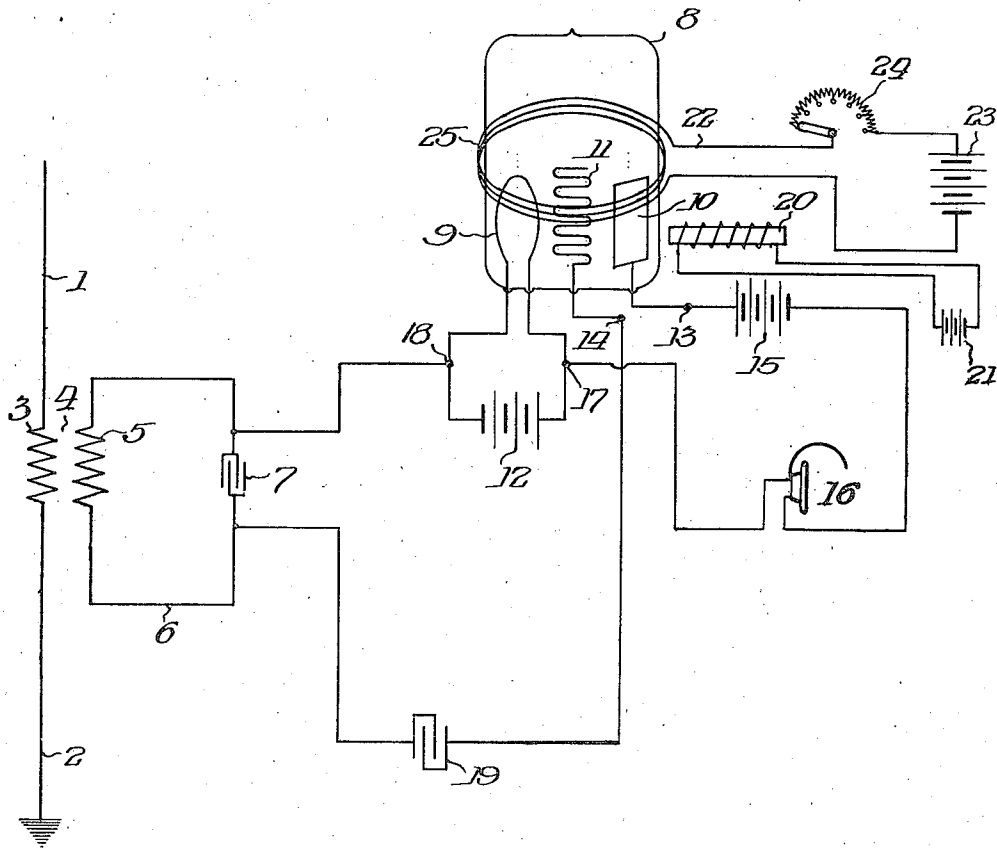


B. GRAVES.
WIRELESS TELEGRAPHY.
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1,138,652.

Patented May 11, 1915.



Witnesses:

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UNITED STATES PATENT OFFICE.

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WIRELESS TELEGRAPHY.

1,138,652.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BURCH GRAVES, a citizen of the United States, residing at Thorntown, in the county of Boone and State of Indiana, have invented certain new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

My invention relates to wireless telegraph receivers or oscillation detectors and more particularly of the audion type, and the object of the invention is to increase the sensitiveness of such oscillation detectors.

It has been ascertained that if the gaseous medium intervening between two separated electrodes in an evacuated vessel be put into the condition of molecular activity as by heating or otherwise, such medium becomes highly sensitive to electrical oscillations. It has been also ascertained that the sensitiveness of such an oscillation detector, wherein the electrodes are separated by such sensitive gaseous medium, may be varied as for example by subjection to the influence of the field of an electromagnet. I have discovered that such gaseous medium is rendered much more highly sensitive by subjecting the same to the influence of electric energy radiating from a coil contained in a local circuit and encircling the vessel whether such energized coil be employed independently of or in association with an electromagnet arranged in proximity to the vessel. Whether the energy radiating from this coil of wire to the electrodes in the gaseous medium is wholly magnetic or partly magnetic and partly induced electrical currents I am unable to say; but the effect upon the detector is different from that of a magnet, rendering the detector more sensitive to currents of all frequencies, possibly due to the fact that the energy radiating from all side of the coil excites the electrodes in the gaseous medium synchronously. Inasmuch, however, as the explanation of this phenomenon is exceedingly complex and would be at the best merely tentative, I do not deem it necessary herein to enter into a more detailed discussion of what I believe to be the probable explanation of the action which takes place.

