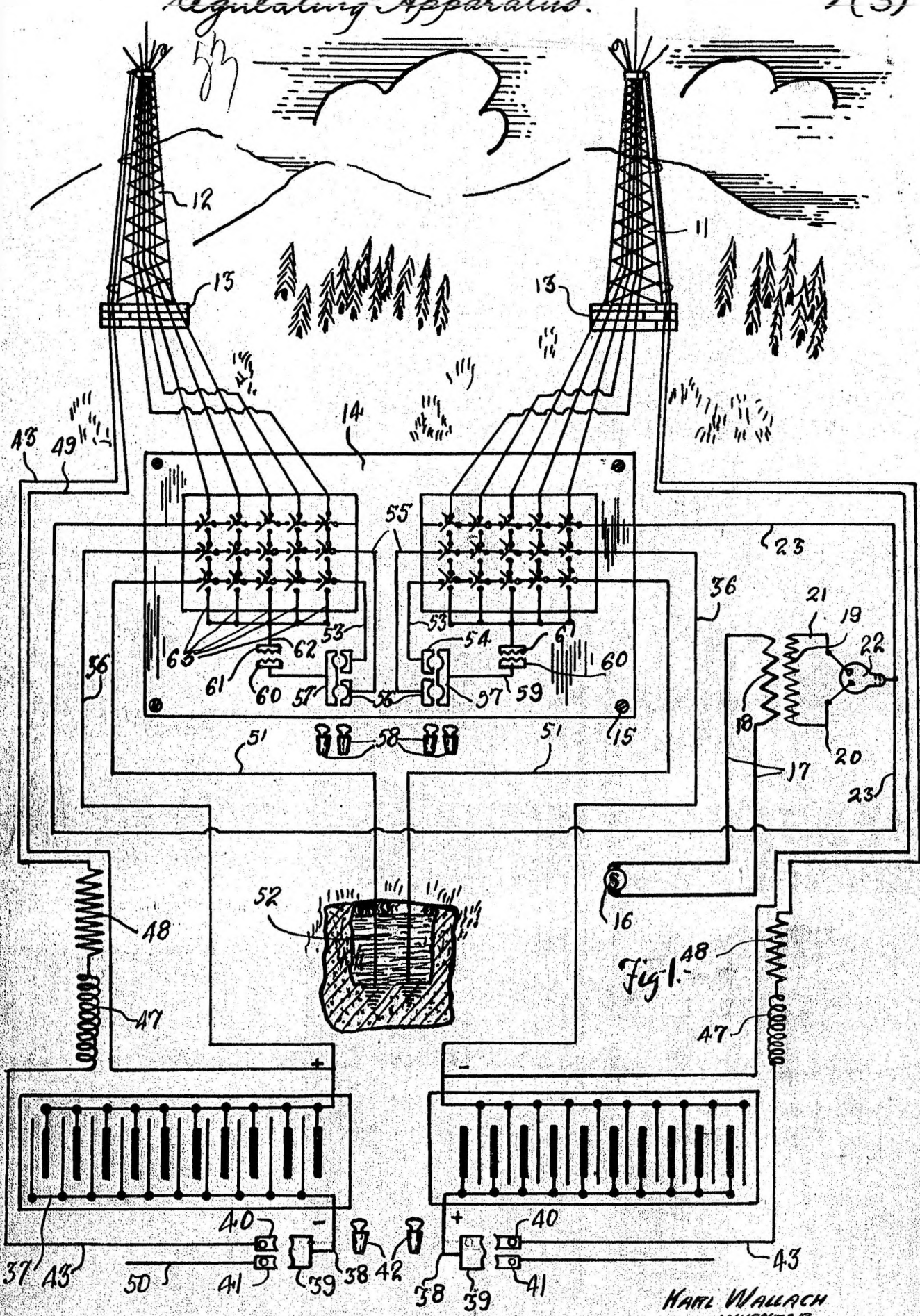


*Artificial
making of Weather
Regulating Apparatus.*

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Certified to be the drawings referred to
in the specification hereunto annexed.
Ottawa, June 16th, 1926.

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INVENTOR
BY *J. M. S. Fowler*
HIS ATTORNEY.

