May 6, 1952 H. PEREIRA 2,595,697

GARDEN UMBRELLA

Filed June 8, 1948 4 Sheets-Sheet 1

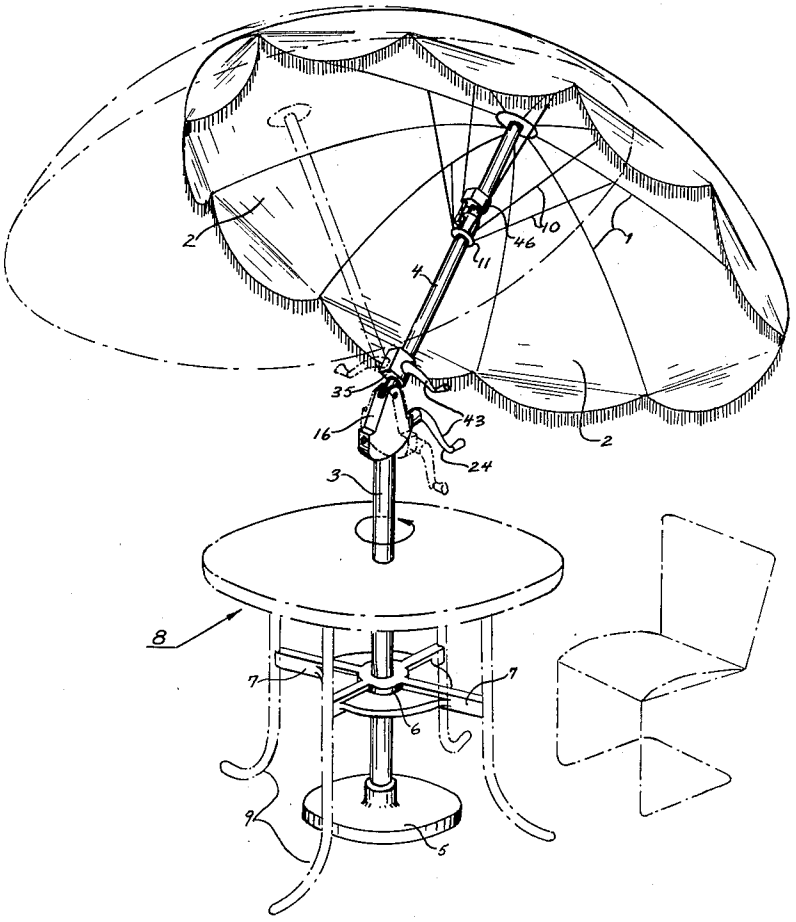


FIG. 1

FIG. 2

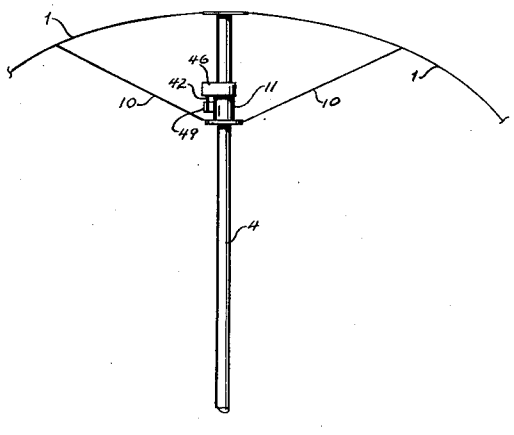
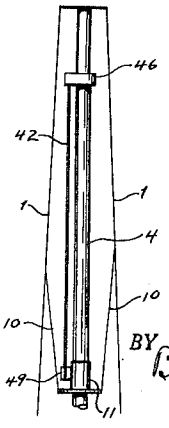


FIG. 3



INVENTOR.
HUMBERTO PEREIRA.
BY Bartlett Eyre Keel & Weymouth
Attys.

