

(No Model.)

2 Sheets—Sheet 1.

C. G. BURKE.
TELEGRAPHY.

No. 405,984.

Patented June 25, 1889.

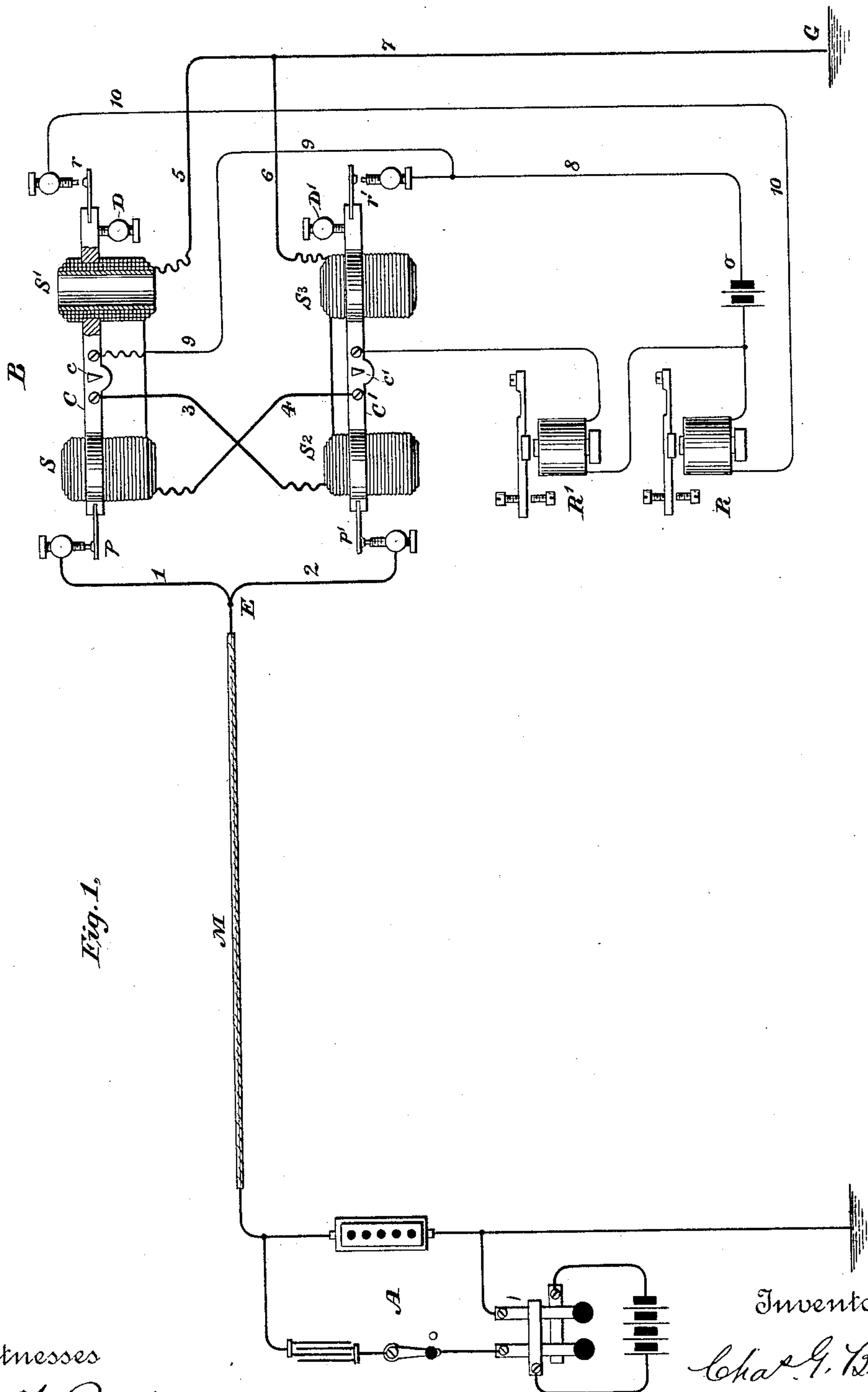


Fig. 1.