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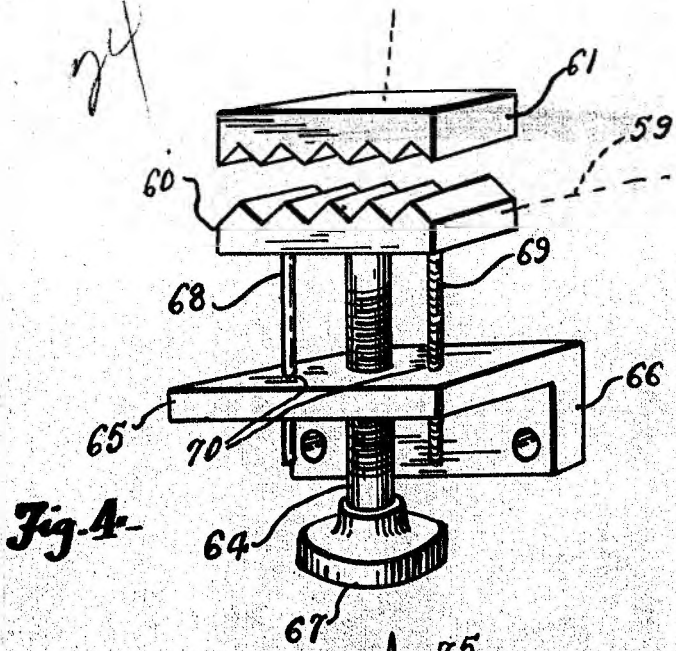


