TILTABLE GARDEN UMBRELLA


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This invention relates to garden, beach, terrace, and other such large umbrellas, which will be hereinafter referred to, for convenience, as garden umbrellas. The invention relates more particularly to tiltable garden umbrellas.

Tiltable garden umbrellas are known which are provided with linkage or other mechanism to effect the tilting thereof, e. g., my Patent 2,661,012, granted December 1, 1953. In these tiltable umbrellas, the umbrella is opened by manually manipulating the runner, i. e., the runner is grasped manually and raised to open the umbrella and lowered to close it. This, of course, requires considerable energy, in view of the size of such umbrellas.

The Pereira Patent 2,595,697 of May 6, 1952, discloses a garden umbrella equipped with mechanism for effecting the tilting thereof and with a separate mechanism for effecting the raising and lowering of the umbrella. In the construction of the Pereira patent two distinct mechanisms, each equipped with a handle, are provided, one to operate the mechanism effecting the raising and lowering of the umbrella and the other for actuating the tilting mechanism. While the construction of the Pereira patent represents an important advance in the umbrella art, in that it enables both the tilting of the umbrella and the raising and lowering of the umbrella to be done by handles associated therewith, the use of two separate mechanisms for effecting the tilting and raising and lowering of the umbrella, and the accompanying design and objectionable appearance of the umbrella, make it prohibitive in view of the expenditure of little energy by the user.

Another object of this invention is to provide a garden umbrella in which the mechanism which effects the raising and lowering of the umbrella also accomplishes its tilting.

Still another object of this invention is to provide such an umbrella in which the operating mechanism is for the most part concealed from view and which therefore presents an attractive, streamlined appearance.

Other objects and advantages of this invention will be apparent from the following detailed description thereof.

In accordance with this invention a tiltable garden umbrella is provided which is equipped with mechanism for raising and lowering it, which raising mechanism also effects its tilting.

In the accompanying drawings forming a part of this specification and showing, for purposes of exemplification, preferred forms of this invention, without limiting the claimed invention to such illustrative instances and in which like parts are indicated by like reference characters; Fig. 1 is a fragmentary vertical section through a garden umbrella embodying my invention, the umbrella being shown in the upright position; Fig. 2 is a fragmentary vertical section, on a somewhat larger scale than that of Fig. 1, with the umbrella shown in the tilted position; Fig. 3 is a fragmentary vertical section showing the portion of the lower pole in which the wind-up shaft is mounted; Fig. 3e is a vertical section taken in a plane passing through line 3e—3e on Fig. 3; Fig. 4 is a fragmentary vertical section of a modified form of tiltable umbrella embodying this invention; in the modification of Fig. 4 the operative mechanism for effecting the tilting of the umbrella is disposed in the lower pole, whereas in the embodiment of Fig. 1 this operative mechanism is disposed in the upper pole of the tiltable umbrella; Fig. 5 is a fragmentary vertical section, on a somewhat larger scale than Fig. 4, showing the umbrella of Fig. 4 in tilted position; Fig. 6 is still another modification of the invention, showing a different form of linkage connection between the upper pole and the operative mechanism for effecting the tilting of the umbrella disposed in the lower pole; Fig. 6a is a fragmentary vertical section showing the same linkage connection as employed in Fig. 6, but in which this linkage connects the lower pole with the operative mechanism for effecting tilting of the umbrella disposed in the upper pole; Fig. 7 is a fragmentary vertical section of still another modified form of the invention, in which the operating mechanism for effecting tilting of the umbrella is disposed mainly exteriorly of the umbrella poles and not within the umbrella poles as in the modification of Figs. 1 to 6a inclusive; Fig. 7a is a horizontal section taken in a plane passing through line 7a—7a of Fig. 7; Fig. 8 is a fragmentary vertical section, on a somewhat larger scale than Fig. 7, showing the umbrella of Fig. 7 in a tilted position; Fig. 9 is a fragmentary vertical section of still another modification, in which opening of the umbrella is effected by moving the runner downwardly rather than upwardly as in the case of the modification of Figs. 1 to 8 inclusive. Fig. 9 shows the umbrella in the erect or vertical position; Fig. 10 is a fragmentary vertical section, on a somewhat larger scale than Fig. 9, showing the umbrella of Fig. 9 in a tilted position; Fig. 11 is a fragmentary vertical section of still another modification in which, like in that of Figures 9 and 10, opening of the umbrella is effected by moving the runner downwardly rather than upwardly. The modification of Fig. 11 differs from that of Figs. 9 and 10 chiefly in that the actuating mechanism for effecting tilting of the umbrella is positioned in the lower pole and not in the upper pole as in the case of Figs. 9 and 10; Fig. 12 is a fragmentary vertical section through a portion of the umbrella pole showing still another modification of the invention, namely, one in which an air cylinder is employed to take the place of the loaded spring in each of the other modifications of Figs. 1 to 11 inclusive; and Fig. 13 is a fragmentary vertical section of still another modification in which a compressible rubber or other elastic and compressible plastic is employed in lieu of the air cylinder of Fig. 12 or the loaded spring of the other modifications.

