

No. 682,694.

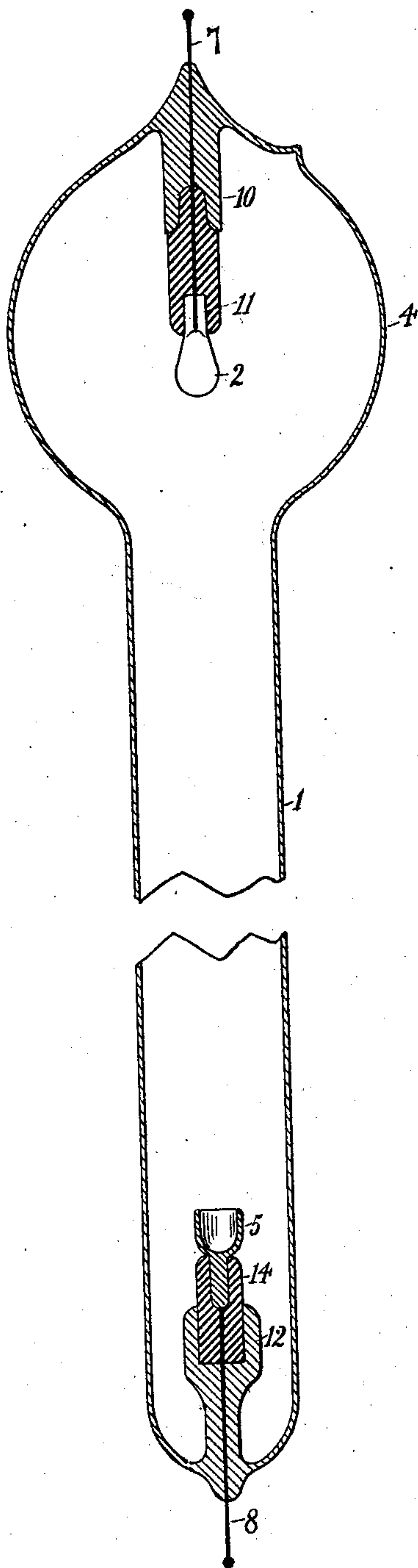
Patented Sept. 17, 1901.

P. C. HEWITT.

ELECTRIC GAS OR VAPOR LAMP AND ELECTRODE THEREFOR.

(Application filed Apr. 5, 1900.)

(No Model.)



Witnesses:

Raphael Petter
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Inventor

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UNITED STATES PATENT OFFICE.

PETER COOPER HEWITT, OF NEW YORK, N. Y., ASSIGNOR TO PETER COOPER HEWITT, TRUSTEE, OF SAME PLACE.

ELECTRIC GAS OR VAPOR LAMP AND ELECTRODE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 682,694, dated September 17, 1901.

Application filed April 5, 1900. Serial No. 11,616. (No model.)

To all whom it may concern:

Be it known that I, PETER COOPER HEWITT, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Gas or Vapor Lamps and Electrodes Therefor, of which the following is a specification.

My invention relates to that class of electric-lighting devices in which electric energy is transformed into light by its action upon gases or vapors inclosed in a suitable chamber.

In the operation of lamps of the character referred to I have found that suitable gases having the proper density may be so affected by electric currents of moderate electromotive force as to yield an intense light and operate at very high efficiencies. The resistance which a lamp of this character offers to the passage of current seems to reside in the gas carrying the current between the electrodes and at the point between the gas or vapor and the electrodes, particularly the cathode. When the lamp is started and receives current, these resistances may be so adjusted as to cause the lamp to be self-regulating. In operating the lamps the electric current tends to pass around to the back of the cathode, and unless prevented is liable to fuse the leading-in conductors and disintegrate the glass usually surrounding them. To avoid this I provide an electrically-tight protecting-covering for such portions of the electrode, leaving exposed only those portions at which it is desired that the current shall enter. This phenomenon mainly manifests itself at the negative electrode.

The accompanying drawing illustrates a lamp having electrodes embodying my invention.

Referring to the drawing, 1 represents the main body of the lamp.

2 represents an electrode (in this instance assumed to be the anode) located in the upper part of the lamp and within or near the neck of an enlargement 4, which is sometimes employed as a cooling-chamber. The cathode is represented at 5. These electrodes may be made of suitable metal—such, for instance, as iron or any desired conducting ma-

terial. The electrode 2 is shown as being seated within a porcelain sleeve 11, which is held by a glass column 10, surrounding the leading-in wire 7. The electrode 5 is shown as being seated within a tube 14, of porcelain or other suitable material which is a non-conductor at such temperatures as it may attain in the lamp and inert to chemical reactions at the temperatures and surroundings to which it is subjected in the operation of the lamp. The cylinder 14 is shown as being carried by the stem or column 12 of glass, through which the leading-in wire 8 is passed. The joints between the electrode and the porcelain and between the porcelain and the glass are sufficiently tight to prevent the electric current from passing through them, and thus reaching the metal parts within, thus making a complete insulation of the stem of the electrode from the wall of the vessel to the electrode.

With electrodes of the character described I am able to operate the lamp so that the current will pass to and from the electrodes and be prevented from passing around to the portions near the leading-in wires.

In the operation of lamps of this character it is possible for the current to heat the cathode to a very high temperature and yet not impair the non-conducting quality of the material protecting the conductor leading to it.

In certain other applications filed by me—for instance, Serial Nos. 11,605, 11,606, and 11,607, filed April 5, 1900, and Serial Nos. 44,647, 44,648, and 44,649, filed January 25, 1901—claims are made upon certain of the features disclosed herein.

The invention claimed is—

1. The combination of a closed chamber, a gas of such density as to convey currents of considerable quantity under moderate pressures, an electrode, and a protecting-sleeve of non-conducting material, substantially as described.

2. In a gas or vapor lamp comprising two electrodes and a conducting vapor or gas between the electrodes, a protected electrode comprising an exposed conducting-surface, and a sleeve or covering of insulating material protecting the remaining portion of the electrode, substantially as described.

3. In a gas or vapor lamp, an electrode having an exposed conducting-surface, a sleeve or covering of insulating material protecting the remaining portion of the electrode, and
5 a non-conducting supporting-pillar for the sleeve composed of a different material therefrom.
4. In an electric lamp having a vapor or gas path of such density as to conduct currents,
10 an electrode having an exposed portion, a non-conductor surrounding the conductor leading to the electrode for protecting said conductor, consisting of a material inert to chemical reactions within the lamp and forming an electrically-tight joint therewith.
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5. The combination of a closed chamber, a

gas of such a density as to convey currents of considerable quantity under moderate pressure, an electrode, and a protecting-sleeve of non-conducting material for the same, said sleeve being a non-conductor at high temperatures and also being in electrically-tight connection with the wall of the vessel.

Signed at New York, in the county of New York and State of New York, this 27th day of March, A. D. 1900.

PETER COOPER HEWITT.

Witnesses:

WM. H. CAPEL,
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