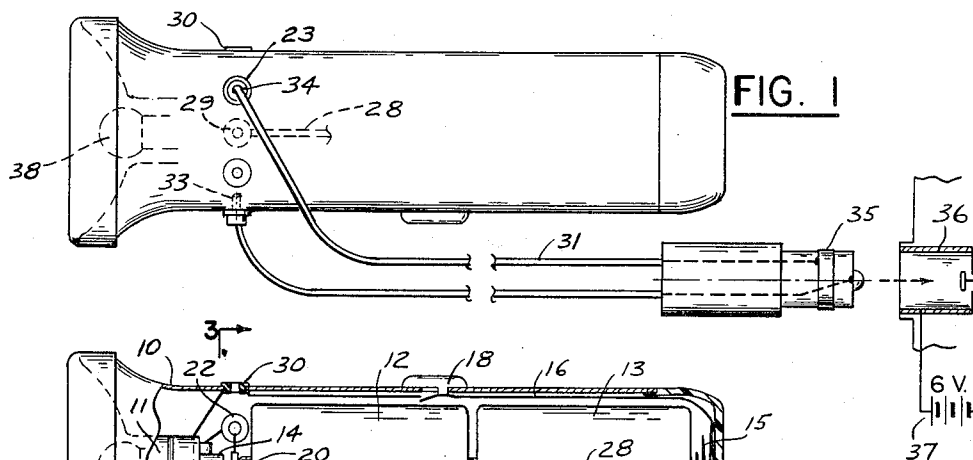
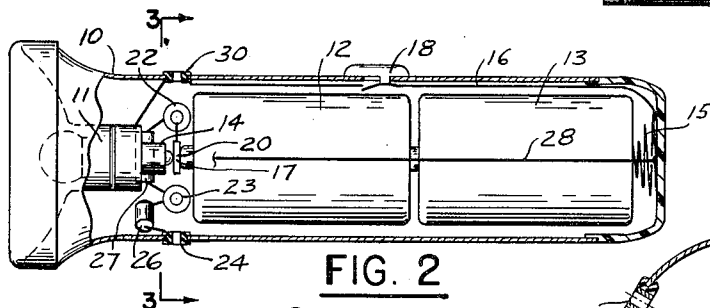
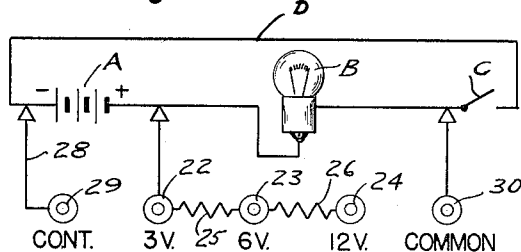
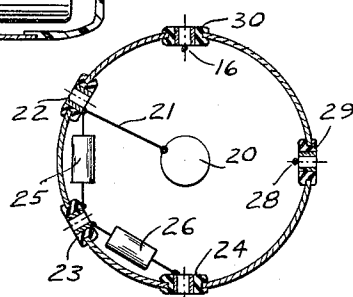
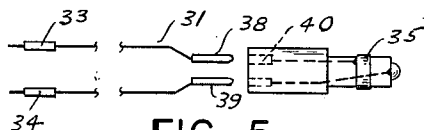
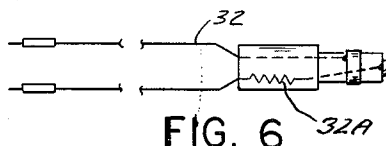
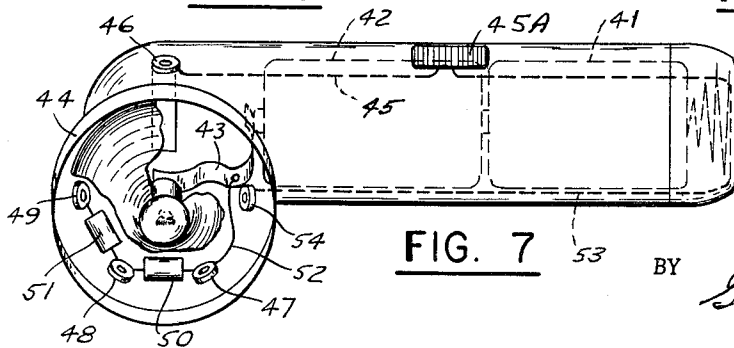


