March 31, 1936. M. PODELL 2,036,077

CIRCUIT TESTING DEVICE

Filed May 15, 1934

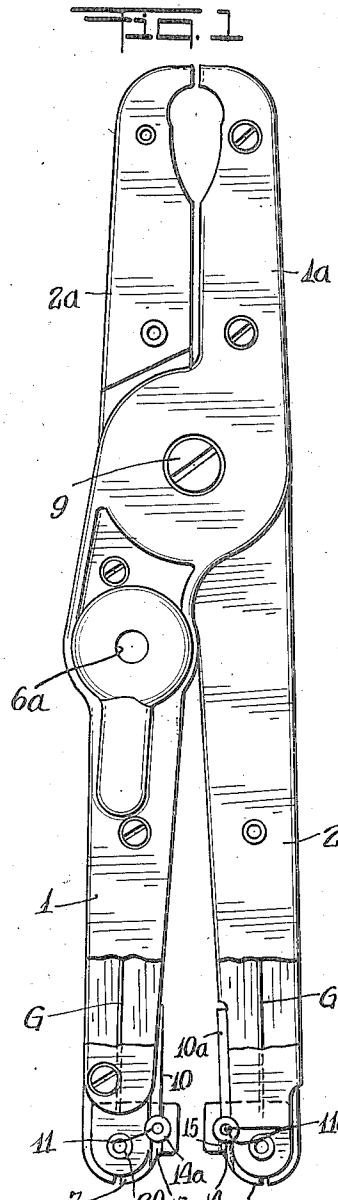


FIG. 1

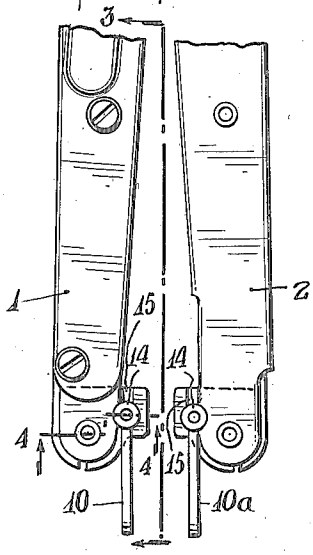


FIG. 2

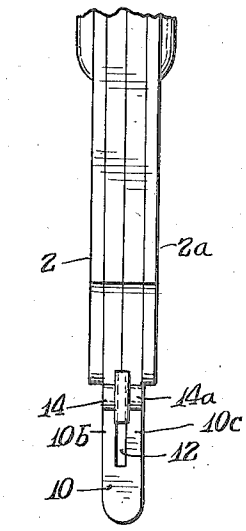


FIG. 3

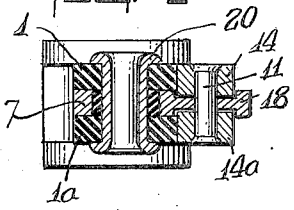


FIG. 4

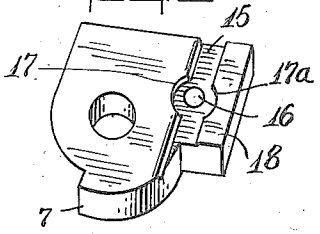


FIG. 5

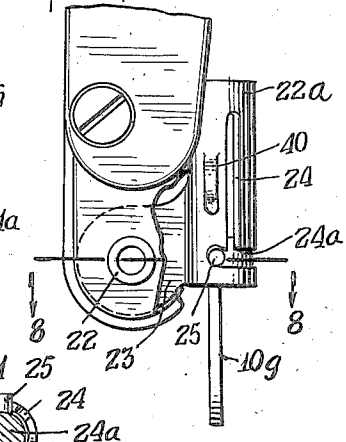


FIG. 6

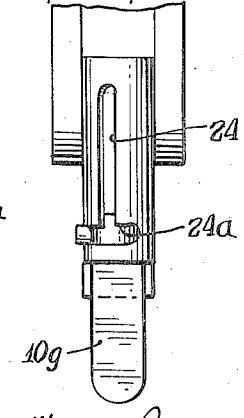


FIG. 7

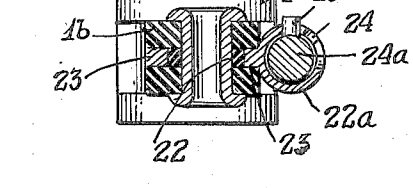


FIG. 8

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CIRCUIT TESTING DEVICE

Morris Podell, Far Rockaway, N. Y.

