Jan. 3, 1933. J. L. SHANNON 1,893,108

BATTERY HAND LAMP OR FLASH LIGHT

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Fig. 1.

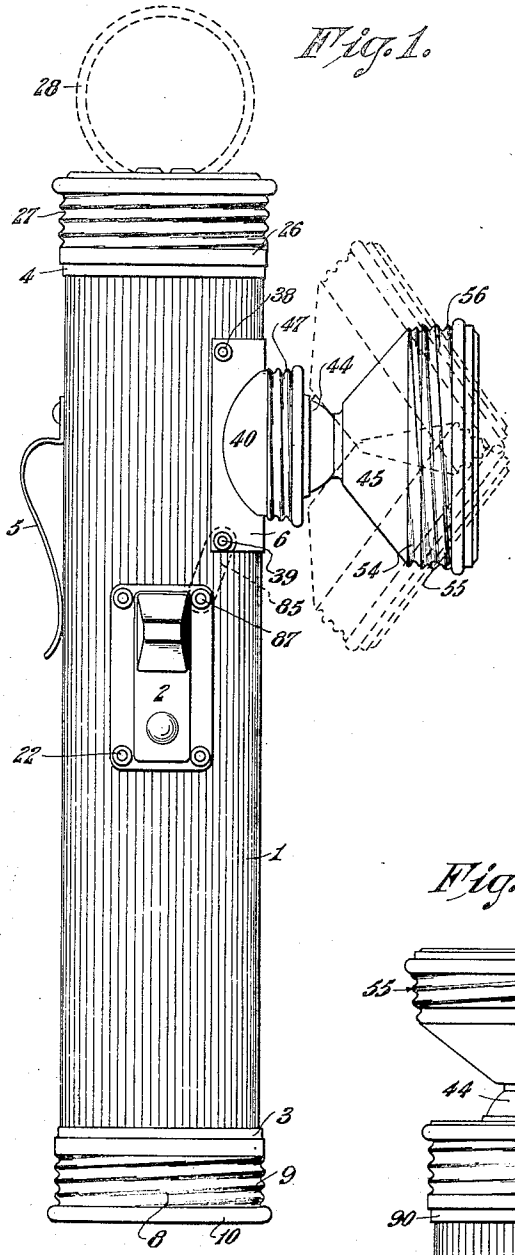


Fig. 2.

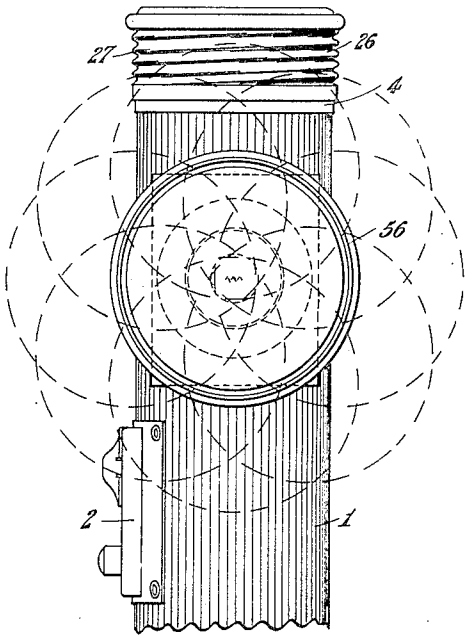
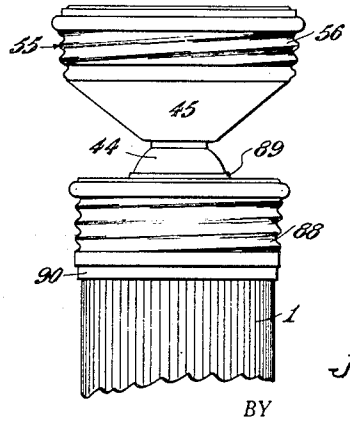


Fig. 3.



