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CIRCUIT TESTING DEVICE

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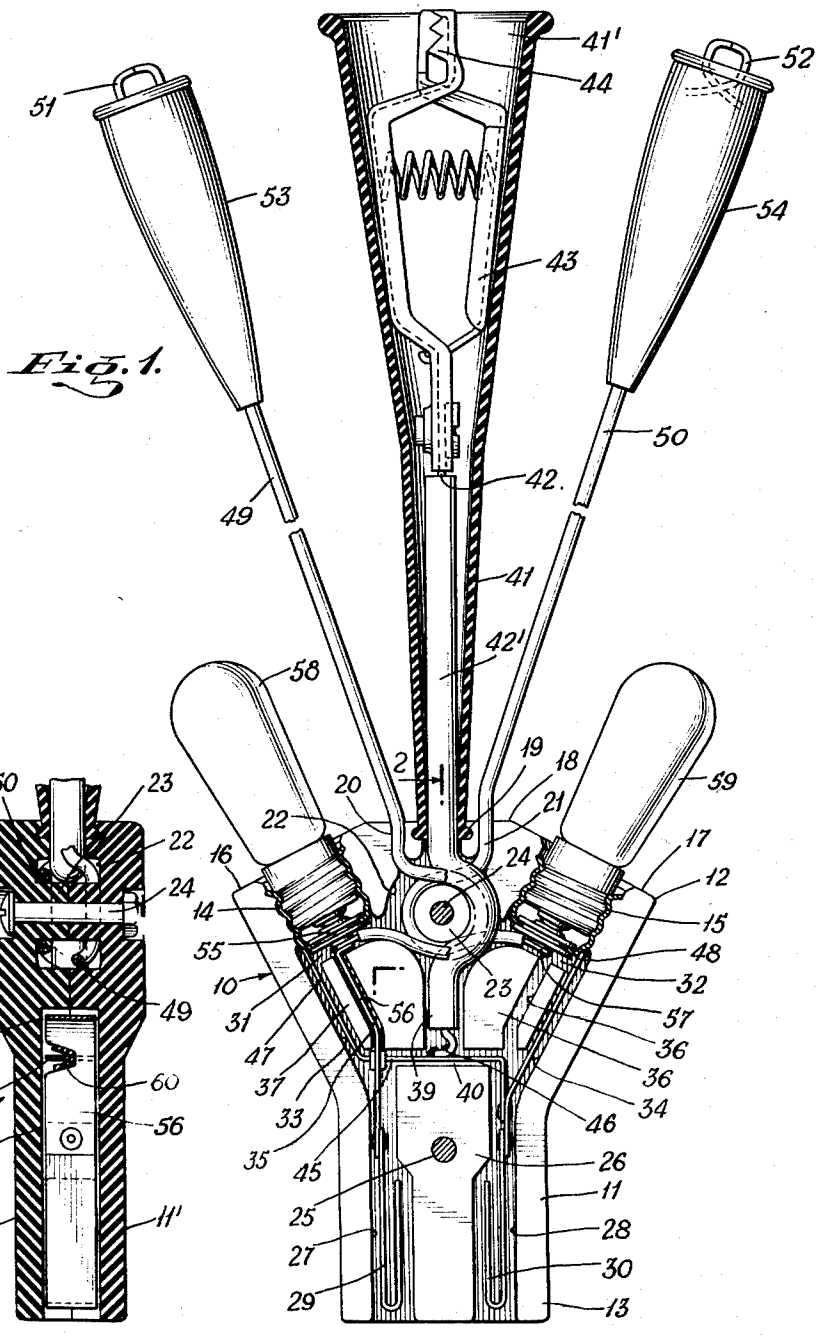



Fig. 1.




Fig. 2.