May 6, 1952 H. PEREIRA 2,595,697

GARDEN UMBRELLA

Filed June 8, 1948 4 Sheets-Sheet 2

FIG. 8

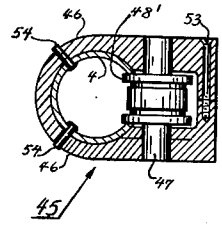


FIG. 7

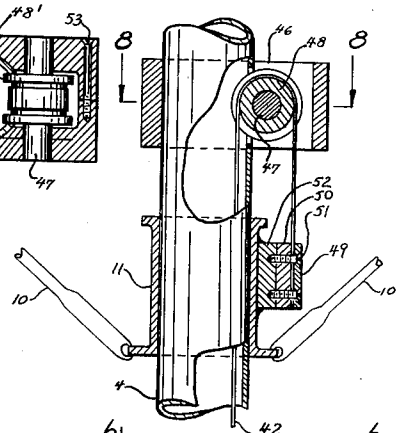


FIG. 6

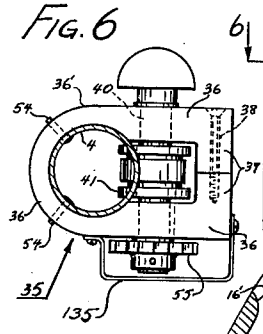


FIG. 5

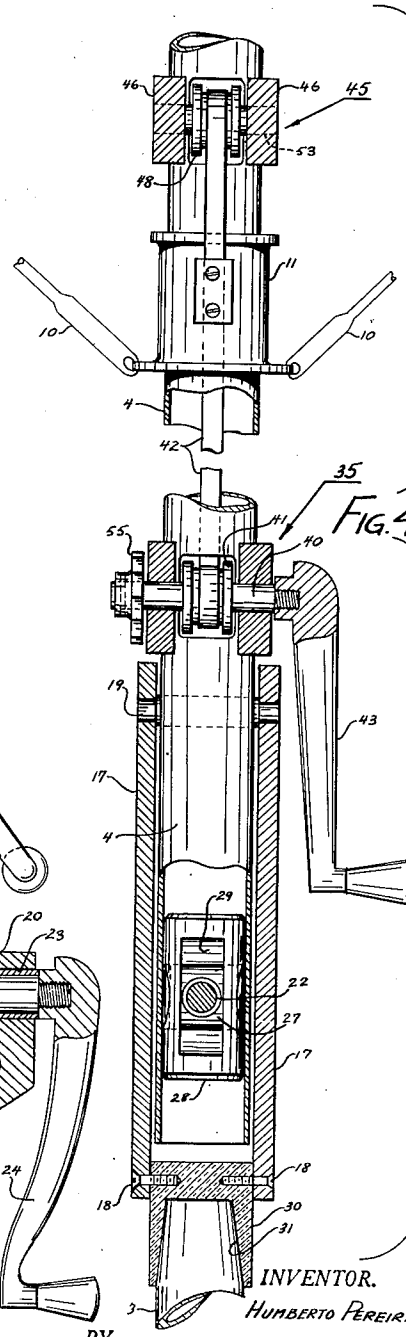


FIG. 4

INVENTOR.
HUMBERTO PEREIRA

BY
Bartlett Eyre Keel & Weymouth
Attys.