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Fig. 4.

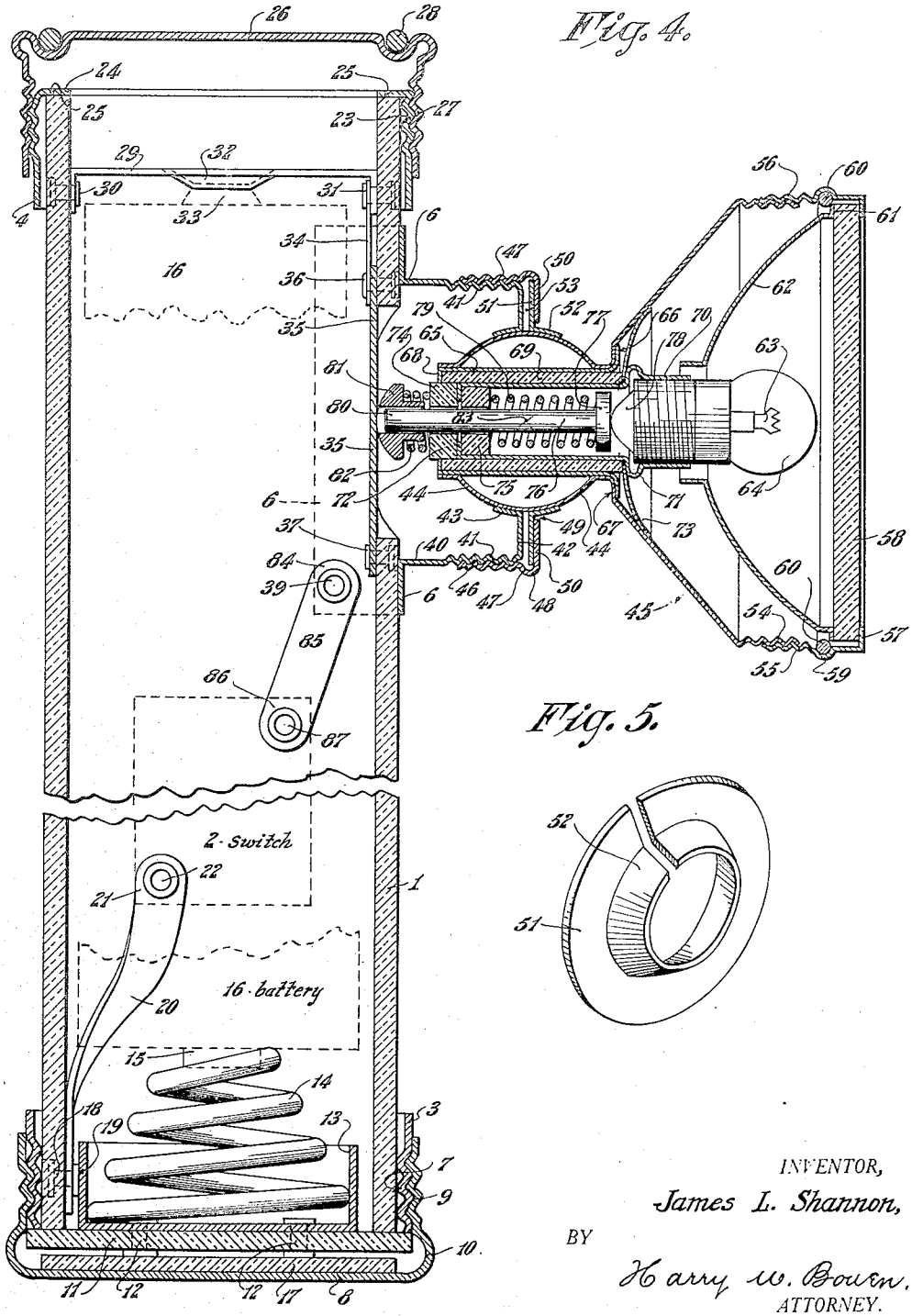


Fig. 5.

