

(No Model.)

S. MARTIN & J. F. RICHARDS.

ELECTRIC ARC LAMP.

No. 270,449.

Patented Jan. 9, 1883.

Fig. 1.

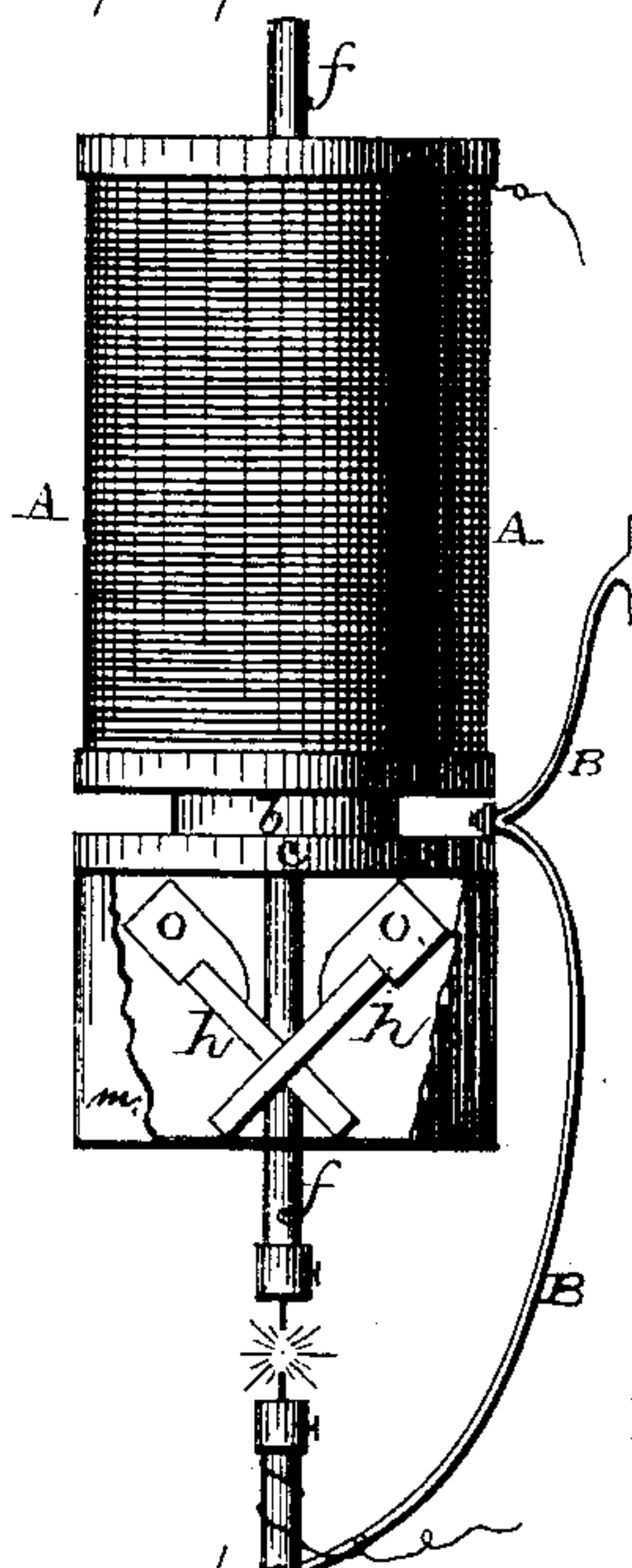


Fig. 2.

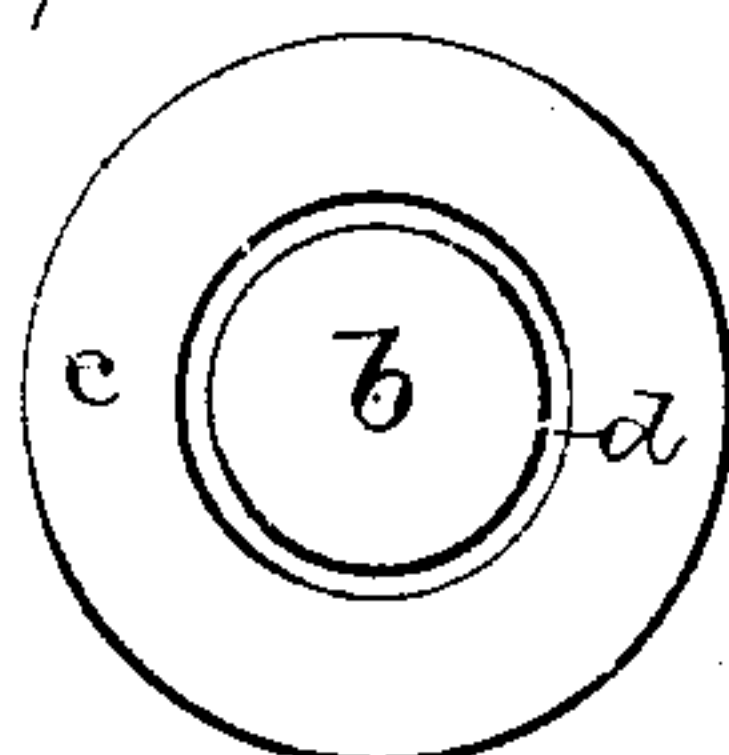


Fig. 5.

