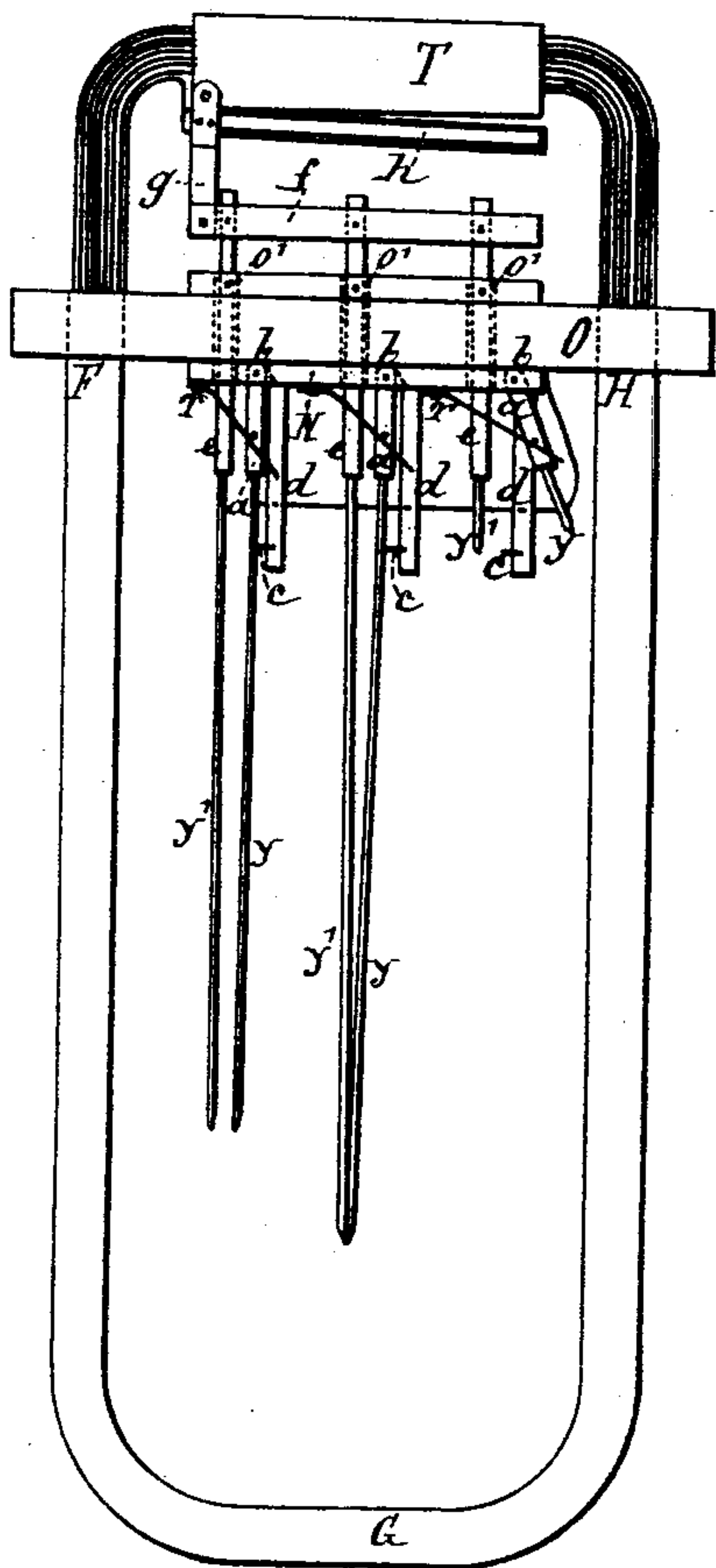


