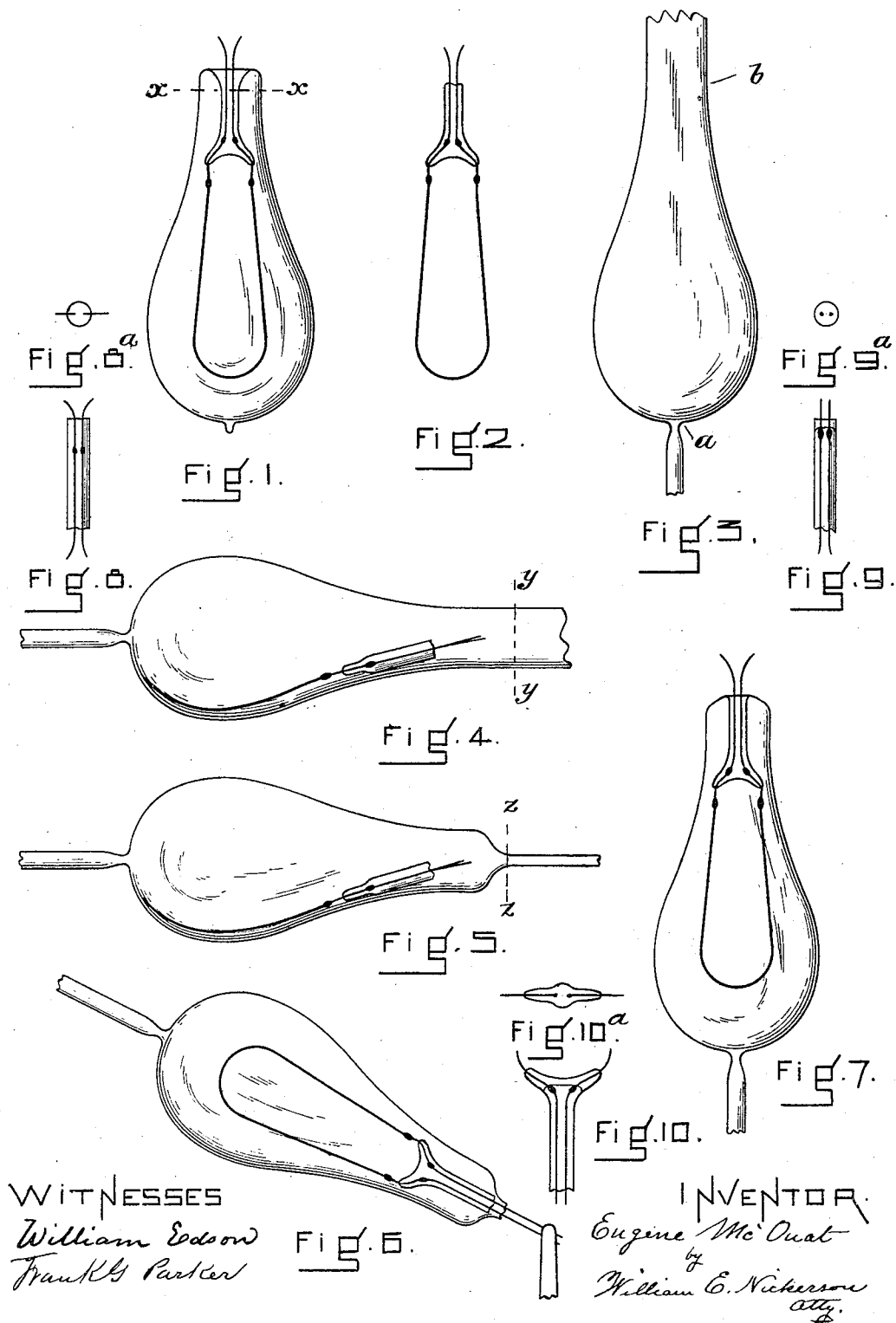


(No Model.)

E. McOUAT.
INCANDESCENT ELECTRIC LIGHT.

No. 481,047.

Patented Aug. 16, 1892.



UNITED STATES PATENT OFFICE.

EUGENE MCOUAT, OF BOSTON, MASSACHUSETTS.

INCANDESCENT ELECTRIC LIGHT.

SPECIFICATION forming part of Letters Patent No. 481,047, dated August 16, 1892.

Application filed July 9, 1891. Serial No. 398,940. (No model.)

To all whom it may concern:

Be it known that I, EUGENE MCOUAT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Incandescent Electric Lights, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a method of arrangement and construction of the parts of an incandescent electric lamp that are more immediately connected with the leading-in wires and the sealing in and mounting of the same, the object being to lessen the length of platinum wire required and to so improve the "mount" and its connection with the body of the bulb of the lamp that there shall be the least possible danger of accidental fracture and leakage at the places of juncture of the wire with the mount and of the mount with the body of the bulb.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a completed electric lamp embodying my invention. Fig. 2 is a vertical section of a mount before it is sealed into the bulb. Figs. 3 to 10^a, inclusive, show the various steps in the making of a lamp which are taken in the practice of my invention.

