

No. 803,112.

PATENTED OCT. 31, 1905.

I. KITSEE.

TRANSMISSION OF INTELLIGENCE WITH THE AID OF ELECTRIC ENERGY.

APPLICATION FILED APR. 10, 1905.

Fig. 1.

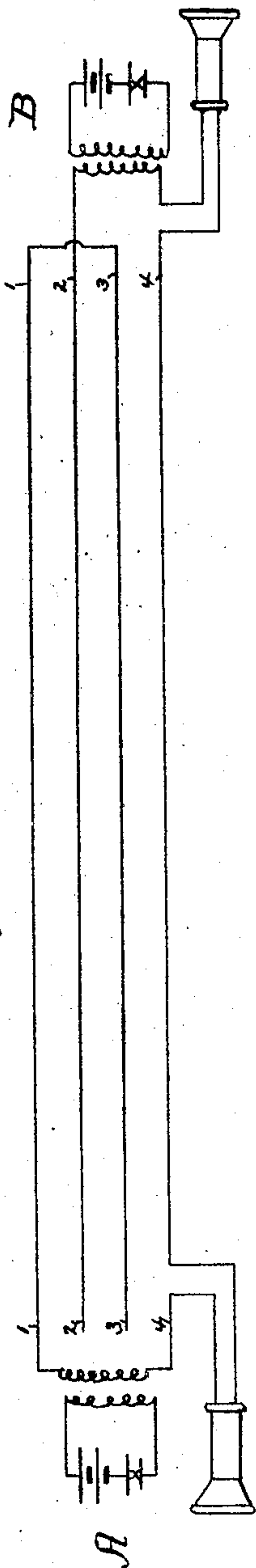


Fig. 2.

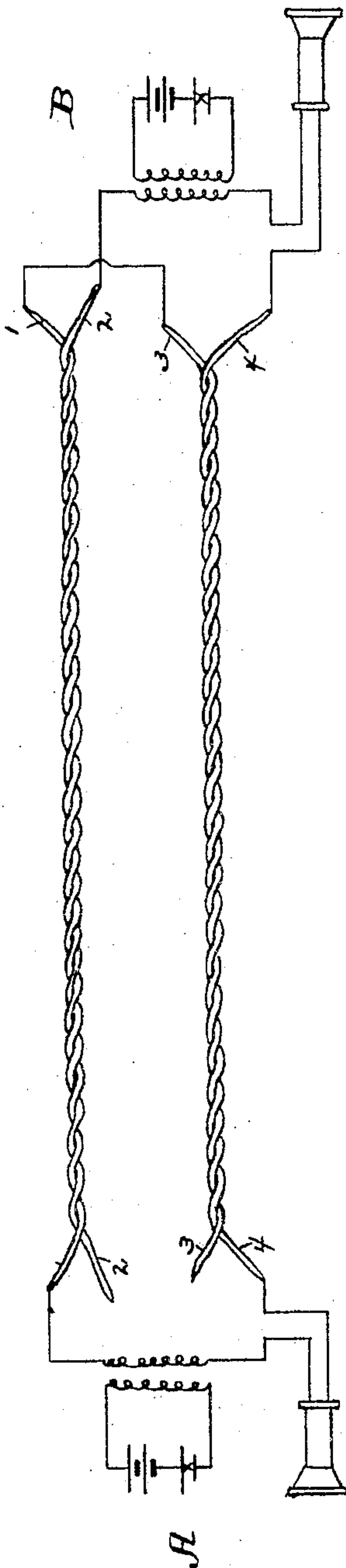
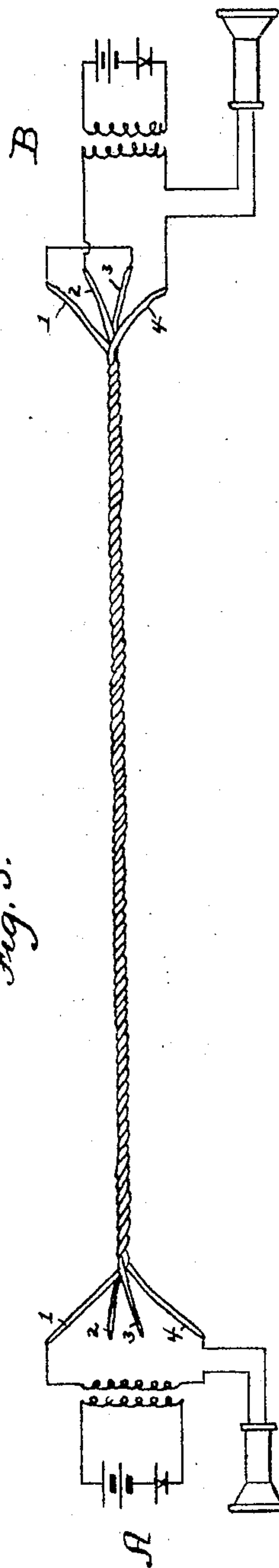


Fig. 3.