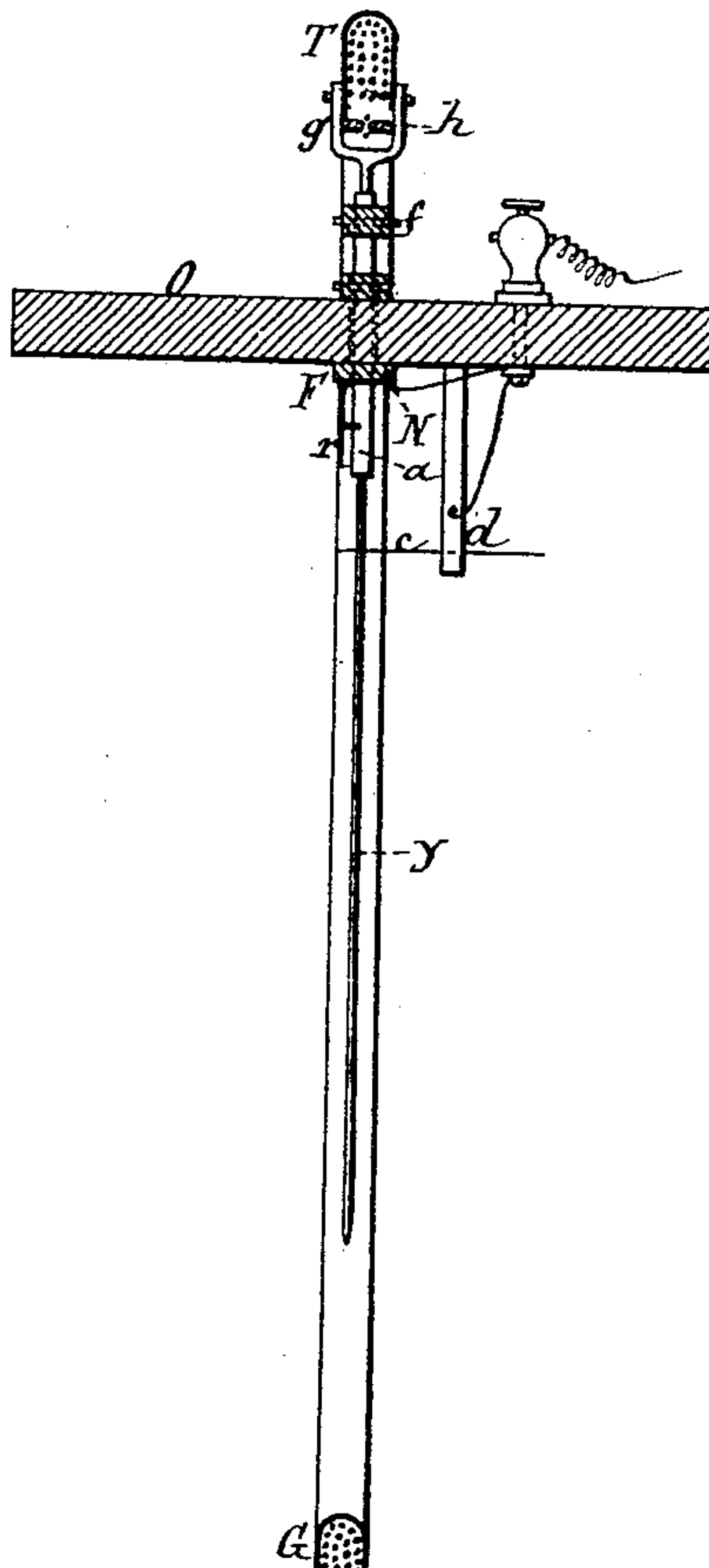
J. C. JAMIN.  
Electric Lamp.