May 6, 1952 H. PEREIRA 2,595,697

GARDEN UMBRELLA

Filed June 8, 1948 4 Sheets-Sheet 3

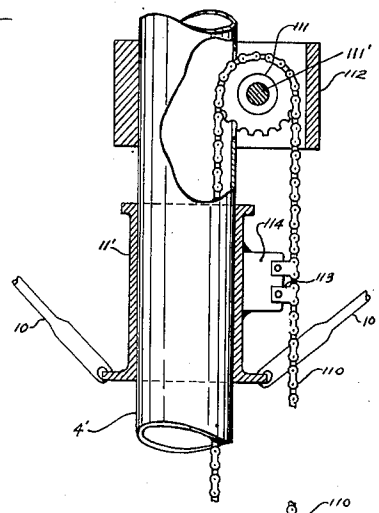


FIG. 9

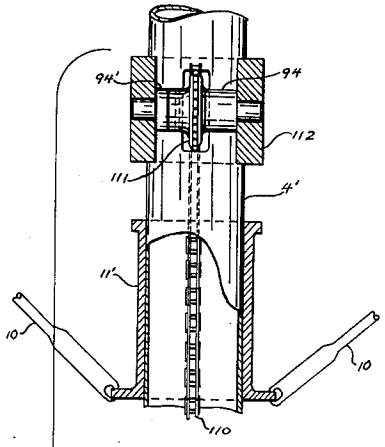
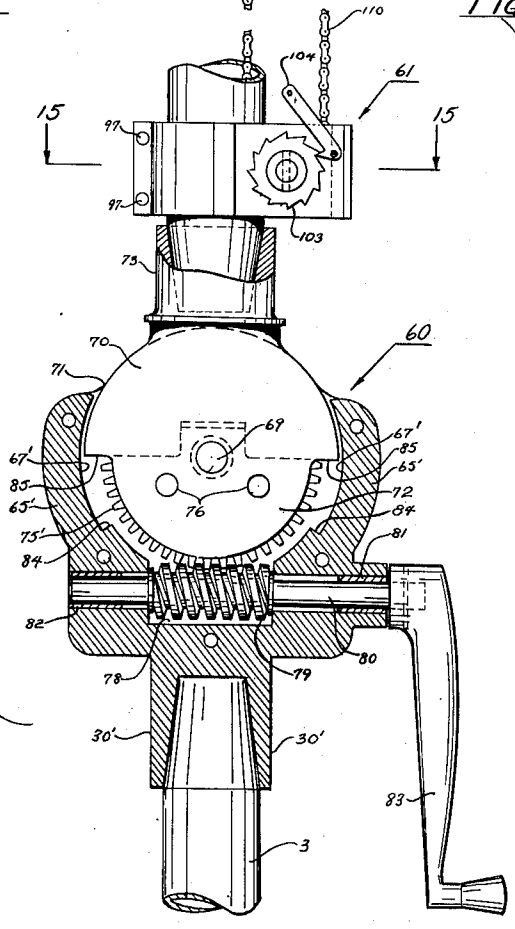
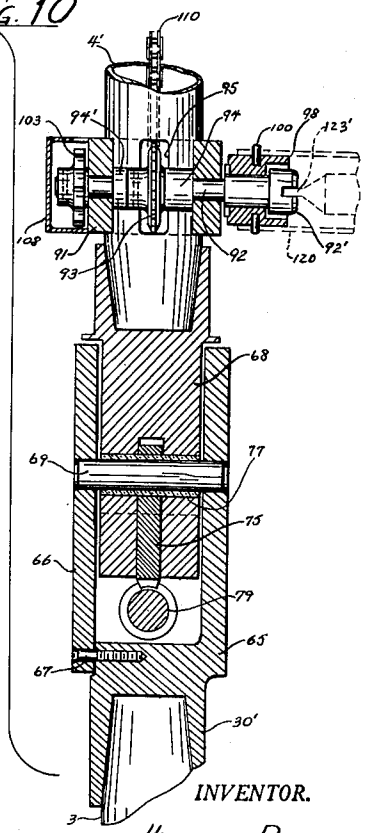


FIG. 10





INVENTOR.
HUMBERTO PEREIRA.
BY
Bartlett Eyre Keal & Marymont
Attys.

