

No. 827,918.

PATENTED AUG. 7, 1906.

I. KITSEE.
ELECTRIC CIRCUIT.

APPLICATION FILED APR. 1, 1904.

Fig. 1

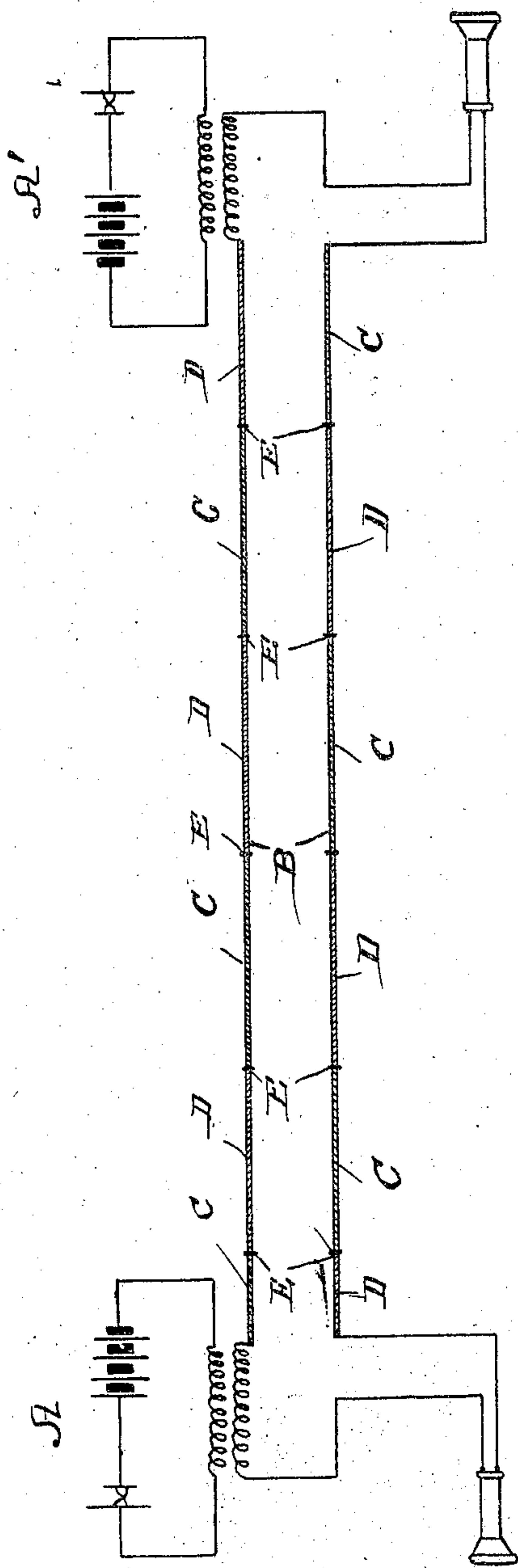
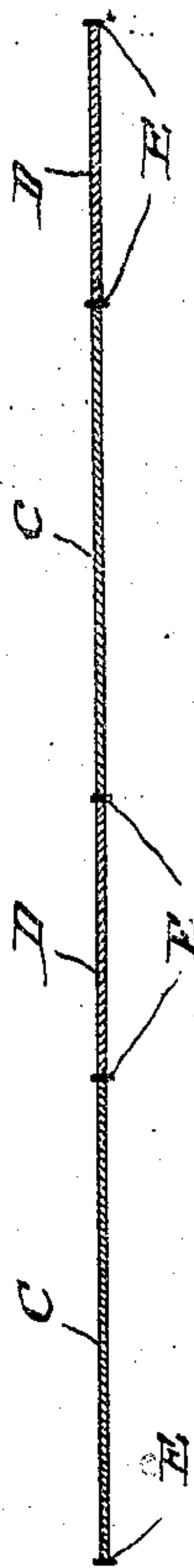


Fig. 2



WITNESSES:

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ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRIC CIRCUIT.

No. 827,918.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed April 1, 1904. Serial No. 201,124.

To all whom it may concern:

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and
5 useful Improvements in Electric Circuits, of which the following is a specification.

