

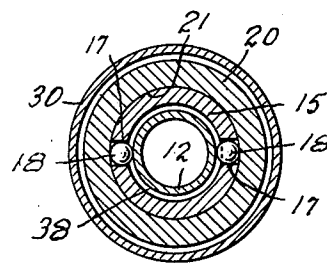
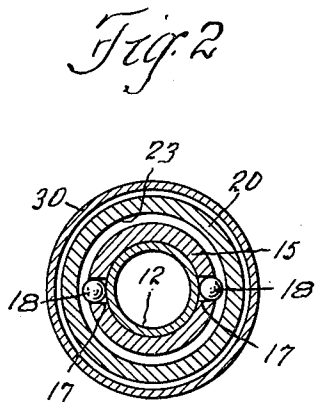
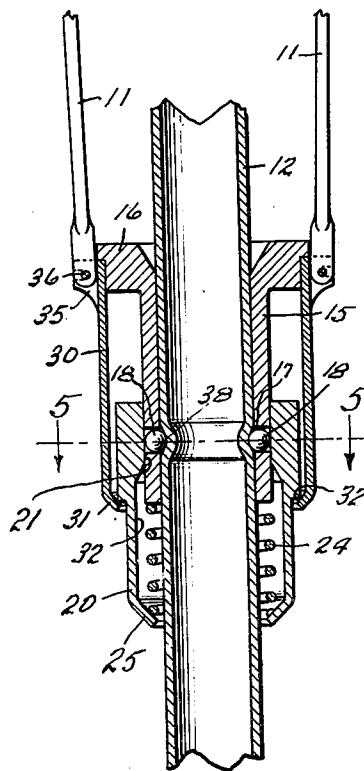
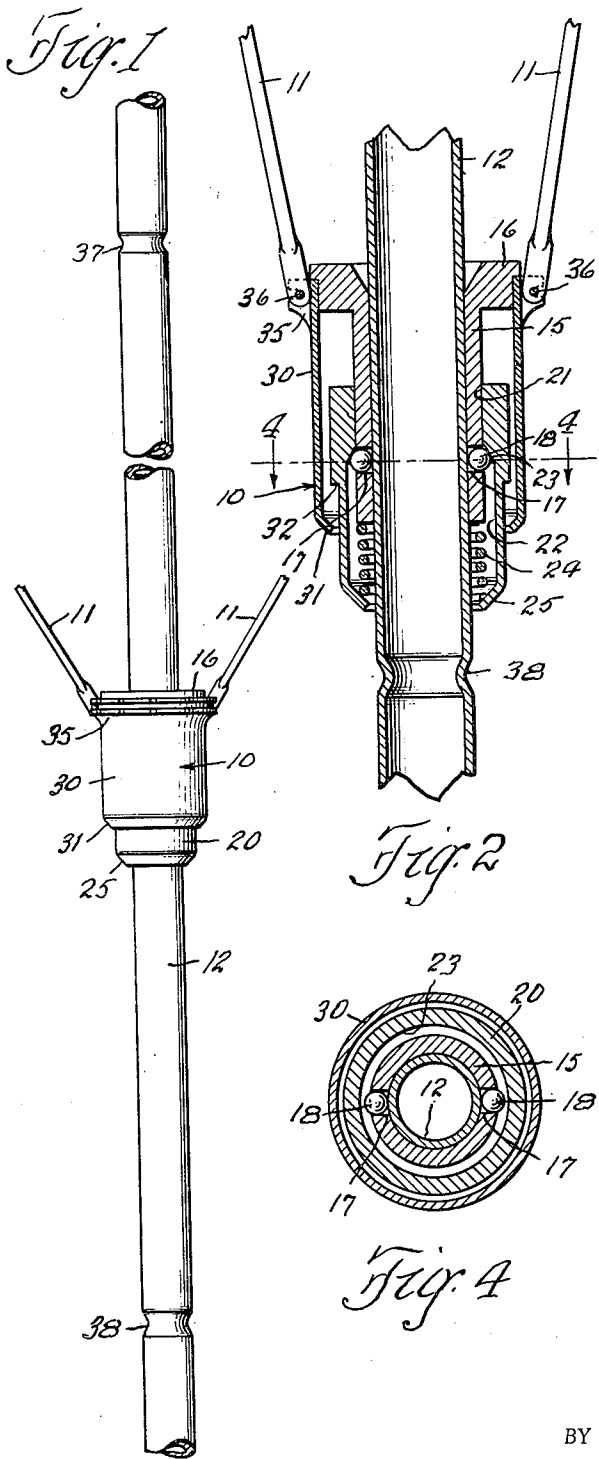
Oct. 31, 1950

