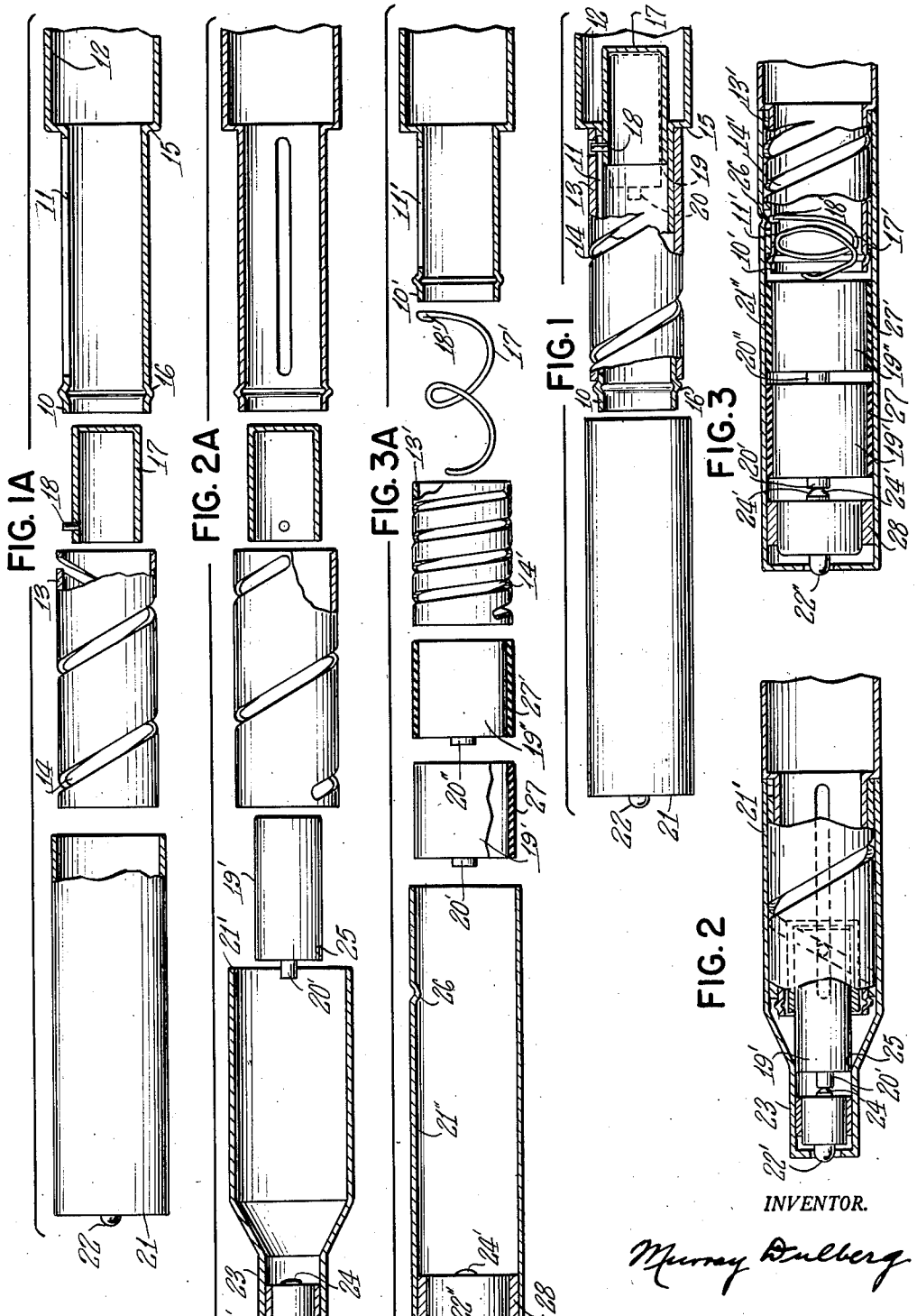
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FLASHLIGHT

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FLASHLIGHT

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This invention relates to flashlights and the means for closing the electric circuit to light the bulb.

The general object of the present invention is to provide a flashlight having a longitudinally movable carrier for advancing and retracting the means for closing the electric circuit and spiral cam means for moving said carrier.

Specifically, it is the object of the present invention to include in a flashlight a propel-repel carrier assembly of the swivel type generally used at the present time for carrying lipstick but, here, employed to make an electric circuit flashlight capable of operating completely independent of the length of the battery or batteries used within a given casing and without requiring any external part or parts to be moved longitudinally of said casing.

It is a further object of the invention to provide a flashlight having a relatively even surface without the conventional exterior switch or push button at the bottom thereof.

Another object of the invention is to provide a flashlight which may utilize the safety means disclosed in my co-pending application Serial No. 50,999, filed September 24, 1948, and now Letters Patent No. 2,695,028, granted November 23, 1954, for controlling the movement of the carrier in the propel-repel carrier assembly.

