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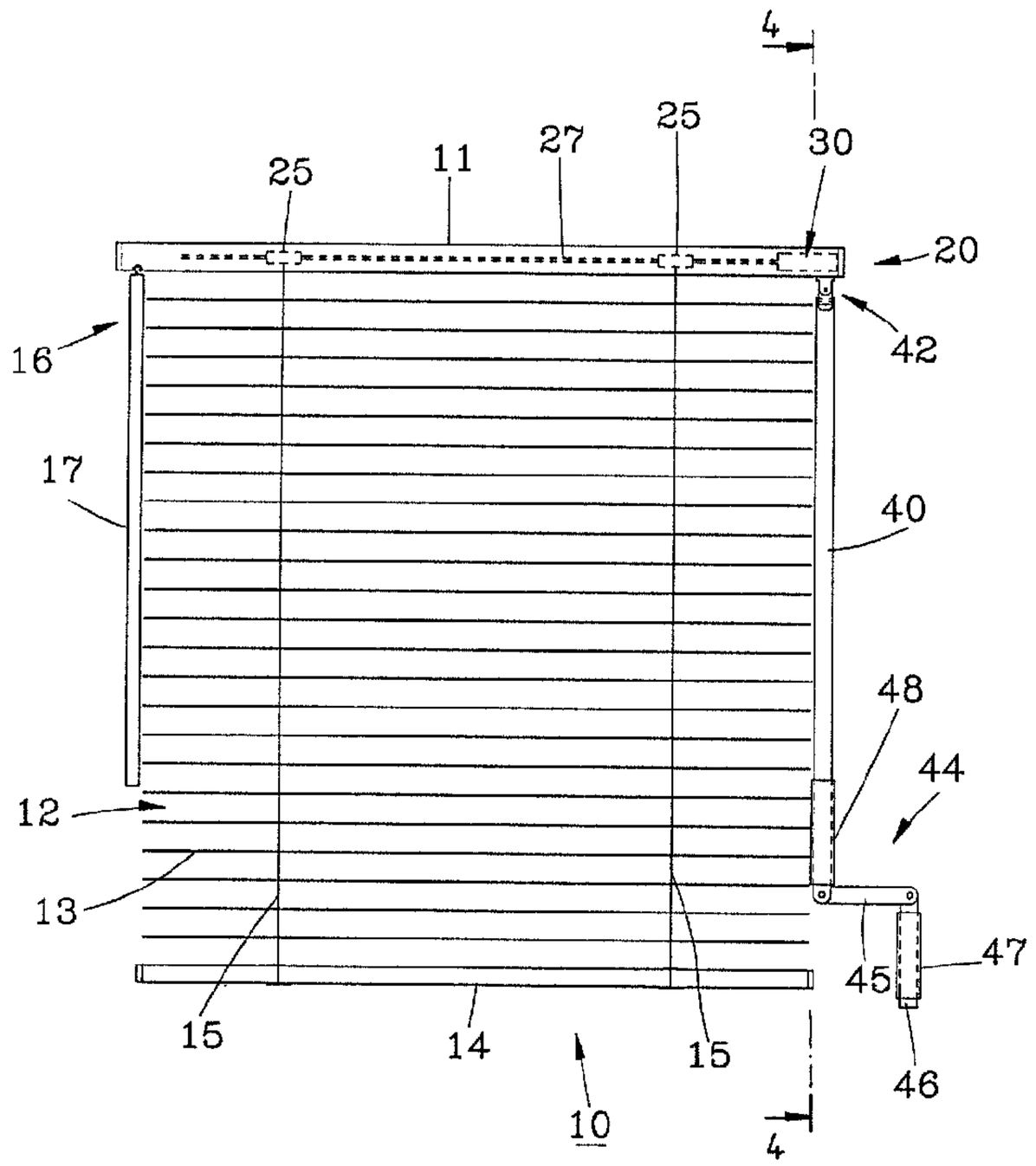
(54) **Titre : METHODE ET MECANISME DE COMMANDE DE LEVAGE DE STORE**
(54) **Title: BLIND LIFTING CONTROL METHOD AND MECHANISM**



(57) **Abrégé/Abstract**:
A blind lifting control mechanism for use in a blind and adapted to control the elevation of the blind body is constructed to include two bobbins pivotally mounted inside a headrail of the blind, a transmission mechanism mounted inside the headrail of the blind and coupled to the bobbins, and a control rod vertically suspended at a side of a window and coupled to the transmission mechanism for rotating by the user to drive the transmission mechanism to rotate the bobbins to roll up/let off the lift cords of the blind body and to further lift/lower the blind body.

BLIND LIFTING CONTROL METHOD AND MECHANISM

ABSTRACT OF THE DISCLOSURE

A blind lifting control mechanism for use in a blind and adapted to control the elevation of the blind body is constructed to include two bobbins pivotally mounted inside a headrail of the blind, a transmission mechanism mounted inside the headrail of the blind and coupled to the bobbins, and a control rod vertically suspended at a side of a window and coupled to the transmission mechanism for rotating by the user to drive the transmission mechanism to rotate the bobbins to roll up/let off the lift cords of the blind body and to further lift/lower the blind body.

BLIND LIFTING CONTROL METHOD AND MECHANISM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to blinds, and more specifically to a blind lifting control mechanism and a method of the same.

2. Description of the Related Art

A variety of blinds including Venetian blinds, roller blinds, pleated blinds, honeycomb shades, Roman blinds, vertical blinds, curtains, and so on are commercially available for use in a window to regulate the light, air, etc. A regular blind generally includes a headrail fastened to a top side of the window, and a blind body (formed of a shade or a set of slats, and a bottom rail) mounted at a bottom side of the headrail. The blind body is driven by an external driving force to change its window shading status.

The blind lifting control mechanism of a conventional blind generally includes at least one bobbin, regularly two bobbins rotatably mounted with the headrail of the blind and adapted to roll up or let off lift cords of the blind and to further lift or lower the blind body (in an alternate prior art design, a roller is used instead of the bobbin, and the top side of the blind body is directly fastened to the periphery of the roller), a transmission mechanism mounted inside the headrail of the blind and coupled to the bobbins, and an endless operating cord member suspended from the headrail of the blind at an end for pulling by hand to drive the transmission mechanism to rotate the bobbins (or the roller). There is another conventional design in which each of the two lift cords has a first end fastened to the bottom side of the blind body (for example, the bottom rail of the blind body), and a second end inserted inside the headrail of the

blind and through a lift lock in the headrail and then downwardly extended out of the bottom side of the headrail to a distance. The user can pull the lift cords to lift or lower the blind body. When the lift cords are released, the lift lock automatically locks the lift cords.

In the aforesaid prior art designs, the operating cord member or lift cords are suspended outside the headrail. Because a child can easily reach the suspended part of the lift cords or operating cord member, an accident may occur when a child pulls the lift cords or operates the cord member for fun.

SUMMARY OF THE INVENTION

It is a feature of preferred embodiments of the present invention to provide a blind lifting control mechanism, which keeps cord members of the blind in a hidden status, eliminating the possibility of a person, especially a child, hanged on cord members of the blind accidentally.

In accordance with one embodiment of the present invention provides a blind lifting control mechanism installed in a blind that includes a headrail mounted at a top side of a window and blind body mounted under the headrail, the blind lifting control mechanism comprising: at least one bobbin rotatably fastened to the headrail of the blind for synchronous rotation to lift or lower the blind body of the blind; a transmission mechanism mounted inside the headrail of the blind and adapted to rotate the bobbin, the transmission mechanism having a rotating force input end disposed in an end of the headrail, a rotating force output end connected to the bobbin, and means for stopping reverse transmission of force from the force output end toward the force input end; and a control rod vertically suspended at a lateral side of the window and pivoted to the force input end of the transmission mechanism and adapted to rotate the force input end of the transmission mechanism by the user and to further drive the transmission mechanism to rotate the bobbin; wherein the force input end of the transmission mechanism is a movable device, the movable device having a cylindrical gear horizontally suspended inside the headrail of the blind, a rod member coaxially connected to the cylindrical gear and downwardly extended out of the headrail of the blind and pivoted to a top end of the control rod, a toothed endless groove fixedly located on a part inside the headrail of the blind, a toothed collar fixedly provided around the periphery of the rod member and vertically movable with the

rod member between a locking position where the toothed collar engages the toothed endless groove to stop the rod member from rotation and an unlocking position where the toothed collar is disengaged from the toothed endless groove for enabling the rod member to be rotated by the control rod, a spring member connected between a part of the headrail and a part of the cylindrical gear to support the movable device in the locking position, and gear set meshed with the cylindrical gear and located between the force input end and the force output end.

