(No Model.)

2 Sheets—Sheet 1.

W. P. FREEMAN.

ELECTRIC ARC LAMP.

No. 289,823. Patented Dec. 11, 1883.

FIG. 1.

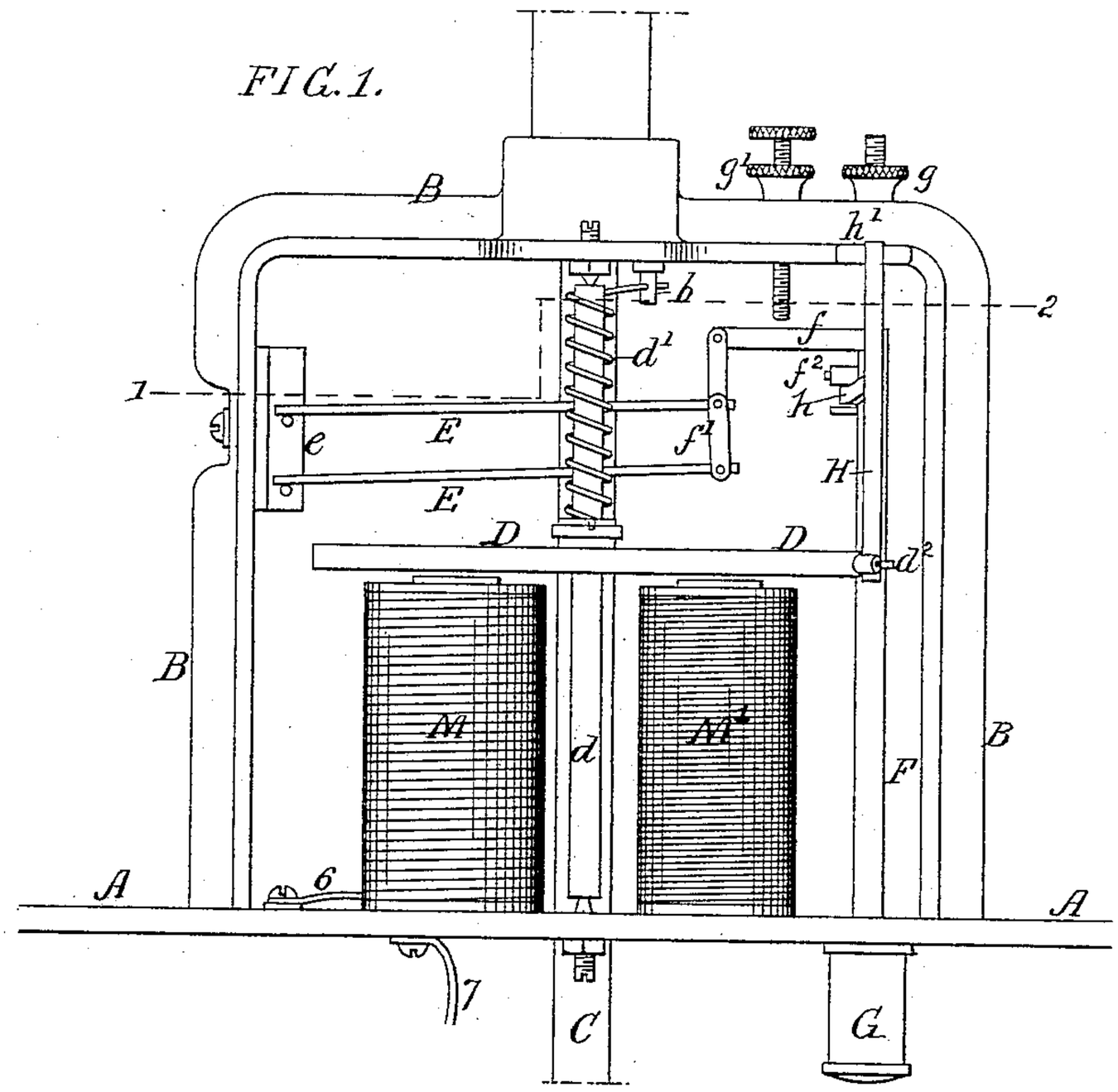
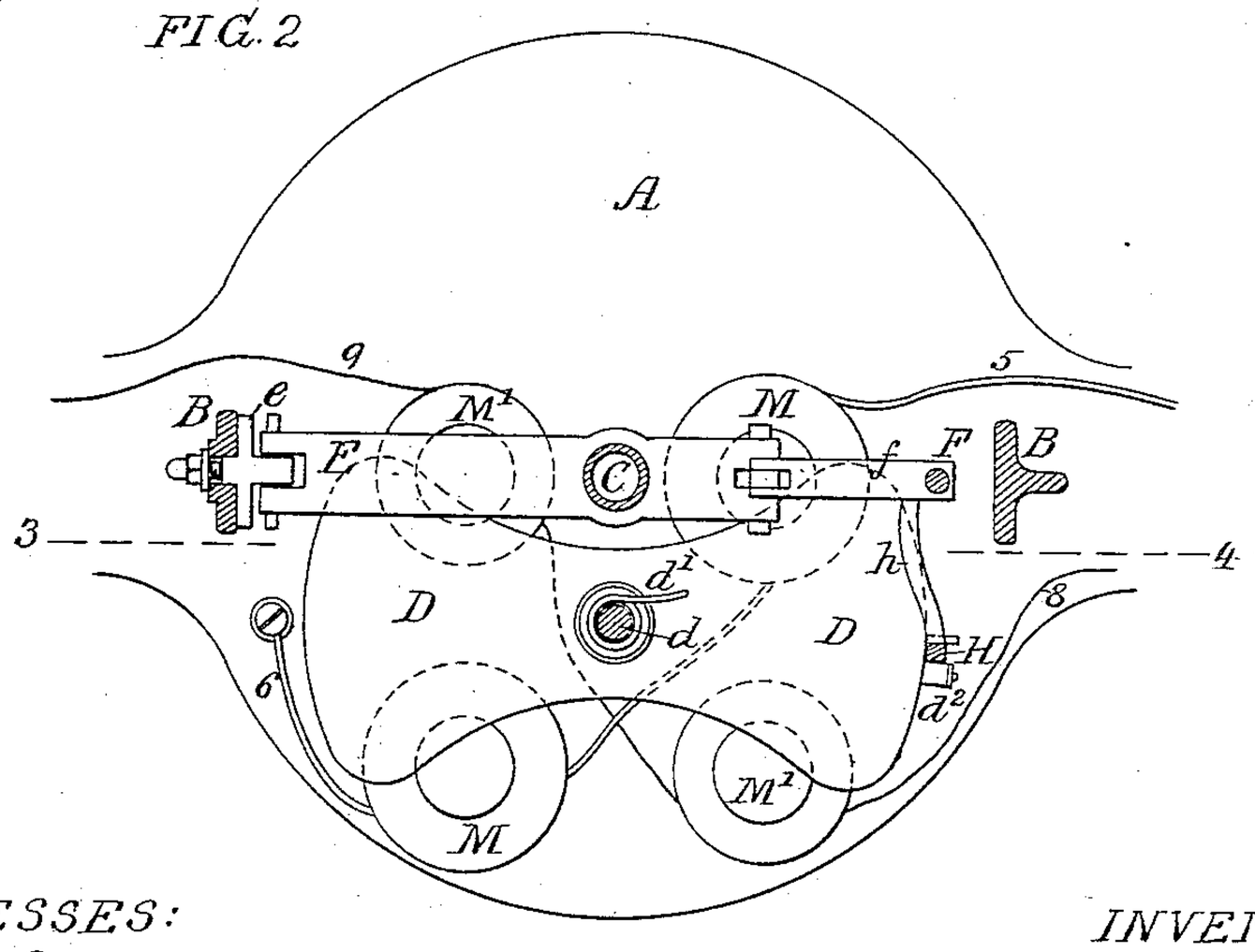


FIG. 2.



