

Dec. 18, 1951

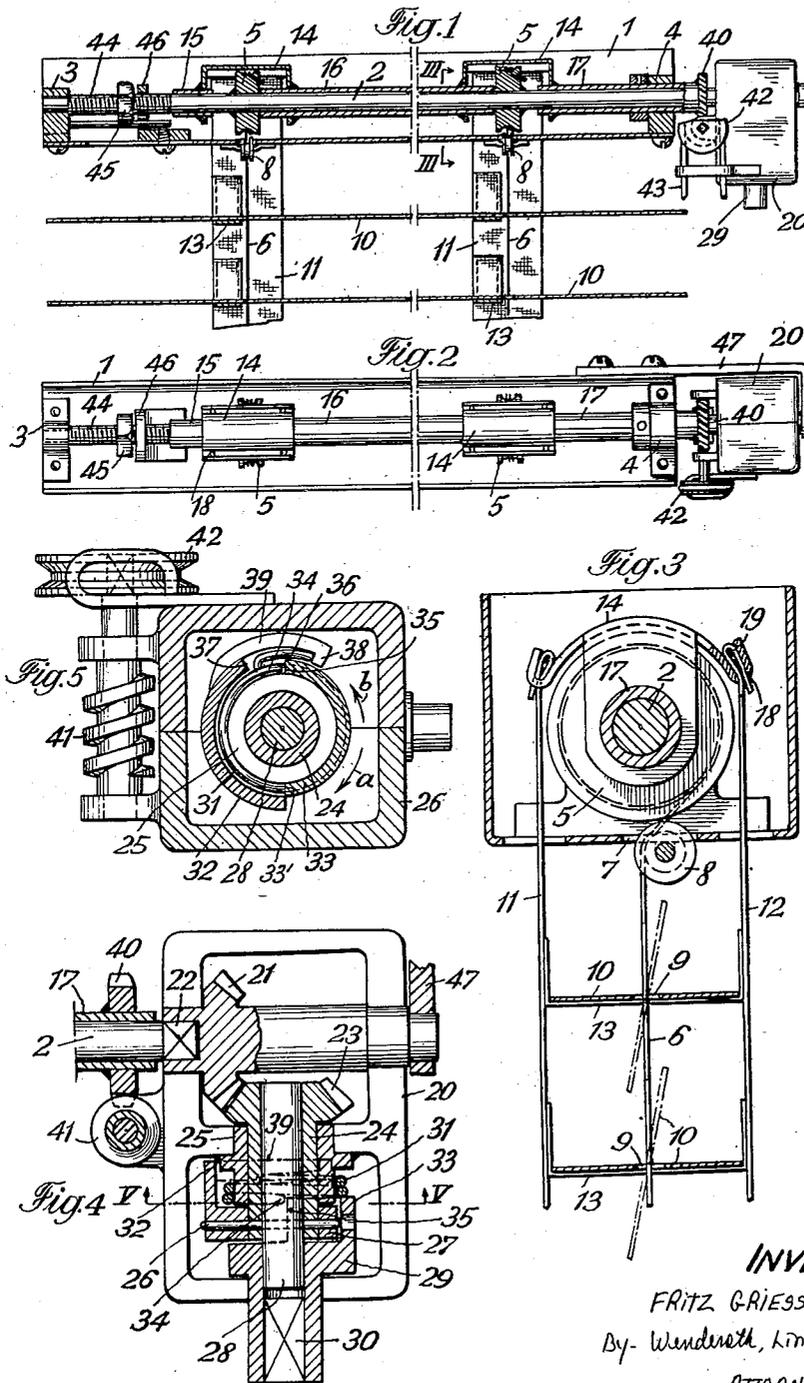
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WINDING AND STOPPING MECHANISM FOR VENETIAN BLINDS

