



AMENDED SPECIFICATION.

Reprinted as amended in accordance with the decision of the Comptroller-General, dated the 20th day of August, 1909.

N° 26,588



A.D. 1908

Date of Application, 8th Dec., 1908

Complete Specification Left, 19th Mar., 1909—Accepted, 15th Apr., 1909

PROVISIONAL SPECIFICATION.

"Improvements in Apparatus for Measuring Electro-magnetic Wave Lengths."

We, MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, and HENRY JOSEPH ROUND, Electrical Engineer, both of Watgate House, York Buildings, Adelphi, London, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to improvements in apparatus for measuring electro-magnetic wave lengths such as are commonly used in wireless telegraphy whereby considerable accuracy over a wide range of wave lengths is obtained with a very compact and simple apparatus.

10 As is well known the ordinary form of wave measurer consists of a resonating circuit of small resistance containing inductance and capacity, one or both of which are adjustable, in combination with some form of detector.

15 According to the present invention we employ as detector a crystal with asymmetrical electrical properties and connect it across the condenser in the resonating circuit in series with a telephone by which means we obtain an extremely sensitive detector in a circuit of such high damping that the resonating circuit is unaffected and the wave length may be accurately determined from its inductance and capacity.

20 The resonating circuit may be adjusted by varying the capacity or inductance or both, but we find it most convenient to provide one or more fixed inductances and effect the adjustment by means of a variable condenser such for instance as described in the Specification of the Patent No. 15909 of 1906, and in this case the condenser may be so calibrated and the inductances made of such sizes that the readings of the condenser have only to be multiplied by a simple constant depending upon the inductance in use to give the wave length in any desired units.

25 Dated this 7th day of December, 1908.

MARCONI'S WIRELESS TELEGRAPH CO. LTD.

S. FLOOD PAGE,
HENRY S. SAUNDERS,
Directors.

30 HENRY W. ALLEN,
Secretary.

HENRY JOSEPH ROUND.

[Price 8d.]

PRICE 6d.

WS1 10807

Improvements in Apparatus for Measuring Electro-magnetic Wave Lengths.

COMPLETE SPECIFICATION (AMENDED).

"Improvements in Apparatus for Measuring Electro-magnetic Wave Lengths."

We, MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, and HENRY JOSEPH ROUND, Electrical Engineer, both of Watergate House, York Buildings, Adelphi, London, 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:—

This invention relates to improvements in apparatus for measuring electro-magnetic wave lengths such as are commonly used in wireless telegraphy whereby considerable accuracy over a wide range of wave lengths is obtained with a very compact and simple apparatus.

As is well known the ordinary form of wave measurer consists of a resonating circuit of small resistance containing inductance and capacity, one or both of which are adjustable, in combination with some form of detector.

According to the present invention we employ as detector a crystal with asymmetrical electrical properties and connect it across the condenser in the resonating circuit in series with a telephone by which means we obtain an extremely sensitive detector in a circuit of such high damping that the resonating circuit is unaffected and the wave length may be accurately determined from its inductance and capacity.

The resonating circuit may be adjusted by varying the capacity or inductance or both, but we find it most convenient to provide one or more fixed inductances and effect the adjustment by means of a variable condenser such for instance as described in the Specification of the Patent No. 15909 of 1906, and in this case the condenser may be so calibrated and the inductances made of such sizes that the readings of the condenser have only to be multiplied by a simple constant depending upon the inductance in use to give the wave length in any desired units.

The drawing shows diagrammatically an instrument made according to this invention.

a is the inductance of the oscillation circuit and is the principal part acted upon by the oscillations being measured. It is made with an inductance of say 15 microhenries if a range of wave lengths from 600 to 2,500 feet is required. *b* is a crystal of carborundum about $\frac{3}{8}$ of an inch long held between two metallic plates. One of the points of contact should be on an unbroken crystalline edge. *c* is a condenser the capacity of which is adjustable from say 0 to $\frac{1}{90}$ of a microfarad. *d* is a telephone.