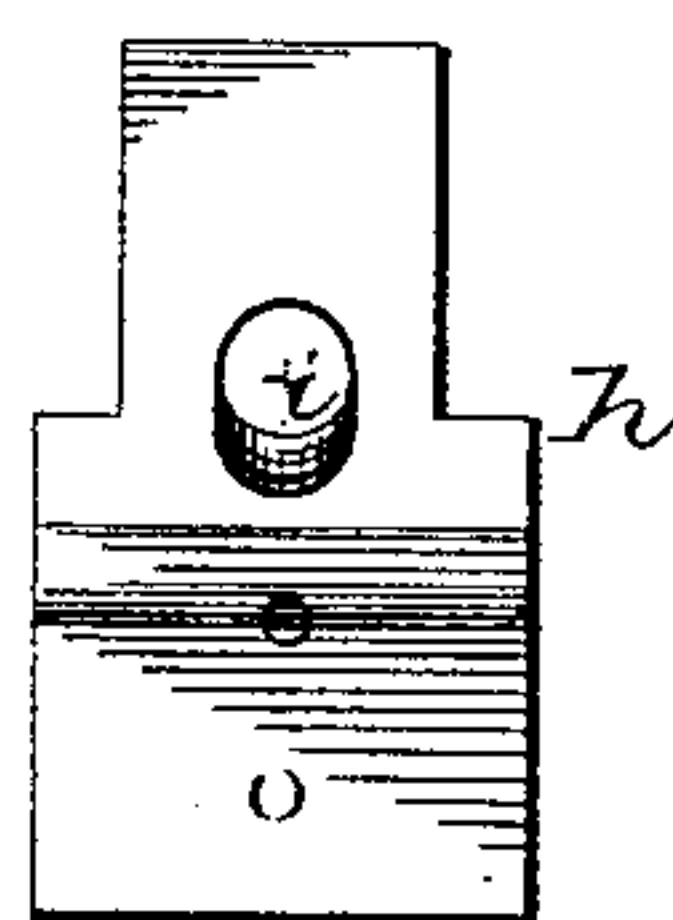


Fig. 4.

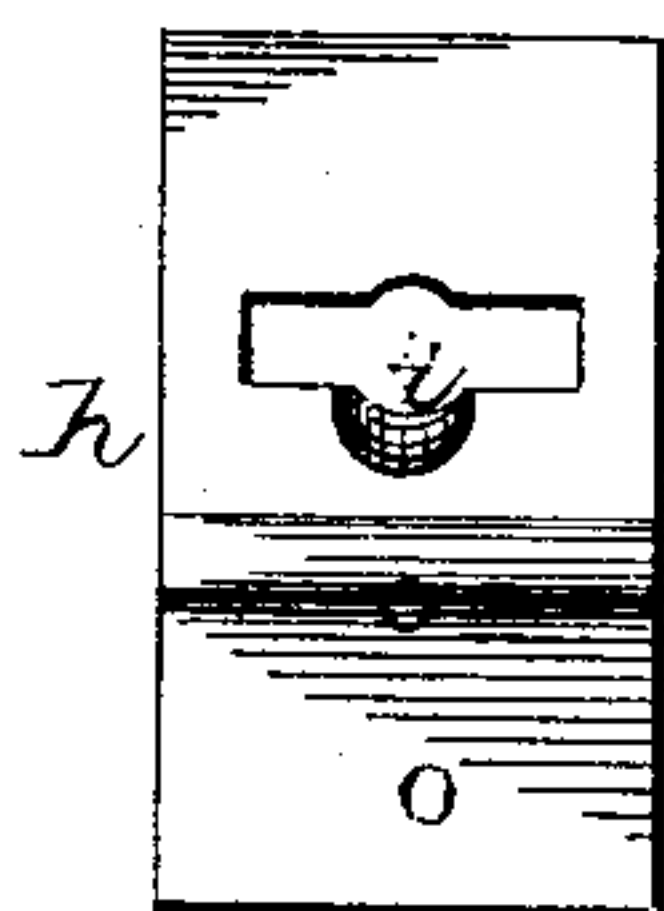
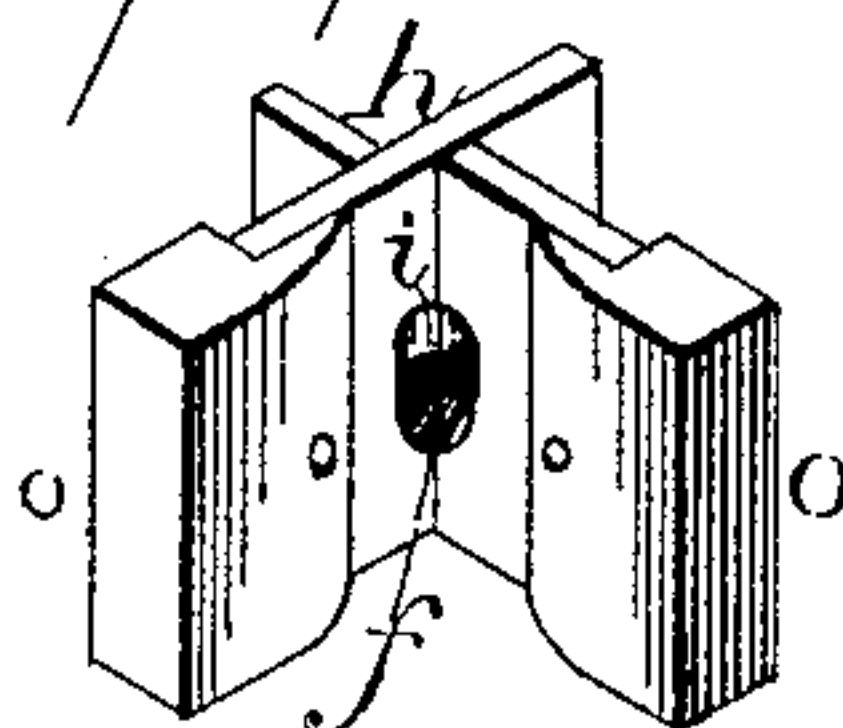