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4 Sheets-Sheet 1



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Fig. 6

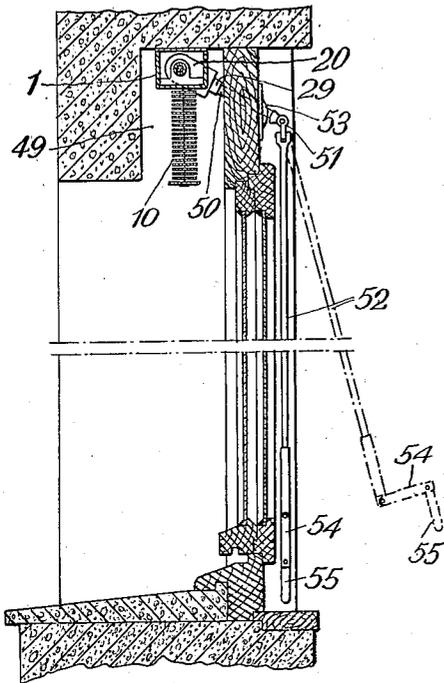


Fig. 8

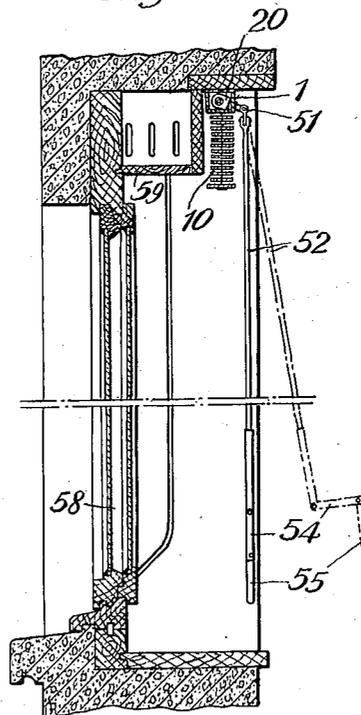
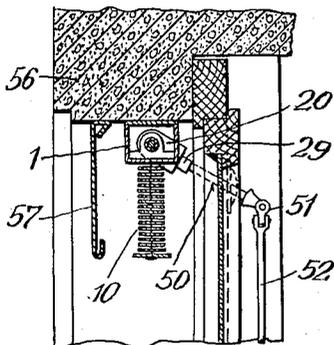


Fig. 7



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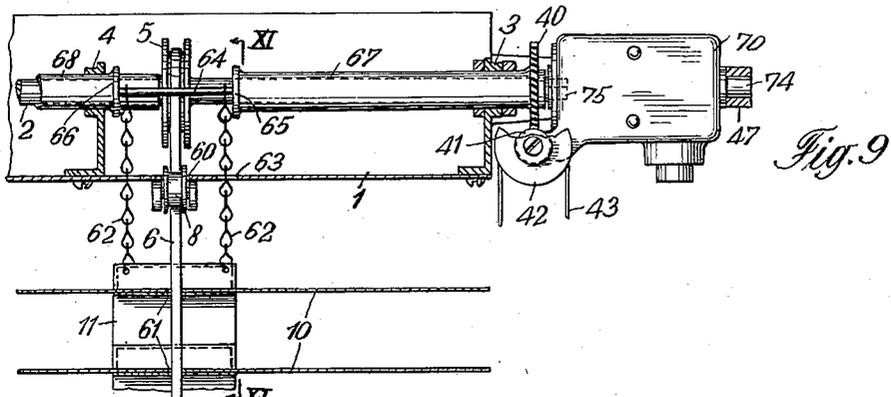


