

[Second Edition.]

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PROVISIONAL SPECIFICATION.

"Improvements in Apparatus for Wireless Telegraphy."

We, GUGLIELMO MARCONI, LL.D., D.Sc., and MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, both of Watergate House, Adelphi, London, W.C., do hereby declare the nature of this invention to be as follows:—

5 This invention relates to transmitting apparatus of the class described in the Specifications Nos. 4593 and 20,119 of 1907 in which the discharge takes place across a small gap between discontinuous metal surfaces in relative motion at a very high speed.

According to this invention the moving surfaces consist of pegs or studs on the adjacent faces of two parallel discs fixed to two shafts in a line with
10 each other and revolved in opposite directions, the shafts being mounted in insulated bearings.

The circuit arrangements are similar to those described in the Specification No. 20,119 of 1907, but the generator is connected to the parallel discs instead of to the discs or balls *e*.

15 Dated this 19th. day of August, 1908.

G. MARCONI.

MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED.

S. FLOOD PAGE,

H. JAMISON DAVIS,

20

Directors.

F. S. TOMKINS,
Assistant Secretary.

COMPLETE SPECIFICATION.

"Improvements in Apparatus for Wireless Telegraphy."

25 We, GUGLIELMO MARCONI, LL.D., D.Sc., and MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, both of Watergate House, Adelphi, London, W.C., 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:—

30 This invention relates to transmitting apparatus of the class described in the Specifications Nos. 4593 and 20,119 of 1907 in which the discharge takes place across a small gap between discontinuous metal surfaces in relative motion at a very high speed.

According to this invention the moving surfaces consist of pegs or studs on the adjacent faces of two parallel discs fixed to two shafts in a line with
35 each other and revolved in opposite directions, the shafts being mounted in insulated bearings. In place of the discs being parallel they may be set at an angle but this is not so advantageous.

The circuit arrangements are similar to those described in the Specification
40 No. 20,119 of 1907, but the generator is connected to the parallel discs instead of to the discs or balls.

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Improvements in Apparatus for Wireless Telegraphy.

The accompanying diagram shows a transmitting apparatus made in accordance with this invention.

a and a^1 are the two parallel discs respectively provided with pegs or studs b and b^1 and mounted on shafts c and c^1 which are carried in bearings d and d^1 . The studs are preferably equally spaced and the numbers of the studs on the two discs are equal. c and c^1 are motors or pulleys for connecting to motors, by means of which the discs a and a^1 are driven in opposite directions. The bearings d and d^1 are insulated from the ground, and the motors or pulleys c and c^1 are respectively insulated from the shafts c and c^1 .

The parallel discs a and a^1 are connected by means of brushes f and f^1 to the plates of a condenser g and this condenser circuit is coupled at h to the aerial j . The plates of the condenser g are also connected through suitable inductances k and k^1 to a generator l .

Discs 2 feet in diameter having each two studs and running at a speed of 3000 revolutions per minute are found to work well in practice. It is found moreover that far better results are obtained with studs of copper than with studs composed of any other material.

In order to obtain the best results it is necessary to give such values to the condenser g and inductances k and k^1 as will make the time period of this circuit equal to or some integral multiple or submultiple of the interval of time between two successive discharges of the condenser.

The time period of this circuit is approximately equal to $2 \pi \sqrt{CL}$ where C is the capacity of the condenser in farads and L is the inductance of the whole circuit in henries.

The interval of time between two successive discharges of the condenser is equal to $1/N(X_1 + X_2)$ where N is the number of pegs or studs on either revolving disc, X_1 is the number of revolutions per second of one disc and X_2 is the number of revolutions per second of the other disc.

The right value of the inductances k and k^1 can therefore be determined from the equation:—

$$2 m \pi \sqrt{CL} = \frac{1}{N(X_1 + X_2)}$$

where m is an integer.

