

No. 746,601.

PATENTED DEC. 8, 1903.

M. A. STOGSDILL & E. J. SCHATZ.

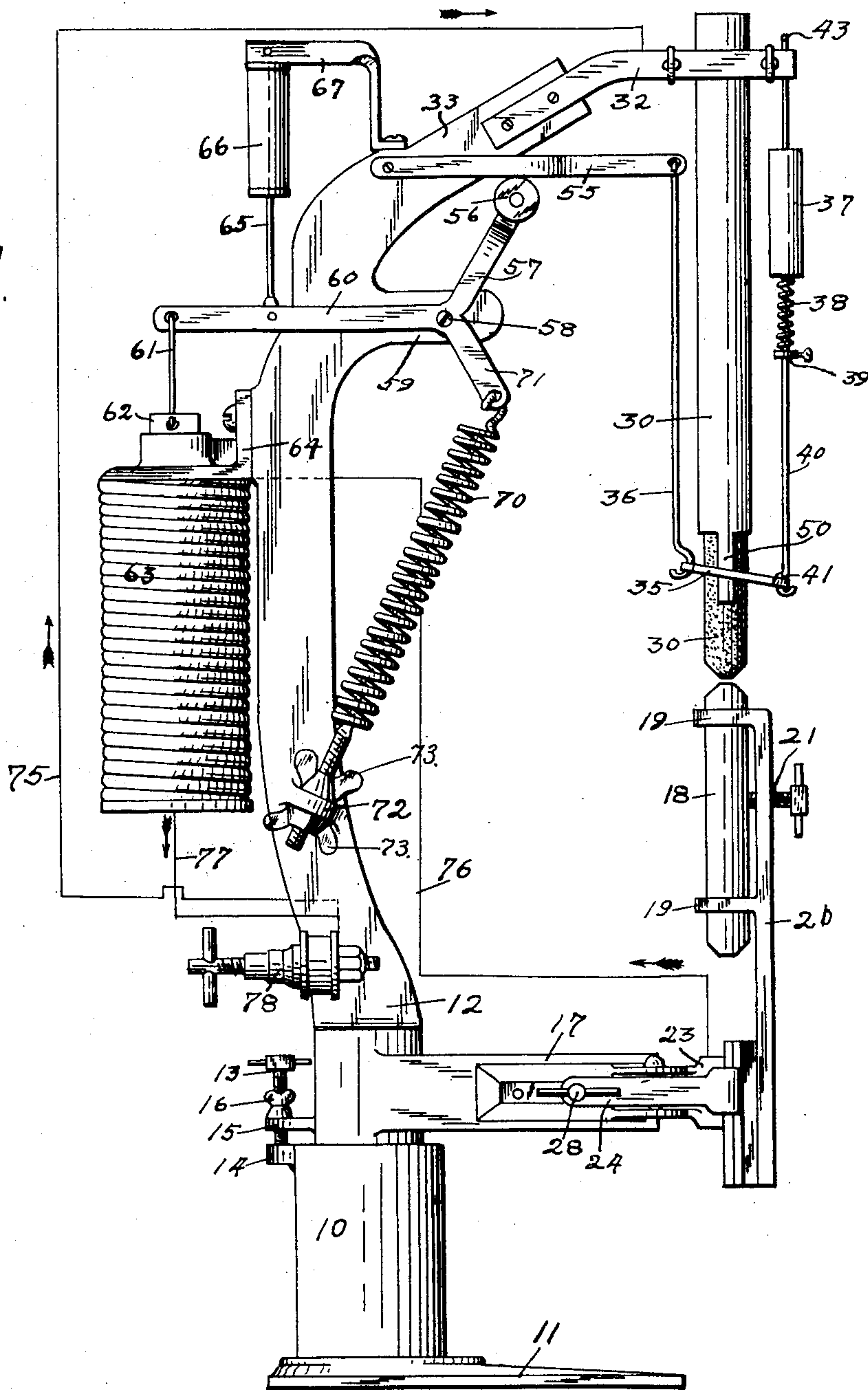
ELECTRIC ARC LAMP.

APPLICATION FILED DEC. 20, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

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INVENTORS

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2 SHEETS—SHEET 2.

FIG. 2.

