

UNITED STATES PATENT OFFICE.

CARL FARKAS, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO HERMAN J. JAEGER, OF NEW YORK, N. Y., AND ONE-HALF TO CHARLES T. JAEGER, OF BROOKLYN, NEW YORK.

METALLIC FILAMENT FOR INCANDESCENT LAMPS.

945,504.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, CARL FARKAS, a citizen of the Kingdom of Hungary, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Metallic Filaments for Incandescent Lamps, of which the following is a specification.

This invention has reference to improvements in process of producing metallic filaments for incandescent electric lamps. It pertains to the production of such filaments in which a refractory coating is produced *in vacuo* on an inner conducting core, said coating being formed by decomposing vapors of salts by means of the electric current. For the purpose of effecting a rather quick decomposition of the salts for instance chlorid of chromium, I introduce simultaneously with such vapors or immediately thereafter some vapors of pyrogallol.

In carrying the invention into effect I substantially proceed as follows: A fine conducting core is placed between the clamps of a support to which current may be supplied. The support and conducting core are placed into one of the well known receivers of glass from which the air is then exhausted. Now the vapors of chlorid of chromium, for instance, are introduced and preferably simultaneously therewith some vapors of pyrogallol. By heating electrically the conducting core the vapors within the receiver are decomposed and a refractory coating produced thereon in a quick manner by virtue of the presence of the vapors of pyrogallol which latter is an organic substance and when its vapors are decomposed atomistic carbon is formed. The carbon, in *statu nascendi*, acts as a cementing means for a refractory coating just forming and while in the incandescent state. Probably chromium carbide is formed. Pyrogallol further acts as a reducing agent as pointed out further below. When the coating has thus been produced the vapors within the receiver are removed and hydrogen gas is introduced in the usual manner and the refractory filament electrically heated whereby the coating or the deposition is reduced to metal. If desired the conductive core, when consisting for instance of silver, may be volatilized.

For carrying the above described process

into effect the mixture of the vapors of chlorid of chromium and pyrogallol may have various proportions. The large bulk is certainly vapor of chlorid of chromium mixed with some vapors of pyrogallol for instance of the first 93% per volume may be allowed to enter the receiver mixed with 7% of the latter. The vacuum in the receiver, which at the start is about or slightly above 29 inches, will be reduced by the introduction of the vapors to about 20 inches. As to the action of the pyrogallol vapors it need hardly be mentioned that same is a great reducing agent and absorbs oxygen in considerable quantities. This substance takes up the oxygen of the metal oxids of which the refractory coating is primarily composed whereby a partial reduction to metal is effected. When the coating has been produced as described the excess of the vapors is removed and hydrogen introduced into the evacuated receiver which in the well known manner completes the reduction of the coating to metal.

The core within the metallic filament may be volatilized by the electric current or not as desired before the filament is placed into a lamp globe.

I claim as my invention:

1. The process of making metallic filaments for incandescent electric lamps consisting in producing on a fine electric conductor a highly refractory coating by decomposing in an evacuated space the vapors of a salt of a highly refractory metal in the presence of vapors of pyrogallol reducing thus the vapors of the salt to oxid, and finally reducing the oxid to metal in an atmosphere of hydrogen.

2. In a process of producing metallic filaments for incandescent electric lamps produced by forming a highly refractory coating on a conducting core, the cementing of said coating and partial reduction of same to metal by simultaneously decomposing by the action of the electric current vapors of pyrogallol and completing the reduction in an atmosphere of hydrogen.

Signed at New York, N. Y., this 17th day of August, 1908.

CARL FARKAS.

Witnesses:

LUDWIG K. BÖHM,
HENRY BRADY.