Fig. 4-

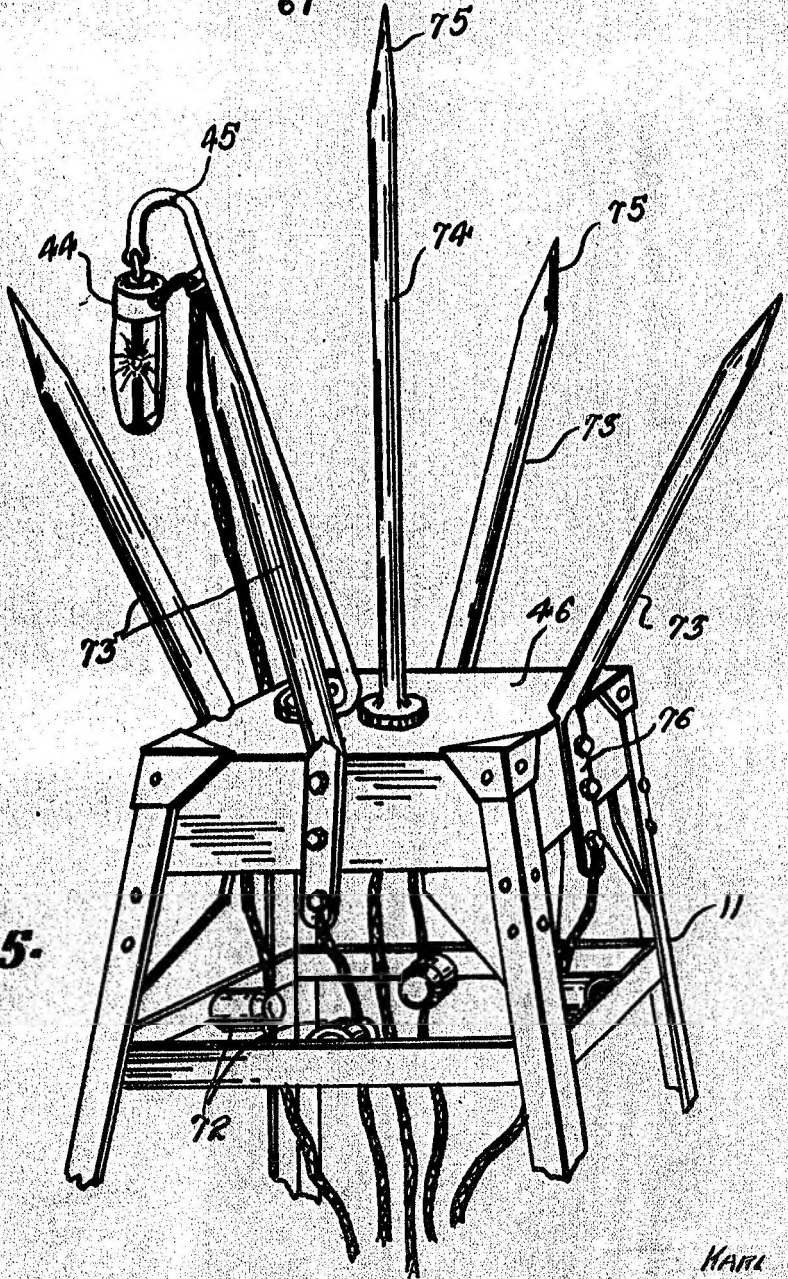


Fig. 5-

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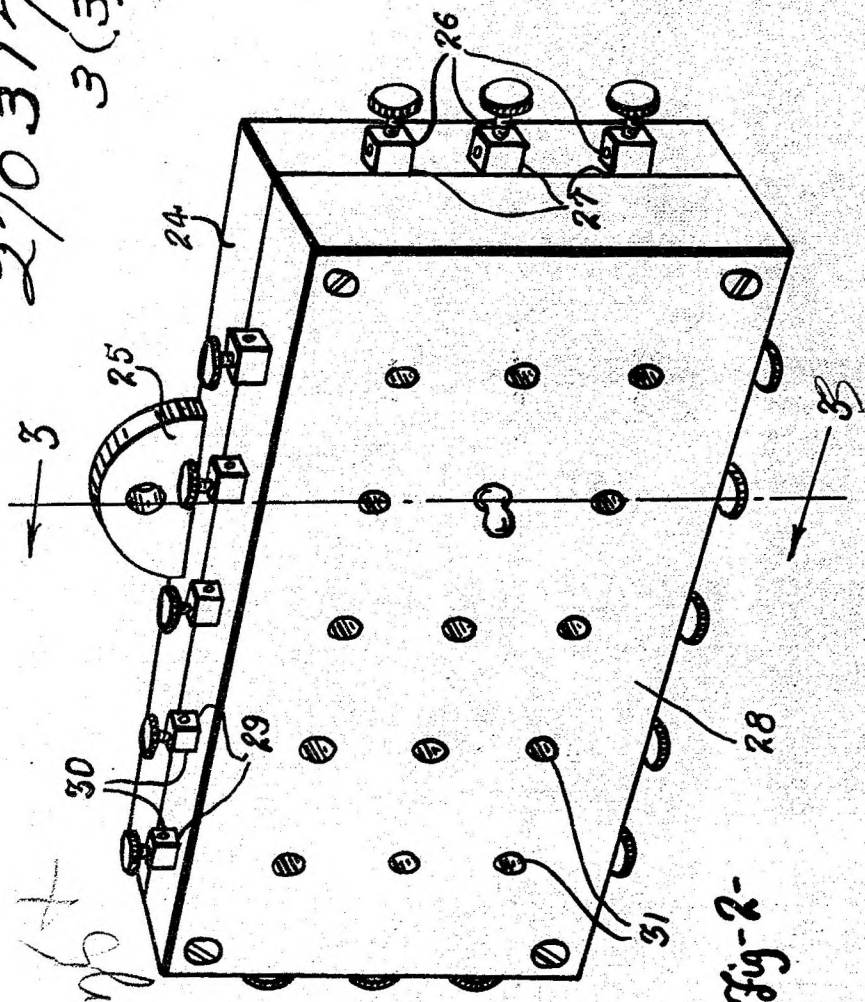


Fig-2-

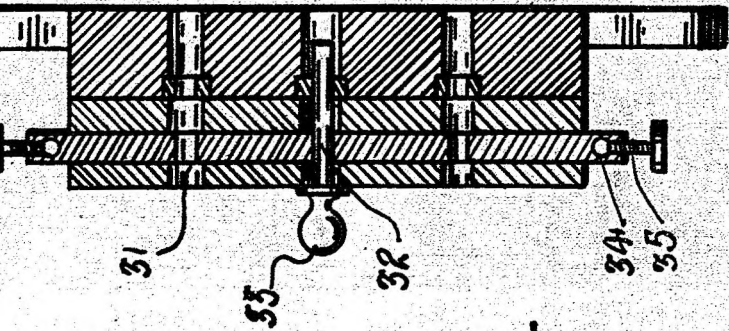


Fig-3-

Certified to be the drawings referred to
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 Ottawa, June 16th, 1926.

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What is claimed is:-

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1. An electric artificial rainmaking and weather regulating apparatus including opposed lightning rod and charge diverting members; a source of electric energy; electric connections and circuit changers between said members and said source of electric energy; spaced towers supporting said members; accumulating and storage batteries connected with said circuit changers; grounding means leading from said circuit changers; lightning protectors in the path of said grounding means; and quartz mercury vapor lamps mounted for operation on said towers.
2. An electric artificial rainmaking and weather regulating apparatus including spaced towers insulated from the ground; a source of electric energy; an insulation panel adapted to be located in a protected operators housing spaced from said towers; circuit changers mounted on said panel; connections from said source of electric energy to said circuit changers; a rectifier within the path of said connections; diverging lightning rod and charge diverting members carried on and insulated from said towers; separate electrical connections from each of said members to said circuit changers; accumulating and storage batteries; electrical connections between said batteries and said circuit changers; grounding means leading from said circuit changers to a grounding well at a distance from the operators housing; adjustable lightning protectors in the path of said grounding means; and quartz mercury vapor lamps operable on said towers.
3. An electric artificial rainmaking and weather regulating apparatus including spaced towers insulated from the ground; a source of electric energy; an insulation panel adapted to be located in a protected operators housing spaced from said towers; circuit changers mounted on said panel; connections from said source

