(No Model.)

R. J. SHEEHY.

INCANDESCENT ELECTRIC LAMP.

No. 289,456. Patented Dec. 4, 1883.

Fig. 1,

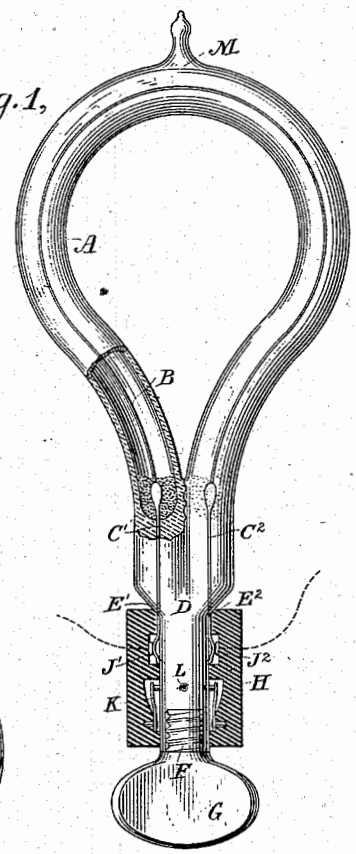


Fig. 2,

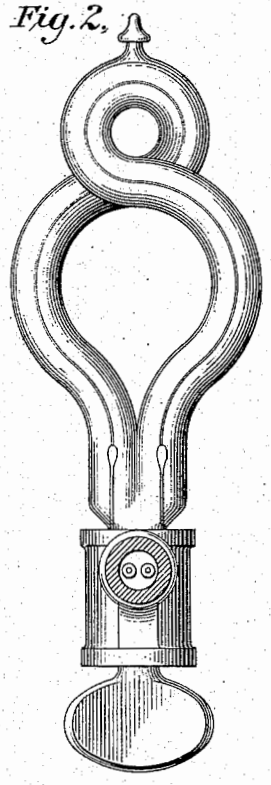


Fig. 3,

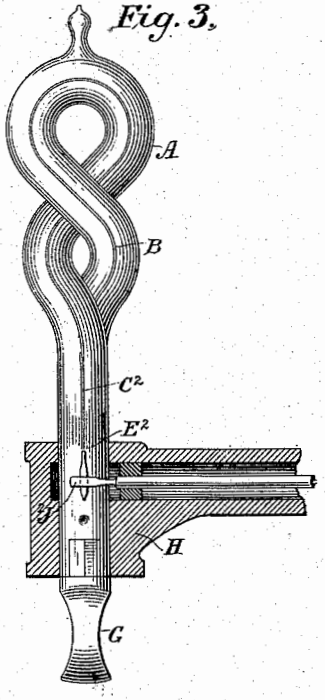
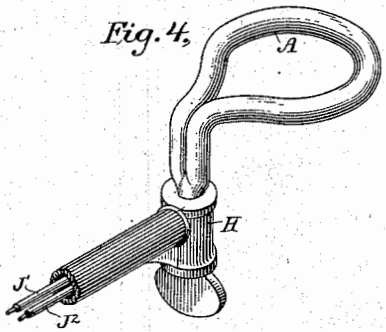


Fig. 4,



WITNESSES

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INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 289,456, dated December 4, 1883.

Application filed December 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. SHEEHY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Incandescent Electric Lamps, of which the following is a specification.

My invention relates to that form of electric lamp in which a filament of carbon or other material is heated to incandescence by the passage of an electric current, said filament being contained within a sealed chamber of transparent material from which the air has been extracted.

In particular my invention relates to the shaping of said filament, to the shape and construction of said chamber, and to the centering of said filament within said chamber. If the ends of a carbon filament are brought together, the filament, having more or less elasticity, will assume the form of a curve. If, then, the carbon be slightly twisted on its own axis, a compound curve may be produced. Further, in the manufacture of such filaments, it is possible to give them curvilinear shapes, to which they will more or less return if temporarily extended or stretched. Availing of these principles, I give to the filament (either in the course of manufacture or by subjecting it to tension after completion) a shape preferably of a sinuous nature, and in place of the bulb or globe commonly employed I make use of a tube of uniform caliber, curved and twisted to exactly conform with the filament, in order that when said filament has been introduced and its ends have been firmly united within the tube it (the said filament) will be coincident throughout its length with the axial line of said tube. The ends of the filament are united to metallic conductors, the glass is molded about the entrance of these conductors, and the air is extracted from the tube by means of an opening, which is subsequently hermetically sealed. The complete lamp thus formed is attached to a support or bracket by mechanism to be hereinafter described.

