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FLASHLIGHT LAMP SOCKET HOLDER ASSEMBLY

Filed May 6, 1947

2 Sheets-Sheet 1

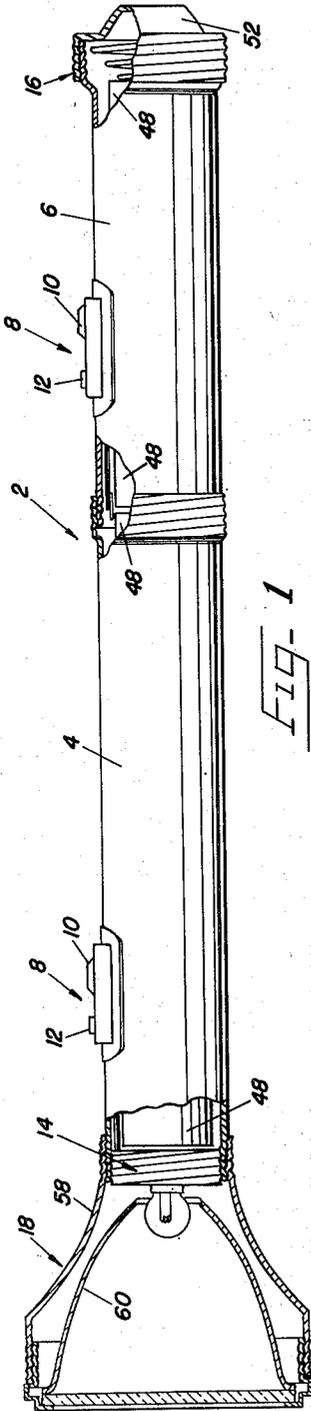


FIG- 1

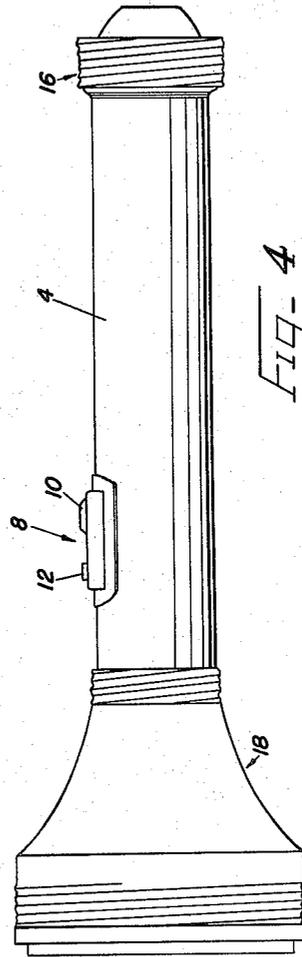


FIG- 4

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2 Sheets-Sheet 2

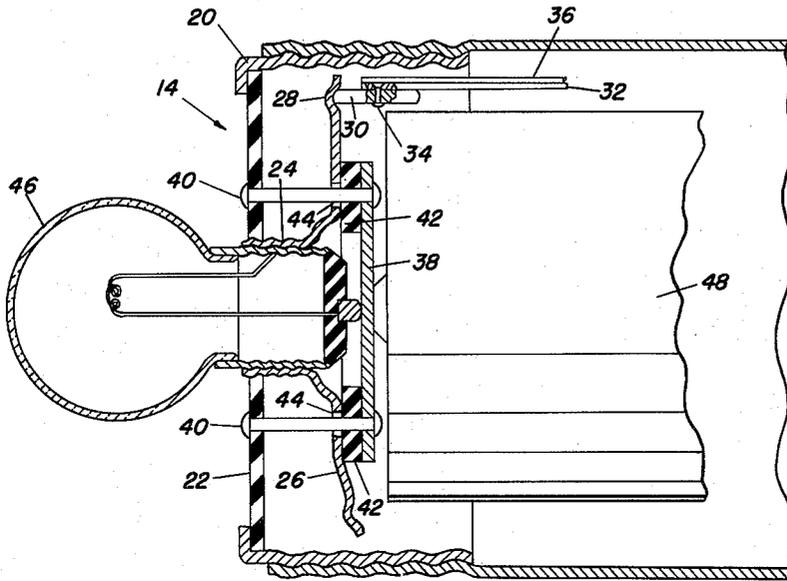


Fig- 2

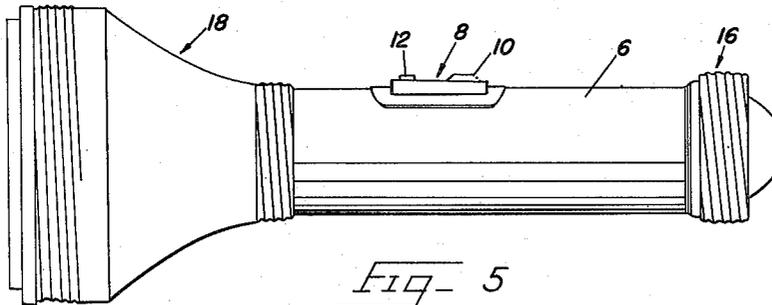


Fig- 5

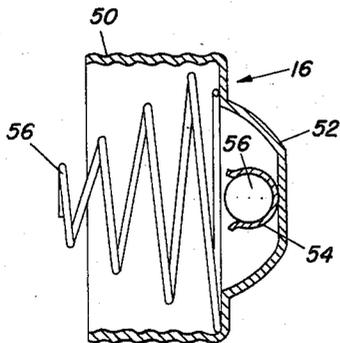


Fig- 3

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# UNITED STATES PATENT OFFICE

2,530,913

## FLASHLIGHT LAMP SOCKET HOLDER ASSEMBLY

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Application May 6, 1947, Serial No. 746,340

3 Claims. (Cl. 240—10.6)

**1** This invention relates to an electric torch, commonly known as a flashlight lamp socket holder assembly.

People who go on fishing or camping trips find themselves in circumstances in which it is desirable to have flashlights of different brightness. While out on the lake fishing, or while walking through the woods, it is desirable to have a powerful light capable of casting a strong beam a long distance. Then, when the camper is back in the cabin, he would like to have a small light that he can carry around in his pocket. The most obvious solution of course is to be provided with two or three flashlights of different sizes. There are at least two disadvantages to this solution, one of them being the added expense, and another being space limitations: most people who go on camping trips already have a great bulk of equipment that must be carried along, and carrying two or three flashlights instead of one aggravates this problem. The solution proposed by this invention provides a single large powerful flashlight that can be broken down into a smaller flashlight.

It is an object of this invention to provide a powerful flashlight having a battery holder which can be separated into at least two smaller segments, the two segments preferably having different battery capacities. Each segment is provided with a switch and is constructed to receive the lamp, reflector, and end cap so that it may serve as a complete flashlight itself.

In the drawings:

Fig. 1 shows a powerful flashlight made according to this invention.

Fig. 2 is an enlarged detail view in section showing the lamp socket holder and associated parts.

Fig. 3 is a detailed sectional view of the end cap or closure.

