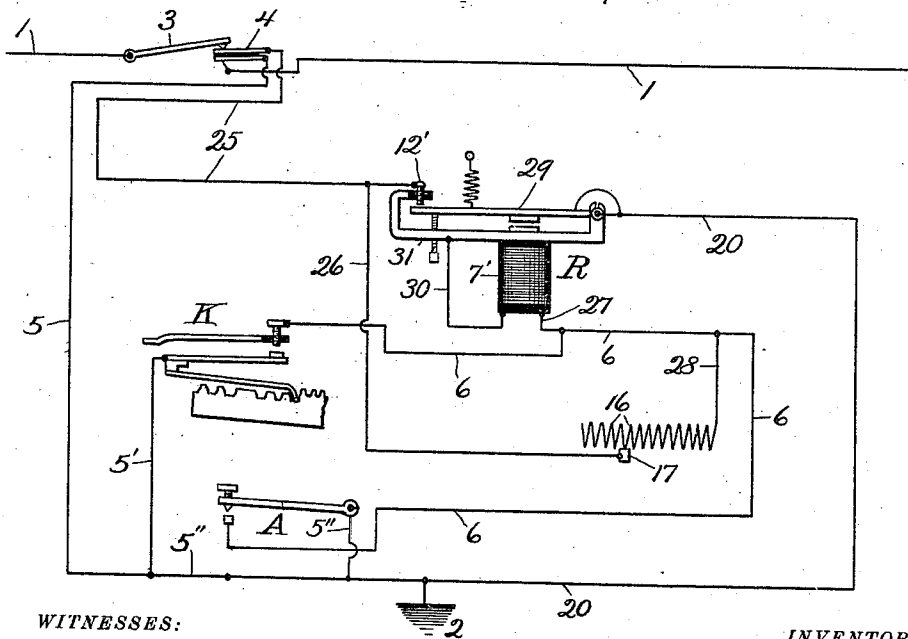
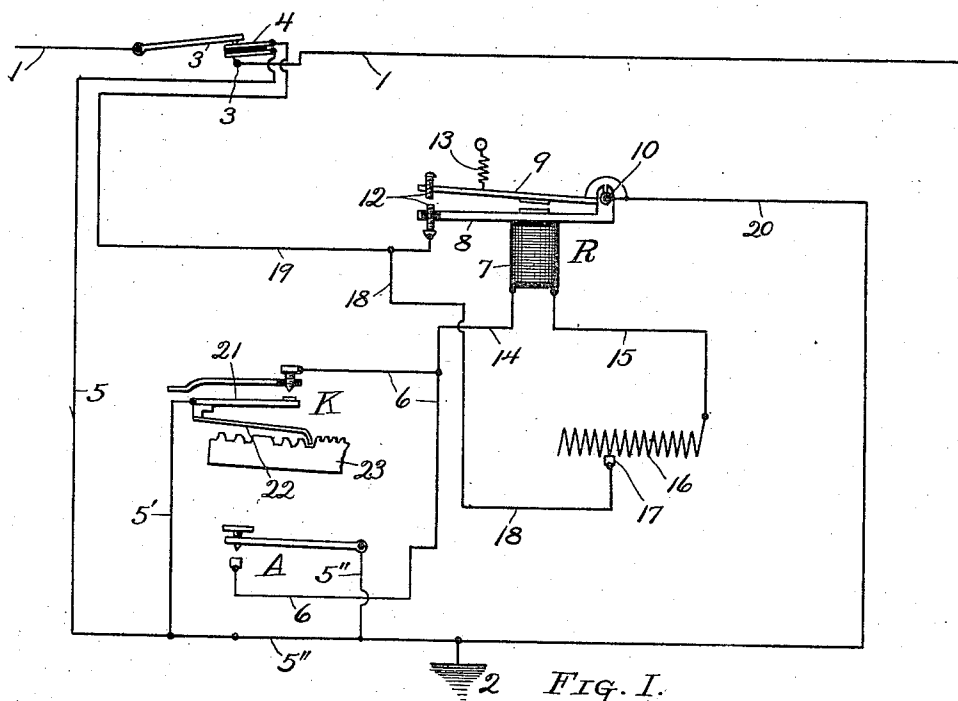


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TELEGRAPHY.
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987,720.

Patented Mar. 28, 1911.



WITNESSES:

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FIG. II.

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Specification of Letters Patent.

Patented Mar. 28, 1911.

Application filed May 17, 1910. Serial No. 561,791.

To all whom it may concern:

Be it known that I, BENJAMIN P. HAYES, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Telegraphy; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates generally to telegraphy, and more particularly to certain devices in connection with telegraphic apparatus.

The object of the present invention is to provide novel means for dispensing with "local" sources of current for energizing local circuits, by utilizing the main line current for that purpose. This object is accomplished by the means illustrated in the accompanying drawings, in which:—

Figure I is a circuit diagram for one station, omitting the receiver, showing connections whereby the relay closes the line circuit on down strokes, and Fig. II is a similar diagram showing connections whereby the relay opens the line circuit on down strokes.

