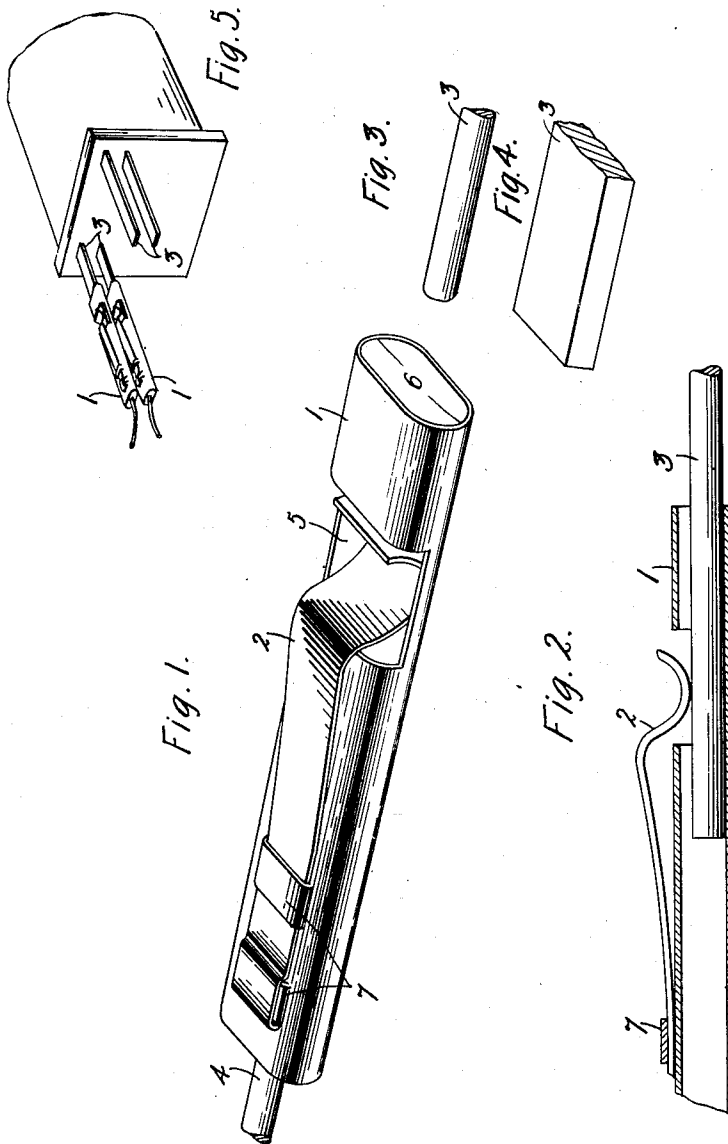


J. FREDRICKS.
TEST CONNECTOR.
APPLICATION FILED FEB. 14, 1918.

1,387,252.

Patented Aug. 9, 1921.



INVENTOR
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by *J. H. Roberts* Atty

UNITED STATES PATENT OFFICE.

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TEST-CONNECTOR.

1,387,252.

Specification of Letters Patent.

Patented Aug. 9, 1921.

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To all whom it may concern:

Be it known that I, JOHN FREDRICKS, a citizen of the United States, residing at Kings Bridge, in the county of Bronx, State of New York, have invented certain new and useful Improvements in Test-Connectors, of which the following is a full, clear, concise, and exact description.

This invention relates to improvements in electrical connectors which are adapted to be used in making temporary connections with electrical conductors, and more particularly with terminals of electrical apparatus.

The principal object of the invention is to provide a test connector which is adapted to occupy when in position but very little more space than is occupied by the apparatus terminal itself, whereby terminals which are mounted in close proximity may be tested without short-circuiting or crossing between the test connectors. In accordance with a feature of the invention, a test connector is provided which comprises a tube which may be either of conducting or non-conducting material and which carries a terminal of an electrical circuit which is adapted to closely embrace the conductor or apparatus terminal to be tested. The device is particularly applicable to relay terminals, or to terminals of similar telephonic apparatus which are mounted in very close relation.

