

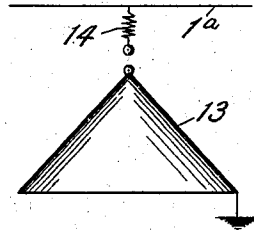
No. 753,864.

PATENTED MAR. 8, 1904.

R. A. FESSENDEN.
SIGNALLING BY ELECTROMAGNETIC WAVES.

APPLICATION FILED OCT. 1, 1903.

NO MODEL.



WITNESSES:

Geo. G. Mahony.
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UNITED STATES PATENT OFFICE.

REGINALD A. FESSENDEN, OF FORTRESS MONROE, VIRGINIA, ASSIGNOR,
BY DIRECT AND MESNE ASSIGNMENTS, TO THE NATIONAL ELECTRIC
SIGNALING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORA-
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SIGNALING BY ELECTROMAGNETIC WAVES.

SPECIFICATION forming part of Letters Patent No. 753,864, dated March 8, 1904.

Application filed October 1, 1903. Serial No. 175,364. (No model.)

To all whom it may concern:

Be it known that I, REGINALD A. FESSENDEN, a citizen of the United States, residing at Fortress Monroe, in the county of Elizabeth
5 City and State of Virginia, have invented or discovered certain new and useful Improvements in Signaling by Electromagnetic Waves, of which improvements the following is a specification.

10 The invention described herein has for its object the provision of suitable conductors for the transmission and receipt of energy, and more particularly for signaling by electro-
magnetic waves.

15 It is also an object of this invention to provide such a construction that only a small portion of the energy will be discharged or radiated at each oscillation as compared with the fraction radiated by a wire of equal length
20 and extending vertically from a point in the plane of the conductor to ground.

The invention is hereinafter more fully described and claimed.

25 In the accompanying drawing, forming a part of this specification, the figure illustrates diagrammatically a form of conductor embodying this invention.

30 A horizontal conductor as shown in the drawing is employed, having a large radiating area—*i. e.*, large capacity. This horizontal conductor may be formed by a group or network of wires. It is preferred to employ in connection with the horizontal conductor a metal cone
35 13, which serves to deflect the radiated waves and direct them along the surface of the earth. If desired, a self-inductance 14 may be placed in the circuit of the conductor 1^a. This conductor is preferably so constructed that its capacity is relatively much larger than that of a
40 wire of equal length and extending vertically from a point in the plane of the conductor to ground. The wires forming this conductor are preferably round in cross-section.

45 The self-inductance 14 may be in the form of a coil or, as shown in Fig. 1, No. 706,736,

in the local circuit at the sending end, in the form of an uncoiled wire.

Exact horizontality is not essential to the operativeness of my invention, and I do not intend to exclude other laterally-extending
50 forms, which are not horizontal—for example, the form shown by me in *Electrical World and Engineer*, June 29, 1901. Similarly the location of the point at which the potential difference is applied is not essential to the oper-
55 ativeness of the device, though it is preferred to have it at the top of the ground extension or cone 13.

I claim herein as my invention—

1. In a system of transmission of energy by
60 electromagnetic waves, the combination of a laterally-extending conductor consisting of a series of wires adapted to radiate electromagnetic waves and having its capacity relatively
65 much larger than that of a vertical wire of the same height as that of the conductor, and an inductance between the laterally-extended portion and ground, substantially as set forth.

2. In a system of transmission of energy by
70 electromagnetic waves, the combination of a laterally-extending conductor of large capacity and formed of a number of laterally-extending wires, and an inductance between the laterally-extended portion and ground,
75 substantially as set forth.

3. In a system of transmission of energy by
80 electromagnetic waves, the combination of a conductor adapted to radiate electromagnetic waves comprising a lateral extension consisting of a number of wires, the inductance of
85 the vertical portion forming the connection of the lateral extension to ground being greater per unit length than that of the lateral portion, substantially as set forth.

4. In a system of transmission of energy by
85 electromagnetic waves, the combination of a laterally-extending conductor consisting of a series of wires adapted to radiate electromagnetic waves and having its capacity relatively
90 much larger than that of a vertical wire of the

same height as that of the conductor, and a coil of wire between the laterally-extended portion and ground.

5 5. In a system of transmission of energy by electromagnetic waves, the combination of a laterally-extending conductor of large capacity and formed with a number of laterally-extending wires, and a coil of wire between the laterally-extended portion and ground.

10 6. In a system of transmission of energy by electromagnetic waves, the combination of a conductor adapted to radiate electromagnetic

waves, comprising a lateral extension consisting of a number of wires and a coil of wire between the laterally-extended portion and ground, the inductance of such connection being greater per unit of length than that of the lateral portion, substantially as set forth. 15

In testimony whereof I have hereunto set my hand.

REGINALD A. FESSENDEN.

Witnesses:

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WM. S. AYRES, Jr.