Jan. 14, 1958 R. J. DEISENROTH ET AL 2,819,725

UMBRELLA

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FIG-1

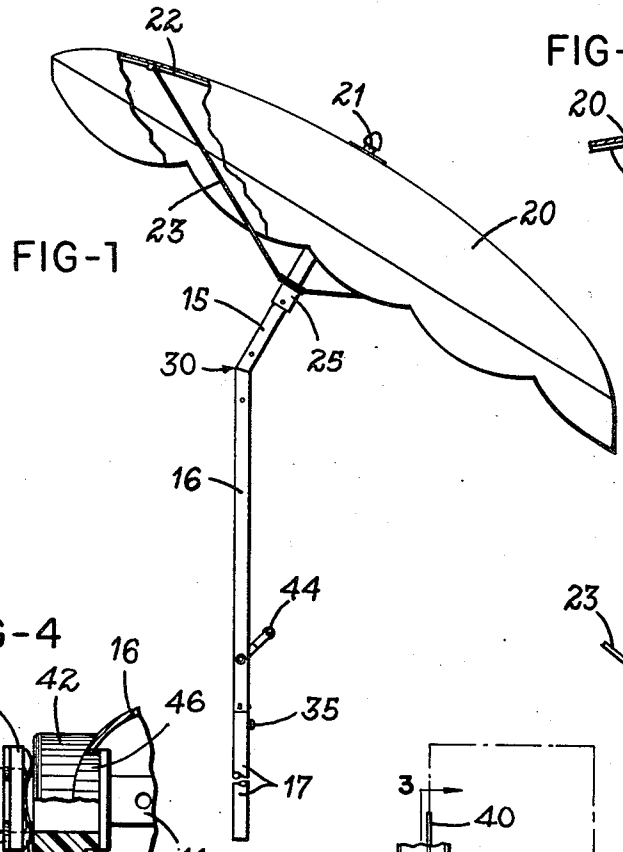


FIG-2

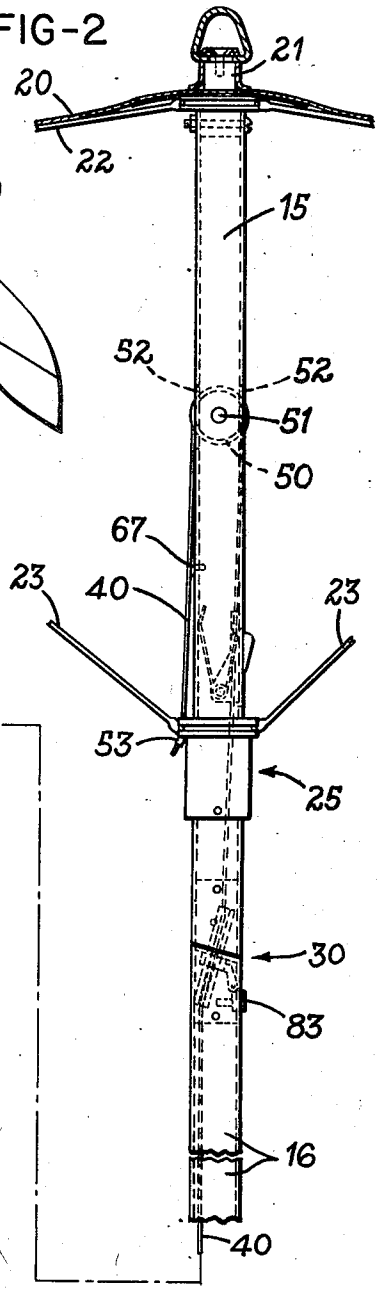
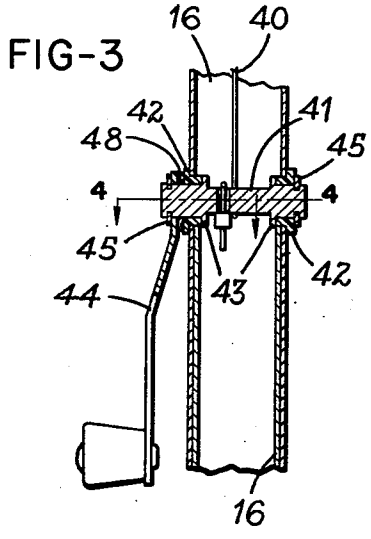
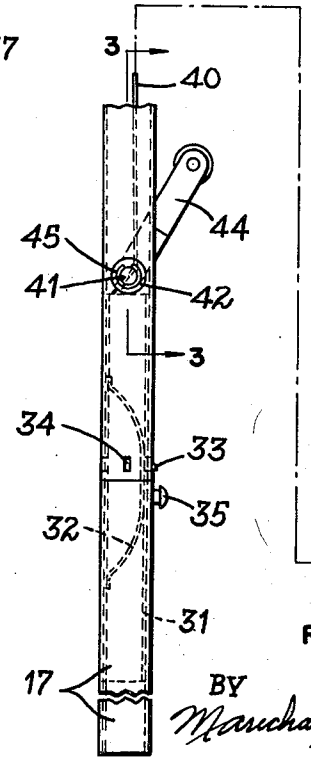