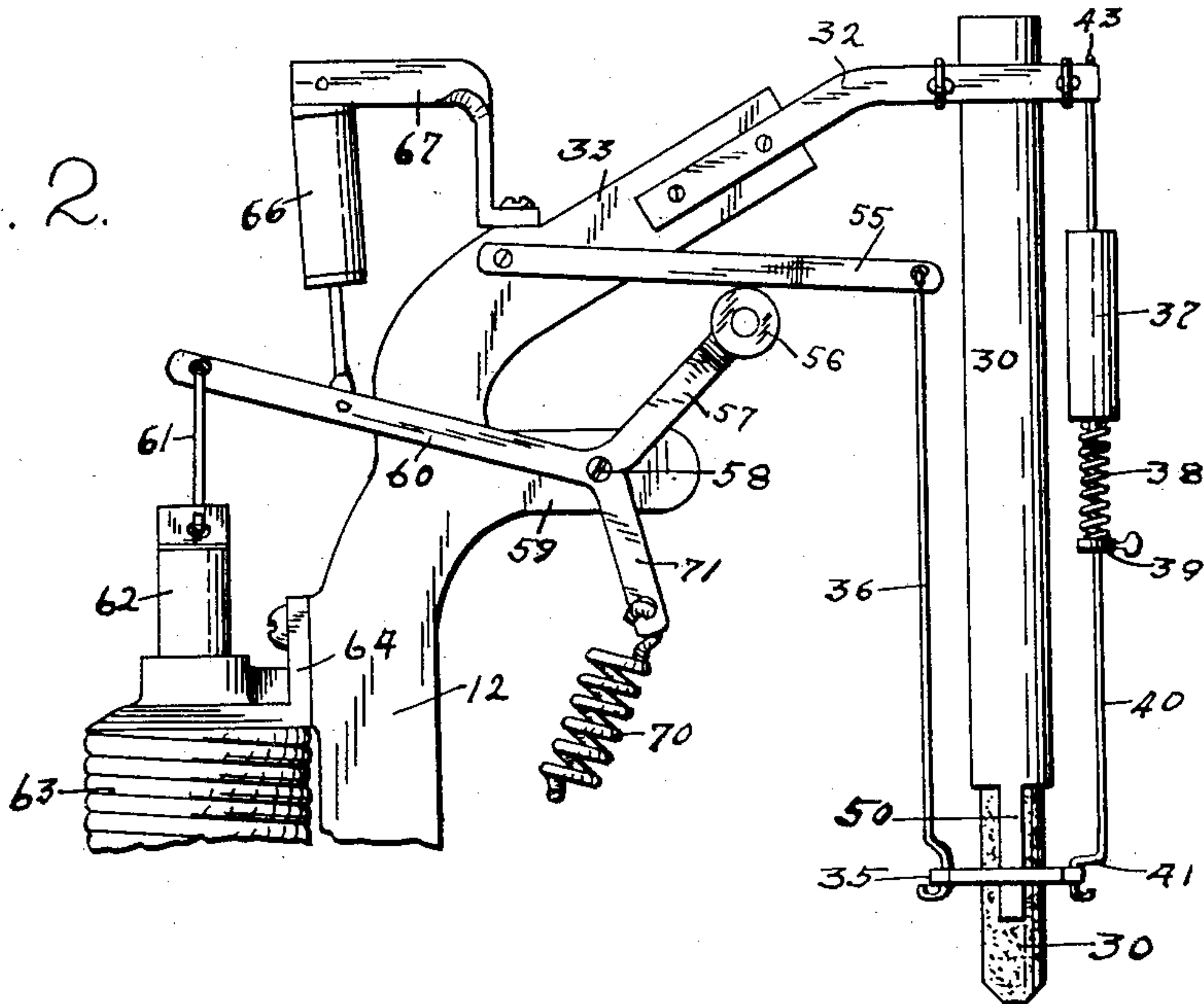


FIG. 3.