Yet another embodiment of the present invention provides a blind lifting control mechanism installed in a blind that includes a headrail mounted at a top side of a window and a blind body mounted under the headrail, the blind lifting control mechanism comprising: at least one bobbin rotatably fastened to the headrail of the blind for synchronous rotation to lift or lower the blind body of the blind; a transmission mechanism mounted inside the headrail of the blind and adapted to rotate the bobbin, the transmission mechanism having a rotating force input end disposed in an end of the headrail, a rotating force output end connected to the bobbin, and means for stopping reverse transmission of force from the force output end toward the force input end; and a control rod vertically suspended at a lateral side of the window and pivoted to the force input end of the transmission mechanism and adapted to rotate the force input end of the transmission mechanism by the user and to further drive the transmission mechanism to rotate the bobbin, the control rod having a bottom end provided with a collapsible crank handle, the collapsible crank handle having a first arm, the first arm having a first end pivoted to the bottom blind a rod member coaxially connected to the cylindrical gear and downwardly extended out of the headrail of the blind and pivoted to a top end of the control rod, a toothed endless groove fixedly located on a part inside the headrail of the blind, a toothed collar fixedly provided around the periphery of the rod member and vertically movable with the rod member between a locking position where the toothed collar engages the toothed endless groove to stop the rod member from rotation, and an unlocking position where the toothed collar is disengaged from the toothed endless groove for enabling the rod member to be rotated by the control rod, a spring member connected between a part of the headrail and a part of said cylindrical gear to support the movable device in the locking position, and gear set mesh with the

cylindrical gear and located between the force input end and the force output end.

In accordance with a still further embodiment there is provided a blind lifting control mechanism installed in a blind that includes a headrail mounted at a top side of a window and a blind body mounted under the headrail, the blind lifting control mechanism comprising: at least one bobbin rotatably fastened to the headrail of the blind for synchronous rotation to lift or lower the blind body of the blind; a transmission mechanism mounted inside the headrail of the blind and adapted to rotate the bobbin, the transmission mechanism having a rotating force input end disposed in an end of the headrail, a rotating force output end connected to the bobbin, and means for stopping reverse transmission of force from the force output end toward the force input end; and a control rod vertically suspended at a lateral side of the window and pivoted to the force input end of the transmission mechanism and adapted to rotate the force input end of the transmission mechanism by the user and to further drive the transmission mechanism to rotate the bobbin, the control rod having a coupling portion at a bottom end thereof; the blind lifting control mechanism further comprises a rotary driving device for detachably connecting to the coupling portion of the control rod for operation by the user to rotate the control rod, the rotary driving device comprising a driving rod for output of a rotary driving force applied by the user, the driving rod having a front coupling portion engaging the coupling portion of the control rod.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevation view showing a blind lifting control mechanism installed in a Venetian blind according to a first preferred embodiment of the present invention.

FIG. 2 is an enlarged view of a part of FIG. 1, showing the arrangement of a transmission mechanism in a headrail of the blind.

FIG. 3 is a sectional view in an enlarged scale taken along a line 3-3 indicated in FIG. 2.

FIG. 4 is a schematic sectional view showing a control rod moved relative to the headrail of the blind.

FIG. 5 is a perspective view showing that the crank handle is at an operative position according to the first preferred embodiment of the present invention.

FIG. 6 is a perspective view showing that the crank handle is at a non-operative position according to the first preferred embodiment of the present invention.

FIG. 7 is an exploded view of a blind lifting control mechanism installed in a Venetian blind according to a second preferred embodiment of the present invention.

FIG. 8 is an exploded view of a blind lifting control mechanism installed in a Venetian blind according to a third preferred embodiment of the present invention.

FIG. 9 is a sectional view of a part of a fourth preferred embodiment of the present invention, showing a movable device is at a locking position.

FIG. 10 is a sectional view taken along a line 10-10 indicated in FIG. 9.

FIG. 11 is similar to FIG. 9 but showing the movable device moved to a unlocking position.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. 1-3, a blind lifting control mechanism **20** in accordance with a first preferred embodiment of the present invention is shown installed in a Venetian blind **10** for lifting control. The Venetian blind **10** includes a headrail **11**, which is a hollow bar fixedly fastened to a topside of a window, a blind body **12**, which is composed of a number of transversely extended parallel slats **13** and a bottom

rail **14** suspended below the slats **13**, two lift cords **15** bilaterally and vertically inserted through the slats **13**, each lift cord **15** having a bottom end fixedly connected to the bottom rail **14** and a top end inserted into the inside of the headrail **11** (this will be described further), and a tilt control mechanism **16** adapted to regulate the tilting angle of the slats **13**. The tilt control mechanism **16** includes a tilt rod **17** vertically suspended from the headrail **11** at a left side thereof and adapted to rotate a tilt rod via a worm gear and tilter mechanism, causing the tilt rod to move two ladder tapes and to further change the tilting angle of the slats **13**. Because the tilt control mechanism **16** is a conventional design, no further detailed description is necessary.

The blind lifting control mechanism **20** includes two bobbins **25** symmetrically mounted on an axle **27** inside the headrail **11** for synchronous rotation with the axle **27** to roll up or let off the lift cords **15**, a transmission mechanism **30** mounted inside the headrail **11** near a right side thereof, and a control rod **40**.

The transmission mechanism **30** includes a worm **31**, which includes a worm body **32** vertically suspended inside the headrail **11** and a round rod **33** axially extended from the bottom end of the worm body **32** and partially extended out of the bottom side of the headrail **11**, a worm gear **34** disposed inside the headrail **11** behind the worm **31** and meshed with the worm body **32**, a gear set **35** connected between the worm gear **34** and the axle **27** and adapted to transmit rotary driving force from the worm gear **34** to the axle **27**, i.e., the worm gear **34** is the driving force input end of the gear set **35** and the axle **27** is the driving force output end of the gear set **35**. The gear set **35** may be variously embodied. For example, the gear set **35** can be a gear train composed of a series of gears of different diameters meshed with one another, or formed of a number of gears coaxially meshed with one another.

The control rod **40** is vertically suspended from the headrail **11** at a right side

thereof, having a top end connected to the round rod **33** of the worm **31** by a universal joint **42**. Thus, the control rod **40** can be oscillated toward inside of the room relative to the worm **31** (see FIG. 4). The control rod **40** has a bottom end mounted with a manual rotary driving device, for example, a crank handle **44**. The crank handle **44** includes a first arm **45** foldably pivoted to a bottom end of the control rod **40**, a second arm **46** foldably pivoted to an end of the first arm **45** remote from the control rod **40**, a grip **47** coupled to the second arm **46** for free rotation relative to the second arm **46**, and a sleeve **48** fitted to the control rod **40** for free rotation and axial movement relative to the control rod **40**. The sleeve **48** is longitudinally longer than the first arm **45**. When in use, as shown in FIGS. 1 and 2, the first arm **45** is set in a horizontal position perpendicular to the control rod **40**, the second arm **46** is set in a vertical position perpendicular to the first arm **45**, and the sleeve **48** connected to a bottom end of the control rod **40** and being stopped against the first arm **45**. When not in use, as shown in FIGS. 5 and 6, the first arm **45** and the second arm **46** are pulled downwards and vertically aligned with the control rod **40**, and the sleeve **48** is pulled downwards and stopped above the grip **47** around the first arm **45** and the pivoted connecting area between the control rod **40** and the first arm **45** as well as the pivoted connecting area between the first arm **45** and the second arm **46**. Therefore, the sleeve **48** locks the control rod **40**, the first arm **45**, and the second arm **46** in alignment.

When wishing to adjust the elevation of the blind **12**, move the control rod **40** in direction from the window toward the inside of the room and set the crank handle **44** in an operative position as shown in FIG. 4, and then hold the sleeve **48** with one hand and drive the grip **47** with the other hand to rotate the control rod **40** relative to the sleeve **48**. Rotating the control rod **40** causes the worm **31** to rotate the worm gear **34**, the gear set **35** and the axle **27**, thereby causing the bobbins **25** to roll up or let off

the lift cords **15** subject to the direction of rotation of the control rod **40**. Therefore, the blind **12** is received upwards or extended downwards.

According to the aforesaid embodiment, the aforesaid worm and worm gear mechanism transmits driving force in one direction only (i.e., the worm **31** rotates the worm gear **34** when receiving a rotary driving force, however the worm **31** stops a rotary driving force coming from the worm gear **34**), therefore the user can control the control rod **40** to rotate the bobbins **25**, and a self-locking mechanism of the aforesaid worm and worm gear mechanism automatically locks the bobbins **25** when the user adjusted the blind **12** to the desired elevation, i.e., the blind **12** is positively positioned at the adjusted elevation.

