

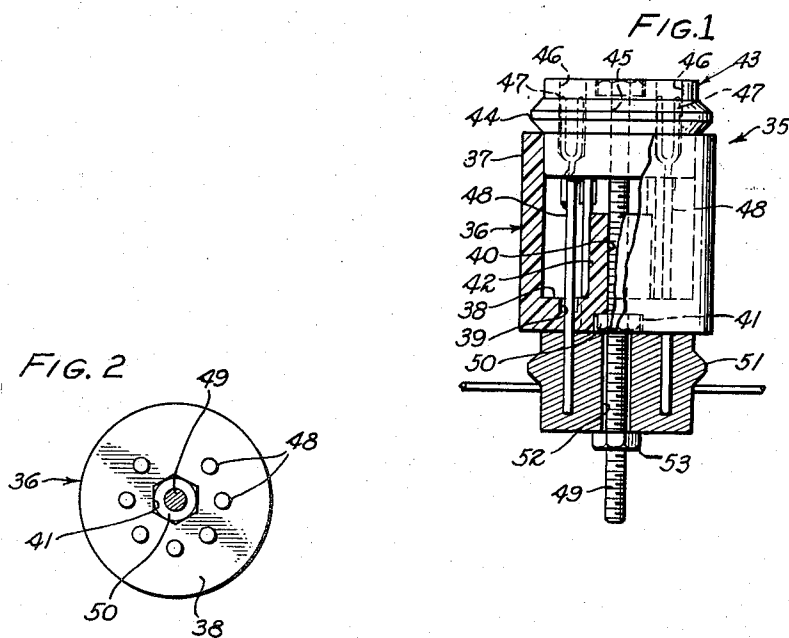
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COUPLER

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COUPLER

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1 Claim. (Cl. 339—92)

This invention relates to couplers for tubes and the like. In the use of many types of complex electronic units, tube tester sets, for instance, tubes and other circuit elements are inserted into and removed from individual sockets a large number of times. This frequent use of the socket causes wear on its receptacle member and a loss of resiliency therein. Then the socket is worn out, makes a poor connection, and must be replaced. Removing and replacing the socket is a major project, inasmuch as the chassis itself must first be torn down, all of the wires which are soldered to the various prongs of the socket removed, and the socket removed and replaced and the wires again soldered to the prongs of the new socket, and the chassis reassembled. This is troublesome and time-consuming operation.

Adapters for sockets are known which receive the prongs of the circuit element, and which plug into the socket to minimize socket wear. These are useful for the reason that it is simpler to replace adapters than it is to replace the entire socket, since as there are no connections in the adapter which are soldered to the various wires within the test set, and the replacement of a worn out adapter is a simple thing. However, conventional adapters of this nature suffer from the undesirable feature that they are themselves merely plugged into the socket, with no means for holding them in place other than the resiliency of the receptacle means of the socket itself. For this reason the adapters are frequently pulled from the socket when the tube is pulled, and at least the adapter is wiggled around, causing wear in the socket. Therefore the conventional adapter saves only a small amount of wear on the socket.

An object of this invention is to provide a coupler which may be plugged into a socket so that it may be firmly retained in place in said socket and will not be pulled from the socket or wiggled therein when the tube is removed from the coupler itself.

This invention is carried out in combination with a body having conductive receptacle means for receiving the prongs of an electron tube or other circuit element. The body is also provided with prongs adapted for insertion into the socket which is to be conserved against wear. Conductive means are provided for interconnecting the receptacles and the prongs, which may, if desired, themselves be the prongs. Attachment means are provided for affixing the coupler to the socket which is being conserved.

A preferred but optional feature of this invention resides in a stud or bolt having an end protruding from the body in the same direction as the prongs and adapted for insertion through the socket, and means attachable to said stud or bolt for drawing the coupler and the socket together.

The above and other features of this invention will be fully understood from the following detailed description and the accompanying drawings, of which:

Fig. 1 is a side elevation, partly in cross-section, of a coupler according to the invention; and Fig. 2 is a bottom view of the coupler portion of Fig. 1.

