

[Second Edition.]



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A.D. 1904

(Under International Convention.)

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United States),

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COMPLETE SPECIFICATION.

"Improvements in Wireless Telegraphy."

I, GUGLIELMO MARCONI, of 18 Finch Lane, in the City of London, Electrician, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

- 5 This invention relates to improvements in telegraphy through the natural media, by means of electric waves, and especially to circuits forming part of a receiver, by which tuned or syntonie effects can be obtained, and the effects of natural disturbances such as thunderstorms, upon the receiver, are minimized.

- 10 According to this present invention, an exposed aerial or elevated conductor is grounded by means of several connections of different inductance and capacity, instead of by one, as has heretofore been the usual practice.

Referring to the accompanying diagrammatic drawings, Figure 1 shows one form of apparatus useful in carrying out this invention; Figure 2 shows a second form of apparatus; and Figure 3 shows a third form.

- 15 The most suitable form of this invention is shown in Figure 1, in which *a* represents the receiving aerial adjustably connected to the inductance coil *b*, *c* a condenser connected to the inductance coil, *d* a suitable receiver or detector, such as my magnetic detector described in my Specification No 10245 of 1902

- 20 One terminal *e* of the detector is grounded at *f*, and another ground connection *g*, which is preferably flexible or adjustable, is joined to the inductance *b* at a certain point, the position of which is dependent upon the period of the electric wave radiated from the distant transmitting station.

- 25 This receiving system is syntonized or attuned to one particular frequency of electrical waves radiated from any one of a number of differently attuned distant electric radiators in the following manner:

The size of the condenser *c* is fixed, and the inductance *b* is varied by adjusting its connection with the aerial until signals are received on the responder or detector *d*.

- 30 Then by sliding the flexible or adjustable ground connection *g* along the inductance *b* or otherwise, a point is found at which, if a new ground connec-

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Marconi's Improvements in Wireless Telegraphy.

tion is established, waves of the particular frequency radiated from a given distant transmitting station from which it is desired to receive signals, will be received and detected to the exclusion of signals transmitted from other stations radiating waves of different frequencies. It has been discovered that this ground connection *g* may be made without weakening, but rather strengthening the signals in the detector *d*. 5

The position of the ground connection *g* in the inductance *b*, is dependent upon the length of the wave to be detected. It should be connected at or near the node or point of no potential of the electric wave which it is desired to read or detect, and the detector *d* will then be unresponsive to electrical waves of frequencies other than that for which the system has been adjusted as described. 10

By means of this present invention, a very sharp selectivity of signals is obtained, and the troublesome effects of atmospheric electricity are largely or wholly eliminated. 15

In Figure 2 is shown a modification of Figure 1, the ground connection *g* of Figure 1 being replaced by another at *h* of Figure 2, the position of which on the inductance *b* may be found similarly to the adjustment of *g* as herein before described.

Many extensions of the arrangements shown in Figures 1 and 2 will readily suggest themselves. 20

In Figure 3 is shown one such extension comprising a series of similar syntonie circuits, each in tune with the wave transmitted, the system being grounded at the nodal points *g*, *h*, *i*, *k* and *f*, which are determined by the periodicity of the wave transmitted. 25

This arrangement gives a particularly sharp attunement, and is especially adapted to eliminate the stray or extra signals caused by atmospheric disturbances.

While three embodiments of this invention are shown and described they are not desired to be understood as limiting the claims thereto. 30

Obviously, other modifications, within the scope of this invention, will readily suggest themselves to persons skilled in wireless telegraphy.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is;— 35

1. At a receiving station employed in wireless telegraphy the combination with the usual connection of the aerial to a capacity such as the earth through an inductance, a capacity and the receiver; of one or more other connections substantially as and for the purposes described.

2. At a receiving station employed in wireless telegraphy, the combination with a receiver connected at one end to capacity, and at the other end to an aerial, inductance and condenser, and a second earth or capacity connection adjusted to make contact with the inductance at a point to be found by ascertaining the position of the node or point of no potential of the electrical waves which it is desired to detect in the aerial, substantially as and for the purposes described. 40 45

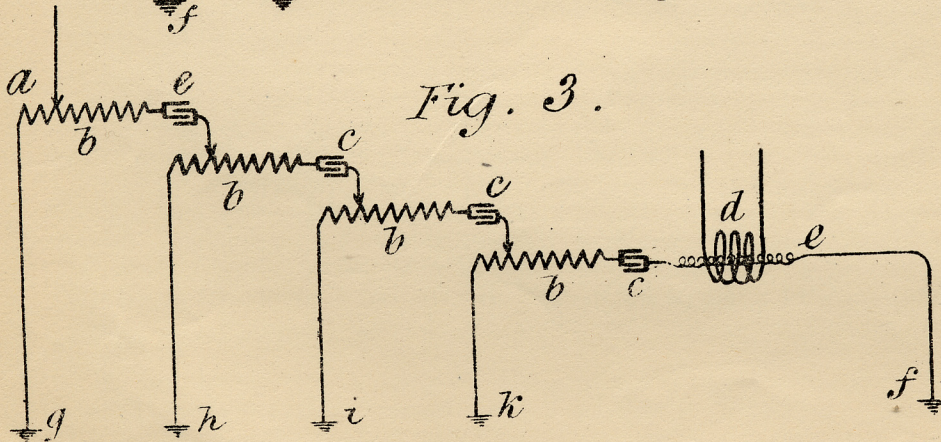
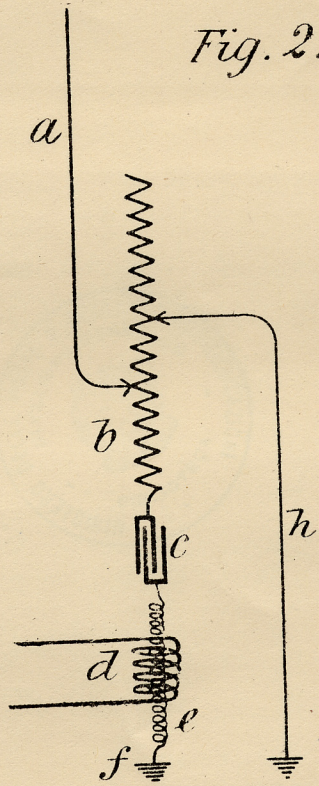
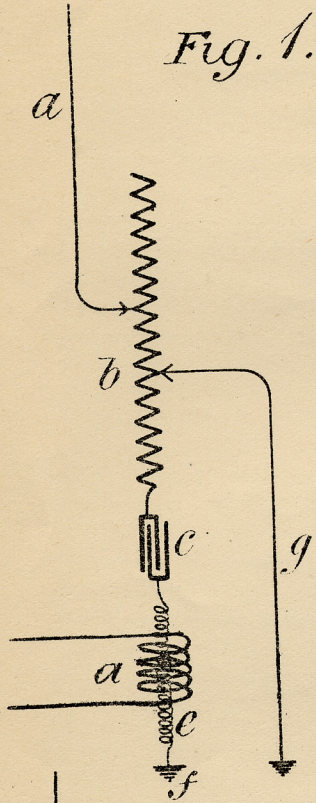
3. The method of selectively detecting electrical waves by means of a grounded aerial, receiver and inductance, which consists in adjusting a second earthed conductor to make contact with the inductance at a point found by ascertaining the position of the node or point of no potential of the electrical waves which it is desired to detect, substantially as and for the purposes described. 50

Dated this 26th day of February 1904.

G. MARCONI.

MARCONI'S COMPLETE SPECIFICATION

(2nd Edition)



[This Drawing is a reproduction of the Original on a reduced scale.]