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of electric energy to said circuit changers; a rectifier within the path of said connections; diverging lightning rod and charge diverting members carried on and insulated from said towers; separate electrical connections from each of said members to said circuit changers; accumulating and storage batteries; electrical connections between said batteries and said circuit changers; grounding means leading from said circuit changers to a grounding well at a distance from the operators housing; adjustable lightning protectors in the path of said grounding means; quartz mercury vapor lamps operable on said towers; said circuit changers including spaced, insulated vertical and horizontal bars crossing one another and provided with openings in their crossed insulated portions to receive circuit closing pins and a plurality of pins for insertion in said openings to electrically connect the selected crossed bars and thus complete circuits over predetermined pairs of said lightning rod and charge diverting members and thus change the circuits through said circuit changers as desired and according to conditions for proper operation of said apparatus.

4. An electric artificial rainmaking and weather regulating apparatus including opposed lightning rod and charge diverting members; a source of electric energy; electric connections and circuit changers between said members and said source of electric energy; spaced towers supporting said members; accumulating and storage batteries connected with said circuit changers; grounding means leading from said circuit changers; lightning protectors in the path of said grounding means; quartz mercury vapor lamps mounted for operation on said towers; said circuit changers including spaced, insulated vertical and horizontal bars crossing one another and provided with openings in their crossed insulated portions to receive circuit closing pins; and a plurality of pins for insertion in said openings to electrically connect the selected

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crossed bars and thus complete circuits over predetermined pairs of said lightning rod and charge diverting members and thus change the circuits through said circuit changers as desired and according to conditions for proper operation of said apparatus.

5. An electric artificial rainmaking and weather regulating apparatus including opposed lightning rod and charge diverting members; a source of electric energy; electric connections and circuit changers between said members and said source of electric energy; space towers supporting said members; accumulating and storage batteries connected with said circuit changers; grounding means leading from said circuit changers; lightning protectors in the path of said grounding means; quartz mercury vapor lamps mounted for operation on said towers; said lightning rod and charge diverting members for each tower consisting of a plurality of bars having conical upper free ends while their lower ends are secured to an insulation block at the top of the tower; one of said members being directed upwardly from the center of said block while the other members are directed outwardly and upwardly from the sides of the block at angles of about 45° ; all of said members being insulated to within a short distance from the free upper ends thereof to prevent jumping of electric sparks or chargers to the frame work of the tower; said lightning protectors being adapted to be adjusted and regulated to protect the apparatus from lightning charges and having electric connections with the various circuits leading through said circuit changers.

6. An electric artificial rainmaking and weather regulating apparatus including spaced towers insulated from the ground; a source of electric energy; an insulation panel adapted to be located in a protected operator's housing spaced from said towers;

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circuit changers mounted on said panel; connections from said source of electric energy to said circuit changers; a rectifier within the path of said connections; diverging lightning rod and charge diverting members carried on and insulated from said towers; separate electrical connections from each of said members to said circuit changers; accumulating and storage batteries; electrical connections between said batteries and said circuit changers; grounding means leading from said circuit changers to a grounding well at a distance from the operators housing; adjustable lightning protectors in the path of said grounding means; quartz mercury vapor lamps operable on said towers; said lightning rod and charge diverting members for each tower consisting of a plurality of bars having conical upper free ends while their lower ends are secured to an insulation block at the top of the tower; one of said members being directed upwardly from the center of said block while the other members are directed outwardly and upwardly from the sides of the block at angles of about 45°; all of said members being insulated to within a short distance from the free upper ends thereof to prevent jumping of electric sparks or changers to the frame work of the tower; said lightning protectors being adapted to be adjusted and regulated to protect the apparatus from lightning charges and having electrical connections with the various circuits leading through said circuit changers.

