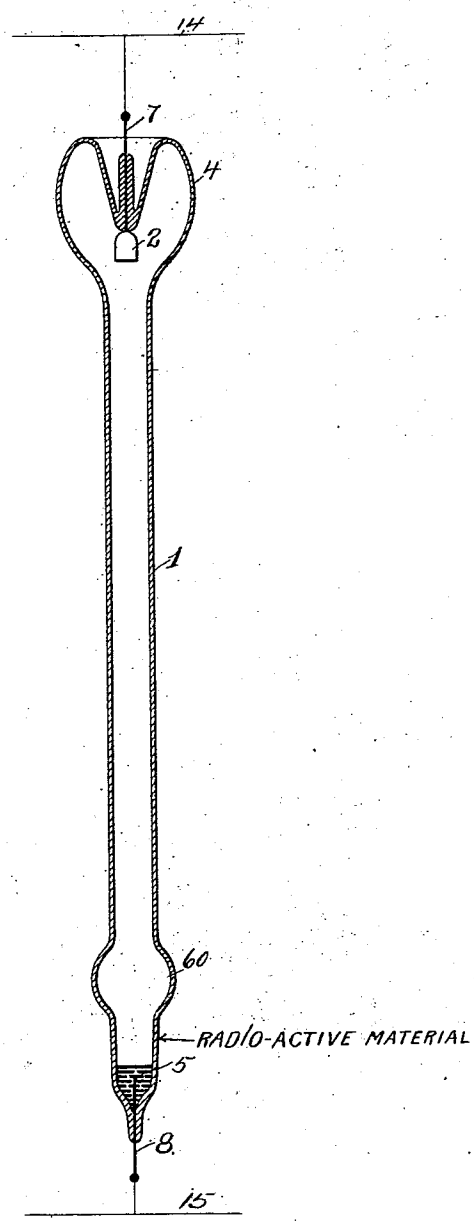
No. 750,889. PATENTED FEB. 2, 1904.

H. N. POTTER.

GAS OR VAPOR ELECTRIC LAMP.

APPLICATION FILED MAY 28, 1901.

NO MODEL.



Witnesses:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 750,889. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

HENRY NOEL POTTER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO COOPER HEWITT ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

GAS OR VAPOR ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 750,889, dated February 2, 1904.

Application filed May 28, 1901. Serial No. 62,181. (No model.)

To all whom it may concern:

Be it known that I, HENRY NOEL POTTER, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gas or Vapor Electric Lamps, of which the following is a specification.

In the practice of the art of producing light through the action of electricity on inclosed gas or vapors—as, for example, by submitting the vapor of mercury within a suitable containing tube or chamber to the action of an electric current—I have found that by a proper selection of the material of the container I can dispense with the usual "starting-band" employed for dissipating the static charge which accumulates near the cathode and I can also dispense with the "starting material" which is sometimes added to the conducting gas or vapor for assisting in the initial operation of the lighting apparatus. A properly-chosen substance for the containing-tube will, in other words, render the lighting apparatus or lamp "cold-starting" with or without any admixture of special "starting materials" and with or without the employment of a starting-band.

The substances which appear to be best adapted for use in the manufacture of the tubes or containers for gas or vapor lamps intended to be cold-starting are the radio-active materials, such as uranium salts and the like. A tube of uranium glass, for example, otherwise suited to its purpose and containing a suitable conducting gas or vapor, such as mercury-vapor, will serve the purpose indicated above very satisfactorily.

In the drawing accompanying this specification I have illustrated in section a lamp of this class in which the container is made of uranium glass, and I have given to the lamp illustrated such a shape and such an arrangement and construction of parts as combine to give to the lamp certain distinct advantages whether the material of which the container is made is uranium glass or a vessel of some other material.

The advantages referred to will be set forth in connection with the description of the lamp illustrated. The lamp consists, essentially, of a tube 1, of uranium glass, the same being provided with a bulb or enlargement 4 at one end and containing two electrodes 2 and 5, the former constituting the anode and the latter the cathode. The anode 2 is in this instance of iron and is connected with the external circuit by a leading-in wire 7, which is sealed into the upper end of the bulb 4 and is covered with glass or other non-conducting heat-resisting material down to a point close to the anode 2. The cathode 5 is in the present instance a mass or puddle of mercury, and it is connected to the external circuit by means of a leading-in wire 8, sealed into the lower end of the tube 1.

It will be noted that the anode 2 extends down nearly to the lower extremity of the bulb or enlargement 4, in consequence of which the greater part of the bulb or enlargement is outside the conducting vapor-path lying between the electrodes.

A lamp of this description when joined to suitable mains, as 14 and 15, carrying electric current of a voltage, say, of two hundred and twenty volts, can be started without the special starting devices mentioned above. It is usually necessary to apply a high-potential current to the terminals of the device in order to cause current to pass initially through the apparatus; but it is also true that the potential required for starting the apparatus is considerably less than would be required with a lamp made of ordinary glass in distinction from uranium glass or glass containing radio-active substances. In other words, when a lamp is made of ordinary glass and another lamp is made of uranium glass, both lamps being in other respects as nearly alike as possible, the uranium-glass lamp will start as easily without a starting-band or starting material as the other lamp with a starting-band or starting material—that is to say, the particular character of the glass in the lamp which I have invented serves to take the place, so to speak, of the starting-band or starting mate-

rial which has hitherto been generally employed.

In constructing my lamp I make the enlargement 4 pear-shaped instead of spherical, so that in case of the lamp being inverted in transportation or for any reason and then being restored to its normal position the mercury which has run down into the bulb or cooling-chamber 4 may begin to flow back as soon as the lamp-axis is turned only slightly below the horizontal. By reason of this construction of the bulb or cooling-chamber the mercury in being restored will slide down a moderate incline instead of dashing down almost vertically and endangering the tube.

A further detail of improvement resides in making the upper end of the bulb 4 reëntrant, by reason of which arrangement the anode can be securely mounted without danger of the bulb end of the tube being broken, as would be the case if the usual projection were located at this end, through which the leading-in wire was sealed.

In addition to employing a pear-shaped bulb to relieve the effects of the mercury running back quickly into the lower end of the tube I may cause a small bulb 60 to be blown in the tube just above the cathode. This prevents the hammer-blow of the mercury running down the tube and may be employed for that purpose whether the bulb 4 is constructed in spherical, pear shape, or other form.

The invention claimed is—

1. A gas or vapor electric lamp, the tube or chamber of which is of radio-active glass.

2. A gas or vapor electric lamp, the tube or chamber of which is of uranium glass.

3. In a gas or vapor electric lamp, a tube containing mercury as the cathode, the said tube being provided with a bulb just above the cathode, as and for the purpose set forth.

4. A mercury-vapor lamp, comprising a tube of transparent material such as glass, an anode of iron, and a cathode of mercury at or near opposite ends of the tube, the tube having a small bulb just above the cathode.

5. A gas or vapor electric lamp the tube or chamber of which is in part of radio-active glass.

6. A vapor-lamp containing mercury and means for breaking the force of impact of the said mercury against the ends of the said lamp when the same is inverted.

Signed at New York, in the county of New York and State of New York, this 5th day of February, A. D. 1901.

HENRY NOEL POTTER.

Witnesses:

WM. H. CAPEL,

GEORGE H. STOCKBRIDGE.