

July 28, 1964

T. T. DANCIART ETAL
TILTING UMBRELLA ASSEMBLY

3,142,307

Filed Aug. 9, 1960

2 Sheets-Sheet 1

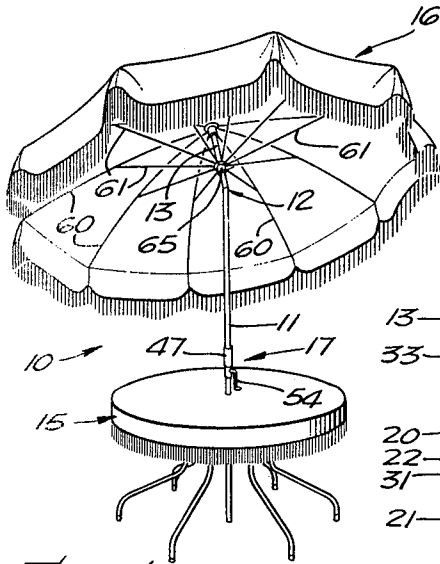


FIG. 1.

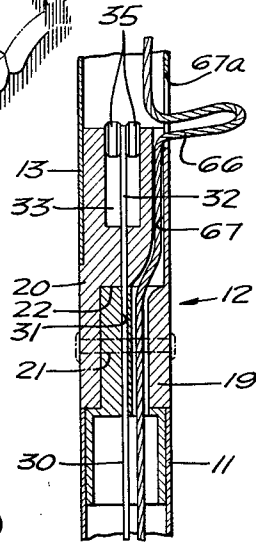


FIG. 10.

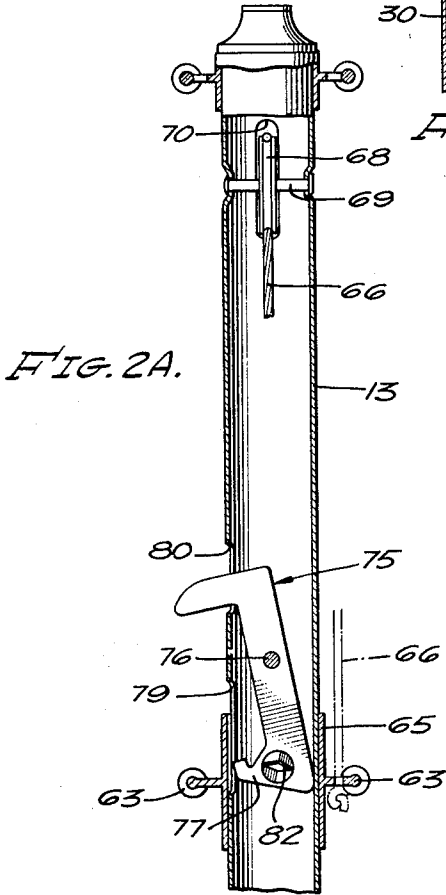


FIG. 2A.

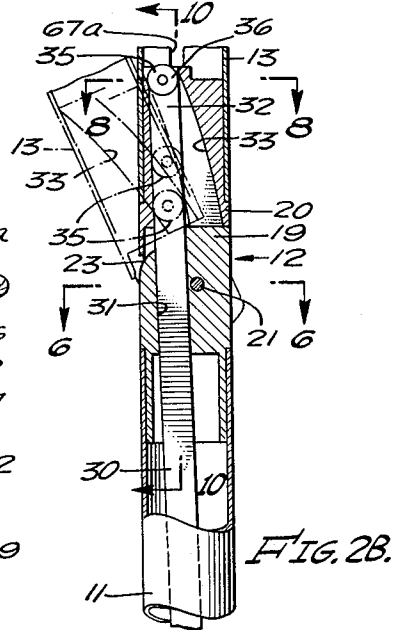
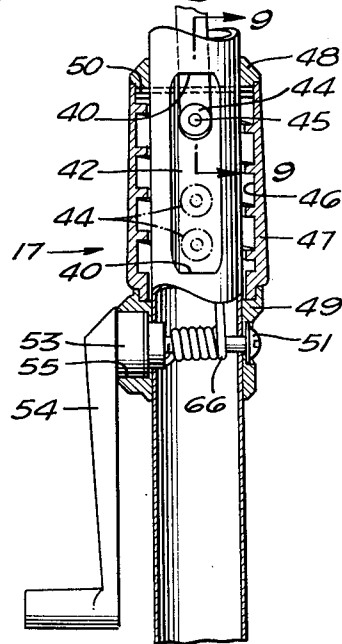


FIG. 2B.



