

June 2, 1959

D. W. FALLOON
ILLUMINATED BATON HEAD
Filed July 23, 1958

2,889,449

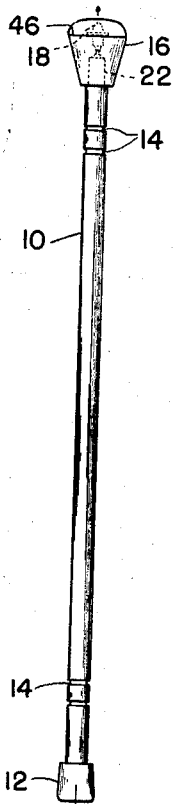


Fig. 1

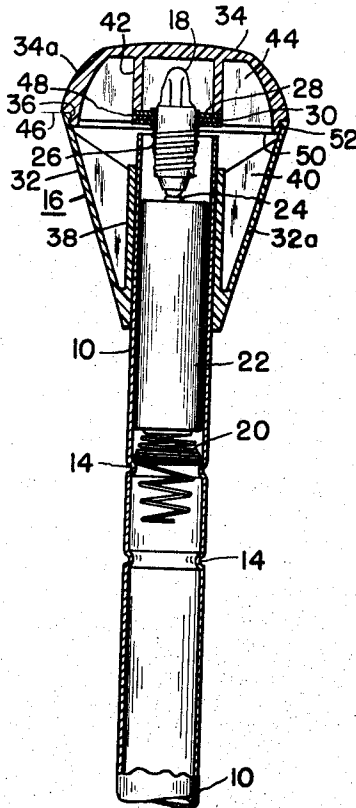


Fig. 2

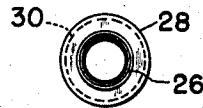


Fig. 3

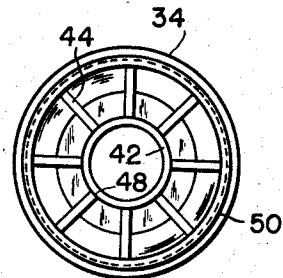


Fig. 4

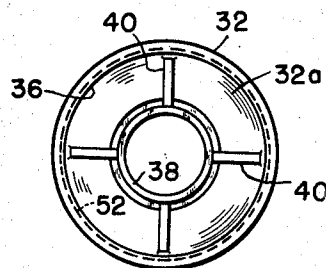


Fig. 5

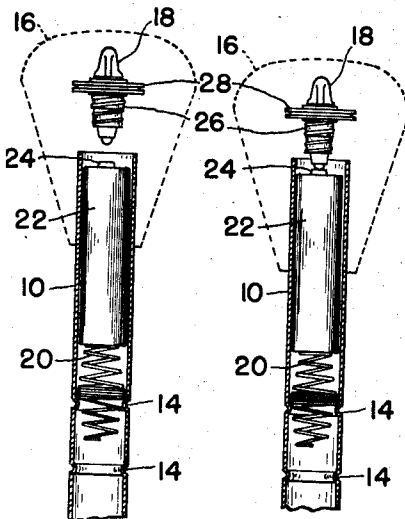


Fig. 6

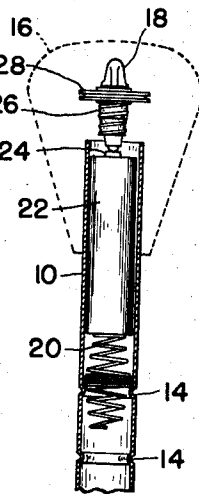


Fig. 7

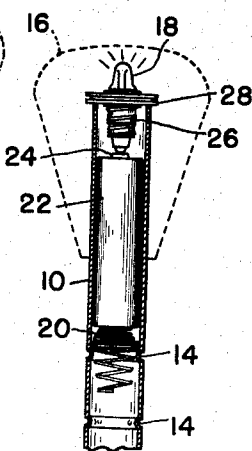


Fig. 8

INVENTOR.
Donald W. Falloon

BY
Webb Mackay & Burden
HIS ATTORNEYS

1

2,889,449

ILLUMINATED BATON HEAD

Donald W. Faloon, McCandless Township, Allegheny County, Pa., assignor to Suburban Toy & Manufacturing Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Application July 23, 1958, Serial No. 750,332

9 Claims. (Cl. 240—6.42)

The present application, in general, relates to a head for a baton or the like and, more specifically, to a ball-shaped baton head made of translucent material and containing a lamp bulb to light it. The lighted head adds a striking decorative quality to the effectiveness of the baton, making is particularly attractive when being twirled in darkness.

