

[Description]

[Title of Invention]

MANUALLY OPERABLE DEVICE FOR AUTOMATICALLY OPENING  
5 AND CLOSING UMBRELLA OR PARASOL

[Technical Field]

The present invention relates to a device for  
automatically opening and closing an umbrella or a  
10 parasol.

More specifically, a configuration enabling not only  
opening operation but also closing operation of an  
umbrella or a parasol to be automatically performed by  
mechanical operation is provided.

15 In addition, the present invention relates to a  
device for automatically opening and closing an umbrella  
or a parasol which can be manually operated in an  
emergency.

20 [Background Art]

In general, umbrellas or parasols are sold under the  
name of automatic umbrellas.

When unfurling these automatic umbrellas, they are  
automatically unfurled by pressing a button, but have to  
25 be manually furled when furling the automatic umbrellas.  
Hence, technically, it is more accurate to refer to the  
umbrellas as semi-automatic umbrellas.

Since these semi-automatic umbrellas are easy to  
unfurl, but need to be furled using both hands, these  
30 semi-automatic umbrellas are inconvenient to furl when  
only one hand can be used such as when one hand is  
holding an object or when one hand is injured.

In addition, since a certain amount of force needs  
to be applied to fold the umbrellas, it was difficult for

the elderly, children, and physically disabled people who have weak force to use the umbrellas.

Moreover, in a case where umbrellas are frequently furled and unfurled such as when playing golf in the summer in which a player unfurls an umbrella to avoid the sunlight while moving and furls the umbrella to hit a ball, the player feels manual furling motion more cumbersome.

10 [Summary of Invention]  
[Technical Problem]

The present invention is proposed to improve the problems in the related art described above.

An object of the present invention is to provide a device for automatically opening and closing an umbrella which enables easy opening/closing operation of the umbrella in an automatic manner, while enabling manual operation in an event of a breakdown or power discharge. This aims to enhance the usability of an umbrella or a parasol.

[Solution to Problem]

In order to achieve the object described above, a screw rod of a device for automatically opening and closing an umbrella of the present invention is configured to have a screw-shaped guide groove formed along an outer circumferential surface of the screw rod. An ascending/descending nut is guided along the screw-shaped guide groove and screw-coupled to the screw rod to ascend and descend when the screw rod rotates forward and backward.

The screw rod is formed to be inserted into an umbrella rod.

The ascending/descending nut is formed to have a

protruding guide protrusion.

The umbrella rod has, in a length direction thereof, a guide groove for guiding the guide protrusion.

The ascending/descending bar forms a cylindrical  
5 shape surrounding the umbrella rod.

The ascending/descending bar is configured to be connected to the guide protrusion to ascend and descend together with the ascending/descending nut having the guide protrusion.

10 Multiple umbrella spokes are connected to an outer upper portion of the ascending/descending bar in a radial shape.

A drive motor is provided at a lower portion of the screw rod to transmit forward torque or backward torque  
15 to the screw rod.

In addition, the guide groove formed in the umbrella rod has, at a lower end portion and an upper end portion, a lower end locking groove and an upper end locking groove, respectively, that form an extension structure by  
20 having shapes forming right angles with the guide groove.

In the case of the manual operation, a user holds the ascending/descending bar by hand and rotates the ascending/descending bar so that the ascending/descending bar come out of the locking groove formed at a right  
25 angle.

After the ascending/descending bar comes out of the locking groove, force is applied to move the ascending/descending bar vertically.

The ascending/descending bar can be manually  
30 operated by the guide protrusion connected to an inner side thereof is guided to ascend/descend along the guide groove formed in the umbrella rod.

In addition, a lubricating ring for reducing friction and preventing friction noise against the guide

groove is formed on the guide protrusion.

An elastic spring for elastically supporting the ascending/descending nut which has ascended is provided at an upper end portion of the screw rod.

