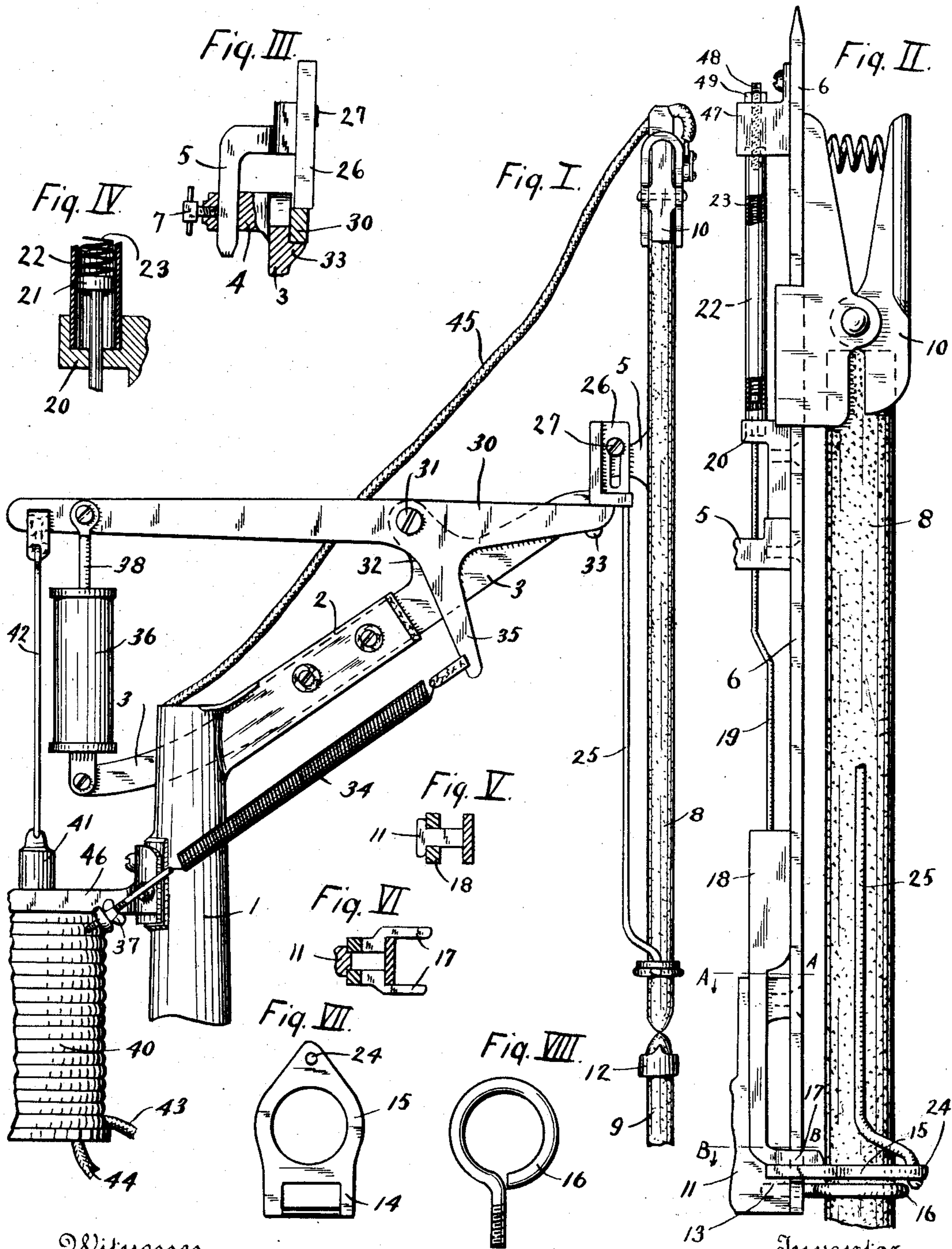


No. 631,816.

Patented Aug. 29, 1899.

G. C. PYLE.
ELECTRIC ARC LAMP.
(Application filed Dec. 24, 1898.)

(No Model.)



Witnesses
A. D. Hawkins
Kate Dunlap

Inventor
George C. Pyle
By H. Lockwood
His Attorney.

UNITED STATES PATENT OFFICE.

GEORGE C. PYLE, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO
FRANK H. EWERS, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 631,816, dated August 29, 1899.

Application filed December 24, 1898. Serial No. 700,272. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. PYLE, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Arc-Lamp; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

10 The object of my invention is to provide means for properly holding and regulating the feed of the upper electrode of an arc-lamp.

15 The said invention is designed for use in electric headlights for locomotives, where the lamp is subjected to considerable jarring, where it is desirable to maintain the light at a certain point opposite the reflector to secure the best reflection, and where, above all things, there must be no failure of the lamp to operate for a moment.

20 I accomplish the object by providing a clutch to support the lower end of the upper electrode, one side of which is held down by a spring-controlled device and the other side is held by means controlled by the current automatically. When the current-controlled holding device is slightly elevated, it causes the clutch to grip and elevate the electrode to form the proper arc. When the arc is destroyed and the current broken, the current-controlled holding device lowers its side of the clutch, thus permitting the electrode to move downward to the proper position to form the arc. In this manner I have a certain and positive feeding and holding device for the upper electrode.