Application May 15, 1934, Serial No. 725,683

4 Claims. (Cl. 175—183)

My invention relates to a new and improved electric circuit testing device.

One of the objects of my invention is to provide an improved portable device for testing the circuit or circuits in a building.

Another object of my invention is to provide an improved device for testing outlets of various types, such as base receptacles and the like.

Another object of my invention is to provide a testing device which has a suitable indicator, such as a glow lamp, a filament lamp, or any other type of electrically operated indicator, such as a buzzer or other acoustic device.

Another object of my invention is to provide a device which is perfectly insulated, so as to eliminate all danger of shocking the operator.

Another object of my invention is to provide a device which has the general shape and construction of a compass, the outer ends of the legs of said device having relatively movable members which can enter the openings of a base receptacle. Said relatively movable members are preferably hinged to the ends of the legs of the device.

Other objects of my invention will be set forth in the following description and drawing which illustrate a preferred embodiment thereof, it being understood that the above statements of the objects of my invention are intended to generally explain the same without limiting it in any manner.

Fig. 1 is a front elevation of the device, the relatively movable members of the legs of the device being shown in their inoperative position.

Fig. 2 is a detail elevation of the outer ends of the legs of the device which are shown in Fig. 1, said relatively movable members being shown in their outer or operative position.

Fig. 3 is an end elevation on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged sectional view, partially in elevation, on the line 4—4 of Fig. 2.

Fig. 5 is an enlarged detail perspective view.

Fig. 6 is a modified embodiment of the general type of device which is shown in Figs. 1–5.

Fig. 7 is a side elevation of the device shown in Fig. 6.

Fig. 8 is an enlarged sectional view, partially in elevation, on the line 8—8 of Fig. 6.

The general construction of the device is shown in my previously filed application Serial No. 591,363, filed on February 6, 1932.

The device comprises legs 1 and 2, which are connected to each other by means of a pivot pin 9. The upper ends of the device are shaped so as to provide members 2*a* and 1*a*, which can be used for extracting a fuse or for any other suitable purpose. The indicator is visible through an opening 6*a*, which is provided in the leg 1. Said indicator is preferably a small filament lamp, although it may be any other type of electrically operated indicator.

Referring to Fig. 1, the lower ends of the legs 1 and 2 have been illustrated as being partially broken away, in order to show the wires or conductors G, which complete the circuit through the indicator, when the terminals of the circuit which are to be tested, are caused to contact with the metal members 7 and 7*a*, which protrude from the outer ends of the legs 1 and 2.

I have not specifically illustrated the resistance which forms part of the circuit, and other details thereof, as such details are shown in my Patent No. 1,989,645, issued Jan. 29, 1935. The device illustrated in said patent cannot be used for testing base receptacles.

According to the improvements illustrated herein, relatively movable test members 10 and 10*a* are provided and these members 10 and 10*a* are movable relative to the legs 1 and 2, in any manner.

Without limiting myself to any special type of relative movement between the members 10 and 10*a*, and said legs 1 and 2, I have illustrated a preferred method of securing such relative movement.

The members 10 and 10*a* are pivotally connected to their respective members 7 and 7*a* by means of pins 11 and 11*a* which pass through suitable openings in the side lugs of said metal members 7 and 7*a*.

