

N° 2918



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*Date of Application, 4th Feb., 1913*

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PROVISIONAL SPECIFICATION.

**Improvements in Transmitting Apparatus for use in Wireless Telegraphy and Telephony.**

I, GUGLIELMO MARCONI, LL.D., D.Sc., of Marconi House, Strand, London, W.C., do hereby declare the nature of this invention to be as follows:—

The Specification of Patent No. 4593 of 1907 describes a transmitter in which a working condenser connected to the middle of a split condenser or of a pair of  
5 condensers, is charged alternately in opposite directions by means of a rapidly rotating toothed disc or pair of discs.

According to the present invention I employ a series of working condensers, one plate of each being connected to the middle of a split condenser which is itself connected in series with a source of current preferably continuous, a key  
10 and an inductive resistance, while its two outer plates are connected to two toothed discs preferably mounted on the same shaft.

The other plates of the working condensers are each connected through an inductive resistance to a fixed terminal placed in close proximity to the path of the teeth on both discs the terminals and teeth being so arranged that a tooth  
15 upon one of the discs passes the terminals of all the working condensers in succession and then a tooth upon the other disc passes them and so on.

The inductive resistances of the working condensers all act as primaries to a secondary in the aerial or in an oscillating circuit coupled to the aerial. Preferably I employ three or a larger odd number of working condensers and  
20 the primaries are wound alternately in opposite directions so that the aerial is impulsed in opposite directions alternately or otherwise in synchronism with its natural period of electrical oscillation. The primaries may however be all wound the same way, the aerial being impulsed once every complete period of oscillation, or otherwise in synchronism with its natural period, in which case I  
25 am not limited to employing an odd number of working condensers.

In place of the two outer plates of the split condenser being connected directly to the discs, they may be connected to terminals, the discs bridging the gaps between these terminals and those of the working condensers.

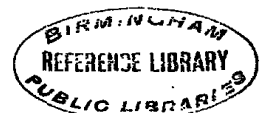
I may employ air-blasts wherever necessary, and also rectifiers to prevent the  
30 condensers discharging in the wrong direction, and I may use rotating discs or spheres as the fixed terminals.

The speed of the toothed discs should obviously be such that the aerial receives impulses in synchronism with its natural time period.

Dated this 4th day of February, 1913.

CARPMAEL & Co.,  
Agents for Applicant,  
24, Southampton Buildings, London, W.C.

[Price 8d.]



Impts. in Transmitting Apparatus for use in Wireless Telegraphy and Telephony.

## COMPLETE SPECIFICATION.

**Improvements in Transmitting Apparatus for use in Wireless Telegraphy and Telephony.**

I, GUGLIELMO MARCONI, LL.D., D.Sc., of Marconi House, Strand, 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:—

This invention relates to improvements in transmitting apparatus for use in wireless telegraphy and telephony, whereby continuous oscillations or groups of continuous oscillations may be generated. 5

The Specification of Patent No. 4593 of 1907 describes a transmitter in which a working condenser, connected to the middle of a split condenser or of a pair of condensers, is charged alternately in opposite directions by means of a rapidly rotating toothed disc or pair of discs. 10

According to the present invention I employ a series of working condensers, one plate of each being connected to the middle of a split condenser, which is itself connected in series with a source of current, preferably continuous, a key and an inductive resistance, while its two outer plates are connected to two toothed discs preferably mounted on the same shaft. 15

One half however of the split condenser may be short-circuited and, if the inductance of the generator be sufficiently low, the other half omitted.

The other plates of the working condensers are each connected through an inductive resistance to a fixed terminal, placed in close proximity to the path of the teeth on both discs, the terminals and teeth being so arranged that a tooth upon one of the discs passes the terminals of all the working condensers in succession and then a tooth upon the other disc passes them and so on. Or the inductive resistances in series with each condenser may be replaced by two inductive resistances placed on the other side of the discs in the common paths of all the condensers. 20 25

The inductive resistances of the working condensers all act as primaries to a secondary in the aerial, or in an oscillating circuit coupled to the aerial, and the circuit formed by the inductive resistances and the working condensers should be in resonance with the aerial. Preferably I employ three or a larger odd number of working condensers and the primaries are wound alternately in opposite directions, so that the aerial is impulsed in opposite directions alternately in synchronism with its natural period of electrical oscillation. The primaries may however be all wound the same way, the aerial being impulsed once every complete period of oscillation, or otherwise in synchronism with its natural period, in which case I am not limited to employing an odd number of working condensers. 30 35

In place of the two outer plates of the split condenser being connected directly to the discs, they may be connected to terminals, the discs bridging the gaps between these terminals and those of the working condensers. 40

I may employ air-blasts or quéncher gaps wherever necessary, and also rectifiers to prevent the condensers discharging in the wrong direction, and I may use rotating discs or spheres as the fixed terminals.

