R. A. FESSENDEN.

WIRELESS TELEGRAPHY.

APPLICATION FILED DEC. 31, 1906.

923,962. Patented June 8, 1909.

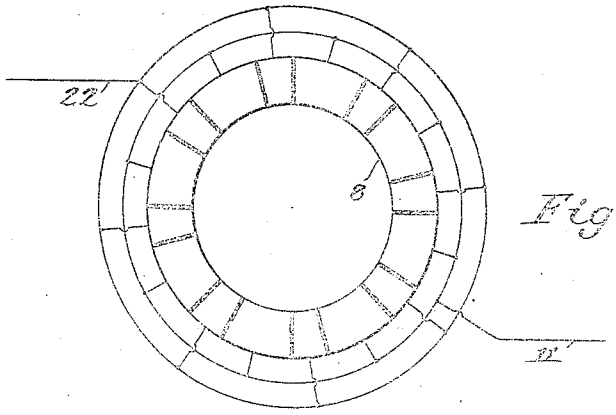


Fig. 2.

Fig. 1.

Fig. 3.

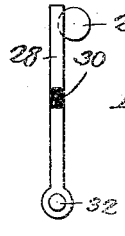


Fig. 4.

WITNESSES:

Jessie E. Bent

Fritz P. Kensbeck Jr.

Reginald A. Fessenden

INVENTOR.

UNITED STATES PATENT OFFICE.

REGINALD A. FESSENDEN, OF WASHINGTON, DISTRICT OF COLUMBIA.

WIRELESS TELEGRAPHY.

No. 902,962. Specification of Letters Patent. Patented June 8, 1908.

Application filed December 31, 1903. Serial No. 350,195.

To all whom it may concern:

Be it known that I, REGINALD A. FESSENDEN, citizen of the United States, and resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

My invention relates to the art of receiving and transmitting signals on the same antenna and more particularly to apparatus for transmission and receipt of speech simultaneously on the same antenna.

In the accompanying drawings forming a part of this specification Figure 1 shows a diagrammatic representation of the apparatus and circuits for carrying out my invention. Figs. 2 and 3 show commutators and Fig. 4 a revolving brush employed for carrying out my invention.

Heretofore in wireless telephony it has been necessary to throw over a switch from sending to receiving as in the early Bell telephone system. In the invention hereinafter described and claimed I disclose means whereby this is unnecessary. It will of course be understood that my invention is not restricted to telephony. I accomplish this by connecting the sending and receiving apparatus to the antenna during a portion only of the total time, the receiving apparatus being connected when the sending apparatus is disconnected and vice versa.

In Fig. 1, 1 is an antenna grounded at 2, 3 and 4 are the primary and secondary of a transformer, 7 and 8 are commutators, 5 and 6 are fixed rings, 9 and 10 are revolving balls driven around by the motor 23 so as to make contact between the rings 5 and 6 and the different segments of the commutators 7 and 8. 13 and 14 are condensers, 15 is a wireless receiver, for example a liquid barretter or magnetic detector, 16 is a potentiometer, 20 is a high frequency dynamo or condenser dynamo, 19 is a resistance, 18 is a transmitter and 17 a receiver.

Fig. 2 illustrates the commutator 8 in detail, the broad segments 8 being connected to the lead 11 and the narrow segments to the lead 12.

Fig. 4 shows the revolving brush, 32 being the axle of the motor 23, 30 an insulating joint, 28 a metallic pin and 29 the revolving ball shown at 10 in Fig. 1.

In the practice of my invention, the motor 23 driving the balls 9 and 10 causes the receiver 17 to be connected for approximately ¾ of the time and the transmitter 18 to be connected for the remaining ¼ of the time. The motor 23 revolves at such a speed as to connect and disconnect the receiver from operative relation to the antenna any desired number of times per second preferably about 10,000 times per second, though it may be considerably less. It is found that when this is done the receiver speech can be understood at the same time that speech is being transmitted, without the necessity of switching over from sending to receiving.

Fig. 3 shows an alternative form of commutator in which 27 is the revolving axle, 31 an insulating joint, 25 a commutator, 24 a fixed metal ring, and 26 a pointed wire, making connection between 24 and 25 by a discharge through the air or if desired through gas in an inclosing vessel in partial vacuum.

What I claim is:

1. The combination with receiving and transmitting devices for wireless telephony, of an antenna and a commutator adapted to connect the antenna alternately with the receiving and sending devices with a periodicity above the limits of audition, substantially as subscribed.

2. In wireless telephony, the combination with a receiving device and a transmitting device of an antenna and means to alternately connect it with the receiving and sending devices with a periodicity above the limit of audition, comprising two rotary commutators connected in series with said receiving and transmitting devices.

Signed at Brant Rock, in the county of Plymouth and State of Massachusetts this 28th day of December A. D. 1906.

REGINALD A. FESSENDEN.

Witnesses:

JESSIE E. BENT,

ADELEINE WOLENER.