No. 668,315. Patented Feb. 19, 1901.

G. MARCONI.

RECEIVER FOR ELECTRICAL OSCILLATIONS.

(Application filed July 17, 1900.)

(No Model.)

Fig. 1.

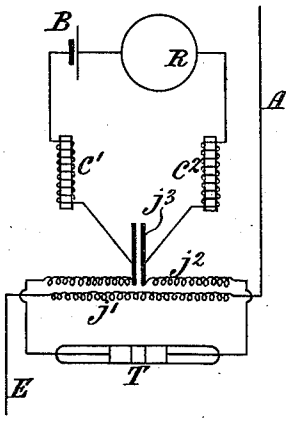


Fig. 2.

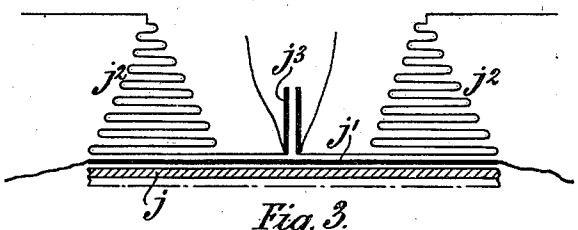
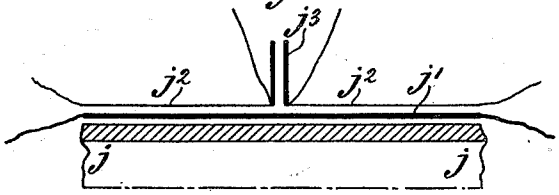


Fig. 3.



Witnesses.
E. A. Pollock
S. P. Hollingsworth

Inventor.
Guglielmo Marconi
By his Attorneys,
Baldwin Davidson & Wright.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GUGLIELMO MARCONI, OF LONDON, ENGLAND, ASSIGNOR TO MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, OF SAME PLACE.

RECEIVER FOR ELECTRICAL OSCILLATIONS.

SPECIFICATION forming part of Letters Patent No. 668,315, dated February 19, 1901.

Application filed July 17, 1900. Serial No. 23,949. (No model.)

To all whom it may concern:

Be it known that I, GUGLIELMO MARCONI, electrician, a subject of the King of Italy, residing at 18 Finch lane, Threadneedle street, in the city of London, England, have invented a certain new and useful Receiver for Electrical Oscillations, of which the following is a specification.

In the specification of a former patent, No. 627,650, I described a receiver in which the aerial conductor was connected to a capacity, which might be the earth, through the primary of an induction-coil, while the terminals of a detector of electrical oscillations—for instance, a coherer or other imperfect contact—were connected to the secondary. According to this invention this secondary is broken in the middle or wound in two parts, the inner ends of the wire being connected to the local-battery circuit, which usually includes a relay working an ordinary telegraphic receiving instrument, while the outer ends are connected direct to the detector. It is advantageous also to place a condenser across the inner ends.

Figure 1 is a diagram of the apparatus arranged according to this invention, and Figs. 2 and 3 show coils which I have found to work well.

In Fig. 1, A is the aerial conductor, connected to one end of the primary j' of an induction-coil, of which the other end is connected by E to a capacity, which may conveniently be the earth. j^2 is the secondary of the induction-coil, wound in two parts, the outer ends being in connection with the terminals of a detector T, while the inner ends are connected to the two plates of a condenser j^3. B is a battery, and R a relay, connected to the condenser j^3 and working an ordinary telegraphic instrument. c' c^2 are choking-coils, whose object is to prevent oscillations generated in the winding j^2 from running into the battery-circuit, which would weaken the effect of the oscillations on the detector T.

Figs. 2 and 3 show instances of coils with which very good results have been obtained. These diagrams are greatly-enlarged half-longitudinal sections, but are not strictly to scale. In place also of showing the section of each coil or layer of wire as a longitudinal row of dots or small circles, as it would actually appear, it is for simplicity shown as a continuous longitudinal straight line.

The following are the details of the coil shown in Fig. 2: The primary j', wound on a core j .6 centimeter in diameter, consists of one hundred turns of copper wire .037 centimeter in diameter insulated with single silk and coated with paraffin-wax. The secondary j^2 is of copper wire .019 centimeter in diameter insulated with single silk covering and is wound over the primary, commencing in the middle and in the same sense as the primary. Each half of the secondary is in layers of the following number of turns: first layer, seventy-seven; second, forty-nine; third, forty-six; fourth, forty-three; fifth, forty; sixth, thirty-seven; seventh, thirty-four; eighth, thirty-one; ninth, twenty-eight; tenth, twenty-five; eleventh, twenty-two; twelfth, nineteen; thirteenth, sixteen; fourteenth, thirteen; fifteenth, ten; sixteenth, seven; seventeenth, three, making five hundred in all.

The following are the details of the coil shown in Fig. 3: The primary, wound on a core 2.5 centimeters in diameter, consists of fifty turns of copper wire .07 centimeter in diameter insulated with single silk covering. The secondary is of copper wire .005 centimeter in diameter insulated by a single silk covering and is wound over and in the same sense as the primary. Each half of the secondary consists of one hundred and sixty turns in a single layer. These coils give the best results when the length of the aerial conductor at each station is one hundred and fifty feet. When using coils in which the secondary winding consists of one layer only, I have noticed best results when the length of the secondary winding is approximately equal to the length of the aerial conductor employed at the transmitting-station.

What I claim is—

1. In a receiver for electrical oscillations, the combination of an induction-coil the secondary of which is wound in two parts, an aerial conductor connected to one end of the primary, a capacity connected to the other end of the primary, a detector connected to the outer ends of the secondary, and a local

circuit connected to the inner ends of the secondary.

2. In a receiver for electrical oscillations, the combination of an induction-coil the secondary of which is wound in two parts, an aerial conductor connected to one end of the primary, a capacity connected to the other end of the primary, a detector connected to the outer ends of the secondary, a condenser across the inner ends of the secondary, and a local circuit connected to the condenser.

3. In a receiver for electrical oscillations, the combination of an induction-coil the secondary of which is wound in two parts, an aerial conductor connected to one end of the primary, a capacity connected to the other end of the primary, a detector connected to the outer ends of the secondary, a local circuit connected to the inner ends of the secondary, and choking-coils between the local circuit and the inner ends of the secondary.

4. In a receiver for electrical oscillations, the combination of an induction-coil the secondary of which is wound in two parts, an aerial conductor connected to one end of the primary, a capacity connected to the other end of the primary, a detector connected to the outer ends of the secondary, a condenser across the inner ends of the seconda ry, a local circuit connected to the condenser, and choking-coils between the local circuit and the condenser.

GUGLIELMO MARCONI.

Witnesses:
EDWARD CARPMAEL,
WILFRED CARPMAEL.