

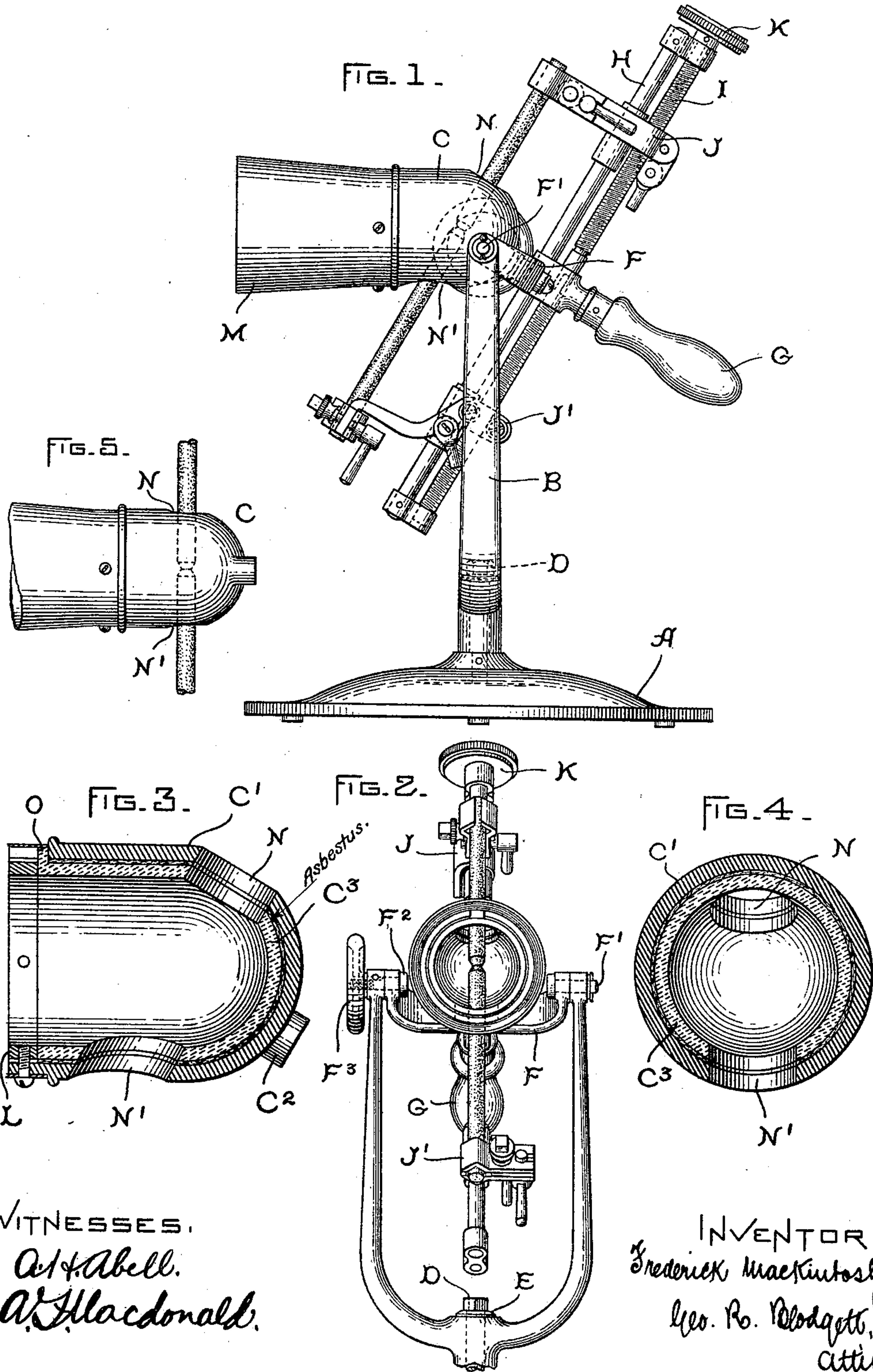
No. 631,313.

Patented Aug. 22, 1899.

F. MACKINTOSH.
ELECTRIC ARC LAMP.

(Application filed July 16, 1897.)

(No Model.)



WITNESSES.

A. H. Abell.

A. Macdonald.

INVENTOR.
Frederick Mackintosh
Geo. R. Blodgett,
Att'y.

UNITED STATES PATENT OFFICE.

FREDERICK MACKINTOSH, OF SCHENECTADY, NEW YORK, ASSIGNOR TO
THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 631,313, dated August 22, 1899.

Application filed July 16, 1897. Serial No. 644,859. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK MACKINTOSH, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, (Case No. 531,) of which the following is a specification.

The present invention has for its object to provide a suitable feed mechanism with a simple and inexpensive reflector of such a character that the light reflected thereby shall be soft and evenly diffused and suitable for engraving and photographing.

