May 30, 1950 W. E. SHOW 2,509,653

ELECTRICAL CIRCUIT TESTER

Filed May 23, 1946

FIG. 1

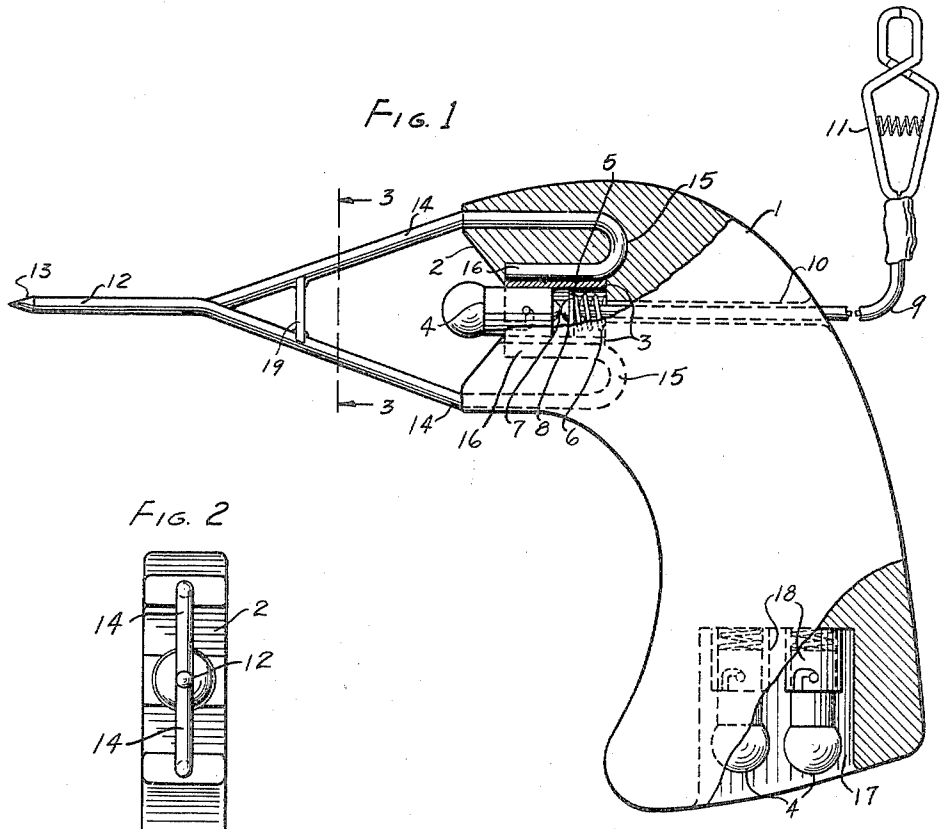


FIG. 2

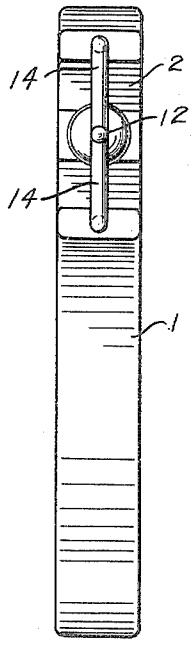
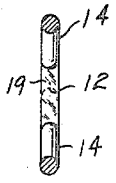


FIG 3



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ELECTRICAL CIRCUIT TESTER

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1 Claim. (Cl. 175—183)

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This invention relates to a circuit tester and more particularly to a device which is used for testing wiring of an airplane, motor vehicle, or other apparatus wherein wires are used for carrying current and are liable to become broken and interrupt operation of the apparatus.

One object of the invention is to provide a tester so constructed that a clip carried by an insulated wire may be applied to a ground and a pointed stem then pressed against a live wire to be tested so that the sharp end of the stem will penetrate insulation of the wire and cause an electric bulb of the tester to be lighted.

Another object of the invention is to provide a tester having a handle resembling the grip of a pistol and carrying the bulb and the ground wire and also the pointed stem or feeler in such position that when the handle is held in a person's hand the ground wire will project rearwardly therefrom and the stem project forwardly from the handle in position to be applied to a wire to be tested.

Another object of the invention is to provide a tester wherein the stem has rearwardly extending forms or arms which support a mirror in front of the bulb and have their rear portions embedded in the handle and so shaped that the socket for the bulb is mounted between them and firmly supported.

