

R. H. PYLE.
ARC LAMP.

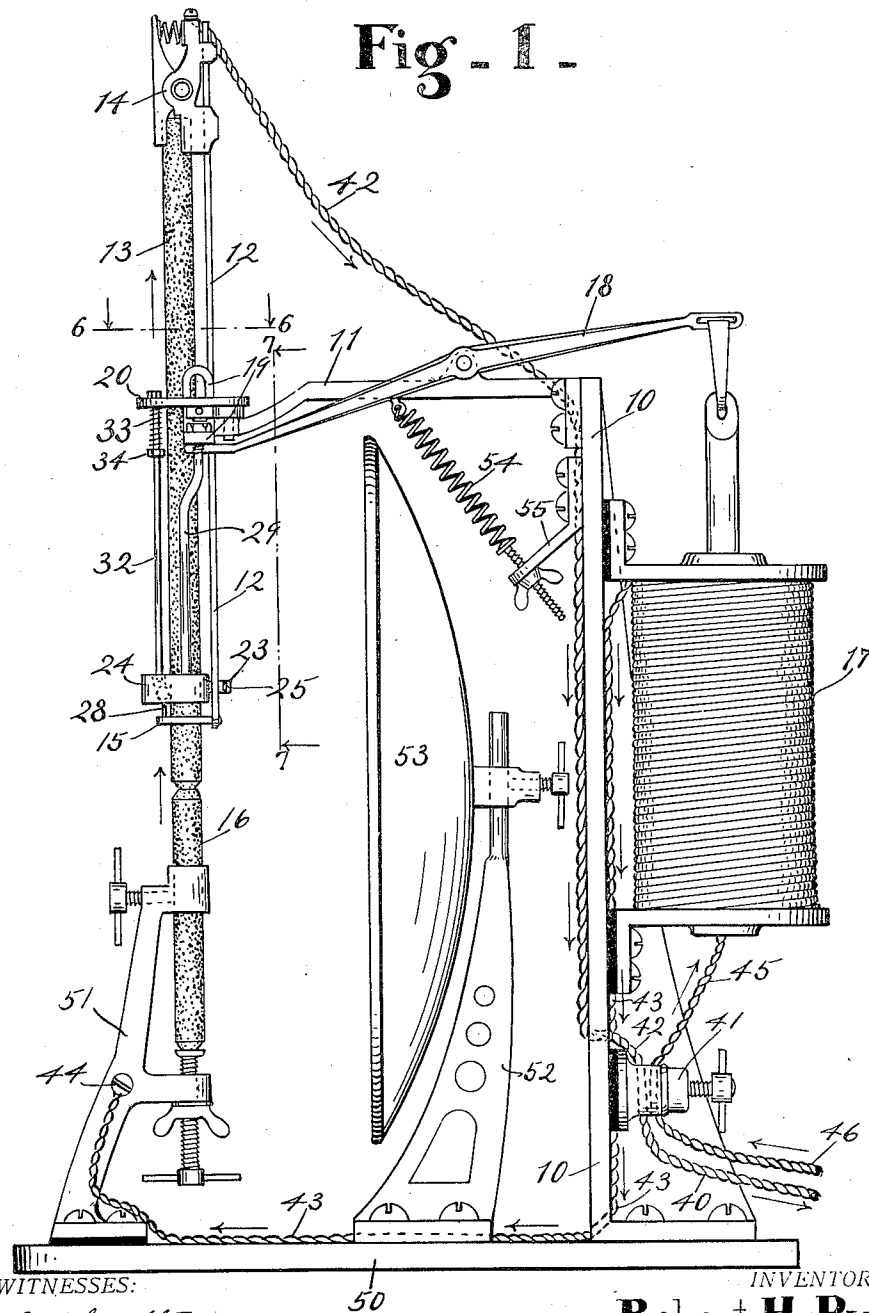
APPLICATION FILED OCT. 9, 1907.