FIG-4

FIG-3





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FIG-5

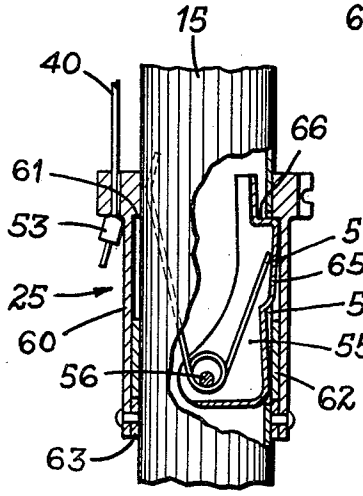


FIG-6

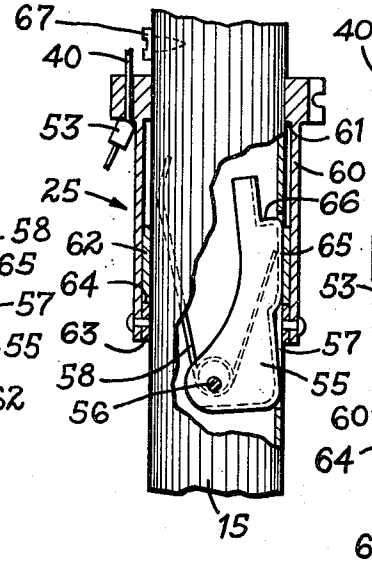


FIG-7

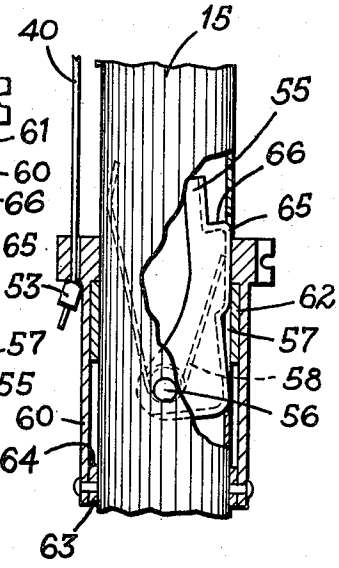


FIG-9

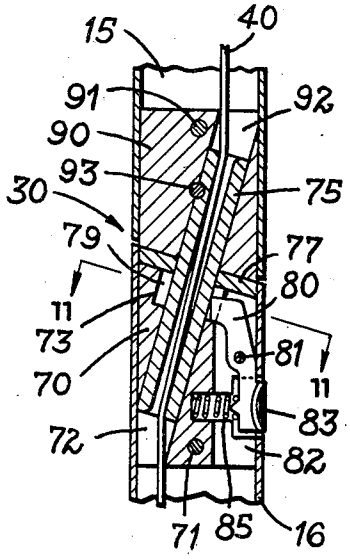


FIG-10

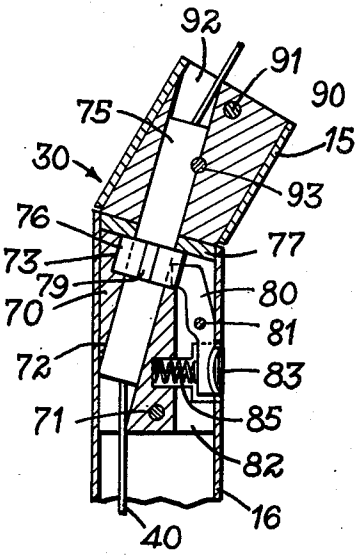


FIG-8

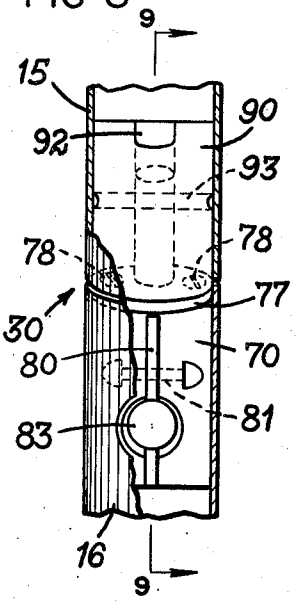
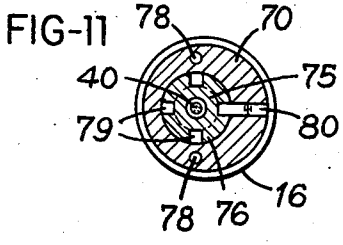


FIG-11



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2,819,725

UMBRELLA

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Application March 19, 1956, Serial No. 572,526

2 Claims. (Cl. 135—20)

This invention relates to umbrellas, and more particularly to umbrellas of comparatively large size such as beach or garden umbrellas and the like.

The invention is especially directed to large umbrellas adapted to be used selectively in vertical position or with the upper part of the standard tilted away from the vertical. These large umbrellas require a substantial amount of force on the part of the user both in raising and in collapsing or lowering the umbrella cover or canopy, particularly the latter since it usually is necessary to raise the runner for release of the catch which commonly holds the runner in its raised position. In addition, the size of such umbrellas is a complicating factor in tilting the standard, particularly if the standard must be returned to the vertical before the cover can be lowered.

It is a primary object of the present invention to provide an umbrella of the above type which is of simple construction and embodies a novel mechanism including a cable and reel for effecting and controlling the raising, latching, releasing and lowering operations on the umbrella cover.

A particular object of the invention is to provide such an umbrella wherein the cover is raised and latched in its raised position in response to simple winding of a reel handle and wherein also the release of the cover for lowering is effected by winding the reel handle a short additional distance in the direction to raise the cover and then allowing the reel to unwind.

Another object of the invention is to provide an umbrella of the tilting type wherein the adjacent ends of the relatively tiltable sections of the standard are beveled with respect to the axes thereof and wherein relative tilting of these standard sections requires simple relative rotation of thin beveled ends.

An additional object of the invention is to provide a tilting umbrella as outlined above wherein the beveled end portions of the sections of the standard are connected by a pivot member extending normally thereof and wherein the tilting movement of these standard sections is accomplished by rotation of the upper section with respect to the lower section on the axis of this pivot member.

It is also an object of the invention to provide a tilting umbrella of the beach or garden type as outlined above wherein the pivot member which connects the relatively tiltable standard sections is hollow and receives therethrough the cable for raising and lowering the umbrella cover or canopy so that the tilting umbrella section can be tilted without affecting the top raising mechanism.

In general, therefore, it is the object of the invention to provide a tiltable umbrella of the beach or garden type which is of simple and economical construction and which requires a minimum amount of skill and effort to raise and lower its cover and to tilt its standard.

