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COMPLETE SPECIFICATION.

System for the Generation of Electric Currents.

I, CARLOS F. BENITEZ, Civil Engineer, 141, Ocampo Street, Guadalajara, Mexico, 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:—

5 The invention relates to a new process for obtaining electric currents, under unusually simple, economic and practical conditions.

I use synthetically in combination: Apparatus or appropriate means, for the production of electric currents for charging one or several condensers, whose collectors or inner coatings, are connected to one of the terminals of the primary
10 circuit of one or several induction coils, and the other coatings of same said condensers are alternately grounded through the primary of same transformer, or connected through same said primary, to the above stated collectors; appropriate means for the collection of the currents produced by the secondary of these transformers and for their application to charging the above stated
15 collectors and appropriate means for discharging said collectors thus recharged, and for the application of its energy, in whole or part, to the successive reproduction of the operations already described, increasing in this way the generation of electric energy or maintaining a constant predetermined production.

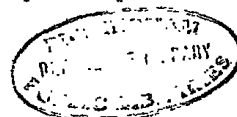
Furthermore, the invention consists of a new combination of parts from which
20 are derived advantages that will be fully understood by the consideration of the two different cases illustrated in the accompanying drawing, in which:

In the figure, 1, is a battery of condensers; 2, a rotative commutating apparatus for establishing and interrupting in due time the connections between the several circuits of the system. 3, is the primary circuit of an induction
25 coil or transformer. 4, the secondary of same transformer. 5, a second battery of condensers. 6, an oscillator spark-gap. 7, is the primary of a second transformer. 8, is the secondary circuit of same transformer. 9, is a third battery of condensers. 10, is the primary of a third transformer. 11, its secondary. 10, is a fourth transformer. 11, is a series of incandescent lamps. 12, is an
30 electric motor. (a), (b), (c), (d), (e), (f), are mercury-vapor converters or cathodic valves, affording passage to the electric currents only in the direction shown by the arrows.

The battery 1, of condensers is connected by its inner coating and by means of conductor 13, to an adequate source of electric currents, affording a
35 preliminary feeding to said battery, that will be the basis for running the system, and by means of switch 14, said communication can be secured or interrupted at will.

Conductor 15, connects the inner coating of same battery 1, with poles 16—17, of the commutating apparatus; and pole 18, of this apparatus is connected by
40 means of wire 19, with one of the terminals of primary 3, of the transformer, whose other terminal is connected by conductor 20, to the outer coating of battery 1. Secondary 4, of the same transformer, communicates respectively by each one of its poles, and by means of wire 21, and 22, with the inner and outer coating of the second battery of condensers 5; and in the same manner
45 wires 23, and 24, connect same said coatings, to both poles of primary 7, of the

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second transformer. Wire 23, is provided with the oscillator spark-gap 6, and in the conductors 21, 22, 25, 26, and 72, are placed the above mentioned cathode-valves (a), (b), (c), (d), (e), (f). Secondary 8, of this second transformer connects by each one of its terminals to the inner coating of battery 9, whose outer coating is constantly grounded through primary 70, of the third trans- 5
former. Secondary 71, of this transformer communicates in the same manner to the inner coating of battery 9, by means of wire 72. Furthermore the conductors 27, and 28, connect said inner coating with poles 29 and 30, of the commutating apparatus, whose pole 31, by means of wire 32, is connected to the inner coating of battery 1. Switches 33, and 34, afford facilities for securing 10
or interrupting communications with the primary of transformer 10, whose secondary will supply current to the incandescent lamps 11, and motor 12. Finally, one of the terminals of primary 3, is connected by means of conductor 35, to poles 36—37, of the commutator; and pole 38 is grounded by means of wire 39.

As the construction and operation of all these apparatus, with the exception 15
of the commutator is perfectly understood, it would be useless to give their description. Commutator 2, is provided with a tank 40, whose lateral walls 41, and 42, support the terminals of bridge 43, and the rotative shaft 44, provided respectively with their corresponding pillow-blocks. In bridge 43, made of 20
non conductive substance, are invariably fixed the strips of copper, or brushes 16, 17, 18; 36, 37, 38; 29, 30, 31, whose contact with the three cylinders that can be seen in the figure, is assured by means of lever 47, and weight 48. These three cylinders placed in said shaft 44, are also made of non-conductive 25
substance, and furthermore are transversally encircled in their centers with a copper strip provided with two longitudinal teeth of the same material, and arranged in diametrically opposed ways in such a manner as to secure and interrupt successively the electric communication between each one of the external brushes and that of the center. On the other hand, the central cylinder 30
has its longitudinal teeth out of the line with those corresponding to the remaining cylinders, as can be clearly seen in the figure; speaking in other terms when the communication is secured in the central cylinder, it is interrupted in the outer cylinders and *viceversa*. Shaft 44, is furthermore elongated, by having one of its ends pass through lateral wall 42, of tank 40, in order to be rotated by means of a belt 45 or the like driven by the motor 12, or with crank handle 46. Tank 40, is arranged to contain oil or any other insulating liquid, in order to 35
prevent the electric-sparks jumping from one brush to the other, that would secure short circuits, thus impairing the efficiency of the system.

The manner of running this system would be as follows: With the commutator-cylinders located as shown in the figure, that is to say securing communication between brushes 36—38, and 30—31, and supposing battery 1, connected by 40
means of wire 13, to a source of electric currents, (one electro-static machine. Wimshurst, for instance); switch 14, being closed, the electric currents would pass through said wire 13, charging battery 1. Therefore the neutral fluid of the outer coating of said battery is influenced through its dielectric and an induced electric current would flow through wire 20, primary 3, conductor 35, 45
brushes 36—38, escaping to earth by conduit 39. The passage of this current through primary 3, will cause in secondary 4, a new inverse induced current passing through conductor 21, and charging the second battery 5; and next a direct induced current passing through conductor 22, and collected by the outer coating of same battery 5. In consequence of these accesses of electricity to 50
both coatings of said battery, a series of electric induced currents, will be produced through primary 7, of the second transformer, which being intercepted by spark-gap 6, will cause in secondary 8, an unnumbered quantity of high-frequency currents which flowing through wires 25, and 26, provided with their respective valves (c), (d), will be stored by the collector of the third battery 9. 55
For the same reasons and as a consequence of the electric charge thus obtained by this collector, a corresponding series of electric currents of same frequency;

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would flow from the exterior coating of said battery that passing through primary 70, of the third transformer, will in the same manner produce in secondary 71, a new series of induced currents, that flowing through conductor 72, would yet increase the electric charge of collector 9.

- 5 Therefore battery 1, being charged by proper means, battery 9, will be charged indirectly and successively re-charged several times by itself; storing at last a quantity of electricity quite superior to that of battery 1.

By such means, the system can be fed by itself, the source of electric currents employed for its starting being unnecessary, and therefore switch 14, can be
10 opened. Thereafter by means of crank-handle 46, shaft 44, of the commutating apparatus is turned a quarter of a revolution, until the circuit be closed between brushes 17—18, and at the same time opened between 36—38, and 30—31. In other terms, in this instant both coatings of battery 1, will be totally discharged through primary 3, of first transformer, producing a strong current through
15 said primary, and therefore will flow in secondary 4, new induced currents that for the reasons already given, will recharge newly the already mentioned battery 9.

By so doing battery 1, will be totally discharged and battery 9, has a great quantity of electricity. Therefore if at this moment switch 33, is closed, and
20 shaft 44, is turned another quarter of a revolution, the following results will be attained.

1. Connections between brushes 17—18, will be reopened.

2. All other connections will be reestablished to former conditions, that is to say: The external coating of battery 1, will be grounded again through
25 brushes 37—38, and the inner coatings of batteries 9, and 1, will be both connected through brushes 31—29.

3. In consequence of this connection a part of the electricity of battery 9, will be discharged over the collector of battery 1, producing thus an electric current through wire 32.

30 4. The flow of this part of electricity from battery 9, sets free immediately on the exterior coating of same battery 9, an equal quantity of negative electricity, and the said coating being constantly grounded through primary 70, will said flow of electricity cause a new current through said primary.

5. In consequence of said current, new induced currents would flow in the
35 secondary, which will be stored now in the collectors of both batteries 9, and 1. Therefore the results already given will be again repeated, and the electric currents through wire 32, will be considerably reinforced.

6. On the other hand battery 1, having been newly charged, new quantities of electricity will pass through primary 3, causing new induced currents, which as
40 the former ones being stored by the collectors of both batteries 5, and 9, will produce successively identical results.

By the foregoing description it is obvious, that if shaft 44, of the commutator is again turned another quarter of a revolution, connections will be established between brushes 16—18, and all other circuits will be opened. Therefore
45 battery 1, will be again discharged and the facts already explained, will be successively repeated if shaft 44, is continually turned.

Thus by the system above described, will be obtained a constantly increasing production of electric currents through wire 32, and it is easy to believe that once this production of electricity be deemed sufficient, switch 34, can be closed
50 and thence a part of said currents can be directed through transformer 10, thus obtaining the running of motor 12, and the turning of shaft 44.

In other words, the system so arranged will run indefinitely, without any exterior help, being automatically fed by itself, and furthermore producing an excess of energy that can be applied at any moment to any desired object, by
55 means of transformers duly connected to wire 32.

Without employing the high-frequency currents, as formerly explained, similar results may be attained by means of the arrangement shown in the lower

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right-hand side of same drawing and in which: Primary 50, of the transformer would be connected as shown by the dotted lines respectively with wires 19, and 20, of the former arrangement, and conductors 53, with wires 27 and 28. In other terms, said primary 50, being connected by its terminal 51, with wire 20, will remain in constant communication with the external coating of battery 1, and its other terminal 52, being connected with wire 35, will be intermittently grounded. Conduit 53, being connected to wires 27, and 28, of the former arrangement, will intermittently connect the collectors of both batteries 54 and 1.

Referring now to this new arrangement, it may be seen that both terminals of secondary 55, are connected respectively to the cathodic-valves 56, and 57, which allow the flow of electricity in the direction shown by the arrow and said valves are connected to wire 53. On the other hand the exterior coating of battery 54, communicates permanently with one of the terminals of primary 58, of a second transformer, whose other terminal is grounded. Secondary 59, of same transformer, is also connected by both terminals with the already mentioned wire 53, and in the same manner is provided with valves 60, and 61.

In these conditions, if battery 1, is charged, said charge will set up immediately in the outer coating of said battery, an induced current which flowing through wire 20, and primary 50, will go to the ground through conductors 35, and 39, and as a result of this discharge, new induced currents will be caused in the secondary 55, that will be stored by the collectors of both batteries 1, and 54, as in this moment the circuit is closed between brushes 29—31, and thereby wire 53, communicates with 32. Receiving these new charges each one of both batteries 1, and 54, will set up in the same manner new induced electric currents which flowing respectively through primaries 50, and 58, of both induction coils, will produce a new effect over their corresponding secondaries affording a new charge to both batteries which in this way will increase progressively their storage. Notwithstanding said electric charges have to decrease from one to another until they are of no importance at all, and at this moment, owing to the turning of shaft 44, the connection between brushes 29—31, and 36—38, will be interrupted, and next secured between brushes 18—17. By so doing terminal 52, being connected with wire 19, battery 1 will now be discharged through conduit 15, brushes 17—18, wire 19, primary 50, and conductor 20; that is to say, a very strong discharge will flow through said primary 50, and thereby new electric induced currents will again be produced in secondary 55, which will now be all stored in the collector of battery 54, since wire 53, is disconnected from conductor 32. On the other hand battery 54, being newly charged will immediately set up on its outer coating new induced electric currents that will get grounded through primary 58, causing thus new induced currents in secondary 59, that once more will recharge said battery 54, producing successively the same results as formerly explained. Finally battery 54, will be stored with a big quantity of electricity that will pass to the collector of battery 1, when by the running of shaft 44, the connections between brushes 17—18, may be interrupted, and secured between brushes 30—31 and 37—38. That is to say, the system will automatically be fed by itself as in the former arrangement, producing furthermore an excess of energy that can be applied in the same manner to any desired object.

I desire also to explain clearly, that the use of mercury-vapor converters or cathodic-valves as described, are not in any manner indispensable in the system; since said devices can be substituted by a proper arrangement of condensers, that in each case would receive separately the direct and inverse currents of secondaries.

The advantages of the system, the principles involved, and its method of operation, will now be easily understood by all those skilled in these matters, and while I have described said invention, showing two different cases that I considered preferable for illustration purposes, it is obvious to state that other

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arrangements, can be attained that would be useless to describe specifically, but that will be particularly pointed out in the following 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
5 what I claim is:—

In a system for the generation of electric currents;

1. In combination: Mechanisms or means for charging one or several condensers; mechanisms for utilising the induced energy of the external coatings of said condensers, produced during the charge of their collectors or interior
10 coatings; mechanisms or apparatus for recharging said collectors by means of the energy already described and produced by said exterior coatings; and means for discharging said collectors thus recharged and for the application of this discharged energy, in whole or part, to the successive reproduction of the above mentioned operations, increasing thus progressively the production of electric
15 energy, or maintaining a predetermined output.

2. In combination apparatus or means for charging one or several condensers connected to the primary of one or several transformers; said condensers and their connections being arranged for the production of oscillatory discharges through said primary or primaries; and means for the application of the energy
20 induced in the secondary of said transformers, in whole or part, to the charge of the same condensers, (primarily described), in order to increase progressively the production of electricity or to maintain a predetermined output.

3. In combination: Mechanisms or means producing electric currents for charging one or more condensers; one or several transformers with their
25 primaries connected by one of their poles with one of the coatings of said condensers, and their other terminals alternately connected with the other coating of said condensers, or grounded; a commutator apparatus suitably arranged for interrupting or securing the connections in the above stated manner; and means for the collection of the secondary currents produced in each one of the trans-
30 formers above mentioned, and for their application in whole or part to the feeding of the condensers already described, increasing thus progressively the production of electricity or maintaining a predetermined output.

4. Mechanisms or apparatus constructed, connected and operating substantially as herein described with reference to the accompanying drawings, and for the
35 purposes set forth.

Dated this Twentieth day of July, 1914.

CARLOS F. BENITEZ.

[This Drawing is a reproduction of the Original on a reduced scale.]