TED T. DANCIART
DAVID DUNDER
INVENTORS.

BY *[Signature]*
ATTORNEYS

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2 Sheets-Sheet 2

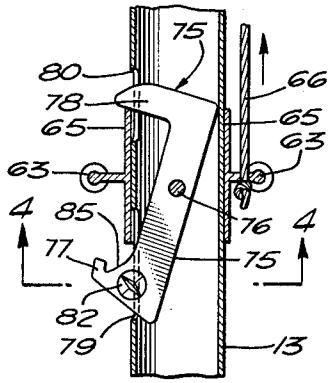


FIG. 3.

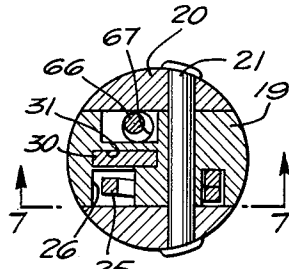


FIG. 6.

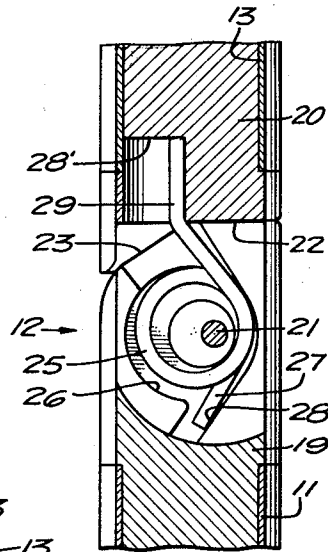


FIG. 7.

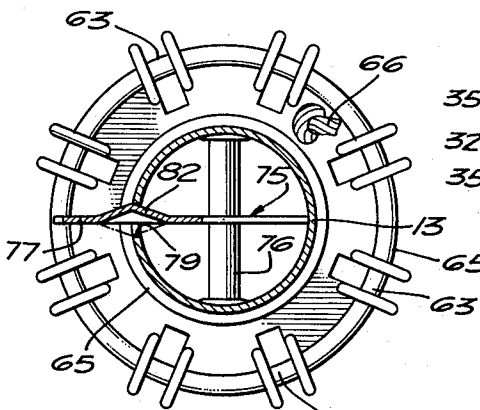


FIG. 4.

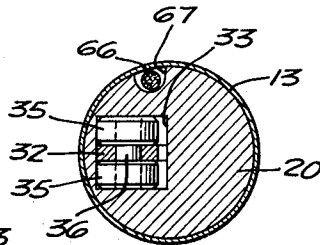


FIG. 8.

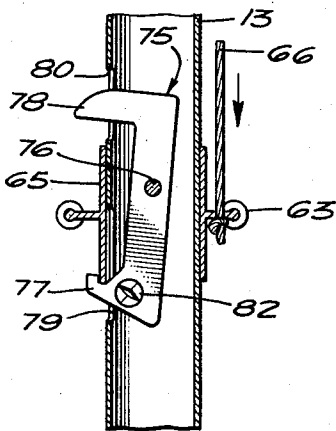


FIG. 5.

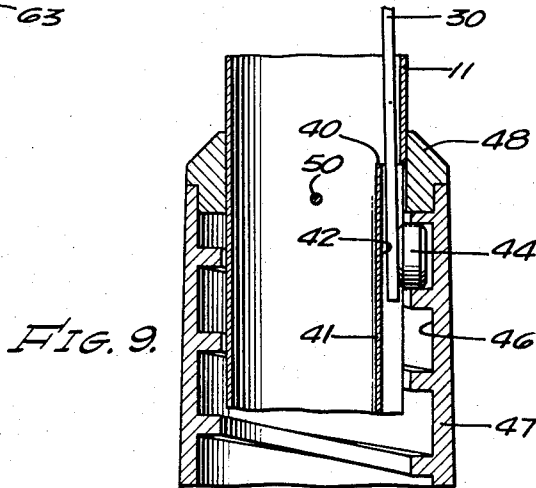


FIG. 9.

