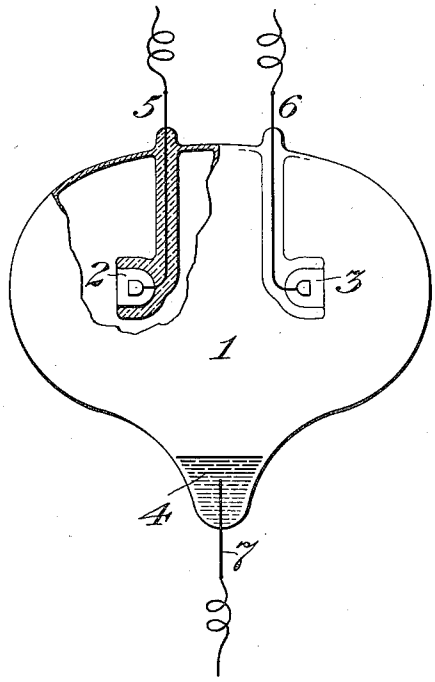
P. H. THOMAS.

VAPOR CONVERTER.

APPLICATION FILED JAN. 13, 1905.

1,163,705. Patented Dec. 14, 1915.



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PERCY H. THOMAS, OF MONTCLAIR, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO COOPER HEWITT ELECTRIC COMPANY, OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

VAPOR-CONVERTER.

1,163,705. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed January 13, 1905. Serial No. 240,865.

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 Vapor-Converters, of which the following is a specification.

In vapor converters of the mercury vapor type wherein two or more positive electrodes are employed in combination with a negative electrode, it has been found that on occasion a short-circuit will take place between two of the positive electrodes, one of which acts temporarily as a negative electrode with respect to the other. To avoid this various devices have been designed, and the present invention relates to an improvement in means for preventing such short-circuiting.

It may be assumed, although it is not taken as absolutely proven, that the described short-circuiting takes place by reason of the attraction of a certain amount of discharged vapor from one of the electrodes to another electrode during a time when the latter is momentarily a negative electrode with respect to the former, the result being that a very great strain is produced on the surface tension of the temporary negative electrode on account of the relative proximity which usually exists as between the various positive electrodes and any given positive electrode and the main negative electrode. As wide a separation as possible of the positive electrodes has been adopted as one of the expedients for reducing the likelihood of the described short-circuiting.

By the present invention a different arrangement of the positive electrodes is contemplated, the several positive electrodes being inclosed in chambers by themselves which chambers are open at one side but not at the sides nearest to any of the adjacent electrodes. In other words whatever discharge takes place from any one of the electrodes is not directed toward any positive electrode but is turned in a direction either straight away from said electrode or at such an angle as to induce no tendency for the discharge to strike the adjacent electrode, and any such vapor discharge attracted by a positive electrode which may be temporarily negative with respect to the electrode forming the source of the discharge will be obstructed by the walls of the chamber around the electrode and thus all danger will be avoided of drawing the vapor around to the farther side where the chamber is open. In general, the discharge takes place against the walls of the converter and remains on the walls of the inner inclosing chamber and is not urged electrically or by other means around to the side or sides where other electrodes are located.

While the theory of the discharge of vapor between electrodes is here mentioned as not absolutely established, yet the facts of actual operation and the success attending the use of the present invention sufficiently attest the probability of the correctness of the theory; and in any case the invention has proved to be useful in overcoming the danger of short-circuiting which has hitherto existed.

I have illustrated my invention in the accompanying drawing which shows partly in section a converter embodying the principles of the present invention.

In the drawing, 1 is a container inclosing two positive electrodes, 2 and 3, which may be of iron or any other suitable material and a common negative electrode 4, usually of mercury. The several electrodes are supplied with lead-wires 5, 6 and 7, respectively. These lead-wires are sealed into the material of the container, which material is usually glass, and suitably connected with several electrodes. The lead-wires 5 and 6 pass to their respective electrodes, 2 and 3 through sleeves of glass or other insulating material and the electrodes themselves are inclosed entirely or partially in insulating material, the electrodes being exposed at points such that any discharge which takes place from the surface thereof is not naturally turned in the direction of the other electrode or electrodes. In the present instance, the discharge from either of the electrodes 2, 3 or 4 would take place in a direction toward the inner walls of the container 1 and all tendency to short-circuiting due to a discharge of vapor from one electrode toward the other is thus obviated.

It is manifest that a similar protection in the matter of direction of the discharge can be made with a larger number of positive electrodes than two, the number shown being chosen simply by way of illustration.

I claim as my invention:—

1. In a vapor converter having a plurality

of positive electrodes, chambers for the said electrodes, the walls of the said chambers being composed of insulating material and having openings at the sides which are remote from any other of said electrodes.

2. In a vapor converter, two or more positive electrodes, the said electrodes being inclosed by insulating walls except as to surfaces which are remote from each other.

3. A mercury vapor rectifier comprising a hermetically sealed and exhausted container, a cathode and a plurality of anodes therein, an alternating supply having points of different potential connected to said anodes and an intermediate point connected to said cathode, in combination with means for protecting an anode in said container, said means consisting of means for obstructing all possible straight line paths between the active surface of the said anode and any part of the current path between said cathode and any other anode.

4. A mercury vapor rectifier comprising an exhausted container, a plurality of anodes and a cathode therein, each anode being partially inclosed in a chamber having openings directed away from the cathode and from any current path passing between the cathode and any other anode.

5. A mercury vapor rectifier comprising a main globular chamber, a cathode therein, anodes also therein and supplemental insulating chambers integral with the wall of said main chamber inclosing said anodes.

6. A mercury vapor device comprising a main chamber and a cathode therein and anodes also located therein and insulating shields for said anodes supported from the wall of the said chamber and interposed between each anode and every electrode.

Signed at New York, in the county of New York, and State of New York, this 11th day of January, A. D. 1905.

PERCY H. THOMAS.

Witnesses:
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