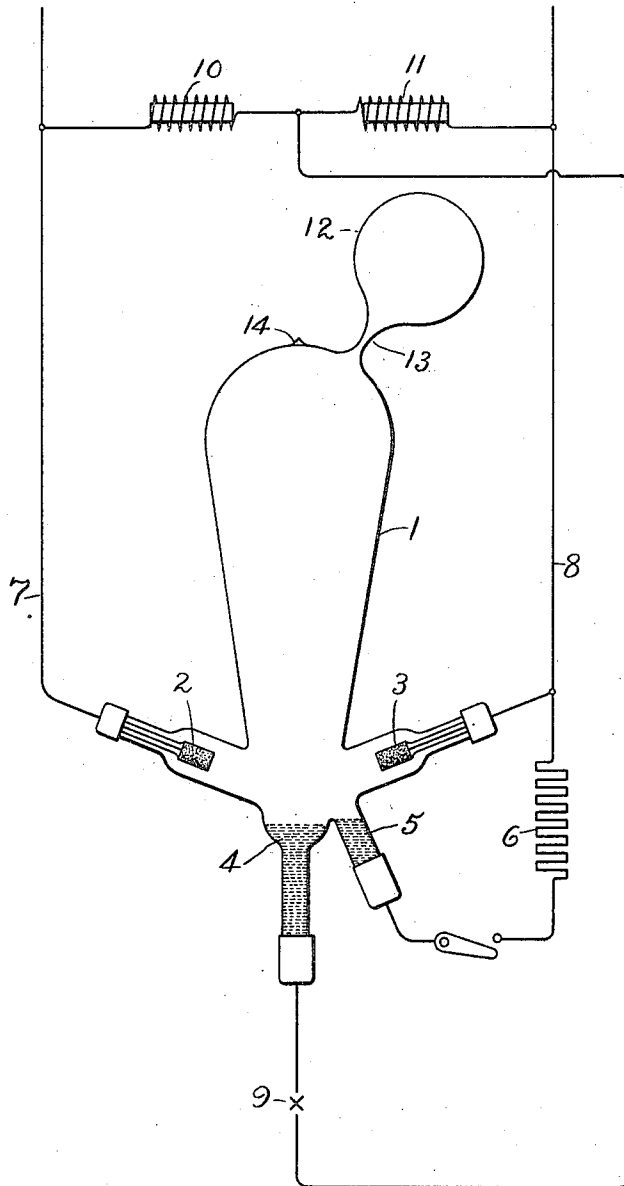


E. THOMSON.
VAPOR ELECTRIC DEVICE.
APPLICATION FILED DEC. 7, 1906.

1,045,641.

Patented Nov. 26, 1912.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

VAPOR ELECTRIC DEVICE.

1,045,641.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed December 7, 1906. Serial No. 346,694.

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Swampscott, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Vapor Electric Devices, of which the following is a specification.

My present invention relates to an improved form of vapor electric device and to a method of completing and using the same.

According to my invention the envelop or tube of the vapor device is provided with an extension communicating with the main chamber of the tube through a constricted neck in such a way that when the vapor device is in operation any gas or foreign material in the tube will be urged along by the cathode blast of the tube and will be segregated in the extension. After the device has been in operation for some time the extension may be sealed off at the constricted neck thereby leaving the vacuum of the vapor device in an improved condition. Several extensions may be provided so that one may be sealed off and removed whenever the vacuum of the tube becomes impaired as by liberation of gas from the electrodes.

One form of vapor device to which this invention may be applied is shown in the drawing forming a part of this specification.

The vapor tube 1 may be of a form commonly used for the rectification of alternating current and may include the usual graphite anodes 2 and 3 and a mercury cathode 4. The rectifier may be started by means of an auxiliary anode 5 connected through a resistance 6 with the alternating current mains 7 and 8. A load 9 represented diagrammatically, may be supplied with current from the cathode of the rectifier, and may return energy to the alternating current mains through the reactances 10 and 11 connected in a well known manner.

At the top of the rectifier tube is connected an auxiliary or extension chamber 12 communicating with the main condensing chamber through a constricted but unobstructed orifice or tube 13. This auxiliary chamber is pumped out when the rectifier tube is exhausted so that when the rectifier is sealed off, as at the tip 14, the tube may

be considered as in an operative condition. If, however, a better vacuum is desired, or if for any reason the vacuum becomes impaired during normal operation of the tube, the gas or other foreign material will be driven upward by the vapor blast and will pass through the tube or neck 13 into the auxiliary chamber 12. It is then possible to melt down the tube 13 with a glass blowers' torch and seal off and remove the auxiliary chamber, thus in effect re-exhausting the rectifier without taking it out of circuit.

Although the extension is shown as connected to the top of the condenser chamber of the tube it may be connected at other points. There may be as many such extensions as desired, thus permitting repeated improvement of the vacuum even after the rectifier has been in operation for many hours.

The invention is applicable to lamps or rectifiers operative on constant potential circuits, and is also applicable to similar devices operating on constant current and at very high voltages. In the latter case the condition of the vacuum is particularly important, and my invention affords a reliable means for the control thereof.

What I claim as new and desire to secure by Letters Patent of the United States, is,

1. The combination with an evacuated envelop having a condensing chamber, of means for maintaining a cathode blast therein, and a removable auxiliary chamber communicating with said condensing chamber by a small unobstructed passage opposite said cathode blast through which gas may be urged to improve the vacuum, the walls of said passage being so constricted as to readily enable sealing off by heat at any time.

2. The method of improving the vacuum of an hermetically sealed envelop after sealing off from the pump and during normal operation, which consists in creating a cathode blast therein to drive gas through a constricted orifice into a closed auxiliary chamber, and then sealing off the auxiliary chamber.

3. In a vapor electric device, the combination with an evacuated envelop having a

condensing chamber, a vaporizable cathode,
a removable auxiliary chamber communicat-
ing with said condensing chamber opposite
said cathode through a small unobstructed
5 orifice so constricted as to permit ready re-
moval of said auxiliary chamber by sealing
off with the aid of fusion.

In witness whereof I have hereunto set my
hand this fifth day of December, 1906.

ELIHU THOMSON.

Witnesses:

ALEX. F. MACDONALD,
JOHN A. McMANUS, Jr.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."