Fig. 4 is a view in elevation showing the parts assembled to form a complete flashlight which is smaller than the big flashlight shown in Fig. 1, being made with the longer of the two battery holder segments, and

Fig. 5 is a complete flashlight but smaller than the one shown in either of Figs. 1 and 4, being made up with the shorter of the two battery holder segments.

The flashlight shown in Fig. 1 includes a battery holder indicated generally by the reference number 2. Battery holder 2 is made up of two parts or segments 4 and 6. Each part 4 and 6 includes a switch mechanism 8 which may, and

**2** preferably does, include an on and off switch 10 and a flash button 12.

The two parts or segments 4 and 6 are interchangeable. To accomplish this interchangeability, the front end of the segment 6 is constructed to screw into the back end of segment 4, and the front end of segment 4 is constructed so that it may be screwed into the back end of segment 6. A lamp socket holder 14 may be screwed inside the front end of either segment 4 or 6. A closure or end cap 16 is made so that it can be screwed onto the back end of either segment 4 or 6. A reflector assembly 18, which may be conventional, is constructed to screw onto the outside of the front end of either segment 4 or 6.

The details of the lamp socket holder and associated mechanism are shown in Fig. 2. As shown in that figure, the socket holder consists of a threaded shell 20 made of an electrically conductive material, having at its forward end a plate 22 made of a non-conductive or insulating material. An electric lamp socket 24 is secured substantially in the center of the plate 22. A contact plate 26 may be formed integral with the socket 24, but is in any event electrically connected with socket 24. Contact plate 26 is preferably cupped slightly toward the rear as is indicated at the lower half of Fig. 2. In addition, the contact plate is preferably provided with a contact groove 28 to receive the rotatable element 30 which is electrically connected with the switch 8 by means of a conductor bar 32. Element 30 is rotatably mounted on the conductor bar 32 by means of a rivet 34 which provides the axis of rotation of the element 30 and also furnishes the electrical contact with conductor bar 32. A strip of insulating material 36 may be provided on the outside of conductor bar 32. Alternatively, the shell 20 may be lined with an insulating material.