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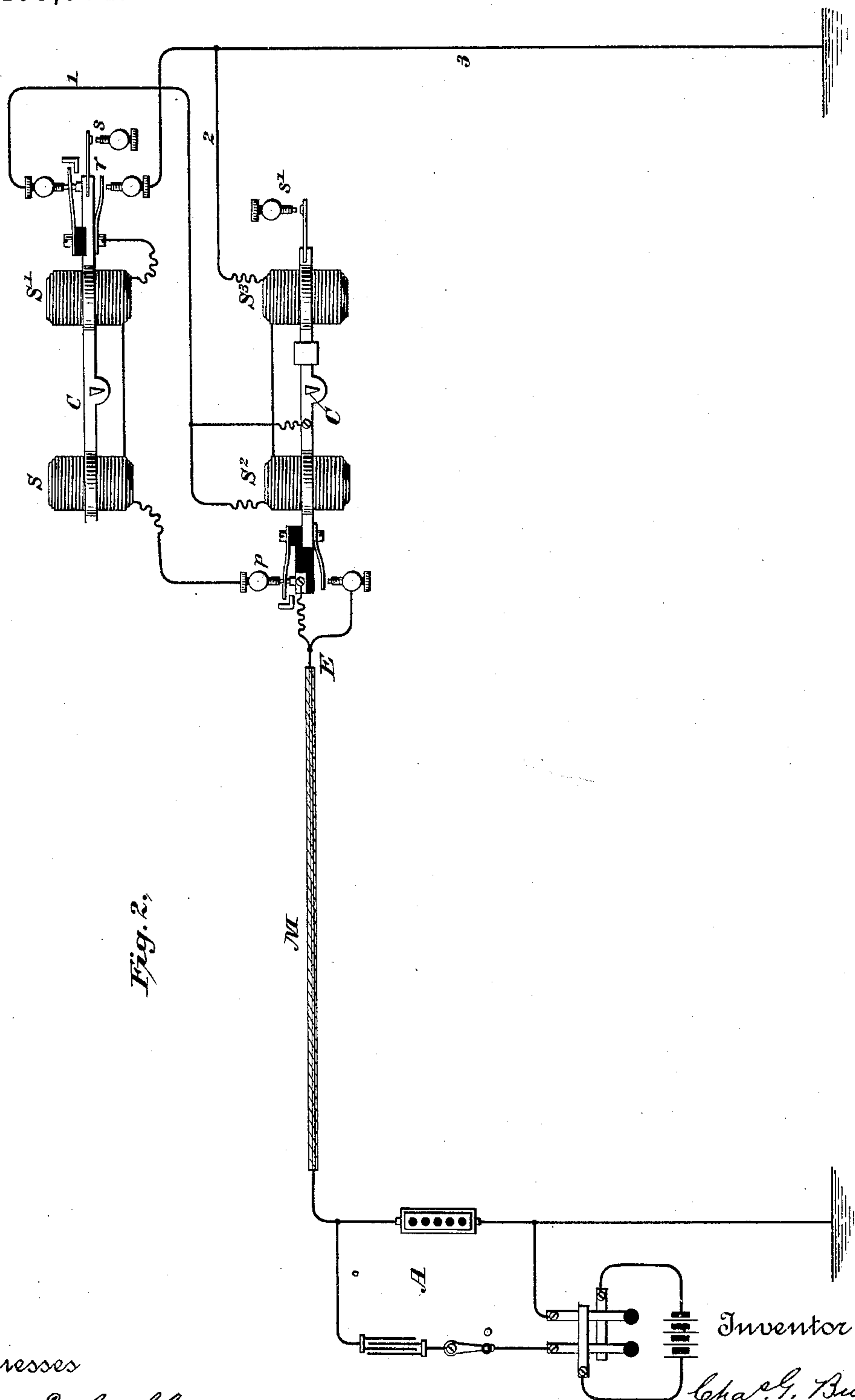
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2 Sheets—Sheet 2.

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No. 405,984.

Patented June 25, 1889.



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UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 405,984, dated June 25, 1889.

Application filed August 4, 1888. Serial No. 281,954. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. BURKE, a citizen of the United States, residing in Richmond Hill, in the county of Queens and State of New York, have invented certain new and useful Improvements in Telegraphy, of which the following is a specification:

The invention relates to that class of apparatus employed for receiving telegraphic messages and indicating or recording the same by any of the usual methods.

The object of the invention is to provide a sensitive receiving apparatus, whereby signals transmitted over long lines or embodied in electric impulses of small power may be more rapidly and accurately received. It is especially adapted to submarine cables.

In carrying out the invention the circuits and apparatus are arranged in a novel manner. At the receiving end of the line two relays or magnets of peculiar construction are arranged to be both normally in the circuit of the main line and capable of responding to the impulses transmitted, each relay being arranged to operate a local circuit. Again, these relays are so arranged that by the operation of either the other one is cut out of the line and restored at the end of such operation. In Letters Patent No. 374,038, issued to me November 29, 1887, the two relays, such as I prefer to use, are described. At the transmitting-station the main battery is connected up in the usual manner, when a mirror-galvanometer or siphon-recorder is used as the receiving-instrument.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows in diagram the arrangement of circuits, and Fig. 2 is a modification.

In the drawings, A represents the transmitting apparatus arranged in the usual method for transmitting electric signals of both polarities, with the battery, condenser, and resistance as ordinarily arranged. M is the main line or cable, and B the receiving-station. The movable parts only of the receiving apparatus are illustrated, and these consist of two pairs of solenoids S and S' and S² and S³. Each pair is attached to a beam C and C', poised upon centers c and c', and each pair is situated within a magnetic field,

as described in the Letters Patent No. 374,038 above referred to. One of the pairs is arranged to be operated by positive currents and the other pair by negative currents, the fixed stops D and D' preventing either beam from moving except in one direction. The battery o is the local battery and R and R' the local relays.

The operation is as follows: The current through the main line M divides at the point E and passes over the lines 1 and 2, and through contact-points p and p' to the beams C and C', carrying the two pairs of solenoids. The divided current then passes over the lines 3 and 4 through the solenoids, the lines 5 and 6, which join in the line 7, and goes to earth at G. If the current is a positive one, then, as arranged, the beam C, which carries the solenoids S and S', only can operate, and this operation causes the contact-point p to separate and the contact-points at r to be closed. The first effect of this, as will be seen, is to cut out of the circuit the two solenoids S² and S³. The second effect is to close the local circuit through the local relay R, the circuit being traced from the battery o through the wires 8, 9, the beam C, contact-point r, and wire 10 to the local magnet R. Upon the cessation of the signal the beam C returns to its former position, the contact-points p are brought together, and the circuit is again made through both pairs of solenoids, as before. If the next signal is one of opposite polarity, the same results follow, except that the other pair of solenoids alone respond to it and the local magnet R' is operated. It will therefore readily be seen that inasmuch as the beams C and C' can only move in opposite directions their movements will be effected by currents of opposite polarity, and therefore only one of the local relays R and R' can be operated at a time. In this way an intelligent code of signals can be transmitted by means of impulses of uniform length. Thus if it be understood that one of the local magnets shall represent dots and the other dashes, then the Morse or any similar code may be sent by means of dots alone.

In Fig. 2 a modification is illustrated whereby the whole of the current coming over the main line is made to pass through both

pairs of solenoids simultaneously or in series, for the current may be traced from the point E through the spring-contact points p , the solenoids S and S', the spring-contact point r , wire 1, solenoids S² and S³, and wires 2 and 3 to the ground at H. The contacts at p and r are arranged, as will be seen, so that the circuit is always closed on one side or the other of the beam. The operation of either pair of solenoids, whereby the beam upon which they are fixed is operated immediately cuts the other pair from the circuit, has already been shown in describing Fig. 1, and local circuits, as will readily be understood, can be operated in the same way through the contact-points s and s' , the entire local circuits not being thought necessary, in this case, to illustrate.

I claim as my invention—

1. The combination of a telegraphic circuit, means for transmitting thereon currents of opposite polarities, two independent coils or sets of coils normally in said circuit, fields of

force for said coils, and stops permitting the motion of but one coil or set at the same time when traversed by a current, each coil or set having contact-points through which the line-connection of the other is made.

2. The combination of a telegraphic circuit, means for transmitting thereon currents of opposite polarity, two independent relays normally in said circuit, stops permitting the operation of but one relay at the same time, each relay having contact-points through which the line-connection of the other is made, and a local circuit having two recorders therein, operated, respectively, by said relays.

In testimony whereof I have hereunto subscribed my name this 18th day of July, A. D. 1888.

CHARLES G. BURKE.

Witnesses:

DANL. W. EDGECOMB,
GEO. M. PHELPS.