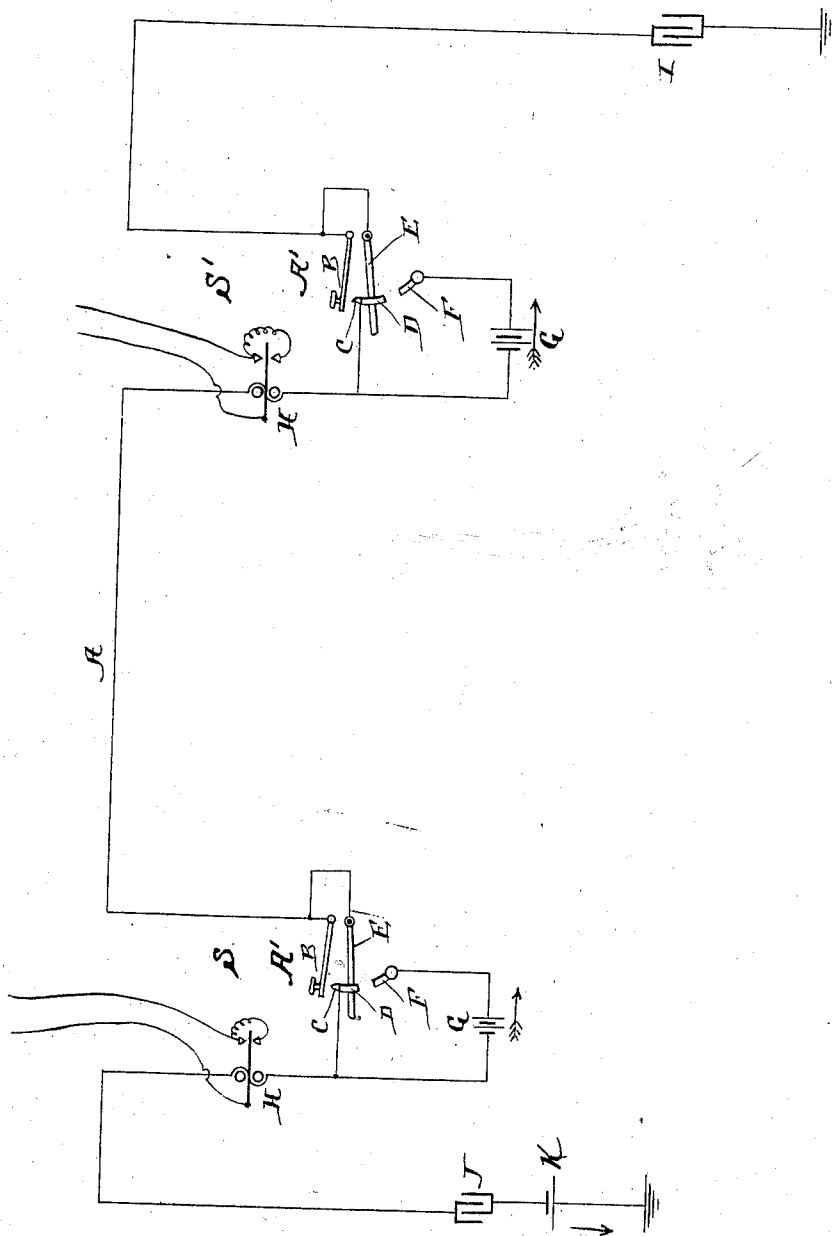


No. 878,963.

PATENTED FEB. 11, 1908.

I. KITSEE.
TELEGRAPHY.

APPLICATION FILED FEB. 3, 1906.



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TELEGRAPHY.

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To all whom it may concern:

Be it known that I, ISIDOR KITSEE, citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Telegraphy, of which the following is a specification.

My invention relates to an improvement in telegraphy and has more special reference to telegraphing over lines with comparative large capacity. It is well known that lines with capacity, such for instance as lines inclosed in cables, cannot well be operated with electric currents of one polarity and that a method whereby true reversals are sent over such lines is preferred in all cases. But on land lines where intermediate stations have to be provided, the adaptation of the true reversal system requires special arrangement for the intermediate stations and the object of my invention is, to provide such lines, having intermediate stations, with a simple and efficient arrangement, whereby true reversals can be sent from any station required.

The drawing represents in diagrammatic view, a line with intermediate stations, the same provided with my invention.

A is the line proper grounded on both sides; I the condenser inserted at one terminal; J the condenser inserted in the other terminal of the line; K a source of current, here shown as one cell connected to the line of transmission at one terminal; S, S', are two intermediate stations, each station equipped with the transmitting key A', the polarized relay H and the source of current G. The key A' embraces the lever B, the stationary point C, the switch E and the two contacting points D, F, respectively.

It is noted that the source of current K is connected to the line in opposition to the source of current G and that the source of current G consists of a greater number of cells than the source K. In the drawing, the source K consists of one cell and each of the sources G of two cells. Normally, that is, when the line is idle, the same is connected at each station directly to the switch E, but when an operator desires to transmit a message, he moves his switch from the point D and connects the switch with the point F, thereby breaking the direct connection of the line and making a connection including the source G. In the line are then inserted in

series two sources, the source K and the source G, both sources in opposition as to each other; the source G of a greater electro-motive force than the source K. The manipulation of the key for the purpose of transmitting a message is the same as is practiced today on land lines, in the transmitting of messages according to the Morse code. When the operator desires to transmit a character, he depresses the lever B, so that the same shall connect with the point C; this operation will shunt the battery or other source G.

As long as the lever is depressed and the source G short circuited, a momentary impulse will flow from the source K in the direction of the unfeathered arrow, charging the condensers and thereby operating the polarized relay, so that the armature shall come to rest at one point, but when the depression ceases, that is, when the lever is moved away from the contact C, then the shunt around the source G is broken and as the potential of G is higher than the potential of K, and as G is in opposition as to K, a momentary impulse will flow from G over the line in the direction of the feathered arrow. This impulse will be of a potential equal to the potential of G minus the potential of K. This impulse will charge the condensers in opposite direction and will thereby operate the relay H, so that their armatures shall move in the direction opposite from the first direction and connect with the other point. Through the movement of this armature, a local circuit is operated and the longer or shorter depression of the key results in a longer or shorter record, audible or otherwise, of the translating devices inserted in said local circuit.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In telegraphy, a line of transmission, a source of current for said line, intermediate stations for said line, each station equipped with a source of current, a transmitting key, a polarized receiving instrument and means to connect the line either directly or with the interposition of said source to said key, the two sources in opposition as to each other.

2. In telegraphy, a line of transmission, a source of current at one terminal of said line, a series of stations distributed along said line, each station provided with a second source of current, said second source of

- different strength from the first source, a transmitting key and means to connect said line either directly or with the interposition of said second source.
- 5 3. In telegraphing with true reversals, a line of transmission provided with a series of stations, a main battery for one terminal of said line, intermediate batteries for each station, the intermediate batteries of an
- 10 electro-motive force greater than the main battery, receiving and transmitting device for each station, the transmitting device provided with means to connect the line either directly or with the interposition of said intermediate battery. 15
- In testimony whereof I affix my signature in presence of two witnesses.
- ISIDOR KITSEE.
- Witnesses:
MARY C. SMITH,
ALVAH RITTENHOUSE.