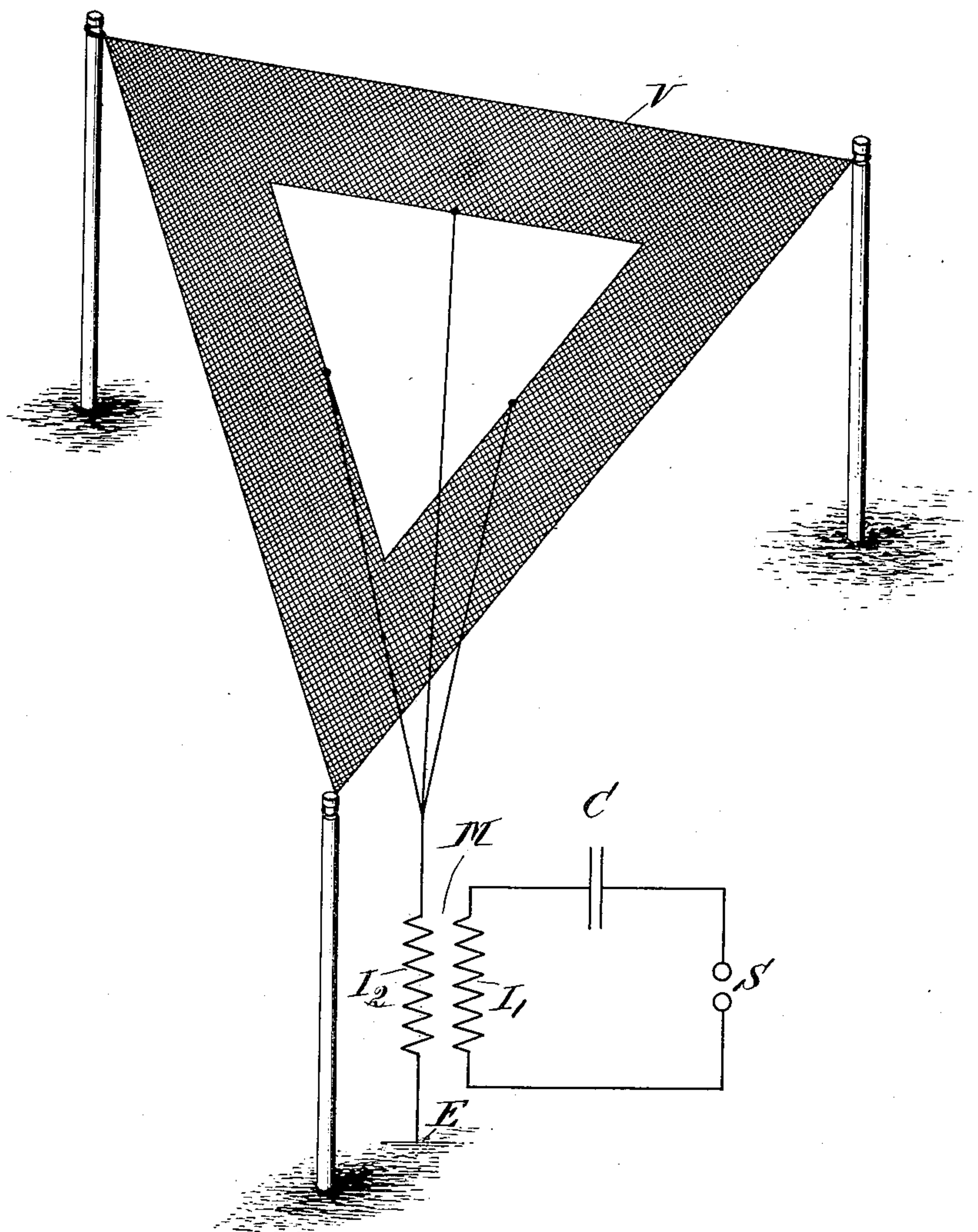


No. 884,071.

PATENTED APR. 7, 1908.

S. CABOT.
SPACE TELEGRAPHY.
APPLICATION FILED DEC. 31, 1906.



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SPACE TELEGRAPHY.

No. 884,071.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed December 31, 1906. Serial No. 350,257.

To all whom it may concern:

Be it known that I, SEWALL CABOT, a citizen of the United States, and a resident of Brookline, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Space Telegraphy, of which the following is a specification.

My invention relates to space telegraphy and more especially to an elevated conductor system which may be employed in a transmitting or in a receiving system.

My invention consists in a development of or an improvement upon the elevated conductor system described in U. S. Letters Patent No. 767,988, granted to J. S. Stone August 16, 1904, to which reference may be had for a more extended explanation of the fundamental principles upon which the present invention is based than is necessary to set forth herein.

The object of my invention is to provide an elevated conductor system comprising a laterally extending conducting surface having its periphery large compared with its distance above the earth, and having its inner portion cut away or removed, said inner portion of said conducting surface having been found to be ineffective in the reception or transmission of electromagnetic waves.

My invention may best be understood by having reference to the drawing which accompanies and forms a part of the present specification and which illustrates, partly in diagram and partly in perspective, one of the several possible embodiments of my invention associated with a sonorous or oscillating circuit.

In the drawing, the figure represents a space telegraph transmitting system.

In the figure, V is an elevated conductor consisting of a laterally extending conducting surface, herein shown as formed of wire netting, having its inner portion cut away and its perimeter large compared with its distance above the earth. The plane of said conductor may be and preferably is substantially parallel to the earth. Said elevated conductor V may be connected to the earth E through the secondary I_2 of the transformer M in any suitable manner and herein is shown as connected to said secondary by three conductors which are joined at symmetrical points with V. The circuit S C I_1 which includes the spark gap S, condenser C

and primary I_1 of the transformer M is an oscillating circuit of the kind commonly used in transmitting systems. It will be understood however that inasmuch as the present invention resides in an elevated conductor system which may be employed in a transmitting or receiving system, the oscillating circuit may be of the type commonly employed in receiving systems, in which case the aforesaid spark gap will of course be omitted and an oscillation detector associated with the circuit in any suitable manner. It will be understood also that although the oscillating circuit is shown as associated with the elevated conductor system by means of a transformer, I do not limit myself to such associating means but may couple the two elements of the transmitting or receiving system in any suitable manner.

The natural period of the oscillating circuit should be made equal to the fundamental of the elevated conductor system and means should be employed for rendering the reactance of the said elevated conductor system zero for electrical vibrations of definite frequency. The means shown for this purpose is the secondary of the transformer M, although as is now well understood any other suitable means may be employed for this purpose. Preferably the association of the elevated conductor system and the oscillating circuit should be such that the oscillating circuit is rendered the equivalent of a circuit having a single degree of freedom.

It has been found experimentally that the inner portion of the elevated conductor described in the hereinbefore mentioned Letters Patent is ineffective and adds nothing to the efficiency of transmission or reception. By cutting away said inner portion, I am able to lessen the cost of said conductor and reduce the structural difficulties connected with erecting and maintaining the same. Also the electrostatic capacity of the elevated conductor system materially is reduced, and this for some purposes is of great advantage. In order further to reduce the difficulties attending the construction and maintenance of the elevated conductor system, I prefer to employ an elevated conductor V which is substantially triangular in shape.

In lieu of the wire netting hereinbefore described, the elevated conductor V may also be formed of parallel wires, preferably of

copper and insulated, and spaced apart a distance depending somewhat upon their height above the earth, this ratio being somewhat on the order of forty to one, comparing the height above earth with the distance apart of these parallel wires. For example, if the elevated conductor V be placed forty feet above the earth, the aforesaid parallel wires will be separated a distance apart of about one foot, and if said conductor be placed eighty feet above the earth, the separation of said parallel wires will be about two feet. It will be understood that the choice of the two constructions hereinbefore described will depend upon circumstances. Experimental results indicate roughly that in the construction of one of these areas it is of advantage to make the side of the triangle roughly equal to the height that the area is suspended above the earth.

It has been determined experimentally that all the advantages set forth in the above mentioned Letters Patent for the elevated conductor system therein shown may be obtained, and in fact are obtained in a greater degree with the elevated conductor system herein described and claimed.

Although I have shown in the accompanying drawing a construction preferred by me, it will be understood that many other constructions are electrically and mechanically equivalent to such preferred construction and that therefore I do not wish to be limited to the particular embodiment of my invention which I have illustrated and particularly described for the purpose of more clearly disclosing my invention.

I claim,

1. In a system of space telegraphy, an elevated conductor system comprising a laterally extending conducting surface having its inner portion cut away and its perimeter large compared with its distance above the earth.

2. In a system of space telegraphy, an elevated conductor system comprising a laterally extending triangular-shaped conducting surface having its inner portion cut away and its perimeter large compared with its distance above the earth.

3. In a system of space telegraphy, an elevated conductor system comprising a laterally extending conducting surface having its inner portion cut away and its perimeter large compared with its distance above the earth, in combination with means for rendering the reactance of said elevated conductor system zero for electrical vibrations of definite frequency.

4. In a system of space telegraphy, an elevated conductor system comprising a laterally extending triangular-shaped conducting surface having its inner portion cut away and its perimeter large compared with its distance above the earth, in combination with means for rendering the reactance of said elevated conductor system zero for electrical vibrations of definite frequency.

In testimony whereof, I have hereunto subscribed my name this 29 day of Dec. 1906.
SEWALL CABOT.

Witnesses:

GEO. K. WOODWORTH,
E. B. TOMLINSON.