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UMBRELLA LOCK

2,528,002

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2 Sheets-Sheet 1



*Fig. 4*

*Fig. 5*

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2 Sheets-Sheet 2

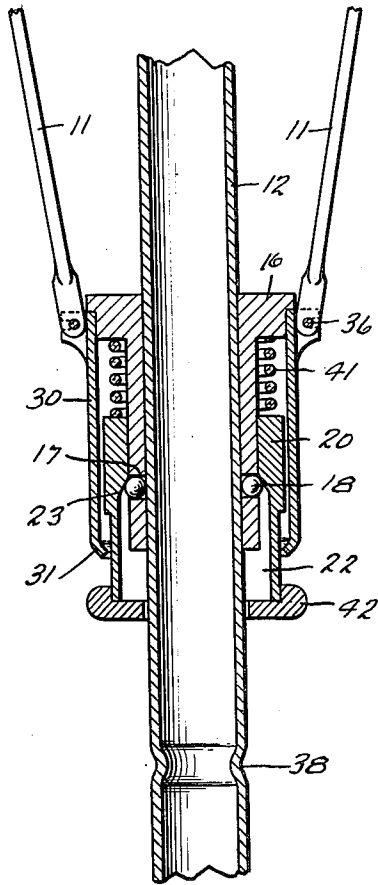


Fig. 6

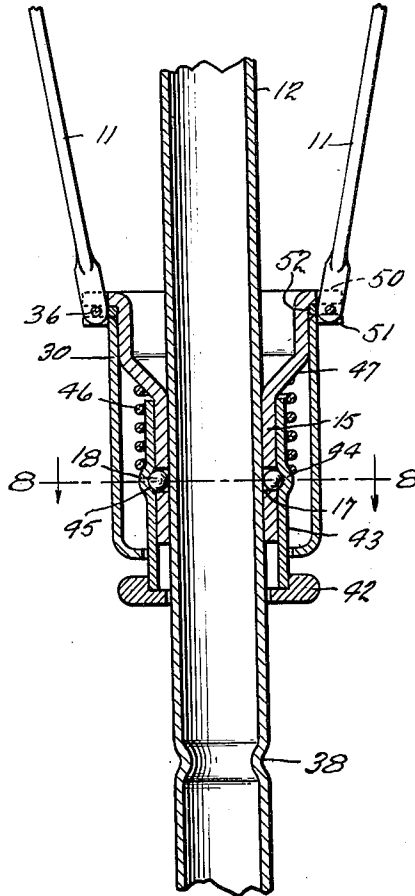


Fig. 7

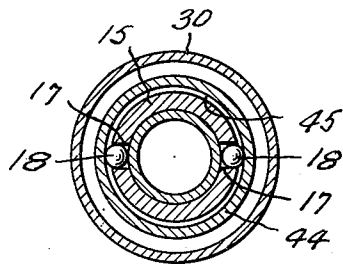


Fig. 8

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# UNITED STATES PATENT OFFICE

2,528,002

## UMBRELLA LOCK

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Application September 26, 1946, Serial No. 699,527

3 Claims. (Cl. 135-39)

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This invention relates to umbrella locks and more particularly to a novel and improved runner and shaft having positive lock means which are automatically actuated to lock the runner in either open or closed position, in combination with a release mechanism which is actuated by a simple movement of the hand.