WITNESSES:

Harry Drury

Hamilton O. Turner.

INVENTOR:

Warren P. Freeman

by his Attorneys

Howson and Sons

(No Model.) 2 Sheets—Sheet 2.

W. P. FREEMAN.

ELECTRIC ARC LAMP.

No. 289,823. Patented Dec. 11, 1883.

FIG. 3.

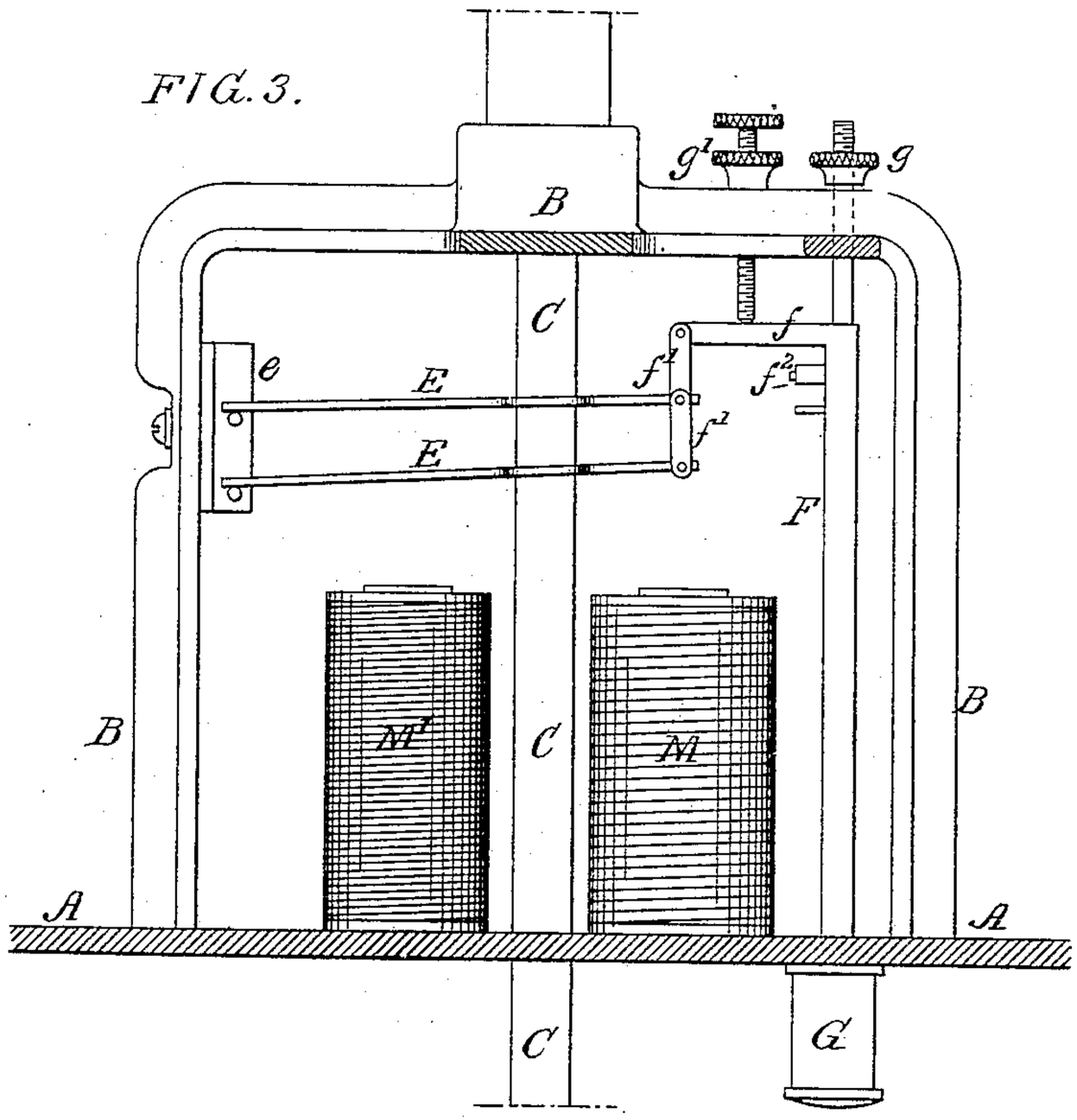