As shown in Fig. 3, the member 10 is provided with a longitudinal slot 12, so that the inner end of said member 10 is fork-shaped, and said inner end is provided with enlarged cylindrical head portions 14 and 14*a*.

The pivot pin 11 extends through said head portions 14 and 14*a*, and through a suitable bore in the lug of the member 7. The members 10 and 10*a* are preferably identical in length and in construction and they are connected in the same manner to the members 7 and 7*a*, so that the detailed description of the member 10 applies to the member 10*a*.

The member 10 has a flat or prong shape, and it can be made by taking a flat blank of metal, forming the slit 12 which extends to one end thereof, and then inwardly turning the separated ends of the blank, in order to form the hollow cylindrical heads 14 and 14*a*, which receive the

pivot pin 11. The pivot pin 11 may be connected to said heads 14 and 14a in any suitable manner. For example, there may be a drive fit between said pin 11 and one of the heads 14 and 14a, or one of the ends of the pin 11 may be enlarged so as to produce a rivet-like connection.

As shown in Fig. 5, the member 7 is provided with a groove 15, in which there is located the hole 16 for receiving the pivot pin 11. Likewise the member 7 is provided with recesses 17 and 17a, which are of general arcuate form, so that said recesses 17 and 17a correspond to parts of the same circle.

The slot 12 has a width which is less than the width of the side-head portion 18 of the member 7. The pin 11 preferably may turn in unison with the member 10, or said pin 11 may have a drive fit in the bore 16 so that the member 10 turns relative to the pin 11. However, at least one of the heads 14 and 14a should be movable relative to the other, in a lateral direction, so as to allow for the relative lateral movement between the legs 10b and 10c of the member 10 when they pass over member 18. That is, both the heads 14 and 14a may be movable relative to each other in a direction parallel to the pivot pin 11. Likewise one of said heads 14 and 14a may be non-movable in the direction of the longitudinal axis of the pin 11, and the other of said heads may be movable in said direction, so as to provide for the necessary spring effect between the legs 10b and 10c.

When the member 10 is in the position shown in Fig. 3 or in the position shown in Fig. 1, one of the legs 10b and 10c of said member 10 is located in the groove 15, thus providing for a spring clamping effect. This clamping effect is sufficient to firmly hold the members 10 and 10a in the operative position shown in Fig. 2 for the purpose of testing a base receptacle. The inner and adjacent surfaces of the legs 1 and 2 may be provided with recesses for partially receiving the members 10 and 10a when they are in the inoperative position shown in Fig. 1.

As shown in Fig. 4, the members 7 and 7a are covered with the insulating material from which the legs 1 and 2 are made, save for the portions which extend to the inner sides of said legs 1 and 2.

The exposed portions of the members 7 and 7a may be made even smaller than shown and this feature is very valuable in eliminating short circuits. For example, when the member 10 has been inserted into the opening of a base receptacle, the improved construction makes it practically impossible for an exposed portion of said member 7 to touch some adjacent metallic and grounded object.

Referring to Fig. 4, the member 7 is connected to its leg 1 by means of a rivet member 20. Referring to the embodiment shown in Figs. 6, 7, and 8, this is used for testing polarity receptacles, in which one of the test prongs must be perpendicular to the other. For this purpose the construction shown in Figs. 1–5 is retained for one of the test prongs, and the other test prong is modified so that it can be turned around a line which is substantially parallel to the axis of the leg 1 or 2, as the case may be.

Referring to Fig. 8, a metal member 23 is connected to the leg 1, by means of a rivet or eyelet 22. A socket member 22a is integral with said member 23, which is clamped in position between sections 1b of the member 1. The socket member 22a is provided with a bayonet slot having a longitudinal portion 24, and a lateral portion 24a.

