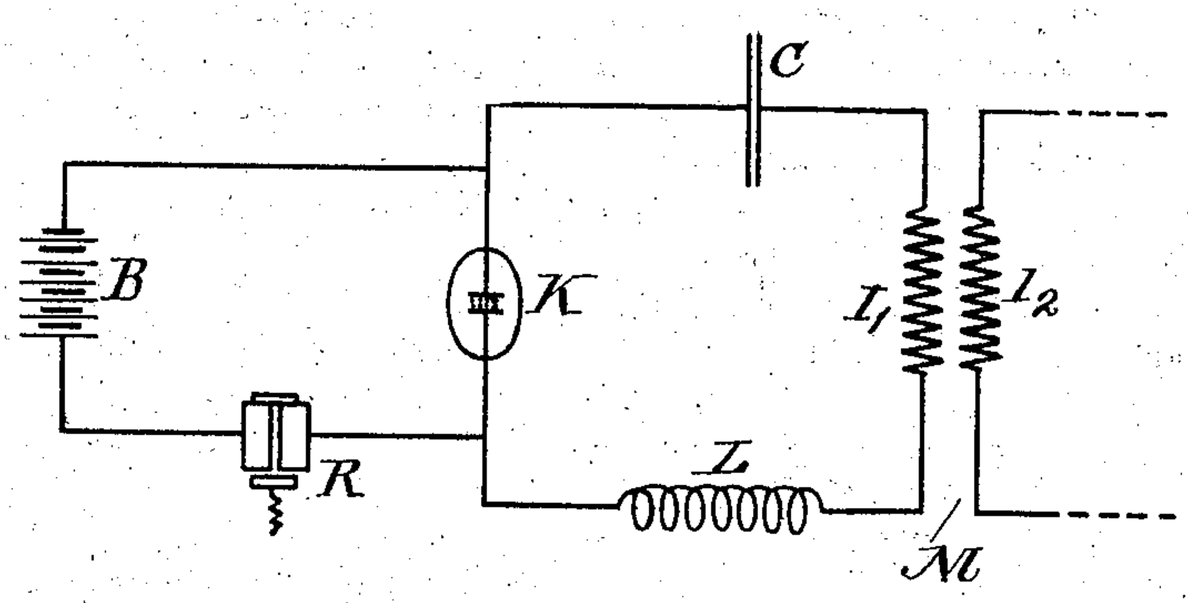
No. 767,978. PATENTED AUG. 16, 1904.

J. S. STONE.

SPACE TELEGRAPHY.

APPLICATION FILED NOV. 24, 1903. RENEWED JUNE 20, 1904.

NO MODEL.



WITNESSES

G. Adelaide Higgins.

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No. 767,978. Patented August 16, 1904.

UNITED STATES PATENT OFFICE.

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SPACE TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 767,978, dated August 16, 1904.

Application filed November 24, 1903. Renewed June 20, 1904. Serial No. 213,323. (No model.)

To all whom it may concern:

Be it known that I, JOHN STONE STONE, a citizen of the United States, and a resident of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Space Telegraphy, of which the following is a specification.

My invention relates to the art of transmitting intelligence from one station to another by means of electromagnetic waves without the use of wires to guide the waves to their destination; and it relates more particularly to a system for receiving signals transmitted by such waves.

This application is restricted to the invention illustrated in Figure 10 of my application, Serial No. 44,384, filed January 23, 1901, which was divided from my application, Serial No. 4,505, filed February 8, 1900, and upon which Patent No. 714,831 was granted December 2, 1902. In Figs. 6 and 11 of said patent I have illustrated an electroreceptive device, diagrammatically shown as a coherer, but which may be any other suitable form of receiver or wave-detector connected in shunt-circuit to one of the tuning elements of a resonant circuit. In Fig. 6 the tuning element is a condenser, and in Fig. 11 the tuning element is an inductance-coil. In Fig. 12 the electroreceptive device is itself one of the tuning elements of a resonant circuit. In Fig. 10 of said patent the electroreceptive device is serially connected in the closed resonant circuit, but does not form one of the tuning elements thereof, as is the case with the condenser-telephone receiver shown in Fig. 12. In this application, therefore, I limit my claims to a receiving-circuit having an electroreceptive device serially connected therein, but not forming one of the tuning elements thereof, as hereinafter explained.