May 6, 1952 H. PEREIRA 2,595,697

GARDEN UMBRELLA

Filed June 8, 1948 4 Sheets-Sheet 4

FIG. 11

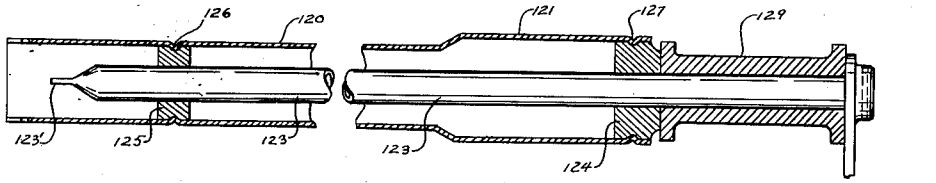


FIG. 12

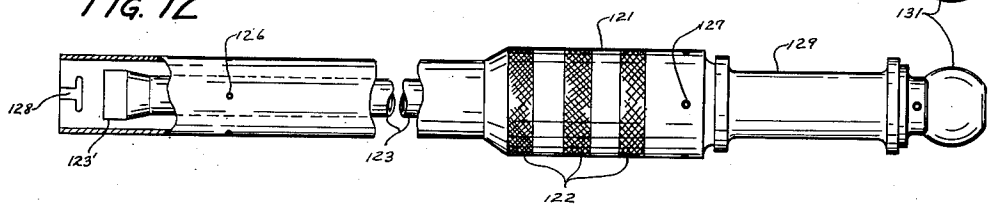


FIG. 13

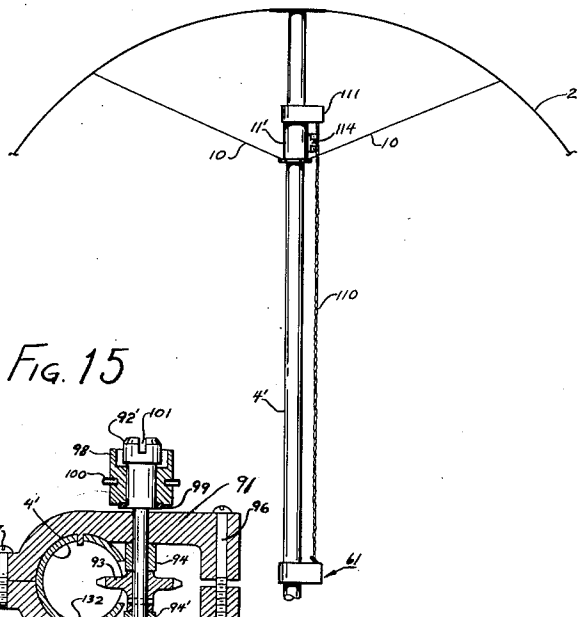


FIG. 14

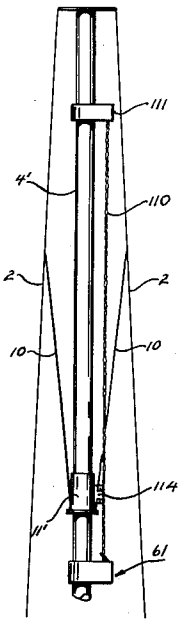


FIG. 15

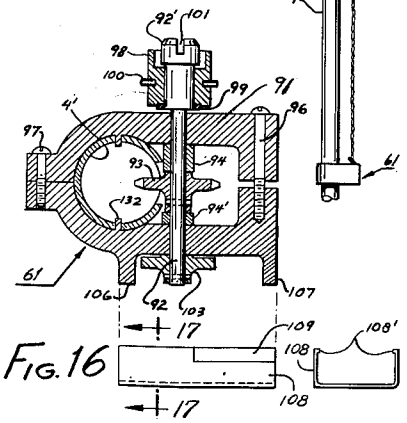


FIG. 16

FIG. 17

INVENTOR.
HUMBERTO PEREIRA.
BY
Bartlett Eyre Keel & Weymouth
Attys.

Patented May 6, 1952

2,595,697

UNITED STATES PATENT OFFICE

2,595,697

GARDEN UMBRELLA

Humberto Pereira, Essex, Conn., assignor to The Finkel Umbrella Frame Company, Inc., New York, N. Y., a corporation of New York

Application June 8, 1948, Serial No. 31,615

2 Claims. (Cl. 135—20)

1

This invention relates to garden umbrellas.

One object of the invention is a garden umbrella which may be raised and lowered, tilted at any desired angle and oriented into any position when so tilted, with a minimum of effort on the part of the user.

A further object of the invention is an umbrella of the character above indicated embodying novel and improved means for raising and tilting the umbrella.

A further object of the invention is a garden umbrella of the above indicated character which is further characterized by its simplicity in structure and in its raising or lifting, tilting and orienting means and by the economy with which it may be manufactured.

A further object of the invention is a novel and improved combination garden table and liftable and tiltable umbrella.

Further objects of the invention will hereinafter appear.

For a better understanding of the invention, reference may be had to the accompanying drawings, wherein

Fig. 1 is a diagrammatic perspective view of an umbrella mount and structure embodying the invention;

Figs. 2 and 3 are diagrammatic views showing respectively the lifted and lowered positions of the umbrella of Fig. 1;

Fig. 4 is a view partly in section illustrating a part of the umbrella mount and the means for lifting, lowering and tilting the umbrella;

Fig. 5 is a sectional view disposed at right angles to the position illustrated in Fig. 4;

Fig. 6 is a view taken along the lines 6—6 of Fig. 5;

Fig. 7 is a view partly in section of the upper part of the liftng and lowering mechanism corresponding but disposed at right angles to the position shown in Fig. 4;

Fig. 8 is a sectional view along the line 8—8 of Fig. 7;

Fig. 9 is a view partly in section of a part of the mount showing another embodiment of the invention;

Fig. 10 is a view at right angles thereto;

Fig. 11 is a part sectional view and part elevational view of a readily attachable and detachable means for lifting the umbrella of the embodiment of Figs. 9 and 10;

Fig. 12 is a view similar to Fig. 11 but disposed at right angles thereto;

Figs. 13 and 14 are diagrammatic views illustrating the elevated and lowered positions of

2

the embodiment of Figs. 9 and 10; and Fig. 15 is a sectional view along the line 15—15 of Fig. 9;

Fig. 16 is a plan view of the cover for the housing defined by the projections on the side of the frame shown in Fig. 15; and

Fig. 17 is a sectional view taken in a plane passing through line 17—17 of Fig. 16.

