

No. 650,109.

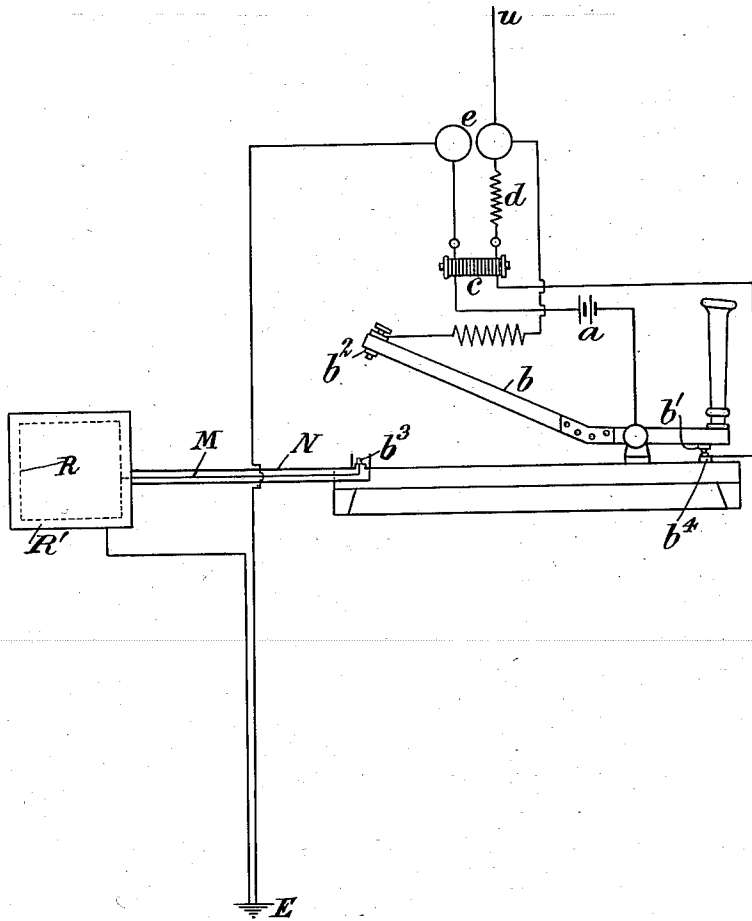
Patented May 22, 1900.

G. MARCONI.

APPARATUS EMPLOYED IN WIRELESS TELEGRAPHY.

(Application filed Oct. 12, 1899.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

GUGLIELMO MARCONI, OF LONDON, ENGLAND, ASSIGNOR TO THE WIRELESS TELEGRAPH AND SIGNAL COMPANY, LIMITED, OF SAME PLACE.

## APPARATUS EMPLOYED IN WIRELESS TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 650,109, dated May 22, 1900.

Application filed October 12, 1899. Serial No. 733,413. (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 28 Mark Lane, in the city of London, England, have invented certain new and useful Apparatus Employed in Wireless Telegraphy, of which the following is a specification.

In the specification of a former patent, dated the 13th day of July, 1897, No. 586,193, an arrangement is described in which the transmitter consisted of a sparking appliance having one terminal connected to an insulated conductor in the air and the other terminal to earth, while the receiver contained a sensitive tube or sensitive imperfect contact having one end connected to a similar conductor and the other end to earth. It is found that the aerial conductor sometimes becomes charged with atmospheric electricity, and when the same conductor is used both for transmitting and receiving this electricity discharges through the operator when he shifts the conductor from the transmitter to the receiver or through the imperfect contact when the conductor is shifted from one instrument to the other, and this is liable to give a shock to the operator or to injure the imperfect contact.

The object of this invention is to remove this inconvenience and also to render it impossible for the operator to accidentally operate his transmitter, and thereby cause a spark when the aerial conductor at his station is connected to the receiver, which might injure the imperfect contact.