A lamp constructed on the above principles possesses, among others, the following advantages: The liability of breakage is decreased in consequence of the small diameter of the tube as compared with that of the bulbs or globes heretofore made use of; the light-giving capacity of the lamp is increased by having less glass to penetrate. Further, by using the tube in place of a globe or bulb, all portions of the glass are uniformly heated, which decreases the liability to breakage, and by applying my method of shaping both the carbon and tube I am enabled to give to the lamp an illuminating capacity approximately equal in all directions.

My invention is set forth in the accompanying drawings, in which Figures 1, 2, and 3 exhibit different forms of my tube-lamp. Fig. 4 is a perspective view of the lamp shown in Fig. 1, bent so that the light may pass downward without obstruction.

Similar letters of reference have been applied to the same parts appearing in the different figures.

Referring to the figures, A represents a tube of glass of the requisite thickness and diameter to withstand the action of the heat which is to be generated within it. The carbon filament B is given an appropriate shape, preferably of a sinuous nature, as shown in Fig. 3, such that when viewed in any direction it will appear to be curved. Such a shape may be obtained by availing of the elasticity of the filament or by previously forming it during the process of manufacture in such shape that, while admitting of its introduction into the tube, it will, by reason of its elasticity, reassume approximately its original shape when once inserted. The shape of the carbon having been thus determined, the tube A is molded to conform thereto, so that the filament will be exactly centered within the tube, or, in other words, that the axis of the filament shall be coincident with the axial line of the tube. The heating effects on all parts of the glass will thus be very nearly equalized. The tube having been thus prepared, the carbon filament is introduced, advantage being taken of its elasticity when cold, or of its flexibility during the passage of the heating-current. The metallic conductors C′ and C² are united with the ends of the filament by any of the well-known processes. Before sealing the ends of the tube I introduce a small quantity of sand or finely-divided vitreous material, the object of which is to provide a means by which the deposits of carbon may be erased

from the inner surface of the tube by simply turning the tube and allowing it (the vitreous material) to rub or scrape upon the inner surface. The ends of the tube are cemented together, as at D, when in a molten condition, the conductors C′ and C² having egress at the points E′ and E². The neck D is connected in any well-known manner—as by a screw, F—to a handle, G. The neck D traverses an opening in the bracket or support H, the line-conductors being introduced into said support at points J′ and J², so that in turning the handle G the conductors C′ and C² may be brought into contact with the line-conductors J′ J², or such contact may be broken at will. To insure perfect position, I make use of a spring, K, which, with every quarter-revolution, enters a slight depression or indentation, L, in the neck, and operates to retain the neck more or less in the required position. To extract the air from the tube, I prefer to leave an opening at the point M, at which place the glass may be preferably somewhat thicker than the remainder of the tube. The air having been extracted at this point by means of a suitable exhauster, the tube is hermetically sealed, so as to present the appearance shown in the figure.

Having thus described my invention, what I desire to claim by Letters Patent is—

1. The combination, substantially as herein-before set forth, of a curved tube of glass or other transparent material and an illuminating conductor or filament of carbon traversing the axial line of said tube.

2. The combination, substantially as herein-before set forth, of a tube of glass or other transparent material, having a curved projection when viewed in any direction, and a filament of carbon or other illuminating-conductor traversing the axial line of said tube.

3. The combination, substantially as herein-before set forth, of a tube of glass or other transparent material, a filament of carbon or other conducting material traversing said tube axially, and a common neck to which both ends of said tube are welded.

4. The combination, substantially as herein-before set forth, of a tube, a filament of carbon within said tube, a common neck to which both ends of said tube are welded, a system of electrodes carried by said neck, and a handle whereby said neck may be revolved.

In testimony whereof I have hereunto subscribed my name this 9th day of December, A. D. 1882.

ROBERT J. SHEEHY.

Witnesses:
DANIEL W. EDGECOMB,
CHARLES A. TERRY.