Referring to the drawings, I have illustrated the preferred embodiment of my invention in Figs. 1 to 8. In Fig. 1 I have diagrammatically illustrated the mounting of the umbrella of my invention. It incdludes any conventional rib structure 1 having thereon any suitable covering 2. The umbrella frame comprises a vertical shaft 3 and an umbrella pole or mast 4 adjustably mounted upon the upper end of the shaft 3. The shaft 3 is swivelly mounted for rotation about its axis and in the particular embodiment shown it rests at its lower end in the socket of a base 5 and passes down through a guiding collar 6 carried by the radiating frame members 7 of a table 8, the legs of the table being indicated at 9. The umbrella stays are indicated at 10 and are attached at their upper ends to the ribs 1 and at their lower ends to a collar 11 slidably mounted on the umbrella stick or mast 4.

The umbrella is tiltable about the upper end of the shaft 3 to any desired angle within limits and as indicated the shaft 3 is swivelly mounted for orienting the tilted umbrella to any position desired. The umbrella includes manually manipulated means for both tilting the umbrella and for raising and lowering the same and with a minimum effort by the user.

The umbrella pole or mast 4 is a metallic hollow tube. The shaft 3 may be either hollow or solid as may be desired. The means for tilting and raising and lowering the umbrella is housed partly within the tubular mast 4. The shaft 3 carries on its upper end a segmental casting comprising an arcuate part 15 and radial parts 16, and side plates 17 are suitably fastened to the opposite sides of the segmental frame 15, 16 as, for example, by means of bolts some of which are indicated at 18. The hollow tubular mast 4 is pivotally mounted on a trunnion pin 19 journaled or mounted in openings formed near the upper ends of the side frame plates 17. The lower end of the tubular mast 4 stops short of the inner surface of the arcuate part 15 as indicated in the drawing, with the inner surface of the arcuate part 15 forming a segmental cylindrical surface about the trunnion pin 19 as an axis. Bearing frame portions 20 and 21 are formed in the radially extending parts 16 of

the casting and these bearing parts 20 and 21 are provided with aligned openings for the reception of a rotating shaft 22, the latter being journaled in bearings 23 disposed in the openings of the bearing structures 20 and 21. This shaft 22 is provided with a handle 24 for rotating the shaft. The hollow mast 4 is provided with opposed elongated slots 25 for the accommodation of the shaft 22.

The shaft 22 is provided with a screw thread 26 of any suitable design which passes through a transverse central opening similarly screw threaded in a cylindrical member 27 journaled in a guiding and mast actuating cylindrical block 28, the latter forming a close but easily slidable fit with the interior surface of the hollow mast 4. The cylindrical block 28 is formed on the opposite sides thereof with curved recesses 29, the widths of these recesses or slots being slightly greater than the diameter of the screw threaded shaft 22 and being in line with the slots 25 formed in the hollow mast 4. By this arrangement the cylindrical guide block 28 and the mast 4 may assume different angular positions with respect to the shaft 22. The ends 27' of the member 27 stop short of the inner surfaces of the hollow mast 4 so as to permit relative movements of the members 27 and the mast 4. Fig. 5 shows in dotted lines one relative adjusted position of the mast 4 from the vertical position corresponding to one particular tilt of the umbrella. The casting 15, 16 is provided with a downwardly projecting attaching part 30 comprising a tapered recess 31 for attachment to the upper tapered end of the vertical shaft 3. The casting portions 16 stop short of the mast 4 as indicated at 16' for permitting relative movement of the mast 4 and the side frame plate 17 about the axis of the trunnion pin 19.

Manually operated power means is also provided for raising the umbrella and, like the tilting mechanism, a part of the raising mechanism is contained within the hollow mast 4. This lifting means comprises a frame member designated generally by the numeral 35 which is mounted on the hollow mast at a point just above the trunnion 19 and in close proximity to the tilting mechanism. This frame member 35 comprises a split collar 36 having one end formed into an arc shaped portion 36' conforming to the exterior of the mast 4. When the angular portions 37 of the split collar 36 are fastened together by a bolt or bolts 38, the arc shaped portion 36' surrounds and grips the mast 4 while the angular portions 37 extend laterally beyond the mast.