A battery contact plate 38 is held in place by means of rivets 40 which engage the plate 22. Note that plate 38 is electrically insulated from contact plate 26 by insulating washers or spacers 42. Note also that the holes 44 in the contact plate 26 are considerably larger than rivets 40 to insure that there will be no electrical contact between the rivets and the contact plate.

A conventional electric lamp 46 is screwed into socket 24 and makes electrical contact with the contact plate 38 as well as with the socket 24.

The flashlight shown in Fig. 1 has a battery holder which has a five cell capacity. These batteries, shown at 48, are the standard commercially available flashlight dry cells. A five cell flashlight such as is shown in Fig. 1 requires a

bulb or lamp of a given capacity. Such lamps too are standard and are commercially available. A bulb which is designed for use in a five cell flashlight will give off no light when used in a two or three cell flashlight. It is therefore necessary to provide another bulb of the proper capacity.

Bulbs which are designed for use either with two or three cell flashlights are commercially available. When the flashlight is made up as a five cell torch, as shown in Fig. 1, the smaller capacity bulb is carried in the closure or end cap 16 which is shown in detail in Fig. 3. As can be seen in Fig. 3, the closure 16 comprises a threaded shell 50 which is recessed as shown at 52. A U-shaped clip 54 is secured as by soldering in the bottom of recess 52. The conversion bulb 56 is carried by the clip 54. A contact spring 56 is removably held in the shell 50 to insure electrical contact between the numerous batteries and between the foremost battery and contact plate 33. Spring 56 also forms a part of the electrical circuit.

Placing the conversion bulb 56 in a recess as shown in Fig. 3 insures that the bulb will not be broken by screwing the closure 16 too tight onto the end of the battery holder.

All threads shown are preferably rolled, as will be understood by those skilled in the art.

The reflector assembly 18 is preferably of the focusing type. For this purpose, the position of the reflector shell 58 may be adjusted by means of the screw thread that holds it in place, thus varying the position of the bulb in relation to the reflector element 60.

#### Operation

With the two battery holder segments 4 and 6 screwed together as shown in Fig. 1, the flashlight provides maximum illumination. When it is desired to provide a light of smaller capacity, say a two cell light, the parts are all disassembled: segment 6 is unscrewed from segment 4, lamp socket holder 14 is unscrewed from the segment 4 and is screwed into the forward end of segment 6, the five cell capacity bulb is removed from the socket and is replaced by the smaller capacity bulb, the large bulb being placed in the spring clip in the end cap 16, and the reflector assembly 18 is screwed onto the forward end of the segment 6. This gives the flashlight shown in Fig. 5 which is small and is easily carried in a pocket. The same operations are performed with the segment 4 to provide a three cell flashlight such as is shown in Fig. 4.

The cupped shape of the contact plate 26 in the lamp socket holder assures a good electrical contact, because rotatable element 30 will be screwed tightly against the contact plate 26 and against the spring bias provided by the cupped shape of the contact plate. At the point of contact, the contact plate 26 will straighten out somewhat as is seen in the upper half of Fig. 2. The groove 28 in the contact plate assures that the rotatable element 30 will not be crowded

either inward or outward risking possible damage to the parts.

When the two parts or segments 4 and 6 are screwed together to make one big flashlight as shown in Fig. 1, only the switch in the forward segment is operative. The switch in the rear segment does not enter into the function of the light.

I claim:

1. In a flashlight, a battery holder, a unitary lamp socket and holder assembly screwed into one end of the battery holder, a spring biased contact plate comprising a part of said assembly and electrically connected to the lamp socket, a switch on the battery holder and having an extension disposed within the battery holder, and a rotatable element associated with said switch extension and being electrically engageable with the spring biased contact plate.

2. In a flashlight, a battery holder, a unitary lamp socket and holder assembly screwed into one end of the battery holder, a grooved spring biased contact plate comprising a part of said assembly and electrically connected to the lamp socket, a switch on the battery holder and having an extension disposed within the battery holder, and a rotatable element associated with said switch extension and being electrically engageable with the spring biased contact plate at some point in the groove.

3. In a flashlight, a battery holder, a unitary lamp socket and holder assembly screwed into one end of the battery holder, a grooved spring biased contact plate comprising a part of said assembly and electrically connected to the lamp socket, a switch on the battery holder and having an extension disposed within the battery holder and a rotatable element associated with said switch extension and being electrically engageable with the spring biased contact plate at some point in the groove, said plate having a peripheral flange inclined at an obtuse angle to the plane of the plate, said inclined flange of the contact plate engaging the rotatable element carried by said extension as the said assembly is screwed into the holder and acting to cam the rotatable element into the groove, said spring biased plate flexing on engagement with the extension to provide a yielding contact between said extension and contact plate.

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