(No Model.)

H. R. QUINBY.

ELECTRIC ARC LAMP.

No. 571,792. Patented Nov. 24, 1896.

Fig. 1.

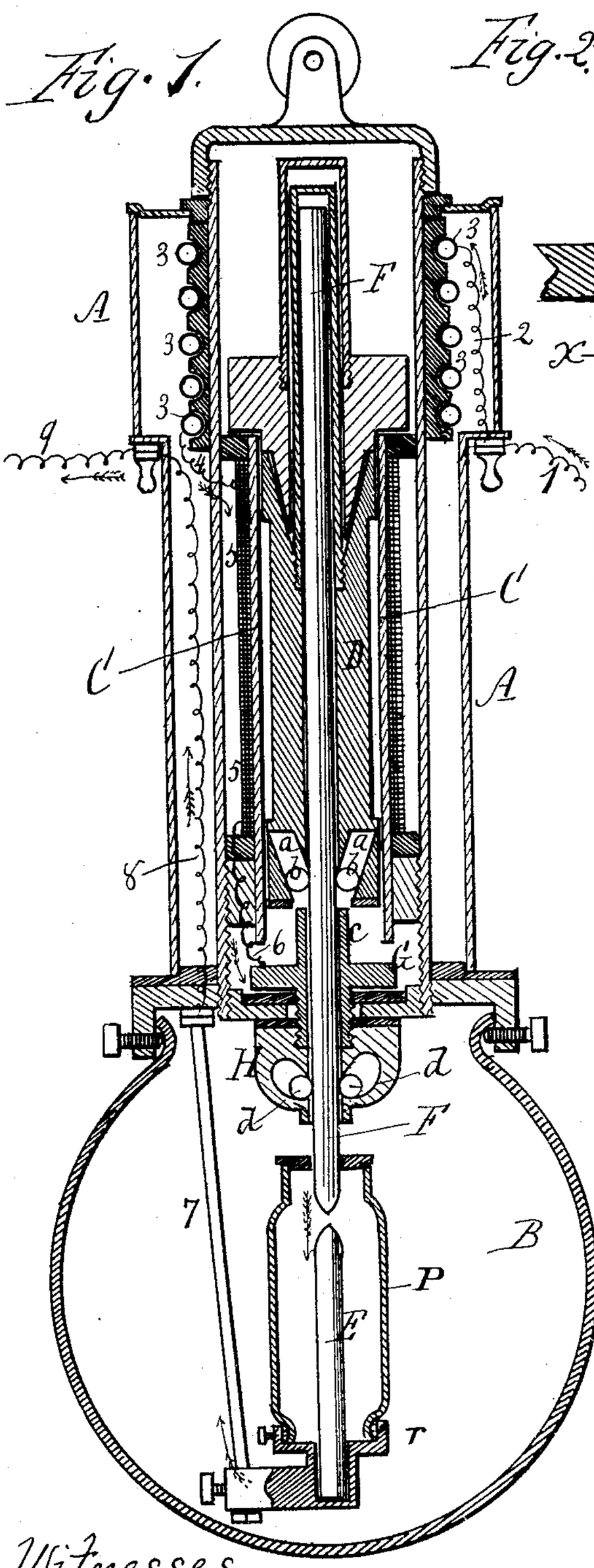


Fig. 2.

