

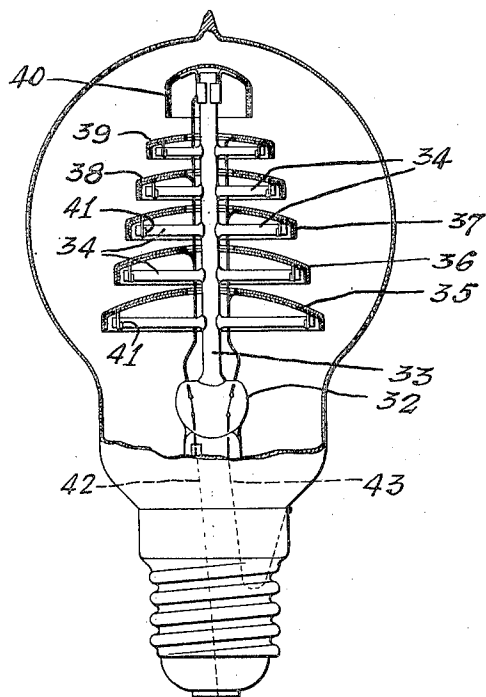
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ELECTRIC GAS LAMP WITH GLOW DISCHARGE

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UNITED STATES PATENT OFFICE.

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ELECTRIC GAS LAMP WITH GLOW DISCHARGE.

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This invention relates to electric gaslamps with glow discharge and consists primarily in a special arrangement of the electrodes. In accordance with the invention the anodes and cathodes have the form of surfaces and are arranged upon a supporting body of insulating material, particularly glass, in such a manner that the illuminative effect of the lamps is not appreciably impaired if the anode is caused to act as the cathode or vice versa. The free radiation of light is also practically entirely unimpeded. This is accomplished by arranging the anode and cathode separate from one another and coaxially. This arrangement results in the further advantage that when the lamps are supplied with continuous current no attention need be paid to the polarity of their terminals.

Further advantages of the novel arrangement of the electrodes consist in their stability, and in their being cheap and easy to manufacture, and having a pleasing appearance.

In the constructional forms of the invention shown in the accompanying drawing the electrodes are either superimposed upon an insulating supporting body, or peculiar disc-like electrodes of decreasing size are arranged above one another on a central support, the largest electrode being near the base of the lamp and the smallest near its tip. The discs of the latter constructional form are alternately connected to the same current lead and are carried by glass arms radiating from the central support or by arms of metal.

Electric gaslamps with glow discharge of the above-described type can only be used in conjunction with resistances. These resistances must be comparatively high and must take up only very little space. To meet the latter requirement resistances have heretofore been arranged in the base or foot of the glow discharge lamps.

In order that the stability and simplicity obtained by the novel arrangement of electrodes may not be impaired the resistances in the base or foot of the lamp are, in accordance with the invention, constructed in the following novel manner:

The resistance consists of a non-conducting material, as for example porcelain or

glass coated with a thin covering of colloidal graphite. Resistances of this kind are of small bulk and their value measured in ohms is high. One form of a resistance of this kind consists of a helix made of a thin glass rod coated with a thin layer of graphite by dipping it into a colloidal solution of graphite.

In accordance with the invention resistances of this kind may be arranged in the foot of the lamp in such a way that the conductors passing into the lamp extend through the resistance. To facilitate the operation of connecting up the resistance with the current lead and with the wire that passes into the lamp the end of the resistance that extends farthest into the lamp is made to pass along the interior or the side of the helical resistance and out of the lamp again.

The novel resistance may also be made in the form of a small tube of insulating material, as for example a small glass tube whose external surface bears a thin narrow strip of conducting material, particularly of colloidal graphite in the form of spiral windings. The beginning and end of this strip are connected to the conducting wires.

By turning the edges of the pipe outward the strip of conducting material is prevented from rubbing against the walls of tubular foot of the lamp and from being thus abraded. The alteration or destruction of the resistance is thus obviated.

The invention is illustrated in the drawing in which the figure is a sectional elevation of a lamp with the electrodes in the form of inverted pans.

Referring more in detail to the drawing, it will be seen that the lamp comprises the usual envelope which is provided with a foot of the usual construction upon which latter is mounted the rod 33. This rod is in turn provided with a plurality of tiers of arms 34, a plurality of arms being arranged about the rod in each level. These arms serve to support the electrodes 35, 36, 37, 38, 39 and 40. The electrodes are preferably made in the form of inverted metallic pans. With the exception of the topmost one, the electrodes are all perforated at the middle so as to enable them to be threaded on to the column 33. The margins of the electrodes are turned down in order to augment

the luminous surface and to cause light to be emitted laterally. Clasp members 41 are also provided at the margins of the electrodes, these members being adapted to embrace the radial arms as indicated. The lamp is also provided with the usual leads 42 and 43. These leads, it will be seen, after passing through the foot, extend along the sides of the column 33, and pass through the holes in the electrodes. These leads are connected to alternate electrodes as clearly indicated in the drawing. If the lamp is fed with continuous current, light will be emitted by the cathode only, that is, either by the electrodes 35, 37 and 39, or by the electrodes 36, 38 and 40, depending upon which lead is connected to the negative side of the source of potential, but as both sets of electrodes are arranged close to each other and concentrically with respect to the body of the lamp, the effect produced will be just as effective, no matter which set of electrodes operates as light-emitting elements. It will be understood that these electrodes are coated on the under side with some insulating material such as enamel, the object being to confine the light-emitting operation to the outer surfaces of the electrodes. It will be understood, of course, that the number of electrodes may be varied.

If the lamps are connected with a source of alternating current, light will be emitted by all of the electrodes so that with the par-

ticular form of construction shown in the drawing, the illuminated surfaces will resemble a cone.

It will be understood that while we have elected to illustrate our invention in the form shown in the drawing and described, we do not wish to be so limited, inasmuch as in view of the disclosure, our invention may be produced in various forms without departing from the spirit thereof or from the scope of the claims contained herein.

We claim:

1. An electric glow lamp having a series of anode and a series of cathode electrodes arranged alternately each in a different zone and all having a common axis coincident with the longitudinal axis of the lamp, said electrodes being each cup-shaped, having a convex bottom and mounted in an inverted position whereby all of the electrodes may form a more or less unitary light.

2. An electric glow lamp having a series of anode electrodes and a series of cathode electrodes, each having a marginal flange and a convex back whereby the rays of light may be projected laterally, said electrodes assembled about the longitudinal axis of the lamp.

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