According to this invention the aerial conductor is permanently connected to one terminal of the sparking appliance, and therefore if a Ruhmkorff coil or transformer is used the aerial conductor will be connected to earth through its secondary winding, thus preventing the accumulation of atmospheric electricity in it, while it is found that the electrical oscillations falling upon it from the transmitter of the correspondent station cannot readily traverse the convolutions of the coil, but prefer to pass to earth through the receiver when the said aerial wire is connected to it. The signals are sent, as before, by means of a Morse key in a local-battery

circuit through the primary of the Ruhmkorff coil or transformer.

According to this invention the arm of the key is prolonged beyond its pivot and carries an insulated terminal which is permanently connected to the terminal of the sparking appliance, and therefore to the aerial conductor. Below this terminal there is on the base of the instrument the terminal of the receiver. The arm is so arranged that immediately it is released by the operator after sending a message it turns about on its pivot, bringing the above-mentioned conductors together, thus connecting the receiver to the aerial conductor.

The drawing is a diagram of a combined transmitting and receiving station arranged in accordance with this invention.

The letters, so far as they are applicable, are the same as those employed in the former specification.

$a$  is a battery, and  $b$  an ordinary Morse key closing the circuit through the primary of a Ruhmkorff coil  $c$ , the terminals of the secondary being connected to metallic balls  $e$ . The aerial conductor  $u$  is permanently connected to one of the balls  $e$ , the other being connected to earth  $E$ . The key  $b$  has two contacts  $b^1 b^2$ , insulated from each other. The diagram shows the key in the position for sending, the contact  $b^1$  touching the contact  $b^4$  and closing the circuit of the battery  $a$  through the primary of the induction-coil  $c$ . Immediately the key is released by the operator its longer arm falls by its own weight, the contact  $b^2$  descending onto the contact  $b^3$ , which is connected to the receiver  $R$  by the wire  $M$ .

It is found advantageous to insert an impedance-coil  $d$  between the terminal of the induction-coil used for sending and the sphere, which is connected to the aerial conductor.

The receiver  $R$  is inclosed in a box  $R'$ , of conducting material, and may be such and so connected as is described in my former United States patent, No. 624,516. The invention can also be applied to receivers described in the specification of the patent dated the 13th day of July, 1897, No. 586,193. The means adopted for protecting the receiver are pref-

erably those described in the specification of the patent dated the 27th day of June, 1899, No. 627,650. The wire connecting the receiver to the terminal on the base of the key should preferably be inclosed in a metal tube N to protect it from the oscillations of the local transmitter, and the tube N should be electrically connected to the box R'. This invention is also applicable if the earth connection is substituted by a capacity area. In this case the capacities of the transmitter and receiver should preferably be connected together.

I claim—

1. The combination of the primary and secondary of a sparking appliance, a battery and key in circuit with the primary, an aerial conductor connected to one terminal of the secondary, a receiver, means for connecting the said terminal to the receiver and a capacity connected to the other terminal.
2. The combination of the primary and secondary of a sparking appliance, a battery and key in circuit with the primary, an aerial conductor connected to one terminal of the secondary, a receiver, means for connecting the said terminal to the receiver and an earth connection connected to the other terminal.
3. The combination of the primary and secondary of a sparking appliance, a battery in

circuit with the primary, an aerial conductor connected to one terminal of the secondary, a capacity connected to the other terminal, a receiver, two fixed contacts one connected to one terminal of the primary and the other to the receiver, a pivoted arm and two contacts on the arm insulated from each other and opposite the fixed contacts one being connected to the other terminal of the primary and the other to that terminal of the secondary which is connected to the aerial conductor.

4. The combination of the primary and secondary of a sparking appliance, a battery in circuit with the primary, an aerial conductor connected to one terminal of the secondary, an earth connection connected to the other terminal, a receiver, two fixed contacts one connected to one terminal of the primary and the other to the receiver, a pivoted arm and two contacts on the arm insulated from each other and opposite the fixed contacts one being connected to the other terminal of the primary and the other to that terminal of the secondary which is connected to the aerial conductor.

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Witnesses:

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