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Fig. 6.

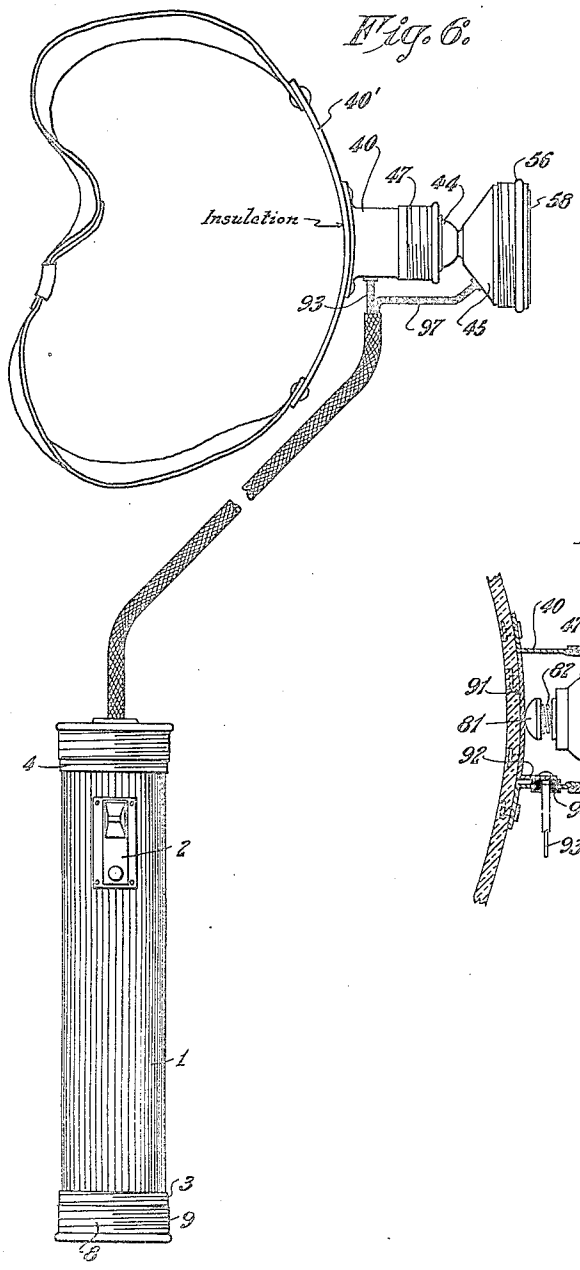
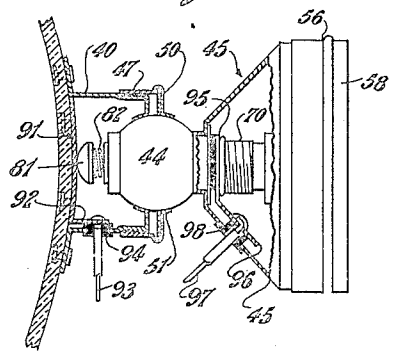


Fig. 7.



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Patented Jan. 3, 1933 1,893,108

UNITED STATES PATENT OFFICE

JAMES L. SHANNON, OF LONGMEADOW, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FRENCH BATTERY COMPANY, OF MADISON, WISCONSIN, A CORPORATION OF WISCONSIN

BATTERY HAND LAMP, OR FLASH LIGHT

Application filed June 7, 1930. Serial No. 459,687.

My invention relates to improvements in battery hand lamps, or flash lights, and more particularly, to improvements in those parts of the battery hand lamp which control the direction and focus of the beam of light.

One of the principal objects of my invention is to provide a head, or lamp supporting member, which may be adjusted to throw a beam of light in any chosen direction, covering a very wide range, without changing the position of the battery case.