As indicated above, the invention does not use any lift cord or like means to achieve blind lifting control, it eliminates the possibility of a person (more particularly a child) hanged on the lift cord accidentally. Therefore, the blind is safe for use and fits blind safety codes in advanced countries.

The aforesaid blind lifting control mechanism can also be used in another equivalent blind, for example, a pleated blind, honeycomb shade, or roman blind. When it's used in a roller blind, a roller is used instead of the two bobbins and, the top side of the blind body is fastened to the periphery of the roller.

In the aforesaid embodiment, a crank handle **44** is mounted at the bottom side of the control rod **40** of the lifting control mechanism **20** for enabling the user to rotate the control rod **40** with less effort. However, this crank handle **44** is not requisite. An accelerating mechanism may be installed in the transmission mechanism **30** so that the user can rotate the straight control rod **40** directly without much effort.

FIG. 7 shows a blind lifting control mechanism according to a second preferred embodiment of the present invention. According to this embodiment, the

blind lifting control mechanism **50** includes two bobbins **52** (similar to the bobbins of the aforesaid first embodiment), a transmission mechanism **54**(similar to the transmission mechanism of the aforesaid first embodiment), a control rod **56**, and a detachable crank handle **60**. The control rod **56** has a coupling device at a bottom end thereof, for example, a hexagonal coupling hole **57**. The crank handle **60** includes a L-shaped crank arm **61**, a driving rod **62** axially forwardly extended from an end of the L-shaped crank arm **61** and terminating in a coupling device, for example, a hexagonal coupling tip **64** that fits the hexagonal coupling hole **57**, a sleeve **63** sleeved onto the driving rod **62** for free rotation, and a grip **65** perpendicularly extended from the other end of the L-shaped crank arm **61** in direction reversed to the driving rod **62**. When in use, the crank handle **60** is attached to the bottom end of the control rod **56** for enabling the user to rotate the control rod **56** with less effort. After use, the crank handle **60** is removed from the control rod **56**. According to this embodiment, a single crank handle **60** can be used to rotate the lifting control mechanisms of multiple blinds in a house.

FIG. 8 shows a blind lifting control mechanism according to a third preferred embodiment of the present invention. According to this embodiment, an electric rotary driving device **73** is used for rotating the control rod **71**. Similar to the aforesaid second embodiment, the control rod **71** has a coupling portion, for example, a hexagonal coupling hole **72** at the bottom end thereof. The electric rotary driving device **73** includes a housing **74**, a battery power supply and motor assembly (not shown) mounted inside the housing **74**, a driving shaft **76** extended from the output shaft of the reversible motor of the battery power supply and motor assembly out of the housing **74** and terminating in a coupling device, for example, a hexagonal coupling tip **77** that fits the hexagonal coupling hole **72** of the control rod **71**, and a switch **75**

adapted to control on/off and forward/backward rotation of the reversible motor of the battery power supply and motor assembly. By means of the electric rotary driving device **73**, the user can conveniently rotate the control rod **71** without effort.

FIGS. 9-11 show a blind lifting control mechanism according to a fourth preferred embodiment of the present invention. According to this embodiment, the blind lifting control mechanism **80** includes a transmission mechanism **81**, a bobbin **94**, two pulleys **95**, and a control rod **97**. The transmission mechanism **81** includes a movable device **82**, a spring member **89**, and a gear set **91**. The movable device **82** includes a cylindrical gear **83** horizontally suspended inside a right side of the headrail **85**, a rod member **84** coaxially connected to the cylindrical gear **83** and extended out of a circular through hole **86** in the bottom side of the headrail **85** and pivoted to the top end of the control rod **97**, a toothed groove **88** formed in the headrail **85** around the circular through hole **86** at a top side, and a toothed collar **87** fixedly provided around the periphery of the rod member **84** and moved vertically with the rod member **84** between a locking position where the toothed collar **87** engages the toothed groove **88** to stop the rod member **84** from rotation (see FIGS. 9 and 10), and an unlocking position where the toothed collar **87** is disengaged from the toothed groove **88** for enabling the rod member **84** to be rotated by the control rod **97** (see FIG. 11). The spring member **89** is connected between an inner surface of the top wall of the headrail **85** and the top side of the cylindrical gear **83** to support the movable device **82** in the aforesaid locking position. The gear set **91** includes an input gear **92** horizontally meshed with the cylindrical gear **83**, and an output shaft **93** disposed in a vertical position for output of force. The bobbin **94** is fixedly mounted on the output shaft **93**. The pulleys **95** are rotatably fastened with the headrail **85** at locations corresponding to the lift cords **96**, and adapted to guide the lift cords **96** to the bobbins **94**, for enabling

the bobbins **94** to roll up or let off the lift cords **96** upon rotary motion of the output shaft **93**. When wishing to adjust the elevation of the blind, push the control rod **97** upwards to lift the toothed collar **87** from the locking position shown in FIG. 9 to the unlocking position shown in FIG. 11, and then drive the control rod **97** to rotate the movable device **82** forwards or backwards. When rotating the movable device **82**, the gear set **91** is driven to rotate the bobbin **94**, thereby causing the bobbin **94** to roll up or let off the lift cords **96**. When the blind lifted or lowered to the desired elevation, pull the control rod **97** downwards to move the toothed collar **87** from the unlocking position shown in FIG. 11 to the locking position shown in FIG. 9.

According to the aforesaid embodiments, the bobbin or bobbins for moving the lift cords of the blind can be designed to position inside the headrail either in a vertical position or a horizontal position. Further, the transmission mechanism for transmitting a rotary driving force from the control rod to the bobbin or bobbins must have a self-locking feature to stop reverse transmission of force from the force output end (the bobbin or bobbins) to the force input end (the control rod). The transmission mechanism has the capability of increasing the speed of revolution.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A blind lifting control mechanism installed in a blind that includes a headrail mounted at a top side of a window and blind body mounted under said headrail, said blind lifting control mechanism comprising:

at least one bobbin rotatably fastened to said headrail of said blind for synchronous rotation to lift or lower the blind body of said blind;

a transmission mechanism mounted inside said headrail of said blind and adapted to rotate said bobbin, said transmission mechanism having a rotating force input end disposed in an end of the headrail, a rotating force output end connected to said bobbin, and means for stopping reverse transmission of force from said force output end toward said force input end; and

a control rod vertically suspended at a lateral side of the window and pivoted to the force input end of said transmission mechanism and adapted to rotate the force input end of said transmission mechanism by the user and to further drive said transmission mechanism to rotate said bobbin;

wherein said force input end of said transmission mechanism is a movable device, said movable device having a cylindrical gear horizontally suspended inside said headrail of said blind, a rod member coaxially connected to said cylindrical gear and downwardly extended out of said headrail of said blind and pivoted to a top end of said control rod, a toothed endless groove fixedly located on a part inside the headrail of said blind, a toothed collar fixedly provided around the periphery of said rod member and vertically movable with said rod member between a locking position where said toothed collar engages said toothed endless groove to stop said rod member from rotation and an unlocking position where said toothed collar is disengaged from said toothed endless groove for enabling said rod member to be rotated by said control rod, a spring member connected between a part of the headrail and a part of said cylindrical gear to support said movable device in the locking position, and gear set meshed with said cylindrical gear and located between said force input end and said force output end.

2. A blind lifting control mechanism installed in a blind that includes a headrail mounted at a top side of a window and a blind body mounted under said headrail, said blind lifting control mechanism comprising:

at least one bobbin rotatably fastened to said headrail of said blind for synchronous rotation to lift or lower the blind body of said blind;

a transmission mechanism mounted inside said headrail of said blind and adapted to rotate said bobbin, said transmission mechanism having a rotating force input end disposed in an end of the headrail, a rotating force output end connected to said bobbin, and means for stopping reverse transmission of force from said force output end toward said force input end; and

a control rod vertically suspended at a lateral side of the window and pivoted to the force input end of said transmission mechanism and adapted to rotate the force input end of said transmission mechanism by the user and to further drive said transmission mechanism to rotate said bobbin, said control rod having a bottom end provided with a collapsible crank handle, said collapsible crank handle having a first arm, said first arm having a first end pivoted to the bottom blind a rod member coaxially connected to said cylindrical gear and downwardly extended out of said headrail of said blind and pivoted to a top end of said control rod, a toothed endless groove fixedly located on a part inside the headrail of said blind, a toothed collar fixedly provided around the periphery of said rod member and vertically movable with said rod member between a locking position where said toothed collar engages said toothed endless groove to stop said rod member from rotation, and an unlocking position where said toothed collar is disengaged from said toothed endless groove for enabling said rod member to be rotated by said control rod, a spring member connected between a part of the headrail and a part of said cylindrical gear to support said movable device in the locking position, and gear set mesh with said cylindrical gear and located between said force input end and said force output end.