In the accompanying drawing and in the description based thereon I have set forth for purposes of illustration only and in a diagrammatic manner one embodiment of the invention. As, however, the details may be modified within a wide range without de-

parting from the spirit and essence of the invention the drawing and description are to be taken in an illustrative and not in an unnecessarily limiting sense.

In the drawings the reference numeral 1 designates the elevated conductor leading to the aeri-als, with the earth connection at 2 and containing the primary 3 of the tuning transformer 4, the secondary 5 of which forms part of the tuned receiving circuit 6, which includes the condenser 7. It will be understood, of course, that the tuned receiving circuit may be associated with the elevated conducting system in any suitable manner.

An evacuated vessel, preferably of glass, is indicated at 8 having sealed therein three conducting members, a filament 9, a plate 10 of platinum or the like, and a grid 11. The filament electrode 9 is connected in series with the battery 12 or other source of electrical current of sufficient strength to heat said filament preferably to incandescence, while the plate electrode 10 is connected to the terminal 13. The grid 11 is interposed between the electrodes 9 and 10 and may be formed of platinum, and is connected at one end to the terminal 14. The local receiving circuit which includes the battery 15 and the signal indicating device 16, has its terminals connected to the plate 10 and filament 9 at the points 13 and 17 respectively. The means for conveying the oscillations to the oscillation detector are the conductors which connect the filament 9 and the grid 11 to the tuned receiving circuit and, as shown, said conductors pass from the terminals 14 and 18 to the plates of the condenser 7, a condenser 19 being inserted in said circuit.

An electromagnet 20 energized by the battery 21 may be disposed in proximity to the evacuated vessel and preferably near the electrode 10 whereby the sensitiveness of the oscillation detector is varied.

In the local circuit 22, which includes the battery 23 and the rheostat 24, is arranged a coil 25 which encircles the vessel 8 surrounding the electrodes 9, 10, and 11 and the gaseous medium within which the electrodes are mounted, the current passing through said coil and the influence exerted thereby upon the oscillation detector being controlled by the rheostat or in any other suitable manner, as by varying the number of cells in the battery.

The employment about the vessel 8 of the coil 25 under the control of the rheostat 24 enables the sensitiveness of the detector to be greatly increased beyond what has heretofore been accomplished whether used in association with or independently of the electromagnet 20 arranged in proximity to the detector.

I claim:

10 1. An oscillation detector comprising a pair of relatively stationary electrodes separated by a gaseous medium maintained in a condition of molecular activity, and a magnet arranged in immediate proximity to and
15 at one side of said electrodes, in combination with other means for creating electric energy surrounding said detector, substantially as described.

20 2. An oscillation detector comprising a pair of relatively stationary electrodes separated by a sensitive conducting gaseous medium, an electromagnet arranged in immediate proximity to and at one side of said detector, and other means for creating electric
25 energy encircling said electrodes, substantially as described.

30 3. An oscillation detector comprising an evacuated vessel, two electrodes inclosed within said vessel, and a grid-shaped member of conducting material interposed be-

tween said electrodes, in combination with means for creating electric energy surrounding said vessel and electrodes, substantially as described.

4. An oscillation detector comprising an evacuated vessel, two electrodes inclosed within said vessel, and a grid-shaped member of conducting material interposed between said electrodes, in combination with means for creating electric energy surrounding said vessel and electrodes, and a rheostat in said local circuit, substantially as described.

5. An oscillation detector comprising an evacuated vessel, two distinct electrodes inclosed within said vessel, a conducting member interposed between said electrodes within said vessel, and an electromagnet arranged exteriorly of said vessel and in proximity to said electrodes at one side thereof, in combination with a coil in a local circuit and encircling the vessel and electrodes, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BURCH GRAVES.

Witnesses:

J. T. RIGG,

H. G. WILLIAMS.