Further objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

In the drawings—

Fig. 1 is a view in side elevation, partly broken away,

illustrating an umbrella constructed in accordance with the invention and shown with the cover raised and in tilted position;

Fig. 2 is an enlarged fragmentary view in two parts showing the structure and operation of the umbrella standard;

Fig. 3 is an enlarged fragmentary section taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is a further enlarged fragmentary section taken as indicated by the line 4—4 of Fig. 3;

Fig. 5 is an enlarged fragmentary view partly in side elevation and partly broken away in section illustrating the runner assembly of the umbrella of Figs. 1 and 2 and the cooperating latch for holding the umbrella cover in raised position;

Figs. 6 and 7 are views similar to Fig. 5 showing the operation of the runner assembly during release and lowering of the umbrella cover;

Fig. 8 is an enlarged fragmentary view showing the tilting mechanism which interconnects the upper two sections of the standard of the umbrella of Figs. 1 and 2, the view looking from right to left in Fig. 2 with portions of the standard broken away;

Fig. 9 is a section on the line 9—9 of Fig. 8;

Fig. 10 is a view similar to Fig. 9 but showing the relation of the parts in the tilted position of the umbrella; and

Fig. 11 is a section on the line 11—11 of Fig. 9.

Referring to the drawings, which illustrate a preferred embodiment of the invention, the standard of the umbrella comprises three main sections, namely the upper tube 15, the middle tube 16 and the lower tube 17. The upper end of the upper tube 15 carries the cover or canopy 20, which is mounted thereon by the cap assembly 21 and includes the usual ribs 22 and braces 23 of steel or other suitable material. The lower ends of the braces 23 are connected with the runner assembly 25 which is slidable on the upper portions of the standard.

The upper tube 15 and middle tube 16 are interconnected by a novel tilting mechanism which is identified generally as 30 and is described in detail hereafter in connection with Figs. 8–11. The tubes 16 and 17 are rotatably and releasably connected as shown in Fig. 2. A connecting sleeve 31 is telescoped within the adjacent ends of tubes 16 and 17 and is swaged or otherwise secured to tube 17. A bow shaped spring 32 within the sleeve 31 carries a latch 33 which projects outwardly of the sleeve and is adapted to engage in one of a plurality of slots 34 in the tube 16 to hold these two tubes together against both axial and angular movement. A knob 35 projects through tube 17 and sleeve 31 from the outside for manual depression of spring 32 to release latch 33 for rotational adjustment or disassembly of tubes 16 and 17.

The umbrella top 20 is raised and lowered by means of a cable 40 and a cooperating reel 41 which is journaled transversely within the tube 16 by means of bearings 42, preferred results having been obtained with these bearings formed of molded nylon material or the like and seated against shoulders 43 on the stud which forms the body of reel 41. A hand crank 44 is held on one end of the reel stud 41 by a retaining clip or ring 45, and a similar retaining member 45 is provided on the other end of the reel.

As best seen in Fig. 4, each of the bearings 42 includes a central portion 46 which projects through a complementary hole in the wall of tube 16 and is surrounded by an annular shoulder 47 contoured to fit the outer surface of the tube. This arrangement effectively keys each of the bearings 42 to tube 16 for rotation of the reel stud 41 therein. A compressible wave washer 48 provides a friction clutch or brake action between handle 44 and the adjacent bearing 42 to prevent possible sudden rotation of the handle if the operator let go of

the handle with the top 20 partly raised, and which could injure the operator's hand if the handle were free to rotate rapidly under the spring load of the ribs 22.

The cable 40 is secured at one end to reel 41, and it extends upwardly within the standard through the tilting interconnection 30 and around a pulley 50 which is mounted on a stud 51 extending across the interior of the upper tube 15. The pulley 50 projects through a pair of opposed slots 52 in tube 15, and the cable 40 extends to the outside of the standard through one of these slots 52 and is secured at its outer end to the runner assembly 25 as indicated at 53. Thus as the cable 40 is wound on reel 41 by rotation of handle 44, it will raise the runner assembly 25 to raise and expand the cover 20, and similarly as the runner assembly moves down along the standard to collapse and lower the cover, the cable 40 will unwind from cable 41.