Other objects and advantages of the present invention will be readily apparent in the course of the following detailed description taken in connection with the accompanying drawings which illustrate, by way of example, preferred embodiments of the invention and wherein—

Fig. 1 is a longitudinal sectional and exploded view of the propel-repel carrier assembly removed from the outer casing, the bulb at one end of the outer casing being shown partly exposed, the internal elements in the outer casing not being shown.

Fig. 1A is a partially broken exploded view of Fig. 1.

Fig. 2 is a longitudinal sectional and exploded view of the flashlight illustrating the internal structure and arrangement of the component elements.

Fig. 2A is a partially broken exploded view of Fig. 2.

Fig. 3 is a longitudinal sectional and exploded view of a modified construction incorporating the features of the invention.

Fig. 3A is a partially broken exploded view of Fig. 3.

Referring now to the drawings in detail and particularly to Fig. 1, numeral 10 represents an inner tubular member having an elongated slot 11 and having an operating handle 12 exposed past the lower end of the metallic spiral sleeve member 13. The broken lines at the bottom of the handle portion shown is to indicate that the bottom of the operating handle may be open or closed. The spiral sleeve member is loosely fitted on the inner tubular member and is provided with a helical slot 14. The annular rim 15 of the operating handle and the annular bead 16 at the upper end of the inner tubular member limit the longitudinal movement of the spiral sleeve member. Metallic carrier cup 17 is positioned in the inner tubular member. The carrier cup is provided with

a metallic lateral follower pin 18 which is positioned in slot 11 and in slot 14 so that rotation of the inner tubular member relative to the spiral sleeve member will cause the carrier cup to move longitudinally in the assembly.

In accordance with the present invention, a battery 19 indicated by the separated dash lines is positioned in the carrier cup, the positive pole 20 being faced upwardly. In the metallic outer casing 21 there is mounted a light bulb 22 shown partly exposed in the upper end of the outer casing. The light bulb is electrically connected to the outer casing so that upon contact of the battery with the conductor (not shown) of the light bulb and the outer casing the electric circuit will be closed and the bulb will be lighted. The means for electrically connecting the light bulb to the outer casing has not been described at more length because it is believed that persons skilled in the art to which this invention relates fully understand the construction and will be more concerned with the means for closing the electric circuit by employing a longitudinally movable carrier. The outer casing is of sufficient length to snugly telescope over the spiral sleeve member so that the outer casing and the spiral sleeve member may be rotated as a single unit relative to the inner tubular member to longitudinally move the carrier cup holding the battery. It is, therefore, evident that rotation of the operating handle realtive to the outer casing will advance the battery and light the bulb.

Referring now particularly to Fig. 2, there is shown a propel-repel carrier assembly similar to that shown in Fig. 1, and like numerals are applied to similar parts. Here, the metallic outer casing 21′ is formed with a reduced or tapered neck portion 23. Upon advancement of the battery 19′, the positive pole 20′ will contact the conductor 24 of the light bulb 22′, and the negative part 25 of the battery will contact the reduced neck portion, thus closing the electric circuit and lighting the light bulb.

Referring now particularly to Fig. 3, there is shown a modified construction incorporating the features of the present invention. Like numerals are applied to parts that are similar to those shown in Fig. 1. Here, the carrier 17′ consists of a wire formation having a portion thereof 18′ positioned in slots 11′ and 14′ serving as a lateral follower pin to move the metallic carrier upon rotation of the inner tubular member 10′ relative to the metallic spiral sleeve member 13′. The carrier, however, may be the conventional carrier cup described in connection with Fig. 1, and the wire formation may be in said carrier cup and have only one end thereof extending past the upper edge of the carrier cup. The metallic outer casing 21″ is provided with an inwardly extending projection or dimple 26 which is positioned in the slot 14′. A pair of batteries 19′ and 19″ are mounted in the outer casing, the positive poles 20′ and 20″ respectively being faced upwardly so that the positive pole of the lower battery may contact the negative end of the upper battery. The batteries are separated from the inner wall of the outer casing by non-conductor material 27 and 27′ respectively. The light bulb 22″ is provided with a conductor covering such as a metal band 28 on its outer wall which is in contact with the inner wall of the outer casing. The conductor 24′ of the light bulb is faced downwardly so as to establish contact with the positive pole 20′ of the adjacent battery. Upon advancement of the carrier, the lateral follower pin 18′ will contact the projection 26 of the outer casing which extends into the slot 14′. The wire formation is made of sufficient length to contact the negative end of the adjacent battery while the conductor 24′ of the light bulb is in contact with the positive pole 20′ of the adjacent battery thereto and the lateral follower pin is in contact with the projection 26 of the outer casing. It is evident,

therefore, that upon advancement of the carrier the electric circuit will be closed and the light bulb will be lighted.

Having described in detail preferred forms of the present invention, it will be understood that the carrier cup shown and described in connection with Figs. 1 and 2 may be adapted to hold two batteries instead of one and the flashlight shown and described in connection with Fig. 3 may contain only one battery instead of two.

Certain additional modifications may be made in the device of the present invention without departing from the scope thereof, and it will be understood that all matter contained in the foregoing specification and shown in the accompanying drawings will be interpreted merely as illustrative and not in a limiting sense.

