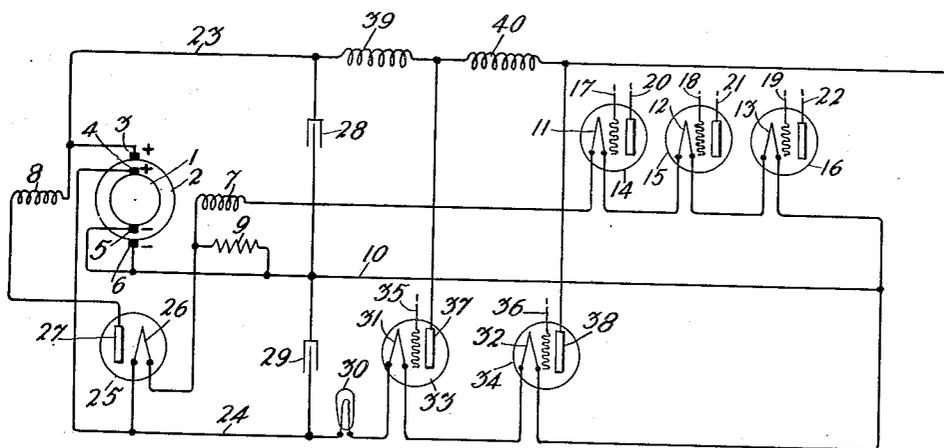


June 19, 1923.

1,459,422

H. M. STOLLER
ELECTRICAL SYSTEM
Filed Sept. 4, 1919



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UNITED STATES PATENT OFFICE.

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ELECTRICAL SYSTEM.

Application filed September 4, 1919. Serial No. 321,654.

To all whom it may concern:

Be it known that I, HUGH M. STOLLER, a citizen of United States, residing at New York city, in the county of New York, State of New York, have invented certain new and useful Improvements in Electrical Systems, of which the following is a full, clear, concise, and exact description.

This invention relates to electrical systems, and particularly to one in which electrical apparatus is supplied with power from a generator. A particular application may be the provision of power to a radio set in which thermionic devices are employed.

In systems where electrical circuits are supplied with power from generators it has been found that local disturbances in the generator set, such as "commutator ripples" will be transmitted to the line with detrimental results, especially in the transmission of signals in their true form. To eliminate these defects it has been customary to provide a separate filter between the generator set and the apparatus to which it is supplying power.

The object of this invention is to reduce the number of elements required in the above-mentioned apparatus below that heretofore used. This reduction results in a decided saving of weight and space which, in the case of aeroplane radio signaling is of extreme importance.

The invention comprises the use of a winding of the generator as an element of the filter, and, as a rule, the winding used is the main field winding. This eliminates the necessity for a separate filter box between the generator and other apparatus.

A form of system in which this improvement may be used is shown and described generally in the "Electric Journal" for May, 1919, on page 209, Fig. 10; page 211, Fig. 1, and page 213, Figs. 5 and 6, which system was used in wireless telephony adaptable for use on aeroplanes. In the set there shown a separate filter box is used. See page 211, Fig. 1.

The invention is illustrated in the drawing, which represents my invention in the form of a circuit diagram.

As illustrated in the drawing, the invention comprises an electrical generator having two separate armatures, 1 and 2 having suitable terminals 3, 4, 5 and 6. This generator is excited by means of a series main

field winding 7 and a differential field winding 8. The series main field winding 7 is in parallel with the resistance 9. This resistance is connected to the return wire 10 common to both armatures 1 and 2. The corresponding end of the series main winding 7 is connected in series to cathodes 11, 12 and 13 of a plurality of thermionic devices 14, 15 and 16. This series at its opposite end is connected to the common return wire 10. The thermionic devices 14, 15 and 16 are provided with control electrodes 17, 18 and 19 and anodes 20, 21 and 22 and may be receiving vacuum tubes used in a wireless telegraph or telephone set. The positive side of armature 2 is connected to a wire 23 leading to the wireless apparatus. The negative side of this armature is connected to the common return wire 10. This armature 2 has a winding of such a character as to develop a higher voltage than the winding of armature 1. The voltage generated by armatures 1 and 2 may, of course, be of any desired relation, but in the form shown in the above-mentioned periodical the low voltage winding of armature 1 is capable of generating a voltage of the order of 25 volts, whereas the high voltage winding of armature 2 is capable of generating a voltage of the order of 275 volts. The positive side of the low voltage armature 1 is connected to the wire 24 leading to the wireless apparatus. A thermionic regulator tube 25, which is also described in the above-mentioned periodical, comprises a filament 26 and an anode 27. The filament 26 is connected at one end of the positive side of the low voltage winding and at the other end to the series main field winding 7. The anode 27 is connected at one end to the differential field winding 8 which winding at its other end is connected to the positive side of the high voltage winding. Condensers 28 and 29 are shunted respectively across the high voltage and the low voltage windings. The positive low voltage wire 24 leads to a series circuit comprising a ballast lamp 30 and filaments 31 and 32 of the thermionic devices 33 and 34. The other side of this series circuit is connected to the common return wire 10. Thermionic devices 33 and 34 are provided with control electrodes 35 and 36 and anode electrodes 37 and 38. The anodes 37 and 38 are connected as shown to an extension of the positive high voltage