The speed of the toothed discs should obviously be such that the aerial receives impulses in synchronism with its natural time period. 45

The invention is illustrated in the accompanying drawings.

Figure 1 shows such an arrangement of three circuits. C<sup>1</sup>, C<sup>2</sup>, and C<sup>3</sup> are condensers which are all connected to the middle of the split condenser K<sup>1</sup> K<sup>2</sup> which is charged in series from a generator G through an inductive resistance I.

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*Impts. in Transmitting Apparatus for use in Wireless Telegraphy and Telephony.*

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The circuits through  $C^1$ ,  $C^2$  and  $C^3$  are completed through inductive resistances  $P^1$ ,  $P^2$  and  $P^3$  and alternately through disc dischargers  $D^1$  and  $D^2$  which are rigidly coupled together,  $P^2$  being wound in the opposite direction to  $P^1$  and  $P^3$ .  $P^1$ ,  $P^2$  and  $P^3$  are coupled to portions  $S^1$ ,  $S^2$  and  $S^3$  of a secondary, which form part of the aerial.

Discharges take place at regular intervals, three on the disc  $D^1$  and then three on the disc  $D^2$  and so on.

The number of studs and the speed of the discs are adjusted, so that the interval between successive discharges is equal to, or an odd multiple of, half the natural time period of the aerial.

Figure 2 shows a modification in which, in place of inductive resistances between the condensers and the dischargers, I employ inductive resistances  $P^4$  and  $P^5$  between the split condenser and the dischargers, such resistances being coupled to portions  $S^1$  and  $S^2$  of a secondary in the transformer. In this arrangement each of the condensers  $C^1$ ,  $C^2$ ,  $C^3$  discharges through the inductive resistances  $P^4$ ,  $P^5$  alternately and  $P^4$ ,  $P^5$  are wound so as to give impulses to the aerial in the same direction. In this case the interval between successive discharges is equal to, or a multiple of, the natural time period of the aerial.

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:—

A transmitter substantially as described with reference to the accompanying drawings.

Dated this 3rd day of September, 1913.

CARPMAEL & Co.,  
Agents for the Applicant,  
24, Southampton Buildings, London, W.C.

SHEET 1.

SHEET 2.

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

Fig. 1.

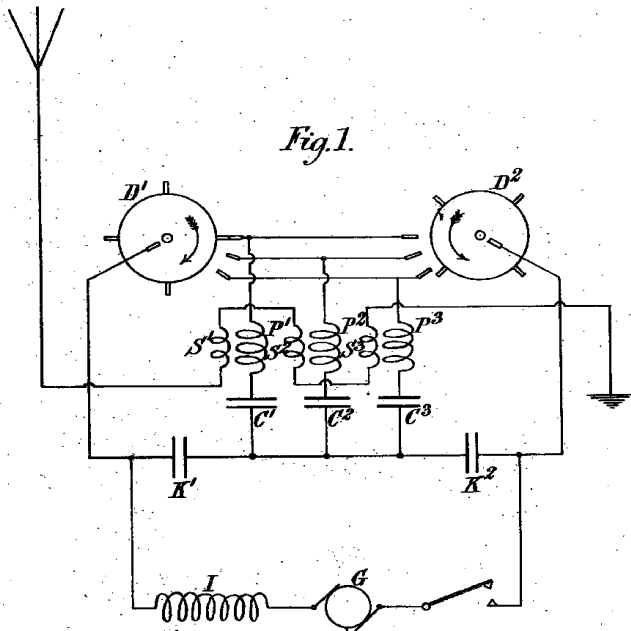
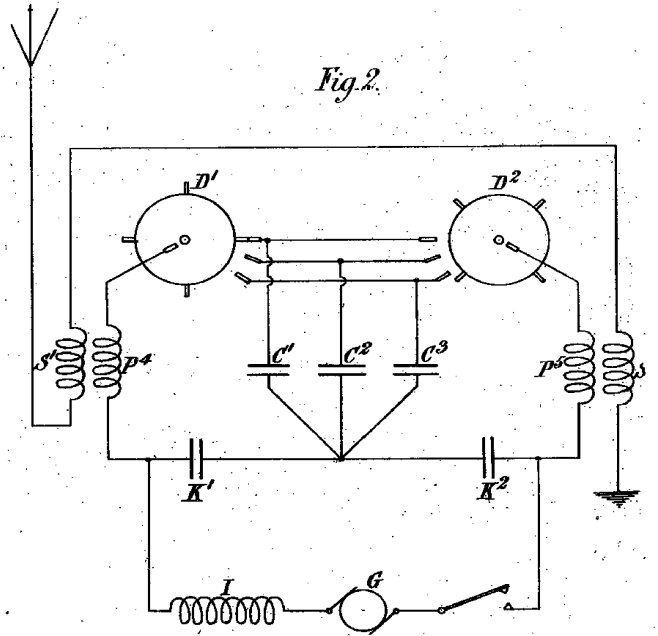