A shaft 40 is journaled in the frame 36, the shaft 40 in the particular embodiment shown just clearing the outer surface of the mast. A reel 41 is keyed to the shaft 40 and one end of a metallic tape 42 as, for example, of steel, is fastened to this reel 41 and is adapted to be wound thereabout for raising the umbrella and to be unwound therefrom or partially unwound therefrom upon the lowering of the umbrella. One side of the hollow mast 4 is recessed to permit the reel to project to a point within the hollow mast whereby the tape 42 passes upwardly through and within the mast. The shaft 40 is provided with an operating handle 43 for the manual raising of the umbrella. The upper part of the raising mechanism comprises a bracket 45 mounted on the mast 4 at a point above the uppermost position of the sliding collar or sleeve 11. This bracket comprises a split collar 46 generally similar to the collar 36 of the frame 35. This frame 45 has mounted in the parts 46 thereof a shaft 47 and a roller 48 having flanges 48' is freely journaled on this shaft 47. The roller 48 projects through a recess formed in the side of the mast 4 so as to bring one side of the periphery of the main body of the roller within the mast 4, thereby permitting the metallic tape 42 to pass freely over the roller 48 with the end of the steel tape extending down parallel to the mast and securely fastened to the sliding collar 11 as, for example, being clamped between the clamp members 49 and 50 by means of bolts 51 passing through openings in the tape and the clamps 49 and 50 which are screw threadedly attached to a base or block member 52 fastened as by welding to one side of the sleeve 11. The split collar 46 is fastened together in any suitable manner as, for example, by the bolts 53 and is anchored to the pole or mast 4 in any suitable manner as, for example, by the pins 54 passing through the frame member 45 and openings in the mast. Similar pins 54 are provided for mounting the frame 35 to the mast 4.

The shaft 40 carrying the reel 41 not only projects through and beyond one of the members 36 for attachment to the manual operating member 43 but also extends through the other frame member 36 to carry a ratchet wheel 55, this ratchet wheel being keyed to the shaft. A pawl 56 is pivotally mounted at 57 on the side of the adjacent frame member 36 and this pawl engages the teeth on the ratchet wheel 55 to hold the umbrella in any position to which it has been raised. The pawl may be manually released to permit the lowering of the umbrella. The arm of the pawl 56 is indicated as having a hole 58 for the attachment of any manual operating means, such as a chain or cord, if desired, whereby for example, the user may stand out of the way of the umbrella and release the pawl to permit the automatic lowering of the umbrella from its lifted position to the lowered position indicated in Fig. 3, this automatic lowering being facilitated by the spring of the ribs 1 and by gravity.

With an umbrella of the character set forth the umbrella may be raised, tilted and oriented by anyone, including children, with a minimum of effort and with complete freedom from injury. The mechanism as described is a simple one whereby all these three functions may thus be easily performed by any one. For raising or lifting the umbrella the user only needs to operate the handle 43 and with the power leverage indicated this may be easily accomplished. The umbrella may be raised to any desired height by simply operating the handle 43. The user may tilt the mast 4 to any desired angle within the limits provided by the radial portion 16 of the tilting mechanism housing unit. During the rotation of the handle 24 the cylindrical member 27 travels along the worm gear depending upon which direction the handle or shaft is rotated and the actuating cylindrical block 28 and the lower end of the mast 4 are thereby actuated to the position desired. This tilting operation may be effected before the raising of the umbrella or afterwards. The umbrella may be oriented to any position desired by simply rotating the mount 3 about the universal socket therebelow so that with the umbrella raised and tilted to any desired angle the umbrella may be oriented to the desired position, for example, as indicated by the dot and dash line in Fig. 1. All these adjustments

may be easily made with the greatest facility as pointed out.