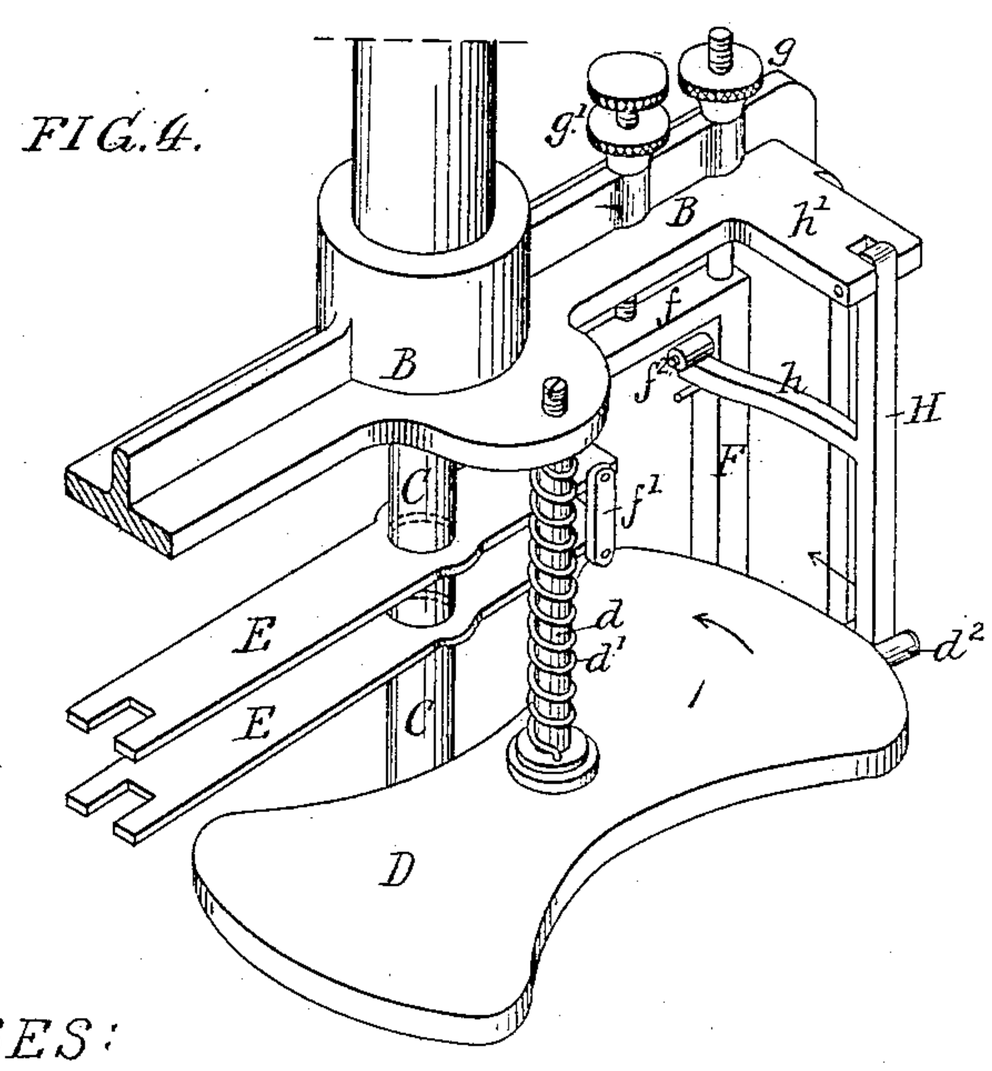


FIG. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WARREN P. FREEMAN, OF BROOKLYN, NEW YORK, ASSIGNOR TO WILLIAM F. JOBBINS, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 289,823, dated December 11, 1883.

Application filed March 10, 1883. (No model.)

