

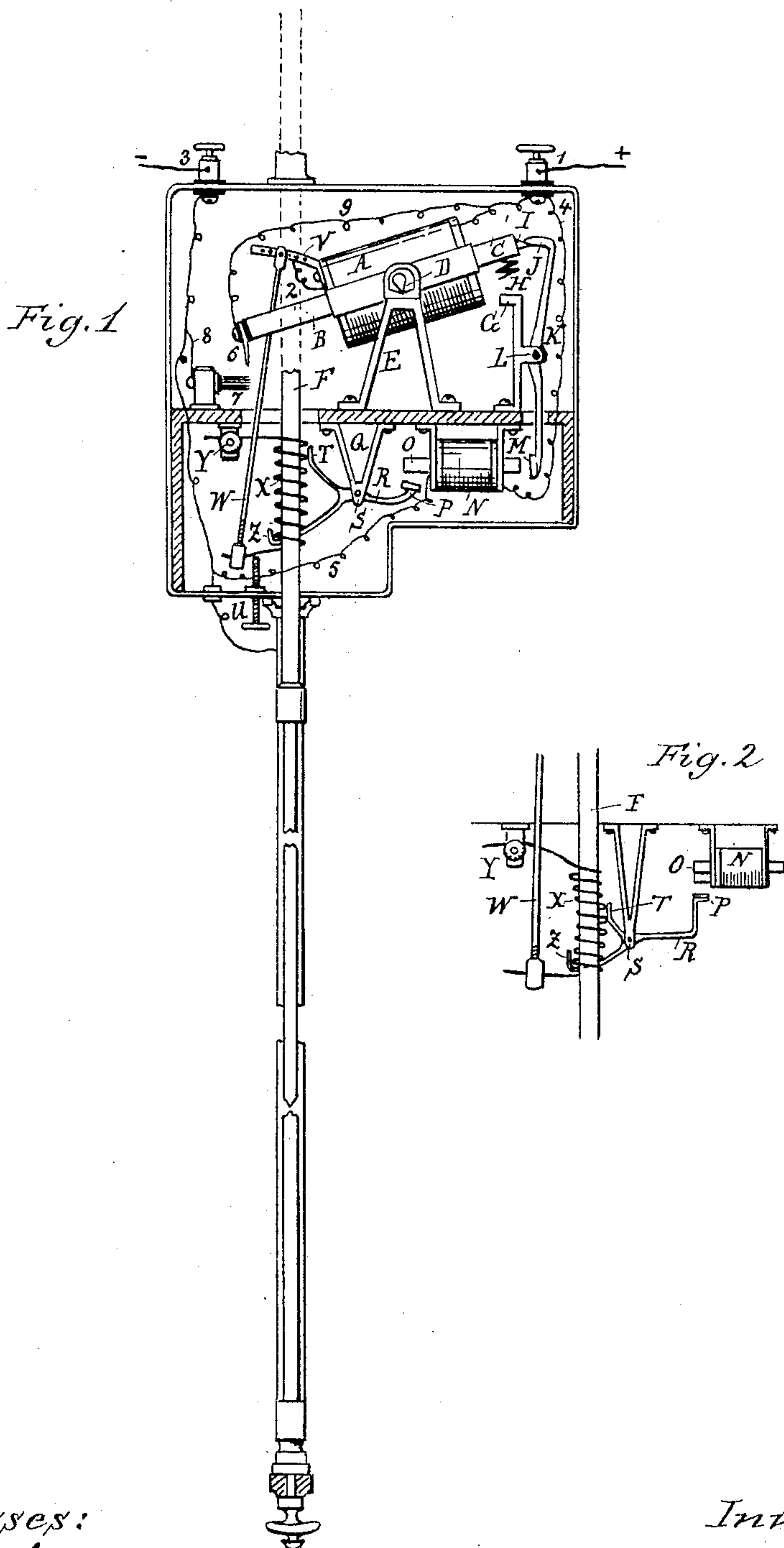
(No Model.)

J. A. WETMORE.

ELECTRIC ARC LIGHT.

No. 272,811.

Patented Feb. 20, 1883.



Witnesses:

Ptotherville
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Inventor:

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UNITED STATES PATENT OFFICE.

JEAN A. WETMORE, OF CONCORD, MICHIGAN.

ELECTRIC-ARC LIGHT.

SPECIFICATION forming part of Letters Patent No. 272,811, dated February 20, 1883.

Application filed September 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, JEAN A. WETMORE, of Concord, in the county of Jackson and State of Michigan, have invented a new and useful Improvement in Electric Lamps, of which the following is a specification.

Figure 1 is a perspective of the operating mechanism of the lamp, and Fig. 2 is an enlarged view of the clutch and releasing mechanism.

My invention consists, first, in a clutch for raising the upper carbon, consisting of a spiral spring encircling the carbon-holder; second, in a shunt-circuit of comparatively high resistance, adapted, when receiving much of the electric current, to open the clutch; third, in the combination of a pivoted magnet in the main circuit, locking mechanism for holding said magnet in position, and a shunt-circuit of comparatively high resistance, adapted, when receiving much of the electric current, to open the locking mechanism which holds said pivoted magnet; fourth, in so constructing the magnet which operates the clutch that it constantly tends to close a switch and divert the electric current from the lamp.