Referring to Figs. 1 to 3 of the drawings, 20 indicates a lower hollow pole provided with a casting 21 disposed in the upper end thereof. Rotatably mounted in pole 20 is a wind-up shaft 22 provided with a handle 23 for effecting rotation thereof, which handle is equipped with
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a spring detent pin 24, arranged to enter one of the pair of openings 25 and 26 disposed diametrically opposite each other in the wall of the hollow lower pole 20.

Upper pole 27 is hollow and has suitably fastened to the upper end of casting 28, which has an extending portion 39 (Fig. 2) positioned between the extensions 30 of lower casting 21 and pivoted as at 31 to the lower casting 21. A push-tube 32 is mounted for reciprocal motion within hollow pole 27, being guided for such motion by bearings 33 near the top of the pole and the bearings 34 forming the top end of casting 28. Push-tube 32 is hollow and is provided near the top with a slot 35, in which slot is mounted a pulley 36 which is rotatably mounted on the push-tube 32 to move therewith. Pulley 36 extends through a slot 37 in the wall of upper pole 27, the latter slot being of sufficient length to permit limited movement of the pulley 36 as herein-after more fully described.

A runner 38 of the conventional type, to which are pivotally fastened the stretchers 39 of the umbrella, is mounted for movement up and down of the umbrella pole, to effect the raising and lowering of the umbrella. As conventional, the stretchers 39 are pivotally fastened to the ribs 41 of the umbrella, which in turn are pivotally secured as at 42 to the crown or notched member 43 suitably secured to the top of the upper pole 27. A wire rope or steel cable 44 has one end fastened to the runner 38 at 45, passes over the pulley 36, down through the push-tube 32, through the castings 21 and 28, and has the other end fastened to the wind-up shaft 22. A loaded spring 45 has end 46 pinned or otherwise suitably secured to the push-tube 32, and has the other end 47, against the upper portion of casting 28, secured to the lower end 47 of the push-tube 32 is one end of a link 48, the other end of which is pivoted to a second link 49. End 50 of link 49 is provided with a slot 51 in which is slidable disposed a shoe 52. Pin 53 passes through the shoe and is suitably mounted in casting 21; shoe 52 is free to rotate on pin 53 and vice versa, so that these two parts can move relative to each other. Link 49 is pivoted at 54 to casting 21, which as above noted is secured to lower pole 20.

A stop ring or other stop member 55 is fastened to the upper pole 27 at the position indicated in Figs. 1 and 2 of the drawings. When the runner 38 engages the stop ring 55 the stretchers 39 and ribs 41 are so positioned that the canopy of the umbrella is fully opened.

Desirably, the wind-up shaft 22 is provided with a brake B, which may be of any desired construction. In the embodiment of the invention shown in Figs. 3 and 3a the brake B comprises a split collar 56 secured by pins 57 to the lower hollow pole 20, so that the collar 56 cannot rotate with the shaft 22. The compression exerted by this split collar on the wind-up shaft 22 can be adjusted by adjusting the bolt 58 which threadedly engages in the threaded openings 59 in the split collar 56. Thus, by loosening or tightening the bolt 58 more or less pressure will be exerted on the shaft 22 to permit it to turn more or less freely.

In the operation of the umbrella of Figs. 1 to 3a inclusive, with the parts in the position shown in Fig. 1, the loaded spring 45 exerts a tension, not only to counterbalance the weight of the canopy but also to maintain the umbrella in the vertical position shown.

Assuming the umbrella is in a closed position and it is desired to open it, it is only necessary to turn the handle 23 to wind up the wire rope 44 on the wind-up shaft 22, which will effect elevation of the runner 38 to the position shown in Fig. 1, with consequent raising of opening of the umbrella. To maintain the umbrella in the open position, detent 24 is engaged in opening 25 or 26. In this position of the parts the umbrella is locked in open position.

