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DUAL-PURPOSE ELECTRICAL CONNECTOR

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FIG. 1.

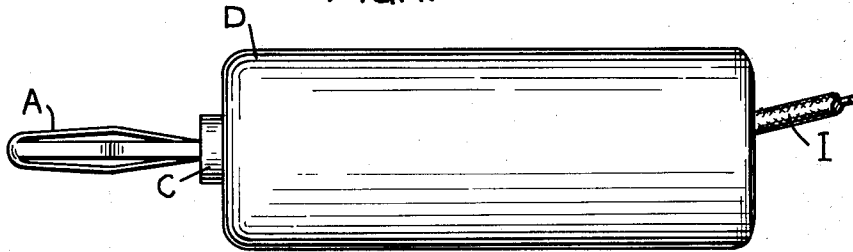


FIG. 2.

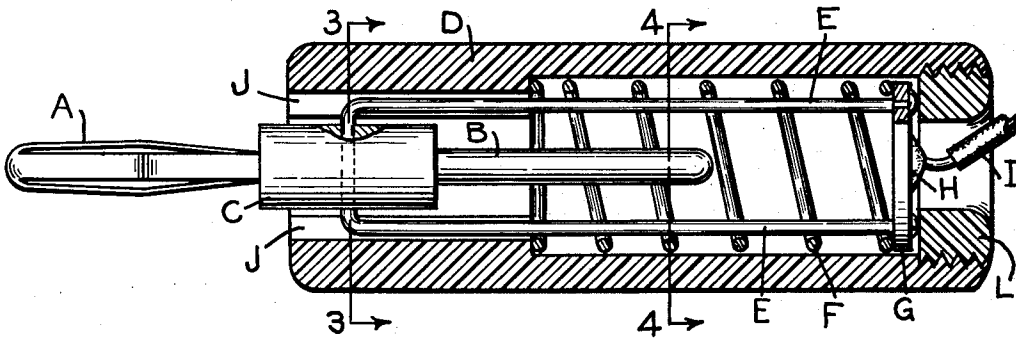


FIG. 3.

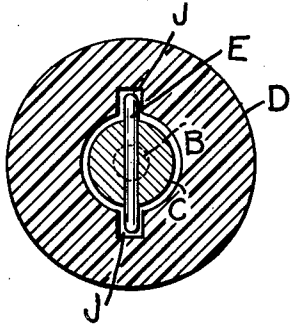
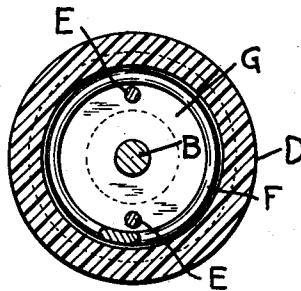


FIG. 4.



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DUAL-PURPOSE ELECTRICAL CONNECTOR

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2 Claims. (Cl. 339—31)

1

My invention relates to electrical connectors adapted for use on electronic testing equipment.

One of the objects of my invention is to provide an improved electrical connector especially adapted for use on electronic testing equipment and to facilitate the connecting of such equipment to other electrical equipment by providing a quick choice between two types of electrical plugs at the terminal of each connecting wire, such as, for example, to provide a choice between a "tip-type" plug or a "banana" plug.

Another object of my invention is the provision of an improved electrical connector adapted to provide by a simple adjustment a quick choice between two types of electrical plugs, such as, for example, between a "tip-type" plug or a "banana" plug.

Another object of my invention is the provision of an improved electrical connector that can be readily adjusted to make a choice between two different types of connecting terminal so as to reduce to a minimum the disturbance and disarrangement of wiring during the testing of electronic and electrical equipment.

A further object of my invention is the provision of a new electrical connector of the above type that is conveniently enclosed within a case of non-conducting material to form a suitable handle.

A still further object of my invention is the provision of an improved electrical connector of the above type that is simple in structure and inexpensive to manufacture.

Other objects and advantages of my invention will be apparent from the following description thereof and from the accompanying drawing in which:

Fig. 1 is an elevation of an electrical connector embodying my invention;

Fig. 2 is an enlarged cross-sectional view of the electrical connector of Fig. 1 taken along the longitudinal axis;

Fig. 3 is a cross-sectional view taken along line 3—3 of Fig. 2; and

Fig. 4 is a cross-sectional view taken along line 4—4 of Fig. 2.

The electrical connector of my invention comprises a dual plug structure A—B—C and a handle or body D which is shown in the embodiment in the drawing as being cylindrical in shape. The body or handle is preferably made of plastic or other suitable material having non-conducting properties. The body has a longitudinal cavity or recess opening at opposite ends of the body. At one end of the embodiment shown in the drawing is a retaining ring L of plastic or other

2

suitable material which may be secured therein by screw threads or other means. There is disposed in the cavity at the other end of the body an integral annular restricted portion. On radially opposite sides of the body cavity keyways J are cut through the restricted portion to provide straight channels.

