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(54) Apparatus and method for controlling blind

(57) A blind control apparatus (20) is disclosed to include a linking mechanism (21), which has a driving force input unit (22) and a driving force output portion (23) and is installed in a headrail (11) of a blind and is controlled to move a blind body (12) of the blind to regulate the light, air, etc., and an independent operating device (25) detachably connected to the driving force input unit (22) of the linking mechanism (21). The operating device (25) has an operating portion (26) for enabling the user to hold and an actuating portion (27) for connecting the operating device (25) to the driving force input unit (22) and rotating the driving force input unit (22) upon operation of the operation portion (26).

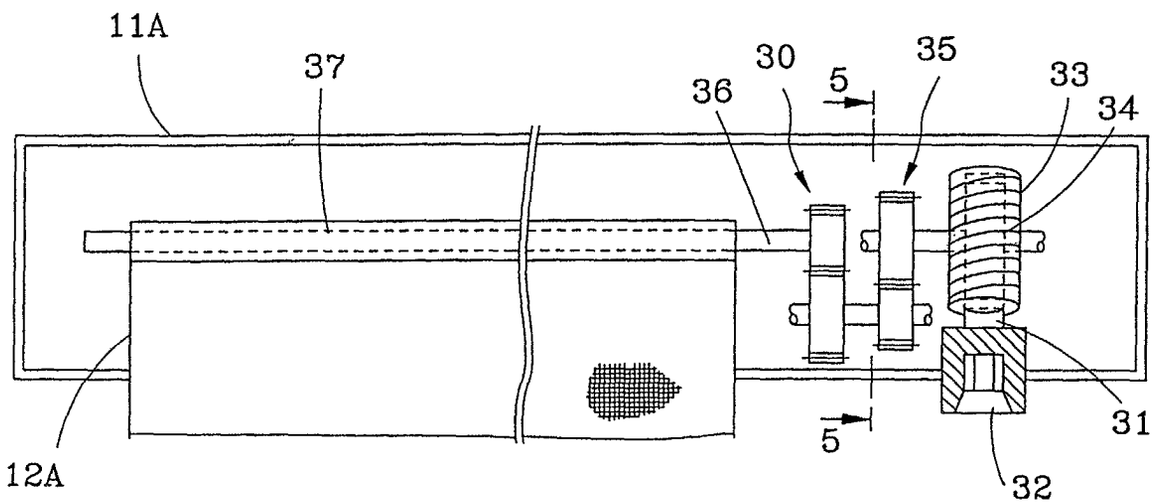

FIG.4

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention:

[0001] The present invention relates to blinds and, more specifically, to a blind control apparatus and a control method for controlling the operation of a blind.

2. Description of the Related Art:

[0002] A variety of blinds including Venetian blinds, roller blinds, pleated blinds, honeycomb shades, accordion-like shades, Roman blinds, vertical blinds, curtains, and etc. are commercially available for use with a window to regulate the light, air, etc. A regular blind generally comprises a headrail fixedly fastened to the top side of the window, and a blind body (formed of a shade, or a set of slats and a bottom rail) provided at the bottom side of the headrail. The blind body is driven by an external driving force to change its window shading status. For example, the blind body of a roller blind, pleated blind, or Roman blind can be lifted or lowered; the blind body of a horizontal or vertical Venetian blind can be extended out/received and tilted; the two side panels of a curtain can be received sideways and extended out horizontally.

[0003] The control method of a blind may be achieved manually or electrically. A manually controlled blind has a linking mechanism provided in the headrail and coupled to the blind body, and a lift cord suspended from one end of the headrail for pulling by hand to drive the linking mechanism to move the blind body, and a tilt rod suspended from the end of the headrail for operation by hand to tilt the slats of the blind. Because the lift cord is not kept out of reach of children, children may pull the lift cord for fun. In case the lift cord is hung on a child's head, a fetal accident may occur (many similar accidents have been reported in different countries). In order to eliminate this problem, blinds without exposed lift cord are disclosed. These blinds commonly use spring means and the gravity weight of the blind body to keep the blind body at the adjusted elevational position. However these blinds are not durable in use because the provided spring means wears quickly with use. US Patent No. 6044889 teaches the use of the tension of two cord members to hold the bottom rail of a Venetian blind at the adjusted elevation. However, the cord members become loosened after a long use. Further, the presence of the cord members destroys the sense of beauty of the blind.

[0004] Further, an electrically controlled blind can easily be operated. Because an electrically controlled blind eliminates the use of a lift cord and a tilt rod, it has a nice outer looking and eliminates the tangling of the blind lift cord with the body of a person accidentally. However, an electrically controlled blind is expensive because is equipped with a motor, a power supply device, and a control circuit. Further, because the battery of the power supply device of an electrically controlled blind is normally installed in the headrail, it is inconvenient to replace the battery when battery power low.

SUMMARY OF THE INVENTION

[0005] The present invention has been accomplished under the circumstances in view. It is one object of the present invention to provide a blind control apparatus and blind control method, which has no cord member expose to the outside of the blind body, preventing tangling of a blind cord member with a person accidentally.

[0006] It is another object of the present invention to provide a blind control apparatus and blind control method, which eliminates the use of any exposed lift cord or tilt rod means, keeping the blind as neat as an electric blind.

[0007] It is still another object of the present invention to provide a blind control apparatus and blind control method, which enables the user to conveniently regulate the blind either manually or electrically.

[0008] It is still another object of the present invention to provide a blind control apparatus, which is inexpensive to manufacture.

[0009] It is still another object of the present invention to provide a blind control apparatus, which is easy to install and to maintain.

[0010] It is still another object of the present invention to provide a blind control apparatus and blind control method, which positively locks the blind body in position after each adjustment.

[0011] To achieve these objects of the present invention, the blind control apparatus comprises a linking mechanism mounted in a headrail of the blind to be controlled and an operating device detachably connected to the linking mechanism. The linking mechanism includes a rotatable driving force input unit and a driving force output portion which is rotated in connection with said driving force input unit when said driving force input unit rotates. The driving force input unit has a driving force receiving portion exposed outside the headrail, which is directly or indirectly coupled to said blind body of said blind and adapted to drive said blind body of said blind to change the window shading status of said blind body upon rotary motion of said driving force input unit. The operating device has an operating portion at one end thereof for operation by hand and an actuating portion at an opposite end thereof which is rotatable in relation to said operating portion for rotating said driving force input unit. The actuating portion has a coupling tip detachably connected to said driving force receiving portion of said driving force input unit such that the driving force input unit can be rotated by the actuation of the operating device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is a schematic drawing showing the basic structure of the blind control apparatus according to the present invention.

FIG. 2 is a schematic drawing showing the basic structure of the blind control apparatus used in multiple blinds according to the present invention.

FIG. 3 is a schematic drawing showing an application example of the first preferred embodiment of the present invention.

FIG. 4 is a schematic drawing showing the arrangement of the linking mechanism of the blind control apparatus in the roller blind according to the present invention.

FIG. 5 is a sectional view taken along line 5-5 of FIG. 4.

FIG. 6 is a schematic drawing showing the structure of the operating device of the blind control apparatus according to the first preferred embodiment of the present invention.

FIG. 7 is a schematic drawing showing an application example of the second preferred embodiment of the present invention.

FIG. 8 is a schematic drawing showing the driving force input unit of the linking mechanism locked according to the second preferred embodiment of the present invention.

FIG. 9 is a sectional view taken along line 9-9 of FIG. 8.

FIG. 10 is similar to FIG. 8 but showing the driving force input unit of the linking mechanism unlocked.

FIG. 11 is a schematic drawing showing an application example of the third preferred embodiment of the present invention.