TED T. DANCART
DAVID DUNDER
INVENTORS

BY 
ATTORNEY

3,142,307

TILTING UMBRELLA ASSEMBLY

Ted T. Danciar, Arcadia, and David Dunder, Glendora, Calif., assignors to Calpatio Co., Monrovia, Calif., a corporation of California

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17 Claims. (Cl. 135—20)

This invention relates to umbrellas and more particularly to an improved jumbo-size umbrella of the type commonly used as a sunshade on beaches, in patios and the like recreational areas and featuring a simplified, more rugged and reliable design arranged for the controlled tilting of the canopy and embodying improved means for raising and lowering the canopy featuring an automatically releasable latch.

Although the features of the present invention have applicability to other and smaller types of umbrellas, they are particularly suitable for jumbo-type sunshade umbrellas frequently supported centrally of an outdoor-type table or in other suitable stationary supports and providing for limited tilting adjustment of the canopy. Numerous designs having these same general objectives have been proposed heretofore but all are subject to numerous disadvantages and shortcomings sought to be obviated by the present invention. The problem is complicated by the size of the canopy and its sensitivity to shifting air currents, particularly in the more extreme tilted positions. Desirably, the size and weight of the staff should be kept to a minimum and the adjustable pivot connection between the upper and lower sections of the staff should be compact yet strong and rugged. It is further desirable that the construction incorporate counterbalancing means minimizing the load on the adjustable pivot connection and on the actuator of the tilt control.

It is also desirable that the assembly embody a concealed means for raising and lowering the canopy including a simple, trouble-free operator having an easily manipulated control accessible at the lower end of the staff.

The tilt control should embody a minimum number of parts so designed as not to be subjected to excessive loading in any tilt position of the canopy and automatically self-locking in any adjusted position of the canopy thereby avoiding any possibility of hazard to the user or damage to the assembly. It is also desirable that the upper section of the staff be relatively short to minimize shifting of the shaded areas and lowering of the canopy rim when adjusting the tilt of the canopy. These requirements necessitate a joint construction between the staff sections permitting the canopy operating sleeve to be shifted back and forth thereover without objectionable interference from the joint parts.

Accordingly, it is a primary object of the present invention to provide an improved more reliable, more rugged, and more easily operated umbrella of the type having an adjustable tilting canopy.

Another object of the invention is the provision of an umbrella staff assembly of the adjustable tilt-type having an improved actuator which is fool proof and self-locking in any adjusted position yet readily adjustable in either direction at the user's option.

Another object of the invention is the provision of an adjustable tilt umbrella staff utilizing an axially shiftable actuator free of pivoting connections with either staff section and concealed within the staff in all adjusted positions thereof.

Another object of the invention is the provision of an adjustable tilt umbrella staff having a controlling actuator concealed within the staff and permitting the canopy sleeve to move freely over the joint interconnecting the two staff sections.

Another object of the invention is the provision of an

actuating control for an adjustable tilt umbrella staff having an operating sleeve for the actuator which is self-locking in all adjusted positions.

Another object of the invention is the provision of an improved automatic latch mechanism for holding the canopy extended and operable upon successive movements of the canopy to its fully extended position to move the latch to latching position and on the first extension movement to latch releasing position on the next extension movement of the canopy.

Another object of the invention is the provision of a tiltable umbrella staff construction incorporating concealed cabling for raising the canopy which cabling is arranged for convenient replacement when worn without need for disassembling the staff components.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawings to which they relate.

Referring now to the drawings in which a preferred embodiment of the invention is illustrated:

FIGURE 1 is a general view in perspective of an umbrella incorporating the features of the present invention while typically supported centrally of a table;

FIGURE 2a is an enlarged longitudinal sectional view through the upper end of the staff section;

FIGURE 2b is a similar section through the pivoted connection between the staff section and including a broken-away view through parts of the actuator control;

FIGURE 3 is a fragmentary sectional view through the automatic canopy latch showing the position of the parts during the first upward movement of the canopy sleeve;

FIGURE 4 is a cross-sectional view on an enlarged scale taken along line 4—4 on FIGURE 3;

FIGURE 5 is a view similar to FIGURE 3 but showing the position of the parts with the canopy latched in open position;

FIGURE 6 is a cross-sectional view on a slightly enlarged scale taken along line 6—6 on FIGURE 2b;

FIGURE 7 is a fragmentary view on an enlarged scale taken along line 7—7 on FIGURE 6;

FIGURE 8 is a cross-sectional view on a slightly enlarged scale taken along line 8—8 on FIGURE 2b;

FIGURE 9 is a fragmentary sectional view on an enlarged scale taken along line 9—9 on FIGURE 2b; and

FIGURE 10 is a fragmentary sectional view along line 10—10 on FIGURE 2b showing details of the provisions for replacing the canopy cabling.