By means of this invention it is possible to discharge the condenser twice as rapidly as with a single revolving disc, while owing to all the pegs on one side being opposite to the pegs on the other disc at the same instant the discharge may take place at any of the pegs. By this invention it is moreover possible to efficiently utilise a large amount of power, and to emit oscillations in regular groups of a frequency to which an appropriate receiver may be tuned, and such as to produce in a telephonic receiver a note which is readily distinguished from the noises caused by atmospheric disturbances.

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. A wireless telegraph transmitter in which two discs having pegs or studs on their adjacent faces are rotated rapidly in opposite directions substantially as described.
2. Wireless telegraph transmitters substantially as described with reference to the drawing.

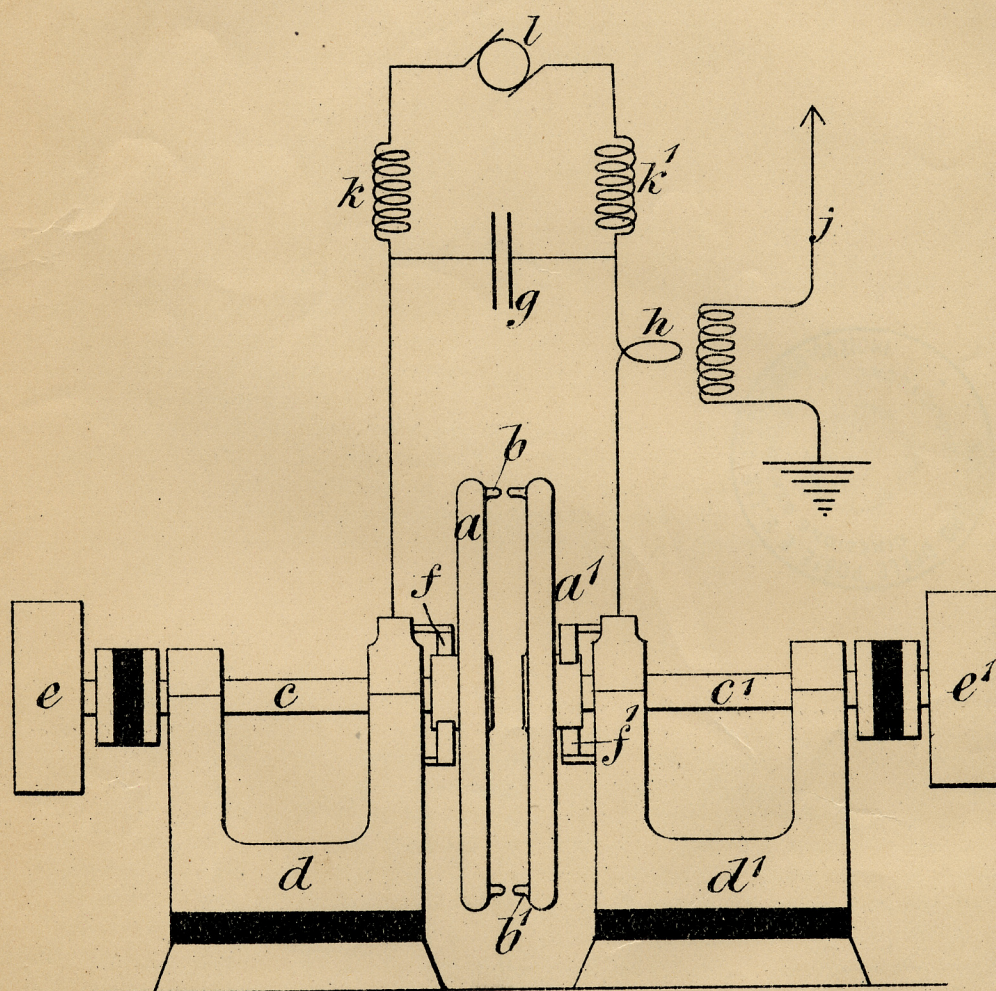
Dated this 19th day of February 1909.

CARPMAEL & Co.,

Agents for Applicants,

24, Southampton Buildings, London, W.C.

(2nd Edition)



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