3. A blind lifting control mechanism installed in a blind that includes a headrail mounted at a top side of a window and a blind body mounted under said headrail, said blind lifting control mechanism comprising:

at least one bobbin rotatably fastened to said headrail of said blind for

synchronous rotation to lift or lower the blind body of said blind;

a transmission mechanism mounted inside said headrail of said blind and adapted to rotate said bobbin, said transmission mechanism having a rotating force input end disposed in an end of the headrail, a rotating force output end connected to said bobbin, and means for stopping reverse transmission of force from said force output end toward said force input end; and

a control rod vertically suspended at a lateral side of the window and pivoted to the force input end of said transmission mechanism and adapted to rotate the force input end of said transmission mechanism by the user and to further drive said transmission mechanism to rotate said bobbin, said control rod having a coupling portion at a bottom end thereof; the blind lifting control mechanism further comprises a rotary driving device for detachably connecting to the coupling portion of said control rod for operation by the user to rotate said control rod, said rotary driving device comprising a driving rod for output of a rotary driving force applied by the user, said driving rod having a front coupling portion engaging the coupling portion of said control rod.

4. The blind lifting control mechanism as defined in claim 1, wherein said control rod has a top end connected to the force input end of said transmission mechanism through a universal joint.

5. The blind lifting control mechanism as defined in claim 1, wherein said control rod has a bottom end provided with a collapsible crank handle, said collapsible crank handle having a first arm, said first arm having a first end pivoted to the bottom end of said control rod and a second end, a second arm having a first end pivoted to a second end of said first arm and a second end, a grip coupled to the second end of said second arm for free rotation relative to said second arm, and a sleeve sleeved onto said control rod for free rotation and axially movable along said control rod onto said first arm and the first end of said second arm to hold said control rod, said first arm and said second arm being aligned with each other.

6. The blind lifting control mechanism as defined in claim 1,

wherein said control rod has a coupling portion at a bottom end thereof; the blind lifting control mechanism further comprises a rotary driving device for detachably connecting to the coupling portion of said control rod for operation by the user to rotate said control rod, said rotary driving device comprising a driving rod for output of a rotary driving force applied by the user, said driving rod having a front coupling portion for engaging the coupling portion of said control rod.

7. The blind lifting control mechanism as defined in claim 6, said rotary driving device is manually operated.

8. The blind lifting control mechanism as defined in claim 7, wherein said manually operated rotary driving device comprises a L-shaped crank arm, said L-shaped crank arm having a first end terminating in said driving rod and a second end, a sleeve sleeved onto said driving rod for free rotation relative to said driving rod and said L-shaped crank arm, and a grip perpendicularly extended from the second end of said L-shaped crank arm.

9. The blind lifting control mechanism as defined in claim 6, wherein said rotary driving device is motor driven, said motor-driven rotary driving device having a reversible motor adapted to rotate said driving rod, a power supply adapted to provide the necessary working voltage to said reversible motor, and switch means adapted to control the rotation of said reversible motor.