Referring first to FIGURE 1, there is shown an umbrella assembly designated generally 10 incorporating the features of the present invention and including a staff having a lower tubular section 11 pivotally connected at 12 to an upper staff section 13. This two-section staff is shown as supported vertically through a central opening in an outdoor-type table 15. Suitably mounted in the usual manner at the upper end of staff section 13 is a canopy 16. Control means for adjusting the tilt of the two staff sections and for raising and lowering the canopy are located on lower staff section 11 at a convenient operating height and designated generally 17. The constructional details of this control will be described presently.

Referring now to FIGURES 2a and 2b, it will be understood that staff sections 11 and 13 are preferably constructed of the same size and gauge of lightweight tubing as, for example, stainless steel or aluminum, lower section 11 being appreciably longer than the short upper section 13. These sections are pivotable through a limited angular range under the control of a hinge connection 12 formed in two parts 19 and 20 from solid metal pivotally connected together through their interleaved parts by a transverse hinge pin 21. Note that each

hinge member 19 and 20 includes oppositely facing reduced shank portions having a snug telescopic fit within the adjacent facing ends of staff sections 11 and 13, respectively.

The lower end 22 of hinge section 20 has a flat face lying at right angles to the axis of the staff, whereas lower hinge section 19 has one corner 23 of its end face cut away, as is best illustrated in FIGURE 7, to lie at an angle to the axis of the staff. The angular relationships of surfaces 22 and 23 in the aligned position of the staff sections represent the angle of permissible tilt of the two sections, it being understood that surface 23 provides a limited stop determinative of the maximum tilted position of canopy.

An important feature of the construction is the provision of counter balancing means normally urging the upper staff section 13 to its upright position without imposing any appreciable load on the means for adjusting and controlling the tilted position of the canopy. This counter balancing means is best shown in FIGURE 7 and comprises a very stiff high-strength torsion spring 25 seated in a generally circular cavity 26 formed in hinge section 19 in the area encircling pivot pin 21. Lower end 27 of spring 25 extends into an anchorage well 28 formed in hinge section 19 whereas the upper end 29 of spring 25 extends into an anchorage well 28' of hinge section 20. It is to be understood that spring 25 is sufficiently strong to hold the canopy and its supporting staff section 13 firmly in an upright position to resist tilting of the canopy to the left as viewed in FIGURE 7. Of course, in its tilted position the unbalanced weight of canopy will be the principal load resisted by the spring and some of this load may be carried by the adjusting actuator and its control means. However, it is desirable that the load imposed on the actuator and its control be kept to a minimum.

Control of the canopy tilt is achieved by means of an elongated rigid actuator 30 here shown as being of rectangular cross-section. Actuator 30 is slidably supported in a rather close fitting passageway 31 extending generally axially through hinge section 19 closely beside hinge pin 21 in the manner clearly shown in FIGURE 2b. Upper end 32 of actuator 30 projects into an arcuate cam passageway 33 formed in hinge section 20, there being a pair of disc-type rollers 35 held assembled by pin 36 to upper end 32. The opposed parallel side walls of cam passageway 33 are accurately formed in order that the diametrically opposed rims of rollers 35 will have a close rolling contact with the side walls of this passageway.

Owing to the angular relationship of groove way or passageway 33 relative to the longitudinal actuator 30, it will be apparent that reciprocal movement of actuator 30 lengthwise of control passageway 31 in hinge section 19 will effect the controlled pivotal movement of upper staff tube 13 and of the canopy supported thereby. For example, in the full line showing of the parts in FIGURE 2b, rollers 35 are at the upper end of camway 33 wherein they are effective to hold tube 13 aligned with lower tube 11. However, when actuator 30 is shifted to the lowermost dot-and-dash position depicted in FIGURE 2b, rollers 35 are then at the lower end of camway 33 and tube 13 is then constrained to occupy a position inclined to the left as is indicated by the dot-and-dash showing in FIGURE 2b. Intermediate tilted positions are accomplished by adjusting actuator 30 and rollers 35 to intermediate positions along passageway 33.