Another, or further, object of my invention is to provide a swivel head containing a lamp, electric connections, a reflector, focusing cap, and lens, so constructed and arranged as to provide a unit which may be installed on the side or top of a battery case, or used as a separate unit, independent of the battery case, except for the connecting wires.

A further object of my invention is to provide means for establishing electrical connections between the various parts in such a way as to definitely prevent any possibility of grounding, if a conducting material should come in contact with any or all metal parts on the exterior of the lamp.

A preferred form of my invention is illustrated in the accompanying drawings, in which

Fig. 1 is a side elevational view, showing the battery enclosing case, the switch, bottom and top metal caps, supporting clip, suspending swivel head and focusing ring.

Fig. 2 is a partial front elevational view.

Fig. 3 is a partial elevational view of a battery case showing the swivel head mounted in the top cap.

Fig. 4 is a sectional view considered in a plane passing through the axis and showing the various parts in detail.

Fig. 5 is a perspective view of the split collar which forms the outer bearing for the universal ball joint.

Fig. 6 is an elevational view of the swivel head mounted upon a typical head harness, and connected by wiring to the battery case, and

Fig. 7 is a detail view showing modifications in the electrical connections employed with the construction illustrated in Fig. 6.

Referring to the drawings in detail, in which similar numerals refer to similar parts throughout:

1 is a battery casing composed of non-conducting material, to which are riveted, or otherwise secured thereto, the switch 2, the threaded metal collars 3 and 4, the supporting clip 5, and the metallic socket plate 6.

The collar 3 is formed with a threaded part 7, onto which is threaded the bottom cap 8 by means of the threaded part 9. The cap 8 is formed with a bead 10, into which is pressed the disc of insulating material 11, which is slightly larger in diameter than the threaded part 9. Secured to the non-conducting disc 11, with the rivets 12, is the metal cup 13, into which is pressed the spiral-shaped compression spring 14, which forms a shock absorbing contact with one terminal 15 of the battery 16. The rivets 12 are insulated from the bottom cap 8 by the disc 17, made of non-conducting material. Attached to the casing 1, with the countersunk rivet 18, which forms a contact with the metallic cup 13 at 19, is the metal strip 20, its opposite end 21 being secured to the switch plate 2 with the rivet 22.

The collar 4 is formed with a threaded part 23, and a flanged portion 24, which forms a bearing for the end 25 of the casing 1. The top cap 26 is secured to the collar 4 by means of the threads 27. Hingedly connected to the cap 26 is the supporting ring 28 which is shown in Fig. 1 in its open dotted operative position.

Extending across the inner upper end of the casing 1 is the metal bar or strip 29 which is secured to the casing by means of the countersunk rivets 30 and 31. The strip 29 is formed with an indented or struck-up part 32 at its middle portion, which forms a contact with the terminal 33 of the battery 16. The strip 29 is of thin spring metal and forms a shock absorbing stop, when the battery, or batteries, are inserted in the case. Secured to the strip 29, with the rivet 31, is one end of the metal strip 34; the opposite end of the strip 34 is secured to the plate 35 by the countersunk rivet 36. The plate 35

is secured to the inside of the battery case 1 by the countersunk rivets 36 and 37.

The socket plate 6 is secured to the battery case 1, with the rivets 38 and 39, which is formed with a cylindrical portion 40, upon which the threads 41 are formed. The outer end 42 of the portion 40 is formed with an inwardly, extending and curved-shaped bearing socket 43, which acts as one bearing for the spherically-shaped end 44 of the lamp head 45.