In the drawing which accompanies and forms a part of this specification the figure represents diagrammatically one embodiment of my invention.

I_2 is the primary of a transformer which is either connected in series with an elevated conductor, as shown in Fig. 6 of my patent aforesaid, or is included in a closed resonant circuit interposed between said elevated conductor and the resonant circuit containing the electroreceptive device K, as shown in Fig. 8 of said patent.

I_1 is the secondary of the transformer M, of which I_2 is the primary.

L is an inductance.

C is a condenser.

K is an electroreceptive device, herein diagrammatically illustrated as a coherer, but which may be any receiver adapted for the purpose.

R is a relay or other signal-indicating device.

B is a battery.

For details of construction of apparatus and for the operation thereof reference may be had to my patent hereinbefore referred to.

When the electroreceptive device is a coherer with contacts under light pressure, it is equivalent to a condenser and its capacity should be made great as compared to that of the tuning-condenser for the reason more fully explained in my prior patent, No. 714,831, in connection with the condenser C′, Fig. 6, or C″, Fig. 8.

I desire to point out that for the reasons more fully set forth in my prior patents I find it necessary in order to effect the selective absorption of the energy of electromagnetic waves of a predetermined frequency to the practical exclusion of the energy of waves of other frequencies to so design the coils that the kinetic energy of the current in the coil shall be large compared to its potential energy when the coil is supporting a current of the said predetermined frequency. It is, furthermore, a characteristic of my invention that this selective absorption of the energy of electromagnetic waves of a predetermined frequency is accomplished solely by means of the closed circuit C K L I_1, made resonant to said frequency by the adjustment of the capacity of the condenser to the inductance of the coil and not by the tuning of the induction-coil or transformer by an adjustment of the distributed capacity of its coils to the distributed inductance of its coils.

It is characteristic of my invention that the energy of the electrical oscillations developed in the elevated conductor by electromagnetic waves is transferred to the closed secondary circuit entirely by electromagnetic induction, and to this end the coils are designed so as to exclude as far as possible the displacement-currents which tend to exist between adjacent layers of each winding and between the primary and secondary windings. In this way and by observing the injunctions laid down in my prior patent the electroreceptive device will respond to electromagnetic signal-waves of one frequency to the exclusion of like waves of other frequencies, although the other frequencies be aliquot parts of the frequency to which the resonant circuit or circuits are attuned.

Having described my invention, I claim—

1. In a system for receiving the energy of electromagnetic signal-waves of one frequency to the exclusion of the energy of like waves of other frequencies, an elevated conductor, a circuit associated with said elevated conductor and resonant to the frequency of the waves, the energy of which is to be received, and an electroreceptive device serially connected in said resonant circuit but not forming one of the tuning elements thereof.

2. In a system for receiving the energy of electromagnetic signal-waves, an elevated conductor, a closed circuit having its capacity and inductance predetermined by the frequency of the waves, the energy of which is to be received, an electroreceptive device serially connected in said closed circuit but not forming one of the tuning elements thereof, and means for translating the energy of the electrical oscillations developed by electromagnetic signal-waves in said elevated conductor to said closed circuit solely by electromagnetic induction.

3. In a system for receiving the energy of electromagnetic signal-waves, an elevated conductor, a circuit associated with said elevated conductor having its capacity and inductance so correlated and adjusted that currents of greater amplitude or strength are developed in said circuit by electromagnetic waves of one frequency than by like waves of other frequencies, and an electroreceptive device serially connected in said circuit but not forming one of the tuning elements thereof.

In testimony whereof I have hereunto subscribed my name this 23d day of November, 1903.

JOHN STONE STONE.

Witnesses:

G. ADELAIDE HIGGINS,

ELLEN B. TOMLINSON.