The frame of my lamp and the upper and lower carbons do not differ from those in common use.

A represents an electro-magnet, having a soft-iron core, C B, extending through the center thereof, and so proportioned that it constantly tends to tilt magnet A, which is hung on knife-edged trunnions D to the left, as shown in the drawings.

E represents one of a pair of supports on which magnet A is hung.

G represents a piece of iron fastened to the frame of the lamp and insulated therefrom under end C of core C B.

K represents a lever, pivoted at L to iron G, but insulated therefrom, if desired, having at its upper end a hook, J, and at its lower end a piece of iron, M. The curved form of lever K causes its upper end to swing, when undisturbed, toward end C of core C B, and causes hook J to engage with a lug, I, on end C, thus holding magnet A in the position shown in the drawings.

T represents a metal rod, sliding in suitable guides, carrying the upper carbon.

V represents an arm attached to magnet A, to which is adjustably pivoted a connecting-rod, W.

X represents a clutch consisting of a spiral spring encircling carbon-holder F, its upper end being continued and fastened to binding-post Y, and its lower end being straightened and fastened to connecting-rod W.

U represents a thumb-screw to adjustably support the lower end of clutch X.

N represents a small electro-magnet, wound with much finer wire than that on magnet A, fastened to the frame of the lamp, and having a soft-iron core, O, longer than the spool of the magnet.

R represents a lever, pivoted at S to suitable supports, Q, carrying at one end a piece of iron, P, its other end having two arms, Z T, the former partially encircling the lower end of clutch X, the latter resting against clutch X, at or near its center, as shown in Fig. 2. Magnet N is so placed that one end of core O is near the iron piece M on lever K, and the other end is near the iron piece P on lever R.

6 represents a piece of soft iron fastened to end B of core C B, and 7 represents a metallic brush, which receives piece 6 when magnet A tilts.

4 and 5 are fine wires, forming a shunt-circuit through magnet N.

8 and 9 are switch-wires to form a circuit when the lamp is not working, and the main circuit is through magnet A, wire 2, arm V, connecting-rod W, and spiral-spring clutch X into carbon-holder F, and through the carbons and frame in the usual manner.

The lamp being as shown in Fig. 1, the current will practically all pass through magnet A, and core C B will attract iron piece G, thus depressing end C, the piece G being stationary, raise connecting-rod W, and cause clutch X to grasp and raise carbon-holder F, thus separating the carbons and establishing the voltaic arc. As the consumption of the carbons increases the resistance of the main circuit the pull of magnet A on rod W decreases, and clutch X tends to resume its normal position until it relaxes sufficiently to allow carbon-holder F to slide downward slowly. The amount of current which passes through the shunt-circuit also causes the core O of magnet

N to attract the iron piece P on lever R, when arms Z T also tend to straighten clutch X and allow carbon-holder F to descend slowly, this action becoming stronger as the resistance of the main circuit becomes greater. When the resistance of the main circuit becomes too great for the current to pass through it, and for any cause the upper carbon cannot descend and re-establish the main circuit, the current passes through the shunt-circuit and magnetizes the magnet N so powerfully that core O attracts the iron piece M on lever K, and swings said lever until hook J clears lug I, allowing magnet A to tilt until the iron piece 6 comes in contact with metallic brush 7 and establishes a circuit, cutting the lamp out entirely. The spring-connection between connecting-rod W and clutch X prevents magnet A from actuating clutch X by sudden jerks, and tends to render the light extremely steady.

I do not broadly claim the combination, in an electric lamp, of a lifting-clamp, an operating-armature or electro-magnet for said clamp, and an elastic connection between the clamp and armature.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an electric lamp, the combination, with the carbon or its holder, of a spiral-spring clamp, and means for bending the spring laterally to cause it to grasp the carbon or its holder, substantially as described.

2. In an electric lamp, the combination of a clutch composed of a coiled spring encircling the carbon or its holder, a device adapted to act on the spring and spread it to release the carbon or its holder, and an electro-magnet in a shunt-circuit of comparatively high resist-

ance for actuating the clutch-operating device when a large portion of the electric current passes through the shunt-circuit, substantially as described.

3. In an electric lamp, the combination of the pivoted electro-magnet A, having core O B, iron piece G, arm V, connecting-rod W, and clutch X, substantially as herein shown and described.

4. The combination of a pivoted electro-magnet, A, having the core O B, the metallic brush 7, switch-circuits 8 9, a locking device for holding the part B of the core from contact with the brush, and an electro-magnet in a shunt-circuit for releasing the pivoted armature and permitting contact of the said core and brush to cut out the lamp, substantially as described.

5. The combination of a pivoted electro-magnet in the main circuit of an electric lamp, automatic locking mechanism adapted to hold said electro-magnet in position, and an electro-magnet in a shunt-circuit of comparatively high resistance, adapted, when receiving a large portion of the electric current, to open said locking mechanism, substantially as and for the purposes set forth.

6. The combination of a pivoted electro-magnet, A, a metallic brush, 7, and a locking device for holding the magnet away from the brush, operated by a magnet in a shunt-circuit to release the magnet and permit it to come in contact with the brush, substantially as and for the purpose described.

JEAN A. WETMORE.

Witnesses:

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