As with the preferred embodiment of Figs. 1 to 8, the umbrella of Figs. 9 to 14 embodies cooperating mechanisms permitting easy raising, tilting and orienting of the umbrella. In this embodiment the umbrella is mounted on a vertical swivel shaft 3 generally similar to the mounting of the embodiment of Figs. 1 to 8. The numeral 60 indicates generally the tilting mechanism and the lower part of the lifting or raising mechanism is indicated generally at 61 and is mounted just above the tilting mechanism. The tilting unit or mechanism comprises a casting 65 having a lower extension 30' for mounting upon the vertical swivelling shaft 3. One side of the casting 65 forms a part of the housing for the tilting mechanism and the other side of the housing comprises the plate 66 which is fastened to the other part of the housing in any suitable manner as, for example, by bolts 67. The casting 65 comprises end walls 65' against which are clamped the separate side plate 66 which completes the closure of the housing. The inner surfaces 67' of the end walls 65' of the housing are cylindrical in shape and a tilt head 68 is pivotally mounted in the housing on a pin 69, the latter having one end mounted in an opening of the plate 66 and its other end mounted in an opening in the opposite mating casting part. Tilt head 68 has a semi-cylindrical portion 70 having a cylindrical surface 71 corresponding to the cylindrical surfaces 67'. The tilt head also is provided with a lower portion 72 which is generally of semi-cylindrical shape. The upper part of the tilt head is provided with an extension 73 within which is mounted the lower end of the hollow mast 4' of the umbrella, the latter having a tapered lower end fitting into a similarly shaped socket formed in the extension 73. The tilt head 68 is provided with a central slot on its underside extending up to a point above the trunnion pin 69 and in this slot is disposed a segment of a worm gear 75. This segment is fastened to the tilt head in any suitable manner as, for example, by means of pins 76 and is mounted upon the tilt head so as to have the worm gear teeth 75' of the gear concentric with the axis of the pin 69. In the particular embodiment shown the tilt head 68 is journaled upon the pin 69 through the medium of a bearing sleeve 77, the worm gear 75 having an opening therethrough accommodating the bearing sleeve 77. The lower part of the casting 65 is provided with a recess 78 therein for the accommodation of a worm 79 meshing with the worm gear 75. This worm 79 is carried by a shaft 80 which is suitably journaled in the casting structure by means of bearing sleeves 81 and 82. A manually operated handle 83 is suitably fastened to the outer projecting end of the shaft 80 for the manual tilting of the umbrella. By the construction and arrangement shown the tilt head is adjustable through an angle approximating 80°, clearances being provided in the upper part of the casting structure 65 to permit this adjustment and shoulder stops 84 being provided on the interior of the casting 65 to engage the shoulders 85 formed on the tilt head for limiting the tilting angle.

The lifting mechanism and mount comprises a frame 61 suitably fastened or clamped to the hollow mast 4' and this frame comprises two members 91 extending outwardly laterally of the mast 4'. In these frame members is journaled a shaft 92 having keyed thereto a sprocket 93 with the latter held centrally between the frame members 91 by means of spacing sleeves 94, 94'. The sprocket projects through a slot 95 formed in the mast 4'. In the particular embodiment shown the frame 61 is formed into two parts with a bolt 96 fastening the two parts together on one side of the mast 4' and with bolts 97 fastening the two frame parts together on the other side.

The shaft 92 has a lock nut 98 secured to an overhanging end of the shaft with a washer 99 disposed on the inside. This nut carries a pair of locking pins 100 on the opposite sides for a purpose below described. This overhanging end of the shaft is provided with an enlarged end 92' having a slot 101 therein for the reception of an adjusting tool or instrument. The shaft 92 overhangs the frame on the other end and carries on the extension a ratchet wheel 103 keyed thereto. A pawl 104 is pivotally fastened to the frame by means of a shoulder screw 105. One side of the frame is provided with a pair of projections 106 and 107 and a cover 108 fits over these projections 106 and 107 and is suitably fastened thereto, as by snapping detents 109' into corresponding recesses in the projections 106 and 107. This cover houses the sprocket wheel 103 and is provided with a cut-away portion 109 for accommodating the pawl 104. The pawl 104 is similar to pawl 56 of Fig. 5.

A sprocket chain 110 passes around the sprocket wheel 93 and another sprocket wheel 111 journaled on a shaft 111' which is mounted in a frame member 112 generally similar to the frame 61. This frame 112 is mounted just above the uppermost position of the sliding collar 11' and may be mounted upon the hollow mast 4' in any suitable manner. The sprocket 111 is journaled in the frame 112 so as to have the periphery thereof on one side project to a point inside the mast 4', a slot being provided in the side of the latter to permit this projection. Thus a part of the sprocket chain 110 extends through the hollow mast 4' and the other part is disposed on the outside thereof. The part disposed on the outside is fastened to the sliding sleeve 11' as indicated at 113, the fastening being directed to a lug 114 welded or otherwise suitably fastened to the sleeve 11'. Spacing sleeves 94 and 94' maintain the sprocket 111 in a central position.

