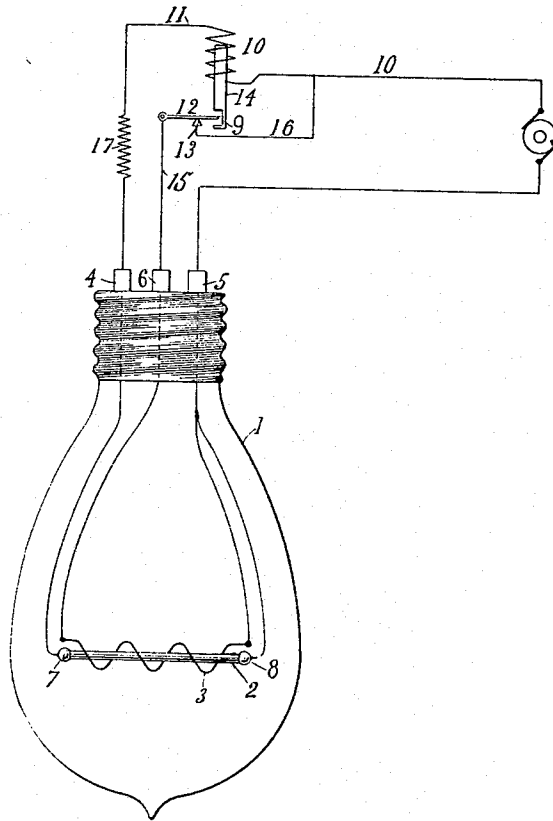


No. 830,698.

PATENTED SEPT. 11, 1906.

A. ACKERMAN.
ELECTRIC LAMP.

APPLICATION FILED OCT. 4, 1899.



Witnesses:

Raphael Ketter
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by *Charles A. Kemp* - Atty

UNITED STATES PATENT OFFICE.

ALBERT ACKERMAN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO NERNST LAMP COMPANY, OF PITTSBURG,
PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ELECTRIC LAMP.

No. 830,698.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed October 4, 1899. Serial No. 732,480.

To all whom it may concern:

Be it known that I, ALBERT ACKERMAN, 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 Electric Lamps, of which the following is a specification.

My invention relates to that class of electric lamps or lighting devices in which a glower or illuminant is used composed of a material which is a non-conductor at ordinary temperatures and requires to become heated in order to be traversed by electric currents at ordinary differences of potential.

The object of the invention is to provide a convenient form of lamp and a convenient and ready means for imparting to the glower the preliminary heat for rendering it conductive.

The general plan of the invention is to inclose the glower within a chamber similar to the ordinary incandescent-lamp chamber, from which air is exhausted, the glower being surrounded by an ordinary incandescent-lamp filament composed of carbon, so disposed as to impart its heat to the glower in a convenient and efficient manner.

While it is ordinarily not necessary to inclose a glower of the type referred to within a vessel from which air is exhausted, because it will operate successfully in the open air, yet for the purpose of availing of the benefits of a high-resistance conductor composed of carbon for heating the glower it becomes necessary to make use of a vacuum-chamber, and I therefore inclose the glower and the heating-conductor within a vacuum-chamber more particularly in order to be able to use a carbon filament as the heater.

The filament may be formed with a spiral portion surrounding the glower, or it may be otherwise suitably disposed in the immediate neighborhood of the glower, so as to impart its heat thereto. Suitable terminal connections are led out through the walls of the inclosing chamber for forming electrical connections with the heating-filament and the glower.

In the accompanying drawing I have illustrated the invention as applied in connection with an ordinary form of incandescent-lamp bulb.

Referring to the drawing, 1 represents the inclosing chamber or bulb of glass, within which I place the glower 2 and carbon heating-filament 3. The inclosing chamber is constructed in the usual manner employed for manufacturing ordinary incandescent lamps. It is provided, however, with three leading-in wires 4 5 6, sealed into the wall in any convenient usual manner. The wires 4 and 5 are connected with the terminals 7 and 8 of the glower 2. This glower is composed of a rare earth or a mixture of rare earths suitably ground together and formed into a strip or tube and thoroughly baked in the manner usually employed in the so-called "Nernst" lamps. The carbon filament 3 is manufactured in any of the usual well-known ways for manufacturing ordinary incandescent-lamp filaments, and it is shown in this instance as being provided with several spiral loops through which the glower 2 extends. One terminal of the lamp-filament is connected with a leading-in wire 6 and the remaining terminal with the leading-in wire 5, although this latter may be brought out by a separate terminal, if desired. Electric connections are made with the several terminals 4, 5, and 6 in any convenient well-known manner. I usually employ in connection with one of the terminals leading to the heating-filament 3 a circuit-interrupting device 9, which is here shown as being operated by a solenoid 10, included in the circuit 11, leading to the terminal 4. The circuit-interrupter 9 comprises a contact-arm 12 and a contact-point 13. When current commences to flow through the glower 2, the solenoid 10 draws within itself a core 14, which moves the contact-lever 12 from its point 13, thus interrupting the circuit connections of the conductors 15 16, which lead to the terminal 6. In this manner the circuit of the filament will be interrupted when current commences to flow through the glower.

For the purpose of preventing an undue flow of current through the glower when it has become conducting I usually insert a ballast-conductor 17 in the conductor 11. This ballast-conductor offers sufficient resistance to increments of current flowing to offset the decreasing resistance of the glower 2 under increasing temperature.

While I have described the invention more

particularly in connection with a lamp having but one glower, additional glowers may be connected in parallel with the glower 2, and, moreover, the heating-filament may be
5 connected in an independent circuit from the glowers, in which case each terminal of the filament would have its connection brought out independently of the circuit of the glower.

I claim as my invention—

10 1. The combination with a glower of the character described, of a heating-conductor therefor, consisting of a carbon filament separate therefrom having spiral convolutions in its length, the spiral convolutions
15 surrounding the glowers, an inclosing chamber from which air is exhausted containing the filament and the glower, and terminal connections leading through the walls of the chamber.

2. The combination of one or more glowers 20 containing rare oxids, a heater therefor consisting of a conducting-filament which will deteriorate in the open air, the said filament being separate from the glower or glowers but in proximity thereto, an air-tight inclos- 25 ing chamber therefor, a ballast-conductor in circuit with the glower, means for sending current through the filament for heating the glower, and means for interrupting the circuit through the filament by the action of 30 current transmitted through the glower.

Signed at Pittsburg, in the county of Allegheny and State of Pennsylvania, this 27th day of September, A. D. 1899.

ALBERT ACKERMAN.

Witnesses:

EDWARD BENNETT,
A. J. WURTS.