Fig. 9

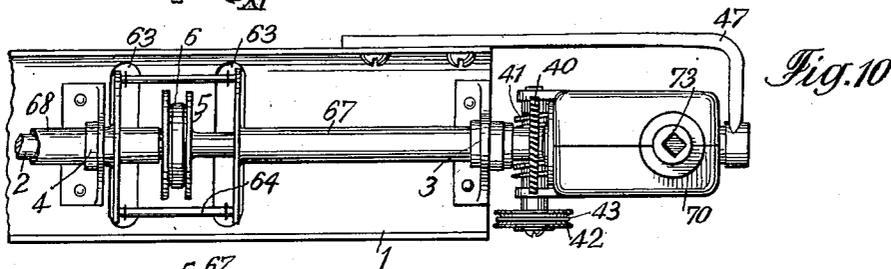


Fig. 10

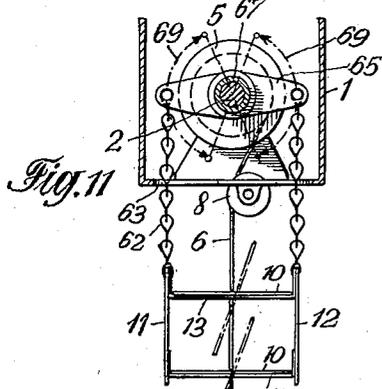


Fig. 11

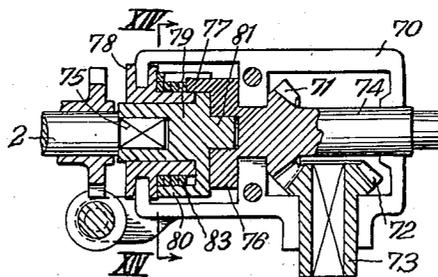


Fig. 12

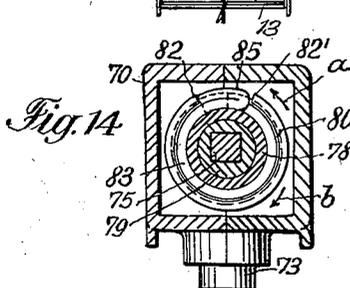


Fig. 14

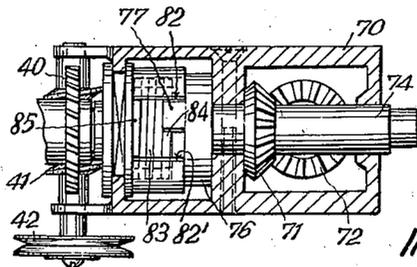


Fig. 13

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WINDING AND STOPPING MECHANISM FOR
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Rolladenfabrik A. Griesser A.-G., Aadorf, Swit-
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This invention relates to a winding and stopping mechanism for Venetian blinds and more particularly to apparatus for the operation, that is raising and lowering the laths of Venetian blinds and for maintaining them at the desired position.

According to the invention this operating mechanism comprises a winding shaft from which the laths of the blind are suspended and a driving device for said shaft, said driving device comprising two relatively movable members which are coupled with each other by means of a friction clutch in such manner that upon operation of the winding shaft for raising or lowering the laths the friction clutch is disengaged, while when the driving device is out of action and the winding shaft tends to turn under the influence of the weight of the laths or of a pulling action exerted thereon, a relative movement between said two members causes engagement of said friction clutch so as to prevent an undesired lowering of the laths.

In the accompanying drawings,

Fig. 1 is a vertical section through the winding shaft and the upper portion of a Venetian blind,

Fig. 2 is a plan view of the winding shaft assembly,

Fig. 3 is a transverse section through the casing of the winding shaft according to the line III—III of Fig. 1, drawn to a larger scale,

Fig. 4 is a vertical section through the winding and stopping gear,

Fig. 5 is a transverse section through the gear along the line V—V of Fig. 4,

Fig. 6 is a vertical section through a window opening having a Venetian blind according to the invention disposed outside of the window,

Fig. 7 is a similar sectional view of the upper part of a window opening with a modified disposition of the Venetian blind,

Fig. 8 shows the disposition of a Venetian blind at the interior of a sash window,

Fig. 9 is a vertical section of a modified arrangement of a winding shaft and gear,

Fig. 10 is a plan view of the winding shaft and gear assembly,

Fig. 11 is a transverse section through the casing of the winding shaft according to the line XI—XI in Fig. 9,

Fig. 12 is a vertical axial section through the winding and stopping gear,

Fig. 13 is a horizontal section through the gear with the movable parts shown in elevation,

Fig. 14 is a transverse section through the gear along the line XIV—XIV of Fig. 12,

Fig. 15 is a longitudinal vertical section through a further modified form of a winding shaft assembly,

Fig. 16 is a plan view of this modified form,

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Fig. 17 is a transverse section along the line XVII—XVII of Fig. 15,

Fig. 18 is a transverse section through the winding gear according to the line XVIII—XVIII of Fig. 1.

The Venetian blind according to Figs. 1-5 comprises an upwardly open casing 1 of U-shaped transverse section adapted to be mounted on the upper cross frame of a window opening. A winding shaft 2 extending through the entire length of the casing is rotatably mounted at both end walls of the casing in fixed bearings 3 and 4. The shaft 2 carries two or more winding rolls 5. A flexible pull member 6 for example a string, a fine steel cable or a steel tape is attached by one of its ends to each winding roll 5. The pull member passes through an opening 7 in the bottom of the casing 1, extends downwardly over a guide roller 8 carried underneath the casing and penetrates through a hole provided in each of the laths 10 of the blind; the lower end of the pull member 6 is fixed to the lowermost not represented lath. The provision of very thin steel tapes as pull members 6 is advantageous, since when they wind up on the roll 5 they only slightly increase the diameter of the roll. The various laths of the blind are maintained between two bands 11 and 12 on cross straps 13 fixed to the bands and are maintained by the traversing pull members 6 against displacement in longitudinal direction. The carrier bands 11 and 12 of the laths 10 pass through the bottom of the casing 1 and the upper ends of each two cooperating opposite bands are fixed to a bracket 14 passing above the rolls 5. The two brackets 14 in the represented example are rigidly connected with tubes 15 and 16, and 16 and 17, respectively, which tubes are rotatable on the shaft 2. The two longitudinal edges of the brackets are bent backwards as shown in Fig. 3, while a slot 18 is provided at the bend through which slot pass the ends of the bands 11 and 12 to be folded about a pin 19 and threaded again through the slot, so that when exerting a downwardly directed pulling action on the bands, they are automatically clamped within the bent portion of the bracket. When turning the bracket 14 in one or the other direction, one of the bands, for example the band 11, is pulled upwardly while the other band 12 moves downwardly. The laths 10 can be brought in this manner in any desired inclined or almost vertical position as is shown in dotted lines in Fig. 3.