The runner assembly 25 is of a novel construction facilitating retaining thereof in raised position and which also provides for its release and the lowering of the cover 20 without any manual operation except rotation of the reel handle 44. Referring to Figs. 5–7, a stop or catch 55 is pivoted within the upper tube 15 on a pin 56 and includes a nose portion adapted to extend outwardly from within tube 15 through a slot 57. A spring 58 urges the catch outwardly of slot 57 for engagement with the runner assembly 25, and catch 55 may be retracted against spring 58 inwardly of tube 15.

The runner assembly 25 includes an outer sleeve 60 which is of materially larger inner diameter than the tube 15 over its entire inner surface except for a portion at the upper end thereof which provides a downwardly facing annular seat 61. A smaller sleeve 62 is received within the runner sleeve 60 and is slidable with respect thereto and with respect to tube 15, and it is retained within runner sleeve 60 by a ring 63 pinned or otherwise secured within the lower end of sleeve 60 and slidable therewith on tube 15. The sleeve 62 is substantially shorter in an axial direction than the distance between the seat 61 and the similar annular seat 64 formed by the upper end of ring 63, and it normally rests by gravity on seat 64 leaving enough space above it to accommodate the nose portion of catch 65.

With this construction, when the umbrella cover 20 is raised by winding the cable 40 onto the reel 41, the runner assembly 25 will travel upwardly on the standard until its upper end reaches the projecting portion of catch 55. The outer edge 65 of the catch is inclined as shown to provide a cam surface, and the runner sleeve 60 will engage this surface and depress the catch against spring 58 until the seat 61 passes beyond the projecting shoulder 66 on the upper end of the catch 55. At this point, spring 58 will urge the catch outwardly of slot 57 again, causing the shoulder 66 to engage below seat 61, and when the reel handle 44 is released, gravity and the spring action of the ribs 22 will force the runner assembly down until seat 61 engages shoulder 66 and is thus retained with the cover 20 in its raised position.

To lower the umbrella cover, it is merely necessary first to wind the reel handle a short distance in the direction for raising the cover, and this movement is limited by the provision of a stop stud 67 on tube 15 above the level of the catch 55. This action raises the runner assembly above its position of engagement with shoulder 66, and during this movement the seat 64 will raise the sleeve 62 with respect to catch 55. The action of sleeve 62 will then be the same as previously described for the upper end of runner sleeve 60 in that it will engage the cam surface 65 and depress the catch 55 out of its latching position. In addition, the force of spring 58 will cause the catch to hold sleeve 62 frictionally when reel 41 is now permitted to unwind, and instead of dropping within the runner sleeve 60, the sleeve 62 will hold catch 55 depressed until the seat 61 has passed below the level of shoulder 66, as shown in detail in Fig. 7. The seat 61 will therefore not re-engage shoulder 66, and the runner assembly 25 can therefore continue its downward movement along the standard until the cover 20 is fully lowered.

It will therefore be apparent that the construction of the invention as described above reduce to a minimum the effort and the complicity of raising and lowering the umbrella cover. Since all that is required is a simple winding of the reel handle, followed by release thereof at the proper point, it is never necessary for the operator to touch the runner or its catch, and therefore the familiar hazards of pinched fingers and the like from prior art constructions are completely eliminated.

The construction and operation of the tilting connection 30 between the tubes 15 and 16 are shown in detail in Figs. 8–11. The adjacent ends of these tubes are beveled with respect to the tube axes at a relatively small angle shown as 15°. A plug 70 is secured within the upper end of tube 16 by a pin 71 and has its upper end beveled parallel with the beveled end of tube 16. A bore 72 extends through plug 70 at an angle to the axis of tube 16 but normally to the plane of the beveled upper end of the tube 15, and this bore includes a counterbore 73.