Aug. 18, 1964

M. LIPSON
COMBINED FLASHLIGHT, EXTENSION LIGHT, CONTINUITY
AND VOLTAGE TESTER
Filed April 20, 1959

3,145,337



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3,145,337
**COMBINED FLASHLIGHT, EXTENSION LIGHT,
CONTINUITY AND VOLTAGE TESTER**
Milton Lipson, 16 Duncan Ave., Jersey City 4, N.J.
Filed Apr. 20, 1959, Ser. No. 807,595
2 Claims. (Cl. 324-53)

This invention relates to an improved portable flashlight which can also be used as an extension light, a continuity tester and as a voltage tester.

The average motorist is frequently confronted with the frustrating situation of requiring the use of a flashlight or trouble light only to discover that his flashlight batteries are dead and that there are no spare batteries available. The instant invention comprises a modified conventional flashlight wherein a set of pin jacks are provided adapted to receive the plugs of an extension cord which can be plugged into the usual cigarette lighter on the dashboard. When the flashlight is thereby connected to the cigarette lighter, the voltage from the vehicular batteries is utilized to actuate the flashlight. In addition by selecting the proper pin jacks in connecting the extension cord, the flashlight can be used to test the electrical continuity of various circuits in the vehicle or other environments, or to test the voltage of other external sources of current as will be disclosed in more detail.

The equipment is compact and economical comprising merely an ordinary flashlight, properly modified and a conventional extension cord all of which fits comfortably in a conventional vehicular glove compartment.

Consequently the primary object of this invention is the provisions of a flashlight which can be used as an extension light operating off the batteries of a vehicle, preferably from the cigarette lighter.

An additional object is the provision of a flashlight which can be operated from external sources of voltage, and also used to test continuity of an external electric circuit.

A further object is the provision of a flashlight adapted for operation as an extension light from an external source of voltage, adapted for use as a tester of electrical continuity and the voltage of some external source.

Additional objects of this invention and novel features of construction will be made more apparent from the following detailed disclosure, claims and appended drawings in which:

FIGURE 1 is a side elevation of the novel flashlight depicting the method of connection with a cigarette lighter via an extension cord.

FIGURE 2 is a partial longitudinal cross section through the flashlight axis showing details of the internal construction.

FIGURE 3 is a transverse cross section through plane 3-3 of FIGURE 2 showing additional structural details.

FIGURE 4 is a schematic representation of the electrical circuit of the novel flashlight.

FIGURE 5 is a side view of the extension cord assembly used in conjunction with the flashlight.

FIGURE 6 is a modification of the extension cord assembly shown in FIGURE 5.

FIGURE 7 is a modification of the flashlight of FIGURE 2 demonstrating the manner in which an ordinary angle type flashlight is adapted to perform the same function as the straight flashlight of FIGURE 2.

Referring to the drawings, the novel flashlight is seen to comprise the conventional hollow housing 10, bulb assembly 11 and batteries 12 and 13, pressed towards the bulb contact 14 by a spring 15. In the conventional flashlight the electric circuit is effected by means of a conductor 16 connecting the rear battery 13 to the bulb and the bulb contact point 14 is in engagement with the con-

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tact 17 of the front battery 12. A switch 18 is interposed along conductor 16. This circuit is better understood on the schematic drawing of FIGURE 4 wherein A is the batteries, B is the bulb, C is the switch and D is the conductor 16. Thus the various elements are serially connected in the sequence A, B, C, D, A.

