To all whom it may concern:

Be it known that I, CHARLES H. STEVENSON, a citizen of the United States, residing at New Haven, in the county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Flash-Light Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to battery hand lamps and comprises switch mechanism of simplified construction whereby the flow of battery current through the lamp may be controlled as desired.

In the present contact device, in its preferred embodiment, there are three positions for a thumb-actuated cam, in one of which the switch is held closed without the need for continuing thumb pressure on the actuating cam, in another of which the circuit is held closed only so long as the thumb pressure is maintained, and in another of which the switch is open and the actuating cam is itself held against too easy accidental movement to circuit-closing position.

The details of the invention and other objects and advantages will become clear from the following description, which is to be taken in conjunction with the accompanying drawings, wherein—

Fig. 1 is a sectional elevation of a hand lamp equipped with the contact device of the present invention; Fig. 2 is an enlarged plan of the contact device; Fig. 3 is a section on the line 3–3 of Fig. 2; Figs. 4 and 5 are sections similar to Fig. 3 but show the switch mechanism in other positions; Fig. 6 is a transverse section on the line 6–6 of Fig. 2; Fig. 7 is a detail of the riveted connection on the front conductive strip and the fiber casing of the hand lamp; and Fig. 8 is a plan view of the switch housing and the parts carried thereby.

In the embodiment illustrated, a casing 1 of fiber or other suitable material is provided at its bottom end with a threaded ring 2 and a sheet metal bottom cap 3 which carries a coiled spring 4 engaging the naked bottom of the lowermost dry cell 5. The uppermost dry cell 6 of a series placed end to end has its inner or carbon electrode 7 in contact with the inner terminal of the lamp 8. The outer or threaded terminal of the lamp is connected as through a reflector 9 with a conductor 10 which is in the form of a flat strip secured to the fiber casing by a rivet 11 and having its lower reduced portion bent and protruding through a slot 12 in the fiber casing to form a contact element 13 of the switch.

Lamp 8 is provided with a lens 14 held in position by the usual flanged collar 15 which is threaded to a metal ring 16 mounted on the front end of tube 1. Preferably the periphery of reflector 9 is insulated from the collar 15 and ring 16 to prevent inadvertent lighting of the lamp when the hand lamp is laid down on a metal surface.

The contact mechanism comprises an escutcheon 17 connected to the bottom of the lowermost dry cell as through a flat strip 18, the upper end of which is riveted to the escutcheon and the lower end of which is tuckted under and makes connection with the inwardly extending flange of ring 2, and so is in electrical connection with the battery through cap 3 and spring 4. Mounted on this escutcheon plate and preferably integral therewith is a housing 19. Within the housing is a contact element in the form of a swinging spring member 20, one end of which is riveted at 21 to housing 19 and the other end of which is free to swing into and out of engagement with the opposed yielding contact element 13. Housing 19 has a pair of outwardly projecting lugs 22 and 23 between which is pivoted a cam 24. The outer surface of the cam is knurled to facilitate manual operation and the inner side of said cam has three flat faces 25, 26 and 27 cooperating with the spring member and so shaped and positioned that when the face 25 is in engagement with the spring member and the cam it will hold said spring member 20 in continuing contact with the opposed contact element 13 and the spring member will hold the cam from accidental displacement without the need for continuing thumb pressure on cam 24. When the face 27 engages the spring member 20, it will press said spring member 20 into circuit-closing position but will permit it to spring back of its own elasticity when the cam is manually released, and intervening between surfaces 25 and 27 the surface 26 will permit said spring member 20 to rest in open circuit.
position where the outward push of spring member 20 will hold said cam 24 against accidental or too easy manipulation.

Because of its simplicity and the ease with which it may be inspected and repaired, the contact device of the present invention offers many practical advantages, as will be understood by those skilled in this art.

It will be evident from the description that the normally inoperative spring member 20 cooperates with the several faces of the rocking cam to hold the cam against accidental displacement.

I claim —

1. In a contact device for battery hand lamps, the combination of a resilient normally inoperative contact member and a pivoted cam having a face movable into direct continuing engagement with said member and cooperating with said member to hold the cam from accidental displacement with the member in operative position when a continuous lighting of the lamp is desired, substantially as described.

