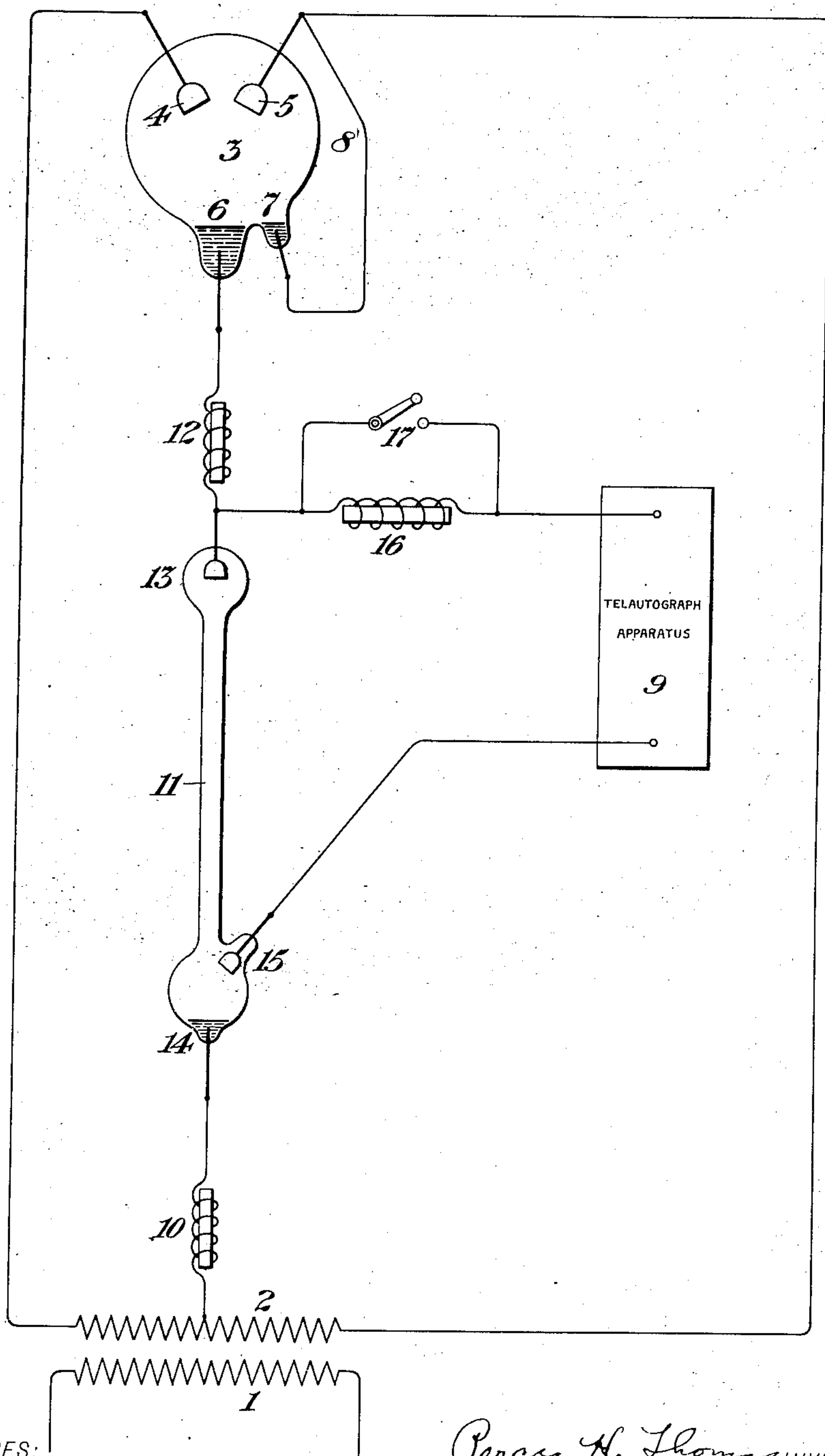


P. H. THOMAS.
 DEVICE FOR STEADYING CURRENTS.
 APPLICATION FILED SEPT. 27, 1905.

928,287.

Patented July 20, 1909.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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DEVICE FOR STEADYING CURRENTS.

No. 928,287.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed September 27, 1905. Serial No. 280,253.

To all whom it may concern:

Be it known that I, PERCY H. THOMAS, a citizen of the United States, and resident of Montclair, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Devices for Steadying Currents, of which the following is a specification.

In another application executed on even date herewith I have described means for supplying direct current having a high degree of steadiness to an apparatus such as a telautograph device. In the system of circuits described in that application I employ in series with the vapor converter an inductance device tending to keep the converter alive during the non-operating periods of the telautograph apparatus and I also employ a resistance in series with the said inductance device and in shunt to a second inductance and to the telautograph apparatus itself.

The present invention contemplates the use of other means for accomplishing the result of securing a steady current for utilization in connection with telautograph apparatus or other electrical devices.

In the present instance I substitute for the shunt resistance described in the aforesaid application a vapor apparatus having the general form of a mercury vapor lamp, the same being provided with main positive and negative electrodes at opposite extremities of the device and with a second positive electrode nearer to the main negative electrode than the main positive electrode is.

It is known that the voltage upon a vapor column of given dimensions and given pressure is practically independent of the current flowing in the apparatus. Accordingly, an electrical device arranged in shunt to such vapor column will receive a practically constant voltage, provided always that a sufficient current be supplied to the main and shunt circuits to cause an excess of current to flow through the vapor column or both.

