

May 24, 1960

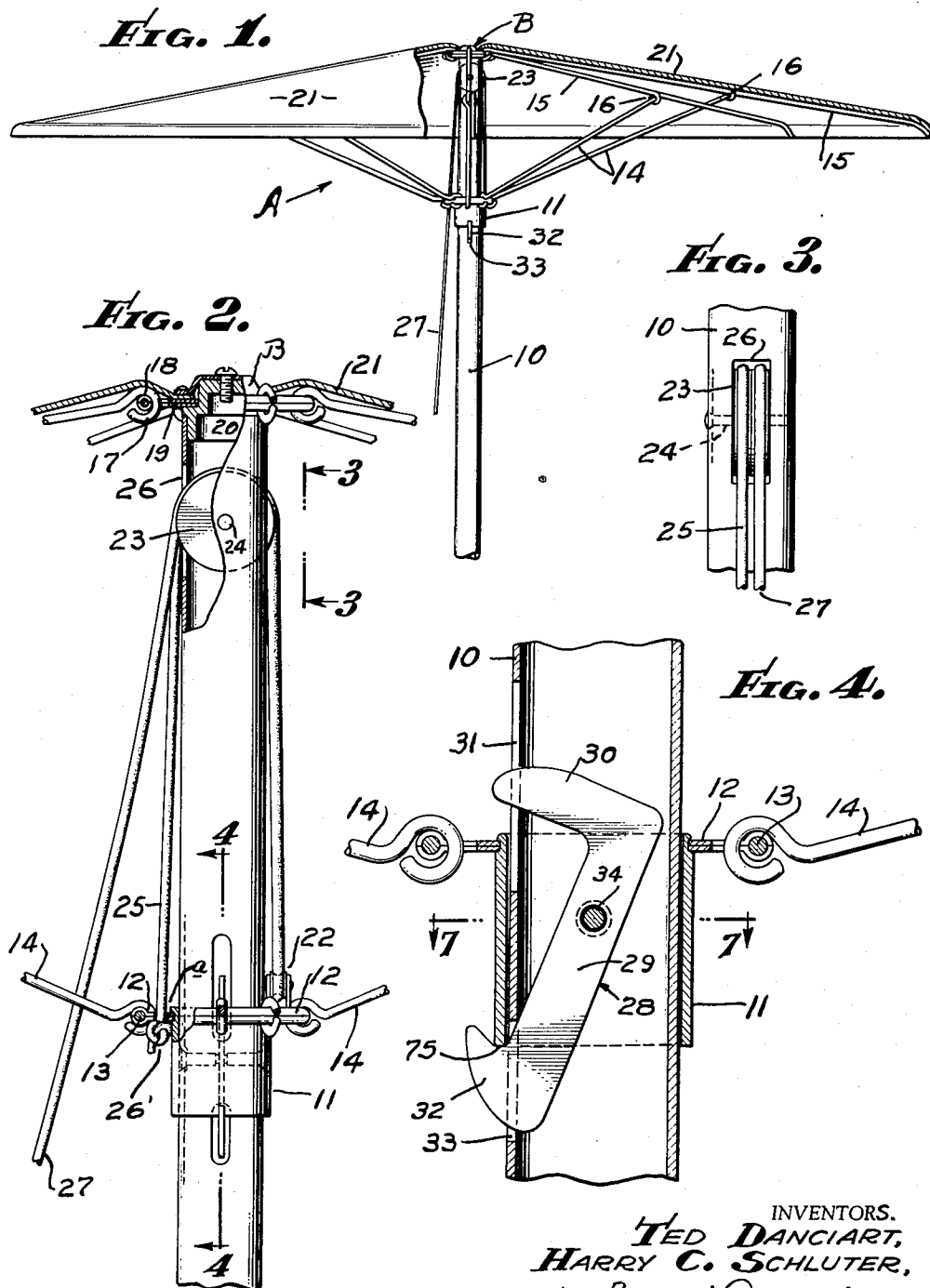
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2,937,653

SUPPORTING AND RELEASE CATCH FOR UMBRELLA RUNNERS

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2 Sheets-Sheet 1



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FIG. 5.