In the accompanying drawing, Figure 1 is a perspective view of a test connector constructed in accordance with the invention; Fig. 2 is a view in longitudinal section of the connector; Figs. 3 and 4 are perspective views of details of conductors or terminals with which the connector is adapted to connect; and Fig. 5 is a perspective view of the terminal end of a telephone relay with a pair of the connectors of the invention in engagement with the terminals thereof.

In testing apparatus, it is customary to use test connectors to obtain temporary connections between the terminals of the apparatus to be tested and the conductors leading to the testing device. In relays or similar apparatus the terminals are often arranged in such close proximity to each other that it has been found exceedingly difficult with test connectors heretofore in use to connect therewith without short-circuiting these adjacent terminals through the me-

dium of the test connectors. Such short-circuiting is, of course, not desired and will seriously interfere with any test carried on while such a condition exists.

The terminals of apparatus to be tested furthermore differ considerably in shape, some of them being of circular cross sections and others being of substantially oblong cross section as illustrated in Figs. 3 and 4 respectively, and to be capable of general application, it is essential that a test connector be designed to satisfactorily engage with these types of terminals. The connector illustrated in the drawings utilizes a tube of flat elliptical shape which provides a maximum spacing between connectors when applied to adjacent terminals of apparatus being tested as shown in Fig. 5. This shape also adapts the connectors for use with terminals of both substantially circular and substantially oblong cross sections, inasmuch as the elliptical tube in addition to slipping over terminals of oblong cross section will also slip over terminals of substantially circular cross section so long as the diameter thereof is not greater than the minimum diameter of the tube.

The connector of the invention is exceedingly simple in construction and is very efficient for the purpose for which it is designed.

Referring now to the drawing and the embodiment of the invention illustrated therein, the connector shown comprises a tube 1 which may be of any suitable material. The tube may be of any desired cross section but it has been found that a substantially elliptical form as shown in the drawing is especially desirable since it permits its use with conductors having various shapes. The resilient member 2 is secured on the outside of the tube 1 and extends into an orifice 5 located at a point intermediate the ends of the tube. One end of the tube is left open for the purpose of allowing it to be slipped over a conductor or terminal 3 with which an electrical connection is desired. A test cord 4 is secured to the other end of the tube 1 and is electrically connected to the resilient member 2. The resilient member 2 is secured at one end of the tube 1 by means of the straps 7 which may be formed by slitting the tube at nearby points and extruding the material which composes the tube intervening between these

- points. The resilient member 2 can thus be inserted underneath the raised portion which holds the one end thereof in a fixed position. The other end of the resilient member 2 is curved so as to lie in the orifice 5 and touch the opposite side of the tube 1. The test conductor is thus held firmly in contact with the conductor 3 through the resilience of the member 2.
- 10 The test connector may be easily connected to a conductor or terminal by sliding the tube 1 over the conductor or terminal 3 which enters the aperture 6, and is engaged by the resilient member 2 secured on the outside of the tube 1. Electrical contact is thus completed with the conductor or terminal 3 by means of the member 2 and the tube 1 to which is electrically connected the end of the test cord 4.
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- 20 What is claimed is:
1. The combination with electrical apparatus having a plurality of terminals mounted in close proximity, a tube of non-conducting material having an orifice in one side thereof, a single spring member secured at one end of said tube and adapted to

lie in such orifice to engage one of said terminals over which said tube is adapted to be slipped.

2. The combination with electrical apparatus having a plurality of terminals mounted in close proximity, a tube of the dimensions substantially that of the terminals and having an orifice in one side thereof, and a single spring member secured at one end thereof and adapted to lie in such orifice to engage one of said terminals over which the tube is adapted to be slipped.

3. The combination with electrical apparatus having a plurality of terminals mounted in close proximity, a tube of non-conducting material having an orifice at a point intermediate its ends, and a single spring member secured at one end of said tube and adapted to lie in such orifice to engage one of said terminals over which said tube is adapted to be slipped.

In witness whereof I hereunto subscribe my name this 6th day of February, A. D. 1918.

JOHN FREDRICKS.