2. In a contact device for battery hand lamps, the combination of a resilient swinging contact member, a rocking cam having a face adapted to contact with the member and cooperating therewith to hold the cam against accidental displacement with the contact member in inoperative position, whereby to prevent accidental closing of the circuit.

3. In a contact device for battery hand lamps, the combination of a resilient swinging contact member, and a pivoted cam having a face rotatable into direct continuing engagement with said member when a continuous lighting of the lamp is desired, said cam having a second face for actuating said contact member when the cam is rotated in reverse direction.

4. In a contact device for battery hand lamps, the combination of a swinging contact member, a conductor opposed thereto, and a pivoted cam having three flat faces so shaped and positioned that one of said faces will hold said swinging contact member in continuing contact with its opposed conductor, another of said faces will press said swinging contact member into closed-circuit position, but will permit it to swing back when the cam is manually released, and the other of said faces will permit said swinging contact member to rest in open circuit position and will hold said cam against too easy manipulation, substantially as described.

5. In a contact device for battery hand lamps, the combination of a stationary conductor serving as a contact element, a housing enclosing the contact end of said element, a spring member secured at one end to said housing and having its other end opposite said contact element and free to swing into and out of engagement therewith, and means pivoted to said housing and rotatable in one direction to cam said spring member into engagement with the opposed contact element and to hold it there, and rotatable in the opposite direction to cam said spring member into engagement with the opposed contact element but permitting it to spring back when said rotatable means is manually released.

7. In a contact device for battery hand lamps, the combination of a stationary conductor serving as a contact element, a housing enclosing the contact end of said element, a spring member secured at one end to said housing and having its other end opposite to said contact element and free to swing into and out of engagement therewith, and a manually actuated cam pivoted to said housing and having a plurality of flat faces so shaped and positioned that one of said faces will hold said spring member in continuing contact with the opposed contact element, and another of said faces will press said spring element into engagement with said opposed contact element but will permit it to spring back when the cam is manually released.

8. In a contact device for battery hand lamps, the combination of an insulating tube, a conductor secured to the inside of said tube and extending therethrough to form a contact element, a housing secured to said tube and enclosing the contact end of said conductor, a spring member secured at one end to said housing and having its other end free to swing into and out of engagement with said contact element, and means pivoted to said housing, the inner side of said cam having a plurality of flat faces so shaped and positioned that one of said faces will hold said spring member in continuing contact with the opposed contact element and another of said faces will press said spring element into closed-circuit position, but will permit it to swing back when the cam is manually released, substantially as described.

9. In a battery hand lamp, the combination of an insulating tube, a conductor secured to the inside of said tube and extending therefrom to form a contact element, a housing secured to said tube and...
enclosing the contact end of said conductor, a spring member secured at one end to said housing and having its other end free to swing into and out of engagement with said contact element, said housing having a pair of outwardly projecting lugs, a cam pivoted to swing between said lugs, the inner side of said cam having three flat faces so shaped and positioned that one of said faces will hold said spring member in continuing contact with the opposed contact element, another of said faces will press said spring element into closed-circuit position but will permit it to spring back when the cam is manually released, and the other of said faces will permit said spring member to rest in open circuit position and will hold said cam against too easy manipulation.

11. In a contact device for battery hand lamps, the combination of a normally inoperative resilient contact member, a cam mounted to rock and having surfaces for cooperating with the contact member and brought into engagement with the member by rocking the cam in opposite directions to hold the cam against accidental displacement with the contact member in operative or in inoperative position.

12. In a contact device for battery hand lamps, the combination of a normally inoperative resilient contact member, a cam mounted to rock and having faces for cooperating with the contact member and brought into engagement with the member by rocking the cam in opposite directions, to hold the cam against accidental displacement with the contact member in operative or in inoperative position, and having another face between said first named faces for engaging the member to hold the circuit closed while the cam is held and released by the release of the cam.

In testimony whereof I affix my signature.

CHARLES H. STEVENSON.