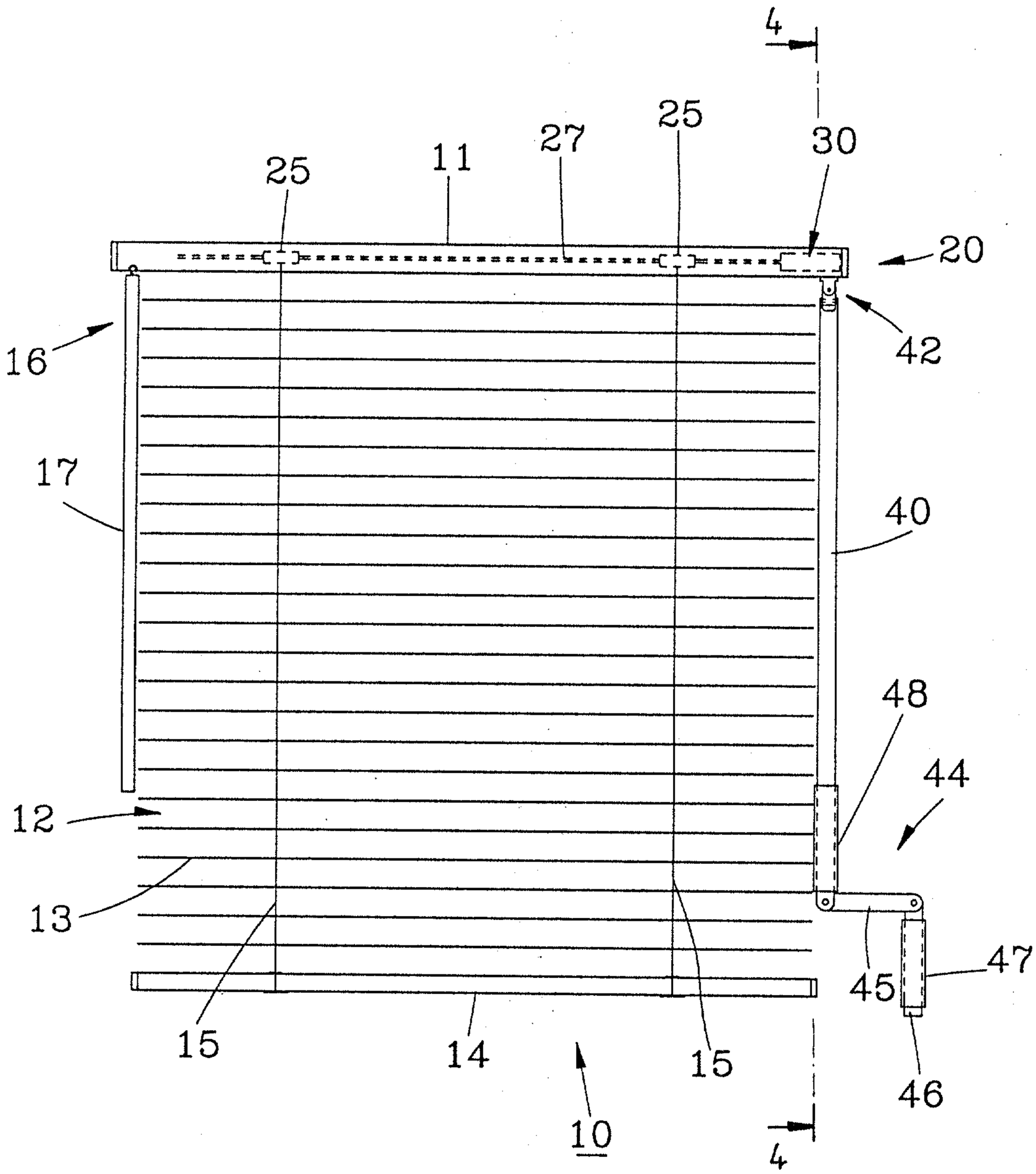


FIG. 1

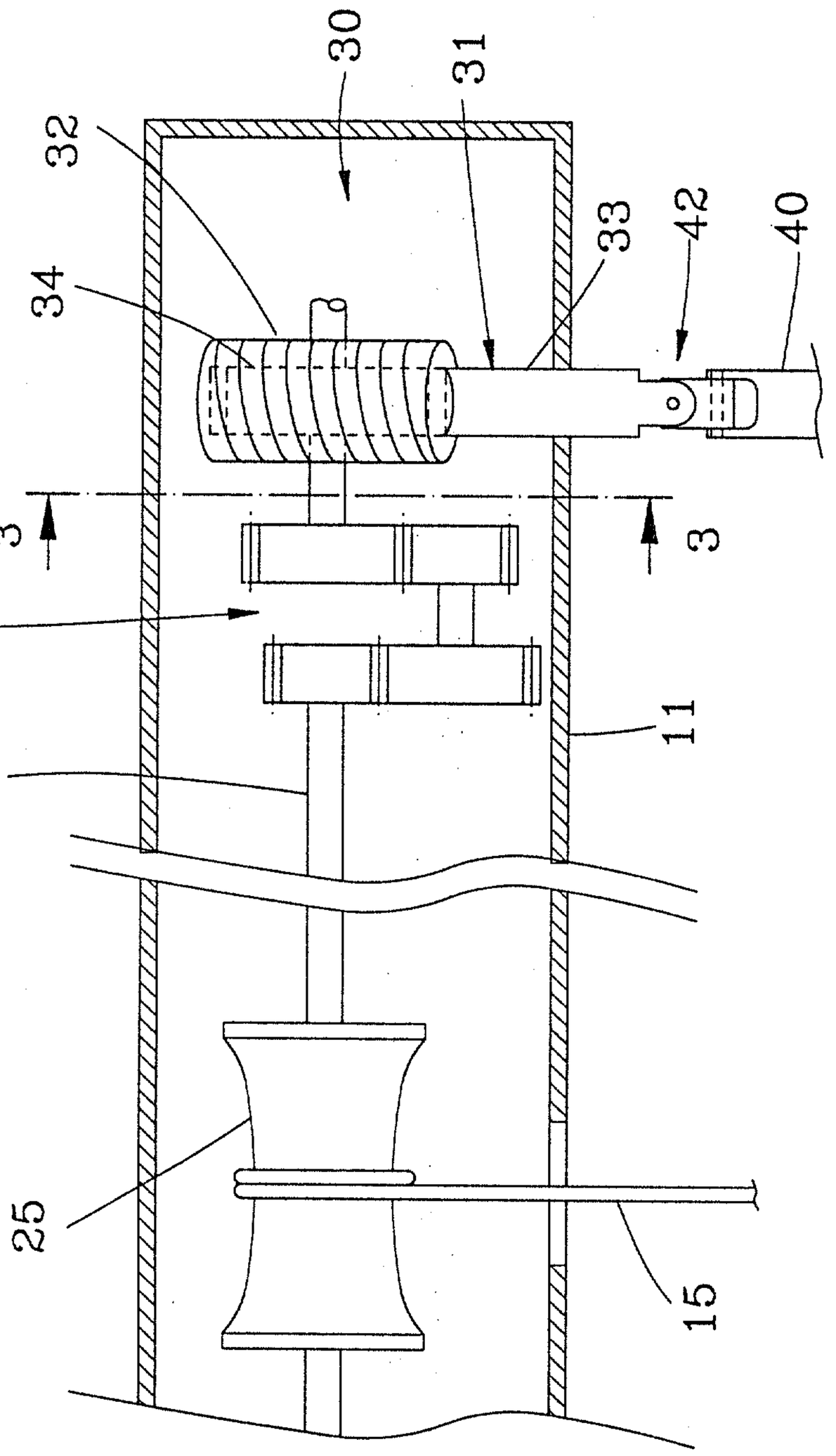


FIG. 2

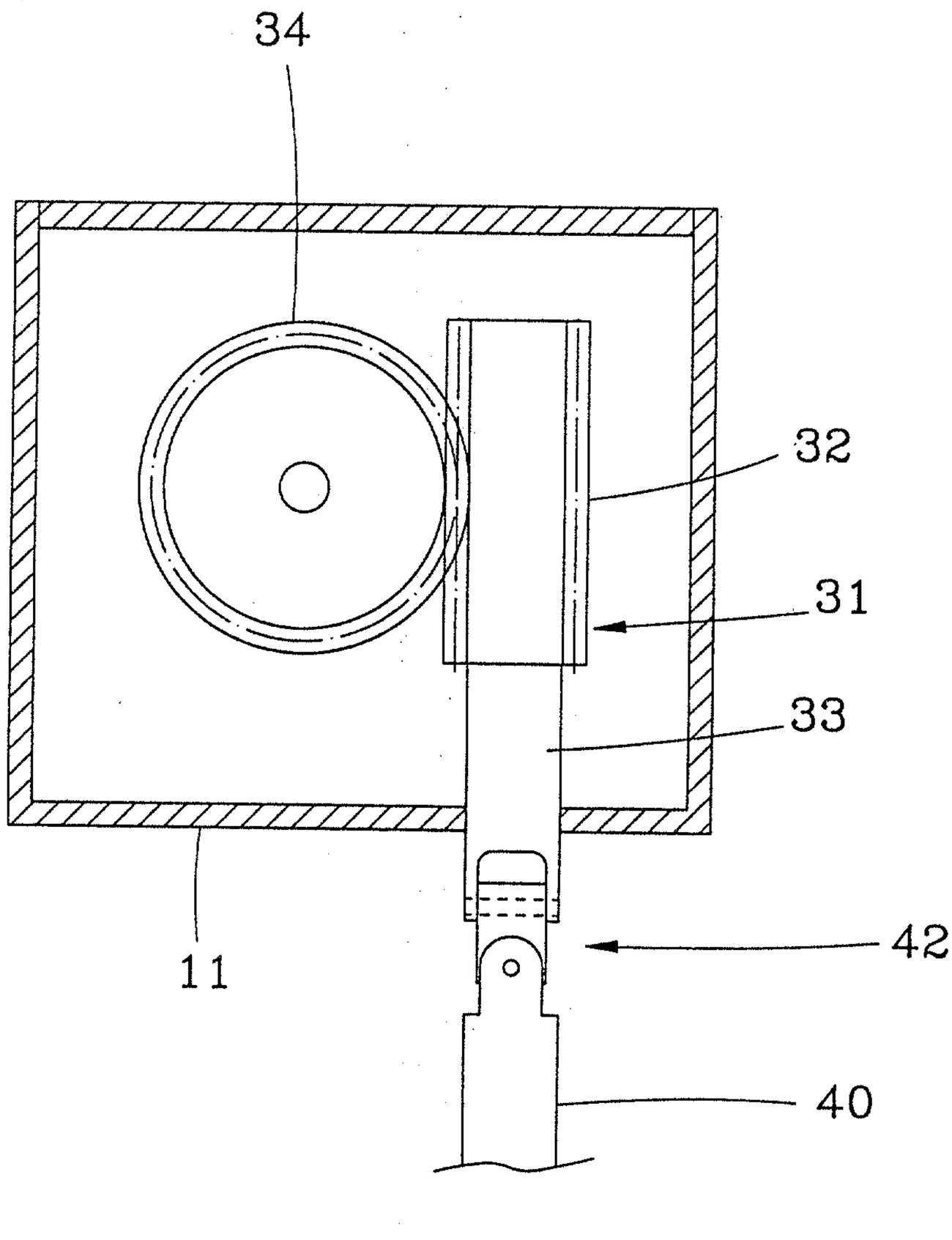


FIG. 3

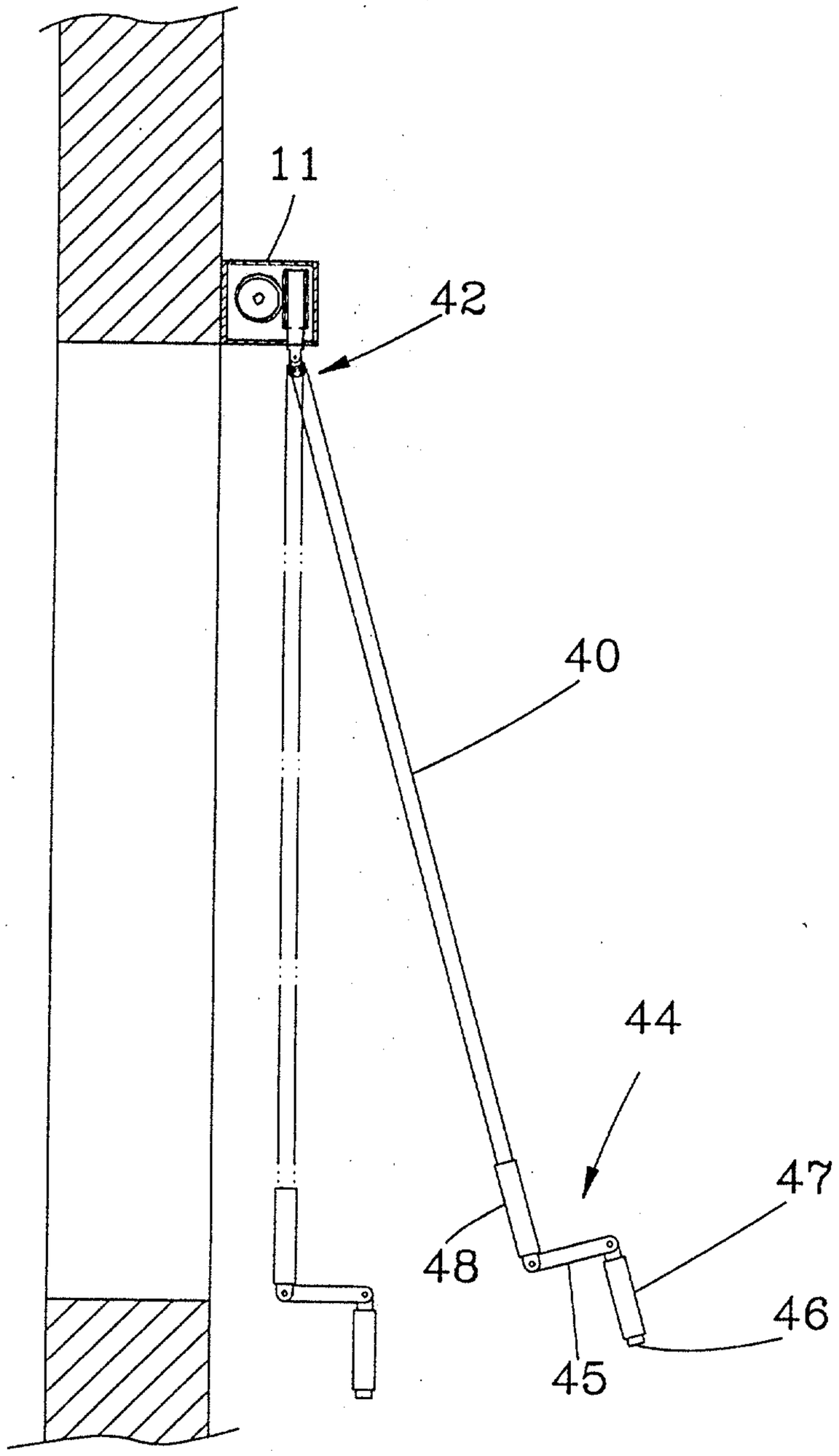