If it is desired to tilt the umbrella, the winding of rope 44 on wind-up shaft 22 is continued. As this takes place stop 55 prevents further upward movement of the runner 38. Accordingly, continued winding movement will pull down on pulley 36 through the wire rope 44, causing this pulley and the one attached to which it is mounted to move downwardly, slot 37 permitting such movement. This downward movement effects a downward thrust on link 48, causing link 49 to pivot about its pivot 54, which in turn causes the upper pole to tilt relative to the lower pole about pivot 31. When the upper pole has been tilted to just the reverse extent the detent 24 is permitted to enter its opening 25 or 26, as the case may be, thus locking the umbrella in the tilted position. It will be understood the umbrella can be tilted more or less in one direction depending upon the amount of wire rope 44 wound onto wind-up shaft 22. When tilted to the desired extent the tilt is locked by detent pin 24 engaging opening 25 or 26 as the case may be.

Once the detent 24 is removed from the opening 25 or 26, spring 45 forces the push-tube in an upward direction and thus returns the tilted umbrella to the vertical position. This action, of course, is not only controlled by the brake B but also the operator who, through pressure exerted on handle 23, can control the rate of movement of the umbrella from the tilted to the vertical position and vice versa and also the rate of opening or closing of the umbrella.

To close the umbrella, it is only necessary to turn handle 23 in the direction which will permit the runner 38 to descend under the weight of the canopy and the umbrella frame.

In the modification of Figs. 4 and 5, the mechanism for effecting tilting of the umbrella is disposed in the lower pole 20, just as in the arrangement of Figs. 1 and 2. In the modification of Figs. 4 and 5 the wind-up shaft 22 is mounted for rotation on push-tube 32 disposed in the hollow lower pole 20 but has its ends positioned in slots 60 in the lower pole 20 so that this wind-up shaft can move up and down along with the push-tube 32, from the position shown in Fig. 4, the lower position, in which position the umbrella poles are in alignment to the position shown in Fig. 5, the upper position, in which position the umbrella poles are at an angle to each other, i.e., the umbrella is tilted.

The pulley 36 in the modification of Figs. 4 and 5 is fixedly mounted on the upper pole 27 as at 61. Wire rope 44 has one end fastened to the runner 38, passes over pulley 36, and has the other end fastened to the wind-up shaft 22.

In the operation of the modification of Figs. 4 and 5, to raise the umbrella, handle 23 is rotated, rotating shaft 22 to wind up the wire rope or steel cable 44, raising the runner 38 to the position shown in Fig. 4 where it abuts the stop 55. In this position the umbrella is fully opened and the parts are disposed as shown in Fig. 4 with the wind-up shaft 22 at the base of slot 60. If it is desired to tilt the umbrella, the handle 23 is rotated further. This exerts a downward pull on pulley 36 which is fixed, and hence an upward pull on the push-tube 32 in which the wind-up shaft 22 is mounted for rotation. Upward motion is thus imparted to the push-tube 32 which rises, the ends of the wind-up shaft 22 rising in slot 60. As the push-tube 32 rises it exerts an upward thrust on link 48, which actuates the connecting link 49 about its pivot 54, to tilt the umbrella about pivot 31 as shown in Fig. 5. It will be understood that the modification of Figs. 4 and 5 is provided with a detent corresponding to detent 24 and elongated slots 25' and 26' to receive the detent 24 to lock the umbrella in both the tilted position and also in the vertical open position shown. In the vertical open position shown, slots 25' and 26' in general correspond to openings 25 and 26 of Fig. 3; these slots are elongated to receive the detent 24 on handle 23 as the wind-up shaft moves up and down in slot 60, as hereinabove described. To restore the umbrella of Figs. 4 and 5 to the vertical position, it is only
necessary to remove detent 24 from its locked position in opening 25 or 26. Spring 45 will then act to restore the umbrella to the vertical position and to maintain it in such position. To close the umbrella, handle 23 is turned in the lower the runner 38; the weight of the canopy and the umbrella frame structure aids in effecting the closing of the umbrella.

The modification of Fig. 6 differs from that of Figs. 4 and 5, while the embodiment of the linkage mechanism 48 and 49 connecting the upper and lower poles 20 and 27, respectively, as shown in Fig. 5, the casting in the upper pole, a link 71 is employed, connecting the upper end of push-tube 32, with an extension 72 on the casting at the base of the upper pole. This casting at the base of the upper pole is pivoted as at 73 to the casting 28 at the top of the lower pole.