To all whom it may concern:

Be it known that I, WARREN P. FREEMAN, a citizen of the United States, and a resident of Brooklyn, Kings county, New York, have invented certain Improvements in Electric-Arc Lamps, of which the following is a specification.

My present invention consists of certain improvements in the construction of the electric-arc lamp for which I obtained Letters Patent No. 266,455, dated October 24, 1882.

In the accompanying drawings, Figure 1 is a side view of sufficient of a lamp to illustrate my invention; Fig. 2, a sectional plan on the line 1 2, Fig. 1; Fig. 3, a vertical section on the line 3 4, Fig. 2; and Fig. 4, a perspective view of a part of my invention.

A is the horizontal plate, and B the arch, constituting part of the frame of the lamp, and through these passes the carbon-holding rod C. On the plate A are mounted the electro-magnets M M′—four in the present instance, two, M M, wound with coarse wire in the main circuit, and two, M′ M′, with fine wire in the shunt-circuit. Over the poles of these four magnets plays the horizontal armature D, carried by the vertical spindle *d*, mounted on adjustable bearing-points passing through the top of the arch and the plate A, as described in my aforesaid patent. A helical spring, *d′*, having one end secured to the armature or its spindle, and the other to a pin, *b*, on the frame, tends to turn the armature against the attraction of the electro-magnets M, while the shunt electro-magnets M′ tend to attract the armature in the same direction as the spring tends to turn it. The main circuit, entering at one of the usual binding-posts on the frame, passes through the conductor 5, Fig. 2, coils M M, and conductor 6 to the frame-plate A, and thence through the flexible conductor 7 to the upper-carbon holder and positive carbon, negative carbon, side bar of the frame or conductor, and exit binding-post, as usual. The shunt-circuit entering through conductor 8 passes through coils M′ M′ and conductor 9 to the exit-post of the lamp.

In my former patent I have shown the clamp-lever for raising the rod C to form the arc as operated by cams or wedge projections on the armature; but in my present invention I have a somewhat modified arrangement of devices, and instead of the one clamp I prefer to use two, E E, as described and claimed in the Letters Patent granted to W. F. Jobbins, as assignee of W. K. Freeman, No. 264,270, September 12, 1882. The outer ends of these clamps rest, as usual, on projections on an adjustable support, *e*, on one of the legs of the arch, while the opposite ends of the clamps are suspended by links *f′* from an arm, *f*, on the vertical rod F. This vertical rod has at its lower end a piston adapted to a dash-pot, G, carried by the plate A, while its upper end passes through and is guided by the top of the arch B, being provided with an adjustable screw-nut, *g*, to limit its downward movement. The upward movement of the rod is limited by the adjustable screw *g′*, with which the arm *f* comes into contact. A pendent lever, H, pivoted at *h′* to the frame, is acted on at its lower end by a pin or pins, *d²*, on the armature D, and has a projecting arm, *h*, which acts on a pin or pins, *f²*, on the vertical rod F, so that when the current passing through the main coils M M causes the attraction of the armature D in the direction of the arrow, Fig. 4, the lever H will, through its arm *h*, lift the rod F, and with it the clamps E E and carbon-holder C to form the arc. When, owing to the consumption of the carbons, the attraction on the armature from the current in the shunt-coils M′ M′ overbalances (with the spring *d′*) the attraction of the main-circuit magnets, the armature will move in the opposite direction, and allow the rod F, clamps, and carbon-holder to drop.

I claim as my invention—

1. The combination of the movable carbon-holder of an electric-arc lamp, clamp-lever, and electro-magnets in shunt and main circuits, with a rotary armature, a guided rod supporting one end of the clamp, and an armed lever acted on by said armature and

acting on the guided rod, substantially as described.

2. The combination of the movable carbon-holder, clamp, and electro-magnets with a rotary armature, guided rod F, carrying the clamp, and armed lever H, pivoted to the frame of the lamp, substantially as set forth.

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

WARREN P. FREEMAN.

Witnesses:

JAMES C. EADIE,

HUBERT HOWSON.