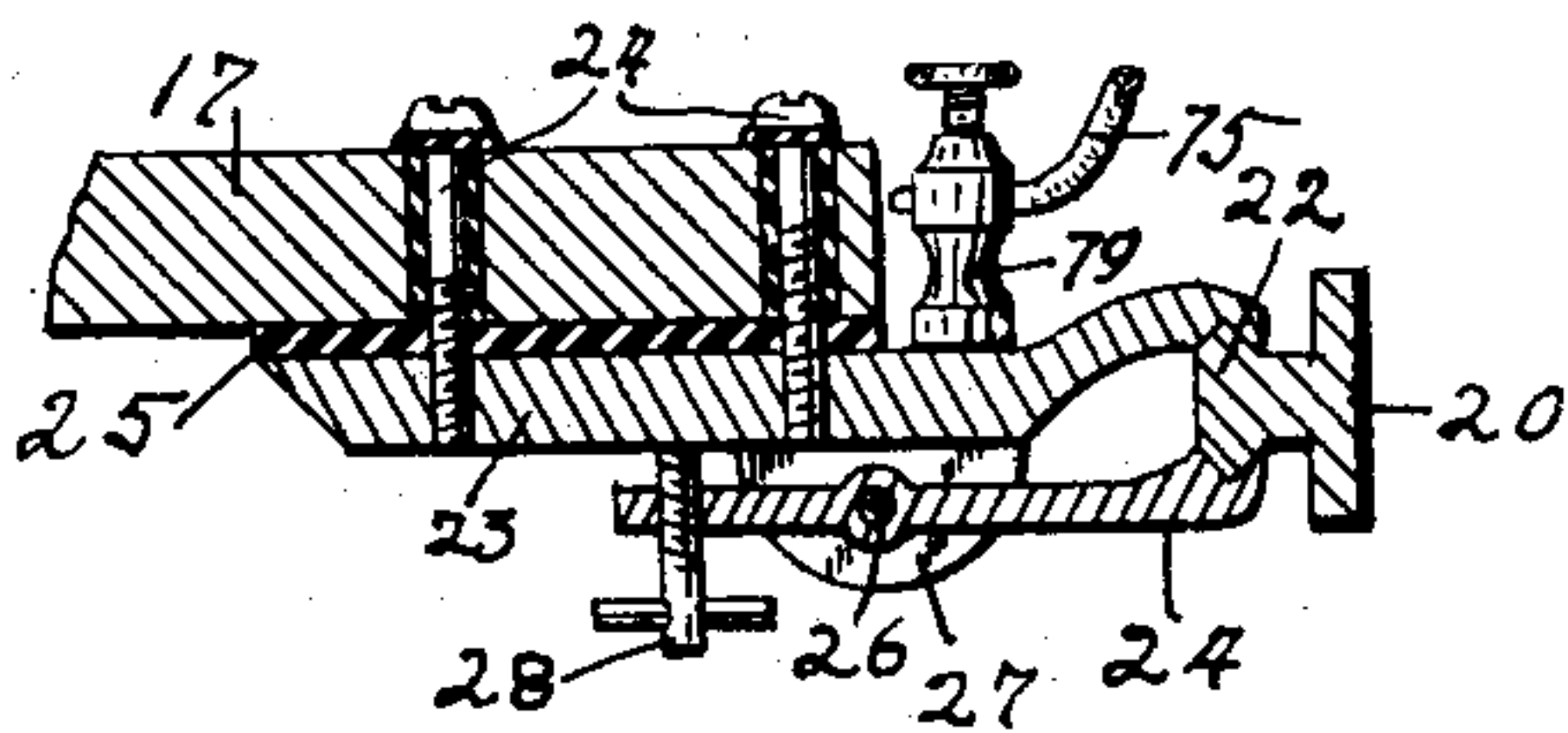


FIG. 4.