In the modification of Fig. 6, as in Figs. 4 and 5, pulley 36 is fixed to the upper pole 27 and the wind-up shaft is mounted for up and down movement in slots 60 in the lower pole. In operation, tilting of the umbrella is accomplished by further rotation of the wind-up shaft 22, after the runner 38 engages the stop 55, causing the push-tube 32 to move upwardly as hereinabove explained in connection with Figs. 4 and 5, exerting an upward thrust and thus causing the upper pole to pivot relative to the lower pole through the action exerted by link 71, as shown in Fig. 6a.

The modification of Fig. 6a differs from Fig. 6 chiefly in that push-tube 32 and associated loaded spring 45 are disposed in the upper pole rather than in the lower pole, as shown in Fig. 6. In the modification of Fig. 6a the pulley 36 is mounted for limited up and down movement and the wind-up shaft 22 is mounted for rotary movement on the lower pole 20 as in Fig. 6. Tilting of the umbrella in the modification of Fig. 6a is effected when the push-tube is moved downwardly by the winding of the wire rope or steel cable 44 on the wind-up shaft 22, as explained above, in connection with the modification of Figs. 1 to 3. This causes the push-tube 32 to move downwardly, exerting a thrust on link 71a, which causes the upper pole to pivot relative to the lower pole as shown in Fig. 6a.

The modification of Figs. 7 and 8 differs from those hereinabove described, particularly that of Figs. 1 to 3 inclusive, in that the operating mechanism for effecting raising and lowering of the umbrella and its tilt is disposed chiefly externally of the upper umbrella pole rather than within this pole.

In Figs. 7 and 8 the upper pole 27 is provided with a bearing 81 extending exteriorly thereof, in which slides an actuating rod 82. The upper end of rod 82 is provided with a collar 84 encircling pole 27. Loaded spring 45 is positioned under tension between collar 84 and pin 85 passing through pole 27. The rod 82 is also provided with an arm 86 extending laterally through the slot or opening 37 in pole 27. Arm 86 is provided with a pin 87 on which is rotatably mounted the pulley 36 over which passes the wire rope 44. End 89 of rod 82 is pivotally fastened to one end of link 48, the other end of which is pivotally secured to link 49 pivoted at 54 to an extension of the casting 21.

In the embodiment of the invention shown in Figs. 7, 7a and 8, as before shown in Fig. 7a is in the form of a split runner provided with a slot or opening 90 defined by the cammed or curved sides 91 and 92 defining the slot 90. Actuating rod 82 is disposed in the slot 90, the cammed or curved sides 91 and 92 of the runner being disposed on opposite sides of the rod 82 so that the latter does not interfere with the movement of the runner up and down the umbrella pole 27 to effect opening and closing of the umbrella.

In the operation of the embodiment of the invention shown in Figs. 7, 7a and 8, when it is desired to open the umbrella the wind-up shaft 22 is actuated to wind up the wire rope 44 thereon, thus raising the split runner 38 until it engages the slot 85, as shown in Fig. 7. In this position of the parts the umbrella is in fully opened position, with the two poles 20 and 27 in vertical alignment and spring 45 under load to maintain the poles in alignment through the action of collar 84, arm 83, links 48 and 49.

If it is desired to tilt the umbrella, the wind-up shaft 22 is actuated to further wind the wire rope 44 thereon. Since the split runner cannot move upwardly further because of its engagement with the slot 55 this action effect a downward pull with the pulley 36 on rod 82, arm 86 moving downwardly in slot 37. The downward motion of rod 82 through links 48 and 49 effects the tilting of the umbrella poles about pivot 31, as shown in Fig. 8. The umbrella is locked in tilted position by the detent pin 24 engaging in one of the openings 25 or 26 in the umbrella pole 20.

To restore the umbrella to the vertical position, it is only necessary to remove the detent pin 24 from its locking opening. When this is done the loaded spring 45 will cause the rod 82 to move upwardly to effect restoration of the upper and lower poles to the position of vertical alignment shown in Fig. 7. The umbrella can, of course, be closed or lowered by actuating the wind-up shaft 22 to unwind the wire rope 44, permitting split runner 38 to descend to the position where the umbrella is closed.

In the modification of Figs. 9 and 10 an umbrella is shown which is opened by moving runner 38 downwardly rather than upwardly along pole 27, just the reverse of the operation required to effect opening and closing of the umbrella in the modification of Figs. 1 to 8 hereinabove described.