For operation of the winding shaft there is provided a winding gear located within a two part gear casing 20 carried at one end of the casing 1. A bevel gear 21 is mounted within the casing 20 in alignment with the winding shaft 2 and is coupled with this shaft by means of a square socket cooperating with the square

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end 22 of the shaft. The gear 21 meshes with a second bevel gear 23. This gear 23 comprises a hub 24 which is rotatably mounted in a fixed sleeve 25. A driver sleeve 27 is fixed by means of a pin 26 to the hub 24. A bolt 28 extends through the bore of the hub 24 to beyond the lower end of the hub for guiding a driving sleeve 29 which is freely rotatable relative to the bolt 28 and projects out of the casing 20. The portion of the sleeve 29 below the bolt 28 is provided with a square portion 30 adapted to receive a driving member for the operation of the winding shaft 2. A coiled spring 31 is wound about the fixed sleeve 25. The driver sleeve 27 comprises a cylindrical wall portion 32 extending outside of the spring 31 through slightly less than one half of the circumference of the sleeve, while the sleeve 29 comprises a cylindrical wall portion 33 which extends substantially through one half of the circumference of the sleeve and penetrates into the space between the two end faces of the wall portion 32 of the sleeve 27. One end 34 of the coiled spring 31 bears against the end face 35 of the wall portion 33 of the sleeve 29. The other spring end 36 is bent backwards and at the bend the spring bears against the end face 37 of the wall portion 32 of the sleeve 27, while the free end of the bent spring portion cooperates with an abutment 38 of an extension 39 of the wall portion 32. The two sleeves 27 and 29 are movable relatively to each other, and the bent end piece 36 of the spring has a slight play between the two abutments 37 and 38.

When the blind has to be raised the coupling sleeve 29 is turned for example in the direction of the arrow *a* in Fig. 5 by means of a winding crank shaft to be inserted into the square socket 30. The sleeve 29 acts with the end face 33' of the wall portion 33 against the driver sleeve 27, 32 and causes this latter to turn in the same direction. The end face 37 of the wall portion 32 of this sleeve then acts against the bent portion of the spring end 36 and exerts pressure on the spring in the direction of opening of the spring coils. The spring 31 therefore can turn with the two sleeves 27 and 29 about the fixed sleeve 25. Rotation of the sleeve 27 is transmitted by means of the pin 26 to the bevel gear 23 which turns the gear 21 and accordingly the winding shaft 2. The two rolls 5 turn with the shaft 2 and cause the two pull members 6 fixed thereto to be wound up about the rolls. The lowermost lath of the blind is raised by means of the pull member and abuts against the next following lath, and so forth. The blind can be raised in this manner entirely or into any desired intermediary position and remains then without else in the raised position as soon as the turning effort exerted on the sleeve 29 by means of the crank ceases. The rolls 5 and the shaft 2 obviously tend to turn in reverse direction, that is to say, in the direction corresponding to lowering of the laths, by the influence of the weight of the laths or under the action of a pulling force exerted on the laths, so that by the intermediary of the bevel gears 21 and 23 a turning effort in the direction of the arrow *b* in Fig. 5 is exerted on the sleeve 27, but now the abutment 38 of the sleeve 27 bears against the spring end 36 and exerts pressure on this spring end in the direction of closing of the spring coils about the fixed sleeve 25. The coils are clamped against this sleeve and form together with the sleeve a friction clutch which locks the

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driver sleeve 27 and accordingly the winding shaft 2 to the fixed sleeve 25 to prevent a movement of rotation of the shaft 2 in the direction of lowering of the laths.