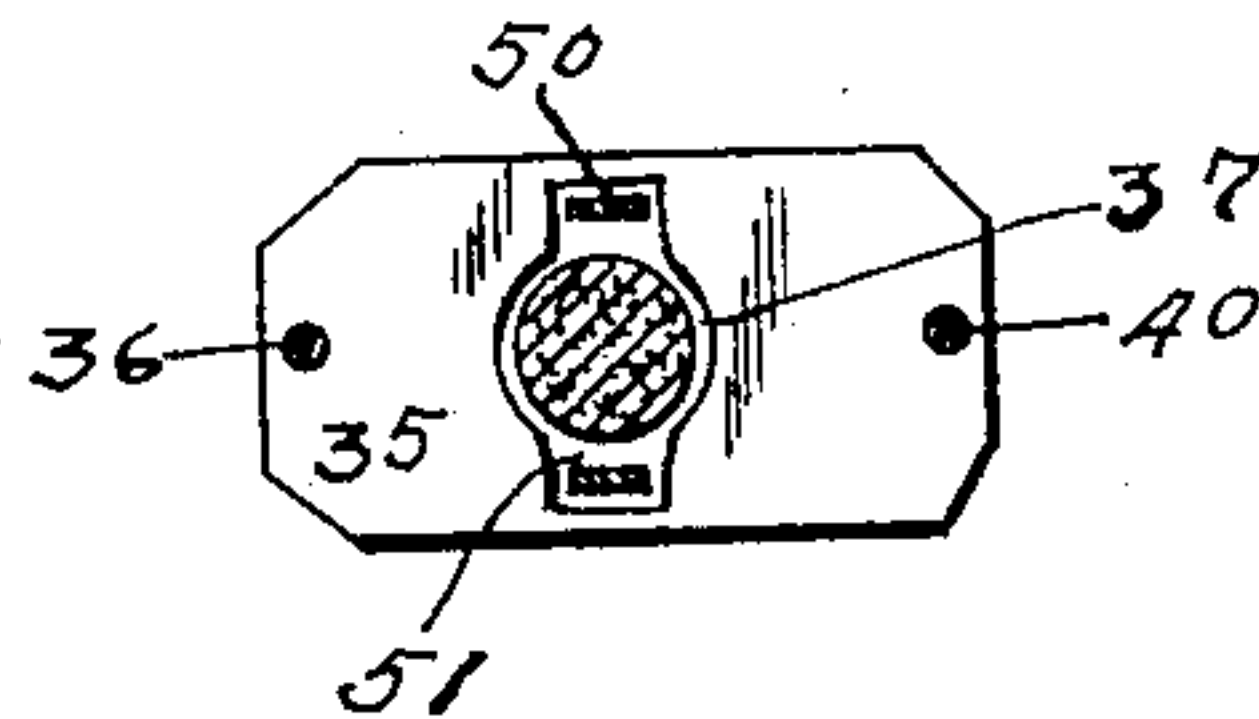
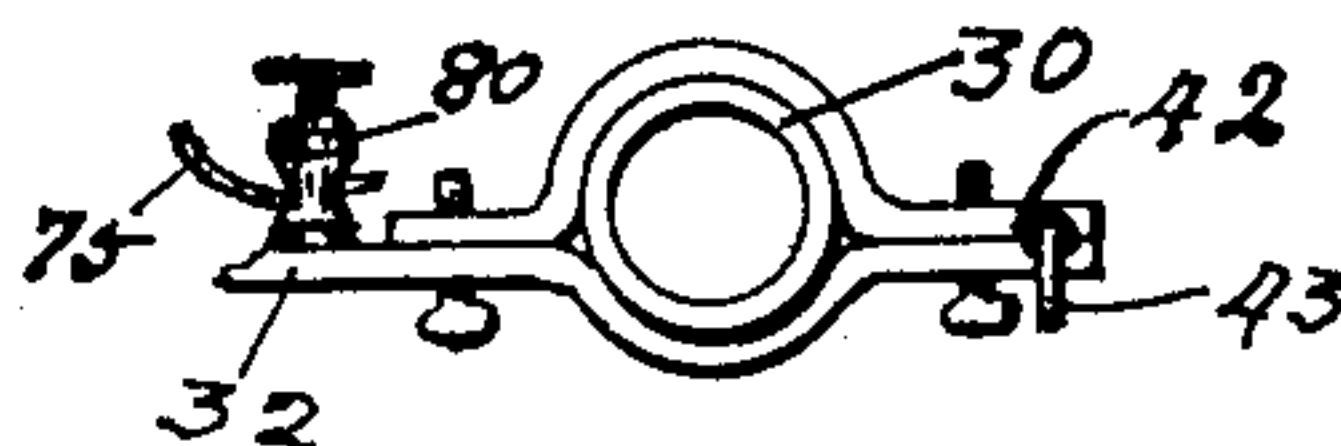


FIG. 5.



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# UNITED STATES PATENT OFFICE.

MARION A. STOGSDILL, OF INDIANAPOLIS, AND EDWARD J. SCHATZ, OF GREENFIELD, INDIANA, ASSIGNORS TO THE PYLE ELECTRIC HEADLIGHT COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF INDIANA.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 746,601, dated December 8, 1903.

Application filed December 20, 1902. Serial No. 136,064. (No model.)

*To all whom it may concern:*

Be it known that we, MARION A. STOGSDILL, of Indianapolis, county of Marion, and EDWARD J. SCHATZ, of Greenfield, county of Hancock, State of Indiana, have invented a certain new and useful Arc-Lamp; and we 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.