In manufacturing lamps in which my invention is involved the procedure is as follows: For each lamp leading-in wires are prepared by uniting lengths of previously-formed platinum wire to suitable lengths of copper wire by fusing. A glass tube of suitable size and of a length convenient for handling is heated at one end, and the leading-in wires placed within it so as to occupy diametrically-opposite positions in relation to each other in the tube, (see Figs. 8 and 8^a.) so that the platinum parts will come in contact with the inner edge of the glass and adhere to it, the temperature of the glass being sufficiently high to admit of this adhesion. Now the wire end of the tube is heated to such a degree that it will collapse into a globular shape and form an air-tight seal about the wires. (See Figs. 9 and 9^a.) The wires are now drawn farther away from each other and outwardly, the glass still being hot, so that the mount thus formed appears as shown in Figs. 10 and

10^a. This drawing of the wires, as described, increases the length of contact and insures better adhesion of the glass and platinum, thereby preventing leakage. It also reduces the glass to a thickness and form admirably adapted to resist cracking, the drawing action leaving the glass without internal strain. A mount, as represented in Fig. 2, consisting of a glass tube carrying leading-in wires to which a "filament" is suitably attached and whose open end is not expanded is prepared. A bulb is then taken, Fig. 3, to which a small tube has been attached, as at *a*, but whose neck *b* is as it comes from the glass-house, and the mount, Fig. 2, is placed loosely within it, (the bulb being held horizontally,) as shown in Fig. 4. This causes the filament to be deflected against the bottom end of the bulb by the weight of the mount; but well-prepared filaments will not be injured thereby, but will slip around the bulb as it is slowly turned in the blower's flame. The neck of the bulb is now heated at the line *y y*, Fig. 4, and the outer end drawn off, leaving the neck as shown in Fig. 5. The slender glass spur resulting from the last operation is scratched with a file and broken off at the line *z z*, Fig. 5, leaving an opening at least as small as the unexpanded open end of the mount-tube. Through the small opening thus formed the wires of the mount are caused to protrude by simply inclining the bulb, as shown in Fig. 6, and are there held by pinchers, so that the unexpanded end of the mount is brought in contact with the parts around the opening, which are now heated and blown, until a union takes place, resulting in the form shown in Fig. 7. The neck end of the bulb is again softened in the flame and the final step taken, which is to grasp the wires with pinchers and push the mount and adjacent parts inward, properly locating the filament and giving the finished form, that of an inwardly-projecting cone, as shown in Fig. 1, in which the line *x x* shows the juncture of the unexpanded mount-tube to the substance of the bulb. This act of pushing in the mount is important, as it has a tendency to reduce the thickening of the glass at the line juncture and gives the parts a form well adapted to eliminate and resist strains in the glass. Lamps made by this method very seldom

crack and require no annealing, while the operation is so simple that the necessary skill to perform it is more easily acquired than in any other method known to me.

5 While I am aware that many ways of "sealing in" tubular mounts have been used, they have always involved an expanded tube, which is productive of much after damage
10 from cracking, as well as more labor in making.

By using an unexpanded tubular mount I am able to accomplish several useful results, most important of which are economy in labor and skill and the manufacture of a lamp that
15 will not crack or leak in the neck.

My invention is especially useful in the making of incandescent lamps of large size, since in such lamps there is particular need of keeping the lines of juncture as short as
20 possible.

I claim—

1. The above-described method of making an incandescent electric lamp, consisting of the following steps: first, uniting to the interior of an adhesively hot glass tube two platinum wires; second, causing the said tube to collapse by heat, so that the edges of the tube

shall seam together and form a globular mass around the wires; third, drawing the wires away from each other and outwardly, dragging the adhering glass with them, so as to insure better contact and to leave the glass in better form for resisting fracture, substantially as described. 30

2. In an incandescent electric lamp, the method of manufacture, consisting of the following steps: first, placing the prepared tubular mount with attached filament loosely into the open-neck lamp-bulb; second, drawing down the neck of the bulb while the mount is within it and cutting off the former at a point where it is at least as small as the end of the mount-tube; third, melting together the unexpanded open end of the mount-tube and the drawn-out neck of the lamp-bulb; fourth, pushing the mount and adjacent parts inward until the filament is properly located and the end of the neck of the bulb assumes the form of an inwardly-projecting cone, substantially as described. 35 40 45

EUGENE MCOUAT.

Witnesses:

EDWARD E. CARY,
WILLIAM EDSON.