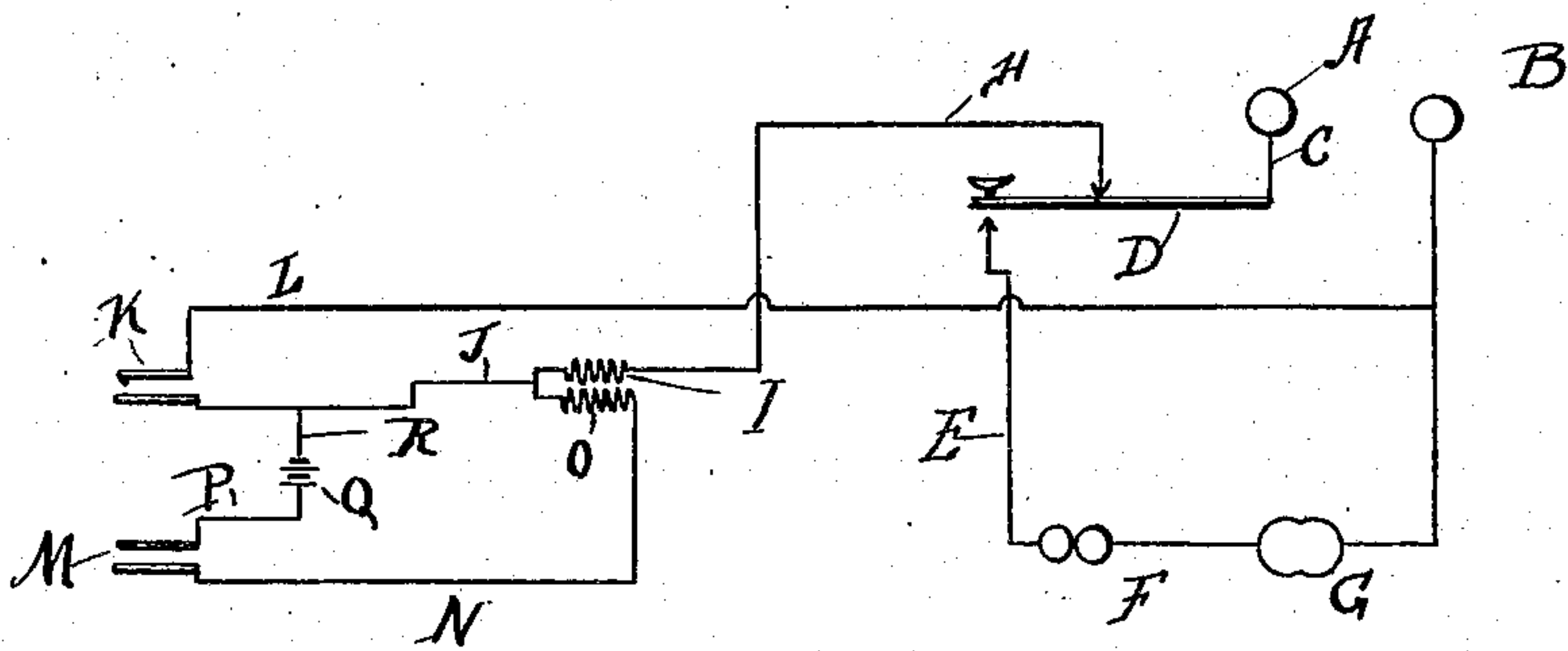


No. 855,117.

PATENTED MAY 28, 1907.

J. M. MILLER & C. J. MURRAY.  
APPARATUS FOR TESTING TELEPHONE WIRES.

APPLICATION FILED JUNE 20, 1906.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES M. MILLER AND CLINTON J. MURRAY, OF NEWTOWN SQUARE,  
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## APPARATUS FOR TESTING TELEPHONE-WIRES.

No. 855,117.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed June 20, 1906. Serial No. 322,511.

*To all whom it may concern:*

Be it known that we, JAMES M. MILLER and CLINTON J. MURRAY, citizens of the United States, residing at Newtown Square, county of Delaware, and State of Pennsylvania, have invented a certain new and useful Improvement in Apparatus for Testing Telephone-Wires, of which the following is a specification.

Our invention relates to a new and useful improvement in apparatus for testing telephone lines, and has for its object to provide an exceedingly simple and effective device of this description by which the line-man may readily communicate with a central station for the purpose of testing a given length of line wire and in which the transmitter will have a battery included in its local circuit so as to avoid the difficulty heretofore experienced in having to transmit the speech by the power of voice.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, we will describe its construction in detail, referring by letter to the accompanying drawing forming a part of this specification, in which a diagram is shown of our improvement, the case being omitted so as to clearly illustrate the form of wire.

Referring to this drawing A represents a binding post or terminal adapted to be connected to the line wire, and B a similar post adapted to be connected with the returned wire or the ground, and the post A is connected by the wire C with the switch D. This switch normally stands open and when closed connects the line wire A with the magneto and bell circuit E in which is located the vibrator or bell F and the magneto G, and the opposite terminal of this circuit is connected with the post B.

The wire H leads from the switch to the secondary coil I, and this coil is connected by the wire J to one side of the receiver-jack K,

while the opposite side of this jack is connected by the wire L to the post B.

M represents the transmitter jack, one side of which is connected by the wire N to the primary coil O while the opposite side of this jack is connected by the wire P to the battery Q, the opposite side of the latter being connected by the wire R to the wire J, and as the wire J is also connected with the primary coil a local circuit will be provided in which the transmitter jack, primary coil and battery are included.

A transmitter and receiver having been connected with the jack and the posts A and B connected with the line wires or the line wire and the ground it is only necessary to depress the switch D to put the bell and magneto in circuit with the line wire, when by operating the magneto a current will be thrown to line, thus signaling the central station and an answer from the station will sound the bell F. Now by releasing the switch D the bell and magneto circuit will be cut out and communication may be had between the central station and the line-man through the transmitter and receiver, the battery relieving the line-man of the necessity of having to raise his voice to an undue pitch to transmit the message when the distance is considerable as will be readily understood.

Heretofore testing sets for line-men have not included a battery and consequently considerable difficulty has been experienced in transmitting a message to the central station at any distance, and under some conditions this difficulty reaches the point of impracticability; but this difficulty is entirely overcome by the use of our improved testing apparatus and a message may be as readily transmitted as through ordinary stationary telephone instruments.

Having thus fully described our invention, what we claim as new and useful, is—

In a line-man's testing set for telephone lines, a bell, a magneto, a circuit in which said bell and magneto is included, a switch for cutting said bell and magneto circuit in or out of the line circuit, a receiver jack, a

circuit in which said receiver jack is included,  
said last named circuit being so arranged as  
to be cut in or out of the line wire circuit by  
the switch, a secondary coil also included in  
5 the receiver jack circuit, a transmitter jack,  
a local circuit in which said transmitter jack  
is included, a battery and a primary coil also  
included in the last named circuit, as speci-  
fied.

In testimony whereof, we have hereunto 10  
affixed our signatures in the presence of two  
subscribing witnesses.

JAMES M. MILLER.  
CLINTON J. MURRAY.

Witnesses:

JACKSON DUNLAP,  
W. J. LEEK.