FIG. 4

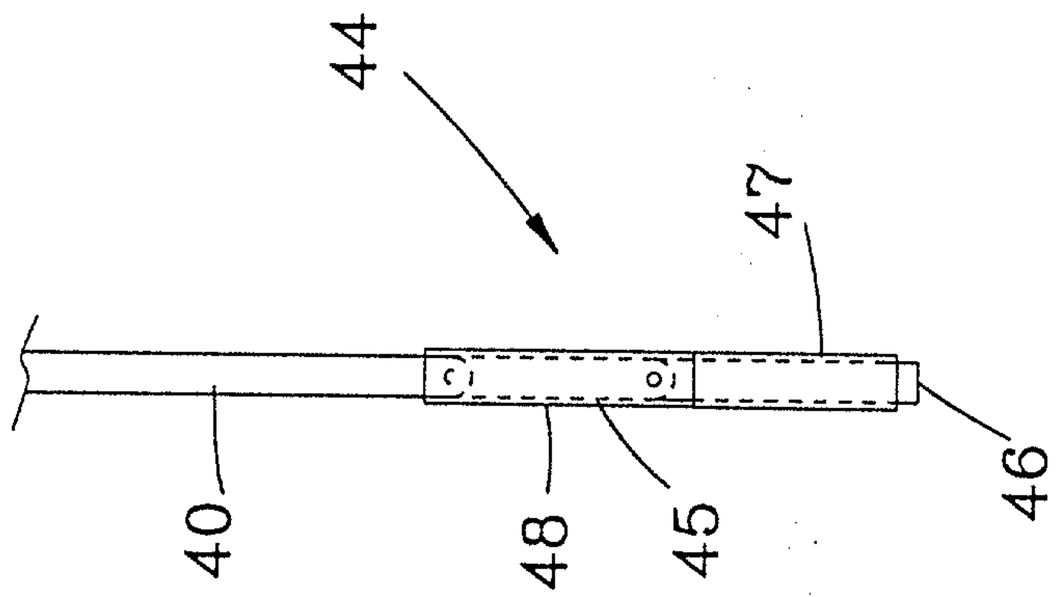


FIG. 6

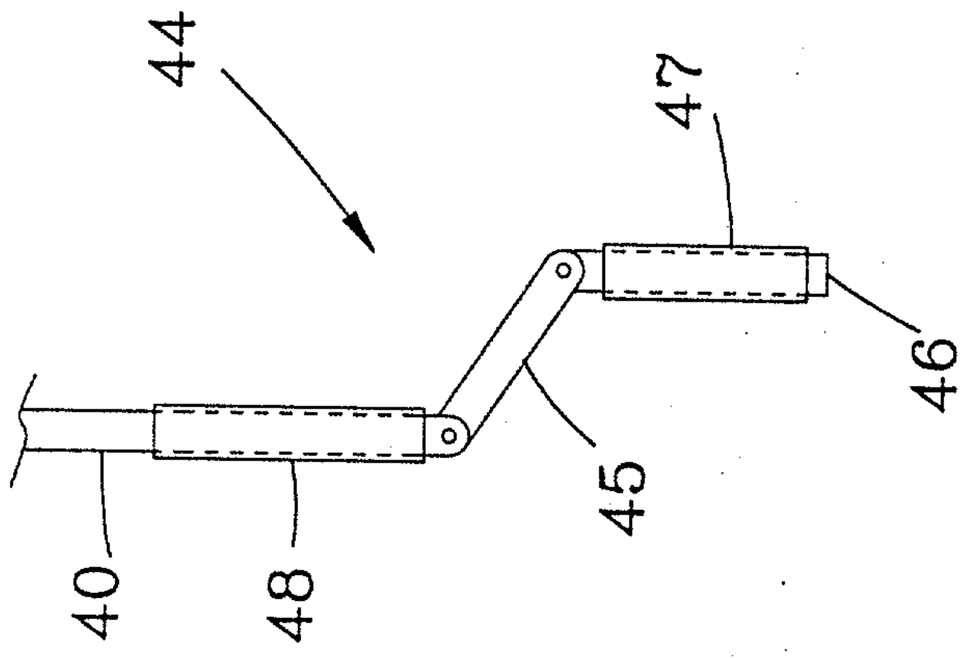


FIG. 5

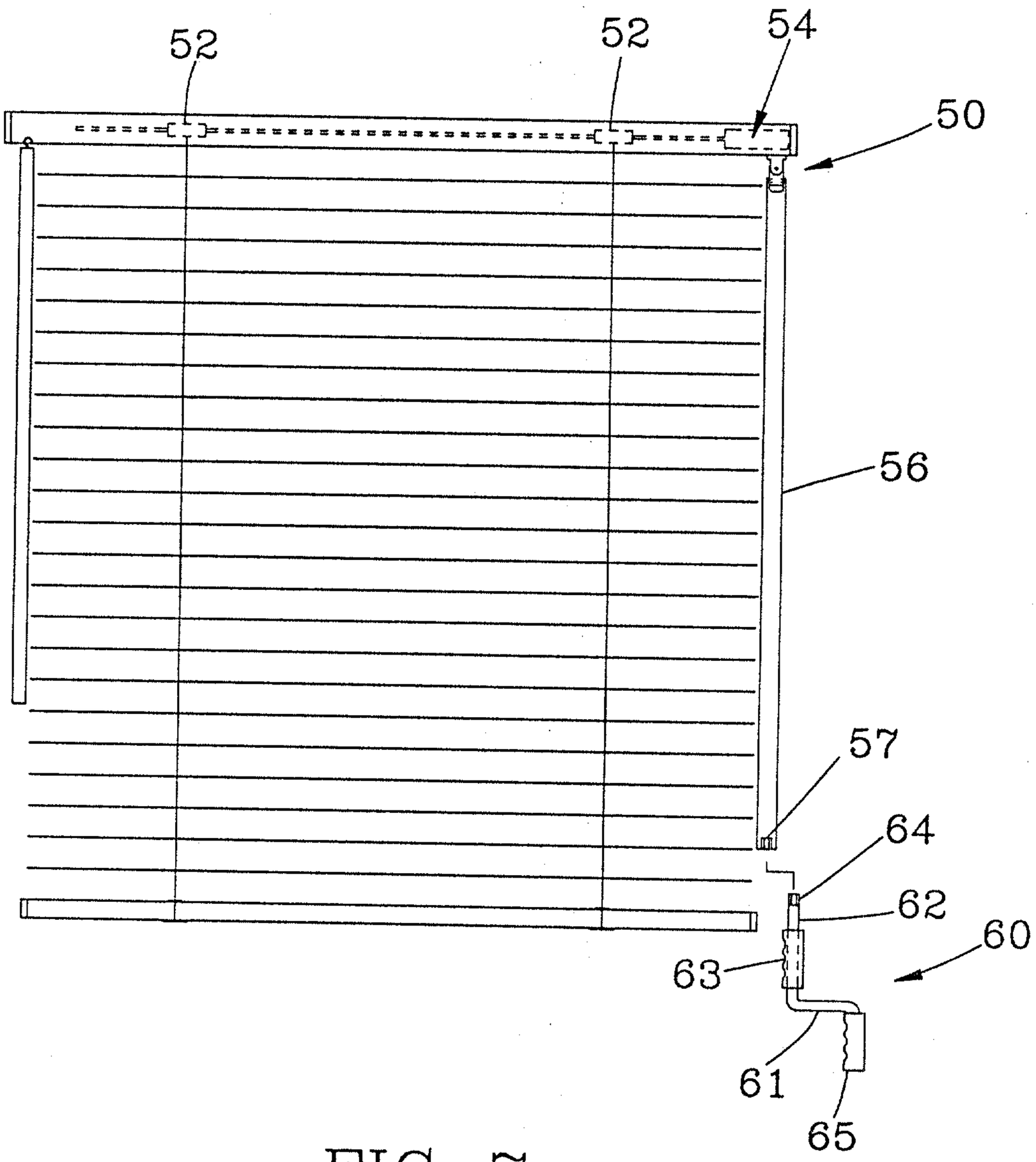


FIG. 7

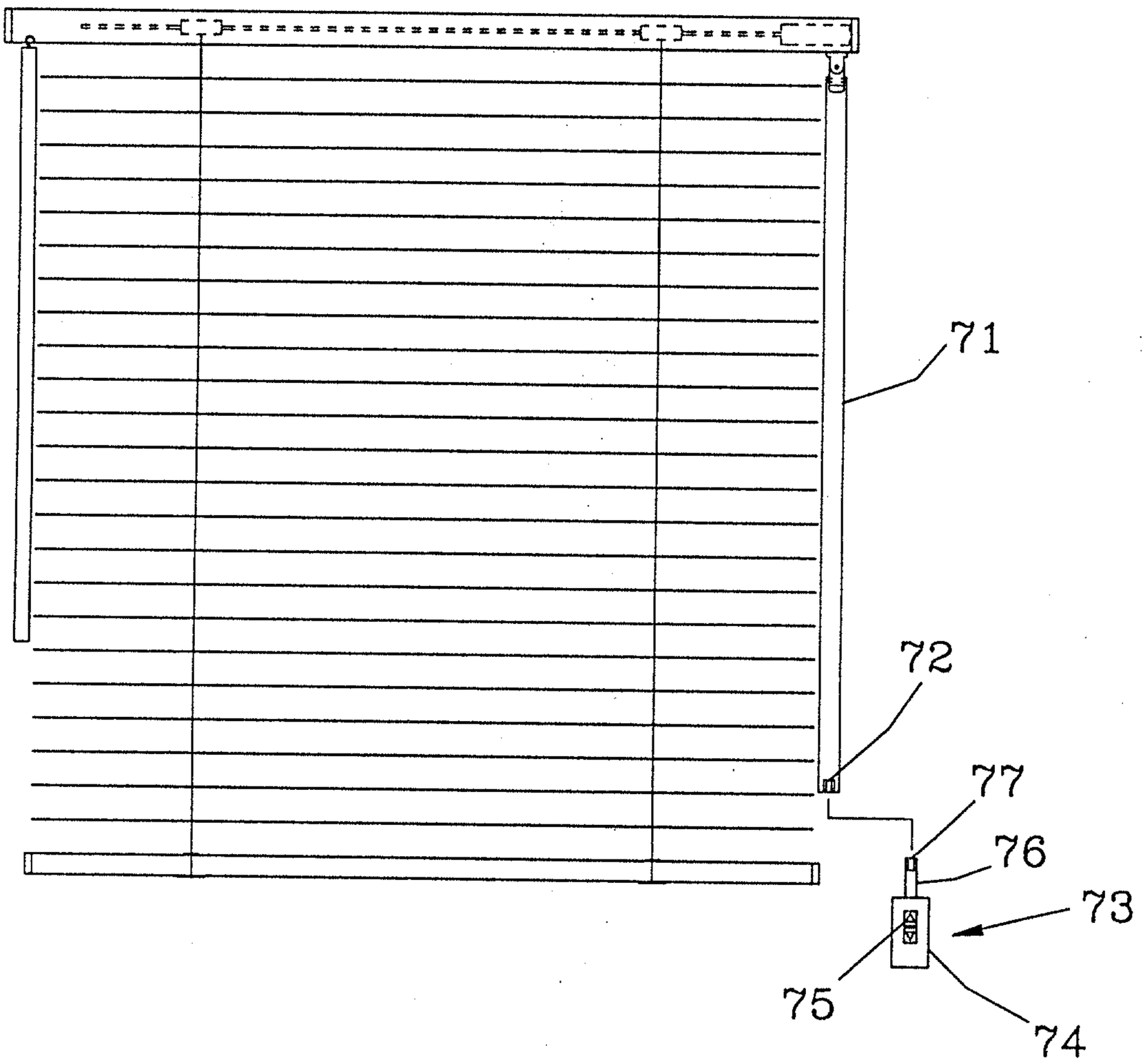