When the blind has to be lowered, the sleeve 29 is rotated in the direction of the arrow *b* in Fig. 5 by means of the winding crank. Now the end face 35 of the sleeve portion 33 acts against the spring end 34 and exerts thereon a pressure in the direction tending to open the spring coils. The spring 31 can turn relatively to the fixed sleeve 25 so that the bent portion of the spring end 36 bears against the end face 37 of the portion 32 of the sleeve 27 and transmits the movement of rotation of the sleeve 29 to the sleeve 27 and accordingly to the bevel gear 23. The shaft 2 now turns in the direction of lowering of the laths 10. When the driving action on the sleeve 29 by means of the crank ceases, the shaft 2 tends to continue to turn in the same direction owing to the weight of the laths. The turning force in the direction of the arrow *b* is transmitted from the shaft 2 through the bevel gears 21 and 23 to the sleeve 27 and the abutment 38 of this sleeve at once bears against the free end of the spring portion 36 and exerts a pressure on the spring in the direction of closing of the spring coils so that the friction clutch becomes again operative.

In order to tilt the laths 10 to inclined position the tube 17 rotatable on the shaft 2 carries a screw wheel 40 meshing with a worm 41 which is rotatably carried outside of the gear casing 20. A driving pulley 42 carried by the worm shaft can be rotated by means of a string 43. When pulling the string the screw wheel 40 and the tubes 15, 16, 17 with the brackets 14 connected to the wheel 40 can be swung in one or the other direction. In this manner one of the bands 11 or 12 carrying the laths is lifted and the other is lowered, and the laths are correspondingly inclined. The worm gear 40, 41 is not reversible so that the brackets 14 cannot move out of their adjusted position under the action of their weight.

For limiting the driving motion to raise or to lower the blind one end of the winding shaft 2 is provided with a screw thread 44 carrying a travelling nut 45 which is maintained against rotation so that it moves longitudinally along the screw when the shaft 2 rotates. The movement of the nut 45 is limited in one direction by the bearing 3 and in the other direction by an adjustable abutment 46. This abutment is so adjusted according to the height of the blind or the number of the laths, that the sliding nut abuts against one or the other of the two abutments 3 and 46 when the laths are completely raised or completely lowered, so that a further operation of the winding gear by means of the crank driving the sleeve 29, when the blind has reached one or the other of its two end positions, is not possible. This limitation of the winding operation is also necessary in order to prevent a raising of the laths by rotation of the shaft 2 and the rolls 5 in the wrong direction of rotation. The pull members 6 would naturally wind up on the rolls 5 in both directions of rotation thereof, but the friction clutch for preventing lowering of the laths by the action of their weight is only effective in one direction of rotation and it is accordingly necessary that the driving movement for raising or lowering of the blind can be effected only in the correct direction of rotation and that the pull members

6 owing to the weight of the laths exert such a turning moment on the rolls 5 and the shaft 2 that the driving sleeve 27 tends to turn in the direction of the arrow b.

The gear casing 20 is carried by means of a bracket 47 on the casing 1 and can be moved about the axis of the bevel gear 21 so that the driving shaft to be connected to the square opening 30 of the driving sleeve 29 can be given the proper direction for its connection with the crank shaft as is represented in Figs. 6 and 7.

Fig. 6 shows an example of a Venetian blind to which the winding and stopping mechanism according to the invention is applied. The blind having blades 10 is disposed outside of a window 48 in a recess 49. The casing 1 containing the winding shaft is fixed to the lintel in any convenient manner. The driving sleeve 29 projecting from the gear casing 20 is connected to a square shaft 50 which is downwardly inclined and extends through the fixed window frame inside of which it is connected by means of an universal joint 51 to the manually operated crank shaft 52. The square shaft 50 is carried in a ball thrust bearing 53 in which it is maintained against disengagement from the square socket 30 of the sleeve 29. The crankshaft 52 is also carried by this bearing. The crankshaft 52 carries at its lower end a hingedly connected crank arm 54 to which the crank 55 is also hingedly connected.

For lowering or raising the blind the crankshaft 52 is swung to the position shown in dash-and-dot lines in Fig. 6, in which a convenient manual operation of the crankshaft is possible. After operation of the blind the crankshaft 52 is returned to its position of rest drawn in full lines in which it depends perpendicularly from the universal joint 51. The crank 54, 55 is then extended into aligned position with the shaft 52 so that in its position of rest the crankshaft together with the crank uses little space only but can be readily swung into operative position.

Fig. 7 shows a disposition of a Venetian blind immediately underneath the lintel 56. A screen 57 covers the casing 1 and the raised laths of the blind towards the exterior. The driving sleeve 29 projecting from the gear casing 20 is again connected by an universal joint 51 with the crank shaft 52.