It is to be understood that rollers 35 operate along a pair of similar facing passageways 33 located to either side of the upper end 32 of the actuator. The portions of upper hinge section 20 lying between arcuate passageways 33 are cut away or notched sufficiently to permit the unobstructed edgewise movement of upper end 32 of the actuator for reasons which will be readily understood.

Referring again to FIGURE 2b and FIGURE 9, it is pointed out that the lower end of actuator 30 projects through a slit formed transversely of the side wall of tubing section 11. Preferably there are a pair of parallel slits 40 spaced longitudinally of staff section 11 in order that the intervening portion 41 of the staff may be displaced inwardly sufficiently to form a support and guide-way 42 for the lower end of actuator 30. If desired, actuator 30 may be sufficiently long to project past both slits 40, 40 in all operating positions of the actuator. However, if desired the actuator may terminate short of the lower slit 40 as it does in the showing of FIGURES 2b and 9.

Rotatably supported on the outer face of actuator 30, as by a shouldered rivet 45, is a roller 44. This roller projects into and is seated between the side walls of a helical groove 46 of rectangular cross-section formed in the inner side wall of a control sleeve 47 journaled in upper and lower collars 48, 49. Collar 48 is held assembled to tube 11 by a pin 50. Lower collar 49 is held in assembled position by a screw 51 extending transversely of the tube and into the hub 53 of an operating crank 54. Hub 53 is journaled in a well 55 formed in one side of collar 49.

As will be readily apparent from FIGURES 2b and 9, the rotation of sleeve 47 within its supporting journal collars 48, 49 will be effective through cam roller 44 to shift actuator 30 axially of itself in a direction depending upon the direction of rotation of sleeve 47. Owing to the pitch of helical groove 46, axial loads acting on actuator 30 are absolutely ineffective to rotate sleeve 47 with the result that the actuator remains locked in any adjusted position until sleeve 47 is deliberately rotated.

The canopy is arranged to be opened and closed by means which will now be described. In accordance with customary practice, canopy 16 includes the usual radial ribs 60 arranged to be supported by radial struts 61 having one end connected to a midportion of the ribs and their inner ends pivotally connected at 63 to a ring encircling a canopy sleeve 65 of generally conventional construction and freely slidable along the umbrella staff between a canopy-folded position wherein the sleeve is located below hinge connection 12 and to a position thereabove when the canopy is open.

The means for effecting the opening movement of the canopy and for controlling the latching and unlatching thereof comprises a flexible cable 66 having one end encircling and fixed to the shank of screw 51 (FIGURE 2b). This cable extends through aligned passageways 67 formed in hinge portions 19, 20, past an elongated cabling threading slot 67a (FIGURE 10) in upper staff section 13, and over a pulley 68 supported by a pin 69 at the upper end of staff section 13. After passing over pulley 68, cable 66 passes through an elongated opening 70 (FIGURE 2a) formed in the side wall of tube 13 and downwardly along this tube to a point of connection with canopy sleeve 65.

From the foregoing, it will be apparent that rotation of crank 54 in one direction is effective to reel cable 66 about the shank of screw 71 to tension the same thereby elevating canopy sleeve 65 along the umbrella staff to open the canopy. Likewise, rotation of crank 54 in the other direction unwinds the cable permitting the weight of the canopy to collapse downwardly toward the staff.

A feature of the invention is the provision of an automatic latch designated 75 pivotally supported by a pivot pin 76 in upper staff section 13. Latch member 75 is of C-shape as viewed from the side, its lower end including a latch detent leg 77 and its upper end including a control detent leg 78 having an important function, as will be described. Latch detent 78 projects through elongated openings 79 and 80, respectively, formed thereopposite in the side wall of tube 13.

An important feature of latch member 77 is the provi-

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sion of a cammed projection 82 pressed outwardly therefrom. The pinnacle of projection 82 is designed to frictionally engage the side wall of opening 79 in the manner best shown in FIGURES 3 and 4 for the purpose of holding latch 77 rotated to the position shown in FIG- 5
URES 3 and 4 under certain operating conditions.

