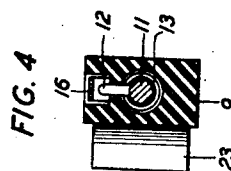
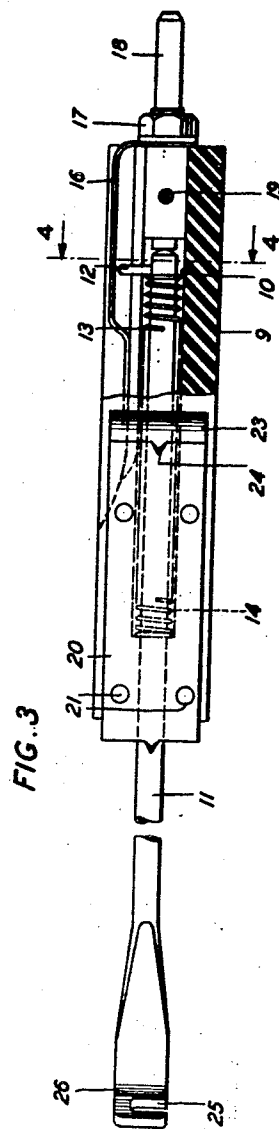
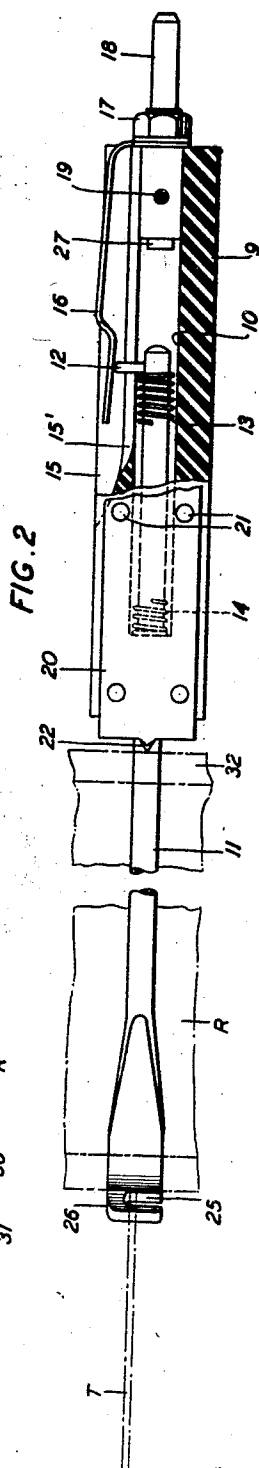
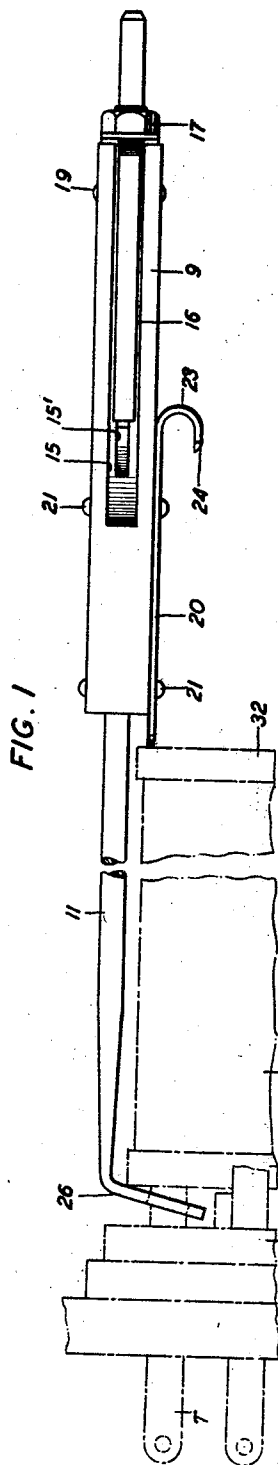


Aug. 4, 1931.

W. H. HARVEY
ELECTRICAL CONNECTER
Filed May 21, 1930

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ELECTRICAL CONNECTER

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This invention relates to electrical connectors and more specifically to a tool for making test connections to windings of electromagnets and the like.

5 In telephone exchanges, for example, it is customary to test circuits by connecting test sets to the winding terminals of relays and other electrical apparatus.

10 The object of this invention is to provide a tool which can be applied to the relay winding terminals without danger of closing circuits to the test set by accidental contact of the tool with metal parts while and before it is connected to the winding terminal.

