

(No Model.)

E. WESTON.
ELECTRIC LAMP.

No. 258,964.

Patented June 6, 1882.

Fig. 1.

Fig. 4.

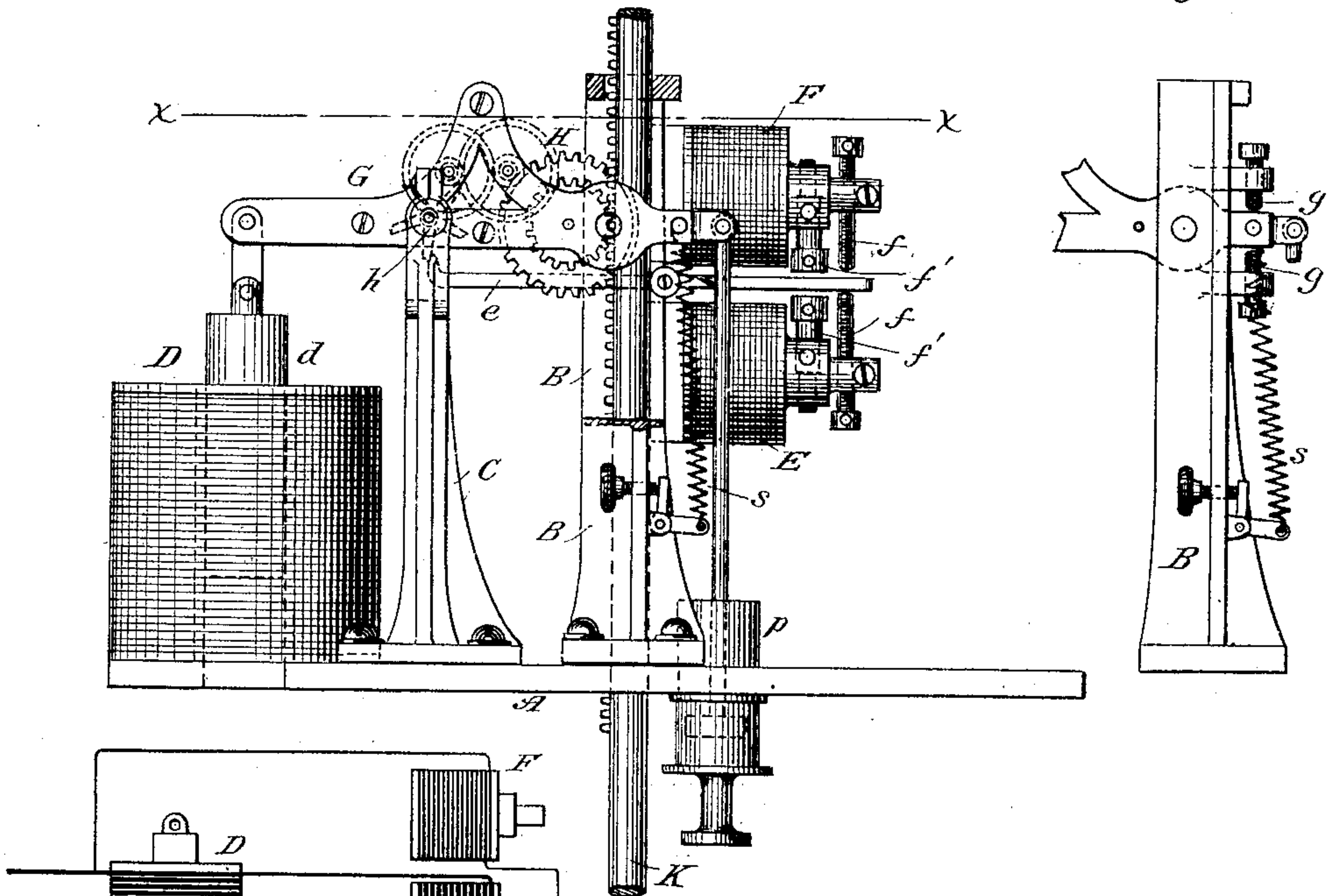
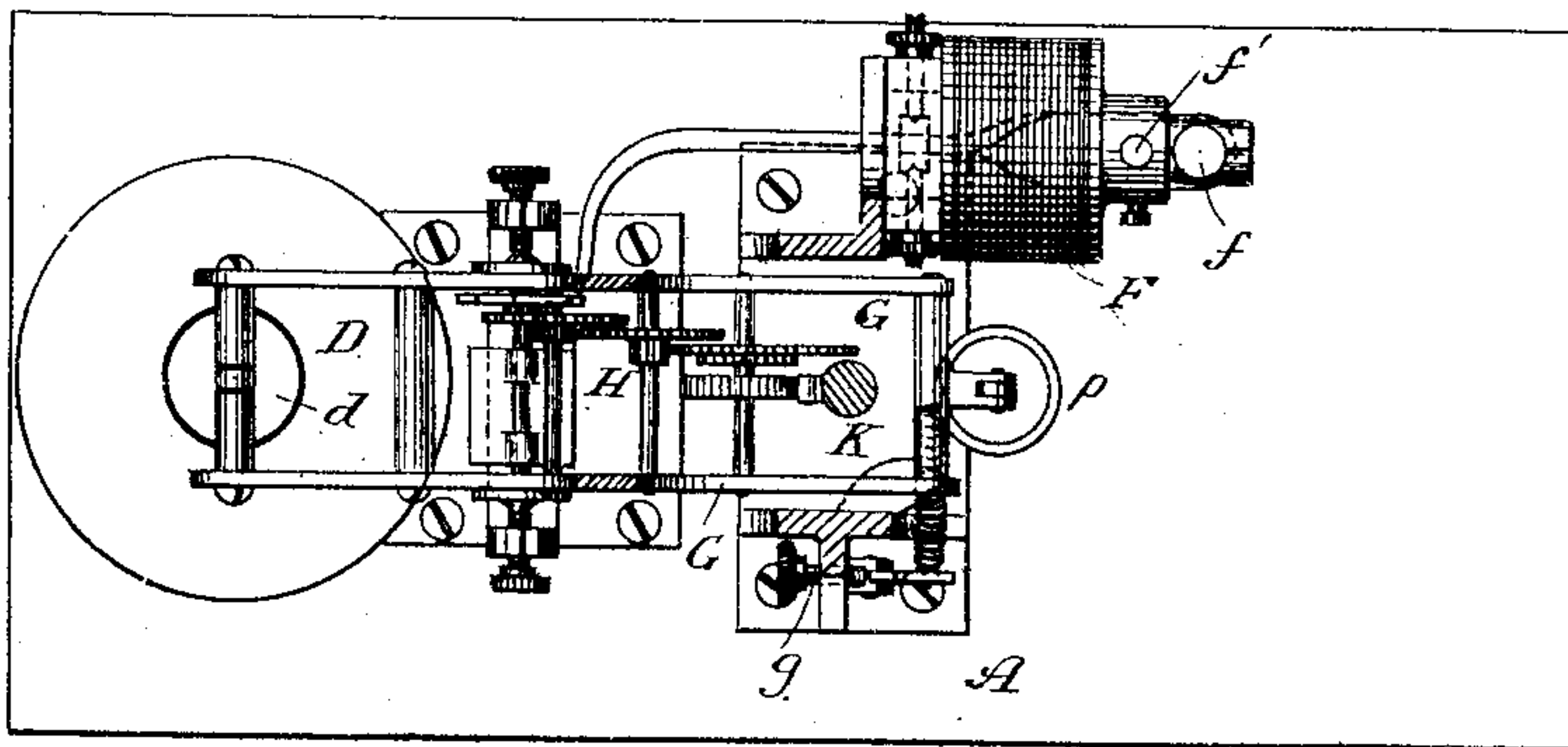
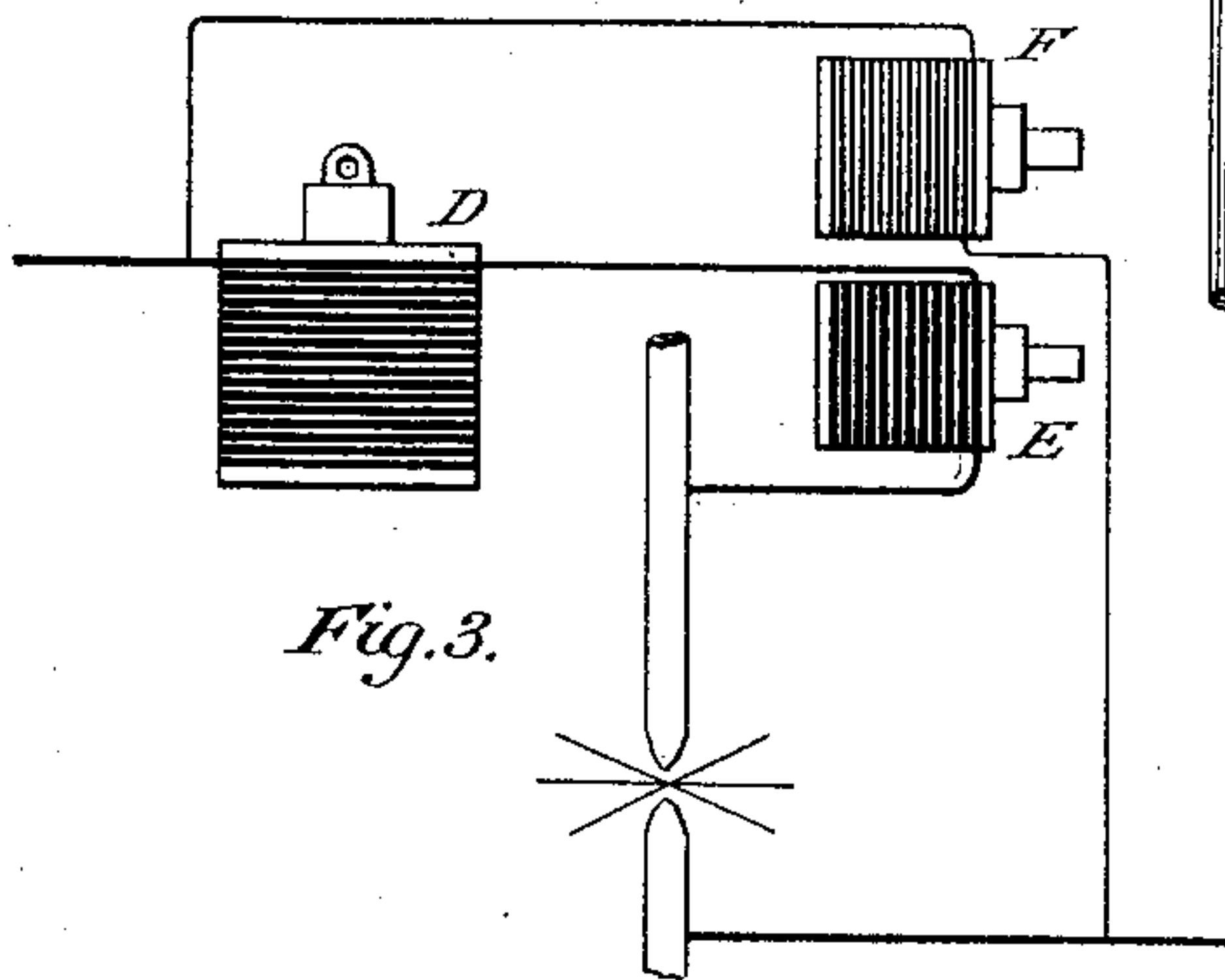