Fig. 3.



— Witnesses. —

Louis F. Gardner  
Jas. F. Johnson.

— Inventor. —

Saml. Martin,  
Jas. F. Richards,  
per  
F. A. Lehmann,  
atty.

# UNITED STATES PATENT OFFICE.

SAMUEL MARTIN AND JAMES F. RICHARDS, OF PITTSBURG, PA.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 270,449, dated January 9, 1883.

Application filed November 9, 1882. (No model.)

*To all whom it may concern:*

Be it known that we, SAMUEL MARTIN and JAMES F. RICHARDS, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to an improvement in electric lamps; and it consists in the adaptation of an armature through which the carbon-holder carrying the carbon at its end passes, which armature, in accordance with the magnetic power evolved, allows the holder to gradually slide down and maintain the required distance for the arc between the carbon points, as will be fully described hereinafter.

The accompanying drawings represent our invention.

Figure 1 is a side elevation of a lamp embodying our invention.

Figs. 2, 3, 4, 5 are detail views.

Letter A represents an electro-magnet vertically attached to a rod, B. Around the projecting end of the core *b* is a flat brass collar, *c*, flush with the end of the magnet, with a groove, *d*, surrounding the magnet. Through the core of the magnet is an opening for the passage of the carbon-holder *f*, that carries at its lower end the carbon point, to be met by a similar one on a fixed and insulated rod underneath. On the carbon-holder *f*, facing and in proximity of the magnet, is an armature, *h*, consisting of two brass plates crossing each other and armed at their ends toward the magnet with soft iron. These pieces *o* of soft iron are secured to the plates *h* by means of rivets, and serve as the means of operating the plates *h* as they are drawn toward or allowed to fall away from the magnet. In one of the brass plates of the armature is a slot into which the other, cut away for the purpose, enters at right angles with the former, and the armed ends of both plates are turned toward the magnet. The slot is slightly wider than necessary to admit the plate to allow the position of the plates to be changed from a right to an obtuse or an acute angle. Through both plates of the armature, when at a right angle to each other, is a circular hole, *i*, passing through the point of intersection, for the carbon-holder to pass through, which hole, when the plates are inclined to an angle greater or

less than ninety degrees, becomes elliptic by the two opposite sides being brought closer together. The carbon-holder, sliding through the hole *i* while circular, is therefore held fast when it ceases to be of that form, caused by a change in the relative position of the plates, and again released when the former status is re-established. Being placed near the magnet, the armed ends of the plates are more or less drawn toward it, according to the development of the magnetic power, and when greatest the armature approaches to the groove *d*, by which it is prevented from coming in contact with the magnet. The effect of this approach to the magnet is a change of angles between the plates, and consequently of the form of the hole *i* from the circular to an elliptic, the contracted sides of which grip the carbon-holder in two places and prevent it from sliding, thus maintaining the distance between the carbon points until by a diminution of magnetic power by burning the carbon the plates by their own gravity recede, and thereby cause the hole *i* to reassume a more circular form and allow the carbon-holder to slide downward, to be held again as soon as greater magnetic power again attracts the armature. Affected by the slightest change in the magnetic attraction, the armature controls the carbon-holder, allows it to slide down when necessary to restore the arc to its lost or losing brilliancy, and when restored holds it until the carbon has again been consumed to require a nearer approach of its points.

Having thus described our invention, we claim—

In an electric lamp, an armature consisting of two brass plates provided with the pieces of soft iron *o*, and intersecting each other, and provided with a circular hole at the point of intersection for the carbon-holder to pass when the plates are at an angle of ninety degrees to each other, which hole, by a change of position of the plates to a different angle, assumes an elliptic form, in which the carbon-holder is suspended and prevented from sliding down, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

SAMUEL MARTIN.  
JAMES F. RICHARDS.

Witnesses:

LOUIS MOESER,  
T. F. LEHMANN.