It will be understood that latching member 75 is so supported on pin 76 as to be counter balanced counter-clockwise as viewed in FIGURES 2a, 3 and 5 to its fully retracted position shown in FIGURE 2. In this position 10
latch 77 proper is located entirely inside tube 13 and projection 78 of the latch member then projects to its maximum extended position with respect to opening 80. Although gravity is relied upon to pivot the latch member to its retracted position shown in FIGURE 2a, it will 15
be understood that a light spring may be utilized for this purpose, it being pointed out that in this case the strength of the spring should be less than the frictional force acting between projection 82 and the edge of opening 79 thereby providing assurance that this frictional engage- 20
ment will be sufficient to hold the latch in its extended position shown in FIGURE 3 despite the action of the referred to spring.

The manner in which the described automatic latch operates to first latch and then to release the canopy sleeve 65 on successive tensioning operations of cable 65 will now be described. First, let it be assumed that the canopy is folded against the staff in which event canopy sleeve 65 will encircle lower staff section 11 at some point below pivot connection 12. Also under these conditions latch member 77 will occupy the position shown in FIG- 30
URE 2a.

To latch the canopy in its raised positions, the operator rotates crank 54 in a direction to tension cable 66 and to elevate canopy sleeve 65 upwardly past joint 12 and past the retracted detent 77 of latch member 75. As the sleeve advances upwardly still further, its upper end engages projection 78 to pivot latch member 75 clockwise. Slight additional raising of sleeve 65 will place the parts in the position shown in FIGURE 3 where- 40
in latch member 75 is forcibly pivoted clockwise until projection 82 frictionally engages the edge of opening 79. The latch member is now resiliently retained in this position with latch detent 77 underlying the lower edge of canopy sleeve 65. The operator then reverses crank 54 to relax the tension on cabling 66 and allowing sleeve 65 to lower and engage cammed edge 85 (FIGURE 3) of the latch member and forcibly rotate the latch counter-clockwise forcing projection 82 out of engagement with opening 79. Sleeve 65 is now positively latched in the 50
position shown in FIGURE 5.

To unlatch the canopy, the operator again tensions cable 66 by crank 54 raising canopy sleeve 65 by the slight amount necessary to release the latch whereupon latch member 75 rotates by gravity action to its retracted position shown in FIGURE 2a. In releasing the latch, care is exercised not to raise the canopy sufficiently for sleeve 65 to again rotate the latching member to the FIGURE 3 position. Once release of the latch has been effected, the operator releases the tension on the cable and the canopy collapses in the usual manner. Folding of the canopy is, of course, always accomplished while the staff is adjusted to its upright position. 60

Tilting adjustment of the canopy is effected simply by rotating control sleeve 47 in the appropriate direction and by the amount required to achieve the desired angle of tilt. Rotation of sleeve 47 shifts actuator 36 upwardly or downwardly along the guideways provided at the opposite ends of the actuator. This action causes the cam rollers 35 to move along the arcuate camways 33, this movement cooperating with the resilient action of counterbalance spring 25 to effect the angular adjustment of the canopy to the position desired. 70

It sometimes happens that cabling 66 becomes worn or frayed and needs servicing or replacement. This can 75

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be accomplished easily and without need for disassembling the staff or the tiltable hinge unit 12. Original cabling 66 is first disconnected from the operating crank 54 by removing screw 51 thereby permitting the cable to be pulled outwardly over pulley 68 at the top of the staff. If a new cable is indicated, a suitable slim bodied weight is attached to one end and this end is then fed through slot 70 and over pulley 68. This weight, preferably of heavy but flexible material, pulls the cable end downwardly through the staff. Threading slot 67a enables the installer to guide the end into the upper end of passages 67. To facilitate this operation, the installer may prefer to pull a loop of the cable outwardly through slot 67a although the use of a suitable weight avoids the need for the loop. Once the cabling end passes below the opening for crank 54, it can be pulled outwardly through the larger journal for the crank and anchored to the crank hub. The crank is then reassembled and the outer end of the cabling is cut to length and secured to canopy sleeve 65.

