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W. S. EVANS, JR  
ILLUMINATED UMBRELLAS

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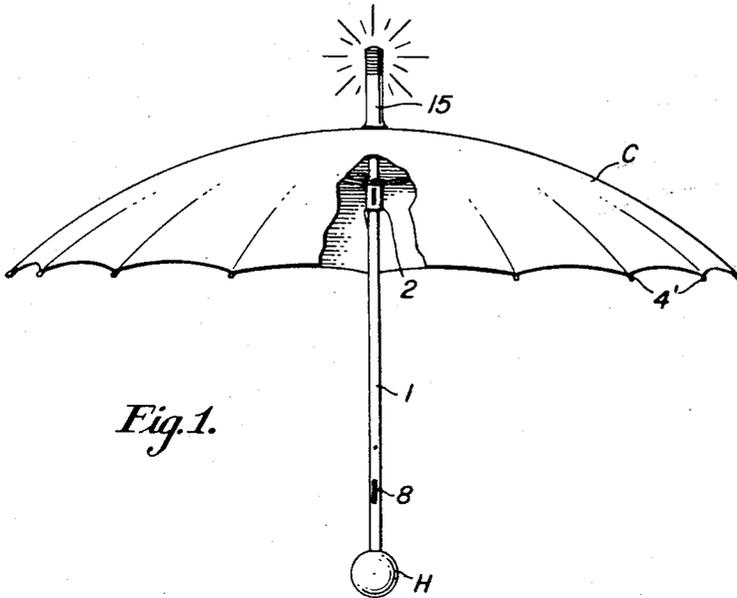


Fig. 1.

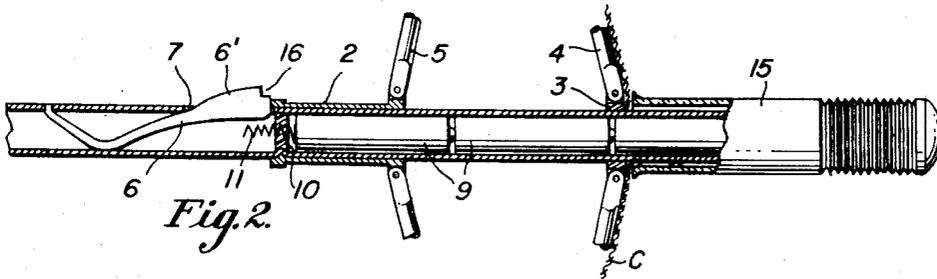


Fig. 2.

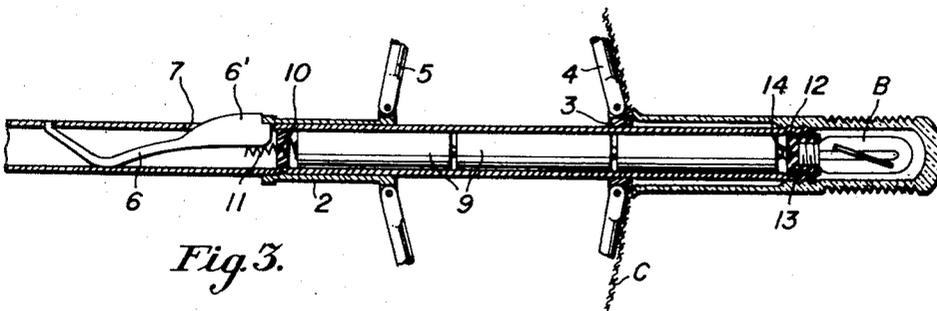


Fig. 3.

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ILLUMINATED UMBRELLAS

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1 Claim. (Cl. 240—6.42)

Umbrellas are of course utilized both in daytime and at night to shield the wearer from inclement weather and in daylight readily can be seen by others in the vicinity, but on dark nights or under other view-obscuring conditions are inconspicuous or totally invisible; in consequence the person holding the umbrella over his head frequently is subject to collision by other persons or moving objects such as motor cars.

Broadly considered, the present invention contemplates the provision of an umbrella comprising means operative to afford a visual indication in the dark of the presence of the person carrying the opened umbrella.

More particularly, it is a principal object of the invention to provide an umbrella comprising an electric light adjacent its tip, means for energizing the light and means for establishing a flow of energy thereto by raising the umbrella to and selectively maintaining it in one of two slightly different open positions, in the other of which energy flowing to the light is interrupted.

A further object is the provision of an umbrella of this character which in appearance and sizes does not appreciably differ from ordinary umbrellas of similar style and type; which can be raised and lowered substantially in the same manner as such umbrellas, and in which the batteries for energizing the light together with means for making or breaking the flow of current from the batteries thereto are housed within a tubular main shaft such as is frequently employed in the industry.

A further object is the provision of an umbrella embodying the aforesaid improvements which can be produced at a cost, exclusive of the light bulb and batteries, not materially greater than generally similar umbrellas devoid thereof, and in which the mechanisms and parts employed in effecting the improvements are simple, of such design and construction as to require little or no attention during a life commensurate with that of the other parts of the umbrella and which do not tend to get out of order or become damaged in normal operation.

