

No. 652,636.

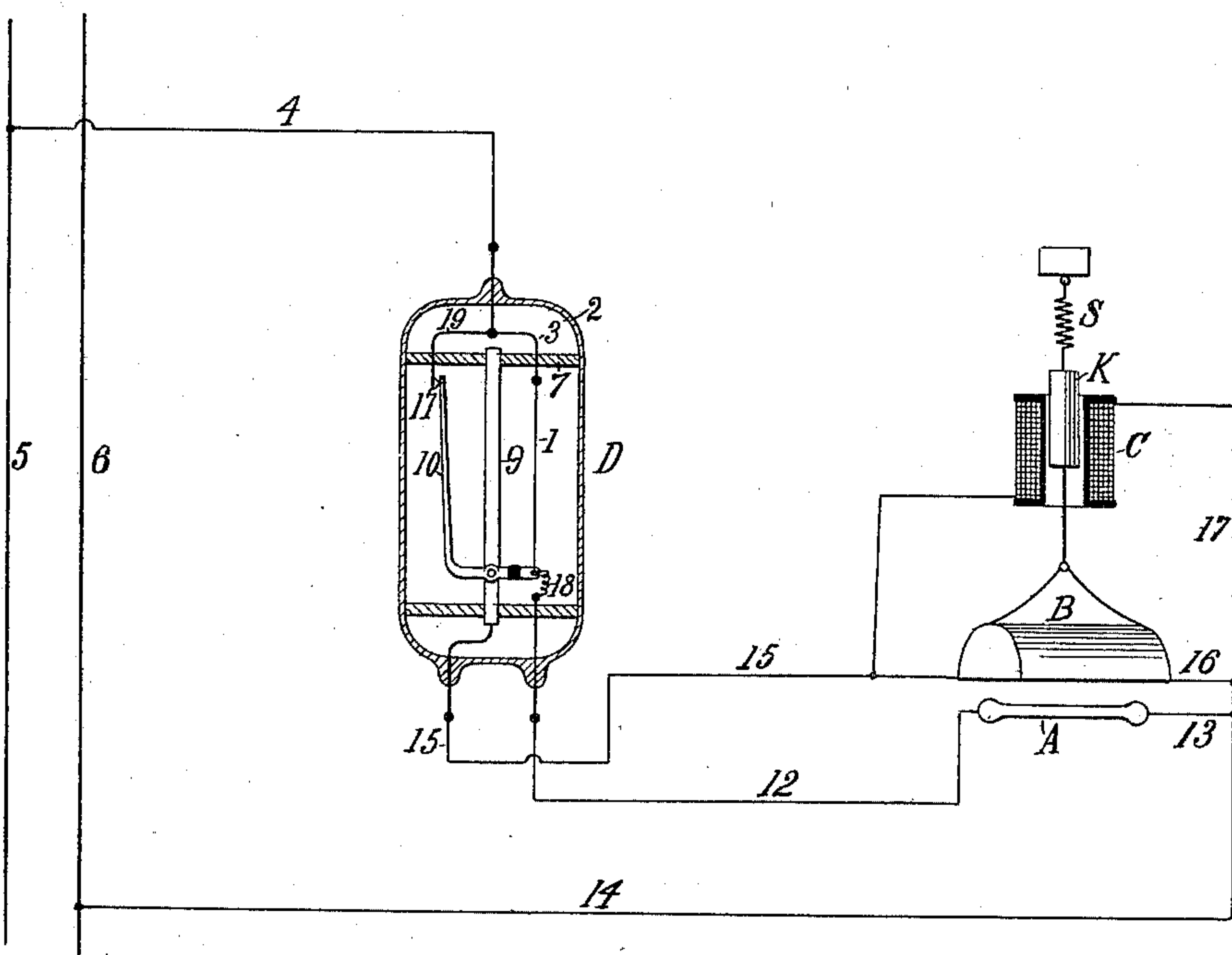
Patented June 26, 1900.

H. N. POTTER.

CONTROLLING SYSTEM FOR ELECTRIC LAMP HEATERS.

(Application filed Aug. 14, 1899.)

(No Model.)



Witnesses:

Rapphaël Vetter
George N. Stoenitz

Henry Noel Potter, Inventor

by Charles A. Perry, Atty

UNITED STATES PATENT OFFICE.

HENRY NOEL POTTER, OF GÖTTINGEN, GERMANY, ASSIGNOR TO GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

CONTROLLING SYSTEM FOR ELECTRIC-LAMP HEATERS.

SPECIFICATION forming part of Letters Patent No. 652,636, dated June 26, 1900.

Application filed August 14, 1899. Serial No. 727,146. (No model.)

To all whom it may concern:

Be it known that I, HENRY NOEL POTTER, a citizen of the United States of America, residing in Göttingen, Germany, have invented
5 certain new and useful Improvements in Controlling Systems for Electric-Lamp Heaters, of which the following is a specification.

In another application for Letters Patent of the United States I have shown and described means for controlling the movement of a heater for lamp-glowsers through the medium of a solenoid in series with the said heater. In the lighting device illustrated in connection with the said application I employ
10 a heater having a double movement—first, toward the glower in order to more effectively accomplish the heating thereof, and, second, away from the glower in order to remove the heater from a position where it might interfere with the useful light-rays proceeding from the glower.
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In the present application I also illustrate a double-movement heater, although I may use the general circuits illustrated in this application in connection with a heater having only single movement—that is to say, a heater which is originally in operative proximity to the glower and which is withdrawn by magnetic or thermostatic means after the initial
30 work of heating has been accomplished.