7. An electric artificial rainmaking and weather regulating apparatus including spaced towers insulated from the ground; a source of electric energy; an insulation panel adapted to be located in a protected operator's housing spaced from said towers; circuit changers mounted on said panel; connections from said source of electric energy to said circuit changers; a rectifier within the path of said connections; diverging lightning rod and charge diverting members carried on and insulated from said towers;

separate electrical connections from each of said members to said circuit changers; accumulating and storage batteries; electrical connections between said batteries and said circuit changers; grounding means leading from said circuit changers to a grounding well at a distance from the operator's housing; adjustable lightning protectors in the path of said grounding means; quartz mercury vapor lamps operable on said towers; said circuit changers including spaced, insulated vertical and horizontal bars crossing on another and provided with openings in their crossed insulated portions to receive circuit closing pins and a plurality of pins for insertion in said openings to electrically connect the selected crossed bars and thus complete circuits over predetermined pairs of said lightning rod and members and thus change the circuits through said circuit changers as desired and according to conditions for proper operation of said apparatus; said lightning rod and charge diverting members for each tower consisting of a plurality of bars having conical upper free ends while their lower ends are secured to an insulation block at the top of the tower; one of said members being directed upwardly from the center of said block while the other members are directed outwardly and upwardly from the sides of the block at angles of about 45° ; all of said members being insulated to within a short distance from the free upper ends thereof to prevent jumping of electric sparks or charges to the frame work of the tower; said lightning protectors being adapted to be adjusted and regulated to protect the apparatus from lightning charges and having electric connections with the various circuits leading through said circuit changers.

8. An electric artificial rainmaking and weather regulating apparatus including opposed lightning rod and charge diverting

members; a source of electric energy; electric connections and circuit changers between said members and said source of electric energy; space towers supporting said members; accumulating and storage batteries connected with said circuit changers; grounding means leading from said circuit changers; lightning protectors in the path of said grounding means; quartz mercury vapor lamps mounted for operation on said towers; said circuit changers including spaced, insulated vertical and horizontal bars crossing one another and provided with openings in their crossed insulated portions to receive circuit closing pins; and a plurality of pins for insertion in said openings to electrically connect the selected crossed bars and thus complete circuits over predetermined pairs of said lightning rod and charge diverting members and thus change the circuits through said circuit changers as desired and according to conditions for proper operation of said apparatus; said lightning rod and charge diverting members for each tower consisting of a plurality of bars having conical upper free ends while their lower ends are secured to an insulation block at the top of the tower; one of said members being directed upwardly from the center of said block while the other members are directed outwardly and upwardly from the sides of the block at angles of about 45° ; all of the members being insulated to within a short distance from the free upper ends thereof to prevent jumping of electric sparks or charges to the frame work of the tower; said lightning protectors being adapted to be adjustable and regulated to protect the apparatus from lightning charges and having electric connections with the various circuits leading through said circuit changers.

This invention has relation to certain new and useful improvements in an electric artificial rainmaking and weather regulating apparatus and has for its primary object the provision of an electric apparatus for causing artificial rain and electric storms and otherwise effecting and regulating local weather conditions for the purposes of encouraging farming and preventing grain rust by agitating the air to dry the grain after a shower or rain fall in localities where the natural and local weather conditions make it difficult to follow such callings, due to lack of rain, moisture and light winds.

Another object of the invention resides in the provision of an apparatus of this character which is distinctly an advance in science and electric technique and which may be readily controlled by the party in charge to effectively bring about artificial thunderstorms and rain and otherwise, to considerable extent, affect or control and regulate the weather conditions to the benefit of those residing in the community.

A further object of the invention resides in the provision of an apparatus of the character stated including the use of a quartz mercury vapor lamp on the towers, the entire apparatus being comparatively simple in construction and operation, inexpensive compared to the benefits derived and of such construction that it may be readily manufactured and the parts assembled without great difficulties and then completely controlled by a single operator in a protected housing in which the operator will be completely insulated and protected from the strong electric currents passing over the conductive parts of the apparatus.

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The invention has for a further object, the provision of an apparatus of the character stated including towers from which suitable lightning rods are extended at appropriate angles and connected on the top of the towers to direct properly charges of electricity so as to electrify the clouds passing between two of the towers, the lightning rods being connected separately with the circuit closers through insulated conduits or cables to assure proper operations of the apparatus for the best results.

A still further object of the invention resides in the provision of an apparatus of the character stated in which several separate circuits are included and a number of towers, any two of which may be brought into use, as desired and also in which apparatus is included storage batteries or accumulators for receiving and storing or accumulating electric energy from the atmosphere or clouds and also provision for directing excessive electric atmospheric charges through a ground well so as to eliminate danger of damage to the apparatus and the operator during electric storms on operation of the apparatus.