Referring more in detail to the parts:— In each of the figures, the numeral 1 designates a line wire; 2, a ground connection; 3, a relay; K, a mechanical key of the type disclosed in my prior application, Serial Number 458,888, filed Oct. 21, 1908; and A, a manually operable key which may on occasion be used for transmitting messages instead of the mechanical key.

I have shown the mechanical key K simply to illustrate the fact that the invention is primarily intended for use with such keys.

The line 1 is broken to provide contact points 3 for the reception of a jack plug 4, by which the transmitter may be cut in. The receiver is not shown, as it is not necessary to the understanding of the invention.

As shown in Fig. I, one terminal of the jack plug 4 is connected by a wire 5 with both keys K and A, by branches 5' and 5''. The opposite poles of the keys are connected by a wire 6. The relay, R, in Fig. I,

comprises a magnet 7, a fixed member 8, and a vibrating arm 9 pivoted at 10; also contact points 12, and a retracting spring 13. Wire 6 is connected to the magnet 60 coil 7 by a wire 14. From the other magnet terminal, a wire 15 leads to a variable resistance, 16, formed of a bare conducting strip or wire, arranged in helical or zigzag fashion. Contacting this conductor, and 65 movable along the same, is a contact shoe or slide 17, having either flexible or sliding connection with a wire 18, which leads to one of the relay points 12. From wire 18, a branch 19 leads to the jack plug 4, to the 70 terminal opposite that to which the wire 5 is connected. From the relay arm 9, a wire 20 leads to the wire 5'' and thereby connects with the arm of key A, and is grounded, as shown at 2. It will be observed that 75 the contacts 12 are normally open, and that the variable resistance 16 is in series with the relay winding. The movable element of the mechanical key K is a pivoted arm 21, having secured thereto a lower arm 22 80 that is adapted to be engaged by the longitudinally movable character bar 23 which is provided with alternate projections and recesses, as shown. The key is operated 85 by moving the character bar 23 by suitable mechanism, it being understood that there are as many character bars as there are letters figures and symbols to be transmitted and that the key A is operable by any one of such character bars. When- 90 ever key K or A is closed, the relay R will be energized and will draw down its arm 9 thereby closing a circuit at 12, 12, between the line 1 and ground 2. The function of the variable resistance 16 is to weaken the 95 high pressure line current, to provide a voltage suitable for the apparatus in the local circuit. The stronger the current may be, the greater the resistance that is introduced, by moving the slide 17 toward the 100 left. When weaker currents are used the slide 17 is moved nearer to the right hand end of the range. Normally when no message is being sent, the jack 4 is out, but this does not prevent the receiving of mes- 105 sages, as a receiver (not shown) is always in series with the line 1. When a message is to be transmitted the jack 4 is inserted and key A or K is operated.

In Fig. II, the relay R is so arranged as 110 to break the circuit on the closing strokes. The conductors having the same reference

characters as in Fig. I, have the same connections as therein. In the modified arrangement, a wire 25 leads from the jack 4 to a contact point of the relay; and from this wire 25 a branch 26 leads to the variable resistance contact member 17. As in the first instance, one pole of key K is connected to one pole of key A, by a wire 6. Wire 6 is connected to the relay coil 7' at 27, and to the variable resistance 16 by wire 28. The other terminal of the relay coil is connected to the relay arm 29 through the medium of the wire 30 and metallic member 31. As already stated, the relay R 7' will open the circuit by its down strokes and close it by the alternate strokes. The resistance element 16 is shunted around the relay winding. The keys K, A, being connected with said resistance, by wires 6, 28, it follows that when either of said keys is closed, current will divide, and a portion will flow through said resistance to the line, while a portion will flow through the relay R to line. The line circuit is thus closed by relay points 12'. It will be evident then that the strength of the current in the relay coil may be adjusted, or adapted by adjusting the variable resistance member 17. As soon as the jack plug 4 (Fig. II) is inserted, the relay contacts 12' will close for an instant, but will

immediately reopen, as magnet 7' is energized; current passing through wires 25, 26, resistance 16, wires 28, 6 and 27, magnet 7', wire 30, frame 31 and wire 20 to ground. Relay contacts 12' are normally open while the keys are open, as the magnet 7' is normally energized while the plug 4 is connected with the line.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent is:—

In telegraphy, a line wire having jack contacts, a local circuit having a jack plug adapted to cut the local circuit into the line, a direct connection from one side of said plug to ground, a relay, a variable resistance, a key, a line from the other side of said plug to one relay contact and to the variable resistance, a connection between the variable resistance and the relay winding, a connection between the relay winding and the key, and a connection between the key and both the jack plug and the ground.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN P. HAYES.

Witnesses:

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