Attached to the socket plate 40 by means of the threads 46 is the cap 47, which is formed with a bead 48 and an opening 49 in its end 50, said opening 49 being large enough to permit the insertion of the spherical part 44 of the lamp head 45. After the spherical part 44 has been inserted in the opening 49, the split collar 51, (see Fig. 5), is forced over the ball 44, with its projecting spherical-shaped socket 52, through the opening 49, thus forming the outer bearing for the ball 44. A space 53 is left between the inner bearing 42 and the outer bearing 52, whereby friction on the ball 44 may be maintained, by a take-up on the threads 41, in order to hold the head 45 in any desired position, and also, to take up wear on the ball 44. The head 45 is formed with threads 54, engaging the threads 55 on the lens ring 56. This lens ring is formed with the flanged portion 57, which supports the lens 58, and the bead 59, into which is pressed the lock ring 60, which holds the flange 61 of the reflector 62 against the lens 58, thereby supporting the reflector 62 in the lens ring 56, independent of the head lamp 45. The usual friction means are employed between the threads 54 and 55 to maintain the desired adjustment of the focus, obtained by screwing the lens ring 56 with the reflector 62 inward or outward in relation to the focal point 63 of the bulb 64.

Located within and pressed into the spherical ball 44 is the tubular metal bearing 65, formed with a flanged end 66 which bears against the shoulder 67 of the lamp head 45, and an opposite inwardly extending flanged end 68, which forms a stop for the end of the insulating cylinder 69. The threaded lamp socket 70 is pressed into the insulating cylinder 69, and is formed with a bead 71 and a flanged end 72. The metal washer 73 is secured between the bead 71 and the end of the insulating cylinder 69, making an electrical contact between the grounded terminal of the bulb and the lamp head 45, but being separated from the insulated terminal of the bulb by the cylinder 69. On each side of the flanged end 72 of the socket 70 is secured the washers 74 and 75 of insulating material, which form bearings for the contact pin 76. The contact pin 76 is formed with a head 77, which is forced into contact with the insulated terminal 78 of the bulb 64 by the expansion spring 79. The opposite end 80 of the contact pin 76 forms a bearing for the button headed sleeve 81, which is slidably mounted thereon, and the spring 82 forces the button 81 into continual contact with the plate 35, compensating the difference between the plate 35 and the spherical ball 44, caused by the pivoting of the ball 44 about its center point 83.

Attached to the socket plate 6 by the rivet 39 is one end 84 of the metal strip 85, the opposite end 86 being secured to the switch 2 by the rivet 87.

The electrical circuit is as follows:

From the battery 16 to battery terminal 15, the spring 14, cup 13, rivet 19, metal strip 20, rivet 22, switch 2, rivet 87, metal strip 85, rivet 39, metallic socket plate 6, spherical ball 44, head 45, washer 73, bulb socket 70, grounded side of bulb 64, through the filament to the insulated contact 78 of bulb 64, contact pin 76, button head 81, plate 35, rivet 36, metal strip 34, contact strip 29, raised part 32 of contact strip 29, and contact 33 of battery 16.

In the modified form of battery hand lamp shown in Fig. 3, the top cap 88 is formed with a socket bearing 89 similar to the threaded cap 50 in Fig. 4, thereby forming the necessary support for the spherical ball 44, of the head 45, and split washer 51. The collar 90 is formed with a bearing similar to 43, of Fig. 4, and the hanging ring is mounted on the bottom cap 8.

In the modified construction, shown in Figs. 6 and 7, the socket plate 40 is modified to fit the piece 40^1 of the head harness, the contact plate 91 being formed with an upturned part 92, to which the battery wire 93 is secured. The wire 93 is insulated from the socket plate 40 by the non-conducting washers 94. The metallic washer 95 has an extended bent part 96, to which is secured the wire 97, and the wire 97 and washer 95 are insulated from the head 45 with the non-conducting washer 98. The wires 93 and 97 are attached to the battery case 1, and suitable connections are made to the terminals of the battery or batteries within the case.

It is apparent that with a battery hand lamp substantially adjusted, as described, a beam of light may be directed and focused at any angle over a wide range, and that by use of the supporting clip, hanging ring, or head harness, both hands will be left free for work.

It will, also, be seen that I have provided a battery hand lamp the circuit of which is completely insulated within the casing.

