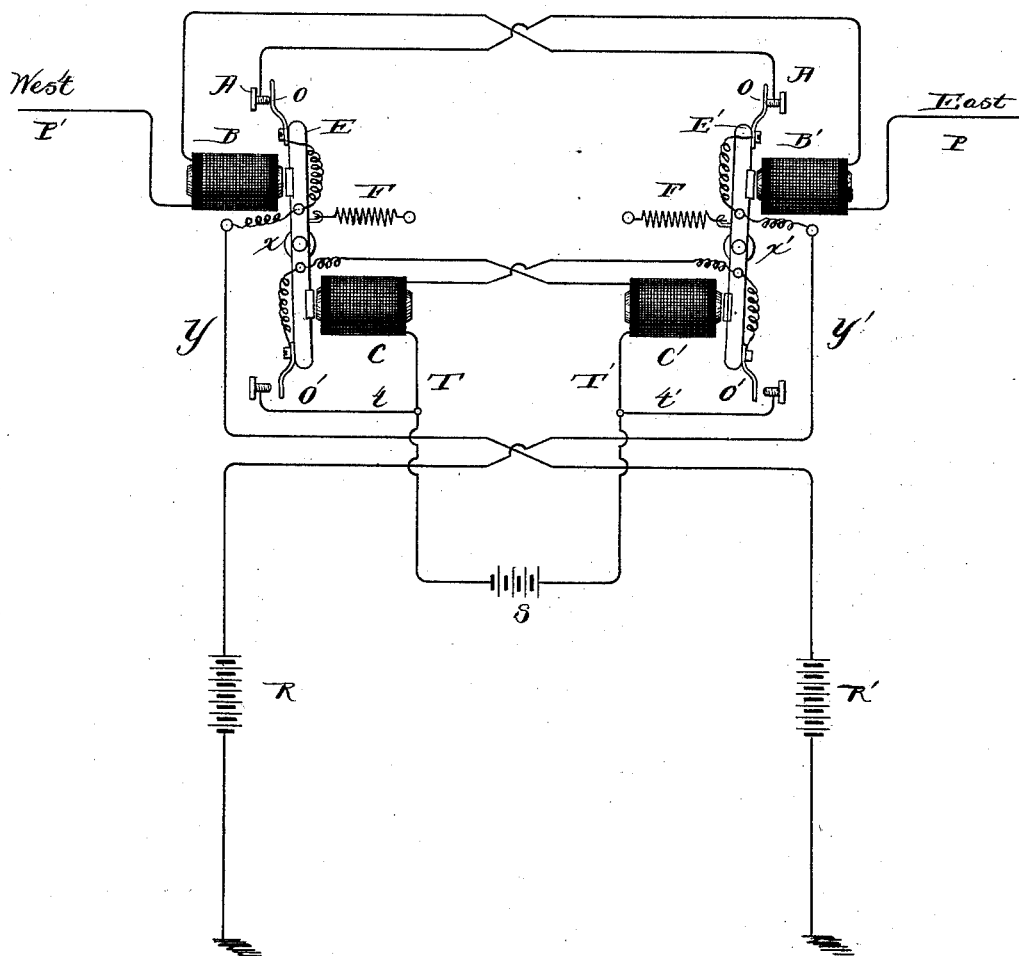


(No Model.)

S. S. EMERY.
TELEGRAPHIC REPEATER.

No. 423,229.

Patented Mar. 11, 1890.



WITNESSES:

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SIDNEY SHEPPARD EMERY, OF NEWTON CENTRE, MASSACHUSETTS.

TELEGRAPHIC REPEATER.

SPECIFICATION forming part of Letters Patent No. 423,229, dated March 11, 1890.

Application filed April 27, 1889. Serial No. 308,887. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY SHEPPARD EMERY, a citizen of the United States, residing in Newton Centre, in the county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Telegraphic Repeaters, of which the following is a specification.

My invention relates to telegraph-repeaters for automatically reproducing in a receiving-line the signals transmitted upon a sending-line, and thereby insuring the proper delivery of the message, however great the distance may be over which the message is transmitted.

In general plan my repeater does not differ fundamentally from others already made known; but my invention comprises important improvements, as described and claimed hereinafter, which both simplify and cheapen the construction of the various parts of the repeater, and which perform their respective functions in such a manner as to meet more fully the requirements of a successfully-operative device than has hitherto been accomplished.

My invention is illustrated in the accompanying drawing, which is a diagrammatic view showing the circuits and the relays in the positions which they occupy when both lines are closed.

P P' are the incoming and outgoing lines, and in the descriptions which follow P or the eastern line is considered the sending-line and P' or the western line is the receiving-line, though the action of the repeater would of course be the same if this order be reversed.

B B' are respectively the receiving and sending relay-magnets, each placed in one of the main lines.

E E' are the two corresponding relay-armatures, centrally pivoted at xx' and controlling the main lines by insulated spring-contacts O O, carried at their upper ends, each of which closes the circuit of one of the main lines when the armature is attracted by the relay of the other line. Thus the circuit of the eastern line when complete is through relay B' to stop A, thence by spring-contact O and wire Y to main battery R' and the ground, and the western line similarly passes to ground through relay B, stop A', contact O, wire Y', and main battery R. If, now, the eastern

line be opened, armature E' will be drawn back by spring F, thereby breaking the western line at A', and the armature E would in turn, under the influence of spring F, break the eastern line at A. This would prevent the closing of the sending-line at the station and would interfere fatally with the operation of the device. To overcome this difficulty, local magnets C C' are provided, which act directly upon the armatures E E', tending, when energized, to turn them in the same direction as do the relay-magnets.

S is a single local battery for the circuit which proceeds from the opposite poles of said battery. It is divided into two branches, as shown, each including one of the local magnets. Thus wire T passes through magnet C to armature E' and the spring-contact O', carried thereupon, returning to the battery by wires t' and T', and wire T' in like manner passes through magnet C', armature E, spring-contact O, and returns by t T.

The contacts O O' on each armature are so arranged that they engage the front and back stops alternately and make contact with one of said stops before breaking with the other.

The operation of my invention is therefore as follows: If east be the sending-line and be opened, the magnet B' will allow E' to fall off, thereby producing a corresponding break in the western line; but before the main contact is severed at A' the local contact will be established at o', and local magnet C is energized so as to maintain armature E in a position to preserve the sending-line closed before the receiving-relay B lets go its hold upon the armature. When, again, the eastern line is closed at the station, magnet B' attracts E', and then finally the local magnet C loses its hold upon E by the breaking of the circuit at o'. It will therefore be seen that the local magnet and receiving-relay take turns in holding the armature E closed against stop A, and that the only parts in the repeater which depend upon any special mechanical nicety are the contact-springs upon the armatures, which must establish the local circuit before breaking the main, as above described.

I claim as my invention—

The combination, in a telegraph-repeater, of the main lines, the relays, and the local

magnets for keeping the sending-line closed, with the centrally-pivoted relay-armatures E E' and the spring-contacts O O', carried on the opposite ends, respectively, of the armatures, the contact O controlling the main receiving-line and the contact O' controlling the circuit of the local magnet C for keeping the sending-line closed.

In witness whereof I have hereunto affixed my seal and signed my name in the presence of two subscribing witnesses.

SIDNEY SHEPPARD EMERY. [l. s.]

Witnesses:

E. M. FOWLE,
ARTHUR E. FOWLE.