(No Model.)

S. S. ALLIN.

ELECTRIC ARC LAMP.

No. 538,999. Patented May 7, 1895.

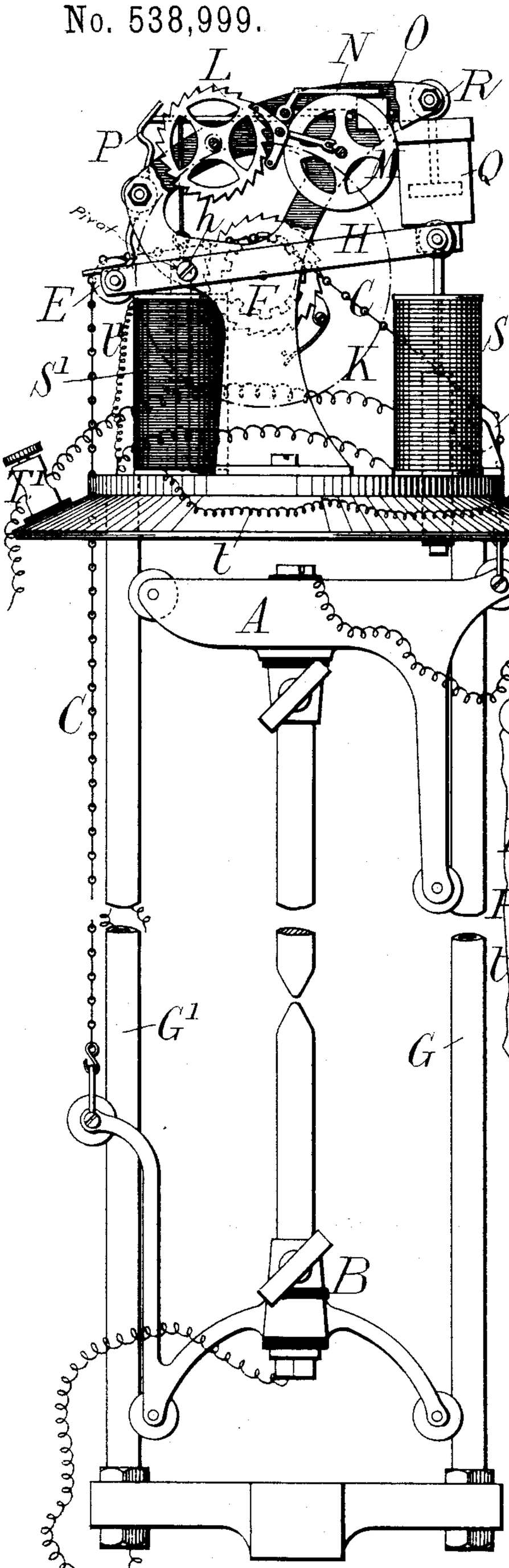

Fig. 1.