FIG. 8

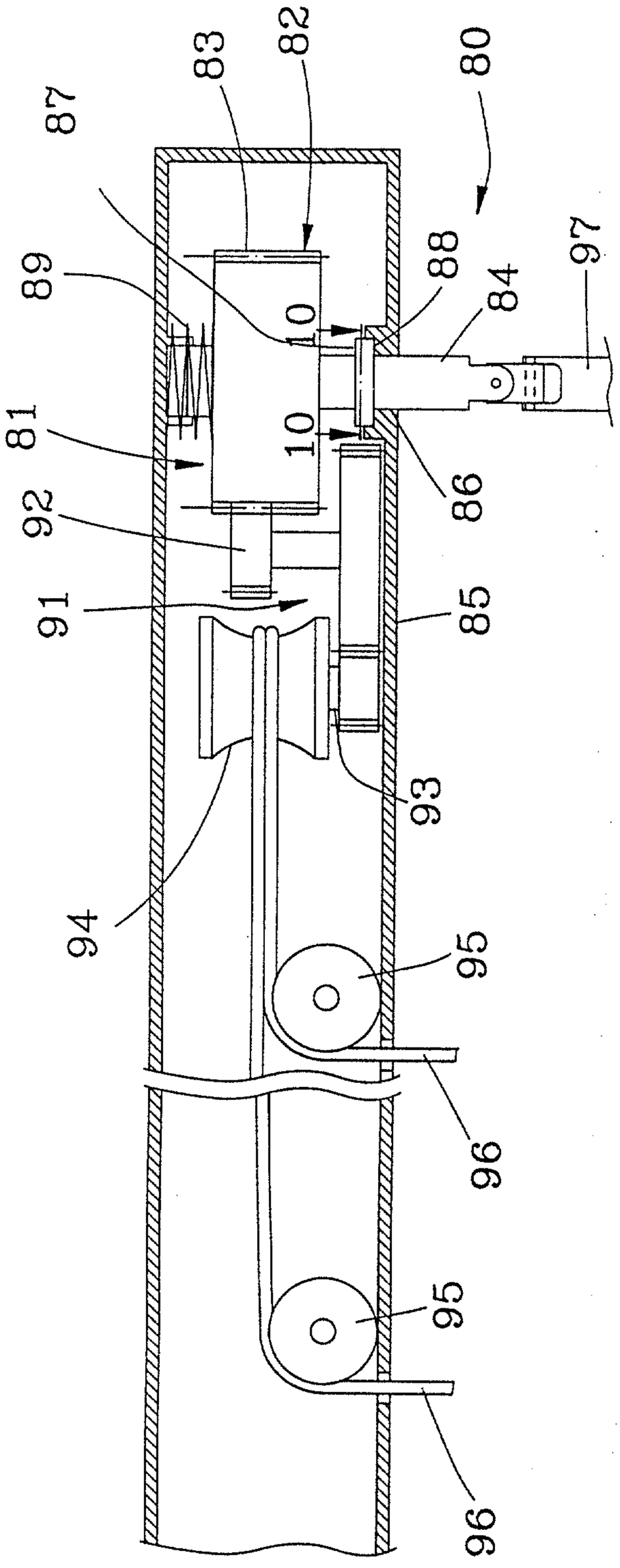

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FIG. 9

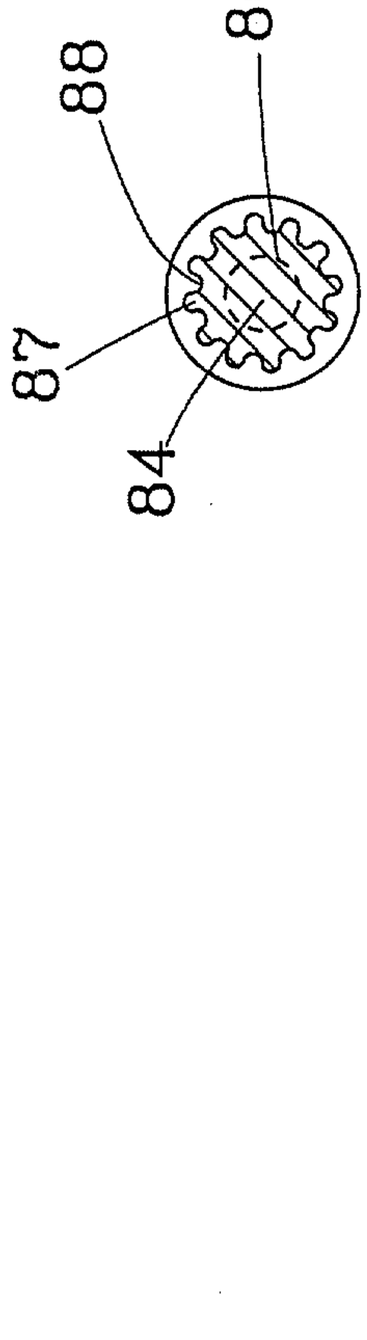