With the foregoing and other objects in view, as will appear as the description proceeds the invention consists of the novel construction, combination and arrangement of co-operating elements, as hereinafter more specifically set forth, claimed and shown in the accompanying drawings forming a part of the present application and in which:

Figure 1 is a diagrammatic view of one unit of the apparatus.

Figure 2 is a detail perspective of one of the lightning-conductor -circuit-changers.

Figure 3 is a transverse section, substantially on the ²⁷⁰⁰¹⁷plane of line 3--3 of Figure 2, looking in the direction indicated by the arrows.

Figure 4 is an enlarged detail of one of the lightning protectors.

Figure 5 is an enlarged detail view, showing the top of one of the towers with the mounting of the lightning rods thereon.

Referring more in detail to the drawings in which similar reference characters designate corresponding parts throughout the several views, it is to be noted that the invention is made of different units one of which is illustrated diagrammatically in Figure 1 and includes 2 towers 11 and 12 which are preferably located about six hundred meters apart and mounted on appropriate bases 13 formed of concrete or other electric insulating material. The towers 11 and 12 may be of metallic angle irons, as indicated in the drawings, particularly Figures 1 and 5 or of any other suitable construction.

An appropriate protecting housing, not shown, is to be provided some distance from the towers 11 and 12 for the operator and within one of the rooms of the housing is to be located the insulation mounting panel 14. This may be secured on a wall of the room, as by the mounting screws 15 shown in Figure 1 at the corners of the panel 14. The panel 14 serves to support all of the parts and mechanism of the lightning conductor circuit changers, as will be later more specifically described.

The source of alternating electric current 16 for the apparatus may be in the form of a generator, dynamo, or the like.

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like and has connected therewith the current conducting wires 17 leading to the opposite terminals of the part 18 of the induction coil between the main or primary circuit and the second or inducted circuit, as will be later understood from the description taken in conjunction with the drawings. The other section 19 of the induction coil is opposite and opposed to the section 18, as shown in Figure 1. The wire sections 20 and 21 from the terminal of the section 19 connect with the rectifier 22 having the negative and positive wires 23 extended therefrom and serving as the main conducting wires for the second or inducted circuit which supplies the current or electric energy through the lightning conductor circuit changers to the pair of electric charge emitting or lightning rods on the towers 11 and 12 selected by manipulation of the lightning conductor circuit changer which will now be described in detail.

There is a complete lightning conductor circuit changer mechanism for use in connection with each of the towers 11 and 12. By referring to Figures 2 and 3 of the drawings, it will be seen that each lightning conductor circuit changer includes a base block 24 having perforated ears 25 by means of which it may be readily fastened on the outer face of the panel 14. A series of horizontal metallic bars 26 are secured in channels 27 provided in the outer face of the base block 24. The outer block 28 is secured on the base block 24 and provided with vertical pockets 29 in which rest the vertical metallic bars 30. The pockets 29 are located in the center of the block 28 so that the vertical bars 30 cross the horizontal bars 26 but are spaced and insulated from the latter, as shown clearly in Figure 3. The arrangement and spacing of the bars 26 and 30 may be clearly

seen in Figure 2. It will also be seen from Figures ²⁷⁰³¹⁷ 2 and 3 that pin receiving openings 31 are provided ^{through} the blocks 24 and 28 and also through the bars 26 and 30 at each crossing or intersections of the bars 26 and 30, the openings 31 being smaller through the bars 26 and 30 and through the blocks 24 and 28, so that the circuit changing pins 32 may be firmly engaged with the walls of the openings through a selected crossed pair of bars 26 and 30, as shown in Figure 3 and the pin 32 readily inserted or removed, as desired. A suitable insulated handle 33 made of porcelain or the like may be provided for the pin 32. As shown in Figures 2 and 3, the bars 26 and 30 are of such a length that their ends project from the blocks 24 and 28 and are provided with wire receiving openings 34 and binding screws 35 or other appropriate means by which wire terminals may be securely fastened thereto.

The wires 23 have their terminals secured to the outer ends of the uppermost horizontal bar 26, as shown in Figure 1 connected to the outer ends of the intermediate or second horizontal bar 26 or the terminals of the positive and negative wires 36, each of which leads to one pole or terminal of one of the pair of accumulating storage batteries 37. Which in turn have respectively negative and positive wires 38 leading from their other poles or terminals and connecting with one member 39 of a two way switch, the members 40 and 41 of which are opposed to and spaced from the member 39. Connection may be made between the member 39 and either the member 40 or 41 of the two way switch and the switch thus closed, through the removable switch key 42.

