

UNITED STATES PATENT OFFICE,

JOHN HADDEN DOUGLAS-WILLAN AND FRANK EUSTACE WELKINS BOWEN,
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FILAMENT FOR ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 577,499, dated February 23, 1897.

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To all whom it may concern:

Be it known that we, JOHN HADDEN DOUGLAS-WILLAN, residing at 16 St. Helen's Place, and FRANK EUSTACE WELKINS BOWEN, of Selwood, Mount Avenue, Ealing, London, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Processes of Making Filaments for Electric Lamps, of which the following is a specification.

This invention relates to a method of "treating" or "flashing" carbon or compound filaments whereby they are rendered capable of being worked at high temperatures without the rapid disintegration which would obtain in the case of filaments treated with hydrocarbons alone. In order to effect this, we deposit on the filaments a coating of carbon and boric anhydrid (B_2O_3) by incandescing the filaments in the presence of certain organic compounds containing both boron and oxygen. Among such compounds suitable

for the purpose we may mention the borates of the alcohols—such as $B(OCH_3)_3$ and $(C_2H_5)_3BO_3$. In order to lower the vaporizing-point of these substances, we preferably add from one to two per cent. of ethyl iodid.

What we claim is—

1. The process of treating filaments consisting in rendering them incandescent in the presence of a compound containing boron, carbon and oxygen.

2. The process of treating filaments consisting in rendering them incandescent in the presence of the borate of an alcohol.

3. The process of treating filaments consisting in rendering them incandescent in the presence of the borate of an alcohol mixed with ethyl iodid.

JOHN HADDEN DOUGLAS-WILLAN.

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Witnesses:

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ALFRED NUTTING.