Fig. 8 shows a sash window having a Venetian blind disposed at the inside of the sash 58. 59 designates the box for the rolls on which the carrying cables of the sash are suspended. The blind with the laths 10 is suspended in the rear of the box 59. The crankshaft 52 adapted to be swung outwardly is again provided with hingedly connected crank members 54 and 55 and is connected by means of an universal joint 51 with the winding gear located in the gear casing 20.

The example according to Figs. 9 to 14 comprises again an upwardly open casing 1 of U-shaped transverse section adapted to be mounted on the upper cross frame of a window opening. The winding shaft 2 is rotatably mounted in bearings 3 and 4 and carries winding rolls 5. To each roll 5 is attached one end of a flexible pull member, particularly a thin steel tape. Each pull member passes through an opening 60 in the bottom of the casing 1 and over a guide roll 8 and penetrates through a hole 61 in each of the superposed laths 10 of the blind. The lower end of the pull member 6 is attached to the not represented lowermost lath. The different laths of the blind are carried between two bands 11 and

12 on cross straps 13 fixed to the bands. The bands 11 and 12 are suspended with their upper ends at chains 62 penetrating through slots 63 in the bottom of the casing 1 and attached by their upper ends at suspension pins 64. The pins 64 of the chains of two cooperating bands 11 and 12 are carried by the ends of two arms 65 and 66 rigidly fixed to tubes 67 and 68. These tubes can turn on the shaft 2 and are rigidly connected with each other by the pins 64 disposed symmetrically at both sides of the axis of the shaft 2. When the tubes 67 and 68 are turned and the arms 65 and 66 correspondingly tilted, the chains fixed for example to the band 12 are pulled upwardly and the chains fixed to the band 11 are lowered, so that the two bands are displaced relatively to each other and the laths 10 can be brought into any desired inclined position as is shown in dash-and-dot lines in Fig. 11. The stroke of tilting movement of the pin 64 is shown in dash-and-dot lines in Fig. 11, and in the uppermost position of the pins, corresponding to the closed position of the laths, the raised pair of chains 62 does not touch the winding shaft 2.

For actuating the winding shaft there is provided a winding gear located within a two-part gear casing 70. A pair of bevel gears is mounted in this casing, the gear 71 of the pair being disposed in alignment with the axis of the winding shaft 2, while the gear 72 is provided with a hollow hub 73 having an interior square bore and extending out of the casing 70 for connections with a shaft member to be connected with the actuating crankshaft. The shaft 74 of the gear 71 also projects from the casing 70 and has its end carried in a bracket 47 fixed to the casing 1, so that the casing 70 may be turned about the axis of the gear 71 and the winding shaft 2, permitting the hub 73 to be brought into any desired suitable position for connection with the crankshaft.

The gear 71 is coupled with the square end 75 of the winding shaft 2 by means of a friction clutch located within the casing 70. A disc 76 rigid with the gear 71 carries a driver member 77. A bearing sleeve 78 is fixed to the casing 70 and serves as bearing for a driving sleeve 79 connected with the square end 75 of the shaft 2. The sleeve 79 is provided with a cylindrical skirt not extending over the entire circumference. The sleeve is guided by means of an axial plug 81 carried in a corresponding socket of the disc 76, and the driver 77 of the disc penetrates between the two ends or axial edges 82, 82' of the interrupted skirt 80. A coiled spring 83 of rectangular wire section is wound about the fixed sleeve 78. One end 84 of the spring abuts with its rectangular end face against the driver 77 on the disc 76, while the other end of the spring is bent back through 180°, the bent over portion 85 being located in the space between the ends 82, 82' of the interrupted skirt 80. The free end of this bent over portion 85 abuts against the edge 82, of the skirt 80, while the bend of the spring end cooperates with the edge 82' of the skirt 80. The bent over spring end has a small play between these two edges.

When the blind is to be raised the gear pair 71, 72 is rotated by means of the crank shaft to be connected to the coupling sleeve 73, for example in such direction that the gear 71 with the driver 77 turns in the direction of the arrow a in Fig. 6. The driver 77 acts in this case against the edge 82 of the skirt 80 while the edge 82'

of this latter in turn acts against the bend of the spring end 85 and exerts pressure on the spring 83 acting to open the spring windings. Accordingly, the spring can turn about the fixed bearing sleeve 78 together with the skirt 80 and the sleeve 79. This latter transmits the movement of rotation to the square end 75 of the winding shaft 2 which is turned in the direction to wind up the pull member 6 on the rolls 5 turning with the shaft, and to raise the laths.