Prior lighted batons have used complicated structures for supporting and wiring the bulb and for switching the bulb on and off. In some prior lighted batons, the components have not been sufficiently rugged and firmly secured together in order to withstand falls, or they have been susceptible to circuit faults arising from the strenuous forces exerted on them in normal use. Centrifugal force, for instance, has had the tendency to make or break the circuit to the bulb at times when such action is not wanted.

The baton head structure according to the present invention materially reduces, if not eliminates, difficulties of the foregoing character, providing a simplified construction of few parts held in rugged association together and establishing a straightforward, essentially fault-free circuit. The head consists of a hollow plastic ball made of translucent material and separable into two halves along a snap-fit joint in order to make the inside accessible for the insertion or removal of an interior lamp bulb. The head slides over a hollow shafted metal baton. The bulb is preferably fixed therein by a metal socket element which holds it in a contacting position with a dry cell within the shaft and which in a surrounding area about the bulb establishes separate contact with the metal end of the shaft to complete a ground return path establishing an electrical circuit through the dry cell.

Both halves of the ball according to the present invention have aligned tubes therein with internal reinforcing webs extending between the inside of each half and the associated tube. One half, forming a body portion of the ball, has an interned bead or flange as its openable end and is arranged with the tube thereof frictionally engaged to grip the metal shaft, which latter is inserted at the opposite end of the body. The other half covers the open end and has a confronting lip provided with an outwardly directed groove adapted to effect said joint by making a snap fit with the flange on the body.

The plastic construction is a definite advantage because of the effectiveness of the material in producing a positive snap fit as desired and the resulting lightness of the ball offsets to a marked degree the weight of the electrical components required. This plastic is or may be pigmented to form various color combinations. Also, the referred-to frictional grip between the tubes in the plastic ball and the end of the shaft makes possible a simple on-off switch action for axially positioning and grounding or interrupting the circuit of the socket element of the bulb against the steel shaft, thereby lighting the bulb at only the times desired to cause the ball cover to glow. Suitable plastics are polyethylene and styrene.

2

The accompanying drawings illustrate a presently preferred embodiment of my invention, wherein:

Figure 1 is a longitudinal view of a baton carrying a head embodying my invention;

Figure 2 is an enlarged longitudinal view corresponding to Figure 1 and sectionally showing the head end thereof;

Figures 3 and 4 are end showings viewed in the upward direction in Figure 2 and showing the respective members for providing a socket for fitting the bulb concentrically to the dry cell and for fitting the bulb concentrically to the ball cover;

Figure 5 is a showing viewed in the downward direction of Figure 2 showing the body portion of the ball; and

Figures 6, 7, and 8 are sequence views showing the operation of the device, partially schematically, in switching the bulb on and off.

In particular reference to the drawings, my baton head fits on a baton, generally indicated at 10, having a hollow metal shaft which is capped at 12 at the lower end and in which a series of grooves 14 is turned in spaced points along the length. The opposite end carries a head consisting of the hollow plastic ball 16 which internally supports a penlight type lamp bulb 18 and which is supported with a friction fit on the end of the baton shaft 10.

The turned groove 14 adjacent the head end of the shaft forms a circular retainer ridge on the inside which supports the large center section of a double frusto conical coil spring 20. A penlight type dry cell 22 engages the free upper end of the spring 20 and has a positive center electrode 24 which engages the bulb 18 on the battery-connected side thereof. Besides acting as a lower cushion or suspension for the dry cell, the double conical spring 20 also acts as the means for electrically grounding the lower negative terminal of the dry cell 22 to the steel shaft 10.

The spring 20 tapers both ways from its larger center section so that, whichever way the spring is placed in the shaft, the center section is fitted on the ridge to retain it and there is a free outer end of the spring 20 on the top side to engage the negative electrode of the cell.

A bulb holder element consists of a threaded socket 26 for holding the threaded end of the bulb in registration with the dry cell electrode 24 and a stack composed of metal washers 28 and a fiber spacer washer 30 which is clamped in rigid contact with the socket to hold the bulb centered within the ball 16. The ground side of the bulb is connected to the metal of the shaft 10 through the lower metal washer 28 forming a contact engageable or disengageable from the bare metal of the shaft.