15 According to this invention a mounting block which is made of insulating material supports a rod having at one end a hook portion for engagement with one of the relay winding terminals. This rod slides freely in a bearing portion at one end of the block and is provided with a contact element in the form of a pin which engages a compression spring for tensioning it upon a movement of the block relative to the rod and for effecting contact with another contact element in the form of a leaf spring mounted on the block. A cord terminal at one end of the block is provided for securing the leaf spring in place and for holding it firmly against abutting shoulders in the block in engageable relation with the pin at the end of the rod and means cooperating in the compression spring is provided for holding the tool in adjusted position on the relay during the testing operation, the engagement of the contact element with the leaf spring being effective to establish circuit connection from the terminal of the relay to the cord terminal of the testing set.

20 In the drawings, Fig. 1 is a side view of the tool shown mounted on a relay. Fig. 2 is a front view showing the mounting block in section and the contacts in the engaged position. Fig. 3 is another front view showing the mounting block in section and the contacts in the disengaged position, and Fig. 4 is a sectional view taken approximately on line 4—4 of Fig. 3.

25 Through the several figures 9 is a block of

insulating material having a centrally disposed countersunk hole 10 in which a rod 11 is slidably mounted. This rod carries at one end a pin 12 which engages the end of a compression spring 13 mounted on the rod 11. The other end of spring 13 engages a shoulder portion 14 in the block 9. The rod 11 is held in a retracted position against the tension of spring 13 by an abutting piece 27 projecting from the end of a cord terminal 18 in turn secured in the ends of the block 9 by pin 19. This block is provided at one side with longitudinal grooves 15 and 15' of different widths and arranged to form shoulder portions on each side of groove 15' as shown in Figs. 1 and 4 for a purpose that will be hereinafter described in detail. The groove 15' is provided for guiding the pin 12 upon the movement of block 9 relative to the rod 11 and for preventing the rotary movement of this rod with respect to the block.

30 In the groove 15 is mounted a leaf spring 16 which is held in position therein by a nut screw 17 engaging the threaded portion of plug 18. The spring 16 is normally so tensioned that its free end effects a certain pressure on the shoulder portions formed by the grooves 15 and 15' these shoulder portions cooperating with each other to hold this spring in proper engageable relation with the contacting pin 12.

35 On one face of block 9 there is mounted a metallic plate 20 which is securely held thereon by a number of rivets such as 21. This plate is provided at one end with a tooth 22 and at its other end with a hook portion 23 which is also provided with a tooth 24.

40 The rod 11 is provided at its free end with a flattened portion 26 which is bent substantially at right angles with respect to the longitudinal axis of the rod and is provided with a notch 25 arranged for engagement with either one of the terminals T of relay R shown diagrammatically in Figs. 1 and 2.

45 In a typical testing operation the hook portion 26 at the end of rod 11 is engaged with the relay terminal of the relay R as

shown in Figs. 1 and 2 between the spool-head 30 and baseplate 31. The mounting block 9 is then pulled rearwardly to compress the spring 13 until the projecting tooth 22 of the plate 12 clears the front spool-head 32 of the relay R. Upon the release of the block 9 this tooth is caused to produce an indentation into the spoolhead under the tension of spring 13 whereby the tool is positively held in position on the relay. The movement of bar 11 from the position shown in Fig. 3 to the position shown in Figs. 1 and 2 is effective to move the pin 12 in engagement with the leaf spring 16 and thereby establishing electrical connection from the relay winding terminal to the plug 18, this plug being adapted to connect with the cord of the testing set, not shown, in a well known manner. The removal of the tool from the relay is effected by pulling the block 9 rearwardly a distance sufficient for disengaging the hook 22 from the spoolhead 32 of the relay, this block being returned in normal position with respect to the rod by the tension of spring 13 in the manner above described.

The combination of contact spring 16 and guide pin 12 constitutes a switch for connecting and disconnecting the contact rod 11 from the relay terminal T as desired. This is for the purpose of preventing accidental closure of circuit from adjacent metal parts to the test set while connecting the tool to the relay terminal since the space between the relay terminal and return pole piece is very restricted in this apparatus. Since the test circuit is maintained open by the tool until it is set in place on the relay terminal, no circuits can be closed due to the part 26 touching adjacent metal parts.

What is claimed is:

A tool for making test connection to winding terminals of relays comprising a mounting block, a member arranged for movement in said block, means carried by said member for engagement with the terminals of said relay, means carried by said block for engagement with the spoolhead of said relay, a spring tensioned by the movement of said block with respect to said member for holding the tool in position on the relay and switch means actuated by the movement of said member.

In witness whereof, I hereunto subscribe my name, this 19th day of May, 1930.

WILLIAM H. HARVEY.