

UNITED STATES PATENT OFFICE.

FRANK E. W. BOWEN, OF LONDON, ENGLAND.

FILAMENT FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 597,492, dated January 18, 1898.

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To all whom it may concern:

Be it known that I, FRANK EUSTACE WILKINS BOWEN, of Selwood, Mount Avenue, Ealing, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Filaments for Electric Incandescent Lamps, of which the following is a specification.

In order to obtain a filament that may be worked at a higher efficiency than the ordinary carbon filament without rapid disintegration, I incorporate in the body of the cellulose from which the filament is formed metallic borates, such as the borates of aluminium, magnesium, zirconium, strontium, or calcium, or of other suitable metals of a refractory character. This incorporation may be effected mechanically by mixing about ten per cent. of the metallic borate in a powdered state with the cellulose prior to squirting. I prefer, however, to adopt the following method:

I take the cellulose filament, squirted and washed in any suitable way, and I soak it in a solution of a salt, preferably the nitrate of the metal being used. I then soak it in a solution of boric acid, and finally dry, wind, carbonize, and flash in any suitable and convenient manner. During these operations or some of them a reaction takes place between the metallic salt and the boric acid, which

results in the production of a filament wherein is incorporated the borate of the metal, which incorporation gives to the filament a high degree of efficiency. The salt of the metal is most conveniently dissolved in water and the boric acid in alcohol.

In the finished product it is preferred that about five per cent. of the metallic borate should be found to give satisfactory results. To this end, therefore, I have employed solutions containing approximately seven to ten per cent. of the metallic salt and two to three per cent. of the boric acid. I do not, however, propose to confine myself precisely to these proportions.

What I claim is—

1. The improved filament for incandescent lamps, in the body of which is incorporated the borate of a refractory metal, substantially as described.

2. The method hereinbefore described, of incorporating metallic borates in the filaments, such method consisting in successively soaking the cellulose of which the filaments are composed in a solution of a soluble salt of the metal and a solution of boric acid, substantially as herein set forth.

FRANK E. W. BOWEN.

Witnesses:

B. F. WEEKS,
RICH'D. WESTACOTT.