

No. 815,836.

PATENTED MAR. 20, 1906.

A. M. JACKSON.

VAPOR ELECTRIC APPARATUS.

APPLICATION FILED MAY 31, 1904. RENEWED JAN. 29, 1906.

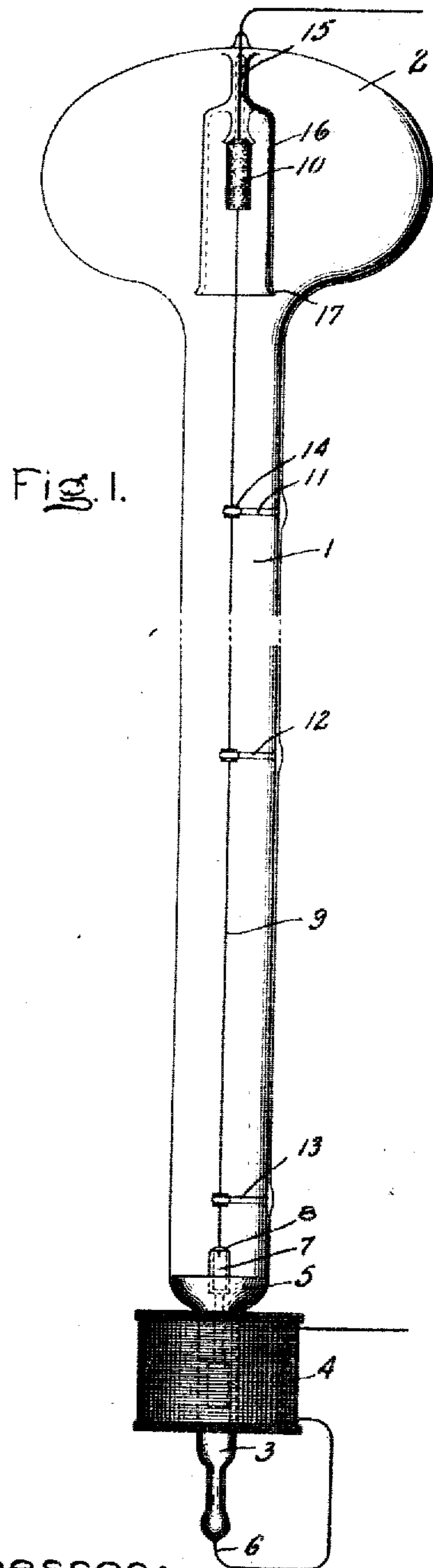


Fig. 1.

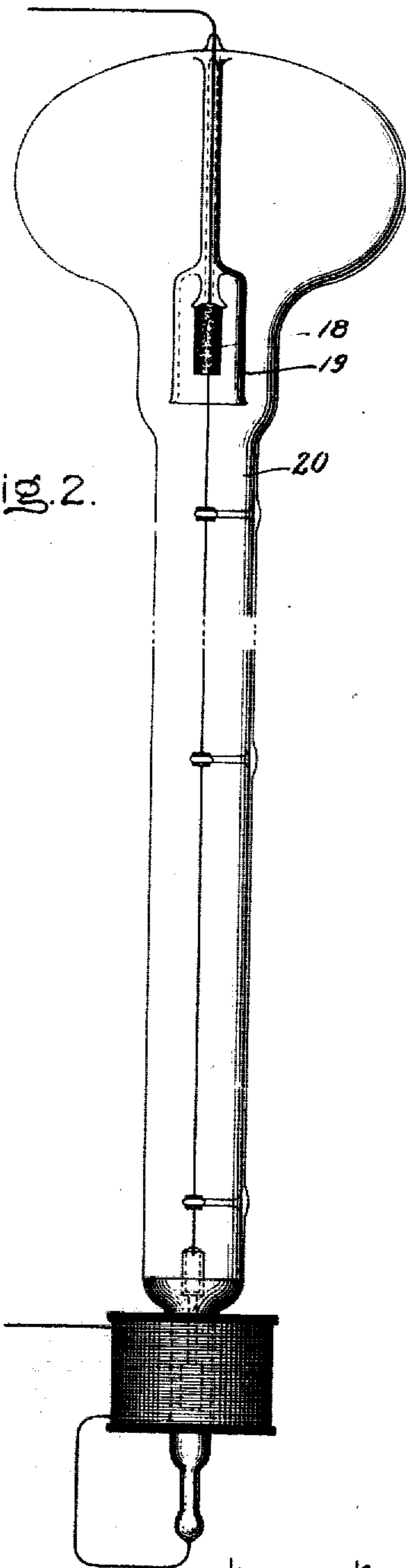


Fig. 2.

Witnesses:

George A. Thronton.
Allen Clifford

Inventor:

Alexander M. Jackson,
By *Allen Clifford*
Att'y.

UNITED STATES PATENT OFFICE.

ALEXANDER M. JACKSON, OF SCHENECTADY, NEW YORK, ASSIGNOR TO
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

VAPOR ELECTRIC APPARATUS.