A still further object is to enable the batteries and/or light bulb after completion of their normal operative life to be easily and quickly removed for replacement by others without the use of tools and in a minimum time.

Other objects, advantages and novel features of design, construction and arrangement comprehended by the invention are hereinafter more particularly mentioned or will be apparent from the following description of one embodiment thereof as illustrated in the accompanying drawing, in which:

Fig. 1 is a side view of my improved umbrella in raised or open position, a portion of the cover being broken away to show subjacent elements;

Fig. 2 is a fragmentary central section on a larger scale, with the tip cap partially in elevation, of that portion of the umbrella shaft adjacent its tip and with the parts in the position occupied when the umbrella is fully open; and

Fig. 3 is a generally similar view, but with the entire

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cap shown in section, illustrating the position of the parts when the umbrella is in signal-giving condition, that is, almost fully open.

More particularly and as shown my umbrella comprises the usual tubular shaft 1 having a handle H at its lower extremity, a hub or collar 2 slidable upon the shaft and another collar 3 fixed thereto proximate the other extremity of the shaft to which are pivoted outwardly radiating ribs 4, the hub having stretchers 5, in number corresponding to the ribs, pivoted to it and to the ribs respectively, so that when the hub is slid upwardly along shaft 1 considered in the position of Fig. 1, the stretchers force the ribs out against the fabric cover C in the ordinary way, this cover being secured at its outer edge to the extremities 4' of the ribs and about the shaft either to or adjacent collar 3.

For holding hub 2 raised with corresponding maintenance of the stretchers, ribs and cover in fully opened position, a detent 6 or "spring" as it is termed in the art is mounted in the shaft at an appropriate point, this detent having a lug 6' projecting through a slot 7 in the shaft and curved along the major portion of its radially outer edge in the usual way so that when the hub is pushed upwardly along the shaft it will ride on the detent, depress it in the slot and finally pass over it whereupon the detent snaps back outwardly into normal position to hold the hub against retrograde movement until the detent is sufficiently manually depressed. A similar but oppositely directed detent 8 may be provided to hold the hub from upward movement along the shaft when the umbrella is closed, this detent of course being pressed inwardly manually so as to enable the hub to pass over it when the umbrella is being opened. As the various parts to which reference has been made are commonly found in umbrellas of ordinary construction and save with respect to detent 6 do not differ therefrom in my improved umbrella further description of them would be superfluous.

In accordance with my invention, however, I utilize a portion of shaft 1 adjacent its end remote from the handle to house current generating means consisting preferably of a plurality, desirably three, of flashlight batteries 9 of diameter to slip easily into the shaft, and to provide a spring seat for the lowermost battery considered in the position of Fig. 1 I dispose at an appropriate point in the shaft a disk 10 of diameter sufficient to fit snugly therein, and to insure its remaining in proper position I either pin it in place or else, as shown, slightly indent the shaft at one or more points in alignment with the disk. This disk is desirably of plastic or other material having insulating qualities and at its center portion is embedded a generally longitudinally extending coil spring 11 which projects axially in opposite directions from the disk, that portion of it above the disk forming a resilient seat for the adjacent battery in electrical contact with its bottom; the function of that part of the spring projecting in the opposite direction from the disk will hereinafter appear.

Means adjacent the upper or outer extremity of the shaft for removably retaining the batteries in position therein and also to form a socket for the reception of the base of the light bulb B are also provided, and while said means may be of various constructions I prefer, as shown, to roll or otherwise form an external and an internal thread 12 at the end of the shaft, the internal thread being appropriate for receiving an adapter 13 of conventional construction having a contact point 14 designed to engage the corresponding central contact of the adjacent battery when the adapter is screwed fully home and a socket for reception of the base of the light bulb, the arrangement being such that when the bulb is screwed home in the adapter one of its terminals, such as the exterior of its base, is in electrical contact with some

portion of the adapter in turn in similar contact with the shaft while its other terminal through contact point 14 is in electrical connection with the central terminal of the adjacent battery.

To protect the bulb and adjacent parts, enhance the appearance of the umbrella and preferably to aid in diffusing the light emitted from the bulb when in operation, a hollow cap 15 of translucent or clear plastic or other suitable material is removably positioned over the bulb and adjacent portion of the shaft to terminate preferably proximate the outer face of cover C, its attachment to the shaft being conveniently effected by providing it with an internal thread corresponding to the external part of thread 12, thus enabling the cap readily to be screwed into place as shown in the drawing or as readily removed to permit access to the bulb and, by unscrewing the adapter, to the batteries as well to enable their replacement with others at the end of their respective operative lives. While the bulb may be of any suitable type operable by flashlight batteries or other similar sources of current, and hence may be of a sort adapted to emit a constant light when energized, I prefer to employ a bulb designed to emit intermittent or flashing light when under constant energization, such bulbs in miniature sizes being commercially available and operated by a bi-metallic element embodied in them which when heated to an appropriate degree interrupts flow of current through the filament until the temperature of the element cools sufficiently to permit a resumption of current flow through it. It will therefore be understood the specific character of the bulb and the manner of its emission of light form no part of my invention, although I have found that an intermittently flashing light usually affords a signal more readily noticeable than a constant one.