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TRANSMISSION OF INTELLIGENCE WITH THE AID OF ELECTRIC ENERGY.

No. 803,112.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed April 10, 1905. Serial No. 254,767.

To all whom it may concern:

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Transmission of Intelligence with the Aid of Electric Energy, (Case No. 241,) of which the following is a specification.

My invention relates to an improvement in the transmission of intelligence with the aid of electric energy, and has more special reference to long-distance telephonic transmission.

In general my invention comprises the construction and use of such a line that the effects of induction are utilized to increase the quantity and quality of transmission and which it is probable are combined to some extent with the effects of static capacity in bringing about the remarkable results attained. The construction referred to involves a line or cable which comprises a plurality of relatively insulated or conductively-separated wires, which are preferably twisted in intimate relation with one another and are therefore at no point on metallic contact. The wires for one line or a single circuit are preferably four in number and of a comparatively small gage. I have found that four strands of No. 28 insulated wire have given extremely-satisfactory results in actual open-air tests for a distance of over a mile. These strands are preferably twisted into intimate relation with each other, so as to produce two pairs of two wires each, the two wires of each pair twisted with each other so as to make approximately four or five complete turns to the inch. These twisted wires should preferably extend the whole length of the line, the ends of the separate wires being connected to the instruments or apparatus at each end of the line or at any two stations, so as to produce out of said two pairs one continuous circuit.

I do not herein desire to advance any particular theory as to the causes and actions of the transmitting currents or impulses in my line which produce the great advantage in quantity, quality, and efficiency of the electric transmission. Suffice it to say that electric induction, both self and mutual, plays an important part in the transmission and is probably modified by and coöperates with static capacity to greater or less extent.

I do not wish to be understood as being limited to the details, arrangements, and sizes herein set forth, for they may be varied to

suit the different conditions of any particular line or number of lines included in a single circuit or cable. Neither do I wish to be understood as being limited to the transmission of intelligence in the application of my invention, for it is evident that the same may be utilized in the transmission of power electrically by alternating or intermittent currents.

Referring to the drawings, Figure 1, Fig. 2, and Fig. 3 are diagrammatic views of transmitting-circuits embodying my invention.

In the figures 1 2 3 4 are four lines or wires connecting one of the stations (here designated as station A) to the second of the stations, (here designated as station B,) each station equipped with the necessary transmitting and receiving devices. Fig. 1 illustrates clearly the connection of the four lines as to each other and as to the necessary devices inserted in this line. In Fig. 2 these four lines are divided into two pairs, the two wires of each pair twisted in intimate relation as to each other, and as said above it is preferred that the twist shall be such as to represent at least three or four turns to the inch. The wire 1 is connected with the wire 4 at station A, with the interposition of the receiving and part of the transmitting device. At station B the wire 1 is connected with wire 3 and wire 2 is connected at this station with wire 4, interposing between this last-named connection the receiver and part of the transmitting device. I have in these figures shown the connection between wires 1 and 3 as free of the devices; but it is obvious that part of these devices may also be inserted in this part of the circuit without departing from the scope of my invention.

In Fig. 3 the connection of the wires and the devices connected therewith are identical with the connections as illustrated in Figs. 1 and 2; but the four wires in this Fig. 3 are twisted together so as to form one composite line. Similar parts are designated by similar letters, as in Fig. 1 and Fig. 2.

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

1. In a circuit for transmitting varying electric currents a line comprising four insulated conductors connected in a manner so as to form one open circuit, and necessary devices at the terminals of said circuit.

2. In the circuit for transmitting varying electric currents a transmitting-line compris-

ing four insulated conductors divided into two pairs, the conductors of each pair twisted around each other and all four conductors connected to each other so as to form one continuous circuit and the necessary receiving and transmitting devices in said circuit.

3. In a circuit for transmitting varying electric currents, a transmitting-line comprising four insulated conductors, said insulated conductors running from one station to a second station more or less remote from the first, the four conductors divided into two pairs; the conductors of each pair in inductive relation with each other, the terminal of one wire of each of said pairs connected together at one station and the terminals of the remaining wires being left free at said station; at the second station the terminal of one wire of one of said pairs connected to a terminal of one wire of the second of said pairs and the terminal of the other wire of the first pair connected to the other wire of the second pair and necessary devices at both stations placed in the circuit formed by said two pairs.

4. In a circuit for transmitting varying electric currents a line comprising four insulated conductors the conductors forming two pairs of two wires each, the two wires of each pair twisted together in intimate relation with one another, said conductors being inductively separated through their entire length and being connected together at the terminals in a manner so as to form one open circuit.

5. A line for electrically transmitting intelligence consisting of four conductors insulated from each other but inductively related to each other, said four conductors connected together in a manner so as to form one continuous circuit and devices operatively connected to said circuit.

In testimony whereof I hereby sign my name, in the presence of two subscribing witnesses, this 7th day of April, A. D. 1905.

ISIDOR KITSEE.

Witnesses:

EDITH R. STILLEY,
H. C. YETTER.