937,386.

Patented Oct. 19, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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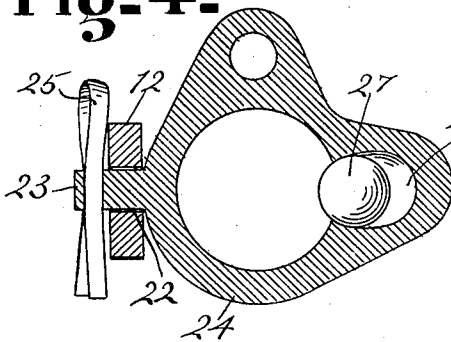
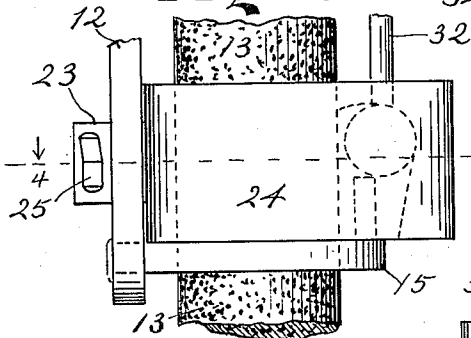
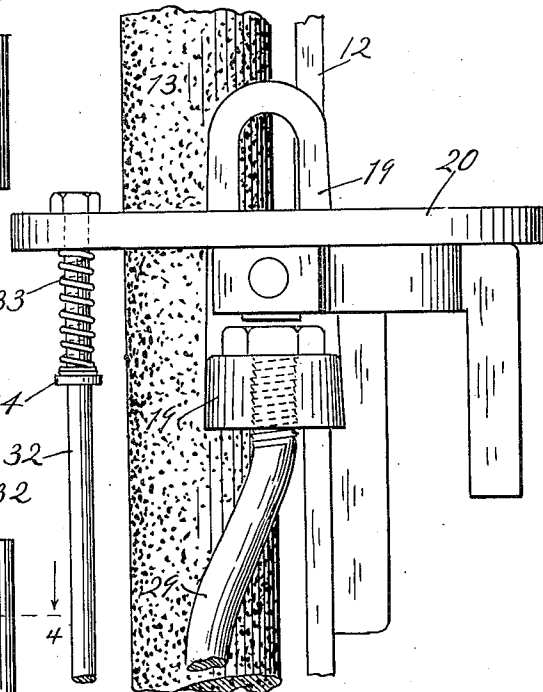
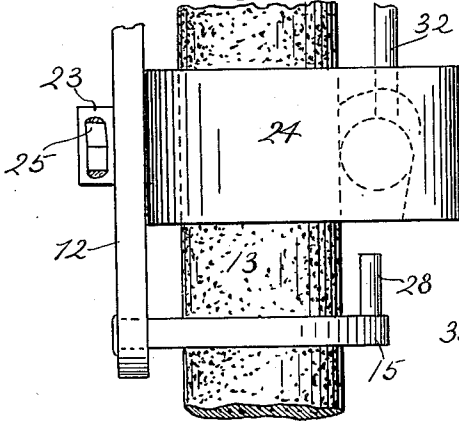
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3 SHEETS—SHEET 2.



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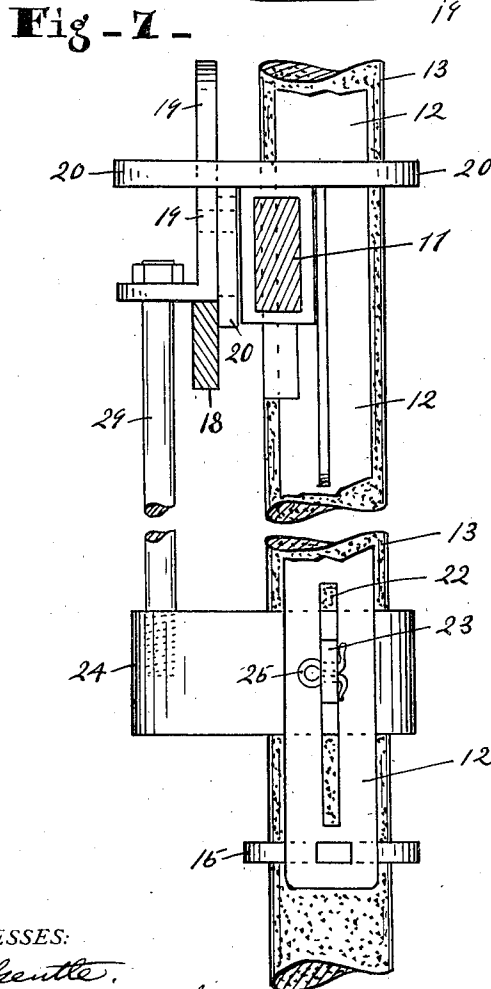
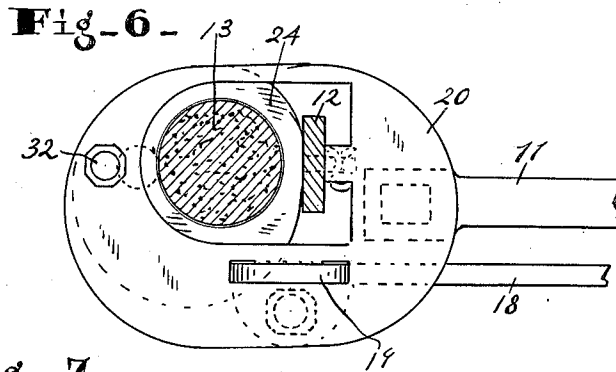
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3 SHEETS—SHEET 3.



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ARC-LAMP.

937,386.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed October 9, 1907. Serial No. 396,678.

To all whom it may concern:

Be it known that I, ROBERT H. 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 letters refer to like parts.

10 The object of this invention is to improve the construction of clutches in arc lamps for holding and regulating the movement of the upper electrode and to that end one feature of my invention consists in what I call a ball clutch, namely, a ball mounted loosely in an inclined recess in the side of the clutch ring and adjacent the upper electrode when the parts are in place, the arrangement being such that the gravity of the ball will cause it to wedge between the clutch ring and electrode and therefore clutch the electrode and hold it in its elevated position. Along with the foregoing I provide means for releasing said ball clutch, namely, a pin adapted to engage the ball as the clutch ring moves downwardly with the electrode for dislodging the ball from its clutching position so that the electrode may drop. Along with the foregoing there is a spring-pressed means provided for holding the ball down in clutching position.

35 The features of this invention will be more fully understood from the accompanying drawings and the following description and claim.

40 In the drawings Figure 1 is a side elevation of an arc lamp embodying my invention, parts being broken away. I do not, however, wish to be limited to the use of my invention with a lamp constructed in any particular way so far as the other features of the lamp outside of my invention are concerned. Fig. 2 is a side elevation of the clutch and upper electrode showing the parts of the clutch in position and parts being broken away. Fig. 3 is the same as Fig. 2, showing the clutch released and not in clutching position. Fig. 4 is a horizontal section on the line 4—4 of Fig. 3 with the electrode removed and the ball in the lower end of the ball recess. Fig. 5 is an elevation of the upper electrode holding a clutching means showing the reverse side thereof as compared with Fig. 2 and parts being broken away, the clutch being shown in operating condition. Fig. 6 is a horizontal

section on the line 6—6 of Fig. 1. Fig. 7 is a vertical section on the line 7—7 of Fig. 1.

Referring to the details of the construction illustrated, there is shown a lamp frame 10, which, however, may be of any type, provided with an arm 11 at its upper end for supporting the guiding bar 12 for the upper electrode 13. The upper electrode is guided on said bar 12 by a clamp 14 that grips the electrode at its upper end and slides on the bar 12, and by the guide ring 15 at the lower end.

16 is the lower electrode and 17 the solenoid for controlling the clutch. The solenoid may be of any desired form. The solenoid controls the lever 18 that at its end carries the slide 19 that has a vertical slot for guiding it on the bracket 20 which is secured to the vertical bar 12. The bar 12 has a vertical slot 22 near its lower end in which the lug 23 projects from the clutch ring 24. A cotter pin 25 or the like, through the lug 23, holds the clutch ring, and the arrangement permits the vertical movement of the clutch ring. The clutch ring loosely surrounds the upper electrode and has in the inner wall thereof a recess 26 for the clutch ball 27. The recess is inclined upwardly away from the hole through the clutch ring for the electrode so that when the ball is in the upper end of the recess, it will disengage the electrode, and when in the lower end of the recess, it will project into the hole for the electrode and engage and clutch the electrode. The lower end of the recess is reduced so the ball cannot escape. A clutch-releasing pin 28 projects up from the ring 15 into the recess 26 for engaging the balls 27 when the electrode and clutch ring move downwardly far enough to permit this result. A rod 29 is secured at its lower end to the clutch ring 24 and at its upper end to the slide 19. This rod 29 is to move the clutch ring 24 in response to the action of the solenoid. There is also a rod 32 that at its lower end projects into the upper part of the ball recess 26 and at its upper end extends loosely through a hole in the bracket 20 and the spring 33 is coiled around said rod immediately below said bracket and above the disk 34. The function of this spring-controlled rod 32 is to positively dislodge and push downward the ball 27 into clutching position and yet permit the ball to recede or move upward when pushed upward by the pin 28. The wiring is of the usual form,

there being the wire 40 running to the binding post 41, a wire 42 to the upper electrode clamp 14, a wire 43 from the lower electrode holder 44 to the solenoid, a wire 45 from the solenoid to the binding post 41, and a wire 46 therefrom.

In operation, before the current is turned on, the upper electrode rests upon the lower electrode and the clutch mechanism is in the position shown in Fig. 3, that is in disengaging position. As soon as the current is turned on, the core of the solenoid moves downwardly and actuates the lever 18 so that it will elevate the clutch ring 24 to the position shown in Fig. 2, and that elevates the upper electrode to establish the arc. As the arc lengthens the current will weaken, and through the solenoid will permit the gradual downward movement of the clutch ring and upper electrode until the ball comes in contact with the clutch-releasing pin 28. Thereafter the parts remain substantially in that position. When the arc becomes too long, the clutch drops down slightly and the ball is moved slightly upward by the pin 28 so as to slightly disengage the upper electrode and permit it to move downwardly very slightly and shorten the arc, and then the slight increase of current will slightly elevate the clutch and electrode, so that there is substantially uniform interplay between the pin 28 and the ball 27 of the clutch, whereby the upper electrode is gradually fed downwardly as it is consumed, and yet

the length of the arc is maintained substantially uniform.

In the drawings there is shown a base 50 with a post 51 for the lower electrode and a post 52 for a reflector 53. There is also a spring 54 from a bracket 55 on the post 10 that runs to the lever 18.

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

In an arc lamp, a clutch ring adapted to surround the upper electrode, and with a recess in the inner wall thereof that inclines downwardly toward the electrode, a ball fitting in said recess that when in the lower part of said recess projects beyond the inner wall of the clutch ring in position to clutch the electrode, means controlled by the current through the lamp for elevating said clutch to the clutching position, a stationary bar beside the electrode with a ring on the lower end thereof surrounding the electrode, and a pin extending upwardly from said ring and adapted to enter the ball recess in the clutch ring when said clutch ring moves downwardly, whereby said pin will disengage the ball from the clutching position.

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

ROBERT H. PYLE.

Witnesses:

N. ALLEMONG,
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