5        In addition, the ascending/descending bar has a structure divided into an upper ascending/descending bar to which the multiple umbrella spokes are connected and a lower ascending/descending bar to which the guide protrusion of the ascending/descending nut is connected,  
10        and the lower ascending/descending bar is rotatably connected to the upper ascending/descending bar with a connection ring.

      In addition, from an upper portion and a lower portion of the ascending/descending bar, an upper  
15        extension pipe and a lower extension pipe are respectively provided to extend so as to prevent external exposure of the guide groove.

#### [Advantageous Effects of Invention]

20        The present invention enables opening and closing operation of an umbrella or a parasol to be automatically performed. The present invention has an effect of improving user convenience as the umbrella or the parasol can be operated with one hand.

25        In particular, the umbrella can be manually furled or unfurled in the case of a breakdown or power discharge, thus enabling safe use even in an emergency situation.

#### 30        [Brief Description of Drawings]

      FIG. 1 is an exploded view of an umbrella according to a first embodiment of the present invention.

      FIG. 2 is an assembly diagram of FIG. 1.

      FIG. 3 is an enlarged view of an

ascending/descending bar of the present invention.

FIG. 4 is a cross-sectional view of portion A in FIG. 3.

FIG. 5 is a view illustrating a state in which an umbrella of the present invention is unfurled and thereby a state in which a guide protrusion is inserted into a locking groove.

FIG. 6 is a view illustrating a state in which the umbrella in FIG. 5 is half furled, whereby the guide protrusion moves along the guide groove.

FIG. 7 is a view illustrating a state in which the umbrella in FIG. 5 is furled, and thereby a state in which the guide protrusion is inserted into the locking groove.

FIGS. 8 and 9 are views illustrating manual ascending and descending operation in the present invention.

FIG. 10 is a detailed view illustrating the guide protrusion portion according to the present invention.

FIG. 11 is a view illustrating a state an anti-slip layer is formed on the ascending/descending bar of the present invention.

FIG. 12 illustrates a second embodiment in which the ascending/descending bar of the present invention is divided.

[BEST MODE]

A device for automatically opening and closing an umbrella of the present invention to achieve the object described above has the following configuration.

First, a screw rod is formed to have a predetermined length and have a screw-shaped guide groove formed along an outer circumferential surface of the screw rod.

The screw rod is formed to be inserted into an

umbrella rod.

An ascending/descending nut has a guide protrusion to be guided along the guide groove formed in the umbrella rod to ascend and descend when the screw rod  
5 rotates forward and backward.

The umbrella rod has a guide groove for guiding the guide protrusion protruding from an outer surface of the ascending/descending nut, the guide groove being formed in a length direction of the umbrella rod.

10 The ascending/descending bar forms a cylindrical shape surrounding the umbrella rod.

The ascending/descending bar is configured to be connected to the guide protrusion to ascend and descend together with the ascending/descending nut.

15 Multiple umbrella spokes are connected to an outer upper portion of the ascending/descending bar in a radial shape. A drive motor is provided at a lower portion of the screw rod to transmit forward torque or backward torque to the screw rod.

20 [Embodiments]

Hereinafter, specific embodiments of the present invention will be described in detail with reference to the accompanying drawings.

The embodiments of the present invention can be  
25 modified into various different examples, and the scope of the present invention is not to be construed to be limited to the embodiments to be described below in detail. These embodiments are to be provided to describe the present invention to those of ordinary knowledge in  
30 the art.

Therefore, a shape or the like of a component illustrated in the drawing are illustrated to emphasize clearer explanation.

In the individual drawings, identical configurations

are illustrated with the same reference numerals.

In addition, the detailed description of a function or a configuration of a known technology which can unnecessarily obscure the gist of the present invention  
5 will be omitted.

First, a configuration of a manually operable device for automatically opening and closing an umbrella according to the first embodiment of the present  
10 invention is as follows with reference to FIGS. 1 to 4.

The device for automatically opening and closing an umbrella of the embodiment is configured to include a screw rod 10 having a predetermined length and having a screw-shaped guide groove 11 formed along an outer  
15 circumferential surface of the screw rod 10.