The wave length of the oscillations taking place in any circuit is measured by holding the instrument in the vicinity of the circuit and adjusting to resonance by varying the capacity until the loudest signals are heard in the telephone. The wave length may then be read off from the position of the condenser.

We are aware that it has before been proposed to employ a non-metallic crystalline substance, such as carborundum as a wave responsive device.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Apparatus for measuring electromagnetic wave lengths consisting of a cir-

Improvements in Apparatus for Measuring Electro-magnetic Wave Lengths.

cuit of small resistance containing inductance and capacity and including a substance possessing asymmetrical electrical properties connected in series with a telephone across the capacity substantially as described.

2. Apparatus for measuring electromagnetic wave lengths substantially as 5 described and illustrated in the drawing.

Dated this 16th day of March, 1909.

MARCONI'S WIRELESS TELEGRAPH CO. LTD.

HENRY S. SAUNDERS,
S. FLOOD PAGE,

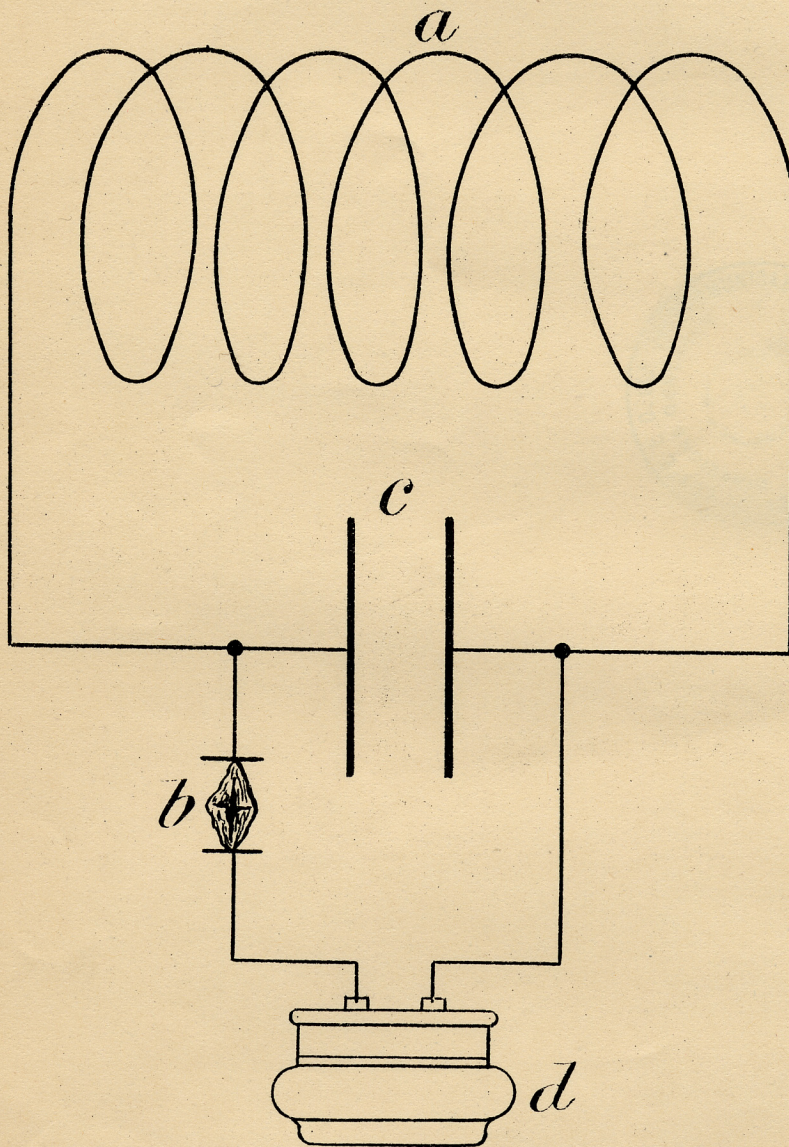
Directors.

HENRY W. ALLEN,

Secretary.

HENRY JOSEPH ROUND.

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[This Drawing is a full-size reproduction of the Original.]