Fig. 2.



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

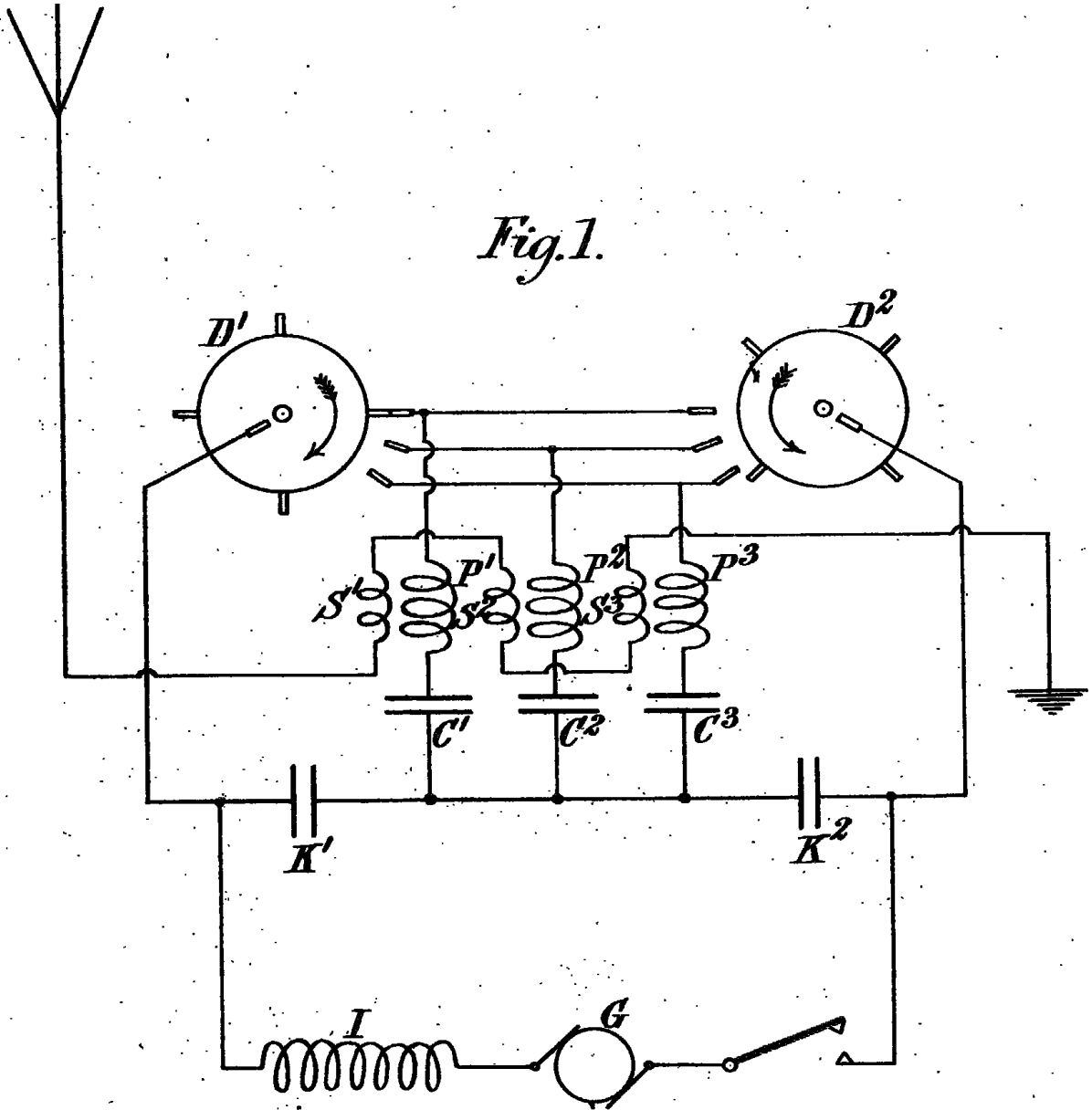