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FIG. 10

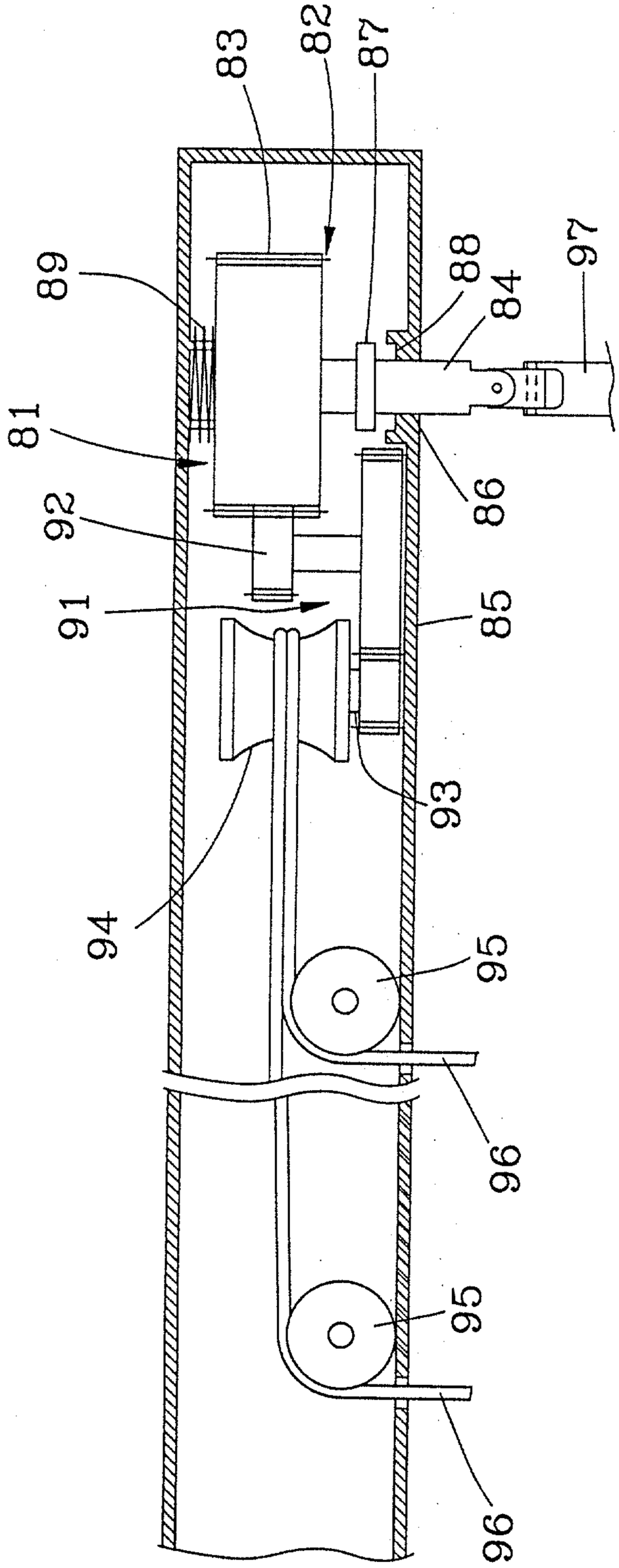
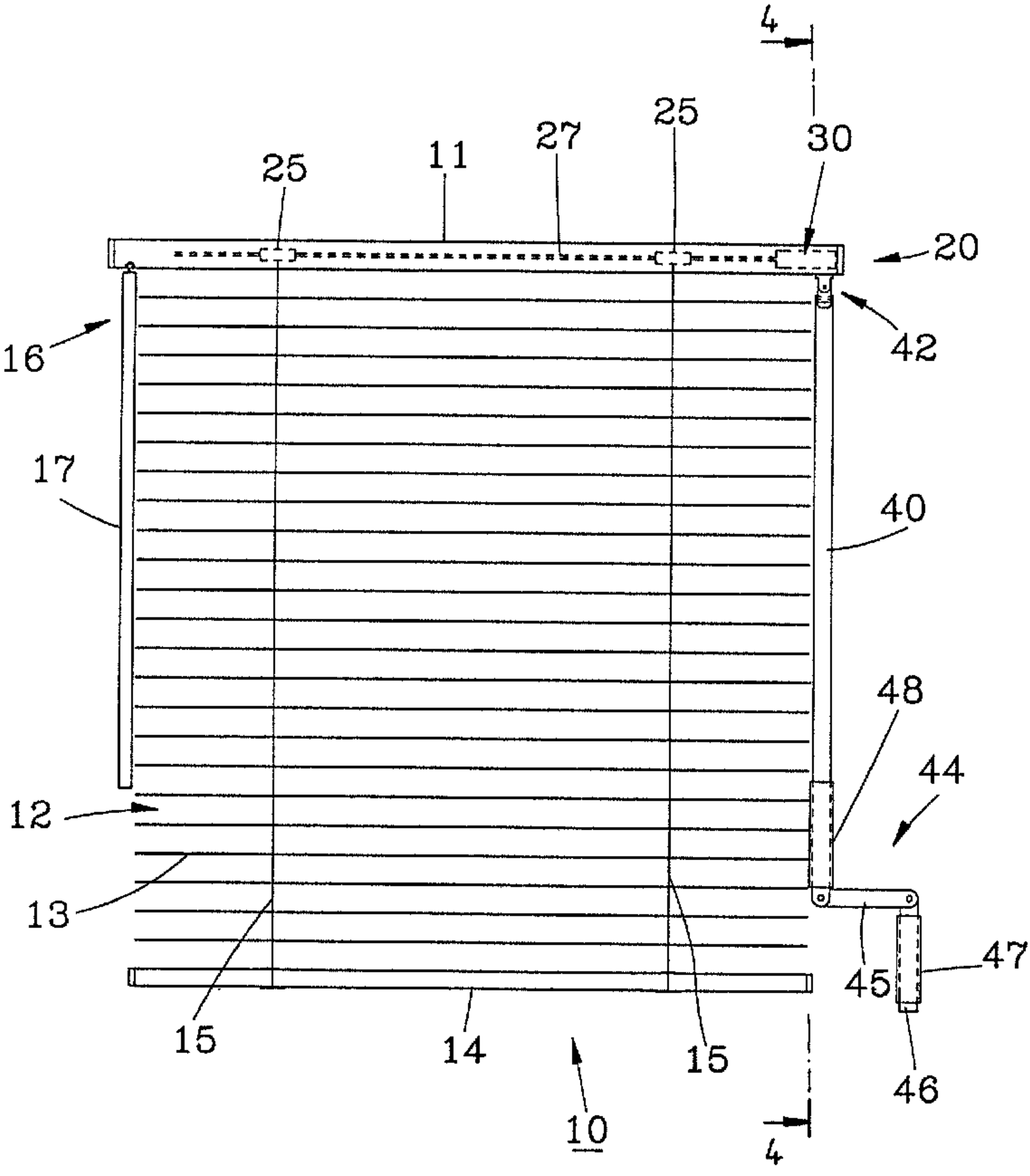


FIG. 11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