

UNITED STATES PATENT OFFICE.

CONRAD RICHARD BÖHM, OF BERLIN, GERMANY.

MANUFACTURE OF INCANDESCENCE BODIES FOR GAS-LIGHTING.

1,020,255.

Specification of Letters Patent.

Patented Mar. 12, 1912.

No Drawing.

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To all whom it may concern:

Be it known that I, CONRAD RICHARD BÖHM, subject of the German Emperor, residing at Berlin, Germany, have invented certain new and useful Improvements in the Manufacture of Incandescence Bodies for Gas-Lighting, of which the following is a specification.

It is known, that the excess of nitric acid contained in commercial thorium-nitrate has a destructive effect both on natural and artificial textile fibers or filaments. Attempts have hitherto been made, to remove this excess of acid by neutralization with ammonia or thorium-hydroxid or thorium-perhydroxid, thereby obtaining basic salts of the luminiferous earths, which were expected to be useful especially for the impregnation of artificial silk. To burn off artificial silk fabrics impregnated in the usual manner, is known to be impracticable, because in so doing they are disintegrated and converted into a powder. It has been found, however, that even with basic salts, the desired results cannot be obtained, and that these are only produced by impregnation of the artificial silk fabrics with salts formed by luminiferous earths with organic acids.

Among the salts of luminiferous earths with organic acids, thorium-acetate has been found especially suitable for the manufacture of incandescence bodies for gas lighting, the effect of the said acetate being especially favorable on artificial silk, inasmuch as the artificial silk fabrics impregnated with acetates of luminiferous earths possess great elasticity and tensile strength.

Thorium acetate is practically insoluble in water and is scarcely dissolved even by acetic acid at boiling temperature. On the other hand thorium acetate can be dissolved rapidly and easily in formic acid. If concentrated formic acid is used, the major portion of the dissolved thorium soon separates out as a formate, and with dilute formic acid, for instance a 9 per cent. acid, solutions are obtained, which remain perfectly clear.

According to my numerous experiments, dilute formic acid is an excellent solvent for the thorium acetate to be used for the manufacture of incandescence bodies. The fibers

or filaments of the woven fabric remain unaltered, even if the incandescence mantles impregnated with a solution of the acetate in formic acid are kept in stock for a long time; the mantles can be burned off easily and faultlessly, and the incandescence bodies obtained are distinguished by high elasticity and flexibility. To the solutions of thorium-acetate in formic acid may, of course, be added other organic acids or their salts, or inorganic acids or their salts.

For converting into per-hydroxids or hydroxids the thorium salts of organic acid contained in the fibers or filaments of the woven fabric, the impregnated fabrics may be treated with hydrogen peroxid or with an alkaline bath, such as ammonia-solution, or with gases or vapors having an alkaline reaction, such as ammonia gas, after which they are washed, dried and calcined or converted to ashes.

What I claim is:—

1. In the process for the manufacture of incandescence bodies for gas lighting, the improvement which comprises impregnating the ground fabric with a solution of thorium acetate in formic acid, then drying the same and converting it to ashes substantially as described.

2. The process for the manufacture of incandescence bodies for gas lighting, which consists in treating the ground fabric with a solution of thorium acetate in formic acid, then treating it with a substance adapted to produce thorium hydroxid as a deposit on the fiber, then drying the fabric and converting it into ashes, substantially as described.

3. The process for the manufacture of incandescence bodies for gas lighting, which consists in treating the ground fabric with a solution of thorium acetate in formic acid, then treating it with hydrogen peroxid to separate out thorium peroxid on the fiber, then drying the fabric and converting it to ashes, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CONRAD RICHARD BÖHM.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.