R. A. FESSENDEN.

APPARATUS FOR PRODUCING HIGH FREQUENCY OSCILLATIONS.

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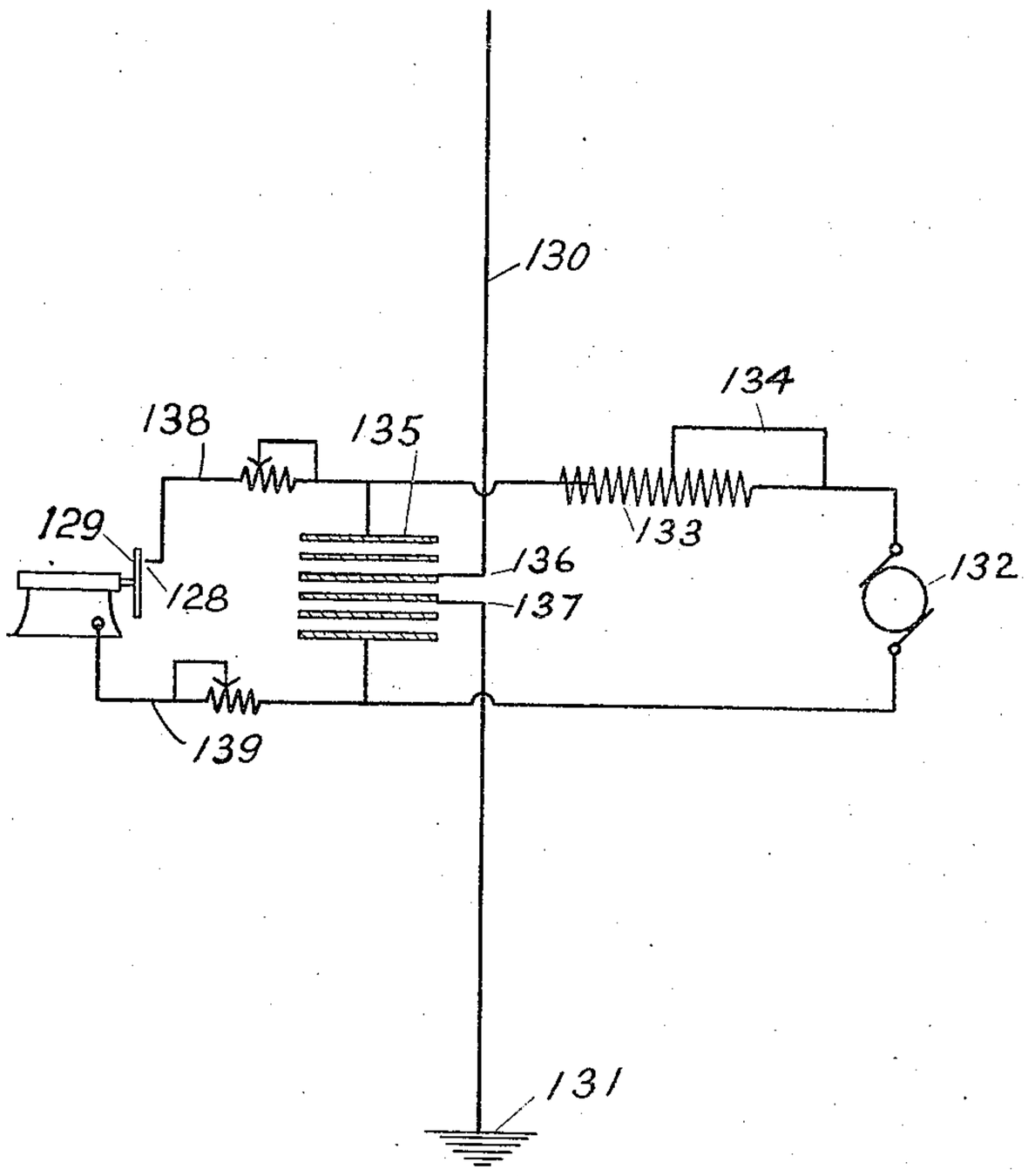
1,166,892. Patented Jan. 4, 1916.