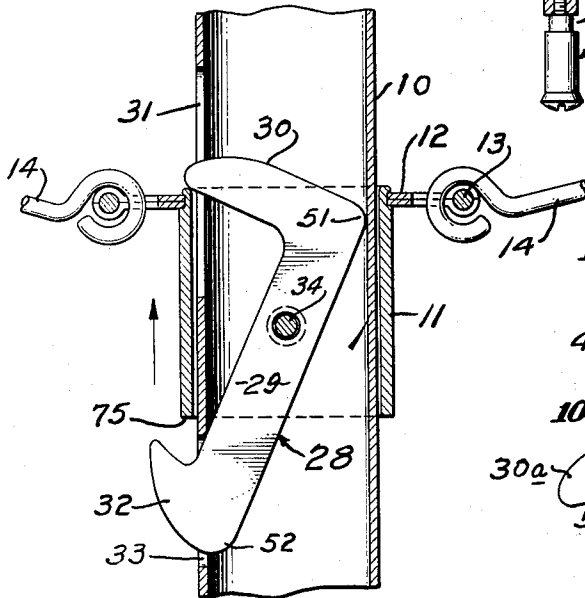


FIG. 8.

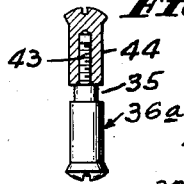


FIG. 7.

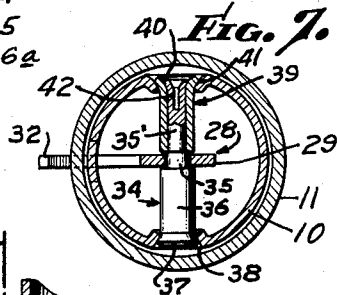


FIG. 9.

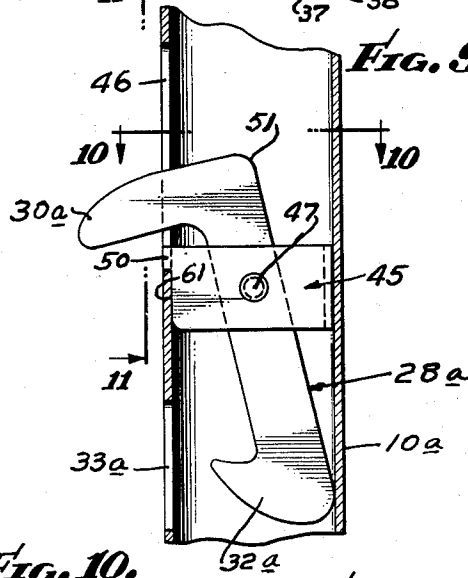


FIG. 6.

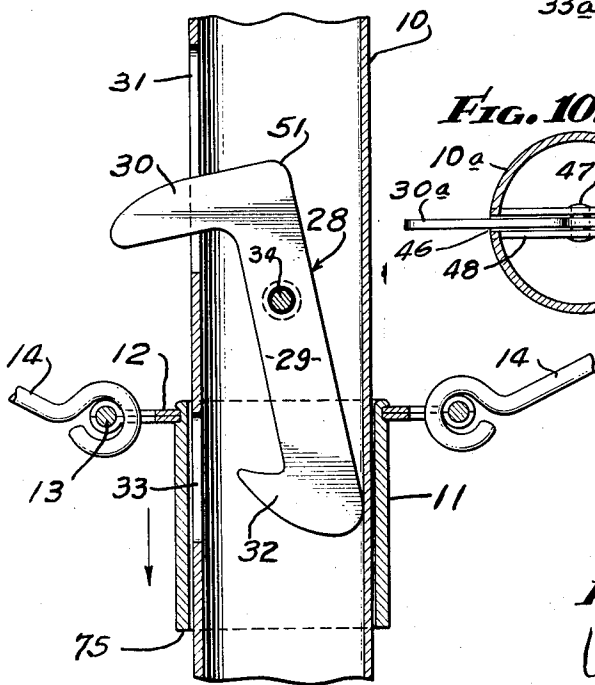


FIG. 10.