To arrive at the instant novel improvement a conductor disc 20 is interposed engagedly between the battery contact 17 and bulb contact 14. A conductor 21 (see FIGURE 3) connects disc 20 with pin jack 22 which is connected in series with pin jacks 23, and 24 with resistances 25 and 26 interposed between the jacks 22-23 and 23-24. Another conductor 28 interconnects the battery 13 with a pin jack 29 (see FIGURES 1, 3 and 4 in particular). A fifth pin jack 30, hereinafter referred to as "common" is connected to the conventional conductor 16 and the bulb assembly 11. It is to be noted that the pin jacks are mounted through apertures in the housing 10 located on the periphery at the same longitudinal position along the flashlight. Each jack is insulated from the housing and includes an internal bushing of conductive material adapted to receive plug connectors of equal diameter.

When the device is to be used as an extension light operating from an external source of voltage such as vehicular batteries, an extension cord such as 31 or 32 of FIGURES 1, 5 and 6 is employed. Plug 33 is inserted in common jack 30 and plug 34 in jacks 23 or 24 depending upon the voltage of the vehicular battery. For example, if the vehicular battery is six volts, only resistance 25 is required to effect the voltage drop to the proper amount (3 volts) for proper functioning of the bulb. Whereas if the batteries involved are 12 volts, both resistances 25 and 26 are required and plug 34 is inserted into jack 24. Thus with plugs 33 and 34 so connected the plug 35 is inserted into cigarette lighter 36 and the six volt battery 37 (see FIGURE 1) actuates the flashlight bulb 38 independent of the flashlight batteries. By connecting common jack 30 on the other side of switch 18 that is between the switch and the battery, the switch can be employed when the flashlight is operated as an extension light off the vehicular battery. It should be understood that the use of six and twelve volt batteries in this illustration does not limit the scope of this invention to my specific voltage since it is obvious that with the proper provision of resistances in series with the jacks any voltage can be used.

To use the device as a continuity tester, plug 33 is again inserted with common jack 30 and plug 34 is inserted into jack 29, designated cont. on FIGURE 4. In this set up plugs 38 and 39 (FIGURE 5) are removed from female adapter 40 and use to engage separated portions of the circuit to be tested for continuity. Alternately, plugs 38 and 39 can be provided with piercing points to penetrate corrosion at the surface of terminals or wires of circuit tested. When so connected, switch 18 is opened and current can only flow from the flashlight batteries through the bulb B and through the extension cord 31 and the circuit being tested. If the tested circuit is continuous, the flashlight bulb will light up, and if not the bulb will not be illuminated.

To test voltage with this device the extension cord 31 is used much in the same manner as in employing an external voltage to light the bulb except that the purpose is to ascertain a specific voltage rather than to light the bulb. Thus with plug 33 connected with common jack 30 and plug 34 with either jacks 22, 23 or 24 depending upon the voltage under test, bulb will be illuminated if the external voltage is equal to or somewhat greater than the amount required to force current through the resistances interposed between the jacks 22,

23, 24 and the light bulb. For example if plug 34 is connected with jack 24, then if the bulb is illuminated it is determined that the voltage source tested is 12 volts or greater. Similarly if plug 34 is connected with jack 23, the bulb will light if the external voltage is six volts or greater. Thus it is seen that with this device one can rapidly ascertain whether an external voltage is more or less than the specific rating for which the testing device has been constructed. It is obvious that by using extension cords with built-in resistances of varying ratings, a great range of voltages can be tested.

Primarily, however, the device has been created to be used in connection with automotive vehicles wherein six or twelve volts are in general vogue. Thus the resistances employed are (25 and 26) suitable to test or utilize six and twelve volt external sources.

The extension cord 32 of FIGURE 6 differs from that of FIGURE 5 in that the plug which fits into a cigarette lighter is not detachable from plugs 33 and 34.

It should be further noted that by means of the detachable plugs 38 and 39 of cord 31, the extension cord can be tapped in directly to the battery cables of the vehicular batteries where no cigarette lighter socket is available. The plug of cord 32 also includes a suitable resistance 32A and cords 31 and 32 could include such resistances per se.

