Nov. 6, 1951 V. LANNOU 2,574,043

INSULATED EXTENSION CLIP-ON TEST PROD

Filed Oct. 20, 1947

Fig. 1.

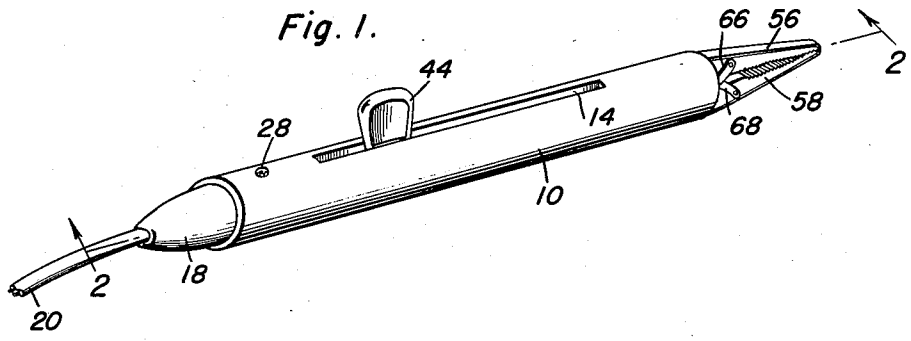


Fig. 2.

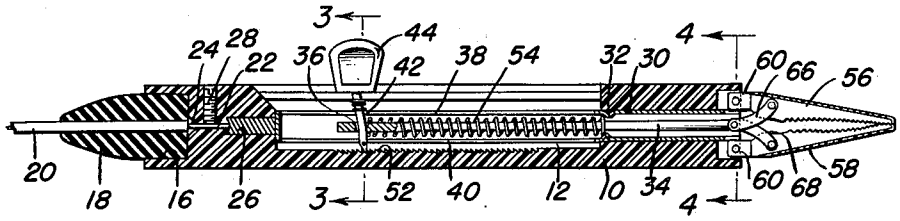


Fig. 3.

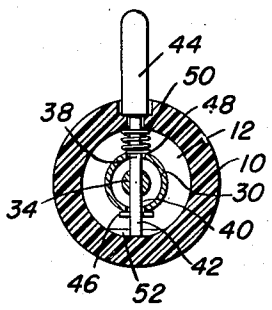
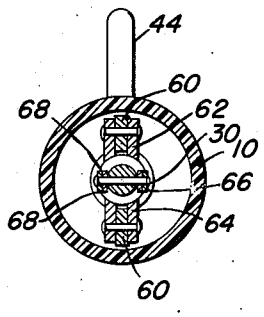


Fig. 4.



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INSULATED EXTENSION CLIP-ON TEST PROD

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2 Claims. (Cl. 173—273)

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This invention appertains to novel and useful improvements in testing apparatus, for use particularly in conjunction with electrical appurtenances.

An object of this invention is to perform tests upon radio tubes, electrical conductors, electrical equipment and the like.

Another object of this invention is to provide means for attachment to a suitable terminal and provide means for selectively actuating said attachment means.

Another purpose of this invention is to provide an insulating housing having electrically conductive jaws at one end thereof and means for conducting electrical current through said housing.

Another purpose of this invention is to provide means for resiliently biasing the said jaws toward the closed or operative position.

Another purpose of this invention is to provide an extremely simple device of the nature to be described which is commercially feasible and which lends itself well to commercial manufacture.

Other purposes of the present invention will become apparent to those skilled in the art, in following the description of the preferred form of the invention, illustrated in the accompanying drawing, wherein:

Figure 1 is a perspective view of the present invention;

Figure 2 is a longitudinal sectional view of the invention shown in Figure 1 and taken on the line 2—2 thereof and in the direction of the arrows;

Figure 3 is a transverse sectional view of the invention shown in Figure 2 and taken on the line 3—3 thereof and in the direction of the arrows;

Figure 4 is a transverse view of the invention in Figure 2 and taken on the line 4—4 thereof and in the direction of the arrows.

Referring now in detail to the illustrated preferred form of the invention, like reference characters are used throughout to indicate similar elements.

This invention has been conceived and developed to provide a device for the purpose of testing various electrical apparatus both conveniently and easily. It often becomes necessary to test radio tubes, electrical appurtenances, electrical apparatus and the like. To this end the present invention has been developed including a pair of jaws which easily and conveniently clip upon the terminal or a selected portion of the device to be tested.

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Particularly embodied in the present invention is the provision of improved means for actuating said jaws. In the embodiment illustrated in the drawing, a locking device is associated with the means for actuating the jaws, which locking device is resiliently biased and engages one of a selected number of teeth of a rack gear in the insulated housing.

The major portion of the device is composed of some suitable material such as an insulating plastic or the like. The jaws are electrically conductive as is the rod. Current flowing through the jaws also flows through the said rod and then, means is provided for conducting the flowing current to an electrical outlet or plug which is secured at one end of the said housing. The means of conducting the current from the rod through the electrical plug will be described in detail as the description proceeds.