What I claim is:

1. In an electric circuit appliance, the combination of a casing, a light bulb in one end of said casing electrically connected with said casing and having a conductor facing toward the other end of said casing, a carrier for conductor means disposed within said casing between said conductor and said other end of the casing in spaced longitudinal relation to said conductor, the space between said conductor and said carrier being available for a battery, said carrier having a lateral projection and being longitudinally movable into said space for engaging one end of the battery to longitudinally move the battery into electrical contact with said conductor, cooperative means for lighting said light bulb when a battery is in said casing and the positive pole of the battery is in contact with said conductor, said cooperative means including conductor means normally carried by said carrier to close the circuit, an operating handle positioned outside said other end of the casing and connected to said casing for relative rotation, means for actuating said carrier operatively connected to said casing and said operating handle and including spiral cam means extending within said casing and engaging said lateral projection for imparting longitudinal movement to said carrier upon said relative rotation, and means for holding said operating handle against longitudinal movement toward said one end of the casing upon said relative rotation.

2. In an electric circuit flashlight, the combination of a casing, a light bulb in one end of said casing electrically connected with said casing and having a conductor facing toward the other end of said casing, a carrier for conductor means disposed within said casing between said conductor and said other end of the casing in spaced longitudinal relation to said conductor, the space between said conductor and said carrier being available for a battery, said carrier having a lateral projection and being longitudinally movable into said space for engaging one end of a battery to longitudinally move the battery into electrical contact with said conductor, cooperative means for lighting said light bulb when a battery is in said casing and the positive pole of the battery is in contact with said conductor, said cooperative means comprising conductor means normally carried by said carrier to close the circuit, a sleeve member extending within said casing and connected therewith for conjoint rotation, a tubular member in said sleeve member and rotatable relative thereto, said members having relatively diverging longitudinally extending slots engaging said lateral projection for imparting longitudinal movement to said carrier upon rotation of said tubular member relative to said sleeve member, an operating handle exposed outside said other end of the casing and connected to said tubular member for conjoint rotation, and means for holding said operating handle against longitudinal movement toward said one end of the casing upon rotation of said operating handle relative to said casing.

3. In an electric circuit flashlight, the combination of a casing, a light bulb in one end of said casing electrically connected with said casing and having a conductor facing toward the other end of said casing, a carrier for conductor means disposed within said casing between said conductor and said other end of the casing in spaced longitudinal relation to said conductor, said carrier having a lateral projection and being longitudinally movable within said casing, a battery longitudinally movable within said casing between said conductor and said carrier and the positive pole of said battery facing said conductor, an operating handle exposed outside said other end of the casing and connected with said casing for relative rotation, means for holding said operating handle against longitudinal movement toward said one end of the casing upon said relative rotation, means for actuating said carrier operatively connected to said casing and said operating handle and including spiral cam means extending within said casing and engaging said lateral projection for imparting longitudinal movement to said carrier upon said relative rotation and to permit said carrier to engage one end of said battery upon movement of said carrier toward said conductor, said carrier normally carrying conductor means for closing the circuit upon said positive pole and said conductor being moved into contact by said carrier.

4. In an electric circuit flashlight, the combination of a metallic casing, a light bulb in one end of said casing electrically connected with said casing and having a conductor facing toward the other end of said casing, a battery carrier disposed within said casing between said conductor and said other end of the casing in spaced longitudinal relation to said conductor, said battery carrier having a lateral projection and being longitudinally movable within said casing, a battery mounted on said battery carrier and the positive pole of said battery facing said conductor, the negative pole of said battery being exposed on the side of said battery, an operating handle exposed outside said other end of the casing and connected to said casing for relative rotation and against movement longitudinally of said casing upon said relative rotation, means for actuating said battery carrier operatively connected to said casing and said operating handle and including spiral cam means extending within said casing and engaging said lateral projection for imparting longitudinal movement to said battery carrier upon said relative rotation to permit said battery carrier to longitudinally move said positive pole into contact with said conductor, and said casing having a reduced portion thereof lying in the path of movement of said negative pole of the battery at a location where said negative pole will be in contact with said reduced portion when said positive pole is in contact with said conductor.

5. In an electric circuit flashlight, the combination of a pair of telescopically related tubular members rotatable relative to each other, said tubular members having relatively diverging longitudinally extending slots, the inner tubular member having an annular rim adjacent and exposed outside one end of the outer tubular member, a casing, one end portion of said casing being snugly fitted on said outer tubular member for conjoint rotation, a light bulb in the other end of said casing electrically connected with said casing and having a conductor facing toward the other end of said casing, a battery carrier cup disposed within said inner tubular member in spaced longitudinal relation to said conductor, a battery mounted in said battery carrier cup, the positive pole of said battery being opposed to said conductor, means for closing the circuit when said positive pole is held in contact with said conductor, said battery carrier cup having a lateral projection extending into said slots to permit longitudinal movement of said battery carrier cup toward said conductor to bring said positive pole into contact with said conductor upon rotation of said tubular members relative to each other, said annular rim holding said inner tubular member against longitudinal movement toward said one end of the casing upon rotation of said tubular members relative to each other.

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