FIG. 12 is a schematic drawing showing the arrangement of the linking mechanism in the headrail of the blind according to the third preferred embodiment of the present invention.

FIG. 13 is a schematic drawing shown an alternate form of the electrically controlled operating device for the blind control apparatus according to the present invention.

FIG. 14 is a schematic drawing shown another alternate form of the electrically controlled operating device for the blind control apparatus according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] Referring to FIG. 1, a blind control apparatus **20** is installed in a blind **10** for controlling the blind **10** to regulate the light, air, etc. The blind **10** can be a horizontal Venetian blind, roller blind, pleated blind, honeycomb shade, accordion-like shade, Roman blind, vertical blind, curtain, or the like, comprising a headrail **11**, and a blind body **12**. The headrail **11** is fixedly fastened to the top side of window (not shown) in transverse direction. The blind body **12** is provided at the bottom side of the headrail **11,** and opened or closed to regulate the light, air, etc.

[0014] The control apparatus **20** comprises a linking mechanism **21** mounted within the headrail **11,** and a detachable operating device **25**. The mechanical transmission mechanism **21** is comprised of a driving force input unit **22** and a driving force output portion **23.** The driving force input unit **22** has a driving force receiving portion **24** extended to the outside (the bottom side) of the headrail **11** and rotatable by an external driving force. The driving force output portion **23** is connected to the blind body **12** directly or indirectly, and driven by the driving force input unit **22** to move the blind body **12,** causing the blind body **12** to change its window shading status.

[0015] The operating device **25** is substantially a rod-like member not directly connected to the blind body **12** or the linking mechanism **21.** The user can hold one end of the operating device **25** with the hand in a vertical position, keeping the other end of the operating device **25** at the elevation of the headrail **11.** The operating device **25** has an operating portion **26** at its one end for the holding of the hand, and an actuating portion **27** at its other end. The actuating portion **27** has a coupling tip **28** detachably connectable to the driving force receiving portion **24** of the linking mechanism **21.** After connection of the coupling tip **28** to the driving force receiving portion **24,** the user can rotate the operating portion **26** with the hand, enabling the rotary driving force to be transmitted through the driving force receiving portion **24** of the driving force input unit **22** to the blind body **12** via the driving force output portion **23.**

[0016] When wishing to regulate the blind **10,** hold the operating portion **26** of the operating device **25** with the hand to force the coupling tip **28** of the actuating portion **27** into engagement with the driving force receiving portion **24** of the driving force input unit **22** of the linking mechanism **21**, and then rotate the operating device **25** with the hand, enabling the rotary driving force to be transmitted through the mechanical transmission mechanism **21** to the blind body **12**, and therefore the blind body **12** is regulated (lifted vertically, extended out or received horizontally, or tilted subject to the type of the blind body itself). After control, the user can remove the operating device **25** from the linking mechanism **21** (the headrail **11**), and received in a proper storage place.

[0017] In general, the blind control apparatus of the present invention is comprised of a driven unit, a driving unit, and an interface unit. The driven unit is substantially formed of the aforesaid linking mechanism **21** mounted within the headrail **11,** and can be driven by an external driving force to move the blind body **12**. The driving unit is substantially formed of the aforesaid operating device **25** detachably connectable to the driven

unit in the headrail **11**, and can be held and operated by the user to output a driving force manually or electrically to the driven unit. The interface unit is formed of the aforesaid coupling tip **28** and driving force receiving portion **24,** and adapted to connect the output end of the driving unit to the input end of the driven unit. The blind control method provided by the present invention enables the user to connect the driving unit to the driven unit in the headrail of the blind through the interface unit and then to operate the driving unit, causing the driven unit to move the blind body of the blind. After the blind body has been adjusted to the desired position, the user can remove the driving unit from the driven unit (the blind).

[0018] FIG. 2 shows another application example of the blind control apparatus according to the present invention. According to this application example, the blind control apparatus comprises a plurality of linking mechanisms **21** respectively installed in the headrail **11** of each of a number of blinds **10,** and an operating device **25** selectively detachably connectable to the linking mechanism **21** in the headrail **11** of each of the blinds **10**. When in use, the user can hold the operating device **25** with the hand and then force the coupling tip **28** of the operating device **25** into engagement with the driving force receiving portion **24** of the linking mechanism **21** in the headrail **11** of each blind **10** to be regulated.

[0019] FIGS. 3~6 show the first preferred embodiment of the blind control apparatus used in a roller blind **10A**. As illustrated in FIGS. 4 and 5, the linking mechanism **30** of the blind control apparatus comprises a driving force input unit **31,** a worm gear **34,** a transmission gear set **35,** and a roller **36**. The driving force input unit **31** is formed of a rod-like member fastened pivotally with the inside of the right end of the headrail **11A** for free rotation on its own axis, having a bottom end terminating in a driving force receiving portion **32** disposed outside the headrail **11A** and a top end terminating in a double-screw worm **33** suspending inside the headrail **11A**. The driving force receiving portion **32** is formed of a tapered hole and a hexagonal hole. The worm gear **34** is fastened pivotally with the inside of the headrail **11A** and meshed with the worm **33.** The transmission gear set **35** is a gear train formed of a series of gears of different diameters and adapted to accelerate rotary driving force of the worm gear **34** and to transfer rotary driving force of the worn gear **34** leftwards. The roller **36** is fastened pivotally with the headrail **1A** in a transverse (horizontal) position, and coupled to the output end of the transmission gear set **35**. The blind body (shade body) **12A** of the roller blind **10A** has one end (the fixed end) fixedly fastened to the periphery of the roller **36.** When the roller **36** rotated, it rolls up or lets off the blind body **12A**, i.e., the periphery of the roller **36** forms a driving force output portion **37.** The operating device **40,** as shown in FIG. 6, comprises a first handgrip **41,** an elongated actuating portion **42** fastened pivotally with the front end of the first handgrip **41** and terminating in a hexagonal coupling tip **43**, which can be inserted through the tapered hole of the driving force receiving portion **32** into engagement with the hexagonal hole of the driving force receiving portion **32,** a crank **44** fastened pivotally with the first handgrip **41** and coupled to the elongated actuating portion **42,** and a second handgrip **45** fixedly fastened to one end of the crank **44** remote from the first handgrip **41**. The crank **44** and the second handgrip **45** form the operating portion **46** of the operating device **40.** When in use, the user can hold the first handgrip **41** with one hand and rotate the second handgrip **45** with the other hand. When rotating the second handgrip **45,** the elongated actuating portion **42** is rotated with the crank **44** and the second handgrip **45** relative to the first handgrip **41**.

[0020] When wishing to roll up or extend out the roller blind **10A**, attach the hexagonal coupling tip **43** to the driving force receiving portion **32**, and then operate the operating portion **46** of the operating device **40** to rotate the driving force input unit **31** of the linking mechanism **30** clockwise or counter-clockwise, thereby causing the worm **33,** the worm gear **34** and the transmission gear set **35** to work, and therefore the roller **36** is rotated to roll up or extend out the blind body **12A** of the roller blind **10A**. According to this embodiment, the worm and worm gear mechanism has an one-way transmission characteristic (i.e., the worm **33** rotates the worm gear **34** when receiving an external torsional force, and stops the worm gear **34** from rotation when receiving a torsional force from the worm gear **34**). Therefore, the user can use the operating device **40** to rotate the roller **36** in the headrail **11A**. When the user removed the operating device **40** from the roller blind **10A** after the blind body **12A** of the roller blind **10A** had been adjusted to the desired elevation, the self-locking effect of the worm and worm gear mechanism locks the roller **36**, keeping the blind body **12A** in the adjusted position.

