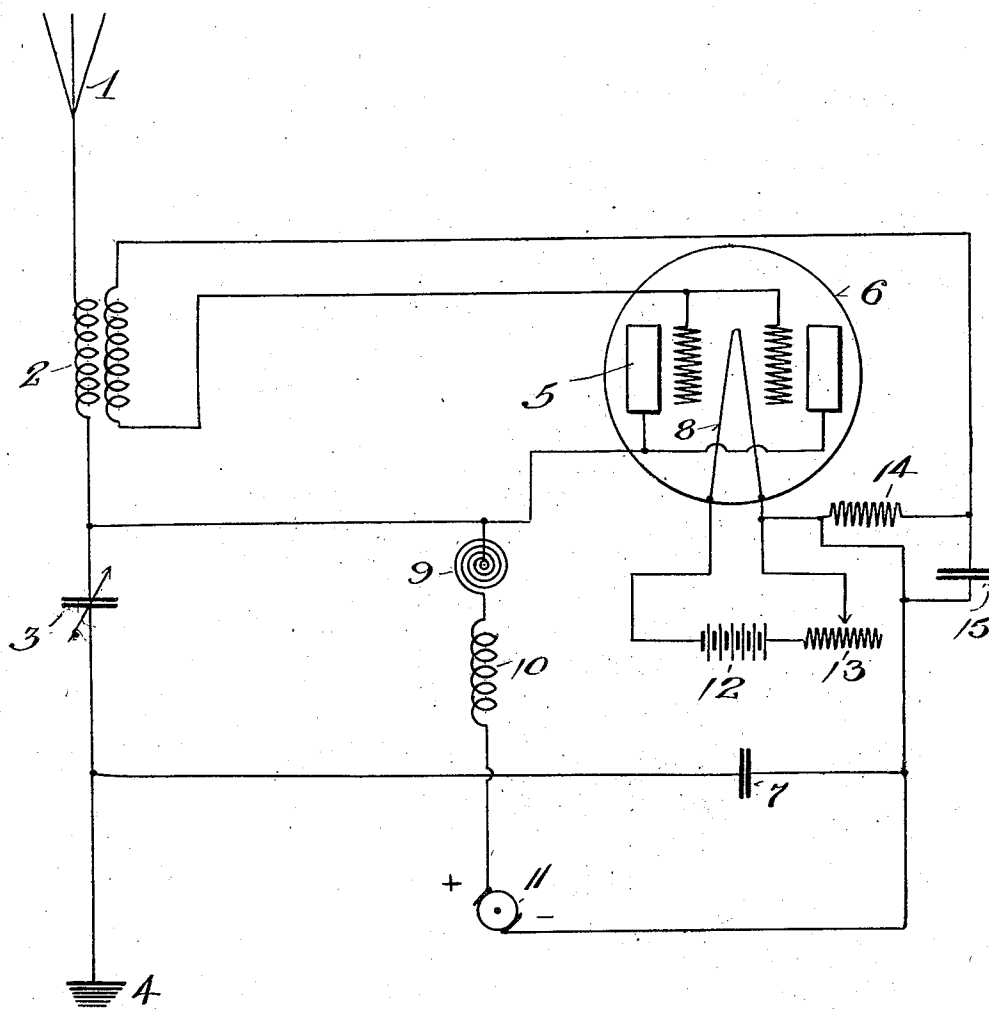


L. DE FOREST.  
 RADIOSIGNALING SYSTEM.  
 APPLICATION FILED JUNE 16, 1917.

1,417,662.

Patented May 30, 1922.



*Inventor*  
 Lee de Forest  
 by his atty Samuel E. Dorky

# UNITED STATES PATENT OFFICE.

LEE DE FOREST, OF NEW YORK, N. Y.

RADIO SIGNALING SYSTEM.

1,417,662.

Specification of Letters Patent.

Patented May 30, 1922.

Application filed June 16, 1917. Serial No. 175,118.

*To all whom it may concern:*

Be it known that I, LEE DE FOREST, a citizen of the United States, residing at New York, county and State of New York, have made a certain new and useful Invention in Radiosignaling Systems, of which the following is a specification.

This invention relates to radio signaling systems.

The object of the invention is to provide a radio signaling system employing an oscillation which is simple in structure, efficient in operation, and economical of manufacture.

Further objects of my invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location, and relative arrangement of parts, together with circuits associated therewith, all as will be more fully hereinafter set forth as shown by the accompanying drawing, and finally pointed out in the appended claims.

The single figure shows a wiring diagram of a radio system embodying my invention.