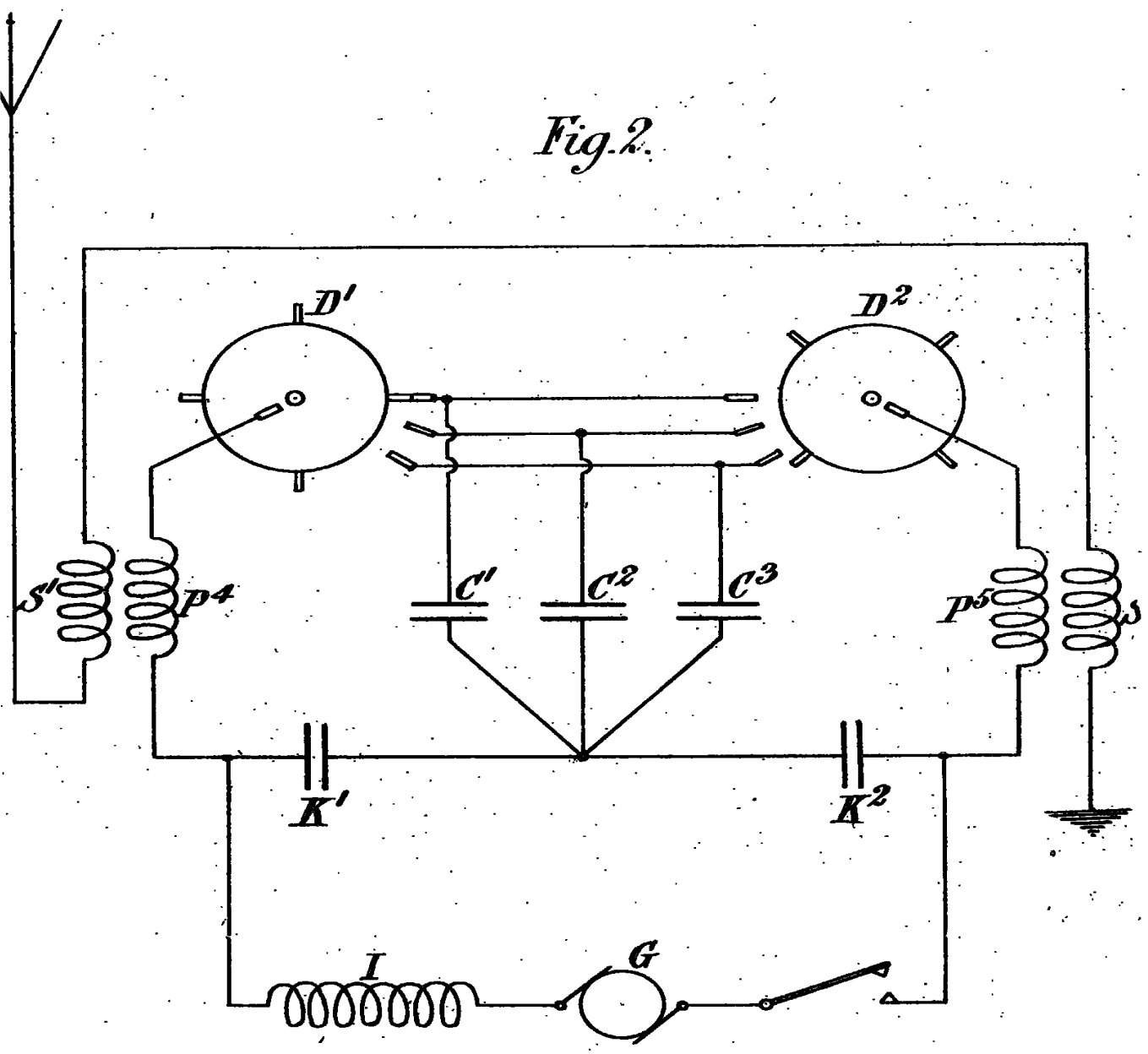


Fig. 2.



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