25 The full nature of this invention will be understood by the accompanying drawings and the description and claims following.

30 Figure I is a side elevation of a portion of an arc-lamp, showing the upper electrode and its means of support and control. Fig. II is a rear elevation of the upper electrode and the parts immediately connected therewith. Fig. III is the detail of the means for supporting the guide-bar beside the upper electrode. Fig. IV is a detail in vertical section of the end of the tube and spring that hold the clutch down on one side. Fig. V is a cross-section on the line A A of Fig. II. Fig.

VI is a cross-section on the line B B of Fig. II. Fig. VII is a plan of the holding-clutch. Fig. VIII is a plan of the guide-ring.

35 In detail 1 is the upper end of a lamp-post provided with a guide-bracket 2, carrying an adjustably-mounted arm 3. At its outer end said arm 3 has a horizontally-extending arm 4, as seen in Fig. III, provided with a vertical aperture through it to receive the arm 5, to which the upper end of the guide-bar 6 is secured. The arm 5 is clamped in any desirable position by the set-screw 7.

40 8 is the upper electrode, and 9 is the lower one. The upper end of the upper electrode is grasped and held by the spring-clamp 10, that is constructed to be vertically slidable on the guide-bar 6. Said clamp 10, as well as the upper electrode, is fed downward by gravity only when the holding mechanism, hereinafter described, permits it. At the lower end of the guide-bar 6 there is a bar or bracket 11, that connects with the holding device 12 for the lower electrode. This piece 11 is provided with a platform or shoulder at 13, upon which the end 14 of the clutch rests. A guide-ring 16 is held also in the piece 11 below the clutch 15.

45 The side 13 of the clutch 15 is held down by the foot 17 on the bar 18, that is connected with the lower end of the rod 19. The upper end of said rod is vertically movable through the extension 20 from the guide-bar 6. A head 21 is provided on the upper end of said rod 19, that operates in the barrel or tube 22 and is held down therein by the spiral spring 23, which tends to keep said rod 19, and therefore the end 14 of the clutch 15, in their downmost position. The barrel 22 is seated at its end in the extension 20, while its upper end is held in a bracket 47 on the bar 6 and the set of the spring is adjustable by the screw 48, that is held and locked by the nut 49.

50 The clutch 15, with the mechanism so far described, would permit the upper electrode to move through it freely, and it becomes a holding-clutch only when the end 24 of said clutch 15 is elevated enough to pinch and hold the electrode. That is accomplished by the following means: The rod 25 is fastened at its lower end in an aperture in the side 24 of the clutch 15 and extends up parallel with

the electrode and has on its upper end a plate 26, provided with a vertical slot through which the screw 27 in the arm 5 extends. This permits a slight vertical movement of the side 24 of the holding-ring 15. This vertical movement is controlled by the current by means of the following mechanism: The plate 26 rests on a lever 30, pivoted at 31 on an extension 32 of the adjustable arm 3. The stop 33 limits the downward movement of the end of said lever, and it is held in such downward position by a spiral spring 34, connected at one end to the arm 35 and at the other end by an adjustable screw 37, secured to the lamp-post 1. The said lever 30 is actuated by the combined action of a solenoid and a dash-pot. The dash-pot 36 is supported on the lower end of the arm 3 and is provided with a piston or plunger 38, pivoted to the said lever 30. A solenoid 40 is carried by the bracket 46. Its core 41 is connected by the link 42 with said lever 30. The wires 43 and 44 lead to and from said solenoid. The wire 45 supplies the current to the upper electrode.

The action of my device is as follows: When the current is turned on, the solenoid acts, drawing down the rear end of the lever 30, and consequently elevating the other end, and thereby the rod 25 and the side 24 of the clutch 15, until said clutch binds and elevates the upper electrode enough to form the proper arc. If the distance between the electrodes becomes so great as to weaken or break the current, the action of the solenoid will be reversed, whereupon the side 24 of the clutch 15 will be depressed sufficiently to release and thereby permit the upper electrode to move by gravity downward into contact with the lower electrode. The current being thus re-established, it again acts upon the solenoid and causes the mechanism to elevate the elec-

trode sufficient to form the proper arc. This process is automatically continued.

Attention is called to the function and importance of the spring 23, especially in electric headlights for locomotives or any place where the lamp will be jarred. Said spring through the casting 18 causes the foot 17 to press down upon the rear side of the clutch 15, thus causing it to maintain and preserve the tight grip of the clutch on the electrode despite the jarring. The pressure of the toe of the foot 17 tends also to release the clutch when the current weakens in order to permit the feeding of the electrode.

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

1. An arc-lamp including a frame with a suitable supporting-arm therefrom, a guide-bar carried by such arm, an electrode slidably carried on said guide-bar, a clutch for supporting the lower end of such electrode, a lever mounted in the frame, a connection from one side of such clutch to said lever, and a solenoid for actuating said lever, whereby one side of said clutch will be elevated.

2. An arc-lamp including a guide-bar with suitable guides for the upper electrode, a clutch resting at one side upon a seat connected with said guide-bar, a plate resting upon the same side of said ring to hold it down on its seat, an adjustable spring tending to force said plate downward, and means controlled by the current for moving the other side of such ring.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

GEORGE C. PYLE.

Witnesses:

V. H. LOCKWOOD,
M. C. BUCK.