

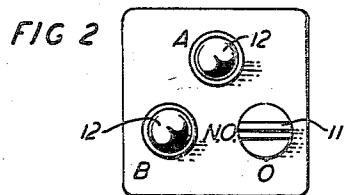
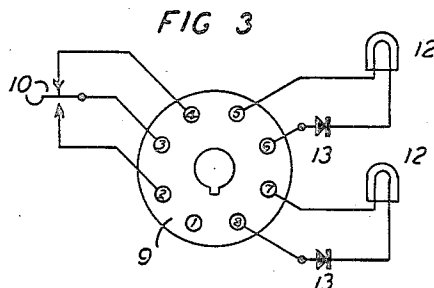
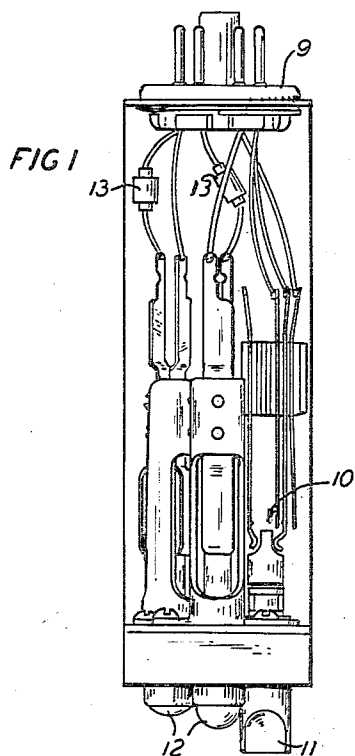
Aug. 19, 1958

E. E. McKEIGE ET AL

2,848,681

SIMULATED RELAY

Filed June 26, 1953



INVENTORS
E. E. McKEIGE
L. A. PULLEY

BY *L. A. Pulley*
ATTORNEY

1

2,848,681

SIMULATED RELAY

Edward E. McKeige, Cranford, and Lester A. Pulley, Westfield, N. J., assignors to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York

Application June 26, 1953, Serial No. 364,404

3 Claims. (Cl. 324—51)

This invention relates to a testing device and particularly to a simulated relay.

In testing certain complex telephone equipment, it is necessary for the tester to know when and if certain relays operate. Some of these relays are of types having mercury wetted contacts enclosed in a gas filled glass envelope which, in turn, is sealed in a metal housing with a pin-type base. Due to the metal housing, the tester cannot see the contacts and in any case, their travel is too slight to be observed readily. Testing the equipment with these relays plugged in is further complicated by the fact that they operate at very high speed and pull up other relays before the tester can make the necessary checks on the circuit as it existed at the time the relay operated.

The object of this invention is a device which may be used in equipment in place of a relay so that circuits related to the relay may be easily tested.

According to the general features of the invention, applicants have provided a device for simulating a relay in electrical equipment comprising an electrical impedance for simulating the winding of the relay, a device for indicating current through the impedance, contacts for simulating the contacts of the relay, switching means for operating the contacts and means for substituting the impedance and the contacts for the winding and contacts of the relay in the equipment to be tested.

These and other features of the invention will be more fully understood from the following detailed description taken in conjunction with the accompanying drawing in which:

Fig. 1 is a plan view of a simulated relay according to the invention, with the cover removed;

Fig. 2 is an end view of Fig. 1; and

Fig. 3 is a schematic diagram of the device of Fig. 1.

The device shown in the drawing is a simulated relay corresponding to a Western Electric plug-in type 276 relay having two D. C. windings and a single movable armature having mercury wetted "make" and "break" contacts.

The plug 9 is similar to the relay plug and has attached to pins 3, 2 and 4 thereof, contacts of a switch 10 which correspond to the movable armature and the "make" and "break" contacts respectively, of the relay. The switch 10 is actuated by a button 11 which is shown in its horizontal or normal not operated position "N. O." This button can be turned to a vertical or operated position "O" which corresponds to the operated condition of the contacts of the relay.

The two D. C. windings of the relay are connected between pins 5 and 6 and pins 7 and 8, respectively, and are simulated by the lamps 12 serially connected with the varistors 13.

2

For a relay of the 276 type, the equipment to be tested must be wired so that the operating current applied to each relay winding is of the proper polarity to make the windings mutually aiding so that energization of either or both windings operates the relay. The varistors 13 in the testing device are therefore poled in the proper direction so that when the device is first plugged in, both lamps will light if the equipment wiring is correct. After this has been determined, the tester operates the button 11 to simulate operation of the relay contacts and he can then devote his full attention to noting the effects produced in the equipment by the simulated relay operation.

While the invention has been described with respect to a particular embodiment for purposes of illustration, it will be understood that the device could be modified in various ways in accordance with the general principles of the invention and the requirements of the particular conditions of use. For example, the device may have various combinations of winding simulating means, not necessarily asymmetrical, and various arrangements of contacts depending on the relay being simulated. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. A device for simulating a plug-in relay in an operating switching circuit to test the circuit wiring for the relay and the operation of the associated parts of the circuit controlled by the operation of the relay, said device comprising a plug adapted to be connected in the circuit in place of the relay, an electrical impedance connected to the plug to simulate a winding of the relay, a lamp for indicating current through the impedance, contacts connected to the plug to simulate the contacts of the relay and a manually controlled switch for operating the contacts.

2. A device for simulating a relay in an operating switching circuit to test the circuit wiring for the relay and the operation of the associated parts of the circuit controlled by the operation of the relay, comprising an asymmetrically conducting impedance for simulating a winding of the relay, an indicator energized when current of a particular polarity flows through the impedance, contacts for simulating the contacts of the relay, a manually controlled switch for operating the contacts and means for substituting the impedance and the contacts for the winding and contacts of a relay in the circuit to be tested.

3. A device for simulating a relay in an operating switching circuit to test the circuit wiring for the relay and the operation of the associated parts of the circuit controlled by the operation of the relay, comprising an electrical impedance for simulating a winding of the relay, a device for indicating current in the impedance, contacts for simulating the contacts of the relay, a manually controlled switch for operating the contacts and means for substituting the impedance and the contacts for the winding and contacts of a relay in the circuit to be tested.

References Cited in the file of this patent

UNITED STATES PATENTS

1,606,063	Edwards	Nov. 9, 1926
2,010,840	Baughman	Aug. 13, 1935
2,131,386	Mishevich	Sept. 27, 1938
2,600,304	Krida	June 10, 1952
2,706,273	De Langis	Apr. 12, 1955