As soon as the driving action exerted by means of the crank shaft on the gear pair 71, 72 ceases, the laths remain stationary in the raised position. The weight of the blind exerts a turning moment on the rolls 5 tending to turn the sleeve 79 with the skirt 80 in the direction of the arrow *b* in Fig. 6, but now the edge 82 of the skirt 80 acts against the free end of the bent-over spring portion 85 and effects a closing of the spring coils about the fixed sleeve 78. The spring windings are clamped about the sleeve and form together with the sleeve a friction clutch which couples the sleeve 79 and the winding shaft 2 with the fixed sleeve 78 so as to prevent any rotation of the shaft 2 in the direction corresponding to lowering of the blind.

When the blind shall be lowered, the crank connected with the sleeve 73 is rotated to turn the gear 71 in the direction of the arrow in Fig. 6. Now the driver 77 acts against the spring end 84 and exerts on this latter a pressure in the direction to open the spring coils. The spring can turn about the fixed sleeve 78 so that the bend of the spring end 85 acts against the edge 82' of the skirt 80 and transmits the movement of rotation of the driver 77 to the skirt and to the sleeve 79. The shaft 2 is now turned in the direction corresponding to lowering of the blind. As soon as the driving action exerted on the shaft by the crank through the intermediary of the bevel gears ceases, the laths are stopped. The shaft 2 which, owing to the weight of the blind, tends to continue its rotation in the same direction, exerts a turning moment in the direction of the arrow *b* in Fig. 6 on the sleeve 79. The edge 82 of the skirt 80 is thus applied against the free end of the bent-over spring end 85 and exerts a pressure on the spring in the direction corresponding to closing of the spring coils, so that the friction clutch again becomes active.

For tilting the laths 10 into their inclined or closing position, the tube 67, which is rotatable on the shaft 2, is rigidly connected with a worm wheel 40 meshing with a worm 41 which is rotatably mounted outside of the gear casing 78. A driving pulley 42 is carried by the worm shaft and can be turned by means of a string 43. By pulling the string, the worm wheel 40 and the tubes 67, 68 together with the arms 65, 66 and the pins 64, can be turned in one or the other direction. One of the bands 11 or 12 carrying the laths is raised and the other lowered and the laths are accordingly brought to an inclined position.

The example according to Figs. 15-18 comprises again an upwardly open casing 1 of U-shaped cross section. The winding shaft 2 is rotatably mounted within the casing and carries winding rolls 86 to each of which a thin steel tape is connected. The tape 6 penetrates through an opening in the casing 1 and through an opening in each of the superposed laths 10 to be attached to the lowermost not represented lath. The laths are again carried by bands 11 connected by means of chains 62 to pins 64 which are carried by rock-

ing arms 66. These arms are rigidly connected to a rotatable tube 68 which in turn is connected to a second pair of arms carrying further lath supporting bands 11. The chains 62 traverse openings 63 in the bottom of the casing 1.

At one end of the shaft 2 there is provided a friction clutch located within a casing 70 which is fixed to the casing 1 by means of an angular bracket 87. The end of the shaft 2 is formed by a square plug 75 which is inserted in a corresponding square recess of a driving sleeve 79. The latter is rotatably mounted in a fixed bearing sleeve 78 carried by the casing 70. A coiled spring 83 of rectangular wire section is wound about the fixed bearing sleeve 78. The driving sleeve 79 is provided with a cylindrical skirt 80 not extending through the entire circumference of the sleeve. The sleeve 79 is guided by means of a cylindrical plug 81 in a corresponding recess of a disc 76 having a driver 77 (Fig. 16). This driver 77 extends into the free space between the two axial edges of the interrupted skirt 80. One end 84 of the spring 83 bears against the driver 77, while the other end 88 of the spring is thickened to cooperate with both axial edges of the skirt 80. The disc 76 is connected with a driving shaft 89 disposed in alignment with the shaft 2. The free end of the shaft 89 extends out of the casing 70 and is fixed to a hub 90 by means of a screw 91. This hub is rigidly connected with a driving wheel 92 disposed outside of the end of the casing 1. The driving wheel is provided with a circumferential groove 93 which is subdivided by uniformly spaced cross webs 94. A flexible pull member 95 is engaged in the groove 93 and is formed of balls which cooperate with the webs 94. The pull member passes over guide rolls 96 and is preferably endless.

