(No Model.) 2 Sheets—Sheet 1.

G. D. BANCROFT.

Electric Gas Lighting Apparatus.

No. 235,979. Patented Dec. 28, 1880.

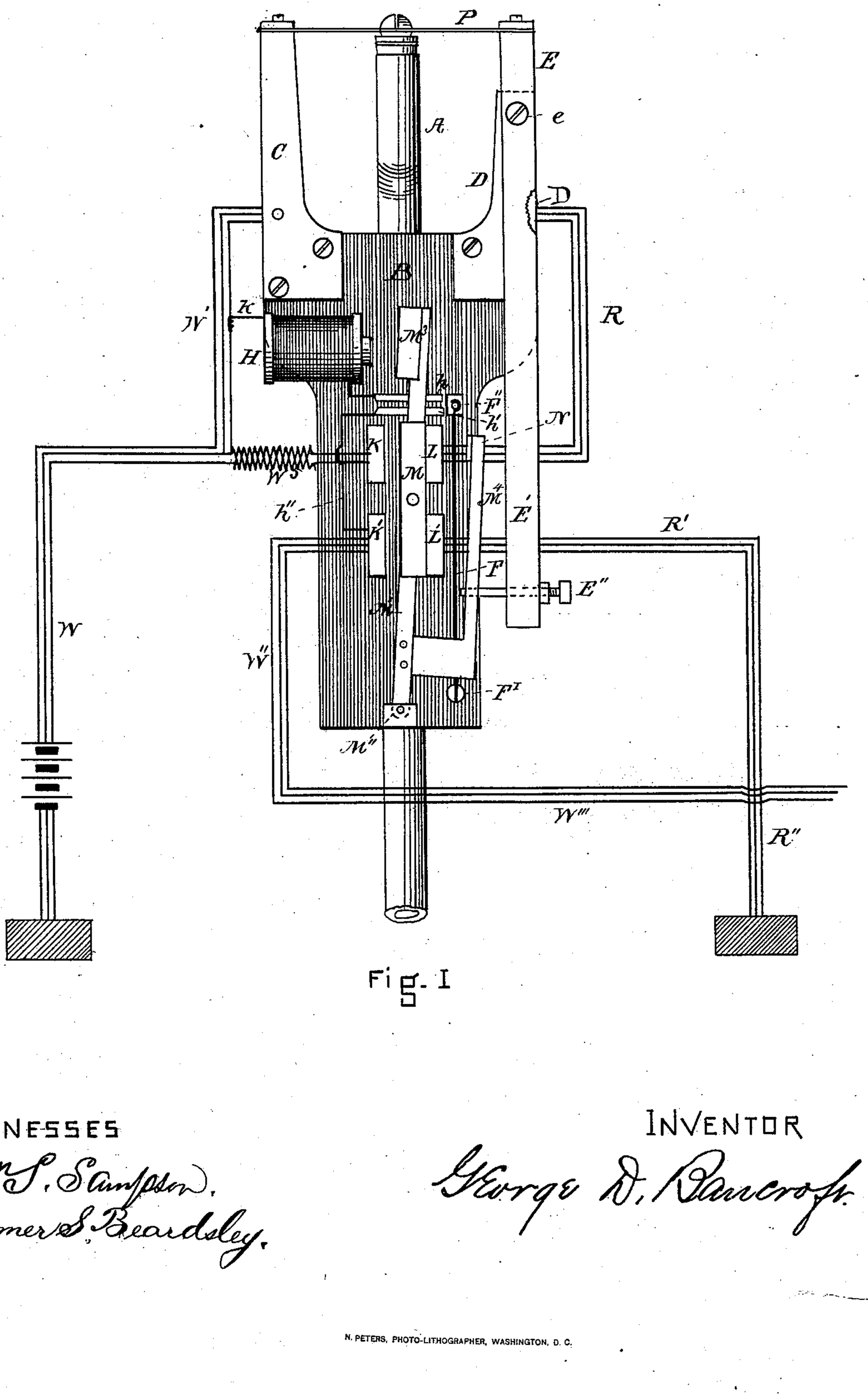

Fig. I

WITNESSES

Wm. S. Sampson.