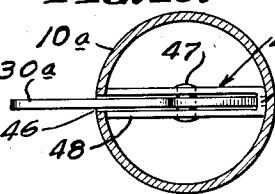
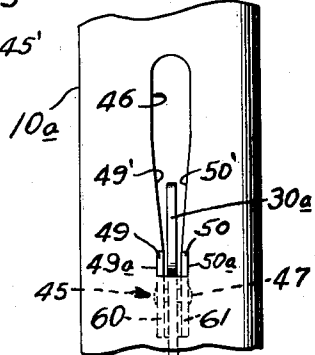


FIG. 11.



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SUPPORTING AND RELEASE CATCH FOR UMBRELLA RUNNERS

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9 Claims. (Cl. 135—37)

Our invention relates to a catch or latch for holding a part in position on a vertical staff or shaft, such as, for instance, a runner which supports, in extended position, the arms or ribs of an umbrella, tent or beach umbrella on its shaft or staff.

In such articles the weight of the arms and the covering (usually of canvas) carried thereby is considerable and the usual type of latch is furnished with a strong spring to insure that the latch remains in position under load.

In the case of beach or garden umbrellas, the operation of the latch is often difficult to effect for the persons setting them up, or when opening the umbrella, and more particularly when the catch is released to permit closing of the umbrella, and an object of our invention is to facilitate the operation of opening the umbrella by providing novel means aiding in raising the ribs of the umbrella to open position, and also whereby said means may be utilized to permit closing of the umbrella.

In opening large umbrellas, as heretofore constructed, the user is required to raise the umbrella runner, above a latch which heretofore was projected by a spring that has to be overcome in opening the umbrella and to make sure that the runner is moved sufficiently high on the staff to enable the spring to project the latch or catch member underneath the runner, and this necessitates considerable effort and fumbling while the operator is trying to push upwardly on the runner with one hand and at the same time holding the staff with the other hand to prevent it from moving in the same direction as the runner.

It is an object of our invention to provide a novel latch construction whereby a cord pulled downwardly of the shaft for a limited distance will both open the umbrella and raise the runner the required distance for catch engaging position, and whereby the cord is then released and the runner automatically locked in raised position.

Another object of our invention is to provide a novel and simple latch construction which automatically locks the runner of an umbrella when moved to raised position and then released sharply, but enabling the runner to be released and permit the umbrella to be closed by an upward movement and a relatively slow downward movement of the runner.

A further object of our invention is to provide novel latching means of the kind described which is assembled as a unit with no loose parts, the unit being readily inserted into position in a tubular shaft previously slotted to receive the latch assembly, no tools being required to effect positionment in the shaft.

Another object of our invention is to provide a novel latch unit comprising a single part mounted in position in a tubular portion of an umbrella shaft by a removable pivot member.

A still further object of our invention is to provide a novel latch which may be constructed from a minimum number of parts and stamped out of sheet metal, and

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also provide a simple, strong, and inexpensive long wearing assembly.

Yet another object of our invention is to provide a novel catch for umbrella runners that is devoid of springs and which is operated solely by sliding movement of the umbrella runner on its staff.

Other objects, advantages and features of invention may appear from the accompanying drawings, the subjoined detail description, and the appended claims.

The accompanying drawings illustrate the invention in some of the forms we at present deem preferable.

Figure 1 is a side elevational view, partly in section, of a beach or garden umbrella (in open position) incorporating the features of our invention. Parts are broken away to contract the view.

Fig. 2 is a fragmentary view, on enlarged scale, similar to Fig. 1, but having additional parts broken away to further contract the view.

