UNITED STATES PATENT OFFICE.

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PRODUCTION OF INCANDESCENT-ELECTRIC-LAMP FILAMENTS.

973,883. Specification of Letters Patent. Patented Oct. 25, 1910

No Drawing. Application filed November 15, 1909. Serial No. 528,152.

To all whom it may concern:

Be it known that I, WALDEMAR RÜHLING, a subject of the King of Prussia, and residing at Berlin, Germany, have invented a certain new and useful Improvement in the Production of Incandescent-Electric-Lamp Filaments, of which the following is a specification.

The present invention relates to the production of filaments for incandescent electric lamps, particularly for lamps of low current requirement. The lamp filaments are of carbon coated with an element of the antimony-arsenic group, that is to say, coated with either antimony or arsenic.

The process of making the filaments may be carried out as follows: The carbon filament, preferably one made by the chlorid of zinc process is first treated with acetic acid (CH_3COOH) and then "glowed" or heated to a red heat in antimony- hydrogen gas (SbH_3) or arsenic hydrogen gas (AsH_3) whereby antimony or arsenic, as the case may be, is deposited upon the filament. This preparatory treatment may take place in a special receptacle or in the lamp bulb itself. To increase the illuminating power of the filament, a drop of mercury may be introduced into the tube, which is then subjected to the exhausting process, until as high a vacuum as possible is obtained. In case mercury is thus employed the filament covered with the element of the antimony-arsenic group as described is given a treatment with carbureted hydrogen in order to deposit on the antimony or arsenic coating a layer of carbon, which protects the arsenic or antimony coating from the amalgamating or oxidizing effect of the mercury vapor. The more complete the exhaustion, the more quickly does the mercury evaporate after the current is turned on, and the more quickly does the filament get up to its full illuminating power.

The coating of antimony or arsenic deposited on the carbon filament is not volatile but serves to prevent a loosening of the particles of carbon, of which the body of the filament is principally composed, so that the life of the filament is considerably increased.

I claim as my invention:

1. An incandescent electric lamp, having a carbon filament with a coating containing antimony deposited thereon.

2. An incandescent electric lamp, having a carbon filament with a coating of antimony deposited thereon.

3. An incandescent electric lamp, having a carbon filament with a coating containing an element of the antimony-arsenic group deposited thereon and an outer layer of carbon.

4. An incandescent electric lamp, having a carbon filament with a coating consisting of an element of the antimony-arsenic group deposited thereon and an outer layer of carbon.

5. An incandescent electric lamp, having a carbon filament with a coating of antimony deposited thereon and an outer layer of carbon.

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

WALDEMAR RÜHLING.

Witnesses:

JOHANNES HEIN,

HENRY HASPER.