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Fig. 1 illustrates an embodiment of the invention, in which the body 35 has a cup-shaped base section 36 with cylindrical wall 37 and a flat bottom 38. The bottom is pierced by a plurality of apertures 39 grouped around a central aperture 40 which may conveniently have a hexagonal shaped sink 41 on the lower face of the flat bottom. The central aperture passes through a central, inwardly directed post 42, which post acts as a spacer.

The cap section 43 of the body has a generally cylindrical periphery with a peripheral shoulder 44 adapted to bear against the cylindrical wall 37 of the base section. The cap section has an aperture 45 therein which is aligned with the central aperture 40 of the base section.

The upper end of the cap section is provided with a plurality of recesses 46 adapted to receive a conductive receptacle 47 in each of said recesses. These receptacles have resilient properties for receiving and contacting the prongs of an electron tube or other circuit element. Each receptacle is soldered to a conductive lead 48, said lead preferably being made of a stiff wire or rod.

The coupler of Fig. 1 is assembled by inserting the conductive leads 48 through the apertures 39 in the base section of the body, and pressing the body sections together until the shoulder 44 bears against the base section. The ends of the conductive leads 48 are long enough that they project from the bottom of the base section, and act as prongs for insertion into a socket.

In order to hold the coupler assembled, a bolt 49 is passed through the central apertures 40 and 45, with the threaded end of the bolt projecting beyond the lower end of the base section as a stud. A first nut 50 is threaded onto the bolt, and may conveniently fit into the hexagonal sink 41. Tightening the bolt and nut will hold the cap and base portions together. Then for attachment to a socket 51, the lower end of the bolt is inserted into a central passage 52 of the socket, and a second nut 53 is turned onto the end of the bolt to hold the coupler to the socket so that the coupler cannot be removed from the socket, or wiggled therein, without unfastening the nut 53. Fig. 2 is a bottom view of coupler 35 as it appears when disengaged from body 51.

After the coupler of Fig. 1 is installed as described above, an electronic tube or other circuit component may be plugged into and out of the coupler with no wear whatever on the socket of the test device. By virtue of this coupler, there will be no necessity of changing the socket in the testing device, since the wear will be taken by the coupler itself. Many hundreds of insertions and removals of tubes, which will wear out a coupler, will cause only one simple removal and replacement in the socket being conserved. Thus the life of the socket is lengthened indefinitely.

When the receptacles of the coupler are worn out and replacement is necessary it is only necessary to remove nut 53 and remove and replace the coupler thereafter replacing the nut to hold the new coupler in place. This is a great saving in time and labor over that which is required to replace a socket in a testing device with all the complications of unsoldering and resoldering the associated leads and chassis connections.

This invention is not to be limited by the embodiments shown in the drawings and described in the description which are given by way of example and not by way of limitation, but only in accordance with the scope of the appended claim.

We claim:

An electrical coupler comprising: a base section that has a central aperture and a plurality of outer apertures which are grouped around said central aperture; a cap section fitted to said base section, said cap section having recesses in an upper surface thereof and a passage from each recess that has at least one lateral dimension smaller

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than a corresponding lateral dimension of the recess, said passage connecting the recess with the under surface of the cap; a conductive resilient receptacle in each of said recesses, each of said receptacles having an enlarged portion fitted in the recess, said enlarged portion having at least one lateral dimension greater than the corresponding dimension of the passage so that the receptacle cannot pass through the passage and therefore bottoms in the recess, said receptacle having an opening for receiving a prong, said receptacle also including a conductive tab which passes through the respective passage; a plurality of straight rods abutted against the underside of the cap, each conductively and structurally connected to a respective one of the conductive tabs, each of said rods being aligned with a respective outer aperture on the base section so as to pass therethrough and project beyond said face; a bolt engaged to the cap section passing through the central aperture of the base section and projecting beyond said base section; the portions of the bolt means and conductive rods which project beyond the base section being parallel to each other; first nut means threaded onto the projecting portion of the bolt means on the opposite side of the base section from the cap for holding the cap section and base section together;

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second nut means threadable onto the projecting portion of the bolt means, an electrical socket having recesses to receive the rods and a central aperture to receive the bolt which projects beyond the socket so that said second nut means can be tightened down against the backside of the socket so as to hold the coupler thereto.

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