Fig. 3 is a fragmentary detail side elevational view of a pulley arrangement for the cord used to raise and lower the umbrella runner, and as viewed from a plane indicated by line 3—3, Fig. 2, and looking in the direction of the arrows.

Fig. 4 is a fragmentary sectional view, on enlarged scale, on line 4—4, Fig. 2, and showing the catch in position to support the runner and maintain the umbrella in opened position.

Fig. 5 is a fragmentary sectional view, analogous to, and on the same scale as, Fig. 4, but showing the runner raised to permit disengagement of the catch from runner supporting position.

Fig. 6 is a fragmentary sectional view, analogous to, and on the same scale as, Figs. 4 and 5, but showing the catch moved to releasing position, and the runner moved downward on the staff during closing of the umbrella.

Fig. 7 is a cross-sectional view, on line 7—7, Fig. 4. Fig. 8 is a detail view, partly in section, showing the journal for the catch member.

Fig. 9 is a side elevational view showing a modified mounting arrangement for the catch, and with a fragment of the staff in which it is mounted being shown in section.

Fig. 10 is a cross-sectional view on line 10—10, Fig. 9. Fig. 11 is a fragmentary side elevational view of the staff and catch members shown in Figs. 9 and 10; and as viewed from a plane indicated by line 11—11, Fig. 9, and looking in the direction of the arrows.

Referring now to Figs. 1 through 8 of the drawing, the numeral 10 indicates the staff or shaft of the umbrella A which is shown as a tube, for simplicity, although only the portion enclosing the latch need be tubular. A spreader ring or runner 11 is mounted for sliding movement on the staff 10 and is formed at its upper edge to retain an annular member 12 securing a hinge ring 13 to which one end of rib struts or braces are pivotally connected. The other end of braces 14 are hinged to the umbrella ribs 15 intermediate their length in the usual manner as at 16, and the inner or upper ends 17 of the ribs 15 are pivotally connected to a top hinge ring or retainer 18 carried by a plate 19 mounted on a crown member 20 at the top of the staff 10. A canopy or covering in the form of a top 21 is secured at its center by a cap plate B to the top member 20 and at its perimeter to the ribs 15. As previously pointed out the braces 14, ribs 15 and the covering 21 of a large garden or beach umbrella A may be of considerable weight, and we preferably provide a hoist comprising a pulley 22 secured to annular member 12, a double sheave pulley 23 mounted in the tubular shaft on an axle bolt 24 secured in the walls of the staff 10, and a cord 25 having a knot 26 at one end which en-

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gages against the underside of annular member 12 when the cord is passed through a hole *a* in the member 12. The free end of the cord is passed through a cut-out 26, over one of the pulleys 23, around pulley 22, thence over the other of the pulleys 23 through cut-out 26, and led down the same side of the shaft as the knotted end 26' of the cord 25. The free end 27 of the cord 25 may, although it is not necessary, have a handle (not shown) fitted thereto to prevent it from being drawn through cut-out 26 since the runner 11 is retained in raised position until released and the braces 14 retain the runner in its lowermost position, so that the free end of the cord, if of reasonable length, need not be secured or provided with a handle.

By the use of the hoist described, it will be obvious that very little effort is required to elevate the runner 11 to open the heaviest umbrella fitted with the novel automatically-operated catch of our invention which will now be described.

The catch or latch generally indicated at 28 is stamped out of sheet metal and comprises a pivotally mounted, elongated body portion 29, an arm 30 which at all times projects to a greater or less degree beyond the outer periphery of the staff 10 and through an elongate slot 31 therein, and also comprises a runner supporting detent 32 projected and retracted at times through a second elongate slot 33 in staff 10.

The catch is pivoted at a point "off-center" such that the upper portion of the body 29 and the arm 30 overbalance the lower portion of the body 29 and detent 32, thereby normally swinging the catch into the position shown in Fig. 6, with the detent 32 withdrawn from projecting outside of staff 10 and into the staff until stopped by its engagement with the inside of the staff 10 and with arm 30 projecting to a maximum extent outwardly of the staff 10.

