

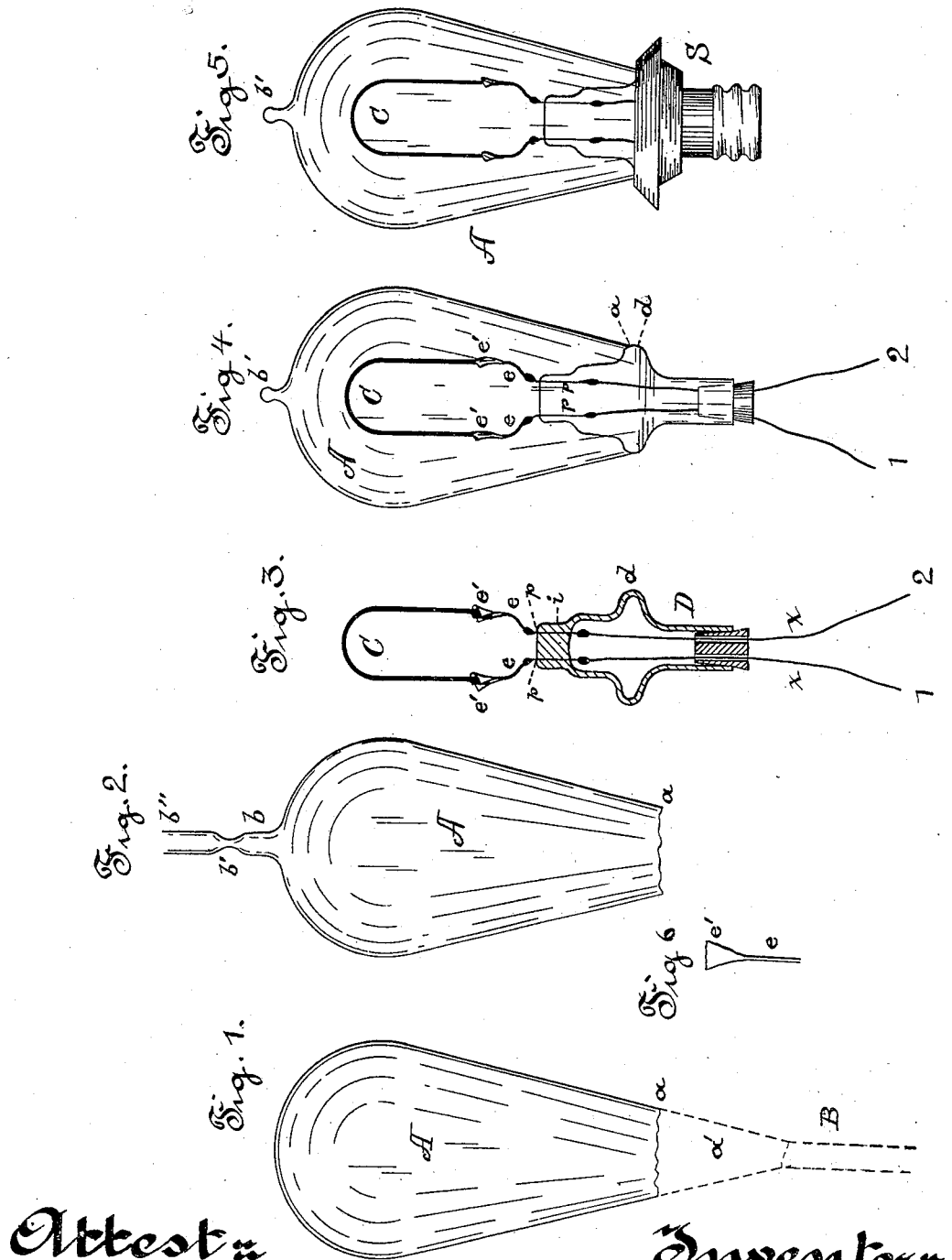
(No Model.)

T. A. EDISON.

ELECTRIC INCANDESCENT LAMP.

No. 266,447.

Patented Oct. 24, 1882.



Attest:

D. D. Mott  
H. W. Seely.

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Inventor:

T. A. Edison  
By *Wyer and Milbrin*  
Attys.

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE  
EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

## ELECTRIC INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 266,447, dated October 24, 1882.

Application filed April 26, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Electric Incandescent Lamp, (Case No. 306;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The electric lamp used in my system consists essentially of a filamentary incandescing conductor of high resistance hermetically sealed in a glass vacuum-chamber.

In Letters Patent of the United States No. 230,255, granted to me, is shown and described a method or process of forming such a lamp. In this present case one object of the invention is to show and describe another method of forming such a lamp, while a second object is to furnish an efficient leading-in wire having a clamping device formed integral with it, as more fully hereinafter described and claimed.