In the construction of Figs. 9 and 10 the upper pole 27 is provided with a slot 101 in which moves a pin 102, the ends of which are secured to the runner 38. Runner 38 has pivotally secured thereto at 103, one end of the stretchers 39, the other end of which is pivotally secured to the ribs 41. When the umbrella is in the open position shown in Fig. 10, stretchers 39 are inclined downwardly somewhat relative to the horizontal.

Fig. 9 shows the umbrella closed. If it is desired to open the umbrella the wind-up shaft 22 is actuated by its handle 23 to wind the wire rope 44 thereon. This permits a downward pull on pin 102, to which one end of wire rope 44 is secured as at 105, moving runner 38 downwardly, causing the stretchers 39 to move to open the umbrella, i.e., to move to the position shown in Fig. 10. When pin 102 reaches the top 104 of the push-tube 32 in the position shown in Fig. 9, the umbrella is fully opened and the upper and lower poles are in vertical alignment.

If it is desired to tilt the umbrella the wind-up shaft 22 is actuated to continue the winding of the wire rope 44 thereon. This causes the pin 102 to move downwardly in the slot 101, forcing the push-tube 32 downwardly, actuating the links 48 and 49 to tilt the umbrella about its pivot 31. Slot 101 is of sufficient length to permit the desired extent of tilt to be imparted. When pin 102 is positioned at the bottom of slot 101 as is the case in Fig. 10, the umbrella is tilted to the maximum extent. Hence slot 101 should be of a length to permit tilting to the desired extent. Within the limits of tilting permitted by the length of slot 101, the extent of tilt can be controlled by the amount of wire rope 44 wound up on the shaft 22. As in the other modifications, the umbrella is locked in the desired tilted position by detent pin 24 engaging in one of the openings 25 or 26 in the umbrella pole 20.

The modification of Fig. 11 differs from that of Figs. 9 and 10 chiefly in that the loaded spring 45 and the push-tube 32 are disposed in the lower pole 20 rather than in the upper pole 27. In Fig. 11 the lower pole 20 is provided with openings or longitudinally extending slots 22a, through which the wind-up shaft 22 extends. These slots 22a permit upward movement of the wind-up shaft.
relative to the lower pole, as explained more fully hereinafter.

In the operation of the modification of Fig. 11, to open the umbrella wind-up shaft 22 is actuated by handle 23 to wind thereon the flexible cable or wire rope 44. This action downward pull on upper pole 21 causes the runner to move downwardly until pin 102, affixed to runner 38, reaches its slot 101, in the upper pole 27, opening the umbrella. When the umbrella is opened pin 102 is disposed at the bottom of slot 101. Further actuation of the wind-up shaft 22 causes the push-tube 32 to rise in such a way that pin 102 rests in the base of slot 101. It can no longer move in a downward direction and hence an upward pull is exerted on the wind-up shaft 22, which pull effects an upward movement of push-tube 32. Such upward movement of the wind-up shaft is permitted by the slots 25, 26, through which slots shaft 32 extends as noted above. The modification of Fig. 11, like that of Figs. 4 and 5, is provided with elongated slots (only one of which is shown in the drawing and indicated by numeral 25) to receive detent 24 irrespective of the vertical position of wind-up shaft 22 on the lower pole 20. The modification of Fig. 12 employs, in lieu of the loaded spring 45 of the other modifications hereinabove described, a cylinder containing gas under pressure. This cylinder 109 surrounds the push-tube 32 and in the form of the invention shown in Fig. 12 comprises a cylindrical lower casing 110 provided with suitable packing of 111, forming a gas-tight seal where the cylinder walls but push-tube 32. An upper cylinder casing 112 which is slidable within cylinder 110, the sliding joint between the two cylinders being suitably packed by packing 113 forming a gas-tight seal, has at its upper end a gas inlet valve 114. Air, gas such as nitrogen, or other inert gas may be supplied through the valve 114 to charge the cylinder 109 to any desired pressure. Suitable packing 115 is provided to form a gas-tight seal between the wall of cylinder 112 in sliding engagement with push-tube 32 and the upper cylinder casing 112. A stop ring 116 is secured to the push-tube 32. The pressure within cylinder 109 forces the upper wall 117 of the cylinder 109 into abutting engagement with stop ring 116 at all times.

In the operation of the modification of Fig. 12, when the wire rope 44 is wound on the wind-up shaft 22 the push-tube 32 is moved downwardly by the action of pulley 36, as described for example in connection with the modifications of Figs. 1 to 3. This causes the stop ring 116 to move downwardly, increasing the pressure within the cylinder 109, which action causes the push-tube 32 to move upwardly.