While the journal generally indicated at 34, on which the catch 28 is pivotally mounted may be arranged in various ways, we have found the arrangement shown in detail in Figs. 7 and 8 to be very satisfactory.

As illustrated in Fig. 7, the journal member 34 is provided by a centrally located necked portion 35 on a shouldered stud 36 engaged by its head 37 in a dimpled opening 38 formed in one side of the tubular staff member 10, the necked portion 35 of the stud 36 having a slightly reduced portion 35' extending into a headed sleeve 39 held by its head 40 in a dimpled recess 41 also formed in member 10 diametrically opposite the dimpled opening 38. Sleeve 39 has a central bore, to receive the reduced portion 35' of stud 36, and the wall of which is flared outwardly adjacent its head 40 and the outer end of the reduced portion 35' of the stud 36 is received in the outwardly flared end of the bore in sleeve 39 and is permanently retained therein by being peened over, or spread outwardly by the use of a punch or similar tool which is driven into an axial bore 42 in the outer end of stud 36.

In place of being permanently retained in sleeve 39 as shown in Fig. 7, one end 43 of the stud 36a may be of reduced diameter and threaded, as indicated in Fig. 8, and screwed into a headed sleeve 44 drilled and threaded to receive the threaded end of stud 36a. In other words, the reduced portion 35' may be threaded as at 43, and received in the threaded sleeve 44; and both heads of the stud 36a and sleeve 44 are provided with kerfs or slots to receive a screw driver bit.

The journal member 34 is so shouldered that when positioned in staff member 10, the necked portion 35 is positioned in the center of the tubular staff member 10 and such portion 35 provides a journal for the catch 28. The inner end of sleeve 39 and sleeve 44 (when the journal members are secured to the staff member 10) engage the shoulder formed by the reduced portion 35' and reduced threaded portion 43 and which form stop

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means to prevent binding of the catch 28 and permit it to freely oscillate or pivot on the necked portion 35.

The form of pivotally mounting the catch, as shown in Figs. 9, 10 and 11, differs from that previously described and illustrated in that the catch 28a is provided with a separate mounting member generally indicated at 45, and which may be inserted in the tubular shaft 10a through an elongate slot 46 of special configuration, a second slot 33a corresponding to slot 33 being also provided below, and spaced from slot 46 to receive detent 32a.

The catch 28a is of identical form as catch 28 previously described, but is pivoted on a stud 47 that extends through the arms of a U-shaped mounting bracket or saddle member 48 as best shown in Fig. 10. Stud 47 is preferably in the form of a rivet with its ends peened over or expanded to prevent accidental displacement thereof. Bracket 48 has a length equal to the inner diameter of tubular shaft 10a, but is provided with outwardly and forwardly extending lugs 49 and 50 at the upper and outer corners of the U-shaped mounting bracket 48 and which fit into widened portions 49a, 50a of slot 46 formed at each side of and at the lower edges of said slot 46. The web portion 45' of bracket 48 and the free ends 60, 61 of the arms that form said U-shaped bracket 48 engage the inner wall surface of staff member 10 and maintain the bracket 48 in proper position therein.

The latch 28a is assembled in bracket 48 and inserted into the tubular shaft 10a through the wide upper end of slot 46 and then moved downwardly with the lugs 49 and 50 riding on the inwardly converging edges 49', 50' of the slot 46 which converge downwardly and inwardly and therefore move the lugs 49, 50 toward each other until said lugs spring outwardly (due to the resilience of the bracket) into the slots 49a, 50a, and are securely retained therein. The lugs 49, 50 prevent further downward movement of bracket 48 in the staff 10, and the convergence of the slot 46 forms stop members to prevent upward movement of the bracket 48 until the lugs 49, 50 are pressed toward each other to permit clearance into the slot 46.