In the accompanying drawings, attached to and made a part of this specification, Figure 1 is a side elevation of my improved lamp. Fig. 2 is a front elevation with the base broken away. Figs. 3 and 4 are respectively a longitudinal and cross section through the reflector, and Fig. 5 is a partial view showing the preferred position of the carbons with respect to the reflector.

Mounted upon a suitable base or stand A is a fork-shaped standard B, supporting at its upper end the reflector C and lamp mechanism. The standard is secured to the base by a bolt D, with a spring-washer E interposed between the head and the standard, permitting the parts to be moved with respect to each other, for training the beam of light in the horizontal plane, and at the same time preventing accidental movement. Pivotaly secured in the standard is a yoke F, which supports the reflector C and the lamp mechanism. One side of the yoke is pivoted to the standard by a pin F', which is held in place by a cotter, and the other side by a screw-threaded pin F², having a clamping-nut F³. Extending rearwardly from the yoke is a handle G, which is employed in directing the beam of light from the arc, the arrangement of parts being such that the beam can be trained over side ranges both vertically and horizontally.

The lamp mechanism comprises two parallel rods H and I, the latter being provided with right and left hand screw-threads arranged in such manner that the carbon-holder carriages J and J' can be fed toward and away from each other by the handle K. The car-

bon-holders secured to carriages J J' may be of any desired construction which will permit the carbons to be adjusted therein. As herein shown, the carbons are placed at an angle to the center line of the reflector, the arrangement being such that the rays of light from the crater in the upper carbon will issue in a free and unobstructed manner.

The reflector C comprises a cylindrical casting C', open at one end and closed at the other by a parabolic end having a boss C² thereon, by which it is secured to the yoke F. Mounted within the casting is a parabolic reflector of porcelain or other refractory material C³, adapted to be rendered incandescent by the arc formed between the carbons. The material when heated to this point constitutes a very excellent reflector and one which intensifies the light to a remarkable degree. Between the reflector and the casting is provided a layer of asbestos, permitting a slight expansion of the reflector independent of the casting. To secure the reflector in place, a projection O is provided thereon, which engages with a slot in the casting C'. In addition to this a ring L is employed, situated directly in front of the reflector and secured to the casting by screws. Surrounding the outer end of the casting and secured thereto is a hood M, adapted to serve as a support for a plate of colored glass or a lantern-slide. Two holes N and N', extending into the interior of the reflector, are provided, through which the upper and lower carbons extend. These holes are somewhat larger than the carbons, so as to prevent the arc from being short-circuited through the outer casting.

In Fig. 5 is shown a slight modification of my invention, in which the carbons are placed at right angles to the center line of their reflector and the position of holes N and N' changed. I have found that when the carbons and reflector are arranged as shown the reflected light is more evenly diffused than when the carbons are placed as shown in Fig. 1. In the latter case when the light is thrown on a screen or printing-frame it will be found to be very intense in the center and gradually decrease in intensity toward the outer edge of the beam. With the arrangement shown in Fig. 5 the light from the arc is

thrown upon the reflector in such manner that it is very evenly diffused, and when employed for blue-printing (a very common use) the result shows an even color on the print, indicating an even distribution of light from the arc.

Between the casting C and the parabolic reflector is a space P, which allows for the expansion of the reflector.

10 In operating the lamp the beam of light is trained both in the horizontal and vertical direction by the handle G, and as the carbons are consumed they are given the proper relative feed by the hand-wheel K.

15 What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. An electric-arc lamp having the arc inclosed in a chamber of refractory material whose spectrum is rich in chemical rays, a 20 casing for said material, and an expansion-space between the two filled with a refractory yielding heat-non-conducting material, such as asbestos.

2. An electric-arc lamp having the arc inclosed in a chamber of refractory material adapted to be rendered incandescent by the arc and whose spectrum is rich in chemical rays, a casing around said material, a space between the two filled with a yielding refractory heat-non-conducting material, and 30 means at the end of the chamber for fastening the casing and lining together.

3. An electric-arc lamp comprising an arc-inclosure, constituted of an outer casing of iron closed at one end and open at the other, 35 a lining of refractory material whose spectrum is rich in chemical rays, a space between the two filled with a yielding heat-refractory material, means at the open end of a casing for fastening the lining and casing together, 40 and arc-electrodes fed through openings in the side of the casing.

4. In an electric-arc lamp, the combination of a base, a fork-shaped standard mounted on the base for oscillating or rotary movement, 45 a yoke pivotally secured to the arms of the fork, a reflector secured to the yoke, lamp mechanism also secured to the yoke, and a handle for directing the beam of light.

5. In an electric-arc lamp, the combination 50 of a base, a fork-shaped standard mounted on the base, a yoke pivotally supported by the fork, a hand-nut for clamping the yoke to the fork, a parabolic reflector composed of refractory material, a casing surrounding the 55 reflector and secured to the yoke, and a hood secured to the casing for supporting a lantern-slide or plate of glass.

In witness whereof I have hereunto set my hand this 30th day of June, 1897.

FREDERICK MACKINTOSH.

Witnesses:

B. B. HULL,

A. F. MACDONALD.