The operation of the blind by means of the wheel 92 is identical with the operation by means of the crank as described with reference to Figs. 12 to 14, except that no bevel gears are necessary. The driving movement is transmitted directly from the wheel 92 and the shaft 89 to the driver 77. When the driver is turned in one or the other direction, the driver 77 or the skirt 80 act on the spring 83 in a direction to open the spring coils and allowing rotation of the sleeve 79 and accordingly of the winding shaft 2, while a turning moment originating from the weight of the laths and exerted on the sleeve 75, results in tightening the spring coils about the fixed sleeve 78, so that the friction clutch becomes effected and maintains the blind in the position to which it has been brought.

I claim:

1. Venetian blind operating mechanism, comprising a rotatably mounted winding shaft, flexible lath raising and lowering members suspended from said shaft and adapted to wind-up on the shaft or unwind therefrom upon rotation of the shaft, driving means operatively connected to said shaft for rotating the shaft in one or the other direction, and a friction clutch connecting said driving means to said shaft, said friction clutch including a resilient member, said friction clutch through said resilient member being operative to allow rotation of said shaft in either direction when actuating said driving means, but preventing rotation of the winding shaft under the action of a turning effort exerted on the shaft by the weight of the laths suspended therefrom.

2. Venetian blind operating mechanism, com-

prising a rotatably mounted winding shaft, flexible lath raising and lowering members suspended from said shaft and adapted to wind-up on the shaft or unwind therefrom upon rotation of the shaft, driving means operatively connected to the winding shaft for rotating the shaft in one or the other direction a friction clutch connecting said driving means to the winding shaft, said friction clutch including a relatively fixed sleeve, a coiled spring wound about said sleeve, a driving sleeve member coacting with one end of said spring, a driven sleeve member mounted for rotation with said winding shaft and coacting with the other end of said spring, and with said driving sleeve, whereby upon actuation of said driving means for raising or lowering the laths one of said sleeve members acts against the corresponding spring end in a direction to open the spring coils to allow rotation of the spring about said fixed sleeve, while a turning effort exerted on the winding shaft by the action of the weight of the laths and transmitted to said driven sleeve member acting against the corresponding spring end in a direction to close the spring coils about said fixed sleeve to prevent rotation of the spring.

3. Venetian blind operating mechanism as defined in claim 2, wherein the spring end cooperating with said driven sleeve member has a thickened end portion coacting with two opposed abutment faces of said sleeve member, whereby when the sleeve member tends to turn in one direction it acts against the spring end to open the spring coils, and when the sleeve member tends to turn in opposite direction it acts on the spring end to tighten the spring coils about said fixed sleeve.

4. Venetian blind operating mechanism, comprising a rotatably mounted winding shaft, flexible lath raising and lowering members suspended from said shaft and adapted to wind-up on the shaft or to unwind therefrom upon rotation of the shaft, a driving member for actuating said winding shaft, a driving gear for transmitting movement of rotation from said driving member to said winding shaft, said driving gear comprising a pair of bevel gears, and a friction clutch including a resilient member connecting said driving member to said bevel gears, said friction clutch through said resilient member being disengaged when said driving member is operated to turn the winding shaft but becoming effective to prevent rotation of the winding

shaft under the action of the weight of the laths suspended from the shaft.

5. Venetian blind operating mechanism, comprising a rotatably mounted winding shaft, flexible lath raising and lowering members suspended from said shaft and adapted to wind-up on the shaft or to unwind therefrom upon rotation of the shaft, a driving member for actuating said winding shaft, a driving gear for transmitting movement of rotation from said driving member to said winding shaft, said driving gear comprising a pair of bevel gears, and a friction clutch interposed between said pair of bevel gears and one end of the winding shaft, said friction clutch including a relatively fixed sleeve, a coiled spring wound about said sleeve, a driver on one of said bevel gears and coacting with one end of said spring, a rotatable driven member mounted for rotation with the winding shaft and coacting with the other end of said spring and with said driver, whereby said spring coils are loosened from said relatively fixed sleeve upon actuation of the driving member to raise or lower the laths, and tightened about said sleeve to lock said bevel gears upon a turning effort resulting from the weight of the laths being exerted by the winding shaft on said driven member.

6. Venetian blind operating mechanism as claimed in claim 5, wherein said pair of bevel gears and said friction clutch are lodged in a casing disposed at one end of the winding shaft and mounted for angular adjustment about the axis of the winding shaft.

7. Venetian blind operating mechanism as claimed in claim 1, wherein said winding shaft comprises a screw threaded shaft portion carrying a travelling nut coacting with abutments to stop rotation of the shaft when the laths are in fully raised or fully lowered position.

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