This invention relates to improvements in arc-lamps for adapting them to satisfactory use, especially in connection with electric headlights for locomotives.

The purpose of the invention is to improve the means for controlling the upper electrode. The necessity of a constant light in a locomotive-headlight makes it very important that the electrode-controlling means in the lamp be very reliable and sensitive.

The nature of the invention will be understood from the accompanying drawings and the following description and claims.

Figure 1 is a side elevation of the lamp with the upper electrode-clamp in position to clutch and support said electrode. Fig. 2 is a side elevation of the upper part of the device with parts altered so as to cause the clutch to disengage the upper electrode. Fig. 3 is a central vertical section of the means for supporting the lower electrode. Fig. 4 is a section on the line 4 4 of Fig. 2. Fig. 5 is a horizontal view of the electrode-holding arm.

A hollow sleeve-like support 10 is mounted on a suitable base 11 for supporting the lamp-post 12. The lower end of the lamp-post extends into the sleeve 10 and is adjustably supported therein by the screw-bolt 13 that extends upward from the ear 14 on the sleeve 10 through a threaded aperture in the ear 15 from the lamp-post, whereby rotation of the screw-bolt will elevate or lower the lamp-post. 16 is a clamp-nut. Any other suitable means for effecting this adjustment may be used, as there is no invention in it. The object of such adjustment is to properly locate the light with reference to the reflector in the lamp.

From the lower part of the lamp-post 12 a horizontal arm 17 extends for carrying the

means for holding the lower electrode 18. Said electrode is made of copper and is held in the ears 19 on the bar 20 by the set-screw 21. In this way it can be readily adjusted vertically. The bar 20 at its lower end has an extension 22, which is held by a clamp composed of the members 23 and 24. The member 23 is secured to the arm 17 by the screw-bolts, with insulation 25 between. The member 24 of the clamp is pivoted at 26 to the ears 27 from the member 23 and is clamped with the screw-bolt 28, whose inner end bears against the member 23. This permits the ready adjustment or removal of the bar 20 without interfering with the insulation between the clamp and the arm 17 from the lamp-post.

The upper electrode 30 is made of carbon, which feeds down through a metal tube 31, which is supported by the bar 32, rigidly secured to the arm 33 on the upper end of the lamp-post.

The upper electrode feeds down to the lower one through the tube 31 by gravity. It is elevated to establish the arc by the inner portion of the clutch 35 being elevated by the rod 36, that is hooked into said clutch. Said clutch 35 is a metal plate provided with the hole 37, slightly larger than the electrode and through which the electrode extends. When said plate is moved to an inclined position, as shown in Fig. 1, it will engage and clamp the outer and inner edges of the electrode. If it is moved to a horizontal position, as shown in Figs. 3 and 4, it will cease to bind the electrode and permit it by gravity to move downward.

The outer portion of the upper electrode clutch-plate is held down by the weight 37 acting through the spring 38 on the adjustable collar 39, secured to the rod 40, which at its lower end is hooked through a hole in the clutch and has a shoulder 41 bearing on the clutch. The upper end of the rod 40 is loosely mounted between the bar 32 and the clamp-bar 42, and has a bend 43 to form a stop to limit the downward movement. It is not new to employ a spring acting against a stationary object at its upper end to push the rod 40 downward. In such construction, however,



the rod is pushed downward by the spring, whereas in this construction the weight 37 is the thing that forces the rod downward, the spring 38 being used merely to prevent any jarring or irregular action of the weight 37 downward on the rod 40 and clutch 35. This construction is of value because of its great sensitiveness, the irregularities in the action of gravity being compensated for by the spring.

The action of the clutch-plate 35 is further made more sensitive and accurate by the two guide-bars 50 extending downward from each side of the tube 31. These enter notches 51 in the clutch, as shown in Fig. 4. The notches are wider than the bars 50, so as to permit sufficient inclination of the clutch to catch the electrode.

The engagement of the upper electrode by the clutch 35 is caused by the downward action of the weight 37 and rod 40 on the outer end, and the upward action of the rod 36, which is connected to one end of a bar 55, and said bar is at its other end pivoted to the upper part of the lamp-post so as to be substantially in a horizontal position when the electrode is supported by the clutch. It is held upward in its horizontal position by a roller 56 on the arm 57, pivoted at 58 to the arm 59 from the lamp-post. The arm 57 is integral with a normally horizontal arm 60, and the two form a bell-crank lever. The outer end of the lever 60 is connected by a rod 61 with the vertically-movable core 62 of the solenoid 63, which is secured to the lamp-post by the bracket 64. Said rod 60 has also connected with it the piston 65 of the dash-pot 66, carried by the bracket 67, secured at the upper end of the lamp-post. The dash-pot acts against the solenoid. Likewise a spring 70, which at its upper end is secured to an arm 71, extending from the bar 60 and forming with it a bell-crank lever, acts against the solenoid. It is held adjusted by the nut 73. Said spring is tensile, and by pulling down on the arm 70 tends to elevate the bar 60 of the double bell-crank lever formed of the parts 60 and 71.

The wiring is shown by a diagram. The current from any suitable supply is carried by the wire 75 to the arm 32, to which it is secured, and from that the current passes through the tube 31 to the upper electrode, and when said electrode is elevated jumps to the lower electrode 18, and passing through the support 20 and the clamp holding the same is returned through the wire 76 to the upper end of the solenoid, and from the solenoid through the wire 77 to the ground from one of the binding-posts 78, to which the wire 77 is secured. The wires bringing and returning the current are not shown.

The operation is as follows: Before the current of electricity is put through the lamp the upper part is in the position shown in Fig. 2, the spring 70 throwing up the bars 60 against the weight of the core 62 of the solenoid and re-

sistance of the dash-pot 66. That lowers the free end of the bar 55 and lets the clutch-plate down to a level position. Then the electrodes are in contact. When the current is turned on, it passes through the circuit heretofore described and energizes the solenoid, so it draws down the arm 60 against the action of the spring 70, which is elevated, moving the bar 55 and the inner end of the clutch-plate to the position shown in Fig. 1. The clutch-plate grasps the upper electrode and in its elevation lifts said electrode away from the lower one, so that the current jumping from the upper to the lower electrode makes the arc and light. Any diminution of the force of the current through the solenoid caused by the gap between the two electrodes being too great for the current to pass will tend to release the core of the solenoid, and thereby the intermediate parts and the clutch, so as to permit the clutch to release the upper solenoid, and it can move down by gravity. In this way the device is rendered automatically regulative. If the action of the solenoid is too great or violent, the tension of the spring 70 should be increased, and vice versa.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In an arc-lamp the combination with an electrode-holder having a pair of oppositely-located bars extending downward therefrom, a clutch-plate with an aperture slightly larger than the electrode and having on its opposite sides notches through which said bars from the electrode-holder extend, the width of said notches being greater than the width of said bars, means for holding down one end of said clutch-plate, and means controlled by the electric current through the lamp for elevating and lowering the other end thereof, whereby the clutch-plate will be guided in its operations and will grasp or release the electrode.

2. In an arc-lamp, a clutch-plate through which the electrode may extend, the width of the opening being greater than the width of the electrode, means controlled by the electric current for elevating and lowering one end of said clutch-plate, a vertically-movable rod connected with the other end thereof so that a depression of the rod will depress the clutch-plate, a spiral spring mounted on said rod with its upper end free, and a weight on the rod resting freely upon the upper end of said spring.

3. In an arc-lamp, a clutch-plate through which the electrode may extend, the width of the opening being greater than the width of the electrode, means for holding one end thereof down, a rod connected with the other end thereof, a bar pivoted to the framework to the free end of which said rod is connected, a solenoid in the lamp-circuit, and means controlled by the solenoid for lowering or elevating said bar.

4. In an arc-lamp, a clutch-plate through which the electrode may extend, the width of the opening being greater than the width of



the electrode, means for holding one end thereof down, a rod connected with the other end thereof, a bar pivoted to the framework to the free end of which said rod is connected,  
5 a double bell-crank lever pivoted to the framework with one arm provided with a roller for supporting said bar, an adjustable spring connected with another arm of said lever tending to move the lever so as to de-  
10 press said bar, a solenoid in the lamp-circuit having a suitable core, a connection between the core of the solenoid and a third arm of said

lever, and a dash-pot with its piston-rod pivoted to said arm to resist the action of the solenoid and said spring.

In witness whereof we have hereunto affixed our signatures in the presence of the witnesses herein named.

MARION A. STOGSDILL.  
EDWARD J. SCHATZ.

Witnesses:

V. H. LOCKWOOD,  
NELLIE ALLEMON.