In FIGURE 7, a modification of the invention is seen in which a conventional angle flashlight has been converted into the multipurpose device disclosed in connection with FIGURES 1 through 7. The basic organization is the same as in the previously described species of the inventions with the exception that the connection between the jacks and the light bulb are accomplished differently due to the difference in construction of an angle type flashlight. The batteries 41 and 42 are connected to the bulb (not shown) via a contact spring 43 which is mounted in the interior of the head 44 in such a position that when the bulb is in its operative position, the bulb contact point (not shown) engages spring 43. The circuit is completed by conductor 45 which connects the batteries and the bulb through switch 45A. A pin jack 46 is mounted in the head 44 and is electrically connected with the bulb. For the purposes of operating the bulb from an external source of current or to test the voltage of the source, pin jacks 47, 48 and 49 are provided with serially connected resistors 50 and 51 to accommodate external voltages of varying magnitudes. A conductor 52 connects the bulb and pin jacks 47, 48 and 49 via the spring 43. For continuity testing another conductor 53 connects the battery 41 with a fifth pin jack 54 resulting in the same electrical circuiting as is available in the species of FIGURES 1, 2 and 3. The extension cords of FIGURES 5 and 6 are used in the same fashion with the FIGURE 7 device as was described in connection with the species of FIGURES 1, 2, and 3.

Thus it is seen by a few simple alterations of a conventional flashlight, as disclosed herein, and the provision of an extension cord such as 31 or 32, an ordinary flashlight can be used as an extension trouble light operating off the vehicular battery, as a means for testing the electrical continuity of a vehicular circuit, or any circuit in general, and as a means for ascertaining the

magnitude of an external voltage. This simple device, which can be conveniently carried in a vehicular glove compartment, will perform practically all the functions heretofore obtained from complicated, expensive and cumbersome equipment.

Having described in detail the novel improvement, a grant of Letters Patent is desired for the inventive features disclosed as defined in the following claims.

I claim:

1. A combined flashlight and continuity tester, comprising a housing, a lamp mounted at one end of said housing and having first and second lamp terminals, a battery supported within said housing and having positive and negative terminals, one of said battery terminals being in contact with said first lamp terminal, a switch mounted through said housing, conductor means in the housing connecting said switch in series between the second lamp terminal and the other of said battery terminals, a first pin jack insulately separated from said housing and mounted therethrough to make electrical contact with the second lamp terminal, a second pin jack insulately separated from and mounted through said housing, said second jack making electrical connection with said first lamp terminal, in further combination with an extension cord having plugs at one end adapted for connection to said jacks, and having terminals at said other end, for connection with an external electrical circuit, whereby insertion of the said extension cord plugs into the said pin jacks, and connection of the extension cord terminals to an external circuit converts a conventional flashlight into a continuity tester, whereby the bulb and battery of the flashlight are used to test the continuity of the external circuit which has been connected to the extension cord, in further combination with an electric conductor disc interposed and in electrical contact with said one battery terminal and said first lamp terminal, including at least one additional pin jack mounted through the housing and in electrical contact with the said disc, and at least one electric resistance in series with the said conductor disc and last said pin jack, whereby the lamp can be operated from an external source of voltage by inserting one of the extension cord plugs into the first said pin jack, and the other extension cord plug into the pin jack which is serially connected to the conductor disc, resistance and lamp, whereby the device can be used as an extension light and voltage tester, in addition to its usages as a flashlight and continuity tester.

2. The device, as in claim 1, wherein all the pin jacks are circumferentially arranged about the housing, with their center lines lying in approximately the same plane, perpendicular to the axis of the housing.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,145,337

August 18, 1964

Milton Lipson

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the heading to the printed specification, line 4, for "16 Duncan Ave." read -- 61 Duncan Ave. --.

Signed and sealed this 17th day of November 1964.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents