PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Method of and Apparatus for Causing Precipitation of Atmospheric Moisture and for kindred purposes.

I, WILLIAM HAIGHT, a citizen of the United States of America, of 228, East 117th Street, Los Angeles, County of Los Angeles, California, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to and has for its purpose the provision of a method of and apparatus for causing precipitation of moisture forming clouds, for dispersing fogs, preventing frosts, and the like, by discharging electrical energy into the atmosphere.

My invention is based upon the theory that in the earth there exists a static charge of electricity of a positive nature, while in the atmosphere there is, at varying distances from the earth, a region or stratum of air containing a charge of electricity of a negative nature. Between the earth and this negative stratum of electrically-charged air, there is a region or stratum of dry or semi-dry air which, owing to its lack of moisture, functions as an insulating medium, and hence normally prevents the positive earth charge and the atmospheric negative charge from combining and thus producing a fall in temperature to cause condensation of the clouds, and, consequently, precipitation of the moisture in the form of rain.

In carrying out my invention, I have found that by discharging into the intermediate or insulating region or stratum of atmosphere an alternating current of a high frequency, the positive earth charge and the negative atmospheric charge are placed in electrical communication, thereby permitting them to combine one with the other with the result that the clouds are condensed and precipitation follows.

Should the atmosphere be devoid of clouds, and it is desired to effect precipitation of moisture, relatively weak discharges of alternating current of a less frequency and potential are effected at different points in a given area to establish electrical contact at various points between the positive and negative charges, whereby the always-existing moisture in the atmosphere is caused to slowly condense until the moisture is of sufficient density and concentration to form clouds of the required area to permit the use of the normal high frequency and potential as discharged from a single source of alternating current, thus effecting a rapid and complete condensation of the moisture to produce rain.

Experiment has proven that by means of my invention I am able to disperse fogs by forming clouds in the manner above described, thus drying the moisture in the lower atmosphere and thereby lifting the fog to a higher level. Further, I am able to prevent frosts also by the formation of clouds, thereby removing from the atmosphere adjacent the earth the excess moisture which is necessary to the formation of frost.

According to my method of causing precipitation of moisture and the like, I discharge into the atmosphere alternating current of high frequency from apparatus designed for the purpose, such apparatus not being earthed, and being in fact insulated from the earth so that all the alternating current discharged is delivered to the atmosphere only. The description of an apparatus for this purpose is set forth in the specification following.

In the accompanying drawings,

Figure 1 is a view showing in side elevation one form of apparatus embodying my invention;

Figure 2 is a view showing diagrammatically the electrical parts of the apparatus shown in Figure 1;

Figure 3 is an enlarged vertical sectional view of the housing shown in Figure 1 and certain parts of the electrical apparatus;

Figure 4 is a horizontal sectional view taken on the line 4—4 of Figure 3.

Similar reference characters refer to similar parts in each of the views.

Referring specifically to the drawings, my invention in its present embodiment, comprises a tower L of suitable height to support a housing H at the desired elevation. The housing H is thoroughly insulated from the tower by means of insulators A, it being necessary to the successful operation of this invention that the entire apparatus be effectively insulated from the tower so as to prevent the possibility of current discharge to the ground.

The electrical apparatus is situated within the housing H, and by reference to Figure 2 it will be seen that the electrical apparatus comprises an alternating current generator G driven in any suitable manner and designed to develop about 5 kilowatts with a frequency of about 500 cycles. The terminals of the generator are provided with a circuit including the primary P of a step-up transformer T connected in series with the generator and with a conventional adjustable rheostat R. A volt meter V and an ammeter A may be interposed in the circuit in the manner illustrated for the purpose of determining at all times the character of the current generated. The secondary winding S of the step-up transformer T is provided with a circuit, including the primary P^1 of a second step-up transformer T^1, the secondary S^1 of the transformer having one terminal thereof connected to the circuit in the manner shown. This circuit also includes a spark gap D of the quenched type connected in series therein, and a plurality of condensers C of the oil type which are connected across the terminals of the secondary winding S. The circuit also includes an external inductance winding E by which fine adjustments may be obtained to bring the circuits into resonance.

The primary winding P^1 is adjustable with respect to the secondary S^1 for the purpose of resonance, and in Figure 3, I have shown one manner of supporting the primary winding to effect this adjustment. As shown in Figure 4, the winding P^1 is in the form of a helix supported on a frame 15 and a hub 16 slidable vertically on a post 17 fixed in upright position within the housing H. The frame, including the hub, and the post 17, are formed of insulating material in order to prevent the possibility of current leakage to and through the housing. The hub 16 is provided with a set screw 18 by means of which the frame and consequently the winding P^1 can be secured in any desired position vertically on the post to change its inductive relation with respect to the secondary winding S^1.

As shown in Figure 2, the other terminal of the secondary winding S^1 is connected to a conducting member K constituting a discharge electrode from which the electrical energy generated in the apparatus is discharged into the atmosphere. As shown in Figure 3, the secondary winding S^1 includes a winding s^1 mounted on a drum 19 of insulating material which is fixed to the post 17. Above the drum 19 is a second drum 20 also of insulating material but of a diameter less than that of the drum 19, and about this drum is wound a second winding s^2 which is electrically connected to the winding s^1 as indicated at 21. A casing 22 formed of insulating material completely houses the winding s^2 and in such manner as to provide between the two a chamber in which a body of oil 23 is stored for effectively insulating the winding s^2. This casing 22 is provided at regularly spaced intervals along its length with downwardly inclined annular flanges 24 which operate to prevent the accumulation of moisture thereon and upon the housing, to provide a continuous path for the leakage of current from the electrode K. To further prevent leakage of current, that portion of the housing directly surrounding the casing 22 is formed of insulating material as indicated at 25.

In operation, the electrical apparatus just described is designed to effect a brush discharge of alternating current from the electrode K into the atmosphere which is of a frequency substantially between 150,000 and 200,000 cycles more or less and to set up in the ether a wave length of between 1200 and 2000 meters more or less. An apparatus of this design will operate to control the elements within a radius of approximately five miles. It is to be understood, however, that I do not wish to be restricted to an electrical apparatus of this particular design, as I may vary the design to meet any particular atmospheric or topographical conditions within the scope of the claims hereinafter set forth.

In practice, the apparatus is adjusted to effect a maximum current discharge at the electrode K when it is desired to cause precipitation and when so operating, the current discharge functions to establish electrical contact between the positive earth charge and the negative atmospheric charge, thereby lowering the temperature of the air in the cloudy region to cause condensation of the clouds and, finally, rain.

When it is desired to form clouds for the ultimate purpose of creating rain, a plurality of such apparatus (say, four or more) as described and shown, are provided and located at spaced points, so as to discharge current at various points into the atmosphere. However, the currents discharged from these apparatus must be of a reduced intensity so as to effect a slow reduction in temperature, with a consequently slow condensation of the moisture in the air. In this manner, the concentration of the condensed moisture of the clouds is effected, so that by subsequent charging of the atmosphere with current of the original high frequency, a rapid condensation of the clouds takes place, causing them to fall in the form of rain.

When desiring to obtain a feeble discharge of current from each of the apparatus incident to the formation of clouds, both the voltage and amperage of the currents, as well as their frequency, can be reduced by a reduction in the speed of the generator, or by cutting out of the secondary circuit and desired number of condensers.

In its capacity as a disperser of fogs or for preventing frosts, my apparatus in discharging high frequency current again functions to concentrate the moisture to a relatively high elevation, thereby drying the air adjacent the earth and thus preventing frosts and lifting the fog should any exist.

Although I have herein shown and described only one form of apparatus for causing precipitation and kindred purposes, embodying my invention, it is to be understood that various changes and modifications may be made without departing from the spirit and scope of the appended claims.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A method of causing precipitation of atmospheric moisture which comprises the discharging of alternating current of a high frequency into the atmosphere, the apparatus for discharging the current being completely insulated from the earth.

2. A method of causing precipitation of atmospheric moisture which comprises the discharging of alternating current of a high frequency as a brush discharge into the atmosphere in which the apparatus for discharging the current is completely insulated from the earth and from the means of supporting the apparatus, said means being in an elevated position.

3. A method of causing precipitation of atmospheric moisture which comprises the establishment of electrical contact between a static earth charge of electrical energy and a static atmospheric charge of electrical energy, in combination with the means described and shown for carrying out the method.

4. A method of causing precipitation of atmospheric moisture which comprises the brush discharge of alternating current of high frequency into the atmosphere, together with the means as set forth completely insulated from the earth for operating the said method.

5. A method of dispersing fogs which comprises the formation of clouds above the fog by discharging into the atmosphere alternating current of a high frequency by means of a brush discharge from apparatus completely insulated from the earth and insulated from the elevated means of support such as a tower or the like.

6. A method of causing precipitation of atmospheric moisture which comprises the establishment of relatively feeble electrical contact between the earth and the upper stratum of electrically charged atmosphere at various points, and then establishing a relatively strong electrical contact at only one of the points aforesaid or at a point in proximity thereto, including the means as set forth for carrying out the said method.

7. An apparatus of the character described comprising means for generating alternating current of a high frequency, and apparatus insulated from the earth by which said current is discharged into the atmosphere, combined and operating substantially as described herein and as shown in the drawings.

Dated this 5th day of February, 1925.

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Fig.1.

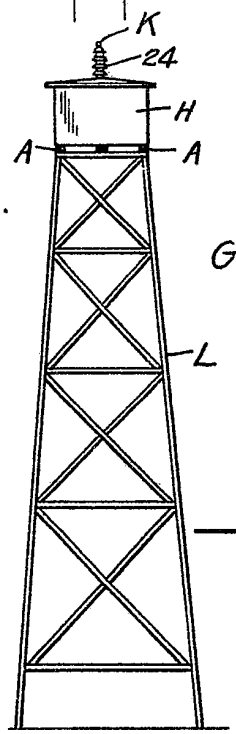


Fig.2.

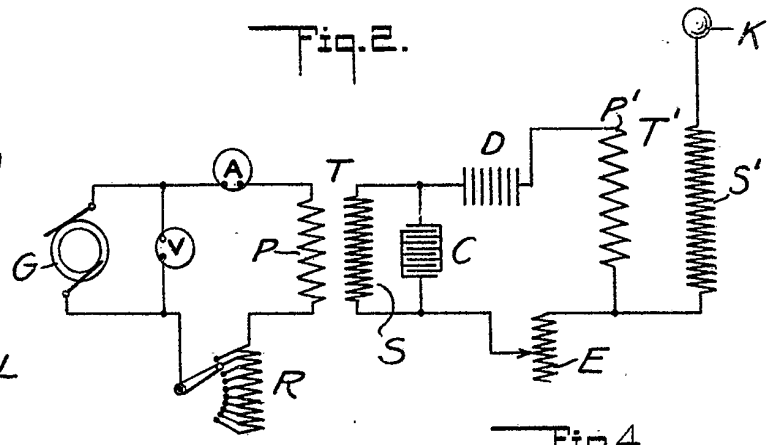


Fig.3.

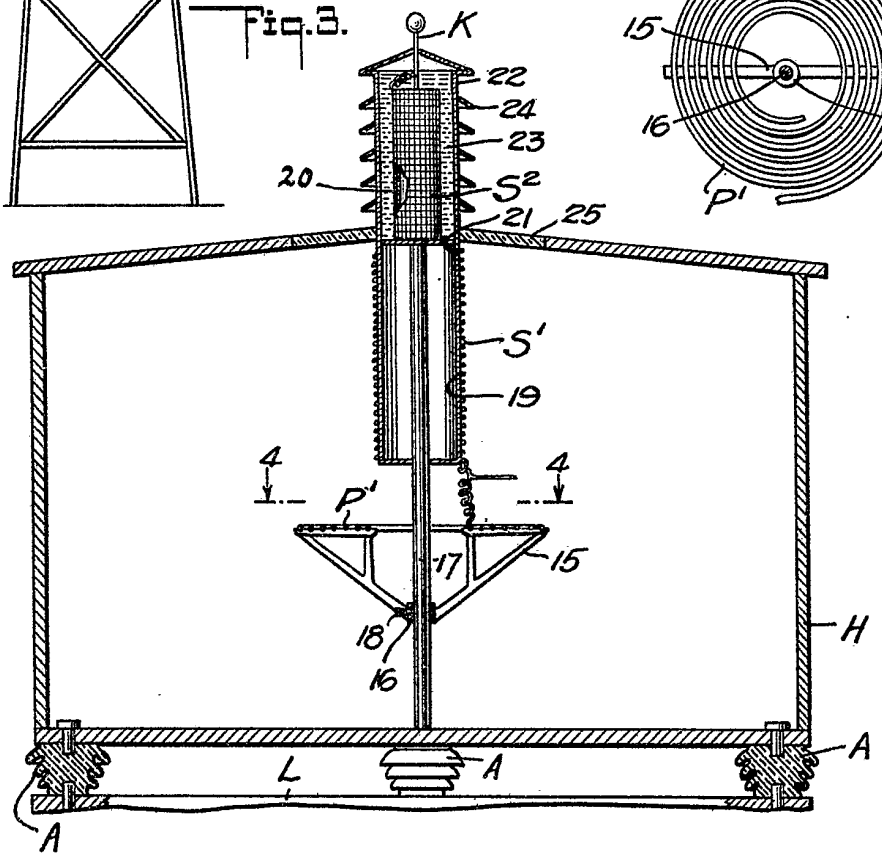
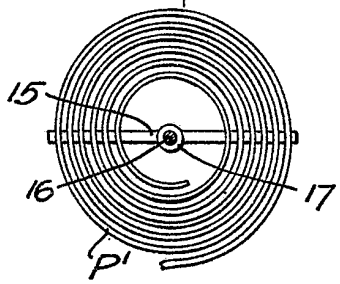


Fig.4.



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