While the particular tilting umbrella assembly herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

We claim:

1. A non-hand held type umbrella assembly having a staff formed in upper and lower tubular sections arranged end-to-end and hingedly connected near their adjacent ends, the lower end of the upper staff section having elongated camming means concealed interiorly thereof and extending at an angle to the axis of said upper staff section, elongated rigid means slidably supported within the upper end of the lower staff section with its upper end movable along said camming means and cooperating therewith to control the tilt angle of said upper staff section relative to the lower staff section and manually operable means carried by said lower staff section for controlling movement of said rigid means in either direction axially thereof to control the angle of tilt of said upper section relative to said lower section.

2. An umbrella assembly as defined in claim 1 characterized in the provision of counterbalanced spring means concealed within said staff and operatively associated with said hinge connection, said spring means being positioned laterally to one side of said elongated rigid means with one portion thereof anchored to said upper staff section and another portion thereof anchored to said lower staff section.

3. An umbrella assembly as defined in claim 1 characterized in the provision of a torsion type counterbalance spring concealed within said staff and positioned laterally to one side of said elongated rigid means, the main body of said spring having an annular main body encircling the axis of said hinged connection with one end thereof anchored in the adjacent end of said upper staff section and its other end anchored in the adjacent end of said lower staff section.

4. An umbrella assembly as defined in claim 1 characterized in the provision of means slidably supporting the lower end of said elongated rigid means on the exterior side of the juxtaposed portion of said lower staff section, said means for controlling the position of said rigid means including manually operable means normally concealing the lower end of said rigid means and having an operating connection therewith effective to shift said rigid means axially of said staff.

5. An umbrella as defined in claim 4 characterized in that said manually operable means includes a sleeve concentric with said staff having an inwardly opening helical groove engaged over roller means mounted on that portion

of the lower end of said elongated rigid means located on the exterior of said lower staff section.

6. An umbrella staff comprising a pair of tubular sections arranged end-to-end and hinged to pivot about a transverse axis through their adjacent ends, rigid means concealed at all times within said staff slidably supported within the lower one of said sections with its upper end projecting beyond said pivot axis and into arcuate groove-way means carried in the lower end of said upper section, said arcuate groove-way means lying at an angle to the longitudinal axis of the upper section, roller means mounted on the upper end of said rigid means with its diametrically opposed surfaces in rolling contact with the opposed walls of said groove-way, counterbalance means urging said upper tubular section toward axial alignment with the lower one of said tubular sections, and manually operable means movably supported on said lower staff section arranged to drive said rigid means in either axial direction thereby to tilt said staff sections about said pivot axis, said manually operable means being effective to lock said rigid means in any adjusted position until and unless said manual means is deliberately moved by an externally applied force.

7. An umbrella staff assembly as defined in claim 6 characterized in that said upper and lower staff sections have substantially the same external diameters and in that their outer surfaces are substantially co-continuous when the upper section is pivoted to its upright position in axial alignment with the lower section and the pivot connection therebetween being then free of protrusions which would interfere with the free movement therepast of a canopy operating sleeve slidably mounted on said staff, and a collapsible canopy mounted on the upper end of said staff having an operating sleeve embracing said staff and movable therealong between a collapsed position below said staff hinge and an extended position above said staff hinge.

8. An umbrella staff assembly comprising a pair of tubular members, means pivotally connecting the adjacent ends of said members together for limiting pivoted movement between an axially aligned position and a small-angle disaligned position, means concealed within said staff to control said pivoted movement including an elongated rigid member slidably supported in one tubular member with one end projecting axially beyond said pivot connection and generally axially into the other of said members, counterbalance spring means connected between said pair of tubular members independent of said rigid member, means for moving said rigid member axially of itself, and cooperating cam and cam follower means concealed within said staff in all tilted positions of said pair of tubular members and interposed between said other tubular member and the adjacent end of said rigid member for causing said staff members to pivot relative to one another in response to longitudinal movement of said rigid member.

9. An umbrella staff assembly as defined in claim 8 characterized in that a folding canopy is mounted on the free end of one of said staff members, said canopy having an operating sleeve slidable along said staff and connected to said canopy by rib-supporting struts for moving the latter between its folded and extended positions, said sleeve being slidable over the pivot connection between said staff members in the aligned position of said staff members, and means carried by said staff and restricted to pivotal movement relative to said staff for releasably latching said sleeve in position to hold said canopy extended.

10. An umbrella assembly as defined in claim 9 characterized in that said latching means is movable between latching and non-latching positions selectively at the user's option, said latching means including latch releasing means positioned to be engaged by the opening movement of said canopy from its folded position to condition said latching means for latching and non-latching operat-

ing at the user's option and in accordance with raising and lowering movements imparted to said canopy by the operator.

