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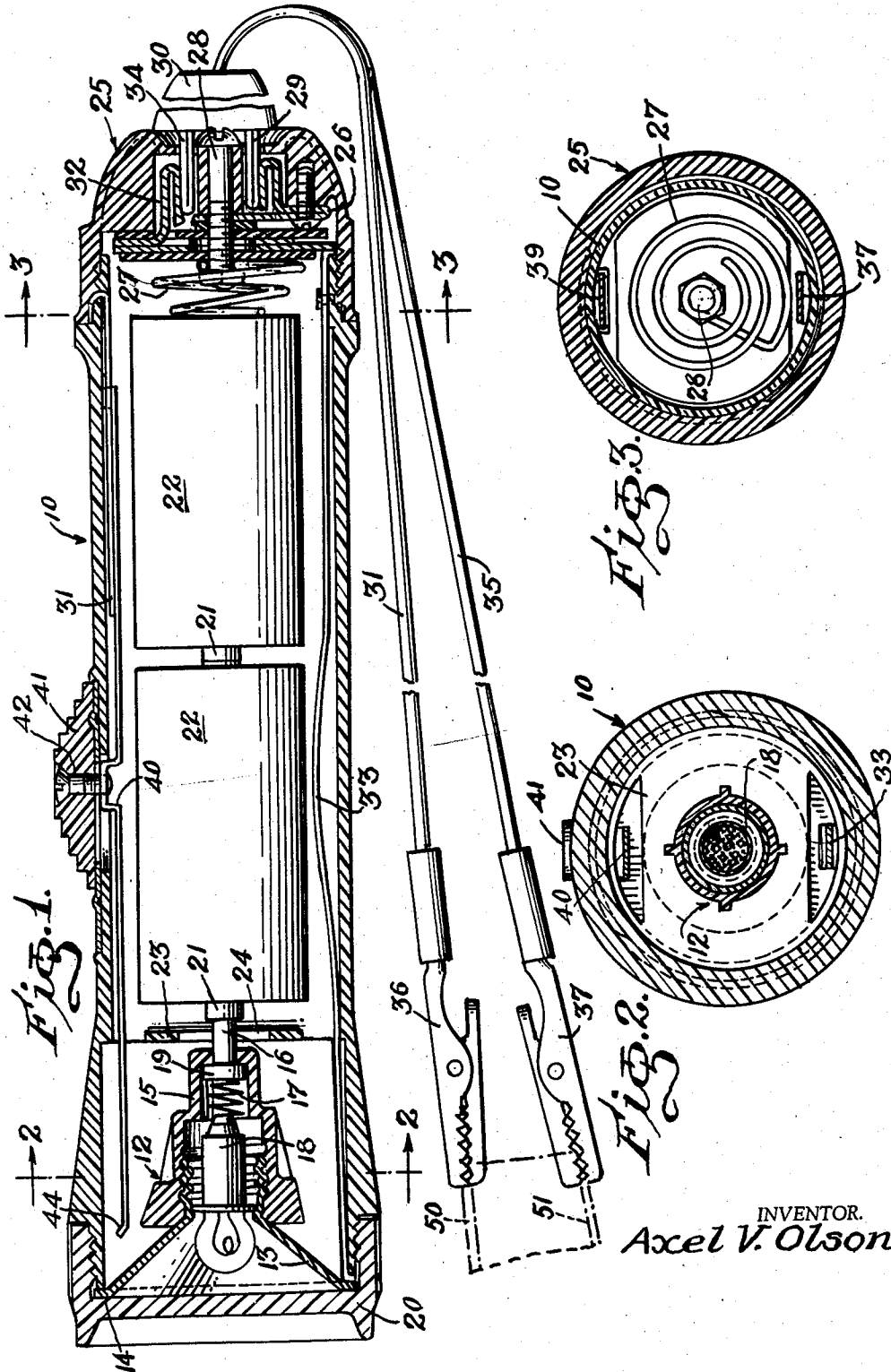
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COMBINED FLASHLIGHT AND ELECTRIC CIRCUIT TESTER

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2 Sheets-Sheet 1



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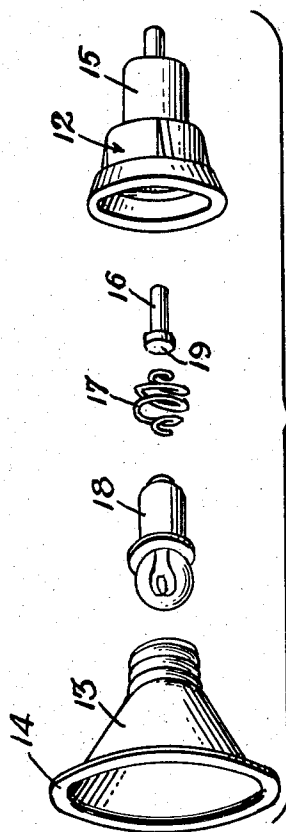


Fig. 4.