**Patented Sept. 28, 1880.**

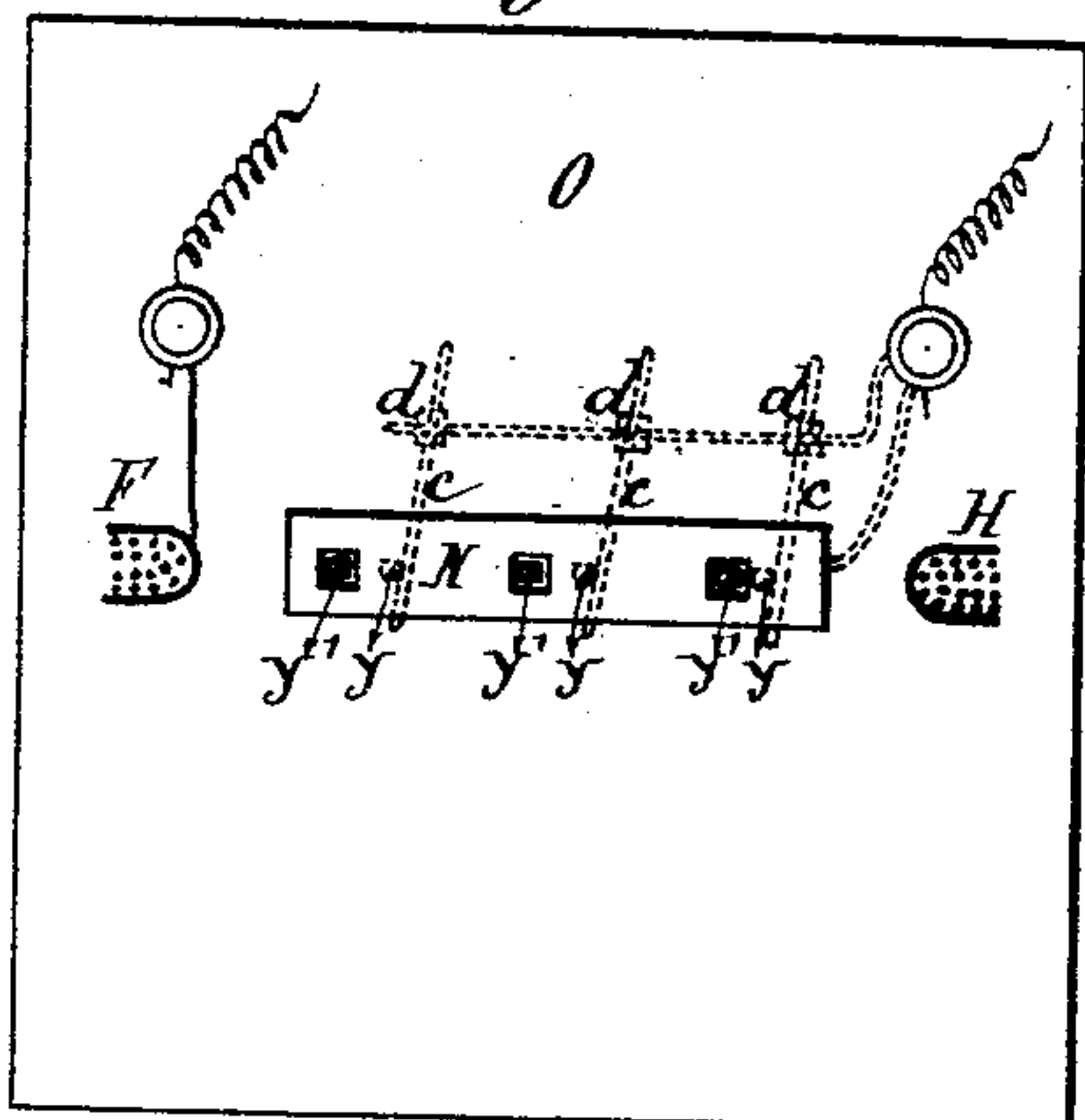
*Fig. 1*



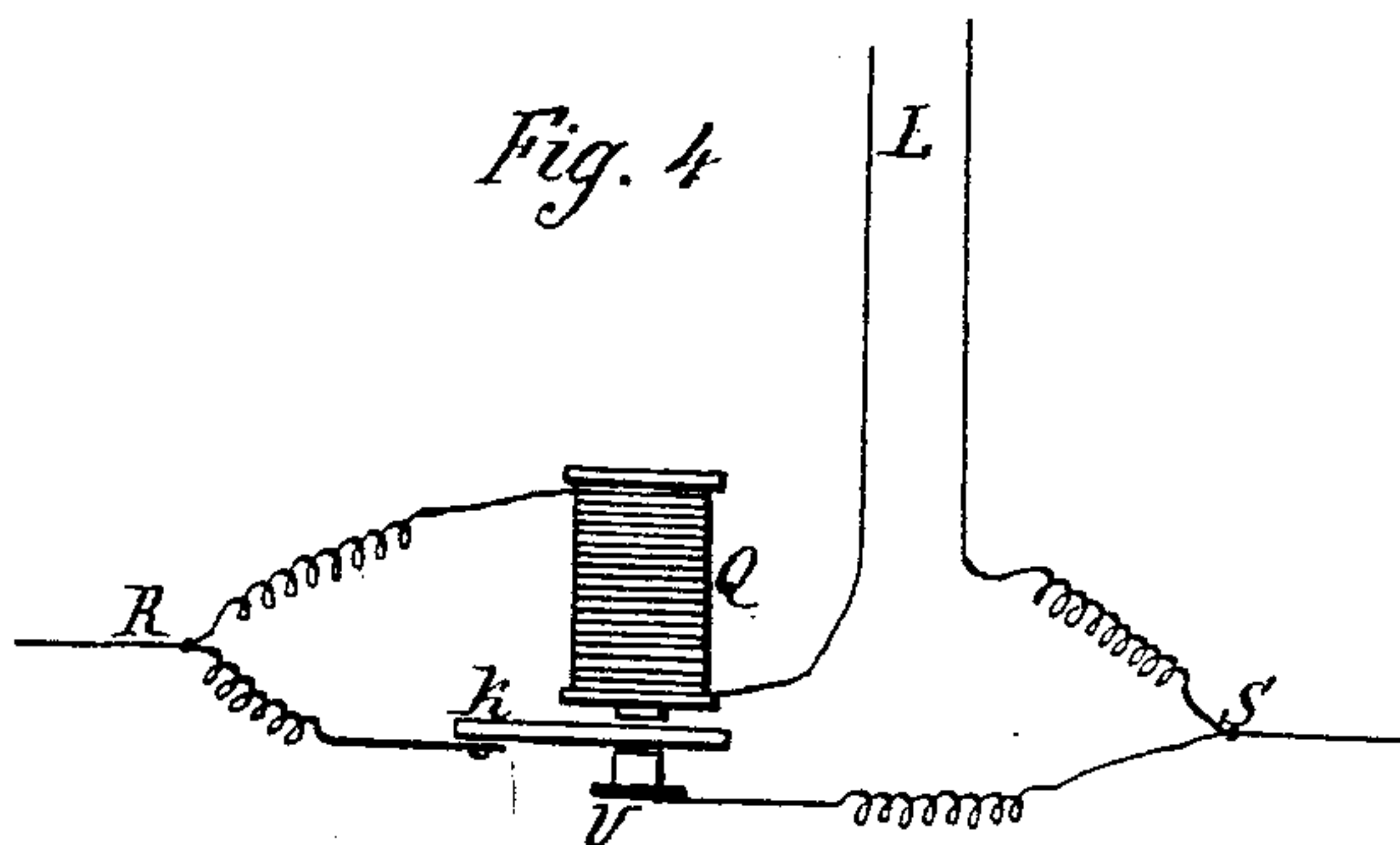
*Fig. 2*



*Fig. 3*



*Fig. 4*



Witnesses.  
Philip Mauro  
C. J. Hedrick

Jules Célestin Jamin  
by A. Pollox  
his attorney.

# UNITED STATES PATENT OFFICE.

JULES C. JAMIN, OF PARIS, FRANCE.

## ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 232,610, dated September 28, 1880.

Application filed July 1, 1880. (No model.) Patented in France March 30, 1880.

*To all whom it may concern:*

Be it known that I, JULES CELESTIN JAMIN, of Paris, France, have invented certain new and useful Improvements in the Production of Electric Light, of which the following is a specification.

This invention relates more particularly to improvements in the electric lamp in which the voltaic arc between the carbons is controlled by a directing body or circuit, as described in Letters Patent No. 218,749, granted to me August 19, 1879.

The object of the invention is to place in the same apparatus a number of burners, which are lighted in succession.

The invention and the manner of carrying the same into effect will be readily understood from the following description, in connection with the accompanying drawings, which form a part of this specification.

Figures 1, 2, and 3 show, in elevation, section, and plan, respectively, a lamp with three burners or pairs of carbons constructed in accordance with this invention. Fig. 4 is a diagram illustrating an apparatus which is or may be used with each lamp in the circuit, to render it independent of the others.

Referring to Figs. 1, 2 and 3, G is the directing body or circuit, connected at F H with the base or supporting-piece O, and Y Y' the burners. All the right-hand carbons Y are connected with a piece of copper, N, fixed to the supporting-piece, which is made of porcelain, marble, or other suitable material. They are inserted in tubes *a*, jointed at *b*, and each acted upon by a steel spring, *r*, which tends to separate the two carbons of the same burner. The movement of the right-hand carbons is prevented by stops *c*, formed of horizontal brass wires fixed in supports *d*, against which the carbons bear near their point of connection with the tubes *a*. When the arc reaches a point on any of the carbons opposite *c* the stop is consumed and the tube *a* is free to yield to the action of the spring *r*.

