G. EGLY.

ARC LAMP ELECTRODE.

APPLICATION FILED SEPT. 9, 1909.

977,607. Patented Dec. 6, 1910.

Fig. 1

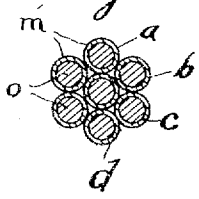


Fig. 2

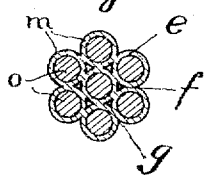


Fig. 3

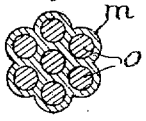


Fig. 4

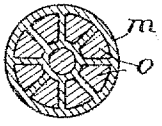


Fig. 5

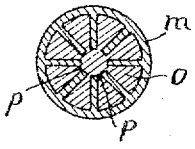
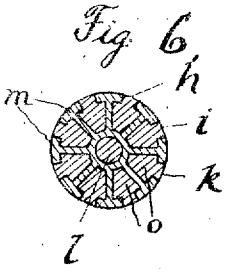


Fig. 6



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ARC-LAMP ELECTRODE.

977,607. Specification of Letters Patent. Patented Dec. 6, 1910.

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To all whom it may concern:

Be it known that I, GEORG EGLY, a subject of the German Emperor, and residing at Berlin, Germany, have invented certain new and useful Improvements in Arc-Lamp Electrodes, of which the following is a specification.

My invention relates to inclosed arc lamps whose arcs are shut off from the atmosphere in such manner that very little or no air has access to them and in which, particularly, electrodes which contain illuminating admixtures are employed. The electrodes for these flame arc lamps have a plurality of cores for containing the illuminating admixtures and can entirely or for the most part consist of such materials and of a shell composed substantially of pure carbon surrounding these cores.

Now I make the shell as thin as possible and form it so that it is everywhere of as uniform strength as possible. If the shell were made too thick or of unequal strength great irregularity in burning would be caused in the inclosed arc lamps. It is very important in the case of inclosed arc lamps to diminish the percentage of carbon in the entire electrode, because the carbon is consumed only exceedingly slowly in such lamps and the quantity of the illuminating admixtures which must be vaporized for obtaining a definite luminous effect is relatively very much larger than the carbon which is vaporized.

By employing a plurality of cores instead of only one it is possible to make the proportion of the badly conducting core mass to the good conducting carbon mass very large and simultaneously to obtain the principal purpose in view in employing carbon, namely the attainment of very high conductivity of the entire electrode; for, in consequence of the considerably larger area of contact which a plurality of cores guarantees, an excellent conducting connection is possible between the cores and the shell, but by forming the wall of the thin shell uniformly at all parts care must be taken that the electrodes burn uniformly and quietly.

Several embodiments of my invention are represented by way of example in the accompanying drawing.

In said drawing: Figures 1 to 6 are like views showing various forms of electrodes according to my invention.

If the cross-sectional shape of an electrode having several cores which has been proposed heretofore for ordinary open arc lamps, were used for inclosed arc lamps, an extremely unsteady non-uniform light and considerable disturbances would be obtained both on account of the very large mass of the carbon shell and also on account of the great differences in the thickness of its wall. When burned in ordinary open arc lamps these disturbances would be avoided completely owing to the equalizing influence of the process of combustion of the carbon, since any carbon points formed projecting into the arc are subjected in a very particularly high degree to combustion and are thereby more rapidly removed. In inclosed arc lamps this equalizing influence is nonexistent.

When my improved electrodes having the forms shown in Figs. 1 to 6 are employed in inclosed flame arc lamps a uniform quiet light and burning free from disturbances are obtained during the entire, in general very long duration of the burning process of the lamp.

Fig. 1 shows the cross-section of an electrode which can be thought of as comprising a plurality of individual electrodes *a*, *b*, *c*, *d* and so on, each of which consists of a core *o* and a surrounding carbon shell *m* as thin as possible. Both the cores and the shell or shells are distinguished in all figures by different cross-hatching. Such electrodes can also be made in one piece in the form represented in Fig. 2 by leaving between the individual cores spaces or chambers *e*, *f*, *g*, but a similar form can also be obtained without such chambers, as represented in Fig. 3. None of these forms of electrode have a circular periphery. If this however, should be desirable, the electrode may be made according to Fig. 4 wherein the individual cores *o* have a sector-shaped cross-section and the cross-section of the shell *m* has the shape of a wheel.

It is not necessary that each individual core *m* be surrounded completely on all sides by a carbon shell. It is only essential that the thickness of wall of the shell, wherever there is a surrounding shell, is throughout approximately of the same thickness. The shell *m* may however be interrupted in places, for example as shown in Fig. 5 at *p* in which form the outer cores are connected

with the central core, or, as represented in Fig. 6, in which form the outer cores *o* are exposed at the outside through slots *h*, *i*, *k* provided in the shell *m*. It is also obvious that one of the spaces formed by the shell *m* and containing the core material *o* may be left empty without departing from the spirit of my invention. So for instance in Fig. 6 the central space *l* may be left without core material.

I claim:

1. An electrode for inclosed flame arc lamps consisting of a plurality of cores containing an illuminating admixture, each of said cores being embedded in a thin carbon shell having a wall of substantially uniform thickness the total cross-sectional area of said shell being uniformly distributed over the whole cross-sectional area of the electrode.

2. An electrode for inclosed flame arc lamps consisting of a plurality of cores containing an illuminating admixture, each of said cores being embedded in a thin carbon shell having a wall of substantially uniform thickness, the shells being arranged and formed symmetrically in the cross-sectional area of the electrode.

3. An electrode for inclosed flame arc lamps consisting of a plurality of cores containing an illuminating admixture, each of said cores being embedded in a thin carbon shell having a wall of substantially uniform thickness, the shells being arranged and formed symmetrically, and forming together a wheel-like cross-sectional area.

4. An electrode for inclosed flame arc lamps consisting of a plurality of cores containing an illuminating admixture, each of said cores being embedded in a thin carbon shell having a wall of substantially uniform thickness, said shells forming together a body of wheel-like cross-sectional area, said shells being interrupted at symmetrical places.

In testimony whereof I have signed my name to this specification in the presence of two witnesses.

GEORG EGLY.

Witnesses:

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