→ 2

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## CIRCUIT TESTING DEVICE

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This invention relates to devices for testing fuses, three phase lines and other electrical apparatus or circuits. More particularly, the invention deals with a device of this type and kind in the form of a socket having means whereby a drill or other electrical tool or appliance can be plugged into the socket, thus avoiding the necessity of carrying a long extension cord, and providing means for keeping the electrical tool in close proximity to the work being done. The novel features of the invention will be best understood from the following description when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed, and in which the separate parts are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is an enlarged sectional view through a device made according to our invention; and

Fig. 2 is a broken section on the line 2—2 of Fig. 1, showing only part of the construction.

In practice, a socket part 10 is provided comprising two similar casing portions 11—11' and as these casing portions are of the same structure, the brief description of one will apply to the other.

Both casing portions are composed of any suitable insulating material and comprise a wide end 12 and a narrow end 13. In the wide end are two electric bulb sockets 14 and 15 which open outwardly through diverging wall portions 16 and 17, the latter joining a straight wall portion 18 centrally of the wide end 12. The parts 11—11' have an undercut recess 19 opening through the straight end 18 and also two similar recesses 20 and 21. All of these recesses open into a ring shaped recess 22 centrally of which is a round hub portion 23 through which one fastener device or screw 24 is passed. Another similar fastening device 25 is passed through the body portion 26 at the contracted end 13. At each side of the body portion 26 are channels or recesses 27 and 28 in which are arranged the spring contacts 29 and 30 to establish electric contact with a conventional electric plug in establishing electric communication to the test device, as will be apparent later.

The recess 22 has diverging channels 31 and 32 arranged at the inner ends of the sockets 14 and 15, and the channels 31 and 32 communicate with the recesses 27 and 28 to other recesses 33 and 34. Inwardly of the recesses 33 and 34 are other recesses 35 and 36 formed in body portions 37 and 38, and these body portions are subdivided centrally of the socket in a recess 39. The recess 39 is placed in communication with the

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recesses 27—28, 33—34 and 35—36 in a transverse recess 40.

From the foregoing, it will be apparent that both sides of each casing 11—11' are identical, therefore, the formation of one casing will serve for use in constructing the two casing parts. Secured and retained within the undercut recess 19 of the casing parts is a long conical flexible rubber sleeve or shoe 41 through which is passed a conductor 42 to the outer end of which is secured a spring to clasp device 43, the jaws 44 of which are preferably contained within the outer enlarged end 41' of the sleeve 41. The flexible sleeve will permit compression of the jaw sides in opening the jaws to establish engagement with a part to be tested, which is engaged by the jaws 44. The inner end of the conductor 42 is arranged in an insulating jacket 42' and the conductor extends to and is suitably secured to a contact plate 45, as indicated at 46. The plate 45 extends from the spring contact 30 to the sockets 14 and 15, as seen at 47 and 48 respectively.

Extending into the castings through the recesses 20—21 are two other insulated wires 49 and 50, to the outer ends of which are secured clamps 51—52 respectively, similar to, but smaller than the clamps 43, the clamps 51 and 52 being contained in short conical jackets, sleeves or shoes 53—54 of flexible rubber or other insulating material. The wire 49 passes around the circuit body 23 and is secured to the center terminal 55 of the socket 14, as is also a contact plate 56 coupled or secured to the spring contact 29 and arranged in the recess 35. The other wire 50 passes around the body 23 and extends to and is coupled with the center terminal 57 of the socket 15. At 58 and 59 are shown electric bulbs in threaded engagement with the sockets 14 and 15. It is also preferred that the contact plates 47 and 56 be cut out where they cross each other, as indicated in Fig. 2 of the drawing and suitable insulation, as at 60 may be supported upon the plate 56 at the cutout portions thereof.

In tracing the circuits from the contacts 29—30 of the socket, it will appear that one line of the circuit from the contact 29 extends to the center contact 55 to the bulb 58 and from the bulb socket 14 back to the contact 30 through the plate 47. This keeps the light or bulb 58 on for supplying illumination, particularly when the test device is used in dark places where illumination is desirable. The other bulb 59 comprises a test bulb and the circuit of this bulb is traced as follows.