Current conducting wires 43 lead from the switch members 40 to quartz mercury vapor lamps 44 mounted by suitable means 45,

on insulation blocks 46 carried in the top of the towers 27 and 12, Choke coils 47 and resistance coils 48 are provided in the path of the wires 43. Current conducting wires 49 are also extended from the quartz mercury vapor lamps 44 to the wires 36 so as to complete the circuit through the batteries 37 and the quartz mercury vapor lamps 44. Current conducting wires 50 also extend from the members 41 of the two way switch so that the electric energy accumulated and stored in the batteries 37 may be utilized for other purposes, if desired, by connecting the members 41 with the switch member 39, through use of the switch key 42.

The lowermost horizontal bars 26 have connected to their outer ends the grounding wires 51 which extend into and are grounded in the well 52 located an appropriate distance from the operators housing. Leading from the other ends of the last mentioned bars 26 are the wires 53 connecting with switch members 54. Wires 55 also extend from the corresponding ends of the second or intermediate horizontal bars 25 and connect with switch members 56. Opposed to the switch member 54 and 56 are the double switch members 57 for each section of the lightning conductor circuit changers. A suitable switch key 58 may be employed to connect either of the switch member 54 or 56 with the double switch member 27 opposed thereto. A wire 59 leads from each double switch member 57 to the lower adjustable or movable member of a lightning protector, one form of which is disclosed in detail in Figure 4 and which will be later described in detail. Extending from the upper or stationary members 61 of the lightning protector is a wire 62 which has branches 63 connected with the lower extremity of the vertical metallic bars 30, as shown in Figure 1, diagrammatically.

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By referring to Figure 4, it will be seen that the members 60 and 61 of each lightning protector have their opposed faces serrated or corrugated and the member 60 is adjusted with respect to the member 61 by means of the adjusting screw 64 threaded through the supporting bracket 65 which has a turned edge 66 adapted to be secured on the insulating panel 14. An appropriate insulation head 67 is carried by the screw 64. Turning of the member 60 is prevented by the guide pins 68 and 69 depending therefrom and then through openings 70 in the bracket 65. The guide pin 69 is also preferably graduated to indicate the adjustment of the member 60 with respect to the member 61 of the lightning protector, so that proper adjustment may be made, according to conditions and thus prevent passage of sparks across the gap or space between the members 60 and 61 unless there should be an excessive electric charge, such as a flash of lightning which would then pass over the lightning protector and then to well 52, by way of the wires 51, as may be later more clearly apparent.

Extended from the upper ends of the vertical metallic bars 30 are the current conducting wires or cables 71, which are insulated and may be termed high power conducting wires. There are five bars 30 for each section or circuit changer and therefore five of the wires or cables 71 extending therefrom to one of the towers of the unit of the apparatus, as disclosed in this application. After being mounted on suitable electric insulation pins 72 on the frame work of the towers 11 or 12, as shown in Figures 1 and 5, Four of the wires or cables 71 are each connected respectively with one of the four diverging electric charge conductors or diverters 73, mounted on the insulation block 46 at the top of the tower, while the fifth wire or cable

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71 is connected with the vertical upwardly directed conductor or diverter 74. It will be seen clearly from Figure 5 that all of the conductors or diverters 73 and 74 are preferably in the form of round bars having tapered or conical free ends 75. The lower ends 76 of the conductors or diverters 73 are shown as being turned at an angle, flattened and securely fastened on the sides of the insulation block 46, the main portions of the conductors or diverters 73 being directed upwardly and outwardly therefrom at angles of approximately 45 degrees; the conductor or diverter 74 being mounted on and extending upwardly from the center of the insulation block 46 and designed to serve as a lightning rod.

It is believed the complete construction and operation of the apparatus may now be apparent from the foregoing paragraphs taken in connection with the accompanying drawings without further detail description. The operation may be briefly set forth, however, as follows:

Each lightning conducting circuit changer is provided with six circuit changing pins 32 which may be readily changed from one position to another to cause proper operation of the apparatus thus completing the necessary circuits or the necessary circuits over the various insulated wires or cables connecting with the bars 26 and 30. The production of a rain takes place, in lowering atmospheric pressure, when clouds are forming, when it is calm or when the air currents are very weak, in dry weather and only in full summer, at a temperature of 18° Celsius in the shade and upward. Measured by conditions in Austria, the application may best be made within the time from the 20th, of May to the end of August or corresponding to the period of time when ice is used. To obtain the best results from use of this apparatus for producing artificial rain the weather conditions

and the temperature of the localities where the apparatus should be used must correspond to such conditions and temperatures as exist in Austria.

