Jan. 15, 1935. N. YAMASHITA 1,988,291

LEADING-IN WIRE AND METHOD OF MAKING SAME

Filed Dec. 18, 1929

Fig. 1

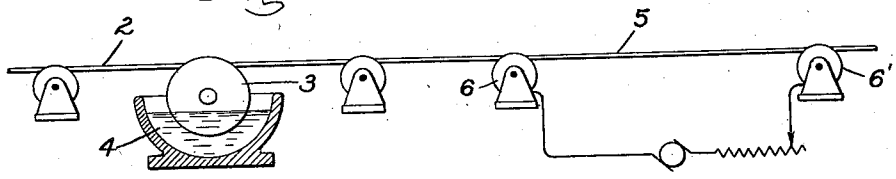


Fig. 3

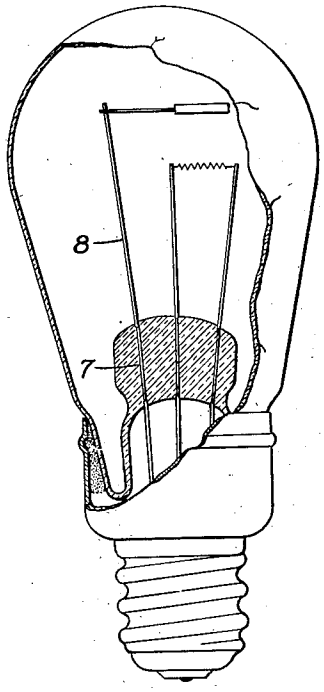
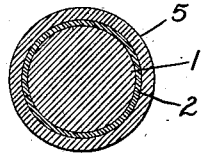


Fig. 2



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LEADING-IN WIRE AND METHOD OF MAKING SAME

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5 Claims. (Cl. 176—36)

My invention relates to methods of manufacturing leading-in wires and more particularly to methods of forming on a tungsten leading-in wire a coating of tungsten bronze. The object of my invention is to produce a superior leading-in wire by forming a tungsten bronze film on a tungsten wire which has a coating of tungsten oxide. The coating of tungsten bronze is very even, strong and sticks well to the wire preventing leaks.

In the drawing, Fig. 1 is a diagrammatic drawing of an apparatus for carrying out my method; Fig. 2 is a cross-section of a leading-in wire of my invention; and Fig. 3 is a fragmentary elevation of a rectifier tube in which the said wire is used.

In the drawing, my method is shown applied to a length of tungsten wire 1 having a tungsten oxide coating 2 which may be produced by heating in an oxidizing atmosphere. The oxide coated wire is passed over a roller 3 dipping in a solution 4 of sodium silicate and is given a coating 5. The wire thus coated is run over the rollers 6 and 6' which are connected in an electrical circuit as shown. This first reduces the solution of sodium silicate on the wire to an anhydrous white coating but finally the film changes to a red or dark red bronze-like coating 5 of the tungsten bronze. Any sodium silicate or silica that may have remained is removed by treating with hydrofluoric acid. This process leaves the wire, as shown in Fig. 2, where 1 is the tungsten core, 2 is the oxide coating and 5 is the tungsten bronze coating.

This method can of course be practised upon leading-in wires having a section of tungsten 7 and other parts 8 of some other metal as used in the article in Fig. 3. It is preferable, however, to apply the coating method and then cut the wire 1 into lengths which may be welded to the other metal wires. Five to six volts with 10 to 12 amperes current has been found to give best results for heating .45 millimeter tungsten wire, the length heated being 29 millimeters.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. The method of manufacturing leading-in wire which consists in oxidizing the surface of a tungsten wire, then applying a coating of an alkalin silicate, and finally heating to form a bronze colored coating.

2. The method of manufacturing leading-in wire which consists in oxidizing the surface of a tungsten wire, then applying a coating of an alkalin silicate, heating to form a bronze colored coating and finally dissolving any excess silica.

3. The method of manufacturing leading-in wire which consists in oxidizing the surface of a tungsten wire, and applying a coating of sodium silicate and finally heating to form a bronze colored coating.

4. A leading-in wire comprising a core of tungsten, an intermediate coating of tungsten oxide and an outer coating consisting of a compound of an alkali metal, tungsten and oxygen.

5. A leading-in wire comprising a core of tungsten and an outer coating consisting of a compound of an alkali metal, tungsten and oxygen.

NOBORU YAMASHITA