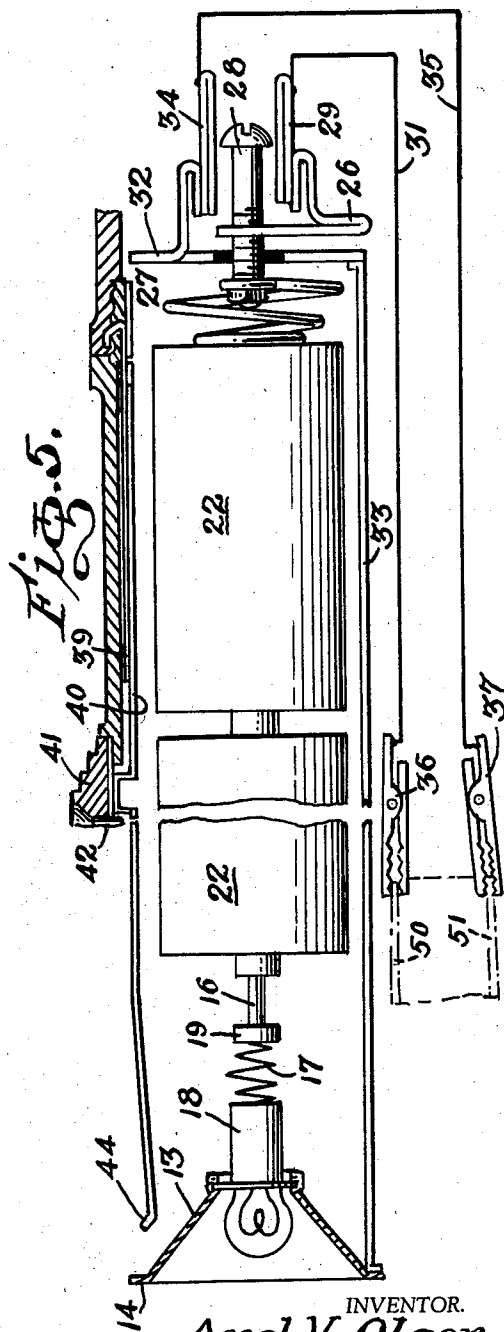


Fig. 5.

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**COMBINED FLASHLIGHT AND ELECTRIC
CIRCUIT TESTER**

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1 Claim. (Cl. 324—53)

This invention relates to flashlights and more particularly to a combined flashlight and electric circuit tester.

It is an object of the present invention to provide a dry cell flashlight that may be used in a conventional manner and which embodies electrical circuitry adapted to permit the use of the flashlight for circuit testing purposes.

It is another object of the present invention to provide a combined flashlight and circuit tester of the above type wherein a tubular housing is provided with a rear end closure that has contact elements forming a part of the flashlight electrical circuit and also includes other contact elements that may be electrically connected to an electric line to be tested and which is also associated with the flashlight circuit.

Other objects of the invention are to provide a combined flashlight and electric circuit tester bearing the above objects in mind which is of simple construction, has a minimum number of parts, is inexpensive to manufacture and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawing, in which:

Figure 1 is a longitudinal cross-sectional view of a combined flashlight and circuit tester made in accordance with the present invention;

Figure 2 is a transverse cross-sectional view taken along line 2—2 of Figure 1;

Figure 3 is a transverse cross-sectional view taken along line 3—3 of Figure 1;

Figure 4 is an exploded perspective view of certain of the contact elements of the device shown in Figure 1; and

Figure 5 is a diagrammatic circuit diagram of the device shown in Figure 1.

Referring now more in detail to the drawing, and more particularly to Figures 1, 2, 3 thereof, a combined flashlight and circuit tester made in accordance with present invention is shown to include a main non-metallic tubular housing or case 10 that has a socket assembly 12 supported at the front end thereof. A reflector 13 of hollow conical configuration is threadingly secured at the base thereof to the socket 12, and is provided with a radially outwardly extending flange 14 at the opposite end thereof that is clampingly held within the housing between the adjacent portions of the housing 10 and the lens piece 20 that is threadingly secured thereto.