The dual plug structure A—B—C is made of conductive material and comprises a central portion C of a size suitable for passing through the restricted portion. A "banana" plug A extends from one end of the central portion and a "tip-type" plug B extends from the other end. In the embodiment shown in the drawing, there is a hole extending along a diameter through the central portion to facilitate mounting the plug structure. The mount for the plug structure comprises a piece of wire E bent to provide opposed substantially parallel legs connected by a bight portion at one end. The bight portion is shown as being disposed in the hole extending through the central portion of the plug structure. The plug structure A—B—C is mounted in the body with the central portion C disposed within the restricted portion of the body and with the wires E extending along the channels J into the body cavity. At the free ends of the legs there is secured a disc G of conducting material. The disc G is urged against the ring L by a coil spring F, one end of which engages the disc and the other end of which bears against the inner shoulders of the restricted portion. An external lead I may be soldered to the disc G at H.

The connector of my invention is shown in Figs. 1 and 2 with the "banana" plug A extending outwardly from the handle in position for insertion into a jack or connector socket. In order to make the "tip-type" plug B available, the body or handle D is held in one hand and the plug structure A—B—C is drawn out of the body until the "tip-type" plug B is completely removed from the body cavity. Then the plug structure A—B—C is rotated through 180° about the bight portion. Finally the plug structure is released permitting the spring member F to pull it back into the cavity to dispose it within the body D except for the "tip-type" plug B which will then extend outwardly from the body D.

It is well known to those versed in the electronic art that in electronic research and production, pieces of equipment are generally interconnected by means of test leads. Most commonly used terminals for such leads are "banana" plugs and "tip-type" plugs. Generally, most of the equipment used in the electronic art has terminals adapted for connection to one

3

or the other of these types of plugs. However, the connectors on a particular piece of equipment are generally limited to one type.

It will be understood from the description and drawing that the purpose of my invention is particularly to speed up the testing of all types of electronic equipment by making readily available at the terminals of the test leads either one of two types of common plug connectors by means of a simple mechanical action, as previously described herein, which consists of simply pulling the assembly out and rotating it and then letting it snap back in. The basic features of the invention may be adapted in the construction of a connector of any desired or required shape as determined by the use to which the connector is to be adapted.

I have shown my invention in a practical and useful form and structure. However, adaptation in use may require modification in form, design or structure or all three, without departing from the basic features and spirit of the invention.

What I claim and desire to secure by Letters Patent, is:

1. A dual purpose electrical connector comprising: a tubular body of insulating material having shoulder portions within said body adjacent opposite ends thereof in fixed spaced relation; an elongated electrical connector member having first and second electrical plug elements at opposite ends thereof and a central portion having openings on opposite sides thereof, said electrical connector member being normally disposed with one plug element extending from one end of said body and the other plug element and the central portion within said body; the shoulder portions at said one end of said body providing opposed channels extending longitudinally into said body; a mounting member including leg elements having the ends thereof adjacent the central portion extending into said openings and an end element attached to the opposite ends thereof, said first mentioned ends providing a pivotal mounting for said connector member, said leg elements normally extending along said channels into said body to provide a slidable mounting for said connector member; spring means engaging the shoulder portions at said one end of said body and the end element of said mounting member to urge said end element away from the shoulder portions at said one end; said end element being normally disposed adjacent the shoulder portions at the other end of said body and providing means for receiving an electrical connecting lead through said other end of said body; each of said plug elements providing handle means for manipulating said connector member; said connector member upon the application of pulling tension to one of said plug elements being removable from said body against the tension of said spring means and rotatable about the ends of the leg elements extending into the openings in the cen-

4

tral portion of the connector element; whereby said connector member may be pulled from said body and reversed, thereby permitting a choice as to the plug element normally extending from said body.

2. A dual purpose electrical connector comprising: a tubular body of insulating material having two sets of shoulder portions within said body in fixed spaced relation; an elongated electrical connector member having first and second electrical plug elements at opposite ends thereof and a central portion having openings on opposite sides thereof, said electrical connector member being normally disposed with one plug element extending from one end of said body and the other plug element and the central portion within said body; one set of shoulder portions being disposed at said one end of said body and providing opposed channels extending longitudinally into said body; a mounting member including leg elements having the ends thereof adjacent the central portion extending into said openings and an end element attached to the opposite ends thereof, said first mentioned ends providing a pivotal mounting for said connector member, said leg elements normally extending along said channels into said body to provide a slidable mounting for said connector member; spring means engaging said one set of shoulder portions at said one end of said body and the end element of said mounting member to urge said end element away from said one set of shoulder portions; said end element being normally disposed adjacent the other end of said body and providing means for receiving an electrical connecting lead through said other end of said body; said other set of shoulder portions retaining said mounting member in said body in opposition to said spring means; each of said plug elements providing handle means for manipulating said connector member; said connector member upon the application of pulling tension to one of said plug elements being removable from said body against the tension of said spring means and rotatable about the ends of the leg elements extending into the openings in the central portion of the connector element; whereby said connector member may be pulled from said body and reversed, thereby permitting a choice as to the plug element normally extending from said body.

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