

No. 706,500.

Patented Aug. 5, 1902.

H. SHOEMAKER.
WIRELESS TELEGRAPHY.

(Application filed May 10, 1902.)

(No Model.)

Fig. 1.

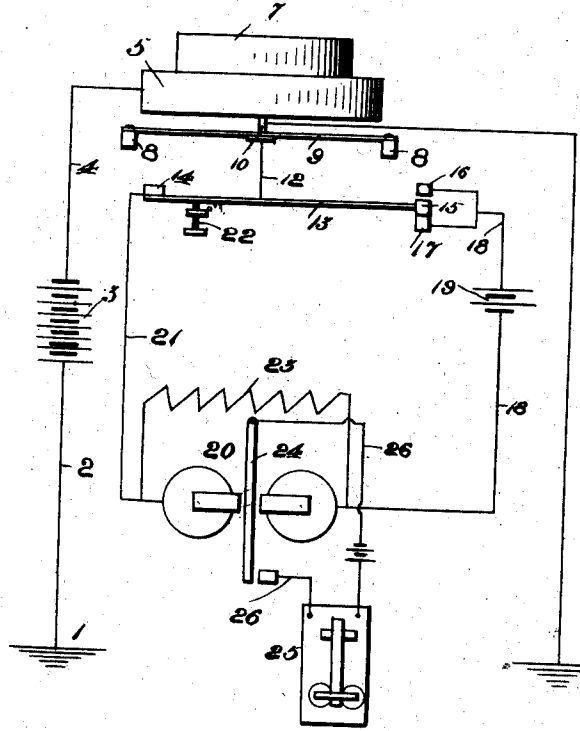


Fig. 3.

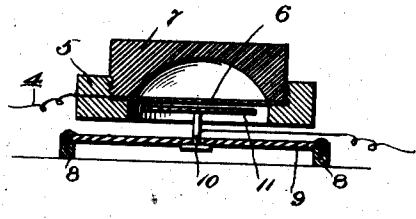


Fig. 4.

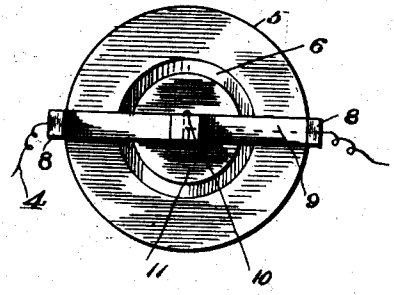
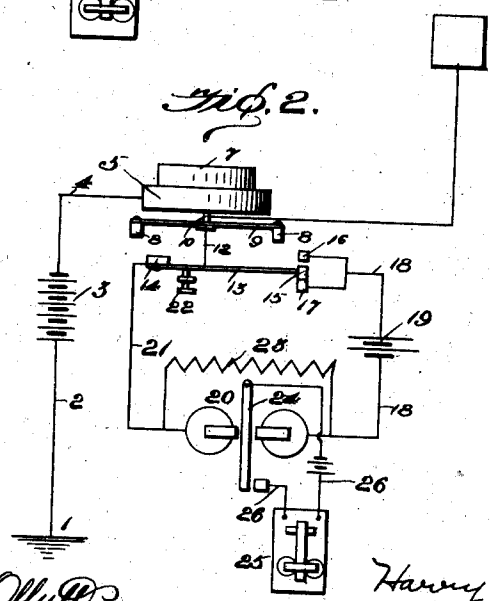


Fig. 2.



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UNITED STATES PATENT OFFICE.

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WIRELESS TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 706,500, dated August 5, 1902.

Original application filed October 25, 1901, Serial No. 79,959. Divided and this application filed May 10, 1902. Serial No. 106,736. (No model.)

To all whom it may concern:

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

This invention relates to improvements in wireless telegraphy, and has special reference to an apparatus employing a receiver which is operated by static induction.

Another object of my invention is to dispense with the imperfect electrical contact or coherer as is now used and employ a responsive device of a much simpler and more durable construction.

Another object of the invention is the provision of a receiver which may employ solely the ground or the air and ground and which may be tuned so that any number may receive signals from their proper transmitter at the same time without interference.

To attain the desired objects, the invention consists of a system of wireless telegraphy embodying novel features of construction and combination of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a diagrammatical view of the entire receiver, having two ground connections. Fig. 2 is a similar view, on a smaller scale, with an air and ground connection. Fig. 3 is a sectional view of the responsive device, and Fig. 4 is a bottom plan view thereof.

My receiving apparatus consists of the ground 1, to which is connected the wire 2, the batteries 3, wire 4, and the cap 5 of the responsive device. This cap 5 clamps and holds the ferrotype-diaphragm 6 in place, and secured to this cap is the rubber cup 7, the wire 4 being also connected to the diaphragm. Mounted upon the posts 8 is the strip 9 of mica or any resilient insulation material. This strip is so mounted as to be free to vibrate at a certain period or pitch, depending upon its length. Carried by this strip by means of a post 10 is a metal plate or disk 11,

which is free to vibrate with the strip and rests adjacent to the diaphragm. Connected to the strip and also with its post 10 by means of a wire 12 is a spring-pointer 13, which is connected to a post 14, thus giving the pointer a slight spring motion, and upon its free end is carried the double-headed contact-point 15, which is adapted to always slightly contact one of the points 16 or 17, which, with the wires 18, battery 19, relay 20, wire 21, and the pointer, make a circuit. An adjusting-screw 22 is employed to vary the pressure of the spring-pointer. I also employ the resistance 23, which is non-inductive and takes up the self-inductance of the relay. The armature 24 controls the sounder 25 through its circuit 26 as the contact at 15 and 16 and 17 is made.