The modified prong member 10g which is shown in Figs. 6 and 7 is provided with a pin 25. Said member 10g is provided with a cylindrical head 24a which fits within the socket 22a. When the pin 25 is in the lateral slot portion 24a, the member 10g is held in its outer and operative position. The lateral slot portion 24a is of sufficient amplitude, so that said member 10g may be turned 90° away from the position shown in Fig. 6 so that it assumes the position shown in Fig. 7. That is, the arc of the lateral slot portion 24a is a little more than 90° so as to make allowance for the thickness of the bayonet pin 25.

The ends of the lateral slot portion 24a may be provided with recesses for receiving and holding the pin 25, when the member 10g is in either of the positions shown in Figs. 6 and 7.

When the pin 25 is pushed to the inner or upper end of the slot 24, the frictional fit between the socket 22a and the cylindrical head 24a of the member 10g is sufficient to releasably hold the member 10g in its inoperative position. In said inoperative position, the bottom of the prong 10g is above the bottom of the blade 23.

If desired, the socket 22a, 22 could have a resilient tongue 40 formed therein, which frictionally presses against the cylindrical head 24a of the member 10g.

If desired, an ordinary threaded plug can be connected to the prongs 10 and 10a, so that the device can be turned, together with said plug, in order to screw the plug into an outlet which is to be tested.

If desired, the thread of the plug can be removed by flattening down the same, so that the plug can be pushed into the receptacle which is to be tested. This makes it very easy to test ordinary threaded sockets. If the circuit is live, this is indicated by the flashing of the lamp or other indicator, so that it is unnecessary to screw a lamp into the socket which is to be tested.

For convenience I have described the device as being held in the vertical position, but of course the operation thereof is independent of said position.

Whenever I refer to test prongs 10 and 10a either in the description or in the claims, I do not wish to be limited to the specific shape shown in the preferred embodiment, as the members 10, 10a and 10g may be made of any suitable shape.

Likewise, while I have shown a device having pivoted legs which extend above and below the pivot member 9, the invention is not to be limited to this construction because the test prongs 10 and 10a could be connected to members which are immovable, relative to each other. However, I prefer to use a form of device having legs which are pivoted to each other, since such device may be folded into compact form.

When the test prongs 10 and 10a are in the inoperative position shown in Fig. 1, the inner exposed portions of the metal members 7 and 7a can also be used for testing the condition of an electric circuit.

While I have preferred to make the legs 1 and 2 of insulating material, this construction is not necessary and the invention is not to be limited thereto, as long as said legs 1 and 2 are insulated from the contact members 7 and 7a and from their prongs 10 and 10a.

The construction of the test prongs 10 and 10a provides resilient means for releasably holding a test prong in its operative or inoperative

position and said resilient means may be replaced by any other resilient or spring-like means or device.

I have shown a preferred embodiment of my invention, but it is clear that numerous changes and omissions can be made without departing from its spirit.

I claim:

1. A circuit testing device comprising a leg, an exposed metal member connected to the end of said leg, said member having a groove, a test prong turnably connected to said metal member, said test prong having separated end portions which can move laterally relative to each other, one of said end portions being adapted to enter said groove when said test prong is in its operative position.

2. A circuit testing device comprising a leg, an exposed metal member connected to the end of said leg, said member having a groove, a test prong turnably connected to said metal member, said test prong having separated end portions which can move laterally relative to each other, one of said end portions being adapted to enter said groove when said test prong is in its operative position, the thickness of the side end wall of said metal member being greater than the distance between the adjacent surfaces of said end portions.

3. A circuit testing device comprising a leg, an exposed metal member connected to said leg, said exposed metal member having a longitudinal groove formed therein, a transverse bore extending through said metal member and extending into said groove, a pivot pin located in said transverse bore and extending through said metal member, a test prong having separated ends which are mounted on said pin, said test prong being turnable relative to said metal member, the side end wall of said metal member being thicker than the distance between the adjacent surfaces of said ends of the prong.

4. A circuit testing device comprising a leg, a metal member connected to said leg and having a sleeve, said sleeve having a bayonet slot, and a prong having a pin which moves in said bayonet slot.

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