

(No Model.)

C. W. HARRISON.
Electric Lamp.

2 Sheets—Sheet 1.

No. 234,032.

Patented Nov. 2, 1880.

FIG. 2

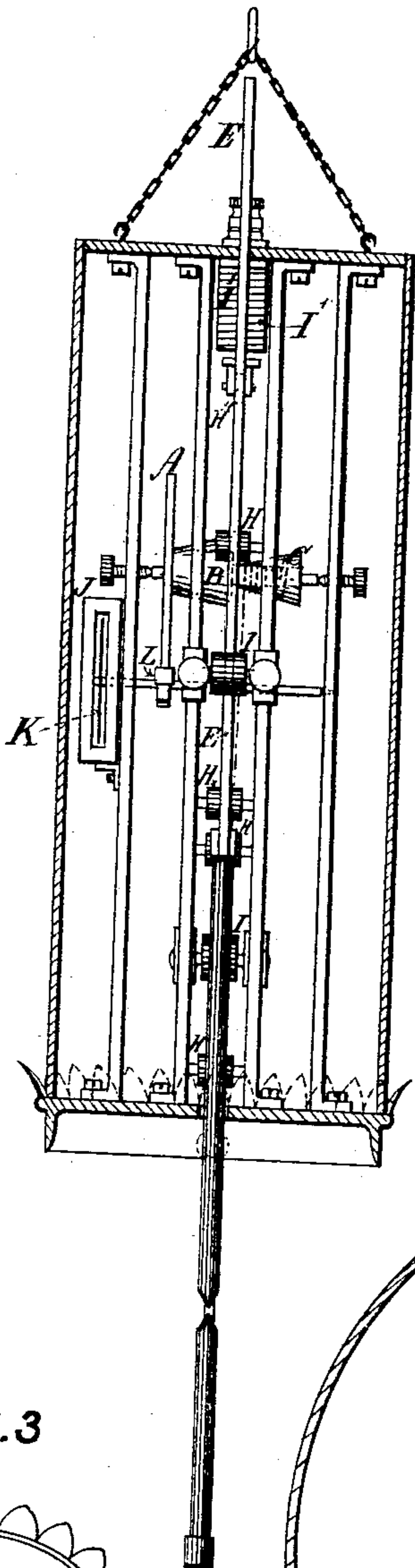


FIG. 1

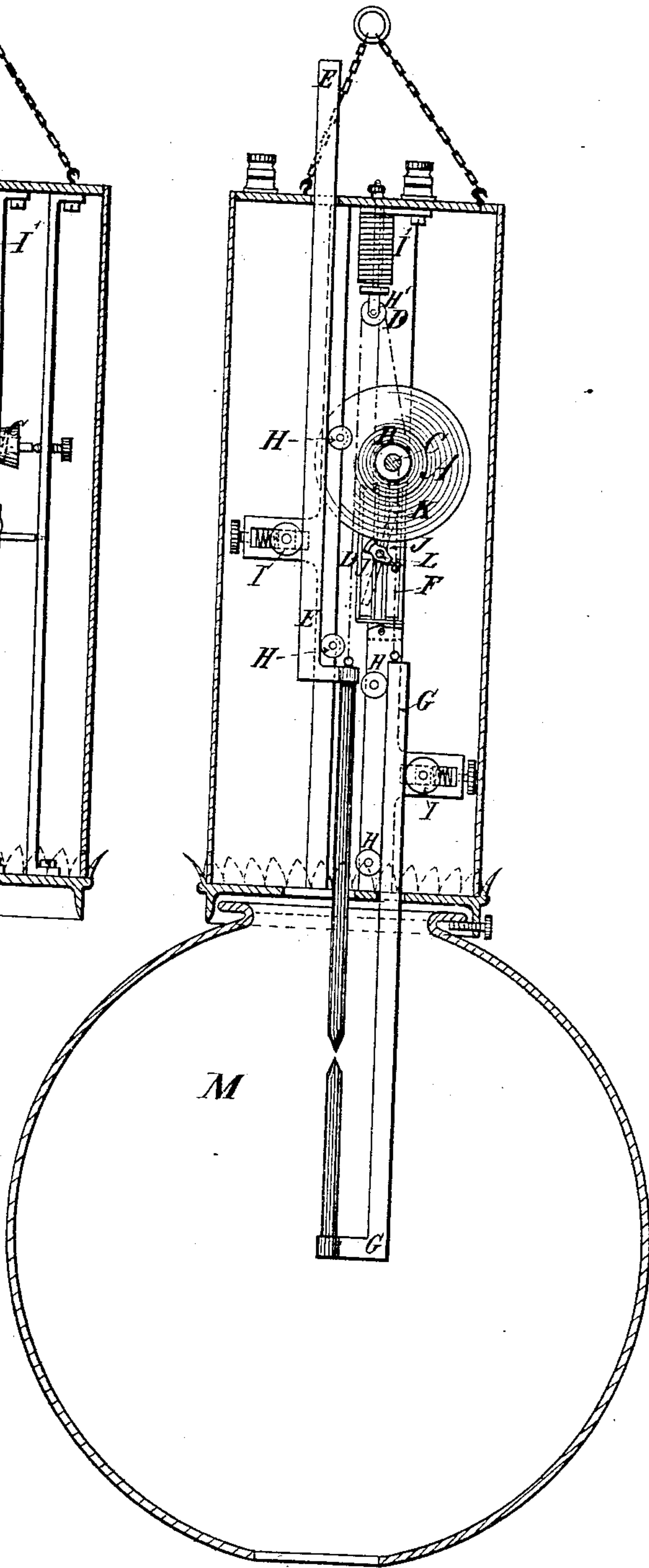
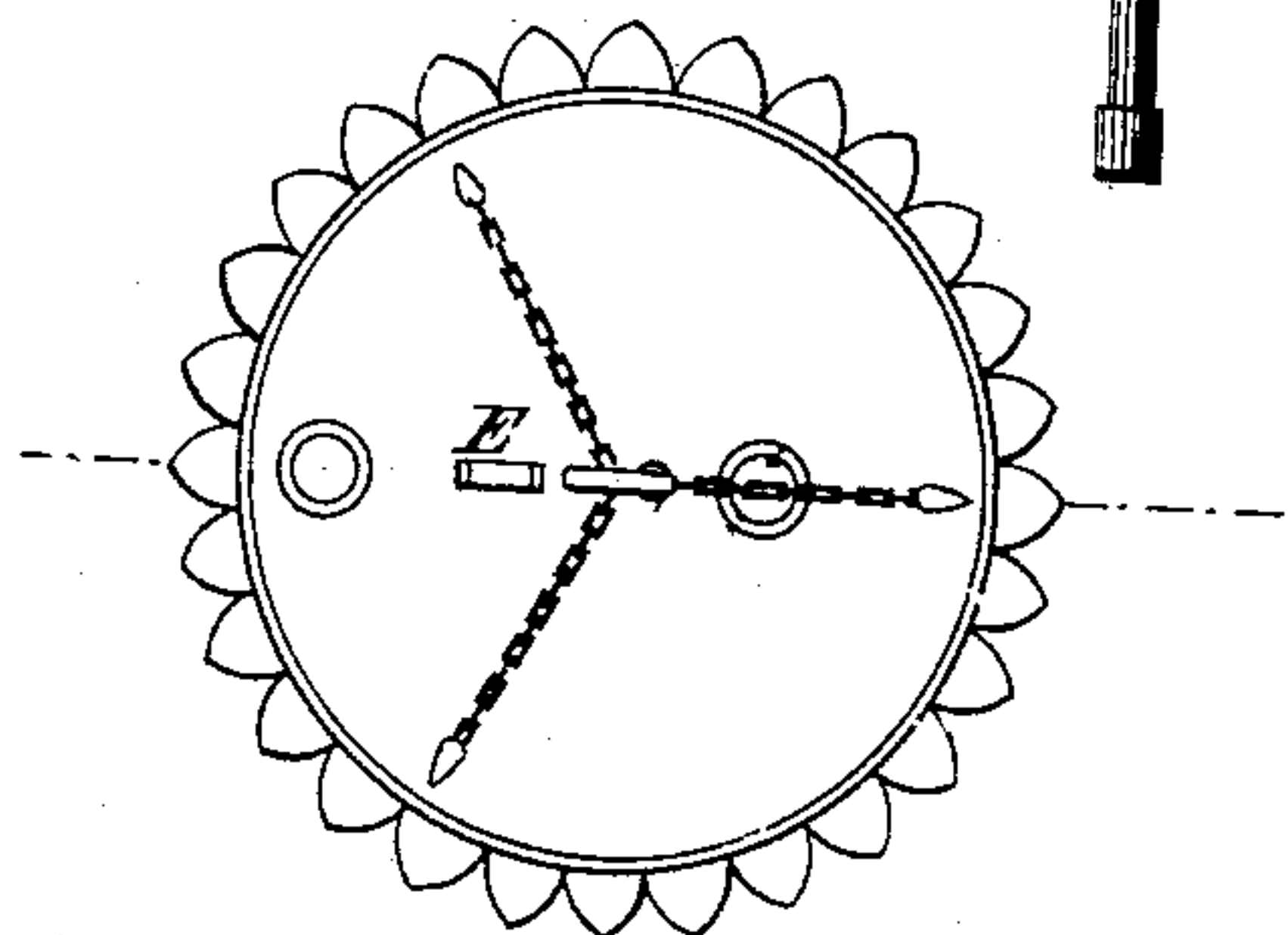


FIG. 3



Witnesses:-

John W. ...
John W. ...

Chas. W. Harrison
Inventor

(No Model.)

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FIG. 4

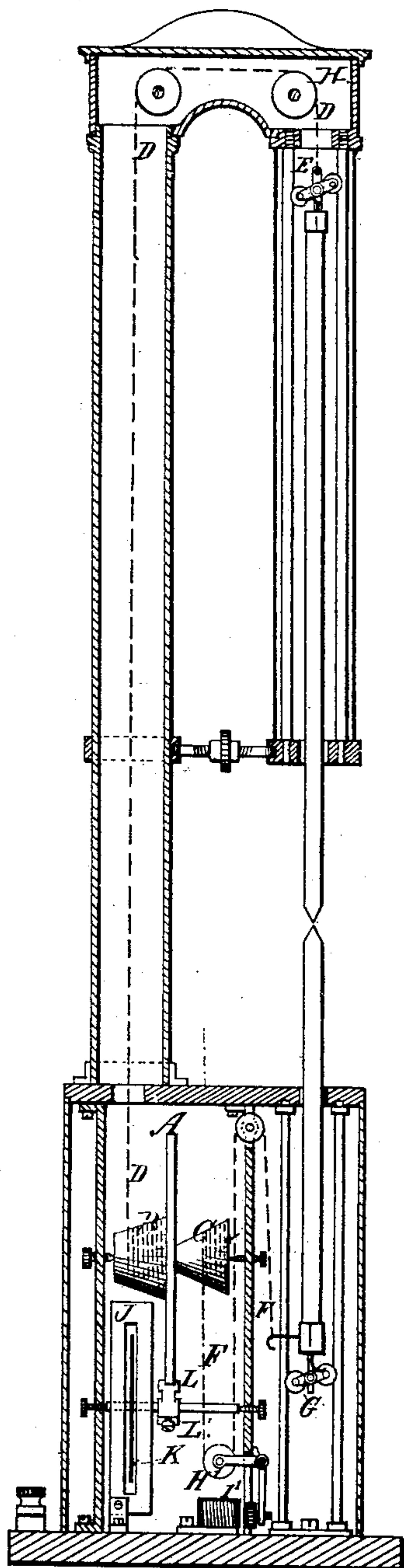
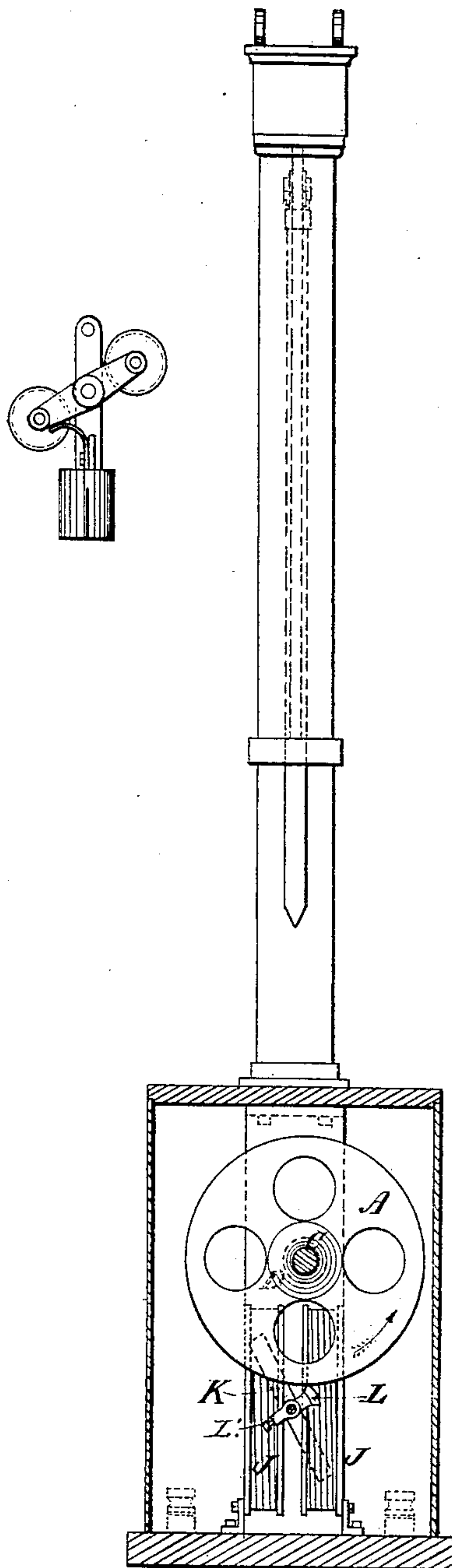