From the foregoing description, taken in connection with the drawings, the operation of my improved receiver is readily understood, but, briefly stated, it is as follows: As the transmitter employing any form of energy is operated electrostatic waves are sent through the ground and are radiated over the surface of the earth in much the same manner as ripples in a pond when a stone is thrown therein—that is, it varies the potential at different points in its path. When these waves reach the receiver, a change of potential is caused at the receiver's grounds, causing variations of potential between the diaphragm 6 and the disk 11, thus causing the disk 11 to vibrate the pointer which controls the relay as the points make a positive contact. The relay thus being operated operates the recorder-circuit and the signal as received. With this form of receiver it is possible to operate a great number of transmitters and receivers without interference, as the disk 11 has a certain natural period of vibration. If the impulses are sent in the same period as the natural period of the strip 9, the plate carried thereby will get its maximum swing, hence will record the character sent. Should the periods of the transmitter not be the same as the strip, the strip will not get its maximum swing, but will no doubt be

effected to a certain extent, such extent, however, not being enough to record the characters. The apparatus in the transmitter for furnishing the varying potential should have the same period as the strip 9. The battery of the receiver is of a very high potential, being about one thousand volts. The reason for this high voltage is to keep the diaphragm 6 under a static field, thus making the same more sensitive in the same manner as the common magnetic field in magneto-telephones makes them more sensitive.

This application is a divisional application which was originally covered and set forth in application for wireless telegraphy, filed October 25, 1901, Serial No. 79,959.

I have found by experimenting that the grounds of the transmitter and receiver should be substantially the same distance apart—say from twenty to thirty feet—and that the distance between the diaphragm 6 and the disk 11 should not be over one-eighth to one-fourth of an inch.

What I claim as new, and desire to secure by Letters Patent, is—

1. A receiver, which comprises a plurality of plates in inductive relation, means for permanently charging the plates and a local circuit controlled by said plates.

2. A receiver, which comprises a plurality of plates in inductive relation, a source of high-potential energy in connection with opposing plates through an earth-circuit.

3. A receiver, which comprises opposing plates, a high-potential source of energy connected to said plates through an earth-circuit to permanently charge the same, and a circuit-controlling means operated by the reaction between said plates upon the reception of a signal.

4. A receiver, which comprises plates in inductive relation to each other, means for normally charging said plates to a high potential, means controlling a local signal-circuit operated upon fluctuations of charge on said plates due to received signal energy.

5. A receiver, which comprises a plurality of plates in inductive relation, batteries of high potential permanently charging the plates, and a local circuit controlled by said plates.

6. A receiver, which comprises a plurality of plates in inductive relation, a battery of high-potential energy in connection with opposing plates of an earth-circuit.

7. A receiver, which comprises opposing plates, a battery of high potential connected to said plates through an earth-circuit to permanently charge the plates, and a circuit-

controlling means operated by the reaction between said plates upon the reception of a signal.

8. A receiver, which comprises a plurality of plates in inductive relation to each other, a battery for normally charging said plates to a high potential, means controlling a local signal-circuit operated upon fluctuations and charged on said plates due to received signal energy.

9. A receiver, which comprises a plurality of plates in inductive relation, batteries of high potential permanently charging the plates, means kept under an electrostatic field interposed between said batteries and one of the plates, and a local circuit controlled by said plates.

10. A receiver, which comprises a plurality of plates, a high-potential source of energy connected to said plates and an electrostatic means interposed between one of the plates and the high-potential source of energy.

11. A receiver, which comprises a plurality of plates, a high-potential source of energy connected to said plates, an electrostatic means interposed between one of the plates and the source of energy, and a recorder instrument controlled by said means.

12. A receiver, which comprises a plurality of plates, a source of high-potential energy connected to said plates and an electrostatic means interposed between one of the plates and the source of energy, a relay-circuit controlled by said means and a recorder-circuit controlled by said relay-circuit.

13. A receiver, which comprises a plurality of plates, a diaphragm surrounded by insulation connected to one of the plates, a battery of high potential interposed between the plate and diaphragm, a disk adjacent to the diaphragm and connected to the other plate as to be kept under an electrostatic field, and a recorder controlled by said disk.

14. A receiver, comprising a plurality of ground-plates, a high-potential source of energy interposed therebetween, a diaphragm connected directly with the source of energy, a disk mounted so as to be free to vibrate adjacent to said diaphragm and kept under an electrostatic influence by said source of energy, said plate or disk being directly connected to the other of the ground-plates and a recorder-circuit controlled by the disk.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY SHOEMAKER.

Witnesses:

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