An object of the invention is to provide an umbrella runner and shaft having novel and improved details of construction and features of operation.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In accordance with the present invention the runner includes locking members such as balls which are normally urged inwardly into recesses formed in the shaft at open and closed positions. When in these recesses the members positively lock the runner against movement. They are released, however, by axial pressure on a spring-pressed sleeve and when released the balls are free to slide on the umbrella shaft between the recesses.

Although the novel features which are believed to be characteristic of this invention are pointed out more particularly in the claims appended hereto, the nature of the invention will be better understood by referring to the following description taken in connection with the accompanying drawings in which certain specific embodiments thereof have been set forth for purposes of illustration.

In the drawings:

Fig. 1 is a broken side elevation of an umbrella shaft and runner embodying the present invention;

Fig. 2 is a longitudinal section through the runner and shaft of Fig. 1 on an enlarged scale showing the same in unlocked position;

Fig. 3 is a section similar to Fig. 2, but showing the runner in locked position;

Figs. 4 and 5 are transverse sections taken on the lines 4-4 of Fig. 2 and 5-5 of Fig. 3 respectively;

Figs. 6 and 7 are longitudinal sections similar to Fig. 2 showing further embodiments of the invention; and

Fig. 8 is a transverse section taken on the line 8-8 of Fig. 7.

Referring to the drawings more in detail, the invention is shown as applied to a runner 10 carrying umbrella rib struts 11 and adapted to slide longitudinally on a tubular umbrella shaft 12 which is preferably made of metal. The um-

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rella shaft and struts are of standard construction except as hereinafter specified. Only so much thereof has been shown herein as is necessary to an understanding of this invention.

The runner 10 comprises a tubular slide 15 (Figs. 2 to 5) which is adapted to slide on the shaft 12 and is provided at one end with a radial flange 16. The slide 15 is provided with a plurality of holes 17 in which retaining balls 18 are inserted. The balls 18 are larger in diameter than the thickness of the slide 15 and are held against the shaft 12 by means of a sleeve 20 which has a surface 21 adapted to slide snugly upon the slide 15 and is provided with a bore forming a recess 22, which when in registry with the balls 18 provides clearance for allowing the same to ride along the shaft 12 as shown in Fig. 2. The bore terminates in a cam surface 23 which is adapted to press the balls 18 inwardly. A spring 24 engages the bottom of the slide 15 and an inturned lip 25 on the sleeve 20 to normally urge the sleeve downwardly so as to cause the cam surface 23 to maintain inward pressure against the balls 18. A cylindrical cover 30 is attached to the flange 16 and extends downwardly over a portion of the sleeve 20. The cover 30 is provided with an inturned lip 31 having a central opening in which the sleeve 20 slides and which is adapted to engage a shoulder 32 formed on the sleeve 20 to limit the downward movement thereof. The cover 30 carries an index ring 35 in which the rib struts 11 are pivoted by means of a wire 36 in accordance with standard practice.

The shaft 12 is shown as provided with upper and lower annular recesses or grooves 37 and 38 respectively which are adapted to receive balls 18 for locking the runner in open or closed positions.

In the operation of this device, when the parts 40 are in the positions shown in Fig. 2, with the spring 24 compressed the slide 15 is free to slide along the shaft 12. The runner 10 is thus free to be raised or lowered until the balls 18 are brought into registration with one of the recesses 37, 38.

In the position shown in Fig. 3 the balls 18 are in registry with the recess 38. It will be noted that as soon as the balls 18 enter the recess 38 the spring 24 forces the sleeve 20 downwardly, thereby positively holding the balls in the recess 38 and locking the runner against axial movement. The umbrella is thus locked in closed position.

In order to open the umbrella it is only necessary to press upwardly on the sleeve 20 thereby bringing the recess 22 opposite the balls 18 and

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permitting the balls to be retracted out of the recess 38, whereupon the runner 10 is free to slide along the shaft 12 until the balls enter the groove 37. When this occurs, the spring 24 again forces the sleeve 20 downwardly and locks the umbrella in open position.