My invention relates to an improvement in electric circuits, and more especially in
10 such circuits with the aid of which alternating or undulating impulses should be transmitted from one station to a second station.

In the drawings I have illustrated my invention as being employed in a telephonic circuit.

5 In the drawings, in which Figure 1 is a diagrammatic view of two stations joined together by the circuit embodying my invention, and Fig. 2 is a modification of Fig. 1, A designates one station, and A' the second
20 station. B designates the circuit as an entirety, consisting of the sectional conductors C, consisting of a non-magnetic material, such as copper, and D, consisting of a paramagnetic material, such as iron, respectively joined at
25 the points E.

To persons versed in the art it is well known that in the early days of telephony the circuit consisted of an iron wire; but it was found that the retardation was such as to
30 impede the speech if the transmission should be over a comparative long distance, and today an all-metallic line consisting entirely of copper conductors is substituted for the iron previously employed.

35 In my experiments I have found that whereas an iron conductor alone is not well adapted for the transmission of speech, a conductor consisting of alternate sections of iron and copper greatly increases the efficiency of long-distance telephone transmission, and as in an all-metallic line both wires
40 are running always parallel in close proximity to each other I found it expedient to arrange the circuit in a manner so that an iron section on one line should always be opposite to a copper section of the second line.

It is not necessary for me to go more into detail or to point out the exact ratio between the iron and copper to be employed for the
50 sections; but I have found that the copper sections may with advantage be of double the length of the iron sections.

In Fig. 1 of the drawings I have illustrated the sections of about equal length, and in Fig.
55 2 I have illustrated the copper to be about double the length of the iron sections; but it

is obvious that these lengths may differ without departing from the scope of my invention. I can state right here that tests were made over lines embodying line as well
60 as artificial resistances, inductances, and capacities, and that invariably the result of the "sectional" line, as I call it, was more satisfactory than where the line consisted either of copper or iron alone.

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

1. In electricity, a line of transmission consisting of alternating sections of iron and copper conductors conductively conducted together each section running only part of the entire length of said line of transmission, said sections connected together so that each successive section shall overspan a successive
70 part of the length to be covered by said line of transmission.

2. In telephony, a line of transmission, said line of transmission consisting of two or more sections of copper wire and two or more sections of iron wire, the sections of iron wire intervening between the sections of copper wire, the sections of copper wire of greater length than the sections of iron wire.

3. In a line of transmission consisting of a copper conductor, iron sections interposed at different points of said copper conductor, said iron sections of a shorter length than the copper conductor between which they are interposed.

4. In electric transmission, two stations, a line of transmission running from one station to the second station and connecting both stations together for the purpose of intercommunication, said line of transmission consisting of a series of sections, each section overspanning part of the space between the two stations, a number of said sections consisting of a copper conductor, and a number of said sections consisting of an iron conductor, the
90 sections of copper conductor intervening between the sections of iron conductor, all sections together forming the line of transmission.

5. In electricity, a single conductor overspanning the space between two stations and connecting said stations together, said single conductor consisting in parts of its length of copper and in parts of its length of iron, the parts of iron intervening between the parts
105 of copper and electrically connected thereto.

6. In combination, two telephonic stations,

each provided with transmitting and receiving devices, an electric circuit connecting said two stations together for the purpose of inter-communication, said circuit consisting of
5 lengths of paramagnetic and lengths of non-magnetic conductors, each length overspanning only part of the space between said two stations, the lengths of the paramagnetic conductor interposed between the lengths of
10 the non-magnetic conductor, all of said lengths connected together so as to form one continuous circuit.

7. An improved line of transmission consisting of sections of paramagnetic material
15 interposed between sections of non-magnetic material, each section running only part of

the entire length of said line of transmission, the sections of the different materials intervening between each other in a manner so that electric impulses flowing through the line
20 from one terminal to the other terminal are caused to flow alternately through a conductor consisting of paramagnetic and through a conductor consisting of non-magnetic material.

In testimony whereof I hereby sign my name, in the presence of two subscribing witnesses, this 31st day of March, A. D. 1904.

ISIDOR KITSEE.

Witnesses:

EDITH R. STILLEY,
H. C. YETTER.