The present invention relates to the employment of such magnetic or thermostatic means for controlling the heater, these means being included in a shunt-circuit to the heater
35 and not located in series with the heater, as in the application above referred to.

The accompanying drawing, which illustrates my invention, is a diagram of the circuits and apparatus which I employ in carrying out the present invention.
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The glower is shown at A and the double-movement heater at B. The latter is supported from the core K of a solenoid C. The said core K is normally held up by a spring S or other suitable device in such a position
45 as to retain the heater B away from proximity to the glower A. Should the solenoid C, however, become energized by the passage of electric current, the force of the spring S will be overcome, the core K will be drawn downward, and the heater B will be carried with
50

it until it comes into operative proximity to the glower A.

At D, I show a ballast cut-out consisting, essentially, of a ballast-conductor 1, of iron
55 or other suitable material, inclosed in a sealed chamber 2, containing an inert gas. The said ballast-conductor 1 is connected to a wire 3, of nickel or platinum, which wire is joined by the conductor 4 to one of the two mains 5
60 and 6, proceeding from any suitable source of electrical current. The wire 3 is sealed into a disk 7, of glass, the edges of which rest against the inner walls of the chamber 2 and, together with a similar disk 8 at the bottom
65 of the said chamber, hold the apparatus within the said chamber in position. In the center of the two disks is supported a metallic rod 9, to which is pivoted an angular lever 10, one end of which is joined to but insulated
70 from the lower end of the ballast-conductor 1. The opposite end of the said angular lever is in contact with a terminal 11, rigidly connected with the disk 7 and supported thereby. The lever is held in contact with the
75 terminal 11 by the tension of the ballast-conductor 1. The ballast-conductor 1 is joined by a flexible conductor 18, sealed into the wall of the chamber 2, to the conductor 12, leading to one terminal of the glower, the opposite terminal of the glower being connected
80 by the conductors 13 and 14 to the main 6. The fixed terminal 11 is connected by the conductor 19 to the conductor 4, and the lower end of the rod 9 is connected by the conductor 15 to one terminal of the heater B.
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In place of the disks 7 and 8 I may employ arms arranged to come in contact with the walls of the chamber 2.

It will be seen that the solenoid C is in a
90 shunt-circuit 17 around the heater B. The said heater may be of any of the usual forms; but I have shown it in the present instance as of U-shaped cross-section and as carrying the heating-conductor upon the external surface of the U-shaped body. The supporting-
95 body for the heating-conductor may be of porcelain, talcite, or some similar insulating and heat-resisting material.

When the circuit of the lighting device or
100 lamp illustrated is first closed, the heater is at once brought into operation by the pas-

sage of the current over the following course: conductors 14 and 16, heater B, conductor 15, rod 9, angular lever 10, contact-terminal 11, conductor 19, and wire 4 to the main 5. The
 5 glower-circuit passes by way of conductors 14 and 13, glower A, conductors 12 and 18 to the ballast-conductor 1 and conductors 3 and 4 to the main 5; but on the closing of the circuit of the lighting device or lamp the current
 10 will divide, a portion of it passing through the heater-circuit above described and a portion through the shunt-circuit 17, including the solenoid C. Accordingly the solenoid will draw down its core K and also the heater B into
 15 proximity with the glower A, where the heater will remain until the glower becomes conductive. Then the glower-circuit will be energized, the ballast-conductor 1 will be heated and will expand under the influence of such
 20 heat, thus moving the angular lever 10 under the influence of the spring *w*, and the heater-circuit will then be broken at the point 11, and the spring S will retract the core K and remove the heater B from prox-
 25 imity to the glower A. In place of the magnetic controlling device included in the shunt-circuit 17 I may employ a thermostatic controller, and in place of the ballast cut-out (shown at D) I may make use of a magnetic
 30 cut-out, such as is already known in the art. These are details which do not affect the essential nature of my invention, which resides in the operation of a heater for Nernst lamps through the medium of a controller in a shunt-
 35 circuit.

I claim as my invention—

1. In an electric lamp, a glower of the type described, an electric heater for the glower, a controller for determining the relative po-
 40 sitions of the heater and glower, said controller being located in a circuit that is in shunt to the heater and outside the glower-circuit.

2. In an electric-lighting device, a glower of the type described, a heater therefor, said
 45 glower and heater being located in parallel circuit, a controlling device for determining the relative positions of the glower and the heater, said controlling device being located in a shunt-circuit around the heater, and out-
 50 side the glower-circuit.

3. In an electric-lighting device, a glower of the type described, an electric heater there-
 55 for, and a ballast-conductor in series with the glower, in combination with an automatic controlling device for the said heater located in a shunt thereto.

4. In an electric-lighting device, a glower of the type described, an electric heater there-
 60 for, a controller for determining the position of the heater comprising an armature or core connected with the heater and a solenoid connected in shunt-circuit around the heater and outside the glower-circuit.

Signed by me at Hanover, Germany, this
 14th day of July, 1899.

HENRY NOEL POTTER.

Witnesses:

W. K. ANDERSON,
 KIRKE LATHROP.