11. An umbrella assembly as defined in claim 10 characterized in the provision of manually controlled means for folding and extending said canopy by movement of said canopy sleeve axially of said staff, said manually controlled means including an operator therefor mounted on the lower portion of said staff and including a cabling connection extending through said staff to said canopy sleeve.

12. An umbrella assembly having a folding canopy mounted on the upper end of a two-section staff the sections of which are arranged in end-to-end relation and controllably and pivotally connected together between these adjacent ends, rigid operating means for said pivotally connected sections which operating means is free of a pivotal connection with either staff section, means providing cam and cam follower operating connections between the upper of said staff sections and the adjacent end of said operating means and including counterbalance spring means having an end connected to each of said staff sections and free of connection with said cam and cam follower means, said canopy including an operating sleeve surrounding and slidable along said staff from a level below to a level above said pivotal connection between said staff sections, and automatically releasable latch means responsive to movement of said operating sleeve and selectively operable at the user's option to latch said sleeve in position for holding said canopy extended.

13. An umbrella assembly as defined in claim 12 characterized in that said automatic canopy latching means includes a latch member movably pivotal about a predetermined fixed point between a latching and a non-latching position relative to said canopy sleeve, means engageable by said sleeve as the latter is moved along said staff to pivot said latch member into latching position, and means for biasing said latch member out of latching position automatically as said canopy sleeve is moved out of latching engagement therewith thereby to permit said canopy to fold against said staff.

14. An umbrella assembly having a folding canopy mounted on one end of a supporting staff, said canopy including an operating sleeve slidable along said staff as said canopy opens and folds, manually operable cabling means carried by said staff and attached to said sleeve for opening said canopy, automatic gravity-actuated latch means movable about a fixed pivot axis and responsive to successive movements of said sleeve vertically toward open canopy position to latch said canopy open and to release said canopy for folding, respectively, the first of said successive movements being effective to pivot said latch means to latching position about the said fixed pivot therefor and the next one of said successive movements being effective to free said latching means for gravity movement about said fixed pivot to a position out of the path of said canopy sleeve, said latching means including means carried thereby and frictionally engageable with the edge of a slot formed in said staff to hold said latching means in latching position between said first and second successive movements of said canopy sleeve.

15. An umbrella assembly as defined in claim 14 characterized in that the pivot axis of said latch means is offset to one side of the center of gravity of said latch means whereby the latter is gravity biased for pivotal movement in a predetermined direction and into the non-latching position thereof upon the elevation of said operating sleeve out of locking engagement with said latch means.

16. In an umbrella staff assembly of the type having a two-section tubular pivotally-connected staff and an actuator housed therewithin for adjusting the angular relations between said staff sections to control the angle of tilt of a canopy mounted on said staff, that improvement which comprises a rigid actuator rod slidably supported

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in one of said staff sections with a lower portion of its length extending through a slot in said staff section and located on the outer side of said section, a roller mounted on said portion outside said staff section, and an operating sleeve concentric with said staff section normally covering the exposed lower end of said activator rod and journaled on said staff section, said sleeve having a helical groove interiorly thereof seating said roller whereby rotation of said sleeve is effective to shift said actuator axially of itself.

17. In a normally rigidly supported umbrella assembly of the adjustable tilting canopy type, said umbrella assembly having an elongated staff provided with a relatively short upper section hingedly connected to the upper end of the longer lower section, and a canopy supported on said upper section; that improvement which comprises manually operable means carried by said staff and manipulatable from the lower section thereof to adjust the angle of tilt of the upper section of said staff relative to the lower section and including elongated rigid means reciprocally supported within said staff, and means housed within and concealed by the lower end of said upper staff

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section and the juxtaposed upper end of said rigid means in all adjusted positions of the canopy for effecting a change in the angle of tilt of said staff sections about the pivot axis of the hinged connection therebetween as said rigid means is shifted axially of said lower staff section, said last-mentioned means being located entirely above the axis of said hinged connection.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,142,307

July 28, 1964

Ted T. Dancart et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 72, after "umbrella" insert -- assembly --; column 8, line 33, strike out "movably".

Signed and sealed this 8th day of December 1964.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents