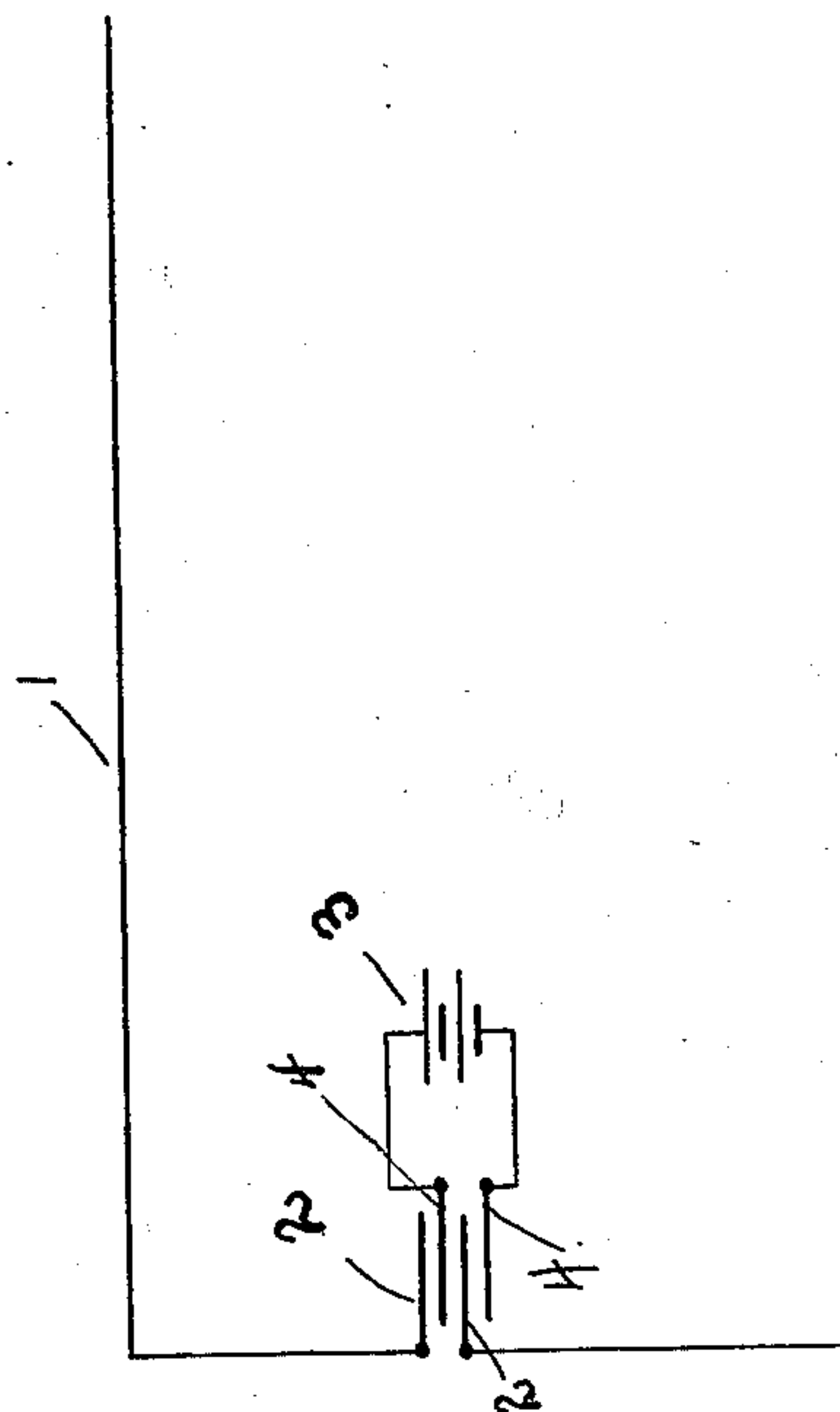


I. KITSEE.
ELECTRIC TRANSMISSION OF INTELLIGENCE.
APPLICATION FILED JULY 13, 1906.

1,083,255.

Patented Dec. 30, 1913.



Inventor

Witnesses

Alvah Rittenhouse
Mary C. Smith

I. Kitsee

UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ELECTRIC TRANSMISSION OF INTELLIGENCE.

1,083,255.

Specification of Letters Patent.

Patented Dec. 30, 1913.

Application filed July 13, 1906. Serial No. 326,078.

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 Electric Transmission of Intelligence, of which the following is a specification.

My invention relates to an improvement in electric transmission of intelligence.

It is adaptable to telephonic as well as telegraphic transmission, but its greatest value is found on telegraphic lines with great capacity, such for instance as submarine cables.

On submarine cables, the method of telegraphing today is as follows: The double key is employed; with the aid of one key a positive impulse is transmitted over the line and with the aid of the second key a negative impulse is transmitted over the line. During the interval between the connection of one source of current and the connection of the other source of current to the line, the same is momentarily left open and then grounded without the interposition of any source of current, so as to discharge the same.

A second mode of telegraphing to-day over the cable is with the aid of the so-called Wheatstone transmitter, on a strip of paper having perforations for the connection of the positive and negative current. Here again the cable is either left open or connected directly to the ground. In both cases, a negative impulse denotes one character of the alphabet, say a dash, and the positive impulse the second character, say a dot. As in the telegraphic alphabet often two or more dots or two or more dashes follow each other, the moving of the zero is the result. It was thought that the moving of the zero could be easily overcome, if after each positive impulse a negative impulse is to follow or vice versa. This was tried with the double key and the Wheatstone transmitter. The receiving instrument was in each case the well-known siphon recorder, but the tape presented the record, clearly indicating that the zero position was still unstable.

After comparing records of different systems, it was deducted that when on a line with great capacity, such as a submarine

cable, an impulse is transmitted and the line then left idle or being connected to the ground directly, that is, without the interposition of any source of electricity, electric waves surge in the cable to and fro till this cable has attained its normal condition. This surging of the electric waves produced the moving of the zero. To overcome this, I found that it is necessary to have a source of potential impressed on the line during the whole time that the message is transmitted. This potential should not interfere with the receiving of the true message. After careful experiments, I found that the arrangement, as outlined in the accompanying drawing, is effective for the purpose in question.

Referring to the drawing, 1 is the line of transmission; 2, 2, and 4, 4, is a static device, such as a condenser. The usual condenser consists of two series of leaves intervening between each other and these leaves I indicated by the numerals 2, 2. The condenser S employed in my arrangement is, what I call, the double condenser, that is, a condenser consisting of four series of leaves electrically considered, and I have designated the second pair of leaves by the numerals 4, 4. The second pair of leaves are locally connected to a source of current, here shown as the battery 3. The action of this condenser is as follows: Through the battery 3, the leaves or branches 4, 4, are raised to a potential depending on the potential of the battery or other source. The raising of these leaves which intervene between the leaves 2, 2, raise again by induction these leaves 2, 2, to the potential of the leaves 4, 4, minus the loss in conversion. I, therefore, have on the line a device which is always at the required potential and it is an effectual bar, which experiments have proven, to the surging of the waves surging in the cable between the different impulses, and the moving of the zero is thereby prevented provided that positive and negative impulses follow each other in regular succession. I have record slips produced over submarine cables of about eighteen hundred miles and found that whereas the record made by impulses in which the plain double key or the Wheatstone transmitter is used, the moving of the zero is quite distinct; the transmission of reversals whereby a source

of potential was always left on the line, produced a record, straight and minus the moving zero.

5 I have here described my invention as applicable to telegraphic lines, but it is obvious that such arrangement may be advantageously applied to any line used for transmitting intelligence.

10 I have here omitted transmitting and receiving stations because the manner of transmitting and receiving may differ in the different systems without departing from the scope of my invention.

15 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, means to impress upon said line a polarity

independent of the signaling polarity, said means comprising a double condenser, one 20 part connected to the line of transmission and the second part connected to a source of electric potential.

2. A line of transmission, a double condenser and means to impress upon said line 25 a potential independent of the potentials or impulses impressed during the transmission of the message through said double condenser.

In testimony whereof I affix my signature 30 in presence of two witnesses.

ISIDOR KITSEE.

Witnesses:

MARY C. SMITH,
ALVAH RITTENHOUSE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."