Another object of the invention is to provide a tester having a handle resembling a pistol grip and provided at its butt end with a pocket wherein sockets are mounted to carry extra bulbs.

Another object of the invention is to provide a tester which is of simple construction and very easy to operate.

The invention is illustrated in the accompanying drawings wherein:

Figure 1 is a view showing the improved tester in side elevation with portions in section;

Figure 2 is a front view of the tester;

Figure 3 is a sectional view taken along the line 3—3 of Figure 1.

The improved circuit tester has a handle 1 which is formed of hard plastic or other suitable insulating material and so shaped that it resembles the grip of a pistol. The upper end portion of the handle extends forwardly and is formed with a recess 2 which tapers rearwardly. A socket 3 for holding a bulb 4 is embedded in the handle with its open front end communicating with the inner or rear end of the recess 2 and in the socket is a terminal plate 5 pressed forwardly by a spring 6 so that when the bulb is fitted into the socket the center contact 7 of

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the bulb will be firmly engaged by the contact 8 of the plate. An insulated wire 9 extends from the socket 3 through a passageway 10 formed through the handle and this wire, which may be of any length desired, extends rearwardly from the handle and at its free end carries a clip 11 for gripping a metal object serving as a ground during testing a circuit.

A stem 12 formed of brass or other conductive material and tapered at its front end to form a sharp point 13 has its rear portion provided with forks or arms 14 which diverge rearwardly for a portion of their length and are then bent to extend parallel to each other, rear ends of the arms being bent and curved inwardly towards each other, as shown at 15, and then forwardly to form fingers 16 which are brazed to upper and lower portions of the socket 3. Since the socket is brazed to the fingers 16 and the handle is molded about the socket and the rear portions of the arms a very firm connection will be established between the handle and the pointer and when the handle is grasped the pointer or stem will project forwardly from the handle. A pocket 17 is formed at the butt end of the handle and in this pocket or recess are mounted sockets 18 for carrying extra bulbs 4' which may be duplicates of the bulb 4 or bulbs of larger capacity. The bulb 4 may be a 6 volt bulb for testing a circuit of a motor vehicle, one of the bulbs 4' 12 volts for testing construction equipment, and the other bulb 4' 32 volts for testing aircraft circuits, but it will be understood that bulbs of any desired voltage may be provided and selectively used.

When the tester is in use the clip 11 is applied to a suitable ground and the handle 1 then grasped and the sharp front end of the stem 12 pressed against a wire to be tested. As the sharp end of the stem penetrates the insulation of the wire being tested contact will be made with the wire and if no break is in the wire up to the point contacted the bulb will be illuminated and since a reflector mirror 19 is mounted between the arms 14 in front of the bulb the workman will instantly see the light. The stem may be applied to the suspected wire at various points until contact of the pointed end of the stem with the wire fails to cause the bulb to be lighted and a break in the wire thus easily located. Batteries and other electrical equipment may also be tested in a like manner in order to determine whether they are in proper working order.

Having thus described the invention, what is claimed is:

In a circuit tester, a handle formed of molded insulating material and including a lower portion constituting a grip, and an upper portion arranged angularly with respect to said lower portion and provided with a recess in its front end, said recess having its front portion tapered, there being a straight passageway in said upper portion arranged in the same plane as said recess and communicating with the latter, a bulb-holding socket snugly seated in the rear portion of said recess, a central terminal arranged in said socket, an insulated wire extending from the terminal in said socket through said passageway, a clip secured to the free end of said wire, a stem of conductive material provided with a sharp point on its front end for penetrating insulation of a wire to be tested, a pair of arms extending from the rear end of said stem and secured thereto, said arms diverging from each other for a portion of their length, said arms having curved rear portions terminating in spaced, parallel fingers, said fingers being

embedded in said handle, said fingers being arranged in contact with opposite sides of said socket and secured thereto, and a mirror arranged forwardly of the bulb-holding socket and extending between the diverging portions of said arms and secured thereto.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,395,819	Guy	Nov. 1, 1921
1,415,254	Maritzen	May 9, 1922
1,454,623	Carter	May 8, 1923
1,471,625	Opsahl	Oct. 23, 1923
1,639,889	Humm	Aug. 23, 1927
2,229,927	Kamper	Jan. 28, 1941

FOREIGN PATENTS

Number	Country	Date
647,226	France	July 24, 1928