FIG. 5



Witnesses:

John W. Gray
John W. Gray

Charles W. Harrison
Inventor

UNITED STATES PATENT OFFICE.

CHARLES W. HARRISON, OF KENSINGTON, ASSIGNOR OF ONE-HALF OF HIS
RIGHT TO THOMAS BLAKE, OF PENGE, NEAR LONDON, ENGLAND.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 234,032, dated November 2, 1880.

Application filed May 26, 1880. (No model.) Patented in England September 25, 1879.

To all whom it may concern:

Be it known that I, CHARLES WEIGHTMAN HARRISON, of Kensington, in the county of Middlesex, England, have invented new and
5 useful Improvements in Electric Lamps, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to that class of lamps
10 in which the electrodes are fed toward one another, so as to keep the light practically at one point in space.

Figure 1 of the accompanying drawings is a side elevation, partly in section on the center
15 line, of a lamp constructed according to my invention. Fig. 2 is a front elevation, also partly in section at the center line, and Fig. 3 is a plan.

The lamp, as shown, is designed for a constant current. A friction or brake wheel, A,
20 has mounted on its spindle, and so as to turn with the wheel, two cones, B and C. From cone B, and so that it may be wound thereon and unwound therefrom, a flexible connector, D, (cord or chain,) passes to the holder E of
25 the positive electrode, to which holder it is attached. This holder E, with its electrode of carbon, descends by gravity, and so draws down cord D and gives motion to cone B and
30 brake-wheel A. To cone C is attached a cord, F, so that while cord D is being let out cord F is being wound onto cone C. This cord is attached to and supports holder G and the negative electrode, so that the negative is
35 raised at the same time as the positive descends, and thus they approach each other.