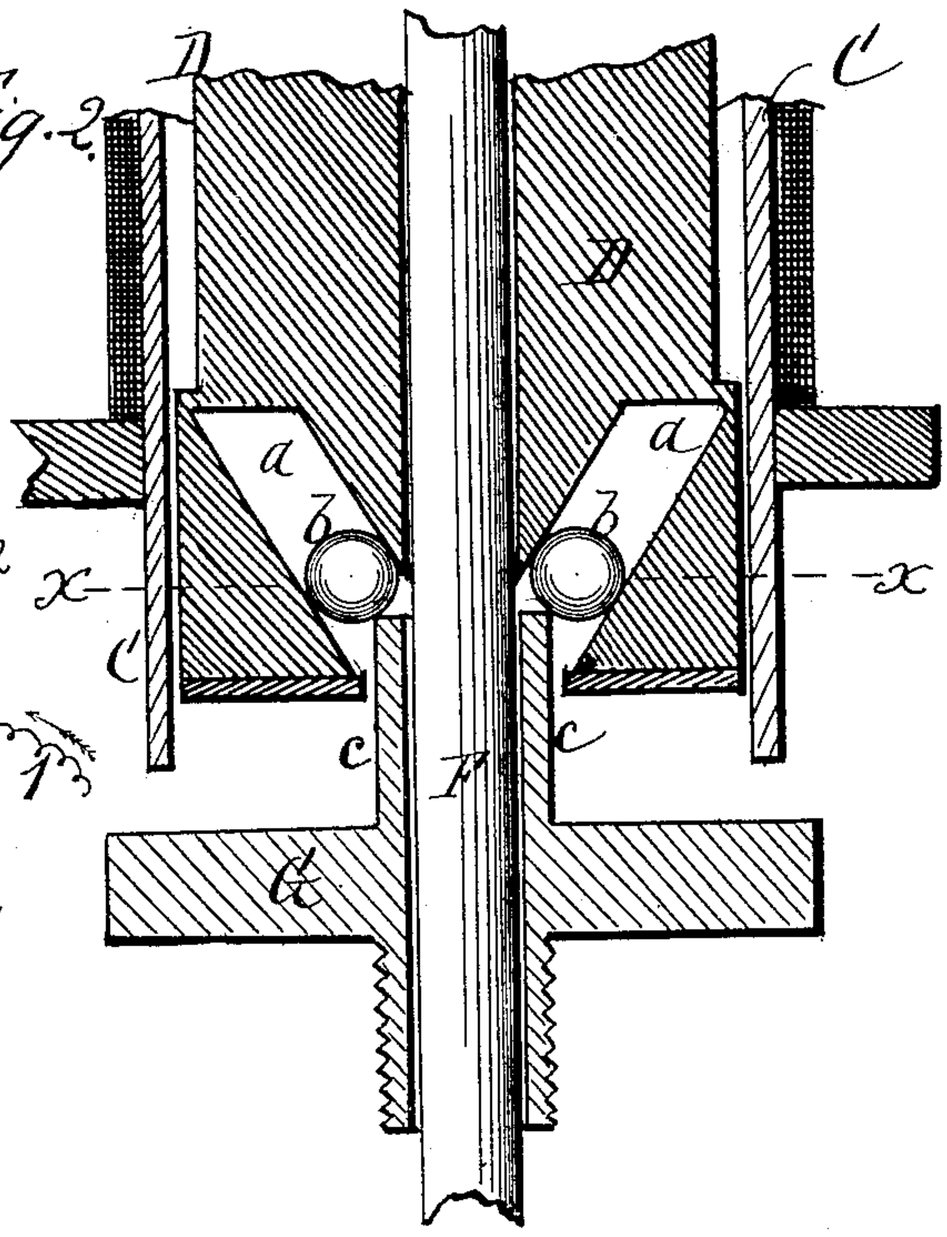
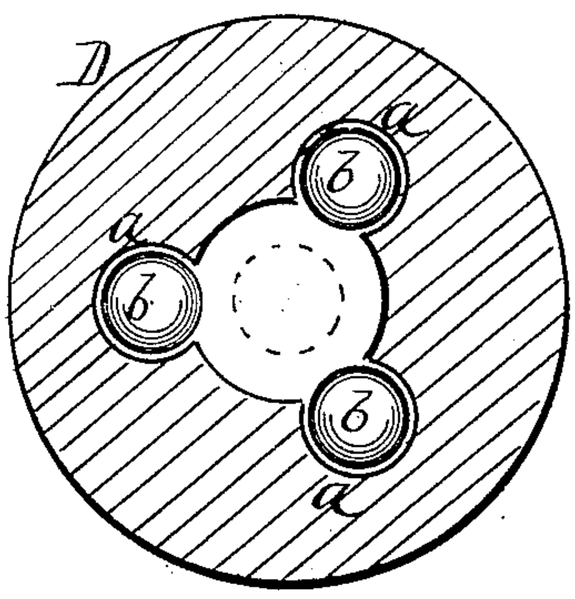


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY R. QUINBY, OF ROCHESTER, NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 571,792, dated November 24, 1896.

Application filed March 12, 1896. Serial No. 582,851. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. QUINBY, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Electric Lamps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

My improvement relates to means for controlling the feed of the upper carbon; and it consists in the combination and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a central vertical section of an electric lamp, showing my improvement. Fig. 2 is an enlarged vertical section of a portion of the same, showing the apparatus for regulating the feed of the upper carbon. Fig. 3 is a horizontal section of Fig. 2 in line $x\ x$ of the last-named figure.