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UNITED STATES PATENT OFFICE.

REGINALD A. FESSENDEN, OF BRANT ROCK, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SAMUEL M. KINTNER, OF PITTSBURGH, PENNSYLVANIA, AND HALSEY M. BARRETT, OF BLOOMFIELD, NEW JERSEY, RECEIVERS.

APPARATUS FOR PRODUCING HIGH-FREQUENCY OSCILLATIONS.

1,166,892. Specification of Letters Patent. **Patented Jan. 4, 1916.**

Original application filed March 22, 1905, Serial No. 251,538. Divided and this application filed October 11, 1909. Serial No. 522,092.

To all whom it may concern:

Be it known that I, REGINALD A. FESSENDEN, residing at Brant Rock, Plymouth county, in the State of Massachusetts, a citizen of the United States, have invented certain new and useful Improvements in Apparatus for Producing High-Frequency Oscillations, of which improvements the following is a specification.

My invention relates to the production of high frequency oscillations and more particularly to a form of discharge gap adapted for the production of such oscillations.

In the accompanying drawing forming a part of this specification the figure shows the discharge gap and a diagram of circuits adapted to be used in connection therewith.

The invention herein disclosed has for its object the production of high frequency oscillations in an efficient manner and more particularly the production of high frequency oscillations of a continuous or practically continuous character and still more particularly an efficient form of discharge gap for use in this connection.

In the figure is shown a form of discharge gap adapted for this purpose and a suitable arrangement of circuits.

The arrangement of circuits is broadly similar to that shown in applicant's U. S. Patent 706,742, Figure 10.

In the figure one of the terminals of the spark gap 128 is formed of a disk 129 which revolves at a speed which may be as high as twelve miles per minute.

130 is the antenna grounded at 131, 132 is a source of voltage, preferably a continuous current dynamo, 133 is a means of regulating the current by means of the movable contact 134, 135 is a capacity, antenna and ground being connected across only a portion of the capacity, *i. e.* the plates 136, 137. By this means a high voltage current of small intensity can be altered into a low voltage current of larger intensity. The inductances formed of the wires 138, 139 are preferably small and arranged so that together with the capacity 135 they are in tune with the sending conductor.

In operation the rapid relative motion between the two terminals due to the rapid revolution of the terminal formed of the disk 129 produces a rapid and equitable succession of discharges and a high efficiency.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. A transmitter for wireless telegraph apparatus comprising a tuned antenna-to-ground circuit containing a condenser, and a local generating circuit also containing said condenser and containing a plurality of metallic bodies forming a spark gap and means for causing relative movement of said bodies at high velocity whereby to prevent the formation of an arc, substantially as described.

2. Apparatus for wireless signaling comprising a continuous current generator, a high frequency oscillatory circuit containing a capacity, a disruptive discharge gap in said circuit, an inductance, an antenna connected to said circuit and discharge gap, said discharge gap having a fixed electrode and a disk electrode in relative movement therewith at such high frequency as to prevent arcing, and means for producing such movement of said electrodes, substantially as described.

3. Apparatus for wireless signaling comprising an electric generator, a high frequency oscillatory circuit connected thereto, including a discharge gap, a capacity, and an inductance in said circuit, an antenna connected to said circuit and discharge gap, said discharge gap comprising electrodes of which one presents a continuous surface to the other and means for relatively moving said electrodes at such high velocity as to prevent arcing and means for regulating the flow of current from the generator across the spark gap.

4. A generating apparatus for wireless telegraphy comprising an oscillatory circuit containing a condenser, and a disruptive discharge gap comprising a fixed electrode and closely contiguous thereto a moving disk, and means to rotate said disk at very high frequency to avoid arcing, substantially as described.

In testimony whereof I have hereunder signed my name in the presence of the two subscribed witnesses.

REGINALD A. FESSENDEN.

Witnesses:
JESSIE E. BENT,
FLORENCE M. LYON.