[0021] FIGS. 7~9 show the second preferred embodiment of the blind control apparatus of the present invention used in a Venetian blind **10B**. As shown in FIGS. 8 and 9, the linking mechanism **50** of the blind control apparatus comprises a driving force input unit **51,** a spring member **56,** and two pulleys **57**. The driving force input unit **51** is comprised of a bobbin **52** and a rod member **53** coaxially and fixedly fastened to the bottom side of the bobbin **52.** The rod member **53** has a driving force receiving portion **54** in the bottom end thereof (the structure of the driving force receiving portion **54** is similar to the driving force receiving portion **32** shown in FIG. 4), and a toothed portion **55** around the periphery (see FIG. 9). The driving force input unit **51** is fastened pivotally with the inside of the right end of the headrail **11B** of the Venetian blind **10B**, letting the rod member **53** be extended out of a bottom round hole **13** of the headrail **11B**. The headrail **11B** has a toothed portion **14** provided around the bottom round hole **13.** The toothed portion **55** can be set into engagement with the toothed portion **14** from the top side of the round hole. The spring mem-

ber **56** is connected between the top side of the bobbin **52** and the top sidewall of the headrail **11B** to impart a downward pressure to the bobbin **52** and the rod member **53**, keeping the toothed portion **55** of the rod member **53** meshed with the toothed portion **14** (see FIG. 8). The pulleys **57** are fastened rotatably with the inside the headrail **11B** and symmetrically located on the left and right ends of the headrail **11B**. The Venetian blind **10B** comprises two lift cords **15** symmetrically inserted through the slats **16** of the blind body **12B**. The lift cords **15** each have a bottom end fixedly connected to the bottom rail **17** of the blind body **12B,** and a top end inserted upwardly into the inside of the headrail **11B** and extended over the periphery of the corresponding pulley **57** and then fastened to the periphery of the bobbin **52** of the driving force input unit **51.** When rotating the driving force input unit **51,** the bobbin **52** is rotated to roll up or let off the lift cords **15,** and therefore the blind body **12B** is lifted or lowered to the desired elevation, i.e., the periphery of the bobbin **52** forms a driving force output portion **58.**

[0022] The user can operate the operating device **40** shown in FIG. 6 to adjust the Venetian blind **10B**. When in use, force the coupling tip **43** of the actuating portion **42** of the operating device **40** into engagement with the driving force receiving portion **54** of the driving force input unit **51** (see FIG. 10), and then push the operating device **40** to move the rod member **53** and the bobbin **52** upwards against the spring member **56** and to disengage the toothed portion **55** from the toothed portion **14**, and then operating the operating device **40** to rotate the driving force input unit **51,** causing the bobbin **52** to roll up or let off the lift cords **15**, and therefore the blind body **12B** is lifted or lowered to the desired elevation. After the blind body **12B** has been adjusted to the desired elevation, disengage the operating device **40** from the driving force receiving portion **54**, for enabling the driving force input unit **51** to be lowered to the position shown in FIG. 8 where the toothed portion **55** of the driving force input unit **51** is meshed with the toothed portion **14** of the headrail **11B**, and therefore the bobbin **52** is locked and, the blind body **12B** is fixed in position.

[0023] According to this embodiment, the linking mechanism **50** controls the lifting action of the blind body **12B** of the Venetian blind **10B**. The Venetian blind **10B** further comprises a tilt control mechanism formed of two ladder tapes **18** and a tilt control rod **19.** The ladder tapes **18** are fastened to the slats **16** and bottom rail **17** of the blind body **12B** and a respective drum at a horizontal tilt rod (not shown) in the headrail **11B.** The tilt control rod **19** is suspended from one end of the headrail **11B**, and coupled to one end of the tilt rod inside the headrail **11B** through a worm gear and tilter set (not shown). When rotating the tilt control rod **19,** the tilt rod is rotated to move the ladder tapes **18** and, to further tilt the slats **16** of the blind body **11B** of the Venetian blind **10B**. Since the title control mechanism is a known art, no further details will be necessary to describe hereunder.

[0024] FIGS. 11 and 12 show the third preferred embodiment of the blind control apparatus of the present invention. This embodiment is used in a Venetian blind **10C**. The linking mechanism **60** is capable of lifting the blind body and tilting the slats of the blind body. The linking mechanism **60** uses the same mechanism of the aforesaid second preferred embodiment to lift the blind body. The linking mechanism **60** further comprises a worm **61** and a worm gear **62** adapted to rotate a tilt rod **63,** causing it to move two ladder tapes **18C** and to further control the tilt angle of the slats of the blind body of the Venetian blind **10C**. The worm **61**, the worm gear **62,** the tilt rod **63,** and the ladder tapes **18C** form a slat tilting control unit that controls the tilting angle of the slats of the blind body of the Venetian blind **10C**. The worm **61** has a driving force receiving portion **64** in the bottom end for receiving the coupling tip **43** of the operating device **40** shown in FIG. 6. In general, the linking mechanism **60** has two independent driving force input units (driving force receiving portions and two driving force output portions so that the user can couple the operating device **40** to the driving force input units selectively, and operate the operating device **40** to lift the blind body of the Venetian blind **10C** to the desired elevation or, to adjust the tilting angle of the slats of the blind body of the Venetian blind **10C**.

[0025] The linking mechanism can also be made having one single driving power input unit to simultaneously control the lifting of the blind body and tilting of the slats of the Venetian blind. For example, the teaching disclosed in US Patent Application No. 10/143330 filed by the applicant of the present invention can be applied to the linking mechanism of the blind control apparatus.

[0026] Basically, the linking mechanisms of conventional blinds commonly use (or can use) a rotary action to achieve blind body lifting/lowering or extending/receiving control and slats tilting control. Therefore, the blind control apparatus of the present invention can be used in any of a variety of blinds.

[0027] FIG. 13 shows an alternate form of the operating device. According to this design, the operating device, referenced by **70** is an electrically controlled device comprising a casing **71**, a rod-like actuating portion **72** forwardly extended out of the front side of the casing **71**, a motor (not shown) mounted inside the casing **71** and adapted to rotate the rod-like actuating portion **72,** a battery power supply (not shown) mounted inside the casing **71** and electrically connected to the motor, a control panel **74** located on the outside wall of the casing **71** and formed of a set of control buttons **73** adapted to control on/off status and forward/backward rotation of the motor, and a protective sleeve **75** fixedly fastened to the front side of the casing **71** around the rod-like actuating portion **72.** The rod-like actuating portion **72** has a front end extended out of the front end of the protective sleeve **75** and terminating in a coupling tip **76.**

[0028] FIG. 14 shows another alternate form of the

electrically controlled operating device. According to this embodiment, the operating device, referenced by **80** comprises a tubular main body **81,** a motor **82** mounted in the front end of the tubular main body **81,** a rod-like actuating portion **83** coupled to the output shaft of the motor **82** and extended out of the tubular main body **81,** and control buttons **84** located on the tubular main body **81** near its rear end remote from the motor **82** and the rod-like actuating portion **83** and electrically connected to the motor **82**.