The object is to control the feed of the upper carbon as it is burned away and insure its standing at the proper relation with the lower fixed carbon.

A is the exterior casing of the lamp; B, the globe; C, the tubular magnet, and D the cylindrical armature which moves up and down in the magnet.

E is the fixed carbon at the bottom of the lamp, and F the movable carbon, the latter extending up centrally through a passage in the armature and being free from contact therewith, so that there is no escape of electricity from the carbon to the armature. In the bottom of the armature are three or more inclined runways $a\ a\ a$, in which lie glass or other non-conducting balls $b\ b\ b$, whose tendency is to slide down the runways and clamp against the carbon, thereby holding the latter elevated.

Beneath the armature is a head G, provided with a projecting tubular stop c, through which the carbon runs freely, said stop c being annular and striking into the lower end of the armature when the latter is lowered. When the stop so enters the passage at the bottom of the armature, it strikes the balls $b\ b\ b$ and throws them out away from contact with the carbon F and allows the latter to fall. When the armature is raised again, it clears from the stop and the balls fall back to place, clamping the carbon and holding it up.

By the means above described the feed of the upper carbon is controlled with great regularity. When the armature falls by a decrease in the electric power, the balls are released from the carbon and the latter is allowed to fall. When the armature rises by increase of the electric power, the balls close on the carbon, clamping it in place, and the carbon then rises with the further rise of the armature until the arc is in a normal condition, when the carbon becomes stationary.

The lower end of the movable upper carbon F rests between a set of balls $d\ d\ d$, located in a cap H, screwed to the lower end of the head G, said balls resting on a slight incline to keep in contact with the carbon at all times, but allowing free passage of the carbon up and down. They are located at such a distance from the upper balls that the two sets of balls practically hold the carbon in a true vertical position, thereby preventing contact between it and the armature through which it runs. The balls $d\ d\ d$ are made of carbon or other conducting material and they are designed to form conductors at all times between the carbon F and the frame in which the balls rest, so that the main circuit through the lamp shall be intact at all times.

P is a glass lamp located inside the globe B and inclosing the meeting ends of the carbons, the lower carbon being attached and resting wholly within the lamp and the upper one sliding freely through the top of the lamp. The lamp is attached to a base r by means of a set-screw, so that it can be removed at any time. The base r, in turn, is attached to a rod 7, depending from the frame to which the globe is attached. The lower end of the rod passes freely through the base r, and a nut is screwed on the bottom. By this means the lamp is adjustable vertically and can be moved up or down to adapt it to the position of the ends of the carbons, which position changes as the carbons burn away. The rod 7 also serves as the conductor between the bottom of the lamp and the carbon attached thereto and the wires connected with the main line.

The current enters through wire 1, thence passes through wire 2 to the upper end of a spiral resistance-coil 3, thence from the lower

end of said resistance-coil it passes through wire 4 to the winding 5 around the magnet, thence it passes through wire 6 to the cap G and to the frame H, thence through the conducting-balls *d d d*, thence through the carbons F E, rod 7, and wire 8, to exit-wire 9, and from the latter to the source of energy.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric lamp the combination of a tubular magnet, a cylindrical armature resting therein and provided with a central passage of greater diameter than the carbon so that the carbon will not come in contact with the armature, a set of non-conducting balls resting in inclines in the armature, clamping the carbon, a stop below the balls entering the end of the armature and raising the balls when the armature is lowered, a cap below the armature and insulated therefrom, and a set of conducting-balls resting on slight inclines in the cap and bearing against the carbon, the whole so arranged that the two sets of balls center the carbon and hold it from contact with the magnet, and the lower set of balls serve as conductors to convey the current to the carbon at its lower end, thereby preventing any circuit between the carbon and the armature above the lower set of balls, as herein shown and described.

2. In an electric lamp the combination with the transparent shade or globe P, provided with the fixed carbon E, and having the carbon F movable freely through its top, of the base 7 to which the shade or globe is attached, and the rod 7 supporting said base and allowing an adjustment of the base up and down thereon in order to adjust the lamp to proper relative positions with the ends of the carbons, said rod also forming a conductor, as herein shown and described and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY R. QUINBY.

Witnesses:
R. F. OSGOOD,
GEO. A. GILLETTE.