(No Model.)

H. W. LIBBEY.

ARC LAMP.

No. 391,477. Patented Oct. 23, 1888.

Fig. 1.

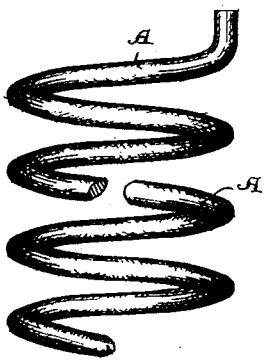
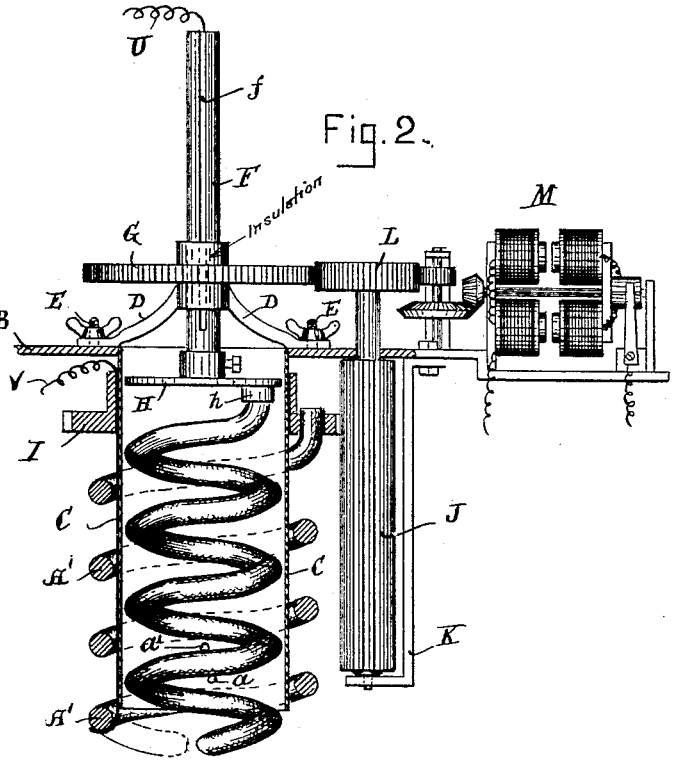


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

HOSEA W. LIBBEY, OF BOSTON, MASSACHUSETTS.

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SPECIFICATION forming part of Letters Patent No. 391,477, dated October 23, 1888.

Application filed October 10, 1887. Serial No. 251,886. (No model.)

To all whom it may concern:

Be it known that I, HOSEA W. LIBBEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Carbons for Electric Lights, of which the following is a specification.

The object of my invention is to produce a feed for spiral carbons for electric lighting in which two spiral carbons are arranged one within the other.

The invention consists in the mechanism whereby the spiral carbons are fed in opposite directions, so as to always bring their points of contact in the same place.

Referring to the accompanying drawings, Figure 1 represents a single spiral carbon for electric lighting as used with my invention. Fig. 2 shows the feeding mechanism for spiral carbons embodying my invention.

A represents a carbon made of suitable material and about one-half inch diameter, and formed into the form of a spiral. This may be done by means of inside and outside dies, the outside dies being formed in two parts and the inside dies composed of four blocks and a central or key block, so that after the carbon has been pressed the central or key block is knocked out, when the other sections can easily be removed. After the carbon has been thus formed it is coated with copper in the usual manner, or a copper wire or ribbon may be embedded in the center of the carbon.

I arrange two spiral carbons one within the other, as shown in Fig. 2, in which B is a plate to which is secured a cylinder, C, of non-conducting material. Over the top of this cylinder C is a bearing, D, secured to the plate B by thumb-nuts and screws E. Through the bearing D passes a rod or shaft, F, provided with a groove, *f*, in which works a feather on the hub of a cog-wheel, G, which rests upon the bearing D. To the lower end of the shaft F is secured a plate or disk, H, provided with a hollow projection, *h*, in which the upper end of the carbon A is placed. The carbon passes down through the cylinder C and is supported and kept from falling by a pin, *a*, in the said cylinder C, and a pin, *a'*, causes it to be fed forward as the wheel G revolves, as hereinafter described.

I is a cog-wheel the hub of which extends up, so as to have a bearing on the cylinder C. The upper end of a carbon, A', that surrounds the cylinder C, is secured to the wheel I, and the carbon is supported and fed forward by the pins *a a'* the same as the inside carbon, A.

The wheel I is in gear with a long pinion, J, supported at its lower end by a step, K. The shaft of the pinion passes up through the plate B and is provided at its upper end with a cog-wheel, L, which is in gear with the cog-wheel G.

As the carbons A A' are of different diameters, the smaller carbon requires to be fed so much faster than the larger one that the ends of the carbons as they are burned away will always be in the same position, consequently the gears I J L G will have to be arranged accordingly.

Motion is imparted to the wheel L from any convenient source. In the drawings I have shown it driven from a small electric motor, M; but any other means may be employed.

The positive and negative wires U V are in connection with the carbons in any convenient manner. In the drawings the wire U is shown connected to the upper end of the shaft F and the hub of the wheel G is of non-conducting material, so that the current passes down the shaft to the plate H, and thence to the carbon A. The wire V extends down outside the cylinder and is bent over at its end for the carbon A' to rest upon. The hub of the wheel I is also in contact with the wire V and transmits the current through the wheel I to the end of the carbon A.

Although I have shown and described one means of feeding the carbons, I do not confine myself to the particular details of construction shown and described, as they may be varied without departing from my invention.

What I claim as my invention is—

1. Spiral carbons arranged one within the other with a cylinder of insulating material between them, in combination with mechanism for causing them to rotate in opposite directions, and the inner one at a quicker speed than the outer one, so that the points of contact will always be in the same place, substantially as shown and described.

2. The shaft T, provided with a disk, H, to

which is secured the spiral carbon A, the bearing D, and cog-wheel G, in combination with the wheel I, to which is secured the carbon A′, the pinion J, and wheel L, driven from an electric or other motor, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOSEA W. LIBBEY.

Witnesses:
L. W. HOWES,
E. PLANTA.