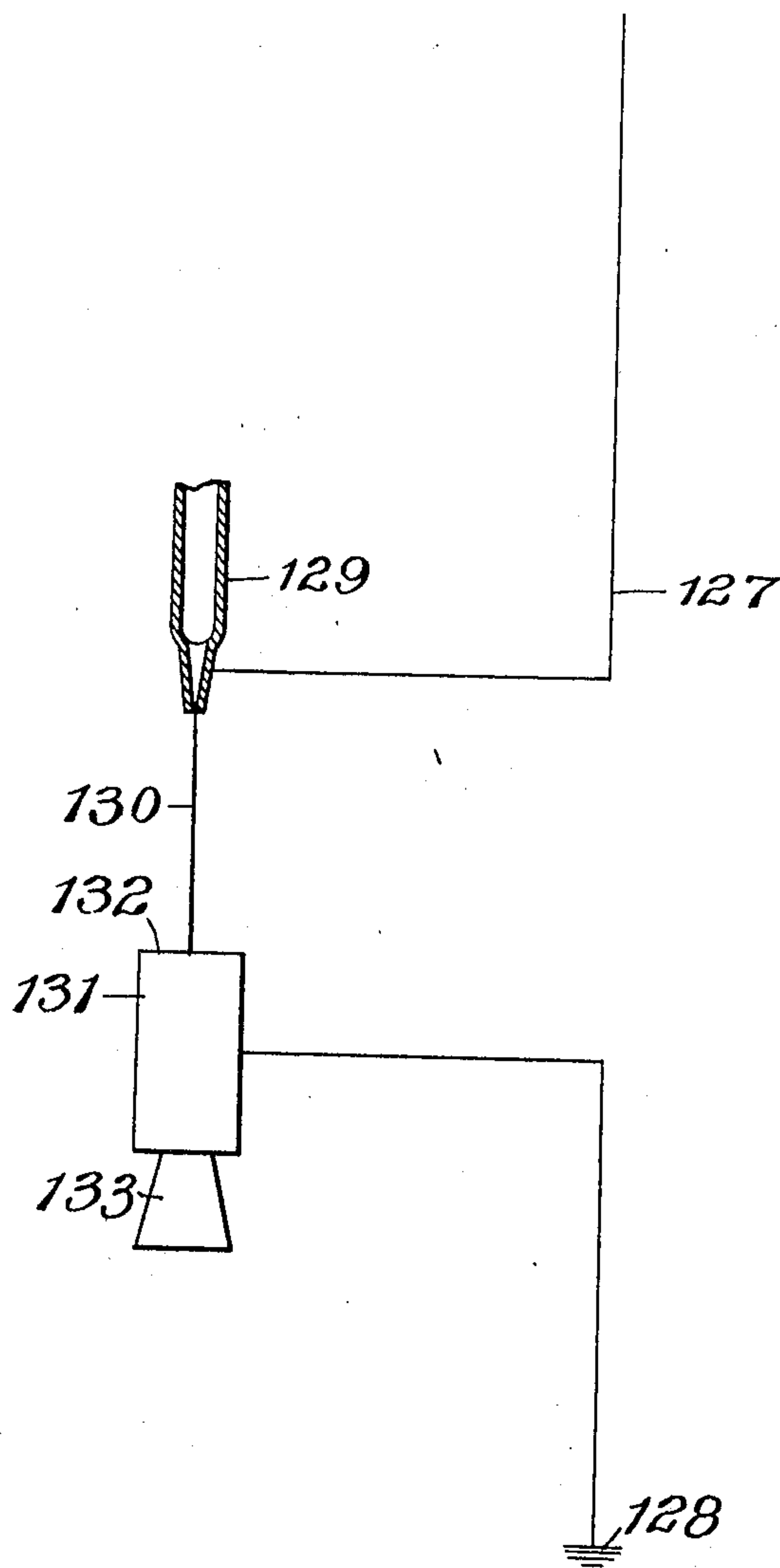


R. A. FESSENDEN.  
RECEIVER FOR ELECTROMAGNETIC WAVES.  
APPLICATION FILED JULY 3, 1906.

916,429.

Patented Mar. 30, 1909.



WITNESSES:

*J. Herbert Bradley.*  
*Wm. H. Wilson.*

INVENTOR

*Reginald A. Fessenden*  
by *Samuel B. Wolcott* Atty

# UNITED STATES PATENT OFFICE.

REGINALD A. FESSENDEN, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE NATIONAL ELECTRIC SIGNALING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

## RECEIVER FOR ELECTROMAGNETIC WAVES.

No. 916,429.

Specification of Letters Patent.

Patented March 30, 1909.

Original application filed July 8, 1903, Serial No. 164,738. Divided and this application filed July 3, 1906.  
Serial No. 324,571.

To all whom it may concern:

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

The invention described herein relates specifically to the form or construction of receivers for electromagnetic waves shown and described *inter alia* in an application for Letters Patent Ser. No. 164,738, filed by me July 8th, 1903, of which application this case is a division.

The improved receiver consists generally stated in moving liquid which is arranged in operative relation to an aerial and to an indicating mechanism, whereby changes produced in said moving liquid or portion will cause the operation of the indicating mechanism.

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming a part of this specification is shown diagrammatically a form of receiver embodying my invention.

In the practice of my invention a moving mass of conducting liquid which may be in the form of thin stream 130 of water rendered conductive in any suitable manner as by the addition of carbonate of soda, is arranged in operative relation to an aerial 127. In the construction shown the aerial is connected to a nozzle 129 which is connected to a suitable source of liquid supply. A stream of liquid from the nozzle 129 will impinge upon a diaphragm 132 at the upper end of tube 131 having a speaking trumpet 133 at its opposite end. The tube which as well as the nozzle 129 is preferably formed of metal, is connected to ground. As the stream of liquid flowing from the nozzle onto the diaphragm forms part of the circuit for currents generated in the antennæ by electromagnetic waves, it will be so affected by such currents

as to produce an indication. When no current is passing through the stream no sound or a uniform sound will be produced by the impingement of the stream on the diaphragm, but when waves are being received the stream will be so changed or affected that it will act differently on the diaphragm producing a sound or a note different from that produced when no waves are being produced. The diaphragm is preferably formed of metal.

I claim herein as my invention:

1. A receiver for electromagnetic waves consisting of a moving liquid mass.

2. In a receiver for electromagnetic waves, a receiving circuit composed in part of a liquid movable in a definite path.

3. In a receiver for electromagnetic waves, detecting means including a flowing liquid.

4. A receiver for electromagnetic waves, having in combination electrodes and a liquid conductor movable in a stream from one electrode toward the other.

5. A receiver for electromagnetic waves having in combination a stream of liquid, means for constricting a portion of said stream and terminals connected to said stream on opposite sides of the constricted portion.

6. In a wave detector, a detecting circuit composed in part of a liquid element movable in an unconfined path or paths.

7. A wave detector including a moving liquid mass in unstable equilibrium.

8. A wave detector having liquid detecting means formed by an unsupported mass.

9. In an electromagnetic wave detector, detecting means including a circulating fluid, substantially as described.

In testimony whereof, I have hereunto set my hand and seal, the 29th day of June, A. D. 1906.

REGINALD A. FESSENDEN. [L. s.]

Witnesses:

JESSIE E. BENT,  
PHILIP T. POST.