjustment of a cord passing over said pulley.

19. A device as in claim 18, in which the driving elements are disengageable only when the tilt-bar is in horizontal position.

20. A device as in claim 18, in which the shaft-and-worm and one of the driving elements are carried by a pivoted support, and means are provided to rock the support in response to extreme raising of the blind and thereby disengages the driving elements.

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