No. 815,836.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed May 31, 1904. Renewed January 29, 1906. Serial No. 298,444.

To all whom it may concern:

Be it known that I, ALEXANDER M. JACKSON, a subject of the King of Great Britain, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Vapor Electric Apparatus, of which the following is a specification.

My present invention relates to certain improvements in vapor electric devices, such as mercury-lamps, rectifiers, or the like.

Among other features my invention aims to protect the solid electrodes or anodes from the blast or draft of vapor in the envelop. Disintegration of the anodes is thus largely prevented, and at the same time the blackening of the glass envelop of the lamp is either decreased or entirely eliminated.

The features of novelty characteristic of my invention are pointed out with particularity in the appended claims. The invention itself, however, will be better understood by reference to the following description, taken in connection with the accompanying drawings, in which—

Figure 1 represents one embodiment of my invention, and Fig. 2 a modification.

The mercury-lamp to which I have shown my invention as applied in Fig. 1 consists of a glass tube or envelop 1, of suitable length, surmounted by a bulb 2, constituting a condensing-chamber. The bottom of the tube 1 is contracted, as at 3, and is surrounded by a solenoid 4. A body of mercury 5 fills this contraction 3, as well as the lower end of the tube 1, as shown, and constitutes one of the electrodes of the lamp. A leading-in conductor 6 makes electrical connection with this body of mercury and is in turn connected in series with the solenoid 4.

A core 7 of iron cupped out at its upper end floats in the body of mercury and is arranged, as indicated in dotted lines, within the influence of the solenoid 4. After the core has been once submerged its upper end, upon its reappearance above the surface of the mercury, brings with it a quantity of mercury 8, filling the cup in the upper end of the core. This body of mercury 8 when the core is in the position shown embraces the lower end of a carbon or similar filament 9. This filament 9 is supported from the carbon or graphite anode 10 of the lamp and is centered in the tube 1 by means of guides 11, 12,

and 13. Each of these guides is provided with a carbon-bushing, as at 14, loosely embracing the filament.

The anode 10, to which reference has been made, is supported by a leading-in conductor 15, extending through the upper wall of the condensing-chamber 2. This anode is surrounded by a bell or hood 16, which may be of glass. This hood is closed at its top about the leading-in conductor 15 and flares out slightly at its lower edge 17. This lower edge is located close to the point where the tube 1 opens into the condensing-chamber.

When current is applied to the lamp, the solenoid 4 is energized, so as to draw the armature 7 below the surface of the mercury. The break thus caused in connection between the lower end of the filament 9 and the mercury body 8 causes an incipient arc, which extends immediately up the tube to the anode 10.

When the lamp is thus started into operation, the flow of current between the two main electrodes is carried by means of the conducting mercury vapor which fills the tube from end to end. The current is apparently conveyed by means of charged particles which move up the tube with great velocity. Where the condensing-chamber is located around or beyond the anode 10, toward which these particles progress, there appears to be a continuous rush or draft of vapor particles past the sides of the electrode into or toward the condensing-chamber. This causes a washing or disintegrating action on the electrodes and apparently carries away particles of the electrode and deposits them in the condensing-chamber. By the washing action of the condensed mercury these impurities are carried down the main tube, and thus blacken and discolor the same.

By surrounding the anode 10 with a protecting shield or hood the vapor in the immediate vicinity of the anode is quiescent, as it were. The draft of vapor into the condensing-chamber passes through the space between the lower end of the shield 16 and adjacent walls of the tube 1. Impurities are thus kept out of the condensing-chamber 2, and no resulting blackening or discoloration of the tube 1 occurs. Such impurities as are given off by the anode 10 are retained within the shield 16 and have no harmful effect.

Instead of locating the anode and its shield

at approximately the middle point of the condensing-chamber I may, if desired, mount them in the mouth of the tube 1, where it opens into the condensing-chamber. This construction is shown in Fig. 2, in which the anode 18 and shield 19 are mounted in the mouth of the lamp-tube 20. In other respects the lamp shown in Fig. 2 is the same as shown in Fig. 1, and therefore requires no further description.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a vapor electric apparatus, the combination of an exhausted envelop provided with a condensing-chamber, electrodes therefor, and a shield protecting one of the electrodes from the vapor progressing toward the condensing-chamber.

2. In a vapor electric apparatus, the combination of an exhausted tube surmounted

by a condensing-chamber, and a shielded electrode arranged where the tube opens into the condensing-chamber.

3. The combination of an envelop or container provided with a condensing-chamber, a vaporizable electrode, and a shielded electrode located in the path taken by vapor passing to said condensing-chamber.

4. The combination of an envelop or container having a tube provided with an enlargement, a shield or hood closed at one end and having its other end located in the mouth of the tube, and an electrode inside of said shield or hood.

In witness whereof I have hereunto set my hand this 27th day of May, 1904.

ALEXANDER M. JACKSON.

Witnesses:

EDWARD WILLIAMS, Jr.,
HELEN ORFORD.