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UNITED STATES PATENT OFFICE.

ANTON LEDERER, OF ATZGERSDORF, NEAR VIENNA, AUSTRIA-HUNGARY, ASSIGNOR
TO WESTINGHOUSE LAMP COMPANY, OF BLOOMFIELD, NEW JERSEY, A CORPORATION OF PENNSYLVANIA.

PROCESS FOR THE PRODUCTION OF TUNGSTEN FILAMENTS.

999,235.

Specification of Letters Patent.

Patented Aug. 1, 1911.

No Drawing. Application filed June 10, 1908, Serial No. 437,667. Renewed January 17, 1911. Serial No. 603,180.

To all whom it may concern:

Be it known that I, ANTON LEDERER, a subject of the Emperor of Austria-Hungary, and a resident of Atzgersdorf, near Vienna, in the Empire of Austria-Hungary, have invented a new and useful Improvement in Processes for the Production of Tungsten Filaments, of which the following is a specification.

Many processes are already known for the production of tungsten filaments for incandescent electric lamps. For the most part these processes are based on the well-known paste process originally proposed by Auer von Welsbach for the production of osmium filaments.

The subject of the present invention is a process by means of which it is possible to convert tungsten, prepared according to a well-known method, without further additions into a plastic mass from which filaments may readily be prepared.

Metallic tungsten may be prepared according to a process proposed by Delépine (*Comptes rendus*, volume 131, page 184). This process is cited in Dammer's "*Handbuch der Anorganischen Chemie*"; Stuttgart, 1903, page 939, and consists in the reduction of tungsten trioxid by means of zinc at a red heat.

According to the present invention the reaction product obtained in the course of Delépine's process is treated with hydrochloric acid and a little nitric acid, the zinc oxid formed in the reaction and the excess of zinc being thus removed. The tungsten preparation thus obtained, without being allowed to dry, is thoroughly washed, then concentrated by careful evaporation and becomes converted into a plastic doughy

mass. This plastic mass can be formed into raw filaments for incandescent lamps by pressing or squirting without further additions, these raw filaments being subsequently finished in the usual manner.

It may and generally does happen that during the washing of the tungsten preparation a small part thereof is converted into higher or lower stages of oxidation. The small proportion of oxids does not however affect the quality of the final product, since the glowing of the filament by means of an electric current for finishing may be carried out in a reducing atmosphere.

I claim as my invention:

1. Process for the production of tungsten filaments for incandescent electric lamps, consisting in reducing tungsten trioxid with zinc at red heat, treating the reaction product with acid, washing, concentrating by evaporation until a plastic mass is obtained, squirting filaments from said plastic mass and heating said filaments in a suitable environment by means of an electric current, substantially as described.

2. The process for obtaining a plastic mass suitable for squirting filaments of pure tungsten, which consists in reducing an oxid of tungsten by means of zinc at a red heat, treating the product with acid, washing and subsequently concentrating to the required consistency.

In testimony whereof I have hereunto subscribed my name this 27th day of May, 1908.

Anton Lederer

Witnesses:

ROBERT W. HEINGARTNER,
AUGUST FUGGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."