Homer S. Beardsley.

INVENTOR

George D. Bancroft.

(No Model.) 2 Sheets—Sheet 2.

G. D. BANCROFT.

Electric Gas Lighting Apparatus.

No. 235,979. Patented Dec. 28, 1880.

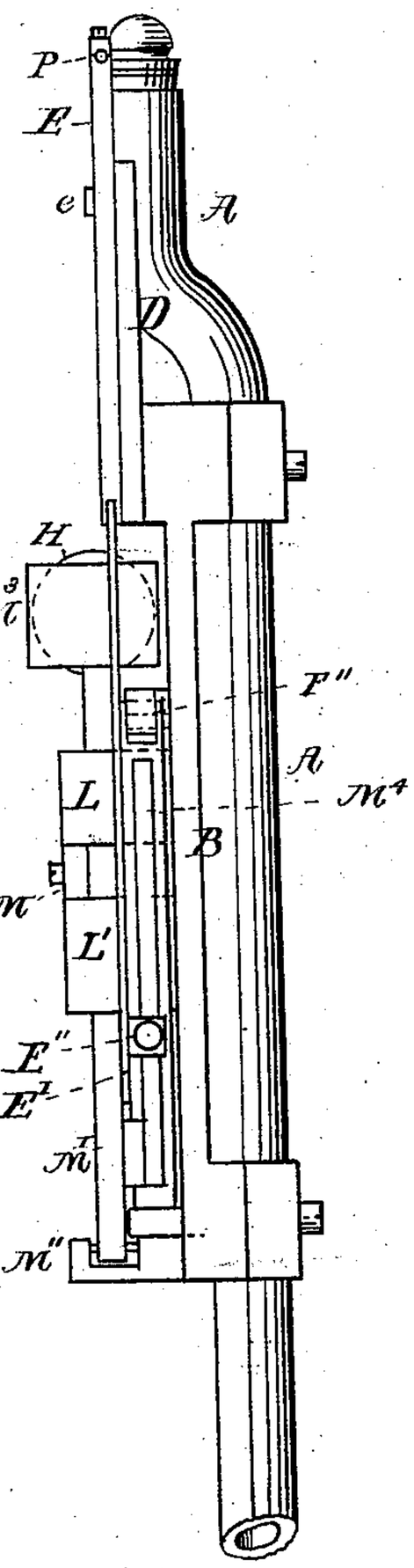

Fig 2.

WITNESSES
Wm. S. Sampson.
Homer S. Beardsley.

INVENTOR
George D. Bancroft

UNITED STATES PATENT OFFICE.

GEORGE D. BANCROFT, OF BOSTON, MASSACHUSETTS.

ELECTRIC GAS-LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 235,979, dated December 28, 1880.

Application filed April 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BANCROFT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Electric and Gas-Lighting Apparatus, of which the following is a specification.

My invention relates to that class of gas-lighting apparatus in which thermal as well as electrical action is utilized; and it consists in combining in a system of gas-lights expansion-wires, one to each jet, which is capable of being heated by an electric current sufficiently to ignite gas, the expansion of this wire, caused by thus heating, being used for the purpose of cutting off the current from the lamp already lighted and making a connection to the next lamp in the line, where the current will repeat its functions.

It also consists in minor details, which may be best understood by reference to the drawings and specification.

In the drawings, Figure 1 is a front elevation of my invention. Fig. 2 is a side elevation of the same.

My invention is to be applied to a series of lamps, and as the same devices are applied to each lamp it is necessary for me to describe one only of the devices that are used in my system of lighting gas-lamps.

A represents the gas-burner pipe. To this pipe I attach a base-plate, B, preferably of some insulating material, such as hard rubber, for instance.