What I claim is:

1. In a battery hand lamp, a battery enclosing casing, a universal joint mounting for the lamp comprising a spherical shell, a threaded member secured to said casing and formed with a curved surface engaging the shell, a second threaded member formed

with a curved surface engaging the shell and threaded onto the first threaded member, a split ring engaging the shell and forced into contact with the shell, when the two threaded members are moved, relative to each other.

2. In a battery hand lamp, a battery enclosing casing, a universal joint mounting for the lamp head comprising a spherical shell, a threaded member secured to said casing and formed with a curved surface engaging the shell, a second threaded member formed with a curved surface engaging the shell and threaded onto the first threaded member, a split ring engaging the shell and forced into contact with the shell, when the two threaded members are moved relative to each other, a battery in the casing, a plate in circuit with the battery, a spring actuated button engaging the plate, and contact means between the button and one terminal of the lamp.

3. In a battery hand lamp, a battery enclosing casing, a battery therein, a lamp head, a bulb therein, a socket plate attached to the side of the casing, a swivel joint in the socket plate for supporting the lamp head, means for electrically connecting the lamp to a terminal of the battery comprising a metallic springy bar having a struck-up part with which the terminal engages to cushion the battery, a plate connected to the metallic bar, a spring actuated button engaging the plate, and electric connections between the button and the bulb.

4. In a battery hand lamp, a battery casing, a universal joint for attaching the lamp head having a spherical part to the side of the casing comprising a cylindrical-shaped member attached to the casing with a curved seat end, to receive the spherical part, a split ring engaging the spherical part and means on the cylindrical member having a threaded connection with the casing for moving the split ring against the spherical part for varying the friction of the spherical part on the casing.

5. In combination, in a hand flash lamp, a battery enclosing casing, a battery therein, a lamp head having a spherical part, a lamp socket electrically connected to the lamp head, means comprising a cylindrical member of insulating material located between the spherical part and the lamp socket, a spring actuated member within the lamp socket with which a terminal of the lamp engages, a contact bearing plate on the casing, a spring actuated member having a curved surface engaging the said contact plate, a plunger rod on which the said curved member is located, the plunger rod being in electrical contact with the lamp terminal, a washer member between the lamp head and the lamp socket for grounding the lamp, and electrical connections between the terminals of the battery and said contact plate.

6. A swivel lamp hood for battery hand lamps comprising, in combination, a cylindrical socket member formed with a spherical seat, a hood member formed with a hollow spherical portion at one end and a comparatively enlarged, open ended, threaded portion at the opposite end, a cap member threaded on said threaded portion, a lens and reflector secured in said cap member, a split ring formed with a spherical seat portion engaging the exterior surface of the spherical portion of said hood, a cap member engaging said collar and threaded on said socket member, a metal sleeve secured within said spherical portion, a cylinder of insulating material secured within said metallic sleeve, a metallic lamp socket secured within said cylinder, a lamp in said socket, a metallic washer engaging a bead on said lamp socket and said hood member whereby the shell of the lamp is grounded on said hood member, a spring actuated contact pin supported in said lamp socket member and insulated therefrom and engaging the end terminal of said lamp, and contact means between said pin and one terminal of the battery of said hand lamp and between said hood member and the opposite terminal of said battery.

7. In a battery hand lamp, a battery enclosing casing, a lamp head, a lamp socket therein, a contact plate on the casing, a spherical bearing forming a part of the lamp head, a second bearing part secured to the lamp head and to the spherical bearing, a cylinder of insulation engaging the second bearing part and a portion of the lamp socket, a washer located between the lamp head and socket for grounding the socket, a spring-actuated contact member engaging the lamp terminal at one end and the contact plate on the casing at its opposite end, said plate being electrically connected to the battery and a curved split ring for frictionally retaining the lamp head in different adjusted positions.

In testimony whereof, I hereunto subscribe my name this 2nd day of June, 1930.

JAMES L. SHANNON.