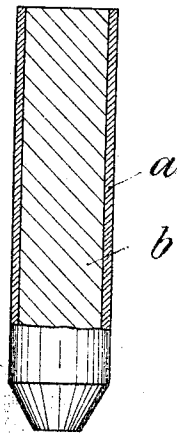


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ARC LAMP ELECTRODE.
APPLICATION FILED SEPT. 28, 1909.

1,036,815.

Patented Aug. 27, 1912.



Witnesses
H. H. K. in *pt*
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UNITED STATES PATENT OFFICE.

GEORG EGLY, OF BERLIN, GERMANY, ASSIGNOR TO GEBR. SIEMENS & CO., OF BERLIN, GERMANY, A COPARTNERSHIP.

ARC-LAMP ELECTRODE.

1,036,815.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed September 28, 1909. Serial No. 519,986.

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 generally to arc lamp electrodes and particularly to those containing light emitting substances.

As essential constituents of the light emitting substances I use molybdates or tungstates of rare earths. The molybdates or tungstates of rare earths can be substituted by admixtures which form such molybdates or tungstates of the rare earths near the arc or in the arc itself when the electrodes burn. The following principally come into consideration: Molybdate of cerium, lanthanum or didymium, or the corresponding tungstates, or mixtures of these molybdates or tungstates, or the oxids of the rare earth metals which, mixed with tungstic acid or tungstates of the alkalis and earth alkalis or other tungstates, form with the rare earths tungstates or molybdates of the rare earths.

My invention resides, broadly speaking, in the discovery that the tungstates or their equivalents, the molybdates, of the rare earths are unusually valuable light-giving ingredients for arc light electrodes. These light emitting substances are distinguished by their emitting great light and one having an agreeable color similar to sunlight. Now I have also found that the light emitted can be increased when in addition a compound of iron is added, *e. g.* tungstate of iron. Admixtures of fluorids are also very advantageous, particularly fluorids of the rare earths or alkaline earths. Such fluorids bring about, on the one hand, a still greater increase in light when the fluorids are suitably selected, but above all, they cause the light emitting substances to be vaporized uniformly and the electrodes to burn quietly. This is advantageous particularly in those electrodes which are meant for inclosed arc lamps.

An electrode according to my invention may, for example, consist of a shell of pure carbon containing a core which is composed of about 60% of a mixture of molybdates and tungstates of the rare earths, about 20% tungstate of iron, and about 20% fluorids of

the rare earths or fluorspar. As agglutinant, I may use tar, water-glass or the like for example.

As an additional example of the invention I give the following composition, viz., 30% cerium tungstate, 15% lanthanum tungstate, 15% didymium tungstate, 10% iron tungstate and 30% fluorspar. As is generally understood, the electrodes are prepared by mixing the ingredients together with the addition of as much water glass as will make a pasty dough like mass, which is then in the usual manner filled into the carbon shells or tubes. The electrodes so made are then dried in an oven. It will be understood, as above stated, that instead of water glass tar may be employed to make the mass plastic.

In the accompanying drawing part of an arc lamp electrode according to my invention is represented by way of example in vertical sectional elevation.

In the drawing *a* designates the carbon shell surrounding a core *b* of the above described composition.

As for the purposes of this specification I regard the molybdates of the rare earths as the equivalent of the tungstates of the rare earths, where I use in the claims the words "tungstate of rare earth", it is to be understood that this term is used to include also the molybdates of the rare earths for the purpose of avoiding alternativeness of expression.

I claim:

1. As a light emitting ingredient of arc lamp electrodes, a tungstate of a rare earth.

2. As light emitting ingredients of arc lamp electrodes, substances which yield upon reaction a tungstate or tungstates of the rare earths.

3. As light emitting ingredients of arc lamp electrodes, a tungstate of a rare earth and an iron compound.

4. As light emitting ingredients of arc lamp electrodes, a tungstate of a rare earth and an iron tungstate.

5. As light emitting ingredients of arc lamp electrodes, a tungstate of a rare earth, an iron compound, and a fluorid.

6. As light emitting ingredients of arc lamp electrodes, a tungstate of a rare earth, an iron compound, and a fluorid of a rare earth.

7. As light emitting ingredients of arc

lamp electrodes, a tungstate of rare earth, and a fluorid.

8. As light emitting ingredients of arc lamp electrodes, a mixture comprising substantially 60% of rare earth tungstate, 20% of tungstate of iron and 20% of fluorid of rare earth.

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

GEORG EGLY.

Witnesses:

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WOLDEMAR HAUPT.