Referring now to the embodiment of Fig. 6, the construction is generally similar to that of Figs. 2 to 5 and the parts have been given similar reference numerals. This embodiment differs from the embodiment of Figs. 2 to 5 in that the spring 41 of Fig. 6 is mounted above the sleeve 20 between the end of the sleeve 20 and the flange 16 and the inturred flange 25 of Figs. 2 and 3 has been replaced by a bead 42 which may be made of a colored plastic and forms a convenient hand grip for operating the sleeve 20.

In the embodiment of Fig. 7 the construction is again similar to that of Figs. 1 to 5 except that the sleeve 43 of Fig. 7 is of a diameter throughout to slide snugly over the slide 15 and is provided with an annular embossed bead 44 forming a central recess 45 to receive the balls 18. The recess 45 is shaped to urge the balls 18 inwardly in response to the pressure of a spring 46 which is seated between the outer bead 44 and a shoulder 47 formed on the slide 15. In this embodiment the slide 15 carries a ring 50 and a cover 30 carries a ring 51 which are separated by a ring 52 to form the index means for securing the rib struts 11. The operation of this form is identical with that described above.

It will be noted that in all of the above embodiments a positive lock is produced as the runner cannot be moved until the retaining means has been retracted from the recesses in the umbrella shaft. When so retracted, however, the runner slides along the umbrella shaft with a minimum of friction. Hence the device works smoothly and readily for opening and closing the umbrella and yet provides a positive lock in both positions. The sleeve may be of a length to extend beyond the ends of the ribs when the umbrella is closed so that the bead 42 (Fig. 6) or the ends of the sleeves may be readily accessible without placing the hand within the confines of the umbrella.

Although certain specific embodiments of the invention have been shown for purposes of illustration, it is to be understood that the invention is capable of various uses and that changes and adaptations may be made therein as will be readily apparent to a person skilled in the art. The invention is only to be restricted in accordance with the scope of the following claims.

What is claimed is:

1. An umbrella lock comprising an umbrella shaft and runner, said shaft having peripheral recesses at spaced points corresponding to open and closed positions of the runner, said runner comprising a slide mounted to slide on said shaft and having means carrying umbrella rib struts, a retaining element carried by said slide and adapted to enter said peripheral recesses when in registry therewith, a sleeve slidable on

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said slide between locking and releasing positions, said sleeve having a surface to engage and retain said element in said recesses when in locking position and having a recess to receive said element when in releasing position, and spring means normally holding said sleeve in locking position, and a cover carried by said slide projecting over a portion of said sleeve and having stop means to limit the outward movement of said sleeve.

2. An umbrella lock comprising an umbrella shaft and runner, said shaft having peripheral recesses at spaced points corresponding to open and closed positions of the runner, said runner comprising a slide mounted to slide on said shaft and having means carrying umbrella rib struts, a retaining element carried by said slide and adapted to enter said peripheral recesses when in registry therewith, a sleeve slidable on said slide between locking and releasing positions, said sleeve having a surface to engage and retain said element in said recesses when in locking position and having a recess to receive said element when in releasing position, spring means normally holding said sleeve in locking position, a cover carried by said slide projecting over a portion of said sleeve and having stop means to limit the outward movement of said sleeve, and a bead on said sleeve beyond said cover to form a hand grip for actuating said sleeve.

3. An umbrella lock comprising an umbrella shaft and runner, said shaft having peripheral recesses at spaced points corresponding to open and closed positions of the runner, said runner comprising a slide mounted to slide on said shaft and having means carrying umbrella rib struts, a retaining element carried by said slide and adapted to enter said peripheral recesses when in registry therewith, a sleeve slidable on said slide between locking and releasing positions, said sleeve having a surface to engage and retain said element in said recesses when in locking position and having an axially elongated recess to receive said element when in releasing position, said elongated recess being adapted to allow substantial axial movement of said sleeve relative to said slide for releasing said element, and stop means to limit the movement of said sleeve on said slide.

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