The left-hand carbons Y' are inserted in tubes *e*, supported on fixed pivots at *o'*, and having their upper ends jointed to a rod, *f*, the position of which is controlled by the armature *h* of the electro-magnet T through the lever *g*. The latter is jointed at the lower end to the

bar *f*, and at the upper end is forked and pivoted to a part of the magnet T, while at an intermediate point the armature *h* is attached by one end. The magnet is formed by a curved piece of soft iron, in which the wires of the directing body or circuit G are inclosed. In order to increase the magnetic effect there are or may be, lengthwise of the armature, one or more turns of the directing circuit or wire. So long as the current is interrupted the armature remains away from the magnet, and the arm *f* being drawn to the left, the carbons Y' make contact, at their outer ends, with the carbons Y. As soon as the current passes, the armature *h* is attracted by the magnet, and the arm *f* being moved to the right, the carbons Y' are drawn away from the carbons Y, and all the arcs tend to light at the same time. One only persists. It is the one between the carbons that remain longest in contact. This arc continues until the carbons are consumed to the point *c*, when, the stop-wire being burned, the carbon Y is released, and, under the action of its spring, is moved quickly to the right and the arc is extinguished. At the same time the current is interrupted the armature *h* drops, the unconsumed carbons again make contact, and the arc glows between a fresh pair of carbons without any permanent interruption of the current, and without the other lamps being affected. This disposition, of which a large number of modifications and variations are possible, permits the placing in the same directing body or circuit, and in the same plane with it, three or more pairs of carbons, so that when the circuit is closed one of them is lit, burns to the end, and then when it is consumed is extinguished automatically without the aid of a superintendent, and replaced by a fresh pair, which, in their turn, are consumed, extinguished, and replaced by another pair, the neighboring lamps in the same circuit not being affected by the operations.

The magnet formed by the curved piece of soft iron inclosing the wires of the directing-circuit can be also used to separate the movable from the stationary carbons when there is only one or two burners in the apparatus. The carbons can, if desired, be fed downward by a weight and clock-work.

In the same circuit there are generally placed



a number of lamps. If simply connected in the circuit they will all be extinguished by an accident happening to one. By means of the apparatus shown in Fig. 4 they can be rendered independent. Apparatus of this general description has, however, been heretofore used with other lamps for the same purpose. The current, before entering one of the lamps, passes through an electro-magnet, Q, provided with an armature, *k*, which is attracted whenever the circuit is closed. The circuit is divided at R, one part leading through the coils of magnet Q and lamp L, and continuing toward S, the other passing by the armature *k* and back contact U to S, where it unites with the first. The current arriving at R is, of course, divided, part passing through the lamp and the rest by the route R *k* U S, in which a suitable resistance is placed. If the lamp burns the armature *k* is attracted and opens the branch R *k* U S, so that the entire current passes through the lamp. If the lamp will not burn, or if an accident happens to it so that the circuit is broken, then the armature *k* drops to its back contact and the current passes by the branch through the armature. This disposition renders the several lamps independent of one another, and allows the current to pass through all of them except those which have been injured or accidentally extinguished.

Having now fully explained the said invention and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

35 1. The combination, with the directing-circuit and supports or holders for a pair of car-

bons, one of said supports or holders being movable, of a body or curved piece of soft iron disposed substantially as described, so as to be rendered magnetic by the passage of a current through said directing-circuit and connected with said movable carbon or support, as set forth. 40

2. The combination, in the same directing-circuit, of two or more pairs of carbons and mechanism for lighting said pairs of carbons in succession, operated by an electro-magnet of which the inducing-wires are formed by or connected with the directing-circuit, substantially as described. 45 50

3. The combination, with a pivoted carbon-holder and a spring, of a stop for retaining said holder against the action of the spring by contact with a carbon in said holder, substantially as described. 55

4. The combination, with two or more pairs of pivoted carbon-holders and a spring and stop for one of each pair, of an electro-magnet connected with and arranged to move simultaneously the other holder of each pair, substantially as described. 60

5. In an electric lamp having a directing-circuit, an electro-magnet formed by a curved piece of soft iron inclosing the wires of said circuit, substantially as described. 65

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

J. C. JAMIN.

Witnesses:

GEO. H. SCIDMORE,  
CH. MARDELET.