The socket assembly 12 is provided with a hollow tubular portion 15 at the rear extremity thereof. This housing has a rearwardly opening bore that slidably receives a contact plunger 16 for limited longitudinal movement. The forward end of the plunger 16 is provided with an enlarged head 19 that is confined within the tubular portion 15, and against which, one end of the compression spring 17 is seated. The opposite end

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of the spring 17 is in electrical contact with the base 18 of a lamp. The housing 10 is constructed to house any desired number of dry cell batteries 22 therein. A divider 23 formed with the internal walls of said housing extending transversely therein and provided with a central opening 24 separates the battery housing portion from the socket assembly portion and the shank portion of the plunger 16 extends through the opening 24 into electrical contact with the positive terminal 21 of the adjacent battery 22. The next battery 22 has its positive terminal 21 in contact with the negative casing of the forward battery, while the negative casing thereof is in electrical contact with one end of a compression spring 27 that is secured at its opposite end to the inside portion of a female socket enclosure 25. The bolt 28 that secures the spring 27 to the socket 25 is in electrical contact with a conductor 26 that is adapted to be engaged by a contact 29 of a two pronged male prong 30, to which is also connected an electric conduit 31. Another conductor 32 is insulated from the first conductor 26 and has a conductor bar 33 electrically connected thereto and to the flange 14 of the reflector 13. This conductor 32 is arranged to electrically engage with the other contact 34 of the male plug 30, and is provided with a similar conduit 35. The opposite end of each of the conduits 31, 35, is provided with a spring contact clip 36, 37, respectively, that may be used to electrically engage with the ends of conductors 50, 51, forming a part of a circuit to be tested.

As is more clearly shown in Figure 5, the housing 10 is also provided with a manually operated switch that may be actuated to selectively close and open the flashlight circuit. This switch includes a fixed contact 39, one end of which is in constant electrical contact with the metallic socket 25. A longitudinally slidable circuit closer or contact member 40 has one end that is in constant slidable engagement with the fixed contact 39 and has an opposite end 44 that is adapted to be moved into and out of engagement with the flange 14 of the reflector 13. A slide button 41 to which the sliding contact 40 is secured, such as by a screw 42, provides means for manually effecting the longitudinal movement of the sliding contact 40.

Thus, when the device is used as a flashlight, the electrical circuit is through the sliding contact 40, the reflector 13, the lamp base 18, the batteries 22, the bolt 28 electrically connected to the metallic female socket 25, and the fixed contact 39. When using the device as a circuit tester, the circuit is through one clip 36, the line 31, the conductor 26, the bolt 28, batteries 22, lamp base 18, reflector 13, fixed contact 33, conductor 32, line 35, and the opposite terminal clip 37. Thus, if the circuit that includes the terminals 50, 51, is otherwise closed, the circuit through the lamp and batteries of the tester is also closed, whereby the lamp will illuminate to signify the condition of the circuit tested.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claim.

What I claim as new and desire to protect by Letters Patent of the United States is:

A combined flash light and electric circuit tester comprising, in combination, a non-metallic tubular flash light housing with external threads on the rear end thereof, a metallic female socket with internal threads at the forward end thereof removably assembled upon said external threads of said housing, an electric conductor connected with said female socket and extending inside said housing, a circuit closer movably secured to said housing intermediate its ends, a divider wall formed with the internal walls of said housing and extending trans-

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versely therein intermediate the ends thereof, said divider wall provided with a central opening and providing a battery chamber in the rear end of said housing and a lamp chamber in the forward end of said housing, a plurality of dry cell storage batteries supported end to end within said battery chamber, a lamp socket and reflector assembly secured to the forward end of said housing and extending into said lamp chamber, a lamp maintained within said lamp socket, an opening in the rear end of said lamp socket, a contact plunger embodying a cylindrical rear end shank portion and an enlarged cylindrical head portion, said head portion supported within said lamp socket with the shank portion of said contact plunger extending rearwardly through said opening in said lamp socket, a small coil spring assembled between said bulb and said head portion of said plunger, said shank portion of said contact plunger extending through said opening in said divider wall and in electrical contact with the forward end of one of said dry cells, an electrical conductor connected with said circuit closer in sliding contact with said conductor connected with said female socket and movable into contact with said reflector assembly, electrical conductor means forming a closed electrical circuit between said reflector assembly and a first contact element in said female socket, a second contact element in said female socket, a large coil spring

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assembly secured by a bolt to said female socket and said second contact element and contacting the rear end of one of said batteries, the flashlight circuit including the circuit closer, the female socket and conductor extending into said housing, the electrical conductor connected with said circuit closer, the reflector assembly, the lamp bulb, the small coil spring, the contact plunger, the dry cell batteries, and the large coil spring, the bolt and the metallic female socket, the female socket having a pair of openings in the rear end thereof to receive a pair of male members embodied with a testing circuit, said first and second contact elements having prongs attached thereto and extending into said openings, the testing circuit including the first named contact element, the reflector assembly, the conductor extending between said reflector assembly and said first contact element, the lamp base, the small coil spring, the contact plunger, the dry cell batteries, the large coil spring, the bolt and said second contact element.

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