The ball 16 according to Figure 2 consists of a frusto conical body 32 open at both ends and a cover 34 which closes the larger end of the body. The body has an inwardly turned bead or flange 36 at the larger end and a tube portion 38 is integral with the small end of the body and extends axially therein for a substantial portion of but not all of the length of the body. The body 32 has a plurality—four, as illustrated in Figure 5—of reinforcing webs 40 which extend radially between and are integral with the inside of the body and the tube portion 38 and also with the floor of the body 32.

The webs 40 reinforce the body 32 when the baton is dropped and the head strikes the ground. The tube portion 38 holds the webs in place relative to the shaft and prevents their inner edges from sliding around the tube portion on the baton when it is twisted, either from a blow or by hand. The tube also frictionally fits over the shaft 10 and holds the head on the shaft.

The cover 34 has sides 34a in continuation of the sides 32a of the body and contains a second tube 42 concentric with the cover 34 and integral therewith. The

tube 42 is aligned with the tube portion 38 but has a bore of slightly lesser diameter. A larger set of webs 44—twice the number of the webs 40, as illustrated in Figure 4—extend radially between and are integral with the inside of the cover 34 and the tube 42 and also with the floor of the cover 34. The tube 42 and the webs 44 reinforce the cup in the same manner as the tube portion 38 and the webs 40 reinforce the body 32.

The tube 42 provides a container or globe for the lamp bulb 18 which is located behind a formation in the floor end of the cover 34. As shown in Figure 2, the central portion of the cover opposite the tube 42 is thicker than the edges and has essentially the function of a lens. Also, the end of the elongated tip of the bulb 18 is provided with a lens through which a portion of the light emitted from the bulb is concentrated into a beam directed against the lens portion at the end of the cover 34.

For purposes of replacing the bulb 18, the ball 16 is separable along a juncture line 46 and it is relatively simple to pry off the cover 34 from the body by inserting and twisting a key, knife, or screwdriver at the juncture line 46. The stack of washers serve as a mounting flange which detachably seats the bulb 18 in the cover, and for accommodating same the webs 44 have portions extending beyond the lower end of the tube 42 to form the fingers of a springable container socket 48 disposed between the tube 42 and the tube 38 which frictionally grips the stack of circular metal washers and fiber washer, 28 and 30, respectively.

To assemble the parts of the ball, the bulb 18 is threaded into the socket 26 and thereafter the bulb and socket are forced into the container socket 48 of the cover 34. Then the cover 34 is placed over the larger end of the body 32 and given a sharp rap. In this manner, a raised circular lip 50 carried by the cover is forced within the flange 36 so that this flange and a groove 52 formed around the lip make a snap fit.

Thereafter, the shaft 10 is introduced into the open end of the ball 16, as illustrated in Figure 6, and, as shown in Figure 7, they are telescoped together to a point establishing initial contact between the bulb 18 and the positive center electrode 24 of the dry cell. At and past this point, the battery suspension spring 20 is compressed to maintain an electrical contact between the bulb and the positive electrode 24. This biased relationship between dry cell and lamp bulb in their normal position is illustrated in Figure 2.

When the bulb 18 is to be lit, the ball 16 is moved by hand to the position shown in Figure 8 in which the ground-connected side of the bulb completes a circuit through the lower washer 28, the body of the shaft 10, and the spring 20.

It should be noted that centrifugal force exerted outwardly along the axis of the shaft in the direction of the arrows of Figure 1 merely augments the force of the spring 20 to keep the dry cell 22 of Figure 8 in contact with the battery side of the bulb. Similarly, from Figures 2 and 7, it can be seen that the centrifugal force in no way tends to re-establish the circuit when unwanted, in view of the positive separation of the socket washers 28 and the bare end of the shaft 10. To replace the dry cell 22, the ball 16 is pulled off the shaft and the shaft is turned downwardly.

I prefer to make the present baton head of a non-conducting plastic or synthetic resin, such as polyethylene, which can be given bright, clear colors and which has a high gloss surface but is nevertheless translucent to produce the proper glow in the cover 34.

Although the present ball 16 for the baton head is essentially hollow, it can withstand repeated blows, and its yieldable plastic composition can be inexpensively molded into the intricate shapes shown. The washers 28 and 30 protect the interior of the ball from chafing by the sharp edges of the shaft 10. Also, as indicated, the lower washer 28 constitutes the movable contact of an on-off

switch in cooperation with the end edge of the shaft 10 and additionally transmits the full axial component of the shocks of falling thereto.