It should be noted that the arm 30 or 30a acts as a positive stop to limit the upward movement of runner 11 on staff member 10, but may be moved upwardly and inwardly until its inner end 51 comes into engagement with the inner wall of the tubular shaft, or the body portion 29 engages the staff 10 adjacent the upper end of slot 33 or 33a. The forward movement of arm 30 or 30a is limited by the back 52 of detent 32 coming into engagement with the inner surface of the staff member 10.

The detent 32 extends from the body portion 29 in an outwardly and upwardly sloping surface or hook and thus provides a notch to receive the lower edge of runner 11 and securely hold the runner in raised position, and at such time, the downward force of the runner on the detent 32 will prevent accidental disengagement therefrom.

It is pointed out that no springs are required in the embodiments of our invention shown in the drawings, and further it is to be noted that the detent 32 is normally held in retracted position by gravity of the freely swinging or pivoted catch or latch member 28; the body portion being journalled or pivoted "off center of gravity" so as to normally move the arm 30 and detent 32 to the retracted position shown in Figs. 6 and 9.

To open the umbrella, it is only necessary to pull the free end 27 of the cord 25 downwardly, thereby easily sliding and raising runner 11 on staff member 10 to unfold or extend the canopy 21.

Of course, it will be understood that our invention may be adapted for use with umbrellas that are not equipped with the cord and pulley means for opening and closing the same, although our invention is peculiarly adapted for use with large and heavy umbrellas now commonly used for gardens and beaches, and due to the weight, size and cumbersomeness thereof, it is preferable to use a cord

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and pulley means for the raising and lowering operations thereof, and will be so herein described.

The runner 11 is reciprocated upwardly on staff 10 until the upper side of runner 11 engages the finger or arm 30, 30a and moves the same into the staff 10, and as shown in Fig. 5 the arm 30 still protrudes from staff 10 and forms a stop to limit upward sliding movement of runner 11, which is preferably in the form of a collar or sleeve of a predetermined length that the detent 32 may be freely moved outwardly of staff 10 by upward sliding contact of the upper edge of runner 11 with arm or finger 30.

When the runner 11 has reached the position shown in Fig. 5 the cord 25 is "quickly" released and the spring action of the ribs 15 through braces 14 will force the runner 11 downwardly with the lower edge 75 thereof in engagement with the detent 32. Such runner supporting operation may be best described as giving the cord 25 a "quick" or "snap" pull to cause runner 11 to engage finger 30, and let the runner "fall" or "drop" into engagement with the detent 32, as otherwise, if tension is applied to the cord 25 at all times, the detent 32 may move back into the staff 10 before runner 11 engages the same, and as will be described in the releasing or lowering operation to close the umbrella.

To close the umbrella, the cord 25 is pulled so as to raise the lower edge 75 of runner 11 out of engagement with detent 32, and by maintaining a "pull" on the cord 25 the runner will be slowly lowered and the detent 32 will be automatically returned by gravity action into the staff 10 and permit the runner 11 to travel downwardly on the staff 10 until the umbrella is fully closed.

While we have specifically described and illustrated preferred embodiments of our invention, various changes may be made therein by those skilled in the art without departing from the scope of the invention, and, therefore, we claim all such changes as may fall within the scope of our invention as defined in the appended claims.

We claim:

1. A catch for an umbrella runner movable along a staff, comprising: an elongated body portion; a finger extending outwardly from the upper end of said body portion; a detent member extending outwardly, but to lesser extent than said finger, from the lower end of said body portion; and means pivotally supporting said body portion in the staff of the umbrella, said body portion being pivotally connected to said means at a point on said body portion whereby the finger and the portion of said body above said pivot overbalance the lower part of said body and the detent to normally tend to maintain the detent member within the staff.

2. A catch for an umbrella runner movable along a staff, comprising: an elongated body portion; a finger extending outwardly from the upper end of said body portion; a detent member extending outwardly, but to lesser extent than said finger, from the lower end of said body portion and adapted to engage the lower edge of said runner; means pivotally supporting said body portion in the staff of the umbrella; the weight of said finger portion and the body portion above said pivot means being greater than that of the detent member and the body portion below said pivot means, so that due to action of gravity said finger normally tends to project outwardly of said staff and said detent member normally tends to be maintained within the staff; said finger projecting beyond the outer surface of the staff to act as a stop when the said detent member is moved out of said staff.

3. A catch for an umbrella runner movable along a staff as set forth in claim 2, and in addition comprising a runner slidably mounted on the umbrella staff and to which the stays connected to the ribs of the umbrella are pivoted, the length of said runner being less than the distance along the staff between said finger and said detent, so that when the runner is slid along the staff until stopped by said finger, the latter will oscillate the body

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portion about its pivot to project the detent member below the lower edge of the runner and engage therewith.

4. A catch for an umbrella runner movable along a staff as set forth in claim 2, and in which release of the detent from the runner is effected by a slight upward movement of the runner against the finger and then slowly lowering the runner on the staff to enable said detent to move within the staff.

5. A catch for an umbrella runner movable along a staff as set forth in claim 2, and in addition comprising a pulley secured to the runner on one side of the staff, a double sheave mounted toward the top of the staff, and a cord secured at one end to the runner on the side opposite to said pulley, passed over one sheave, through said pulley and over said other sheave to facilitate opening the umbrella by pulling on the end of the cord to raise the runner into latched engagement.

6. A catch construction for umbrellas having a tubular staff comprising: an elongated body portion; a finger extending outwardly from the upper end of said body portion; a detent member extending outwardly from the lower end of said body portion, but to a lesser extent than said finger; a U-shaped bracket; a pivot member connecting said body portion in the arms of said bracket, said staff being slotted to receive said body portion and bracket; one end of said slot being wide enough to enable the bracket to be inserted therethrough until the web of the bracket engages the inside of the tubular portion opposite the slot, the arms of said bracket being formed with lugs to extend into contact with the edges of said slot, and notches in said slot edges to be engaged by and securely retain said lugs, thereby holding said bracket against longitudinal movement in the tubular staff with the finger normally projecting outwardly of the staff and the detent member being normally maintained inwardly of the staff.

7. A catch for an umbrella runner movable along a staff comprising the combination of a staff member having spaced laterally opening slots therein, and a runner slidable therealong; of a catch member pivotally connected to said staff member in such manner that longitudinal shifting of said catch member is prevented, and said catch member having a finger extending outwardly through the uppermost slot, and a detent member adapted to extend through the lowermost slot; said runner when moved to umbrella opening position being engageable with said finger to extend said extent member through said lowermost slot to support said runner and maintain said umbrella in opened position.

8. A catch for an umbrella runner movable along a staff comprising the combination of a staff member having spaced laterally opening slots therein, and a runner slidable therealong; of a catch member pivotally connected to said staff member in such manner that longitudinal shifting of said catch member is prevented, and said catch member having a finger extending outwardly through the uppermost slot, and a detent member adapted to extend through the lowermost slot; said runner when moved to umbrella opening position being engageable with said finger to extend said detent member through said lowermost slot to support said runner and maintain said umbrella in opened position; said catch member being so constructed and so pivoted that said detent member normally tends to be supported in retracted position within said staff member without the use of spring members or means.

9. A catch for an umbrella runner movable along a staff comprising the combination of a staff member having spaced laterally opening slots therein, and a runner slidable therealong; of a catch member pivotally connected to said staff member in such manner that longitudinal shifting of said catch member is prevented, and said catch member having a finger extending outwardly through the uppermost slot, and a detent member adapted

to extend through the lowermost slot; said runner when moved to umbrella opening position being engageable with said finger to extend said detent member through said lowermost slot to support said runner and maintain said umbrella in opened position; said catch member being so constructed and so pivoted that said detent member normally tends to be supported in retracted position within said staff member without the use of spring members or means; said detent member being automatically retractable into said staff member without the aid of spring means when said runner is moved upward on

said staff to release said detent from engagement therewith, and said runner is lowered on said staff to close said umbrella.

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