(No Model.)

E. GWOSDEFF.

LONG DISTANCE TELEPHONE SYSTEM.

No. 471,310. Patented Mar. 22, 1892.

Fig. 1

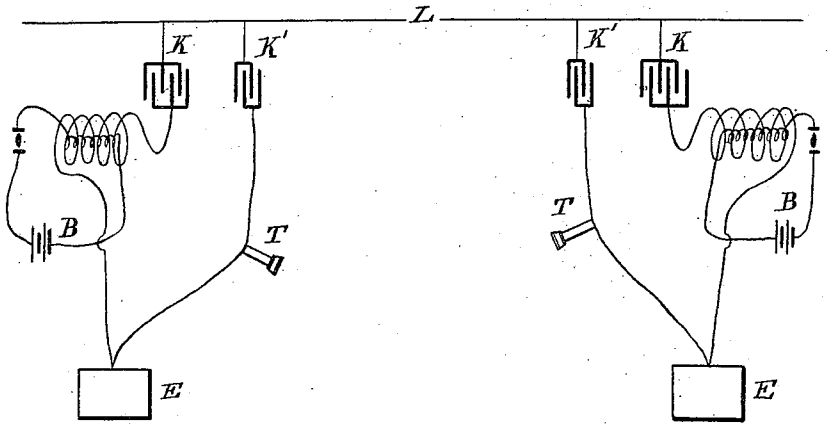
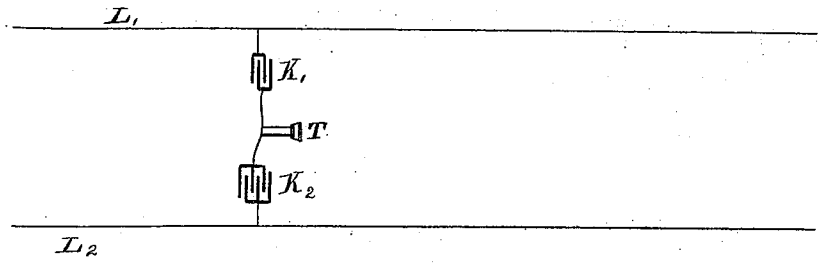


Fig. 2.



Witnesses
W. E. Bowen
J. E. M. Borren

Inventor
Eugène Gwosdeff
By Richards & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

EUGENE GWOSDEFF, OF ST. PETERSBURG, RUSSIA.

LONG-DISTANCE-TELEPHONE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 471,310, dated March 22, 1892.

Application filed February 15, 1889. Serial No. 300,041. (No model.)

To all whom it may concern:

Be it known that I, EUGENE GWOSDEFF, a subject of the Emperor of Russia, residing at St. Petersburg, Russia, have invented certain new and useful Improvements in Long-Distance-Telephone Systems; and I hereby declare that the following is a full, clear, and exact description of the same.

In the drawings which form a part of this specification, Figure 1 is a diagrammatic elevation showing my system, and Fig. 2 is a modification showing two lines.

I have found that in order to obtain a perfect operating of the microphones and of the telephones of all systems for long distances it is sufficient to realize the following conditions: First, not a single electro-magnet, not even the smallest, must be placed in the telephonic line; second, the ends of the line must be isolated from the earth; third, the microphones and the telephones must be connected with the line L by means of the condensers K and K′, as shown in Fig. 1. The capacities of those condensers must be different. The capacity of the microphonic condenser K depends upon the force of the current of the battery and upon the length of the line L, and also upon the total of the capacities of all receivers placed in the line. The telephonic condenser, on the contrary, must have a very small electric capacity in order not to increase unnecessarily the capacity of the line. This condenser can be reduced in some cases to two metallic sheets moving one on the other.

When the distance is great, it is strictly necessary in using the telephone-receiver to exclude (isolate) from the circuit the microphonic condensers—that is to say, with the listening—and with the speaking, on the contrary, the microphonic condenser must be brought into the circuit. These arrangements make the use of the telephones for distances of several hundred miles possible. The telluric earth and thermic currents do not exercise any prejudicial influence on the line with an arrangement as described.

When the line is composed of two wires without earth, as indicated in Fig. 2, the effects of induction are neutralized by connecting the telephone T with every wire L and L^2 by means of the condensers K′ and K^2, the capacity of which agrees with the resistance of the corresponding line.

The proportioning of the condensers of two conductors, Fig. 2, is accomplished in the following manner: To a conductor of smaller resistance a condenser of smaller capacity is applied, and to a conductor of greater resistance a condenser of greater capacity is connected. The result is that induction-currents of the same force act on the telephone, which equalize (compensate) each other.

I claim as new and as my invention—

The telephonic system for great distances, characterized by the following arrangements: the microphones and telephones connected with the line by means of the separated condensers and connected with a return-line by means of condensers the electric capacity of which corresponds with the respective resistances of the two lines, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE GWOSDEFF.

Witnesses:

N. TSCHEKALOFFLEL,

J. HIERLING.