The use of reinforcing webs in the body 32 and the cover 34 and especially the use of a greater number of webs for the cover securely buttresses the ball 16 from side shocks from falls.

While the foregoing disclosure describes a presently preferred embodiment, it is to be understood that the invention may be practiced in other forms within the scope of the appended claims.

I claim:

1. A hollow-shafted baton having a generally hollow ball of plastic at the head thereof, said ball having a frusto conical body with a tube portion therein frictionally gripping the external surface of the shaft head, a cover on said body arranged with a lamp bulb tube therein, webs extending between the inside surface of said cover and said lamp bulb tube for holding the latter in concentric relationship to the cover, to the body of the ball, and to the baton shaft, a bulb element with flat mounting flange means secured thereto in current conducting relationship and operably clamped between said tube and the adjacent end of said shaft to form an electrically energizable ground return path for lighting the bulb in clamped, centered relationship within said tube, and a source of lighting current accommodated in a hollow portion at the head end of the shaft and operably outwardly biased into single point electrical contact with the bulb element in said path to energize same.

2. A hollow-shafted baton having a generally hollow ball made of translucent plastic and disposed at the head thereof, said ball having a conical body with a tube portion therein frictionally gripping the exterior of the shaft, a cover on said body arranged with a lamp bulb tube therein in spaced-apart relation to said tube portion in the body, webs extending between and integral with the inside surface of said cover and said lamp bulb tube for holding the latter in concentric relationship to the cover, to the body of the ball, and to the baton shaft, said shaft extending at the end beyond the corresponding end of said tube portion and in mutually confronting relationship to said lamp bulb tube, a bulb element with flat circular mounting flange means secured thereto in current conducting relationship and operably clamped between said tube and the adjacent head end of said shaft to form an electrically energizable ground return path for lighting the bulb, said webs having extension portions beyond said tube so as to form a counter socket disposed between it and the shaft to frictionally grip said circular flange means to hold the bulb in clamped, centered relationship within said tube, and a source of current in said end of the shaft and operably outwardly biased into single point electrical contact with the bulb element in said path to light same.

3. The baton according to claim 1 wherein said single point of contact constitutes the sole means of connection intervening immediately between said source and said bulb element and wherein an interference fit directly between said tube portion and said shaft provides a force of friction grip as aforesaid materially exceeding the outward pressure of biased contact exerted by the current source so as to simultaneously without slippage overcome swirl-induced centrifugal effects exerted on said current source in said baton in service.

4. A hollow-shafted baton having a generally hollow ball of plastic at the head thereof, said ball having a frusto conical body with a tube portion therein frictionally gripping the surface of the shaft, a number of first webs extending between and integral with the inside surface of said body and the tube portion for holding the former in concentric relationship to the shaft, a cover on said body arranged with a lamp bulb tube therein, second webs of approximately twice said number extending between and integral with the inside surface of said cover

5

and said lamp bulb tube for holding the latter in concentric relationship to the cover, to the body of the ball, and to the baton shaft, a bulb element with flat mounting flange means secured thereto in current conducting relationship and operably clamped between said tube and the adjacent end of said shaft to form an electrically energizable ground return path for lighting the bulb in clamped, centered relationship within said tube, and a source of current in said adjacent end of the shaft and operably outwardly biased into single point electrical contact with the bulb element in said path to light same.

5. A hollow-shafted baton having a generally hollow ball of plastic at the head thereof, said ball having a frusto conical body with a tube portion therein frictionally gripping the surface of the shaft, a lens-carrying cover on said body arranged with a lamp bulb tube therein behind said lens, webs extending between the inside surface of said cover and said lamp bulb tube for holding the latter in concentric relationship to the cover, to the body of the ball, and to the baton shaft, a bulb element with flat mounting flange means secured thereto in current conducting relationship and operably clamped between said tube and the adjacent end of said shaft to form an electrically energizable ground return path for lighting the bulb in clamped, centered relationship within said tube, and said shaft containing a spring retainer ridge inside said shaft in a portion extending therefrom to said shaft end, and further containing in assembly therewith a reversible double frusto conical spring which tapers both ways from its larger center section so as to present a free outer end either way the center section is seated on said retainer ridge in said end portion, and a voltage cell slidably mounted in the end of said shaft in operative engagement between the free outer end of said spring and said bulb element for energizing the electrical path of the latter and lighting same.