In the drawing 1 designates the antenna which is connected through inductance 2 and variable capacity 3 to the earth 4 in the usual manner. The plate electrode 5 of the oscillion 6 is connected to one terminal of the condenser 3, and the other terminal of the condenser 3 is connected through a condenser 7 to the filament electrode 8 of the oscillion 6. The plate electrode 5 is also connected through impedance coil 9, inductance 10 to the source of current illustrated at 11 to the filament 8 as shown. The filament 8 is heated by the battery 12 through the variable resistance 13 in the usual well known manner. The special purpose of my present invention is to provide what I term a "tickler" circuit from the grid electrode or electrodes, as the case may be, to the filament 8, preferably with a high resistance 14 to form a leak path therefrom to the filament. Preferably the high resistance is shunted around a condenser 15 as shown. This tickler circuit from the grid to the filament through the leak path is inductively associated with inductance 2 of the antenna earth system 1 to 4. With this arrangement I find that the efficiency of the transmitting system is greatly increased.

Having now set forth the objects and nature of my invention, and having shown and described one embodiment thereof, what I claim as new and useful, and of my own in-

vention, and desire to secure by Letters Patent, is,—

1. The combination with an antenna-earth system including an inductance and a capacity in series, of an evacuated vessel containing a hot and a plurality of cold electrodes, a conductive connection between said hot electrode and one side of said capacity, a conductive connection between one cold electrode and the other side of said capacity, and a circuit between another cold electrode and said hot electrode, inductively associated with said inductance of said antenna-earth system.

2. The combination with an antenna-earth system including an inductance and a capacity in series, of an evacuated vessel containing a hot and a plurality of cold electrodes, a conductive connection between said hot electrode and one side of said capacity, a conductive connection between one cold electrode and the other side of said capacity, and a circuit between another cold electrode and said hot electrode, and containing a high artificial resistance therein, said circuit being inductively associated with said inductance of said antenna-earth system.

3. The combination with an antenna-earth system including an inductance and a capacity in series, of an evacuated vessel containing filament electrode, plate and grid electrodes, a conductive connection between said filament electrode and one side of said capacity, a conductive connection between said plate electrode and the other side of said capacity and a circuit between said grid electrode and said filament electrode and inductively associated with the said inductance of said antenna earth circuit.

4. The combination with an antenna-earth system including an inductance and a capacity in series, of an evacuated vessel containing filament electrode, plate and grid electrodes, a conductive connection between said filament electrode and one side of said capacity, a conductive connection between said plate electrode and the other side of said capacity and a circuit between said grid electrode and said filament electrode, including a high artificial resistance therein, said circuit being inductively associated with the said inductance of said antenna-earth circuit.

5. The combination with an antenna-earth circuit including an inductance and a capacity in series, of a system for producing

continuous undamped oscillations comprising an evacuated vessel containing a hot and a plurality of cold electrodes, a conductive connection between said hot electrode and  
5 one side of said capacity, a conductive connection between one cold electrode and the other side of said capacity, and a circuit between another cold electrode and said hot electrode, inductively associated with said  
10 inductance of said antenna-earth circuit.

6. The combination with an antenna-earth circuit including an inductance and a capacity in series, of a system for producing continuous undamped oscillations comprising  
15 an evacuated vessel containing a hot and a plurality of cold electrodes, a conductive connection between said hot electrode and one side of said capacity, a conductive connection between one cold electrode and the  
20 other side of said capacity, and a circuit between another cold electrode and said hot electrode, including a high artificial resistance therein, said circuit being inductively associated with the said inductance of said  
25 antenna-earth circuit.

7. The combination with an antenna-earth circuit including an inductance and a capacity in series, of a system for producing

continuous undamped oscillations comprising an evacuated vessel containing filament, 30  
grid and plate electrodes, a conductive connection between said filament electrode and one side of said capacity, a conductive connection between said plate electrode and the  
35 other side of said capacity, and a circuit between said grid and filament electrodes inductively associated with said inductance of said antenna-earth circuit.

8. The combination with an antenna-earth circuit including an inductance and a capacity in series, of a system for producing continuous undamped oscillations comprising  
40 an evacuated vessel containing filament, grid and plate electrodes, a conductive connection between said filament electrode and  
45 one side of said capacity, a conductive connection between said plate electrode and the other side of said capacity, and a circuit between said grid and filament electrodes, including a high artificial resistance therein, 50  
said circuit being inductively associated with the said inductance of said antenna-earth circuit.

In testimony whereof I have hereunto set my hand on this 7th day of June A. D. 1917. 55

LEE DE FOREST.