In carrying the improved method referred to into practice the glass chamber is to be blown directly from the pot-glass. The blower takes upon the blowing-rod a sufficient quantity and blows the same into a bulb, giving it just sufficient motion to cause the bulb to slightly elongate, so that its outer extremity shall be or about be semicircular, from which the sides taper gradually in straight or nearly straight or slightly curved lines to the end of the blowing-rod. The bulb so formed is then broken away at the tapered end sufficiently to leave an aperture large enough for the introduction therethrough into the bulb of the carbon and its supports. Upon the semicircular end of the bulb a small opening is made, and a tube is formed thereon either by drawing out the material thereat or by attaching thereto a separate piece of tubing to form the exhaust-tube of the completed lamp for attachment to the exhaust apparatus. A small piece of tubing is taken and an enlargement blown or formed therein of a diameter about equal to that of the aperture referred to as being made in the tapering or conical end of the bulb. The leading-in wires—*i. e.*, the wires which pass into the lamp and are to connect with the carbon—

are then laid in this tube, one end thereof being then brought to a nearly melting or welding heat and clamped down by suitable means upon the wires, hermetically and firmly sealing them in the glass of tube. The wires which are preferably used are each in three sections—*viz.*, a central bit of platinum for sealing into the mass of the glass with copper extremities, one leading away from the lamp, and one into the lamp for receiving and supporting the carbon. This latter section may be cut from flat or sheet copper, with an enlarged end, or it may be formed of a bit of wire one of whose ends is flattened out. This enlarged flattened portion is wrapped around or folded upon the enlarged end of the carbon, securing it and making electrical contact therewith. This union may, if desired, be electroplated. The carbon being secured to the leading-in wires and then sealed in the tube referred to, the carbon is introduced into the bulb and the edge of the opening in the bulb and the enlarged portion of the tube sealed together at a welding heat. The lamp is then attached to the exhaust or vacuum apparatus by the exhaust-tube and the air exhausted therefrom. When the proper degree of exhaustion has been attained the lamp is sealed off by a welding and fusion of the exhaust-tube near to the body of the bulb or lamp. This may be better understood by reference to the drawings, in which—

Figure 1 shows the bulb as blown and attached to the blowing-rod; Fig. 2, the bulb with its end broken off and the exhaust-tube attached to the bulb; Fig. 3, the supporting-tube; Fig. 4, the lamp completed and sealed; Fig. 5, the lamp provided with means of attachment to a fixture; Fig. 6, a wire or blank for supporting the carbon.

The blowing-rod B, indicated in broken lines, is dipped into the molten or pot glass and a quantity sufficient for one bulb taken up thereon, which is then blown into the shape shown in Fig. 1. This shape is semicircular at its outer end, from whence the sides taper in straight or nearly straight lines to the smaller end, and this shape distinguishes the electric lamp bulb or globe thus made from any heretofore made. The part *a'* is then cut

or broken from the body of A, leaving an aperture at *a*. A is then heated at *b*, and a tube, *b''*, formed thereon either by drawing out the material at *b* or by attaching thereto a separate piece of tubing. A piece of tubing, D, is taken and an enlargement, *d*, formed thereon of about the diameter or of a slightly larger diameter than *a*. In this tube D are laid the leading-in wires 1 2. These wires are each formed of three sections—a central one, *p*, of platinum, which is the portion to be in contact with the glass, with outer sections, *e x*, of copper. The end *i* of the tube is then brought to a welding heat and squeezed firmly together, sealing the parts *p p* of 1 2 firmly and hermetically therein. The carbon C is then attached to the wire sections *e e*. One of these wires is shown in Fig. 6. They may be cut of the shape there shown from flat copper; but I prefer to take a piece of wire, *e*, and flatten its end to form the enlargement *e'*, which enlargement is folded upon or wrapped around one enlarged end of the carbon, making a firm and secure contact therewith and support therefor. If desired, this union may then be plated. If desired, the neck or tube D may be made as the patent referred to, and the wires and clamps therein shown used; but for economy I prefer the means and methods herein shown. The tube and carbon being arranged in relation to each other, as shown in Fig. 3, the carbon is introduced within the body of A and the edges *a*

and *d* brought to a welding heat and sealed together. The lamp is then attached by the exhaust-tube *b''* to the vacuum apparatus, and when the proper degree of vacuum has been reached it is sealed off at *b'*, the result being the lamp shown in Fig. 4. Means S for attaching the lamp to its support or fixture are then secured thereto, and the lamp is ready for the market.

What I claim is—

1. The method of manufacturing incandescent electric lamps, substantially as set forth, consisting in forming the inclosing bulb or globe directly from molten or pot glass, forming separately the supporting tube or neck for the incandescent conductor, sealing therein the leading-in wires, attaching the carbon thereto, and then hermetically uniting the parts by a welding together prior to the exhaustion of the lamp, substantially as set forth.

2. A leading-in wire composed of a central platinum section for sealing into the glass an outer section and an inner section, having a clamping device formed integral therewith, substantially as set forth.

This specification signed and witnessed this 21st day of April, 1881.

THOS. A. EDISON.

Witnesses:

WM. H. ALDEN, Jr.,

H. W. SEELY.