6. A hollow-shafted baton having a generally hollow ball of plastic at the head thereof, said ball having a frusto conical body with a tube portion therein frictionally gripping the surface of the shaft, a lens-carrying cover on said body arranged with a lamp bulb tube therein behind said lens, webs extending between the inside surface of said cover and said lamp bulb tube for holding the latter in concentric relationship to the cover, to the body of the ball, and to the baton shaft, a bulb element with flat mounting flange means secured thereto in current conducting relationship and operably clamped between said tube and the adjacent end of said shaft to form an electrically energizable ground return path for lighting the bulb in clamped, centered relationship within said tube, said body and cover being separable at a mutual point between the larger ends of the two parts and one of which has an inwardly turned flange at the larger end, the other having a raised lip on its larger end but with a smaller diameter than the latter said larger end, said lip provided with an outwardly directed groove adapted to make a snap fit at the joint between the parts about said inwardly turned flange of said one part, and a source of current in said adjacent end of the shaft and operably outwardly biased into single point electrical contact with the bulb element in said path to light same.

7. A translucent baton head comprising a hollow plastic ball provided with a frusto conical body and with a tube portion therein defining an opening at the small end of the body and adapted to coaxially receive a metal baton, a plurality of reinforcing webs extending between and integral with the inside of said body and said tube portion to hold the former concentric to the latter, said ball including a lens-carrying cover on said body arranged with a lamp bulb tube therein behind said lens and in spaced-

6

apart relation to said tube portion, a second plurality of reinforcing webs extending between and integral with the inside of said cover and said lamp bulb tube to hold the latter concentric to said cover, a lamp bulb, and unitary means including a bulb holder for seating said lamp bulb in a fixed location to said cover and to said second webs, and arranged with contact means affixed thereto seatable on the metal end of said baton to establish an energizable ground return path for electrically lighting said lamp bulb.

8. A translucent baton head comprising a hollow plastic ball structure provided with a conical body and with a tube portion therein defining an opening at the small end of the body and adapted to coaxially receive a metal baton, reinforcing webs extending between and integral with the inside of said body and said tube portion to hold the former concentric to the latter, said structure further including a cover on said body arranged with a lamp bulb tube therein and in spaced-apart relation to said tube portion, second reinforcing webs extending between and integral with the inside of said cover and said lamp bulb tube to hold the latter concentric to said cover, a lamp bulb, and unitary means including a bulb holder for seating said lamp bulb in a fixed location to said cover and to said second webs and arranged with contact means affixed thereto seatable on the metal end of said baton to establish an energizable ground return path for electrically lighting said lamp bulb, said body and cover being separable at a mutual joint between the larger ends of the two parts and one of which has an inwardly turned flange at the larger end, the other having a raised lip on its larger end but with a smaller diameter than the latter said larger end, said lip provided with an outwardly directed groove adapted to make a snap fit at the joint between the parts about said inwardly turned flange of said one part.

9. A translucent baton head comprising a hollow polyethylene ball provided with a body larger at one end than the other and with a tube portion therein defining an opening of a predetermined dimension at the small end of the body and adapted to coaxially receive a metal baton, the bore of said tube being of a uniform dimension corresponding to said opening, webs in said body extending between and integral with the inside thereof and said tube portion to hold the former concentric to the latter, a cover on said body with a light emitting surface at one side and arranged with a lamp bulb tube at the opposite side, the bore of said tube being uniform but of a smaller dimension than said predetermined dimension, webs in said cover extending between and integral with the inside thereof and said tube, said cover webs having extension portions at the end beyond the corresponding end of said tube, a screw-threaded lamp bulb element, consolidated bulb holder and contact means structure for holding said bulb element in a fixed location in said ball, said contact means comprising a stack containing metal disks of a diameter exceeding the outside diameter both of said tube portion and said lamp bulb tube, said cover web extension portions providing an insulated socket gripping said contact means of said structure to hold the bulb end of said element concentrically within said lamp bulb tube, and a threaded socket on said structure gripping said bulb element to hold the threaded end of said element concentrically to said tube portion.

References Cited in the file of this patent

UNITED STATES PATENTS

1,398,799	Recker	Nov. 29, 1921
2,601,554	Peters	June 24, 1952
2,681,979	Manoloff	June 22, 1954