It will be understood that in all modifications described, the wind-up shaft 22 may be provided with a suitable brake, such for example as shown in Figs. 3 and 9. Furthermore, while the use of a gas pressure cylinder or other compressible rubber or plastic material in the case of the modification of Fig. 12 has been shown, as associated with a push-tube located in the upper pole, they may be used in the other modifications in lieu of the loaded spring located in the lower pole. In the modifications of Figs. 7 and 8, in which the actuating mechanism for effecting tilting of the umbrella is disposed exteriorly of the pole, the sections 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, and 38, in which latter figure the actuating rod 62 for effecting tilting of the umbrella is disposed exteriorly of the umbrella pole and thus tends to give the umbrella a somewhat more complicated and therefore less attractive appearance.

Since different embodiments of this invention could be made without departing from the scope of the invention, it is intended that all matters contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Thus, the invention, as herein described in connection with umbrellas, it will be understood it is not limited thereto but can be used in connection with any awning, canopy or other such structure involving an upper pole which such structure is adapted to be raised and lowered and in which the upper pole is tiltable relative to the lower pole.

2. In a tiltable umbrella, in combination, a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, means for tilting the upper pole relative to the lower pole, said tilting means including (a) means for raising the cover to open same and (b) means for actuating said cover-raising means, continued actuation of said means for actuating said cover-raising means beyond the point where said cover is open effecting tilting of the upper pole relative to the lower pole.

3. In a tiltable umbrella, comprising a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, means for tilting the upper pole relative to the lower pole, said tilting means including (a) means for raising the cover to open same and (b) means for actuating said cover-raising means, continued actuation of said means for actuating said cover-raising means beyond the point where said cover is open effecting tilting of the upper pole relative to the lower pole.

4. In a tiltable umbrella, comprising a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, means for tilting the upper pole relative to the lower pole, said tilting means including (a) means for raising the cover to open same and (b) means for actuating said cover-raising means, continued actuation of said means for actuating said cover-raising means beyond the point where said cover is open effecting tilting of the upper pole relative to the lower pole.

5. In a tiltable umbrella, comprising a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, means for tilting the upper pole relative to the lower pole, said tilting means including (a) means for raising the cover to open same and (b) means for actuating said cover-raising means, continued actuation of said means for actuating said cover-raising means beyond the point where said cover is open effecting tilting of the upper pole relative to the lower pole.

6. In a tiltable umbrella, comprising a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, means for tilting the upper pole relative to the lower pole, said tilting means including (a) means for raising the cover to open same and (b) means for actuating said cover-raising means, continued actuation of said means for actuating said cover-raising means beyond the point where said cover is open effecting tilting of the upper pole relative to the lower pole.
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carried by said upper pole, which cover is arranged to be opened and closed, compressible and expansible means for maintaining the said upper and lower poles in vertical alignment, and means for tilting the upper pole relative to the lower pole including means for opening said cover, said tilting means being arranged to compress said compressible and expansible means so that the latter means opposes the tilting of the upper pole relative to the lower pole. 5. A tiltable umbrella as defined in claim 4, in which the said compressible and expansible means is a loaded spring.

6. In a tiltable umbrella, in combination, a lower pole, an upper pole pivoted to the lower pole, an umbrella cover, compressible and expansible means for maintaining the said upper and lower poles in vertical alignment, means for tilting the upper pole relative to the lower pole including means for opening said cover, said tilting means being arranged to compress said compressible and expansible means so that the latter means opposes the tilting of the upper pole relative to the lower pole, and means for locking the upper pole in tilted position relative to the lower pole. 7. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole pivoted to the lower pole, a runner movable on said upper pole, a push-tube mounted for reciprocatory motion in one of said poles, a loaded spring acting on said push-tube, links connecting said push-tube with the other of said poles, a wind-up shaft, a flexible cable having one end secured to the wind-up shaft and the other end to said runner, a pulley on said push-tube over which said cable passes, and a stop arranged to be engaged by said runner, said push-tube effecting tilting of the upper pole relative to the lower pole when said cable exerts force on said runner while the runner is in contact with said stop.

8. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole pivoted to the lower pole, a runner movable on said upper pole, stretchers pivoted to said runner, ribs carried by the upper pole, said ribs being pivotally secured to the stretchers, a push-tube mounted for reciprocatory motion in the upper pole, a loaded spring in the upper pole acting on said push-tube to move it in an upward direction within said upper pole, links connecting the lower end of said push-tube with the upper end of said upper pole, a wind-up shaft carried by said lower pole, a flexible cable having one end secured to the wind-up shaft and the other end to said runner, a pulley fixed on said push-tube over which said cable passes, said pulley extending through a slot in the upper pole, a stop on said upper pole positioned to be engaged by said runner when the umbrella is open, the handle for rotating said wind-up shaft, and means for locking said handle to maintain said umbrella open and with the upper and lower poles in vertical alignment and also with the upper pole tilted relative to the lower pole.

9. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole having its lower end pivoted to the upper end of the lower pole, a runner mounted for movement on the upper pole, a stop on the upper pole arranged to be engaged by said runner when the umbrella is in its open position, a pulley fixed to the upper pole above said stop, said upper pole having an opening therein through which said pulley extends, a push-tube in the lower pole, a wind-up shaft on said push-tube, a flexible cable extending through both poles having one end secured to the wind-up shaft passing over said pulley and having the other end secured to the runner, a loaded spring in said lower pole acting on said push-tube to move it in an upward direction, and pivoted links connecting the upper end of said push-tube with the lower end of said upper pole.

10. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole having its lower end pivoted to the upper end of the lower pole, a runner mounted for movement on the upper pole, a stop on the upper pole arranged to be engaged by said runner when the umbrella is in its open position, a pulley fixed to the upper pole above said stop, said upper pole having an opening therein through which said pulley extends, a push-tube in the lower pole, a wind-up shaft on said push-tube, a flexible cable extending through both poles having one end secured to the wind-up shaft passing over said pulley and having the other end secured to the runner, a loaded spring in said lower pole acting on said push-tube to move it in an upward direction, and pivoted links connecting the upper end of said push-tube with the lower end of said upper pole. 11. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole having its lower end pivoted to the upper end of the lower pole, a bearing member extending from the upper pole, a split runner movable on the upper pole, up and down, past said bearing member, a wind-up shaft rotatably mounted in the lower pole, an actuating rod mounted substantially parallel to the upper pole for vertical movement in said bearing member, a link connecting the lower end of said actuating rod to the upper end of said lower pole, an arm carried by said actuating rod and extending within said upper pole, a pulley mounted on said arm, a flexible cable having one end connected to said pulley and having its other end connected to said wind-up shaft, and a loaded spring on said upper pole, positioned to act on said actuating rod to position the umbrella in a vertical position in the upper and lower poles in vertical alignment when the umbrella is open and to operate the tilting of the upper pole relative to the lower pole.

12. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole pivoted to the lower pole, a runner movable on the upper pole, which runner is positioned at the top of the upper pole when the umbrella is closed, a wind-up shaft on the lower pole, a push-tube in one of said poles, links connecting said push-tube to the other pole, a flexible cable having one end connected to the runner and the other end connected to said wind-up shaft, and means for actuating the push-tube when the runner is in position to effect opening of said umbrella, and to effect tilting of the upper pole relative to the lower pole. 13. In a tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole pivoted to the lower pole, a runner movable on the upper pole, which runner is positioned at the top of the upper pole when the umbrella is closed, a wind-up shaft on the lower pole, a push-tube in the upper pole, links connecting the base of the push-tube to the upper end of the lower pole, a flexible cable having one end connected to the runner and the other end connected to said wind-up shaft, and means for actuating the push-tube when the runner is in position to effect opening of said umbrella, and to effect tilting of the upper pole relative to the lower pole.

14. A tiltable umbrella, in combination, a hollow
11 lower pole, a hollow upper pole having its lower end pivoted to the upper end of the lower pole, a runner movable on the upper pole positioned near the top of said pole when the umbrella is in closed position, a pin passing through said upper pole and fastened to the runner, said upper pole having therein longitudinally extending slots in which said pin is adapted to move up and down, a push-tube mounted for reciprocatory motion in the upper pole, links connecting the lower end of said push-tube with the upper end of said lower pole, a wind-up shaft mounted for rotary motion in the lower pole, a flexible cable having one end fastened to the wind-up shaft and the other end fastened to said pin, a loaded spring encircling said push-tube, said push-tube being of a length so that its top extends above the bottom of said slots in the upper pole, and a locking means for locking the wind-up shaft in position in which the umbrella is open and the upper pole and lower pole are in vertical alignment and also in position in which the upper pole is tilted relative to the lower pole.

15. A tiltable umbrella, in combination, a hollow lower pole, a hollow upper pole having its lower end pivoted to the upper end of said lower pole, a runner movable on the upper pole positioned near the top of said pole when the umbrella is in closed position, a pin passing through said upper pole, fastened to the runner, said upper pole having longitudinally extending slots in which said pin is adapted to move up and down, a push-tube mounted for reciprocatory motion in the lower pole, links connecting the upper end of said push-tube with the lower end of said upper pole, a wind-up shaft mounted for rotary motion in the lower pole, a flexible cable having one end fastened to the wind-up shaft and the other end fastened to said pin, a loaded spring encircling said push-tube, and locking means for locking the wind-up shaft in position in which the umbrella is open and the upper pole and lower pole are in vertical alignment and also in position in which the upper pole is tilted relative to the lower pole.

16. A tiltable umbrella as defined in claim 15, in which the slots in the upper pole are of a length such that said pin rests on the base of said slots when the umbrella is open, and said lower pole is provided with longitudinally extending slots in which said wind-up shaft is mounted for movement up and down.

17. A tiltable construction having, in combination, a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, and means for tilting the upper pole relative to the lower pole, said means including means for opening the cover including a runner and means for moving said runner, continued actuation of said runner-moving means beyond the point where said cover is open effecting tilting of the upper pole relative to the lower pole.

18. A tiltable construction having, in combination, a lower pole, an upper pole pivoted to the lower pole, a cover carried by said upper pole, a runner, means for moving said runner to open and close said cover, means for tilting the upper pole relative to the lower pole, said last-mentioned means being connected with the runner-moving means so that continued actuation of said runner-moving means beyond the point where said cover is open effects actuation of the means for tilting the upper pole relative to the lower pole.

19. A tiltable construction comprising, in combination, a lower pole, an upper pole pivoted to the lower pole, and means for tilting the upper pole relative to the lower pole, said tilting means comprising a wind-up member on the lower pole, means slidable on the upper pole, means connecting said wind-up member on the lower pole with said slidable means on said upper pole for effecting actuation of said slidable means by said wind-up member, and linkage mechanism connecting said upper and lower poles and actuated to effect said tilting upon actuation of said wind-up member to actuate said slidable means on said upper pole.

20. A tiltable construction comprising, in combination, a lower pole, an upper pole pivoted to the lower pole, and means for tilting the upper pole about its pivot to the lower pole, said means comprising a wind-up shaft on the lower pole, means slidable on said upper pole, a stop on the upper pole engageable by said slidable means for limiting movement of said slidable means, means extending from said wind-up shaft to said slidable means and adapted to effect movement of said slidable means into engagement with said stop and linkage mechanism for tilting said upper pole relative to said lower pole, said linkage mechanism being actuated to effect said tilting upon continued actuation of said wind-up shaft beyond the point where said slidable means is in engagement with said stop.

21. In a tiltable umbrella, in combination, a lower pole, an upper pole having its lower end pivoted to the upper end of said lower pole, and means for tilting the upper pole about its pivot to the lower pole, said means comprising a wind-up shaft on the lower pole, means slidable on said upper pole, a stop on said upper pole engageable by said slidable means for limiting movement of said slidable means, a rope extending from said wind-up shaft to said slidable means and adapted to move said slidable means into engagement with said stop and linkage mechanism for tilting said upper pole relative to said lower pole, said linkage mechanism being actuated to effect said tilting upon continued actuation of said wind-up shaft beyond the point where said slidable means is in engagement with said stop.

22. A tiltable construction comprising, in combination, a lower pole, an upper pole having its lower end pivoted to the upper end of said lower pole, and means for tilting the upper pole about its pivot to the lower pole, said means comprising a wind-up shaft on the lower pole, a runner on the upper pole, a stop on the upper pole for limiting movement of said runner in an upward direction, a rope extending from said wind-up shaft to said runner and adapted to effect movement of said runner into engagement with said stop, a push tube in the upper pole, linkage mechanism connecting the lower end of said push tube with the upper end of said lower pole, and a pulley carried by said push tube over said upper pole, slidably mounted whereby actuation of said wind-up shaft beyond the point where said runner is in engagement with said stop effects actuation of said push tube to actuate said linkage mechanism to effect tilting of the upper pole relative to the lower pole.

23. A tiltable construction comprising, in combination, a lower pole, an upper pole pivoted to the lower pole, and means for tilting the upper pole relative to the lower pole, said tilting means comprising an actuating member on the lower pole, slidable means on the upper pole, means connecting said actuating member on the lower pole with said slidable means on said upper pole for effecting actuation of said slidable means by said actuating member, and means connecting said upper and lower poles to effect said tilting upon actuation of said actuating member to actuate said connecting means which actuates said slidable means on said upper pole.

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