A hollow pivot stud 75 is journaled within bore 72, and it includes an enlarged collar portion 76 intermediate its ends which fits within the counterbore 73. An annular retainer plate 77 fits around the upper end of stud 75 and against the upper end of collar 76 and is screwed at 78 to plug 70 to retain stud 75 in bore 72. The collar 76 is provided in its periphery with a plurality of axially extending slots 79, shown as four in number and equally spaced, and these slots are adapted to receive the upper end of a latch 80 which is pivoted by a pin 81 within an elongated axially extending slot 82 in the plug 70. The lower end of latch 80 carries an operating button 83 projecting outwardly through a hole in tube 16, and spring 85 normally urges latch 80 into latching engagement in one of the slots 79.

A plug 90 similar to the plug 70 is secured in the lower end of the tube 15 by a pin 91, and the lower end of plug 90 is beveled parallel with the lower end of tube 15. An inclined bore 92 extends through plug 90 similarly to the bore 72 in plug 70 and receives the projecting upper portion of stud 75 therein. A pin 93 extends transversely through the plug 90 and a portion of stud 75 to secure these parts against both axial and angular movement.

Since the stud 75 is thus secured to plug 90 and the upper tube 15, engagement of the latch 80 in any one of the slots 79 will lock tubes 15 and 16 against angular movement, and Fig. 8 shows the relation of these parts when the umbrella standard is erect. In order to tilt the umbrella, it is merely necessary to release the latch 80 by pressing in on button 83 and then to rotate tube 15 with respect to tube 16 by rotating the pivot stud 75 in bore 72. The two tube sections can therefore shift from the position of alignment shown in Fig. 8 to relative positions of maximum angular displacement determined by the sum of the beveled angles on their respective ends, and this maximum will be 30° in the illustrated position.

The number and location of the slots 79 determine the tilted positions in which the standard can be set. If there are two slots equally spaced in the arrangement shown in Fig. 8, the upper tube 15 can be set vertically or in a 30° tilted position, and if there are four slots as shown in Fig. 10, the upper tube 15 can also be set in either of two 15° tilted positions. In this connection, it is important to note that tilting of the umbrella does not require operation of the mechanism for raising and lowering the umbrella cover, since the pivot stud is hollow and receives the cable 40 freely therethrough.

While the form of apparatus herein described con-

stitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. An umbrella of the character described comprising a standard, a top secured to said standard, a runner slidable upon said standard and connected with said top to raise and lower said top in response to movement of said runner on said standard, a downwardly facing shoulder within the upper end of said runner, a releasable latch carried by said standard and projecting outwardly therefrom for engagement with said shoulder to retain said runner in predetermined position holding said top raised, yieldable means biasing said latch outwardly of said standard, a latch-releasing member mounted within said runner for sliding movement with respect to said shoulder, and means in the lower end of said runner limiting downward movement of said latch-releasing member and effective upon upward movement of said runner above said predetermined position to raise said member into releasing relation with said latch to provide for downward movement of said runner shoulder past said latch for lowering said top.

2. An umbrella of the character described comprising a standard, a top secured to said standard, a runner slidable upon said standard and connected with said top to raise and lower said top in response to movement of said runner on said standard, a downwardly facing shoulder within the upper end of said runner, a releasable latch carried by said standard and projecting outwardly therefrom for engagement with said shoulder to retain said runner in predetermined position holding said top raised, yieldable means biasing said latch outwardly of said standard, said latch having an inwardly inclined cam surface below the shoulder engaging portion thereof, a sleeve mounted within said runner for sliding movement with respect to said shoulder, and means in the lower end of said runner limiting downward movement of said sleeve and effective upon upward movement of said runner above said predetermined position to raise said sleeve into engagement with said cam surface of said latch to depress said latch in released position providing for downward movement of said runner shoulder past said latch for lowering said top.

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