It will now be apparent that spring 11 through the batteries and adapter is in electrical contact with one end of the filament of the bulb and that the other end thereof is in electrical contact with tubular shaft 1 and in turn with the spring or detent 6 when the umbrella is fully raised (Fig. 2) but that the circuit through the bulb is incomplete by reason of the lack of contact between spring 11 and the detent; the latter element therefore is utilized to complete the circuit when desired.

To this end the projecting lug 6' of the detent is provided with a notch 16 at its upper outer corner adapted to receive the end of hub 2 when the detent is partially depressed from its normal position in which latter the lower edge of the detent though generally aligned with and extending over is not in contact with spring 11 which therefore "floats" beneath the detent. However, when the detent is manually depressed sufficiently to align the notch with the hub the latter under the stress exerted on it by the extended ribs and stretchers is forced back slightly into the notch, the detent thereafter being operative to hold the umbrella substantially fully open, the very slight difference between the positions of the various parts incident to movement of the hub from engagement with the front face of the detent and engagement in notch 16 being insufficient to change the appearance of the open umbrella to any appreciable extent. Nevertheless the depression of the detent as just described is sufficient to bring its lower edge into engagement with the projecting end of spring 11 with the result that the circuit through the bulb filament is completed and remains so, save when interrupted by the action of the bi-metallic or corresponding element, if any, in the bulb itself as above mentioned, until the hub is pushed upwardly to clear the notch and allow the detent to spring back to normal (Fig. 2), thereby returning the umbrella to fully opened condition and breaking the circuit through the filament.

It will now be appreciated that when opening the umbrella from fully closed position detent 8 is manually depressed sufficiently to permit hub 2 to be pushed over it and upwardly along the shaft against the increasing

resistance afforded by the outward bowing of the ribs under influence of the stretchers until it passes over and clears detent 6 in exactly the same way as any ordinary umbrella is opened; the hub is then permitted to slip back until it engages the front edge of the detent and the umbrella then remains fully open until detent 6 is manually depressed sufficiently to permit the hub to slide back until it seats in the notch where it remains until the detent is again manipulated preparatory to moving the hub to return the umbrella to fully open or to closed condition. Of course during each full depression of the detent as the hub passes over it in either direction a momentary contact is established with spring 11 but this contact is so short that it normally is insufficient to even light the bulb save perhaps for a momentary flash.

When it is desired to make use of the light as a signal, however, the parts are so manipulated as to engage the hub in notch 16 which is usually most conveniently done by opening the umbrella to its fullest extent (Figs. 1 and 2) and then manually depressing detent 6 only enough to clear its front face from the hub and allow the latter to slip back into the notch, though of course a similar result can be obtained by carefully sliding the hub upwardly over the detent just far enough to allow the latter to spring outwardly and receive the rear edge of the hub in the notch.

From the foregoing it will be apparent that an umbrella embodying my improvements presents the same general appearance whether it be closed or open as an ordinary umbrella of corresponding style and character although differing therefrom in respect to its capacity to afford a visible signal when desired by the user without impairment of its ability to afford protection from the elements. Moreover, since normally the signal is maintained in operation only at intervals and then usually for but a relatively short time, replacement of the batteries and/or bulb is required only occasionally to maintain full operating efficiency and, as has been pointed out, can be readily effected by the owner of the umbrella without the use of tools.

It will be further apparent, however, that the improvements of my invention while contributing to the utility of the umbrella as a whole are specifically embodied in its frame alone, and since it is usual in the trade for umbrella frames to be manufactured and sold uncovered for subsequent attachment thereto of the fabric covers by the buyer preparatory to selling the completed umbrellas, the subjoined claims therefore are directed to an umbrella frame embodying said improvements rather than to a covered, merchantable umbrella.

While I have herein described and illustrated one form of my invention with considerable particularity I do not thereby intend to restrict or confine myself specifically thereto, as various changes and modifications may be made in the form, arrangement and method of assembly of the parts if desired without departing from the spirit and scope of the invention as defined in the appended claim.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

An umbrella frame including a tubular shaft, a hub slidable thereon, ribs hinged to the shaft, a stretcher interposed between the hub and each rib, a detent normally projecting from and movable radially of the shaft for releasably maintaining the hub in either of two predetermined positions thereon against the thrust of the ribs when extended, the detent having a notch receiving an edge of the hub when in one of said positions, an electrically energizable light source disposed proximate an end of the shaft, a battery carried by the shaft having one terminal in constant electrical connection with the light source, and means including the detent and a flexible element within the shaft in electrical connection with the other terminal of the battery operative to establish and maintain a circuit through the source from said other

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terminal when the detent is depressed sufficiently to receive said edge of the hub and engage said flexible element.

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