C and D are standards securely fastened to the plate B. One of these standards, C, has secured to it one end of the platinum wire P, while the other standard, D, supports a lever, E, pivoted at *e*, the upper end of this lever E being also attached to the platinum wire P. The lower end, E′, of the lever E has a screw-start, E″.

F is a light spring, fastened at one end to F′, while the other end carries a block of good conducting metal, F″.

h h′ are terminals of conducting-wires. H is a small electro-magnet. L L′ K K′ are metallic blocks, which form terminals for the conducting-wires, all these blocks being carefully insulated from each other.

M′ is a lever pivoted at M″, and having at its upper end an armature, M^3, said armature M^3 to be acted upon by the electro-magnet H.

M is a metallic block pivoted to the lever M′, and acts as a bridge to connect the terminals L L′ or the terminals K K′, as the case may be.

The conducting-wires are indicated by the letters W, W′, W″, and W‴, and by R R′ R″.

The operation of my device may be explained as follows: W and W′ represent wire or wires coming from the battery to the post C. The current from these wires passes up through the post C to the platinum wire P, thence through the lever E and post D to the wires R, thence through block L, bridge M, block L′, and wires R′ to the ground. A strong current of electricity passing through the platinum wire P will cause the same to become sufficiently heated to ignite the gas-jet from the pipe A, (the gas being turned on by an automatic device fully described in the specification of Letters Patent of the United States granted to me June 18, 1878, and numbered 205,032.) This heating of the wire P causes it to expand and force the upper end of the lever E outward. This action causes the start E″ on the lower end of the lever to press upon the spring-plate F, and thus cause the conducting block or bridge F″ to come in contact with the wire terminals *h h′*. This completes a circuit from the wires W′ through *k*, the coil of the magnet H to the terminal *h*, thence through the bridge F″, the terminal *h′*, wire *h″*, the block K′, and the wires W″ on to the line. This current excites the electro-magnet H and causes it to attract the armature M^3. The movement of the armature M^3 thus caused draws the lever M′ over, taking with it the bridge M, so as to break the connection between L and L′, thus breaking the circuit that has heretofore passed through P and closing the circuit between K and K′, so as to cause a current to flow through the wires W W^5, the block K, bridge M, and block K′ to the wire W″, and thence to the next light in the circuit. When the lever M′ passes over it takes with it the arm M^4, which is riveted to it. The end N of this arm M^4 presses against the spring-plate F and holds the bridge F″ in contact with the terminals *h h′*, so that the withdrawal of the start E″ on the lever E′ E, caused by the cooling of the platinum wire P, will not affect the position of the bridge F″, as that will be held in contact with the terminals *h h′* so long as the electro-magnet H has

a current flowing round it—in other words, so long as the line remains unbroken. The electro-magnet H is excited by a branch current, which is taken from W′ by the wire *k*, and conducted through the coil on the magnet H, thence through *h*, F″, *h′*, *h″*, and K′ to the line. In other words, this is operated by what is technically called a "split current." A resistance is put in wire W⁵, so that a sufficient current will pass through wire *k* to energize the magnet H. The platinum wire P being cut out as soon as it has performed its function of lighting the gas of its own burner saves the said wire from too rapid consumption.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. In a system for the electric lighting of gas-jets, the combination of a wire, P, of refractory metal, and an electric circuit, and a gas-tip and its jet with a mechanism for opening the circuit of the lamp already lighted and closing a circuit for the next lamp, whereby the refractory wire P becomes heated and acts, first, as a lighter for the gas, and, secondly, by its expansion, as a current-changer, substantially as described, and for the purpose set forth.

2. In an electric gas-lighting device, the combination of the wire P, lever E E′, spring-plate F, bridge F″, and magnet H with the lever and armature M′ M³ and bridge M, all operating together substantially as described, and for the purpose set forth.

3. The combination, substantially as before set forth, of the armature-lever, the arm M⁴ thereof, the spring-plate F, the bridge F″, and terminals *h h′*.

GEO. D. BANCROFT.

Witnesses:
HELEN M. FEEGAN,
W. S. SAMPSON, Jr.