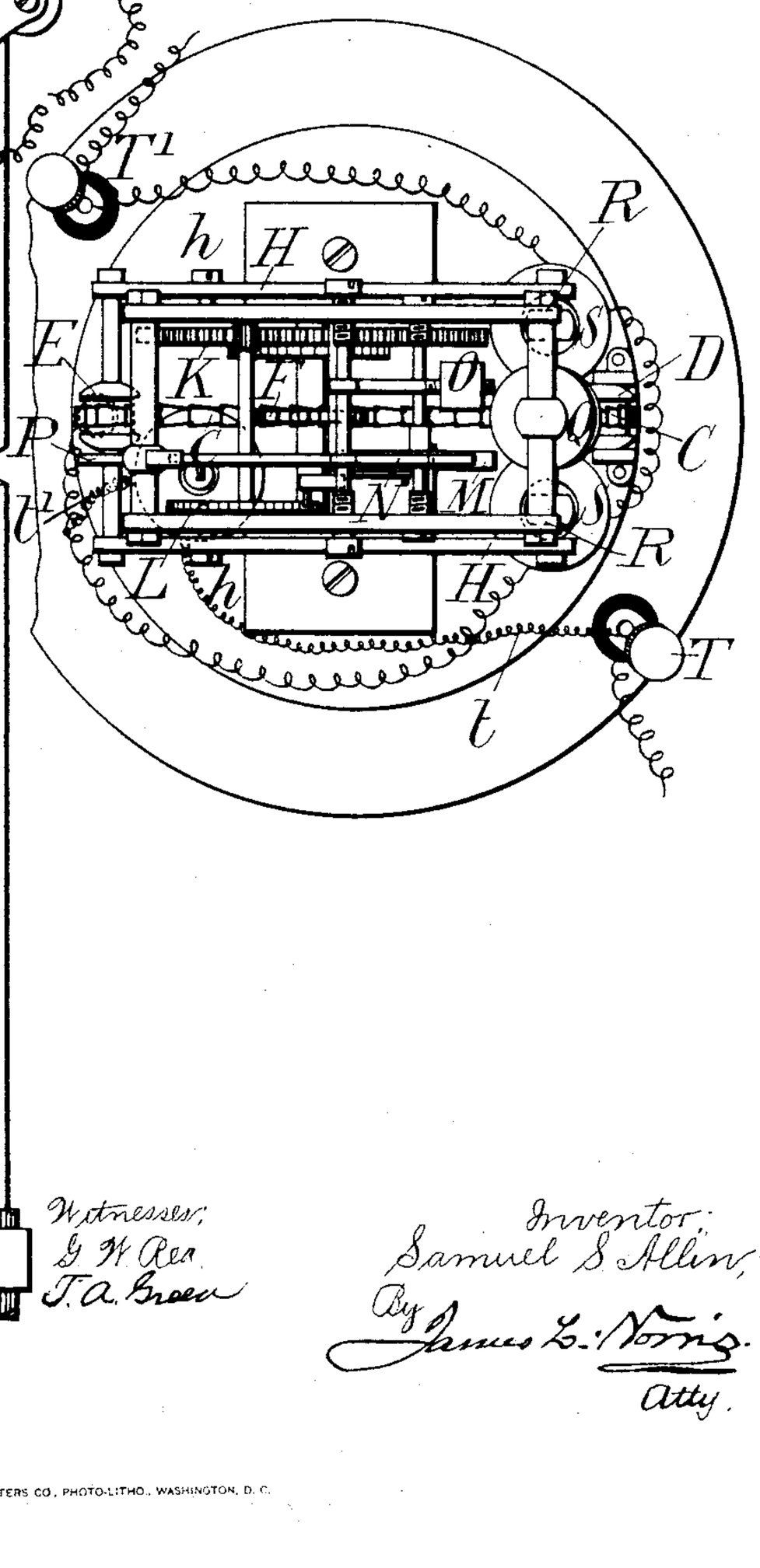

Fig. 2.

Witnesses:
G. W. Rea.
T. A. Brock

Inventor:
Samuel S. Allin,
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

SAMUEL S. ALLIN, OF LONDON, ENGLAND.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 538,999, dated May 7, 1895.

Application filed October 29, 1894. Serial No. 527,294. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL SEALY ALLIN, a citizen of England, residing at 25 Garlick Hill, Cannon Street, in the city of London, England, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

This invention relates to a construction of electric arc lamp and its carbon feeding and regulating mechanism as will be described referring to the accompanying drawings.

Figure 1 is a side view, part of the top frame being broken away to show the escapement. Fig. 2 is a plan.

The upper and lower carbon holders A and B are connected by a chain C which passes over guide pulleys D and E and a sprocket wheel F. Both carbon holders are guided preferably by antifriction rollers as shown along vertical tubes G G′. The upper carbon holder A is sufficiently heavy to overbalance the lower B so that when the holders are free, the upper descends and the lower ascends till the carbons meet. The guide pulley E is mounted at the one end of a double lever H which is pivoted at *h* and has jointed to its other end a pair of cords or links suspending the cores of a double solenoid S having its coil of low resistance in the lamp circuit. On the axis of the chain wheel F is fixed a ratchet wheel with which engages a spring pawl mounted on a toothed wheel K. Indicated in Fig. 1 by dotted lines. This wheel gears with a pinion on the axis of an escapement wheel L which by lever action causes a balance wheel M to oscillate. On the periphery of M a brake lever N bears with a pressure resulting from a weight O which can be adjusted nearer to or farther from the fulcrum of the brake lever. The arm of the lever N opposite to the brake is jointed to a link suspending the core of a solenoid S′ the coil of which is of high resistance in a shunt to the lamp circuit. A lever P has its upper end inclined over the end of the brake lever and its lower end bent to rest on the axis of the guide pulley E so that when that pulley is raised the slope of P acting on the end of the brake lever raises the brake off the balance wheel.

In order to prevent sudden movements of the regulating mechanism I fix on the lever H a dash pot cylinder Q containing glycerine or other suitable fluid and provided with a piston joined to the fixed upper framing at R. The electrical connections are from the post T to the insulated central part of the holder A and also by wire *t* to the coil of the solenoid S′; from the post T′ to the coils of the double solenoid S down the tube G′ and thence to the insulated central part of the holder B. There is also a connection *t′* to the coil of S′.

The operation of the mechanism is as follows: When the lamp is out of circuit, the right end of the lever H is down, and the guide pulley E is up putting P in such position that the brake N is raised off the balance wheel M the escapement being consequently free. The holder A then descends and B ascends until the carbons meet and the mechanism is stopped, in which condition the lamp remains until it is put in circuit, whereupon the cores of S are attracted upward allowing the right end of H to rise, lowering E and the lower holder B, thus separating the carbons and striking the arc. Should there be more than the normal resistance when the arc is struck, or afterward as the carbons are consumed, the solenoid S′ attracts its core down, reducing the pressure of the brake on the balance wheel, and thereupon the upper carbon descends a little raising the lower carbon until the resistance of the arc becomes normal whereupon the brake comes to bear again with such pressure on the balance wheel as to prevent further movement of the carbons until the resistance of the arc again so far increases as to release again the balance wheel.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

1. In an electric arc lamp the combination of a lower carbon holder and a heavier upper holder connected by a chain passing over guide pulleys and a sprocket wheel, the pulley from which the chain is led to the lower holder being mounted on a lever connected to the core of a solenoid having its coil in the lamp circuit and the sprocket wheel being geared to an escapement, on the balance wheel of which bears a brake lever connected to the

core of a solenoid having its coil in a shunt to the lamp circuit, arranged and operating, substantially as described.

2. In an electric arc lamp having its carbon holders connected by a chain passing over guide pulleys and a sprocket wheel geared to an escapement which is governed by a brake in combination with a lever having its one arm linked to the core of a solenoid and having mounted on its other arm the guide pulley from which the chain leads to the lower holder; a lever or equivalent connection from the said lever to the brake lever so that the escapement is released when the lamp is not in circuit, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of October, A. D. 1894.

SAMUEL S. ALLIN.

Witnesses:
T. T. BARNES,
JNO. P. M. MILLARD.