From the contact 29 through plate 56, wire 49

to clamp 51. Then from clamp 52, through wire 50 to the center terminal 57 of socket 15 and from the socket through the connection or plate 48 to the spring contact 30.

In using the device to test fuses, the two clamps 51 and 52 are used and if the fuse is good, the bulbs 58 and 59 will be illuminated, whereas if the fuse is burned out, the circuit to these bulbs will not be completed. This testing is done primarily on fuses of what are known as "three phase lines," each bulb being one hundred and ten volts. The test then takes place on a hook up of two hundred and twenty.

In doing electrical work, or in fact, any type of work, particularly in an unlighted area, the device may be used to contact with an electric circuit of an apparatus or the like, contacts being established by applying the clamp 44 to the ground side of the line and clamp 51 to the live side of the line. This connection will complete the circuit to the bulb 58, which then provides a source of light for the area in which the work is done, and further completes the circuit to the spring contacts or terminals 29 and 30 so that an electric drill or other electrical tool can be plugged into the socket and used at the area where the inspection and work is being conducted, without the need of running an extension cord from other source of electric supply.

The device can be conveniently used in making all types and kinds of electric repairs or installations, renewal of sockets, outlets and so forth. Any type of one hundred and ten circuit can be tested by first connecting the clamp 44 with the ground side of the line and then either one of the clamps 51—52 with the live side of the line and if the circuit is complete, the bulb or lamp controlled by the clamp 51—52 will be illuminated. In short, the device provides an all-purpose tester as well as what might be termed a short, circuit extension to which electric tools and the like can be conveniently plugged in at the place where the work is being performed. Circuits may be tested to electrical devices plugged into the socket or engaging terminals 29 and 30 by connecting 51 and 52 with a source of electric supply and if the circuit to the electrical device is complete or good, the lamp 59 will be illuminated brightly, whereas if the circuit is broken, both lamps will be dim. This is in testing the standard type of circuits.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising two similar casing parts of insulating material, said parts having a contracted plug socket end and an enlarged bulb socket end, a pair of spring contacts in the plug socket end, a pair of threaded sockets in said bulb socket end, said threaded sockets comprising shells and center terminals insulated from the shells, three conductors arranged between and extending outwardly from the casing parts intermediate said shells, one of said conductors being coupled with the center terminal of one of said threaded sockets, another conductor being connected with the center terminal of the other threaded socket, means placing one of said spring contacts in circuit with both of said shells and the third conductor, and means placing the other spring contact in circuit with the center terminal of one only of the threaded sockets.

2. A device of the character described comprising two similar casing parts of insulating material, said parts having a contracted plug socket end and an enlarged bulb socket end, a pair of spring contacts in the plug socket end, a pair of threaded sockets in said bulb socket end, said threaded sockets comprising shells and center terminals insulated from the shells, three conductors arranged between and extending outwardly from the casing parts intermediate said shells, one of said conductors being coupled with the center terminal of one of said threaded sockets, another conductor being connected with the center terminal of the other threaded socket, means placing one of said spring contacts in circuit with both of said shells and the third conductor, means placing the other spring contact in circuit with the center terminal of one only of the threaded sockets, and said casing parts having common recesses at each side portion thereof for reception of electric connections between the various parts of the casing.

3. A device of the character described comprising two similar casing parts of insulating material, said parts having a contracted plug socket end and an enlarged bulb socket end, a pair of spring contacts in the plug socket end, a pair of threaded sockets in said bulb socket end, said threaded sockets comprising shells and center terminals insulated from the shells, three conductors arranged between and extending outwardly from the casing parts intermediate said shells, one of said conductors being coupled with the center terminal of one of said threaded sockets, another conductor being connected with the center terminal of the other threaded socket, means placing one of said spring contacts in circuit with both of said shells and the third conductor, means placing the other spring contact in circuit with the center terminal of one only of the threaded sockets, and the casing parts centrally of the bulb socket end thereof having a hub portion around which the first two conductors are passed.

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