By rotating the shaft 92 and its sprocket 93 the umbrella may be raised and lowered. I have illustrated in Figs. 11 and 12 a small actuating tool for application to the end 92' of the shaft for rotating the same. This comprises an elongated tubular casing 120 having an enlarged outer end 121 for grasping by the hand during locking, the latter being knurled on its outside as indicated at 122. A spindle or crank shaft 123 is journaled in the outer end of the shaft part 121 by means of a bearing 124 and a bushing 125 is indicated for centering the spindle 123 in the tube. The bearings 124 and 125 are fastened by means of the punch indents 126 and 127. The spindle 123 is provided with a flattened end 123' for entering the slot 101 in the end of the shaft 92 and thereby coupling the spindle 123 with the shaft 92. The tube 120 extends beyond the end of the shaft or spindle 123 and is adapted to slip easily over the lock nut 98. The inner end of the tube 120 is provided with T slots 128 disposed at 180° from each other which are adapted to

accommodate the pins 100 whereby the tool may be locked to the shaft 92 during lifting operation. The spindle 123 projects beyond the tube and carries a handle 129 and the end of the spindle 123 carries a crank arm 130 having a knob 131 fastened to the outer end thereof.

For raising the umbrella the operator inserts the tube 120 over the lock nut 93 with the pins 100 entering the T slots 128 and by rotating the tube 121 to bring the pins into the circumferential slots and at the same time coupling the spindle 123 with the shaft 92 the umbrella may be raised by rotating the spindle 123. In the particular embodiment shown the frame 61 is locked to the mast 4' by means of pins or projections 132. The umbrella may be lowered by releasing the pawl 104 to permit lowering by gravity, assisted if desired by the hand tool 120.

At 135 I have illustrated a cover suitably fastened to one of the frame members 36 (Fig. 6) for housing the sprocket 55 and the pawl 56.

Thus both embodiments of the invention comprise a miniature housing for the umbrella tilting mechanism which is mounted upon a swivel support with the hollow umbrella mast or pole being pivotally mounted upon the housing and carrying a lifting or raising mechanism immediately above the housing and the invention is further characterized by the simple and effective operating and controlling structures above described and shown in the drawings.

I claim:

1. In an umbrella, a hollow mast, a collar slidably mounted on said mast to which collar the stays of the umbrella are secured, movement of the collar in an upward direction effecting raising of the umbrella and in a downward direction effecting lowering of the umbrella, a frame on said mast, a manually operated shaft journaled in said frame, a reel keyed to said shaft and extending through a slot formed in the mast, a guide roller on said hollow mast with its periphery projecting through a slot in the hollow mast, said guide roller being disposed at a point just above the uppermost position to which the collar is moved to raise the umbrella, and a tape having one end fastened to said reel and windable and unwindable thereabout, passing upwardly within the mast over the guide roller and having its other end fastened to said collar.

2. In an umbrella, a hollow mast, a collar slidably mounted on said mast, to which collar the stays of the umbrella are secured, movement of the collar in an upward direction effecting raising of the umbrella and in a downward direction effecting lowering of the umbrella, a frame surrounding said mast and anchored thereto, said frame having a laterally projecting portion, a manually operated shaft journaled in said laterally projecting portion, a reel keyed to said shaft and extending through a slot formed in the mast, a second frame surrounding said mast and anchored thereto, said second frame having a laterally projecting portion, a guide roller journaled in said laterally projecting portion of said second frame and projecting through a slot formed in the mast, and a tape having one end fastened to said reel and windable and unwindable thereabout, passing upwardly within the mast over the guide roller and fastened at its other end to said collar.

HUMBERTO PEREIRA.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
32,861	Davis	July 23, 1861
465,084	Kaufert	Dec. 15, 1891
645,704	Downs	Mar. 20, 1900
892,698	Whinnery	July 7, 1908
2,183,833	Farhar	Dec. 19, 1939
2,224,882	Peck	Dec. 17, 1940

FOREIGN PATENTS

Number	Country	Date
30,410	Sweden	Mar. 4, 1911
50,718	Austria	Nov. 10, 1911
54,578	Switzerland	Nov. 21, 1910
128,258	Austria	May 25, 1932