When the mercury vapor device is substituted for the resistance, as described above, the second or auxiliary inductance may be dispensed with, although it may be used, if found desirable. It will, however, be found preferable to employ a second inductance in series with the shunt vapor device for the purpose of keeping the said device alive in the same way as the original inductance de-

vice is used in connection with the vapor converter for the same purpose.

The present invention also contemplates the substitution for the constant voltage obtained from a vapor path, of a constant voltage obtained by any of the well-known means, such, for example, as a primary or secondary battery, a motor, or in some instances, an open air arc.

When the device herein described is used with telautograph or similar apparatus, it is not necessary to maintain an absolutely constant voltage in the shunt circuit, it is only necessary that the voltage should change so slowly that the component added to the movement of the writing arm in the telautograph apparatus shall be negligible in comparison with the motion due to the normal operation of the stylus. Thus, if the change of voltage be distributed over a series comprising five or six lines, say, instead of being concentrated on the movement of the stylus during the formation of a single letter, then the disturbance caused by such a slow variation of the voltage will not seriously affect the result of the act of transmission through the stylus.

The invention is illustrated in a diagrammatic drawing filed herewith.

In the drawing, the alternating current source is represented as a transformer having a primary 1 and a secondary 2. The vapor converter is shown at 3, as being provided with positive electrodes, 4 and 5, a negative electrode, 6, and a starting electrode, 7, connected by a wire, 8, with the positive side of the circuit from the alternating current source. The starting electrode 7 is shown simply as a suitable auxiliary electrode for starting the apparatus into operation, but any preferred means for starting the converter may be used with or without the employment of the supplemental starting electrode.

The telautograph apparatus is shown at 9. The terminals of the secondary 2 are connected with the positive electrodes 4 and 5 and an intermediate point of the secondary is connected to the negative electrode 6 through an auxiliary inductance, 10, a vapor device, 11, and an original or primary inductance device, 12. The vapor device 11 is provided with a main positive electrode, 13, a negative electrode, 14, and a starting or supplemental electrode, 15. The elec-

trode 15 is connected to the negative side of the circuit through the telautograph apparatus 9. In the circuit of the said apparatus I have shown an inductance, 16, located between the points of connection of a switch, 17, which may be closed or opened at will, so as to cut the inductance 16 out of or into the circuit.

Either of the vapor devices 3 and 11 may be started by any suitable means. It being assumed that both devices have been started and are in operation, it is evident that the telautograph apparatus 9 or other electrical device requiring steady current which may be substituted for the telautograph apparatus mentioned will receive a current of practically constant voltage, as is demanded by the character of the apparatus supplied. Reckoned from the negative electrode of the converter 3 the current from the alternating current source will flow through the inductance 12, and will divide beyond that point, a part of the current passing through the main vapor column of the device 11, and another part passing through the apparatus 9 and through a shorter vapor path between the electrodes 15 and 14. Beyond the negative electrode 14 the current will ordinarily traverse the auxiliary inductance 10 before reaching the intermediate point at which the circuit is connected with the secondary 2.

I claim as my invention:

1. The combination with an alternating current supply circuit and a direct current work circuit containing a translating device requiring steady current, of a vapor converter and a choke coil for keeping the same alive, and a vapor device in series with the said choke coil and in shunt upon the translating device, with a second choke coil in series with the translating device.

2. The combination with an alternating current supply circuit and a direct current work circuit containing a translating device requiring steady current, of a vapor converter and a choke coil for keeping the same alive and a mercury vapor device in series with the said choke coil and in shunt upon the translating device, with a second choke coil in series with the translating device.

3. The combination with an alternating current supply circuit, and a direct current work circuit containing a translating device requiring steady current, of a vapor converter and a choke coil for keeping the same alive, and a vapor device in series with the

said choke coil and in shunt upon the translating device, and a second keeping alive choke coil in series with the said vapor device, with a choke coil in series in the circuit of the translating device.

4. The combination with an alternating current supply circuit and a direct current work circuit containing a translating device requiring steady current, of a vapor converter and a choke coil for keeping the same alive and a mercury vapor device in series with the said choke coil and in shunt upon the translating device, and a second keeping alive choke coil in series with the said vapor device, with a choke coil in series in the circuit of the translating device.

5. A system of electrical distribution in which a source of alternating current is connected at its terminals to a vapor converter and an intermediate point to the direct current side thereof, in combination with a choke coil in the circuit of the rectified current, a vapor device in series with the said choke coil, and a translating device in shunt upon the said vapor device, the latter being provided with a main positive and a main negative electrode and an intermediate supplemental electrode connected with one side of the shunt circuit.

6. The combination with an alternating current supply circuit and a direct current work circuit containing a translating device requiring steady current, of a vapor converter, a choke coil for keeping the same alive, a vapor device in series with the said choke coil and in shunt upon the translating device, the circuit of the said translating device containing an inductance in series therewith.

7. The combination with an alternating current supply circuit and a direct current work circuit containing a translating device requiring steady current, of a vapor converter, a choke-coil for keeping the same alive, a vapor device in series with the said choke-coil and in shunt upon the translating device, the circuit of the said translating device containing an inductance, and means for short-circuiting the inductance.

Signed at New York, in the county of New York, and State of New York, this 25th day of September, A. D. 1905.

PERCY H. THOMAS.

Witnesses:

WM. H. CAPEL,
THOS. H. BROWN.