An ascending/descending nut 20 which moves along the screw rod 10 is guided along the screw-shaped guide groove 11 to ascend and descend when the screw rod 10 rotates forward and backward. The screw rod 10 is formed  
20 to be inserted into an umbrella rod 30. In addition, the umbrella rod 30 has a guide groove 31 in a length direction of the umbrella rod.

The guide groove 31 is provided to guide a guide protrusion 21 protruding from an outer surface of the  
25 ascending/descending nut 20.

The ascending/descending bar 40 has a cylindrical shape surrounding the umbrella rod 30.

Multiple umbrella spokes 60 are connected to an outer upper portion of the ascending/descending bar 40 in  
30 a radial shape.

The ascending/descending bar is configured to be connected to the guide protrusion 21 to ascend and descend together with the ascending/descending nut 20 having the guide protrusion.

A drive motor is provided inside a handle on a lower side of the screw rod 10 to transmit forward torque or backward torque to the screw rod.

5 The guide protrusion 21 that can be guided along the screw-shaped guide groove 11 protrudes on an outer side of the ascending/descending nut 20.

10 In particular, it is found that, in the drawings, the guide groove 31 formed in the umbrella rod 30 has a lower end locking groove 31a and an upper end locking groove 31b at a lower end portion and an upper end portion, respectively, the lower and upper end locking grooves forming an extension structure by having shapes forming right angles with the guide groove.

15 In addition, during manual operation, holding the ascending/descending bar 40 by hand and turning the ascending/descending bar in a twisted shape enables the guide protrusion 21 connected to an inner side of the ascending/descending bar to be released from the locking groove 31a or 31b and unlocked from a locked state, and  
20 thereafter guided to ascend and descend along the guide groove 31 when force is vertically applied.

A projecting portion that meshes with the screw-shaped guide groove 11 is formed in a screw shape inside the ascending/descending nut 20, and the  
25 ascending/descending nut can ascend and descend depending on rotation of the screw rod 10.

Such a configuration enables the ascending/descending bar to easily move up and down with only a slight force.

30 In the drawings, drawing symbol 60 represents multiple umbrella spokes which are radially connected to the ascending/descending bar 40, and drawing symbol 70 represents an umbrella cloth.

Operational effects according to configuration

operation of the device for automatically opening and closing an umbrella or a parasol of the present invention are as follows.

Inside the umbrella rod 30 of the present invention,  
5 the screw rod 10 is provided together with the ascending/descending nut 20.

The cylinder-shaped ascending/descending bar 40 has a shape surrounding an outer side of the umbrella rod 30 and has a structure in which the multiple umbrella spokes  
10 60 are connected to the ascending/descending bar.

This configuration allows the opening/closing operation of the umbrella to be performed depending on the ascending/descending operation of the ascending/descending bar 40.

15 Namely, when an operation switch built in an umbrella handle portion is pressed, the drive motor 50 to which electricity is supplied from a power supply unit (not illustrated) installed inside the handle is driven.

Accordingly, when the screw rod 10 that received  
20 torque from the drive motor 50 rotates in one direction, the ascending/descending nut 20 ascends along the guide groove 31 by the screw-shaped guide groove 11.

Accordingly, the ascending/descending bar 40 that is integrally connected through the guide protrusion 21  
25 coupled to the ascending/descending nut ascends together, causing the multiple umbrella spokes 60 to be unfurled, resulting in an unfurled state of the umbrella as illustrated in FIG. 5.

In particular, since the upper locking groove 31b is  
30 formed at the upper end portion of the guide groove 31, the guide protrusion 21 can be stably secured so that a stable umbrella opening state can be maintained.

Meanwhile, if the umbrella is to be furled again, the screw rod 10 receives backward torque from the drive

motor 50 and rotates in a reverse direction.