The cords are so placed upon the cones B C as that at each revolution of the brake-wheel, with its spindle, upon which the cones are placed, the cord reaching to the positive electrode is unwound from a continually-increasing
40 circumference and the cord reaching to the negative electrode is wound upon a continually-decreasing circumference. As the positive electrode is consumed more than the
45 negative, this arrangement of feed by means of cords upon the cones just about compensates for the difference in the rate of consumption of the two electrodes, and the center of light remains practically at one point in space.

50 In the framing and arrangement of lamp

shown the cone B preferably has its base next to the wheel A, and the cone C has its apex next to said wheel on the opposite side.

The holders E and G are guided in their motions by rollers H H and I, the latter in
55 each case being backed up by a spring to keep the holders well up against rollers H H, which rollers also serve in the one case to convey the current to the holder E and in the other to take it away from holder G. If the de-
60 scent of holder E were uncontrolled, the electrodes would continue to advance toward one another until they touched, and they would then remain in contact. This is the case when
65 the current is interrupted, as when it is desired to put out the light.

To separate the terminals at the lighting of the lamp the cord D, in its passage from cone B to holder E, is carried over a pulley, H', attached to the armature of an electro-magnet,
70 I', placed in the circuit. When the current passes through this electro-magnet the armature with pulley H' is attracted and cord D is drawn out, thus separating the electrodes and
75 forming the arc. The electrodes are prevented again immediately approaching one another as follows: The current which has formed the arc and is giving the light passes through a coil, J, surrounding a magnetic needle, K, which
80 needle is deflected by the passing current, and in its motion carries with it its spindle, on which is a brake-block, L, which is thus brought to bear against brake-wheel A and arrests its motion. The electrodes are thus held station-
85 ary until, by their consumption and the consequent enlargement of the arc and increased resistance in the circuit, the current becomes weakened and the hold of the brake-block on wheel A lessened gradually until the driving-
90 power (the weight of the descending electrode and holder) overcomes the resistance of the brake and the electrodes slowly advance until they reach a point where the current, having gained sufficient renewed strength by reason
95 of the shortened arc, again exerts sufficient power on the brake to arrest the motion of the electrodes and maintain the arc at its desired length.

By adjusting the brake-block on its spindle in relation to the angle it bears to the needle 100

the brake-block may be made to act on the brake-wheel at any desired point of the needle's deflection, and thus the strength and time of its action may be so delicately adjusted
5 as to render the motions of the electrodes almost imperceptible, and thereby maintain the are practically at one length, giving a steady brilliant light.

L' is a pinching-screw, by unslacking which
10 the brake L may be turned around, and by tightening it again adjusted in a new position, thus varying the amount of angular deflection of the needle K under the influence of the coils J to arrest the motion of the wheel A,
15 and consequently the amount of perpendicularity required to be induced, either by the gravity of the needle K or by the tendency of the wheel A to turn, which is required to allow the electrodes to again slowly approach each
20 other.

The form of lamp described is arranged to be suspended, and three chains for this purpose are shown on the top of the lamp.

M is a globe of glass encircling the light.
25 Figs. 4 and 5 show a similar lamp, but with slight modifications to adapt it for standing instead of being suspended. The details are obvious from the drawings.

In electric lamps it is found to be of utmost

advantage and importance to preserve a uniform driving-weight. This can only be done by compensating for the varying weights of the carbons consequent on their consumption. I accomplish this end in a most satisfactory way
30 by winding and unwinding the cords which control the electrodes from cones, which, in the case of the positive electrode, continually increases the length of cord which is given off,
35 while in the case of the negative continually decreases the amount of take-up at each revolution.
40

I claim as my invention—

1. In an electric-light apparatus, the combination, with the electrodes and their controlling-cords, of a pair of cones arranged to
45 operate upon the two cords, substantially in the manner set forth.

2. The combination, in electric lamps, of magnetic needle K and brake-wheel A, substantially as hereinbefore described, with the
50 brake L and pinching-screw L', whereby the angular position of the needle K for any given resisting force of the brake may be varied, as and for the purposes herein specified.

CHAS. W. HARRISON.

Witnesses:

JOHN WM. GRAY,

J. ED. BEESLEY.