Fig. 3.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 258,964, dated June 6, 1882.

Application filed December 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

10 In another application filed by me an electric lamp or light regulator is shown that embraces a feed-controlling mechanism in conjunction with the upper carbon holder, two electro-magnets, one in the main or arc circuit, and the other in a shunt around the lamp, whose functions are respectively to lock and to release the said feed mechanism, and thereby control the descent of the upper carbon, and also an electro-magnet and certain appurtenances in conjunction with the lower carbon that act on the completion of the circuit to effect the separation of the same from the upper carbon, and thereby establish the arc. In these lamps, and in others similar in principle, the employment of a magnet or magnets, both above and below the arc, is necessitated, which renders the lamp cumbersome and adds greatly to the expense of construction.

30 The main object of my present invention is to obviate these objections, and by the employment of certain mechanism of novel construction to confine the magnets and other devices above described to the usual box or case above the arc. For this purpose I employ a tilting, swinging, or otherwise movable framework or lever, with which the feed-controlling mechanism is connected, two electro-magnets, one in the main circuit, the other in a shunt about the lamp, adapted to effect respectively the locking and release of the said feed mechanism, and a magnet and armature or helix and core, also in the main circuit, for the purpose of tilting or moving the said frame, and thereby determining the separation of the carbons.

45 The drawings hereto annexed, represent in detail the manner in which the invention is or may be carried into effect.

Figure 1 represents the upper portion of the lamp—to-wit, the magnets, the feed mechanism, and a portion of the carbon-carrier. Fig.

2 is a plan of the same, taken on line *x x* of Fig. 1; Fig. 3, a diagram illustrating the arrangements with respect to the magnets and electrodes, and Fig. 4 is a view in elevation of a detached portion of the feed mechanism. 55

Similar letters of reference indicate corresponding parts in all the figures.