wire 23, which extension includes a low frequency choke coil 39 and a high frequency choke coil 40. The thermionic devices 33 and 34, as used in the apparatus described in the above-mentioned periodical, are respectively a modulator tube and an oscillator tube used to transmit wireless signals. The connections of some of the electrodes in these thermionic devices have not been shown, since their proper connection is generally shown in the above-mentioned periodical.

In operation the device is intended to provide a filter which is intended to substantially prevent local disturbances developed in the generator, such as commutator ripples, from reaching the apparatus to which the generator may be connected, such as the thermionic devices shown in the drawing. The filter as shown comprises the condensers 28 and 29 and the inductive element 7 which, in addition to serving as a filter element, also serves as a field winding for the generator. By this method of connection a considerable economy in weight and space in the present known apparatus can be achieved while at the same time the high efficiency in transmission of the power developed is maintained.

It is to be understood that the particular application of this invention shown in the drawing is only one of many to which my invention is applicable and that connection can be made between a generator and other kinds of apparatus without departing from the spirit of my invention.

What is claimed is:

1. A direct current dynamo having a winding, a filter associated therewith for suppressing current variations, said filter comprising said winding of said generator.

2. A direct current dynamo having a winding, a filter comprising inductance and capacity associated therewith for suppressing current variations, the inductive element of said filter being said winding of said generator.

3. A dynamo having main and differential windings, a filter associated therewith, said filter comprising the main winding of said generator.

4. A dynamo having main and differential windings, a filter having inductance and capacity associated therewith, the inductive element of said filter being the main winding of said generator.

5. An electrical system comprising a direct current generator having windings, apparatus connected thereto and receiving power therefrom, and a filter therebetween, said filter comprising one of the windings of said generator.

6. An electrical system comprising a direct current generator having windings, ap-

paratus connected thereto and receiving power therefrom, and a filter comprising inductance and capacity therebetween, the inductive element of said filter being a winding of said generator.

7. An electrical system comprising a generator having main and differential windings, apparatus connected thereto and receiving power therefrom and a filter associated therewith, said filter comprising the main winding of said generator.

8. A signaling system comprising a transmitting and receiving set, a generator for supplying power to said sets, and a filter therebetween, said filter comprising a winding of said generator.

9. A signaling system comprising a transmitting and receiving set, a generator for supplying power to said sets, and a filter comprising inductance and capacity therebetween, the inductive element of said filter being a winding of said generator.

10. An electrical system comprising a dynamo having a series field winding, a device having an electrode associated with said dynamo, a connection between said electrode and said series field winding, said connection being substantially free from inductance, said field winding serving as an inductance to prevent current variations in said dynamo from reaching said electrode.

11. An electrical system comprising a dynamo having a field winding and high and low voltage armatures, a plurality of thermionic devices having electrodes, associated with said dynamo, three wires connecting said armature windings and said thermionic devices and a fourth wire connecting said field winding and certain of said thermionic devices.

12. An electrical system comprising a direct current generator having a series field winding, a vacuum tube having a cathode, a connection between the cathode and the series field winding, said connection being substantially free from inductance, said field winding serving as an inductance to prevent current variations in said dynamo from reaching said cathode.

13. A self-exciting dynamo having an exciting winding in its output circuit, a load in said output circuit, and a wave filter comprising said winding between said dynamo and said load.

14. A self-exciting dynamo having an exciting winding serially connected in its output circuit, a load in said output circuit, and a wave filter comprising said series winding and a shunt condenser between said dynamo and said load.

In witness whereof, I hereunto subscribe my name this 28th day of August A. D., 1919.

HUGH M. STOLLER.