Heretofore various types of test instruments of this nature have been devised, however, utility of the present invention permits a person testing instruments or other electrical apparatus to position the device on the terminal of the tested instrument and lock the same in position while other necessary operations are performed. The most common test means in practical use involves only a length of wire or the like having an insulator thereon. This means requires the utility of both hands of the operator or at least one hand. The present invention may be clipped and retained on the apparatus to be tested while other operations may be performed by the operator of the invention.

Referring now to the drawing it will be noted that an insulated housing 10 is provided with an aperture 12 longitudinally thereof. A slot 14 extends longitudinally of the said housing 10 and communicates with the said aperture 12.

A recess 16 is formed at one end of the said housing 10 and provides as well as forms means for receiving an electrical plug 18 therein. Of course, this electrical plug has the usual insulated conductor 20 associated therewith. The wire 22 in said insulating conductor 20 extends through a suitable bore 24 to a connecting element which is electrically conductive in nature and indicated at 26. A set screw is provided in a suitably threaded aperture in the said housing 10 and is engageable with the said wire 22. Further note of this set screw will be made hereinafter.

A sleeve 30 is provided in said aperture 12 and has an annular ridge or detent 32 extending therearound. A rod 34 is slidably received in the

said sleeve 30 and has a flared or bevelled slot 36 adjacent one end thereof.

Aligned slots 38 and 40 respectively are provided in the said sleeve 30 and a suitable pin 42 rides therein. This pin also extends through the said slot 36 and is preferably supplied with a suitable handle or actuating knob 44. Viewing Figure 3 it will be noted that the slot 14 is formed with an enlargement at the top portion thereof and serves the person as a recipient for the said handle 44.

A pin 46 extends through the said pin 42 and engages the lower surface of the said sleeve 30 adjacent the said slot 40. A second pin 48 extends through the first mentioned pin 42 and is substantially parallel to the said pin 46. The said pin 48 is also exterior of the said sleeve 30 and has a spring 50 seated thereon. This spring also engages the inner surface of the said aperture 12 and by this construction it is quite obvious that the spring 50 normally urges the pin 42 downwardly relative to the slot 14.

A rack gear 52 is provided at the lower surface of the said aperture 12 and is engaged by the sharpened portion of the said pin 42.

It is now readily apparent that the rod 34 may be shifted to various positions and locked in position through the medium of the pin 42 and its resilient biasing spring 50. Means for resiliently biasing the said rod 34 to a select position is provided. This means is preferably a coil spring 54 encircling the said rod 34 and seated on the annular ridge 32 as well as the said pin 42.

A pair of jaws, preferably light metal or the like are indicated at 56 and 58 respectively. The teeth or gripping portions of the said jaws may be slightly curved for firm grip of various electrical contacts. These jaws have extensions 60 associated therewith which are received between pairs of perches or brackets 62 and 64 respectively which are diametrically positioned on the said sleeve 30 and in a counter-bore formed at the end of the bore 12 in the housing 10.

Means for connecting the said jaws to the actuating rod 34 is provided. The preferable means consists of a pair of pitman rods 66 and 68 respectively connecting each of the said jaws to the said rod 34. Due to the nature of pitman rods, it is readily appreciated that the terminal portions thereof may be connected to suitable pivot pins provided in the jaws and in the said rod 34.

Means for testing the test apparatus is provided. This means may be seen as the set screw 28 and the terminal portion of the said jaws. By simply placing a wire across the jaws and the set screw 28, after the test instrument has been energized, one may ascertain whether there is a complete electrical circuit from the jaws to the set screw. As is readily apparent from inspection of Figure 2, the sleeve is in electrical communication with the said receiving member 26.

There has been described and illustrated but one form of the invention. However, it is apparent that variations may be made without

departing from the spirit thereof. Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having described the invention, what is claimed as new is:

1. In an electrical circuit test apparatus, a housing having a lateral opening, a bore in said housing in communication with said lateral opening, a socket at one end of said housing adapted to retain a plug, a recess in the opposite end of said housing, a pair of jaws mounted for pivotal movement in said recess, a rod slidably disposed in said bore, means pivotally connecting said jaws and said rod, electrically conductive means in said socket connected with said rod, and means for sliding said rod into selected positions comprising a handle slidably disposed in said lateral opening, a toothed rack formed in said housing within said bore, a pin fixed to said handle and slidably extended through a passage in said rod for engagement with the teeth of said rack, said pin operatively connecting said handle to said rod, and a spring surrounding said pin and compressed between the housing and pin to yieldingly engage said pin with the teeth of said rack.

2. In an electrical circuit test apparatus, a housing having a lateral opening, a bore in said housing in communication with said lateral opening, a socket at one end of said housing adapted to retain a plug, and a recess in the opposite end of said housing opening into said bore, a pair of jaws mounted for pivotal movement in said recess, a rod slidably disposed in said bore, means pivotally connecting said jaws and said rod, electrically conductive means in said socket and connected with said rod, means slidably disposed in said lateral opening for sliding said rod, a pin on said last means slidably extending through a passage in said rod and operatively connecting said last means to said rod, a plurality of spaced teeth fixed in said housing and disposed in said bore, said pin being engageable with said teeth selectively to retain said rod in selected positions, and a spring reacting on said pin and against said housing and yieldingly urging said pin into engagement with said teeth.

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