A is designed to represent the upper yoke or cross-piece of an electric lamp, upon which, as a bed-plate, the feed mechanism is mounted. 60

B B are two standards or a V-shaped frame fixed to plate A. C is a standard fixed to plate A, to one side of frame B B, and branched near its top. Between its branches, by pivoting-screws, is pivoted a frame, G, containing a train of gear-wheels, H, such as is usually employed in rack-and-pinion lamps, said train meshing with a rack-bar, K, constituting a carbon-holder, and ending in a scape-wheel, *h*, the shaft of which is in line with the pivotal axis of the frame G. 65 70

D is an electro-magnet, or, by preference, a helix, having a core, *d*, connected with an extension of frame G. Stops *g g* are set in arms extending from one of the standards B for limiting the movement of frame G. 75

E F are two electro-magnets, of comparatively small size, fixed to one of the standards B. The former is wound with wire of low resistance, included in the same circuit with helix D and the electrodes, the latter wound with fine wire of high resistance, included in a shunt-circuit about the lamp, as is shown in Fig. 3. Each magnet has an elongated core, in which are set iron screws *f' f'*, forming pole-pieces, and non-magnetic screw-stops *f f*, both pole-pieces and stops being capable of adjustment. Between the above-mentioned pole-pieces is a light lever, partly or wholly of iron, pivoted to one of the standards B and arranged to vibrate in the path of rotation of scape-wheel *h*. 80 85 90

The remaining portions of the lamp are similar to those commonly employed—viz., a dash-pot, *p*, connected with the frame G, an adjustable tension-spring, S, and other mechanism, which I have not considered it necessary to illustrate. 95

The operation of the lamp is as follows: On completing the circuit through the lamp, the core *d* is drawn into helix D, tilting the frame 100

G. At the same time the magnet E attracts the armature *e* and locks the train of wheels H. By this means the arc is established. Should the resistance of the arc increase beyond a certain point, the current which is diverted through magnet F imparts to its core a magnetism sufficient to draw the lever *e* away from magnet E and release the train H. In this manner the length and consequent resistance of the arc is lessened, and this action is repeated until the carbons are consumed.

The magnets E and F, from their character and size, are affected by very slight changes in current-strength, their action being much more delicate than that of helix D. This is an important feature, as the core *d*, unless the current itself be subject to fluctuations, remains nearly stationary, after once adjusting the length of arc, while the carbon is fed downward, upon the least lengthening of the arc beyond a point determined by previous adjustments by the delicate action of the opposing magnets E F.

As stated above, the shaft of the scape-wheel *h* is in line with the pivoted axis of the frame G, so that its general position relatively to the armature-lever *e* is not affected by the angle of inclination of frame G. The feed and adjustment of the carbons are thus, in one sense, independent of each other.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric lamp, the combination, with the upper-carbon holder, of two electro-magnets in the main or lamp circuit, and an electro-magnet in a shunt-circuit, for the purpose of forming and regulating the arc.

2. In an electric lamp, the combination, with

a gravitating carbon-carrier, and feed-controlling mechanism connected therewith, of a helix in the lamp-circuit, and two electro-magnets in the lamp-circuit and in a shunt about the lamp, respectively, for the purpose of forming and regulating the arc.

3. The combination, with a movable frame or lever, carrying a train of gears in engagement with a gravitating carbon-carrier, of an electro-magnet or equivalent in the lamp-circuit connected to the said frame or lever, and two opposed electro-magnets, one in the lamp-circuit, the other in a shunt around the lamp, and a detent controlled by said magnets, substantially as and for the purpose set forth.

4. The combination, with a pivoted frame or lever, carrying a train of gears in engagement with a gravitating carbon-carrier, of an electromagnetic helix in the lamp-circuit, for moving the frame, and two electro-magnets in the lamp-circuit and in a shunt around the lamp, and a detent controlled thereby for locking or releasing the train of gears, as set forth.

5. The combination, with a pivoted frame, of a train of gears and escapement, having its shaft in line with the pivotal axis of the frame, a carbon-carrier engaging with the train, a magnet or its equivalent in the lamp-circuit, for moving the frame, and a detent controlled by the action of two electro-magnets, as set forth, for the purpose of locking or releasing the escapement.

In testimony whereof I have hereunto set my hand this 21st day of December, 1881.

EDWARD WESTON.

Witnesses:

HORACE F. BALDWIN,
JOHN P. DENGLE.