[0029] As indicated above, the invention has the advantages as follows:

1. Because the invention does not use any lift cord or like means to achieve blind body lifting control, it eliminates the possibility of the hanging of the head of a person (more particularly a child) on the lift cord accidentally.
2. Because the blind control apparatus of the present invention has no control member exposed to the outside of the blind, the sense of beauty of the blind is maintained intact.
3. Because conventional electric blinds have an independent motor, power adapter, control circuit, and etc., their manufacturing cost is high. The invention can use one electrically controlled operating device to control the mechanical linking mechanism of each of a number of blinds. Therefore, the invention greatly reduces the installation cost of multiple blinds in one house.
4. According to conventional electric blinds, the battery is installed in the headrail. When replacing the battery, the user needs to use a chair or ladder so as to access to the battery in the headrail. This battery replacing job is inconvenient to achieve. According to the present invention, the battery is installed in the operating device, which is separated from the blind. Therefore, the user can replace the battery of the operating device conveniently.
5. Because the invention does not use the spring power of a spring member or the tension of a cord member to hold the blind body at the desired elevation, the invention can control and maintain the position status of the blind body stably.

Claims

1. An apparatus for controlling a blind having a headrail fixedly provided at a top side of a window and a blind body provided at a bottom side of said headrail and controlled by an external force to regulate said blind body of said blind in shading said window, the apparatus comprising:

a linking mechanism mounted in said headrail and having a rotatable driving force input unit and a driving force output portion rotated in connection with said driving force input unit when said driving force input unit rotates, said driving force input unit having a driving force receiving portion exposed outside the headrail, said driving force output portion being directly or indirectly coupled to said blind body of said blind and adapted to drive said blind body of said blind to change the window shading status of said blind body upon rotary motion of said driving force input unit; and

an independent operating device connectable to said driving force input unit, said operating device having an operating portion at one end thereof for operation by hand and an actuating portion at an opposite end thereof rotatable in relation to said operating portion for rotating said driving force input unit, said actuating portion having a coupling tip detachably connected to said driving force receiving portion of said driving force input unit.

2. The apparatus as claimed in claim 1, wherein said operating device is adapted to rotate said driving force input unit of said linking mechanism clockwise/counter-clockwise, causing said driving force output portion to extended out/receive said blind body of said blind.

3. The apparatus as claimed in claim 1, wherein said blind is a Venetian blind having slats; said operating device is adapted to rotate said driving force input unit of said linking mechanism clockwise/counter-clockwise, causing the said driving force output portion to tilt the slats of said Venetian blind.

4. The apparatus as claimed in claim 1 wherein said blind is a Venetian blind having slats; said linking mechanism further comprises a second driving force input unit rotatable by said operating device, said second driving force input unit having a driving force receiving portion adapted to receive the coupling tip of the actuating portion of said operating device, and a second driving force output portion to be driven by said second driving force input unit to tilt the slats of said Venetian blind.

5. The apparatus as claimed in claim 1, wherein said blind is a Venetian blind having slats; said operating device is adapted to rotate said driving force input unit of said linking mechanism to further extend out/receive the slats of said Venetian blind or tilt the slats of said Venetian blind selectively.

6. The apparatus as claimed in claim 1, wherein said driving force input unit of said linking mechanism comprises a worm, said worm having said driving force receiving portion in a bottom side thereof; said driving force output portion of said linking mecha-

nism comprises a worm gear meshed with said worm.

7. The apparatus as claimed in claim 1 wherein said linking mechanism further comprises a transmission gear set adapted to transfer rotary driving force from said driving force input unit to said driving force output portion.

8. The apparatus as claimed in claim 1 wherein said coupling tip of said operating device is a polygonal coupling tip; said driving force receiving portion of said driving force input unit is comprised of a polygonal coupling hole adapted to receive the polygonal coupling tip of said operating device.

9. The apparatus as claimed in claim 1 wherein said actuating portion of said operating device is manually actuated to rotate for rotating said driving force input unit of said linking mechanism by hand.

10. The apparatus as claimed in claim 9 wherein the operating portion of said operating device is a crank.

11. The apparatus as claimed in claim 1 wherein said operating device further comprises a motor adapted to rotate said actuating portion, and power supply means adapted to provide the necessary working voltage to said motor; said operation portion of said operating device is comprised of a plurality of operation buttons adapted to control the operation of said motor.

12. An apparatus adapted to regulate a blind body provided at a bottom side of a headrail of a blind, the apparatus comprising a driven unit installed in the headrail of said blind and adapted to be driven by an external rotary driving force to regulate the blind body of said blind, a driving unit adapted to be operated by the user to rotate said driven unit, and an interface unit adapted to couple said driving unit to said driven unit for transferring a rotary driving force from said driving unit to said driven unit.

13. A blind control method of controlling the operation of a blind having a headrail and a blind body at a bottom side of said headrail, the blind control method comprising the step of preparing a rod-like operating device having a first end, an operating portion at said first end, a second end, and an actuating portion at said second end, the step of holding the first end of said rod-like operating device to force said actuating portion into engagement with a driving force input unit which is rotatably fastened with the headrail of said blind, and then operating said operating portion to drive said actuating portion to rotate said driving force input unit for enabling said driving force input unit to move a driving force output portion, which is connected to the blind body, in the headrail of said blind and to further drive the blind body of said blind to change a window shading status of said blind body, and the step of removing said rod-like operating device from said driving force input unit.

14. The blind control method as claimed in claim 13 wherein said operating device is adapted to rotate said driving force input unit clockwise/counter-clockwise, causing said driving force output portion to extended out/receive said blind body of said blind.

15. The blind control method as claimed in claim 13 wherein said blind is a Venetian blind having slats; said operating device is adapted to rotate said driving force input unit clockwise/counter-clockwise, causing the said driving force output portion to extended out, receive or tilt the slats of said Venetian blind.

16. The blind control method as claimed in claim 13 wherein said blind is a Venetian blind having slats; the blind control method further comprising a sub-step before the step of removing said rod-like operating device from said driving force input unit, said sub-step being to attach said operating portion of said operating device to a second driving force input unit which is rotatably fastened with the headrail of said Venetian blind and then to operate the operating portion to drive said actuating portion and to further rotate said second driving force input unit, causing said second driving force input unit to drive a second driving force output portion to tilt the slats of said Venetian blind.

17. The blind control method as claimed in claim 13 wherein said actuating portion of said operating device is manually actuated by the user to rotate.

18. The blind control method as claimed in claim 13 wherein said operating device comprises a motor adapted to rotate said actuating portion, power supply means adapted to provide the necessary working voltage to said motor, and control buttons located on said operating portion for enabling the user to control the motor to rotate said actuating portion.

19. A blind control method of using the apparatus as claimed in claim 1 to control the operation of a blind.

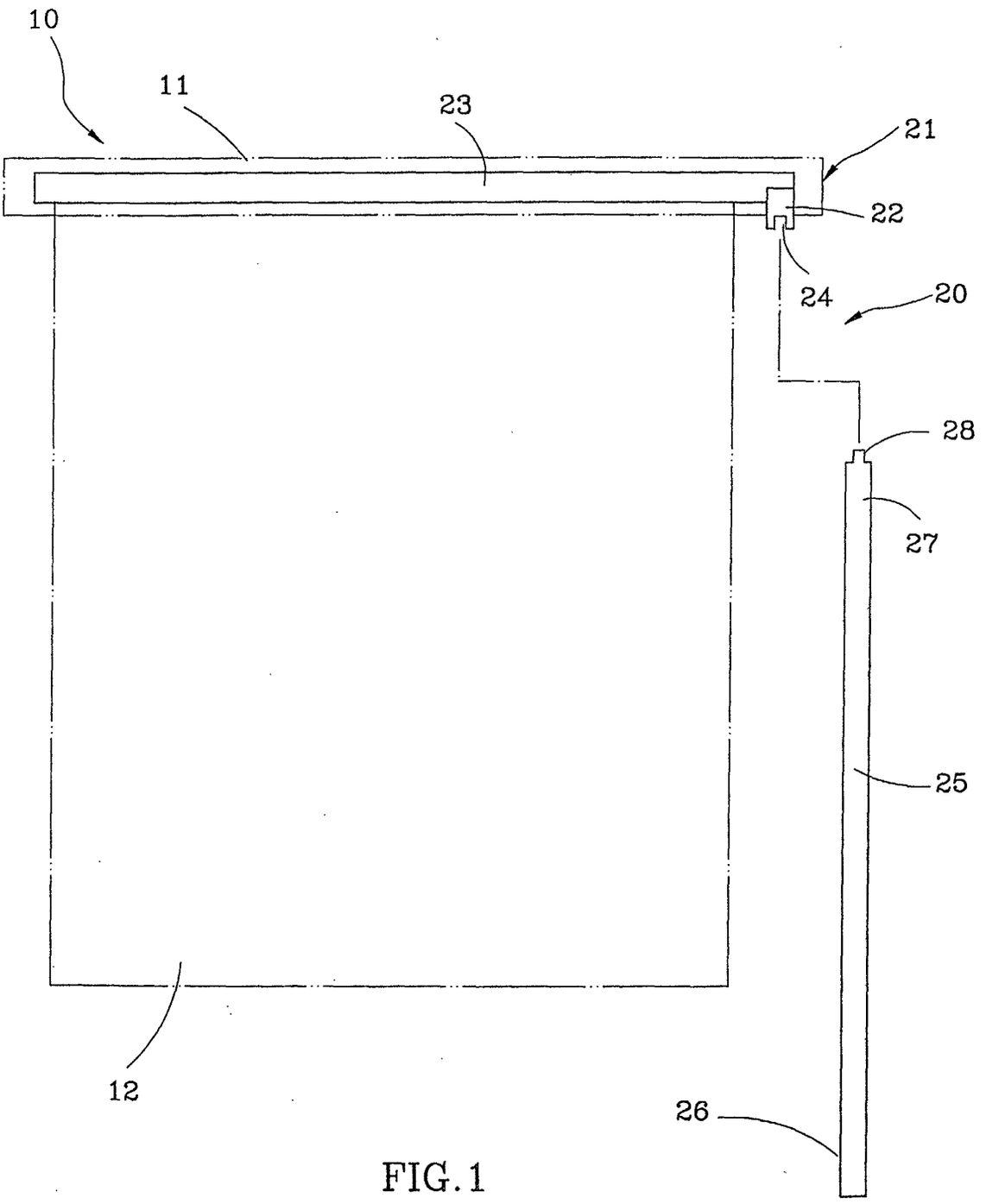

FIG. 1

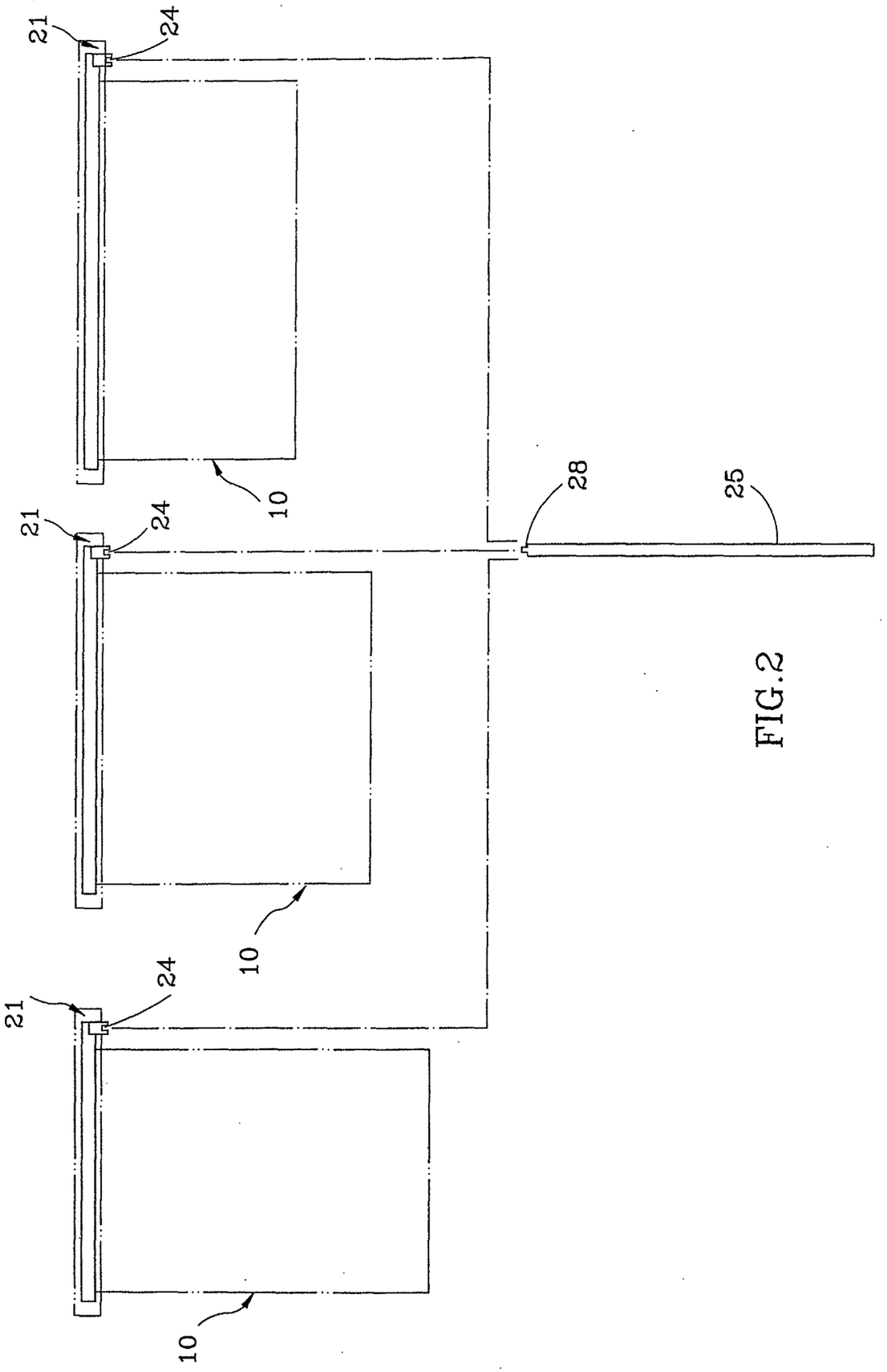

FIG.2

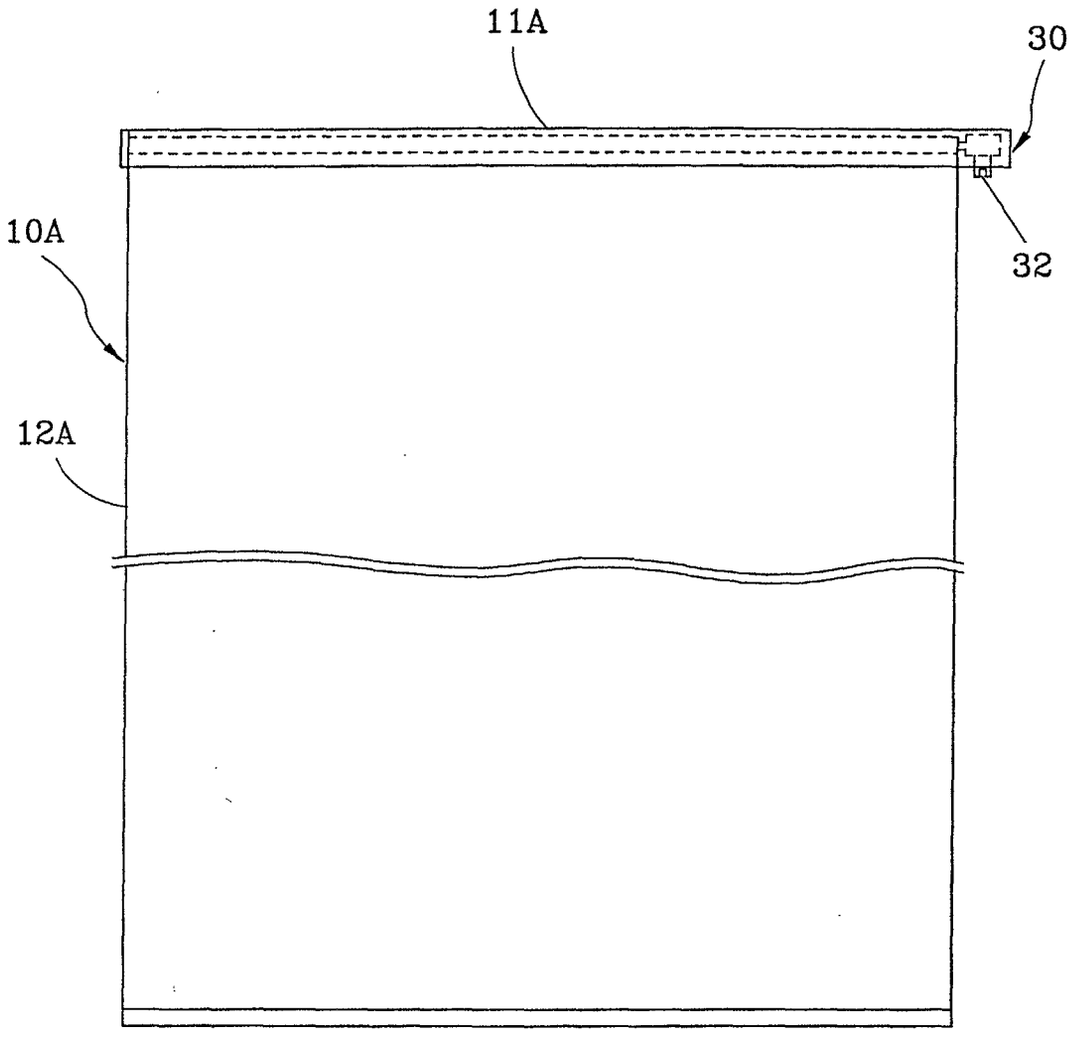

FIG.3

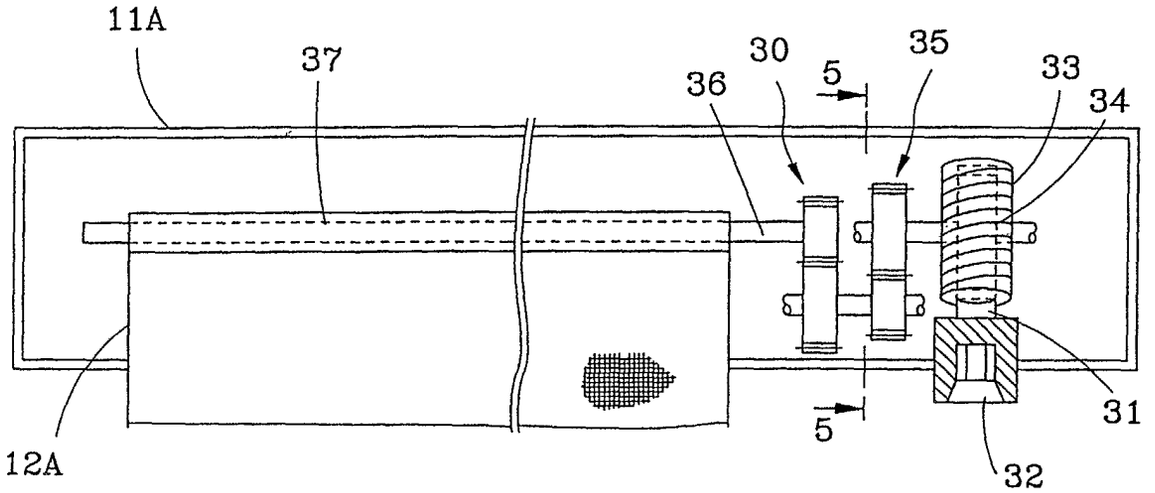

FIG.4

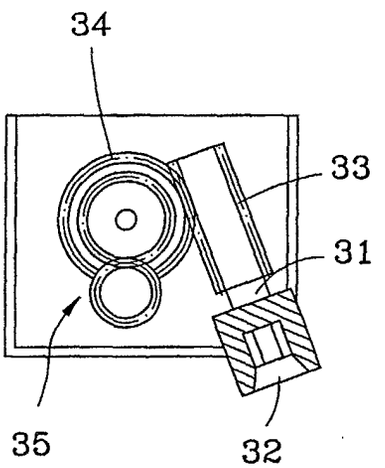

FIG.5

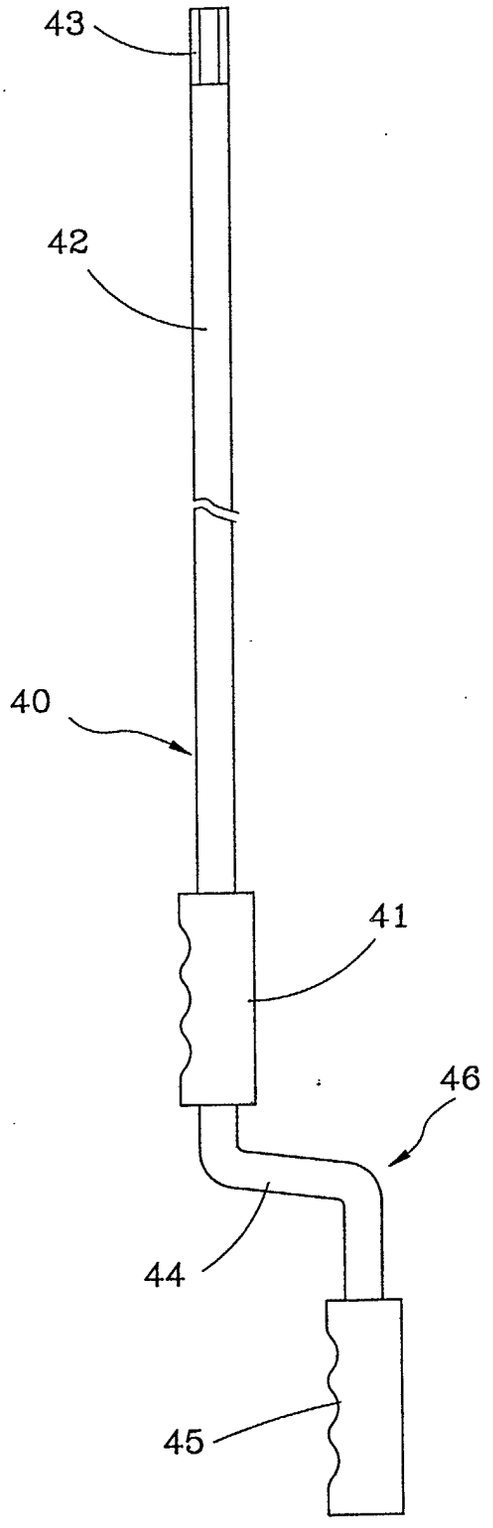

FIG.6

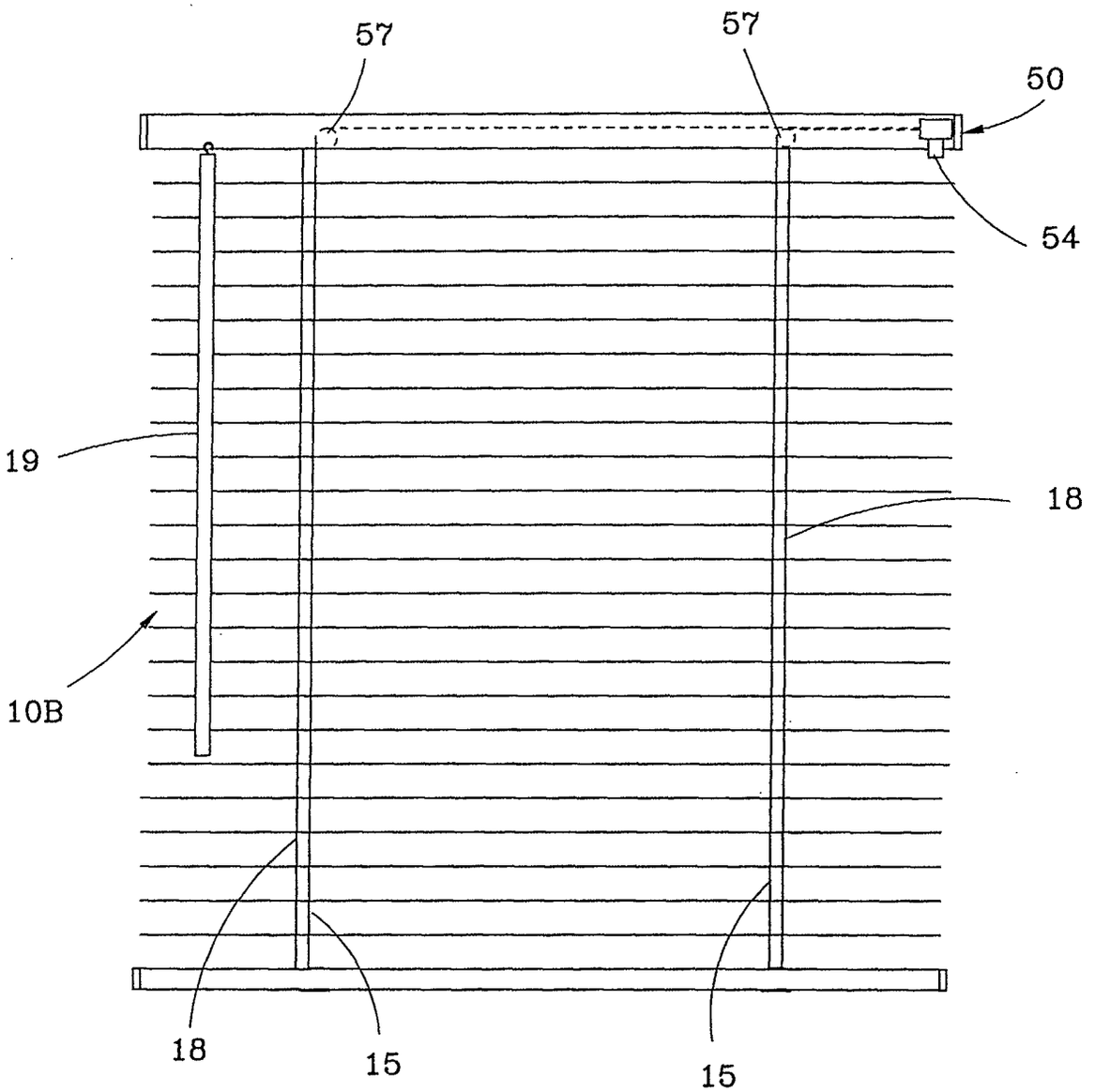

FIG.7

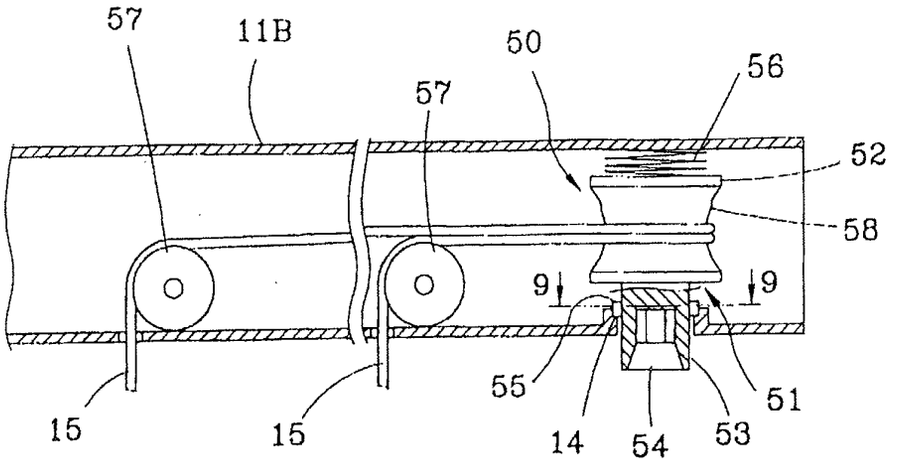

FIG.8

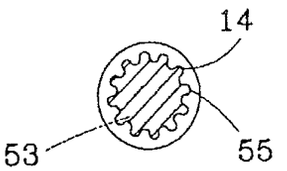

FIG.9

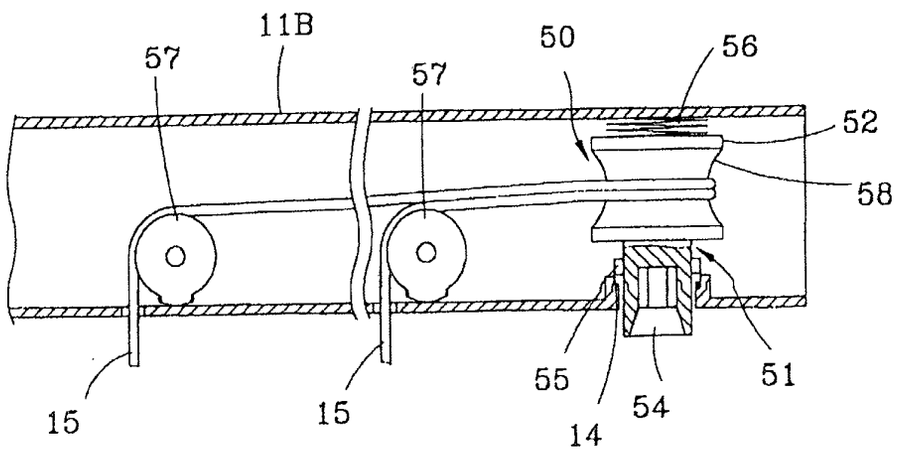

FIG.10

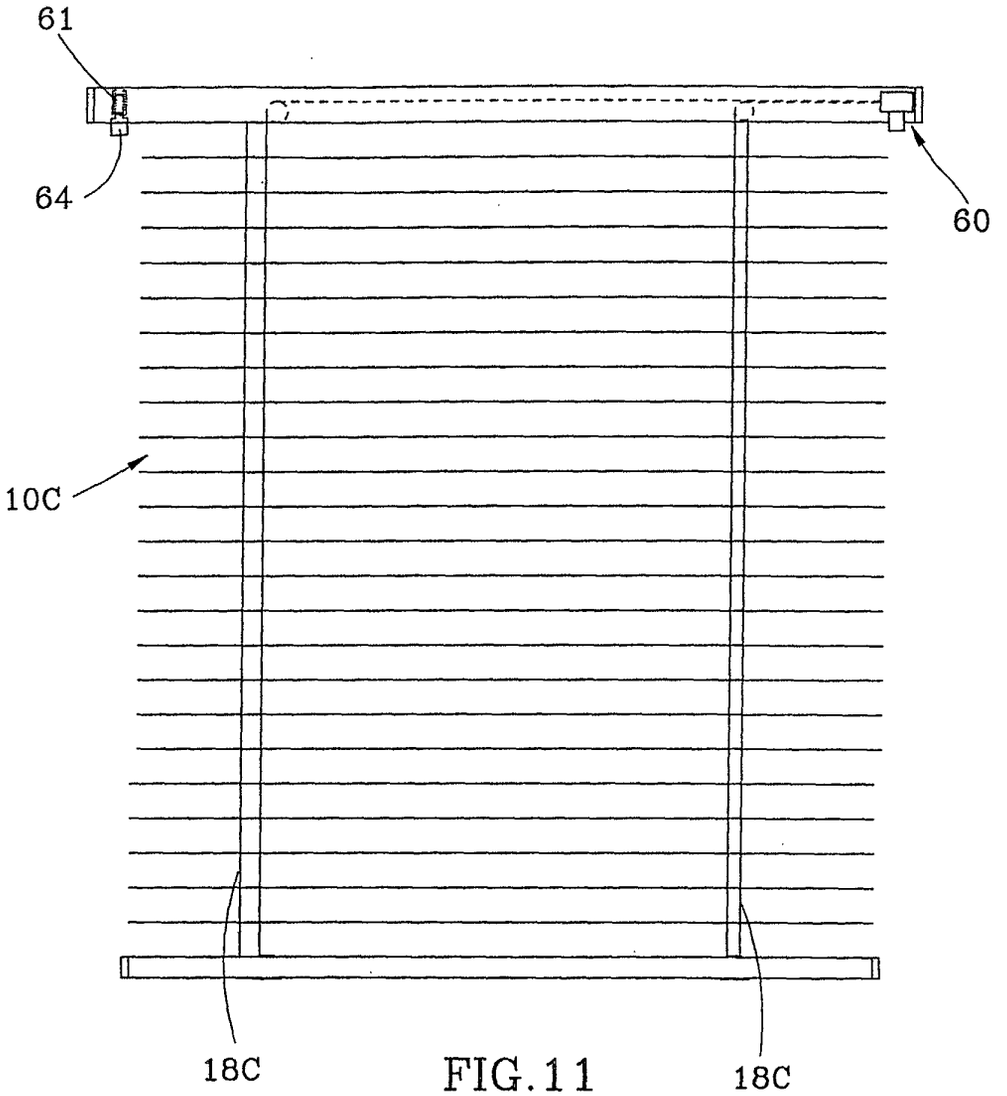

FIG.11

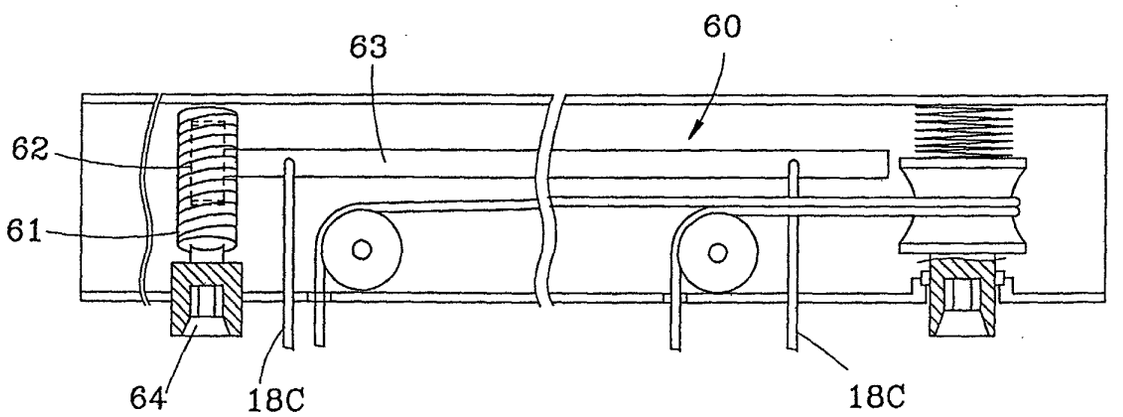

FIG.12

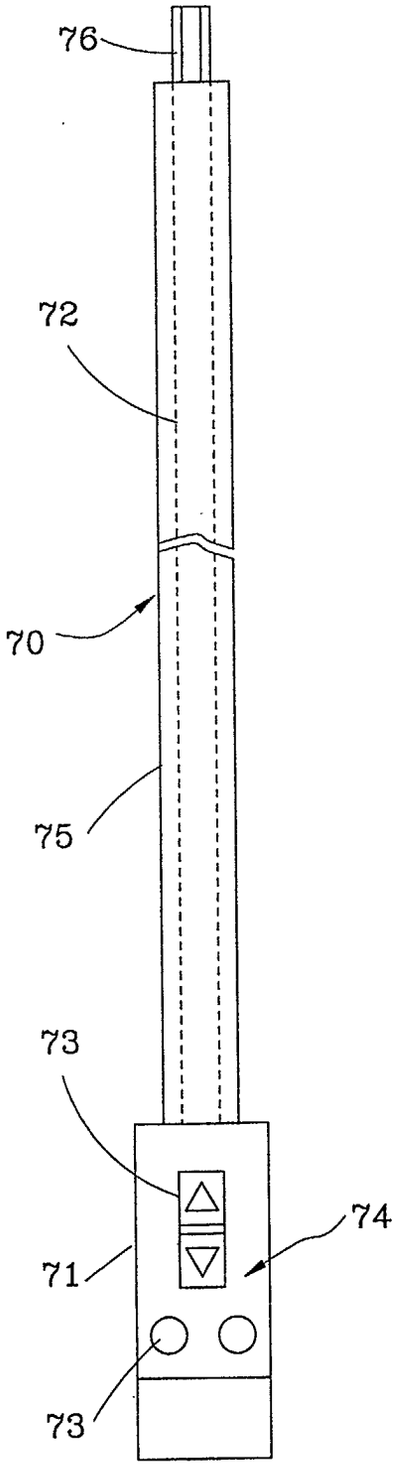

FIG.13

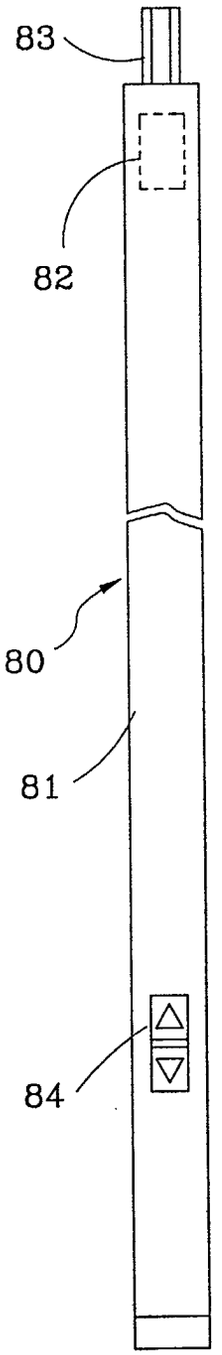

FIG.14

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 25 8004

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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X	DE 201 15 547 U (LIN SHIH MING) 31 January 2002 (2002-01-31) * page 6, line 6 - line 7 * * page 7, line 13 - page 10, line 14 * * figures 1,2 *	1,3-5,9, 12,13, 15-17,19	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	26 March 2003	Geivaerts, D

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