When a cloud (ash-gray) containing water about 0'6 meters in extent measured standing from below appears above or in the vicinity of both towers, or reaches the zone enfiladed by the most favourably situated pair of lightning rods, this cloud can be enfiladed with its own high tension from such pair of lightning rods or charge diverters 73 and thereby compelled to discharge as a rain fall. Both of the towers 11 and 12 may be provided each with a quartz mercury vapor lamp for facilitating the discharge of the clouds, the lamps receiving the energy for lighting from the accumulator or storage batteries 37. The lamps 44 when operated result in the air between the cloud and the lightning rods 73 becoming more conductive and thus assist in the closing or completing of the circuit, owing to the action of the ultra-violet rays of light from the lamps 44 on the air. The discharge of the attacked cloud takes place on the basis of the attraction and equalization of the charges of a different character in the form of a flash. If the cloud is sufficiently charged, i. e. if the attraction of the charges of a different character becomes so strong that they are able to overcome the resistance of the dry air, the flash follows and forces its way through the dry air upon the discharged lightning rods, resulting in thunder and concussion of the air towards the earth, that is to say in the direction of the discharged lightning rods. The attacked and discharged cloud will, through successive flashes be torn to the earth, thickening and condensing small drops, which form and through their moisture, the cloud becomes heavier and thicker until it completely dissolves in a violent rain. When a cloud attacked i. e. enfiladed with its own high tension fails to discharge, it can be

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accepted that the cloud is not sufficiently charged to force ²⁷⁰⁰¹⁷ its way through the dry air. When the last mentioned case happens, the attack upon the cloud must be repeated until eventually the next cloud is attacked i. e. enfiladed with electricity until it begins to rain. Artificial rain production is generally not practicable when the sky is completely overcast. It will be apparent, however, that when this apparatus is operated, a decrease in the temperature or cooling of the atmosphere will be brought about as the result of the production of an artificial thunder storm with or without the production of rain.

With consideration for the parts of the apparatus and also the best safety of the operator two or more clouds should not be attacked simultaneously and therefore should be avoided. When one cloud has passed the first lightning rods without discharging it should be then attacked with other pairs of lightning rods that are in range. These attacks on the cloud should be repeated after short intervals until the rain begins to fall. Operation of the apparatus as described can even lead to a cloud burst when the temperature is high, the air sultry, rapidly sinking atmospheric pressure, the cloud extended and thick. A general rain could be produced by erecting and operating a number of the units of the apparatus at a distance of 75 to 100km. from each other and operating them properly. The production of an artificial rain could be accomplished in a time of extended dryness and drought beyond the wish of the husband man (farmer) for the encouragement of farming.

It should now be apparent that this apparatus serves to regulate the weather conditions as well as causing rain. There is a possibility at times and under certain conditions when there is a long continued cloudiness of quickly scattering the clouds and thus permitting the sunshine to be appreciated

again and the temperature raised as a result thereof. 270017
instance, with the atmospheric pressure rising, after the production of an artificial thunder storm as previously described, the cloud being discharged will be broken up, resulting in scattering of the other clouds till the same become invisible and the overload of the clouds result in a rain. With lowering atmospheric pressure as a result of the emptying of the clouds of rain up to an effective radius from the towers of the apparatus, the sky also clears rapidly, thus letting through the sun rays to dry the ground and grain growing therefrom and quickly raising the temperature.

The lightning collected in artificially produced thunder storms will be conducted over the wires 36 to the batteries 37, by proper manipulation of the pins 32 and stored up by the batteries 37. This gathered atmospheric energy will be known as blue coal and can be used profitably for farming purposes.

It may here be stated that the towers 11 and 12 may have steps or rungs provided thereon and may be also made adjustable for adjustment according to circumstances or the wish of the operator. Furthermore, all of the conducting wires or cables and other parts over which electric currents or lightning charges may pass, must be thoroughly insulated and this also applies to the lightning arresters or charge diverters 73 and 74, which should be insulated to an appropriate position near the free ends or points thereof so as to prevent jumping of the sparks or charges from the lightning arresters or charge diverters 73 and 74 to the metallic frame work of the towers.

While the preferred embodiment of the invention has been disclosed, it is to be understood, that minor changes in the

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details of construction and arrangement of parts may be resorted to, within the scope of the appended claims, without departing from the spirit of the invention: