

J. L. CREVELING.
ELECTRIC DISTRIBUTION.
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Fig. 1.

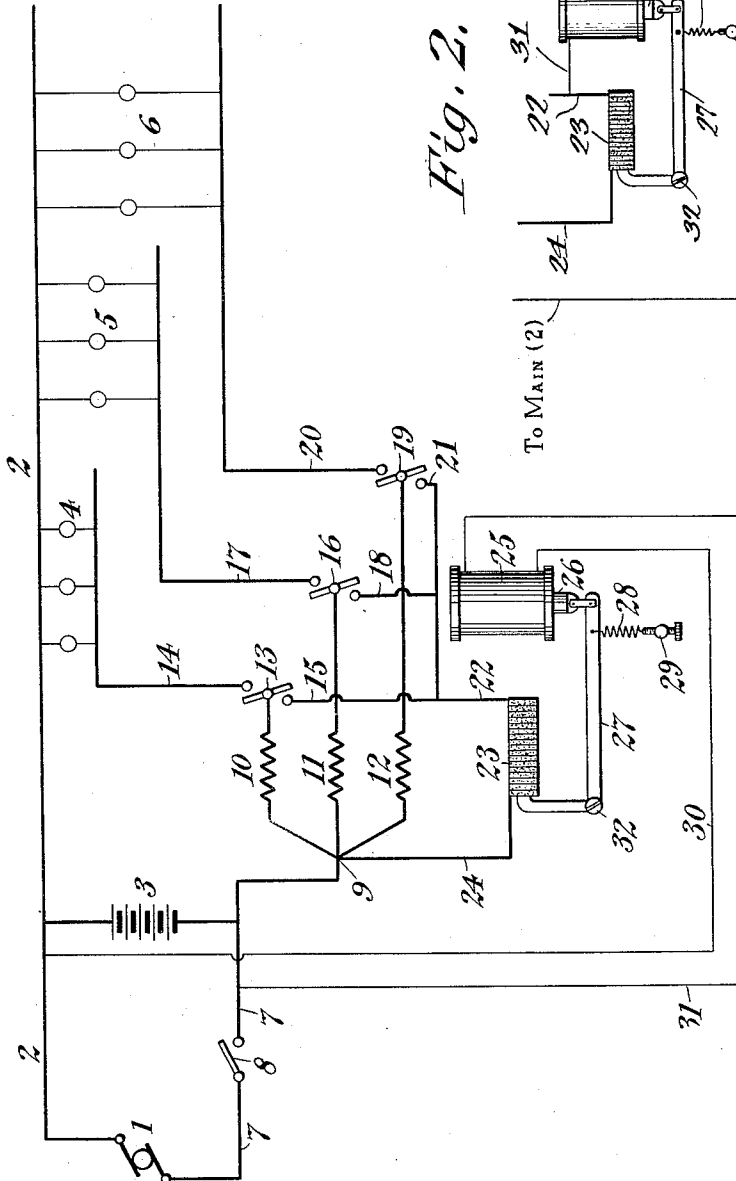
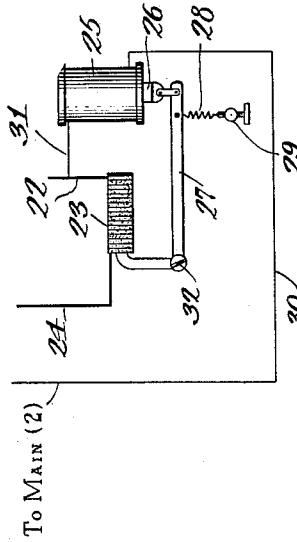


Fig. 2.



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To all whom it may concern:

Be it known that I, JOHN L. CREVELING, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Electric Distribution, of which the following is a specification, reference being had to the drawing forming a part thereof.

My invention pertains to that class of electric distribution in which the current supply is subject to variations in voltage, while the lamps or other translating devices in operative connection with the system are desired to be held at a practically constant voltage, regardless of the variations above mentioned.

My invention has for its particular object to provide means whereby a generator, driven at variable speed or for other reasons having a somewhat variable output, may be used in connection with a storage battery for supplying current to lamps or other translating devices upon which it is desired to impress a uniform voltage throughout variations in the voltage of the generator.

In the drawing Figure I represents a diagrammatic view of one type of system employing my invention. Fig. II represents a diagrammatic view of a slightly modified form of a portion of the system shown in Fig. I.

In the drawing, (1) represents any suitable type of dynamo or generator adapted to furnish current for the system. From one brush of the generator, the lead (2) is carried to one side of the storage battery (3) and to one side of the lamps or other translating devices indicated, in their respective groups, by (4) (5) and (6). From the other brush of the generator, the lead (7) is carried to the switch (8), thence to one side of the storage battery (3) and to the point (9), where it branches into a plurality of resistances indicated by (10), (11) and (12). The resistance (10) is connected with the switch (13), adapted when closed, to throw the resistance (10) in connection with the wire (14), communicating with one side of the lamps or other translating devices (4), and the wire (15). The resistance (11) is connected with the switch (16), closing of which connects the same with the wire (17), communicating with one side of the lamps or translating devices (5), and the

wire (18). The resistance (12) is connected with the switch (19) which, when closed, connects the same with the wire (20) communicating with one side of the lamps or translating devices (6), and the wire (21). The wires (15), (18) and (21) all lead to the wire (22), in series with which is placed the resistance device (23), in this instance indicated as of the ordinary carbon disk variety for sake of clearness, the other side of which, the wire (24) connects with the point (9). Thus it will be seen that if any of the switches (13), (16) or (19) be closed, one of the resistances (10), (11) or (12) will be in circuit with the translating devices controlled by the switch which is closed, also that the resistance device (23) will be in shunt to whichever resistance is cut in circuit with its translation devices by closing of its switch.

Any suitable means may be used for operating the resistance device (23) and, for sake of simplicity in the diagram, I have shown a solenoid (25), provided with a core (26) operating the lever (27) against the action of the spring (28), adjustment of which may be varied as by the screw (29), in such manner that motion given to the lever (27) will cause the same to swing upon its pivot (32) so as to increase or diminish the resistance of the device (23). The solenoid (25) may be connected across the battery as shown by wires (30) and (31) in Fig. I or may be thrown across the translation circuit by connecting the wire (31) with the wire (22) as shown in Fig. II.

The practical operation of my improvement in electric distribution, in a system as indicated in the accompanying drawing, (see Fig. I) is substantially as follows; starting with the generator at rest and the various instrumentalities in the respective positions shown in the drawing. If the generator be brought up to the required voltage, the switch (8) may then be closed and current will flow from the generator, through lead (2), to the storage battery and back to the generator, serving to charge the battery so that the same will be useful when the lamps or any other form of load is thrown upon the system. Current will also flow through the wire (30), solenoid (25) and wire (31) so as to tend to increase the resistance (23) to correspond with any increase in voltage across the battery (3), above the

normal. If the switch (13) be closed, current will flow from main (2), through the lamps or other translating devices (4), through wire (14), to the switch (13), where it will branch and part pass through the resistance (10), to point (9), and part through wire (15), wire (22) resistance (23) and wire (24), to point (9) and thence through switch (8) and wire (7) to the generator. Thus, it will be plain that variation in the resistance (23) may be caused, by operation of the solenoid (25), to compensate for a rise in voltage across the battery and hold the voltage constant across the translating devices (4), provided the shunt resistance (10) be properly chosen and the solenoid (25), spring (28) and resistance (23) be properly designed and adjusted. Now, if the switch (16) be closed, the lamps (5) will be thrown in circuit and then current will flow through the wires (17), switch (16), resistance (11), to lead (7), also from switch (16) through wire (18), through wire (22), resistance (23), and wire (24) to the lead (7), and the solenoid (25) will govern the resistance (23), operating to control the voltage on both groups of translating devices (4) and (5). If the lamps or translating devices (6) be thrown in, as by closing switch (19), current will then flow from these translating devices through wire (20), switch (19) and resistance (12) to lead (7) and from switch (19) through wire (21), wire (22), and resistance (23), to the lead (7), in such manner that now the solenoid (25), by varying the resistance (23), will govern the voltage upon the three translation circuits.

In practical operation I prefer usually, to make the resistances or shunts (10), (11) and (12) slightly greater than the maximum resistance that will ordinarily be required in series with the various groups of translating devices to compensate for any rise in voltage apt to occur across the battery. With this arrangement, very little current is carried through the resistance device (23), except at such times as the resistance of the same is very low, and then there is very little difference of potential across this resistance and very little heat to be dissipated and, it will be obvious that, as each group of translating devices is thrown upon the circuit, a shunt is automatically thrown around the regulating resistance (23) in such manner that the said resistance (23) does not have to carry the entire current on the translation circuit, nor does it have to have the wide range in carrying capacity that would be required if there were only a single shunt across the resistance (23) which did not vary with the load as the same is thrown on and off. Further it will be obvious that, if one group of translating devices be thrown on and the regulator has adjusted the resistance (23) for the prevailing

voltage across the battery and, if then another group of translating devices is thrown on with its respective shunt properly proportioned, very little change in resistance will have to be made in the device (23) to compensate for this extra load having been thrown on, inasmuch as this load is largely taken care of by the shunt thrown across the regulating resistance at the same time the load is thrown on.

Having thus described my invention what I desire to protect by Letters Patent is as set forth in the following claims, to wit:—

1. The combination with a source of current supply, a plurality of translation circuits and means for regulating the voltage upon said translation circuits, of means for diverting a part of the current in the translation circuits around said voltage regulating means and means for varying the current thus diverted, depending upon the number of translation circuits in use.

2. The combination with a source of current supply, a plurality of translation circuits and resistances placed in said translation circuits, of means for regulating the voltage upon the translation circuits, comprising a variable resistance in shunt to such of the above mentioned resistances as are carrying current in said translation circuits.

3. The combination with a source of current supply, a plurality of translation circuits and means for regulating the voltage upon said translation circuits, of a variable shunt, around said voltage regulating means, the resistance of which depends upon the number of translation circuits in operation.

4. The combination with a source of current supply, a plurality of translation devices divided into groups, automatic means for regulating the voltage upon said translating devices, comprising voltage regulating means having in shunt therewith a resistance, varying with the number of groups of translating devices in circuit.

5. The combination with a dynamo or generator, a storage battery and lamps or other translating devices divided into groups, of means for maintaining the voltage upon the translating devices constant throughout certain changes in the voltage of the generator, comprising means for inserting resistance in the translation circuits and automatic means for varying a resistance in shunt to the above mentioned resistance.

6. The combination with a generator, a storage battery and a plurality of resistances in connection with a plurality of translation circuits, of a shunt around said resistances and automatic means for varying the resistance of said shunt.

7. The combination with a generator, a

storage battery and a plurality of translation circuits, and means for inserting predetermined resistances in the said translation circuits of a shunt around such resistances as
5 are inserted and automatic means for varying the resistance of said shunt.

8. The combination with a generator, a storage battery and a plurality of translation circuits, and a variable resistance in cir-

cuit with the said translation circuits of a 10 plurality of shunts around said variable resistance, which shunts are thrown around the said variable resistance by closing of the respective translation circuits.

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