The ascending/descending nut 20 and the ascending/descending bar 40 descend together along the umbrella rod 30, so that umbrella furling operation is performed as illustrated in FIGS. 6 and 7.

Since the lower locking groove 31a is formed at the lower end portion of the guide groove 31, the guide protrusion 21 can be stably secured and fixed.

The guide protrusion 21 enters the lower locking groove 31a, so that a stable umbrella furling state can be maintained.

Meanwhile, the umbrella of the present invention enables manual opening and closing of the umbrella if the power supply unit is discharged and it is difficult to supply power to the drive motor 50.

Namely, FIGS. 8 and 9 are views illustrating manual opening and closing of an umbrella.

When a user holds the ascending/descending bar 40 by hand and descends or ascends by slightly twisting the ascending/descending bar 40, the fixed state of the guide protrusion 21 is released, and the ascending/descending bar 40 and the ascending/descending nut 20 can ascend or descend along the guide groove 31, whereby manual opening and closing of the umbrella is performed.

In particular, the umbrella can be manually furled or unfurled in the case of a breakdown or power discharge, thus the present invention is advantageous in that the umbrella can be stably used even in an emergency situation.

The present invention enables the automatic opening and closing operation of an umbrella or a parasol to be performed, thereby being advantageous in that one-handed operation can be performed, whereby the convenience of use is improved.

Meanwhile, FIG. 10 illustrates a state in which a lubricating ring 22 made of a polyacetal resin is fitted around the guide protrusion 21 to reduce friction with and prevent friction noise against the guide groove 31.

5        An elastic spring 23 for elastically supporting the ascending/descending nut 20 which has ascended is provided at an upper end portion of the screw rod 10.

10        Since the lubricating ring 22 is fitted around the guide protrusion 21, noise and wear caused by friction against an inner wall surface of the guide groove 31 during a process of ascending and descending the guide protrusion 21 along the guide groove 31 can be reduced.

15        In particular, the lubricating ring 22 is made of a polyacetal resin material and is advantageous in that the durability thereof is improved.

      In addition, FIG. 12 is a view illustrating a configuration of an ascending/descending bar according to a second embodiment of the invention.

20        The ascending/descending bar 40 has a configuration divided into an upper ascending/descending bar 42 and a lower ascending/descending bar 43.

25        In this configuration, the multiple umbrella spokes 60 are connected to the upper ascending/descending bar 42, and the guide protrusion 21 of the ascending/descending nut 20 is connected to the lower ascending/descending bar 43.

30        The lower ascending/descending bar 43 is configured to be rotatably connected to the upper ascending/descending bar 42 by a connection ring 44. The connection ring 44 may have a bearing ball so that rotation can be more smoothly performed.

      In this configuration, the upper ascending/descending bar 42 to which the multiple umbrella spokes 60 are connected has a structure in which

the upper ascending/descending bar 42 is prevented from rotating while moving up and down, and the lower ascending/descending bar 43 ascends and descends together with the upper ascending/descending bar 42.

5           The lower ascending/descending bar 43 can ascend, descend, and rotate in a horizontal direction together the internal ascending/descending nut 20, so that the lower ascending/descending bar has a function of a rotating handle.

10           In particular, in a process of performing locking while the ascending/descending bar 43 rotates at positions of the lower locking groove 31a and the upper locking groove 31b, an advantage is achieved in that the upper ascending/descending bar 42 is prevented from  
15 rotating, so that a twisting phenomenon of the multiple umbrella spokes 60 can be prevented.

          In addition, FIG. 13 illustrates a configuration of a third embodiment according to the present invention, in which an upper extension pipe 45 and a lower extension  
20 pipe 46 extend at respective upper and lower portions of the ascending/descending bar 40 to prevent external exposure of the guide groove 31 formed in the umbrella rod.

          In this configuration, the internal guide groove 31  
25 can be covered by the upper and lower extension pipes 45 and 46 during an ascending or descending operation process of the ascending/descending bar 40, so advantages can be achieved in that the external appearance of the umbrella can be improved and foreign substances are  
30 prevented from entering the guide groove 31.

          Further, although specific embodiments of the present invention have been described and illustrated above, it is obvious that the structure of the device for automatically opening and closing an umbrella of the

present invention can be modified and implemented in various ways by those skilled in the art.

For example, in the embodiments, various power supply forms such as a replaceable battery type or a USB  
5 charging type can be applied to the power supply unit built in the umbrella handle portion.

In addition, the opening and closing device of the present invention can be equally applied to not only an umbrella and a parasol, but also an outdoor parasol and  
10 an umbrella-type sunshade.

Therefore, such modified embodiments should not be understood separately from the technical spirit or scope of the present invention, and such modified embodiments are included within the scope of the accompanying claims  
15 of the present invention.

[Claims]

[Claim 1]

A manually operable device for automatically  
5 performing ascending and descending of an umbrella or a  
parasol, comprising:

a screw rod (10) having a predetermined length and  
having a screw-shaped guide groove (11) formed along an  
outer circumferential surface of the screw rod;

10 an ascending/descending nut (20) which is guided  
along the screw-shaped guide groove (11) to ascend and  
descend when the screw rod (10) rotates forward and  
backward;

an umbrella rod (30) into which the screw rod (10)  
15 is inserted and which has a guide groove (31) for guiding  
a guide protrusion (21) protruding from an outer surface  
of the ascending/descending nut (20), the guide groove  
being formed in a length direction of the umbrella rod;

an ascending/descending bar (40) which is connected  
20 to the guide protrusion (21) and has a cylindrical shape  
surrounding the umbrella rod (30) to ascend and descend  
together with the ascending/descending nut (20) and to  
which multiple umbrella spokes (60) are connected in a  
radial shape at an outer upper portion of the  
25 ascending/descending bar; and

a drive motor (50) provided at a lower portion of  
the screw rod (10) to transmit forward torque or backward  
torque to the screw rod.

30 [Claim 2]

The manually operable device for automatically  
performing ascending and descending of an umbrella or a  
parasol according to claim 1,

wherein the guide groove (31) formed in the umbrella

rod (30) has a lower end locking groove (31a) and an upper end locking groove (31b) at a lower end portion and an upper end portion, respectively, the lower and upper end locking grooves forming an extension structure by  
5 having shapes forming right angles with the guide groove.

[Claim 3]

The manually operable device for automatically performing ascending and descending of an umbrella or a  
10 parasol according to claim 1,  
wherein holding and turning the ascending/descending bar (40) by hand in a twisted manner enables manual operation to be performed, in which the guide protrusion (21) connected to an inner side of the  
15 ascending/descending bar is guided to ascend and descend along the guide groove (31).

[Claim 4]

The manually operable device for automatically  
20 performing ascending and descending of an umbrella or a parasol according to claim 1,  
wherein the guide protrusion (21) around which a lubricating ring (22) for reducing friction and preventing friction noise against the guide groove (31)  
25 is fitted, and an elastic spring (23) for elastically supporting the ascending/descending nut (20) which has ascended is provided on an upper end portion of the screw rod (10).

30 [Claim 5]

The manually operable device for automatically performing ascending and descending of an umbrella or a parasol according to claim 1,  
wherein the ascending/descending bar (40) has a

structure divided into an upper ascending/descending bar (42) to which the multiple umbrella spokes (60) are connected and a lower ascending/descending bar (43) to which the guide protrusion (21) of the

5 ascending/descending nut (20) is connected, and the lower ascending/descending bar (43) is rotatably connected to the upper ascending/descending bar (42) with a connection ring (44).

10 [Claim 6]

The manually operable device for automatically performing ascending and descending of an umbrella or a parasol according to claim 1,

15 wherein, from an upper portion and a lower portion of the ascending/descending bar (40), an upper extension pipe (45) and a lower extension pipe (46) are respectively provided to extend so as to prevent external exposure of the guide groove (31).