

UNITED STATES PATENT OFFICE.

CHARLES ORME BASTIAN, OF LONDON, ENGLAND.

PROCESS FOR MANUFACTURING ELECTRIC INCANDESCENCE BODIES.

1,209,247.

Specification of Letters Patent.

Patented Dec. 19, 1916.

No Drawing.

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To all whom it may concern:

Be it known that I, CHARLES ORME BASTIAN, electrical engineer, a subject of the King of Great Britain, residing at 32 The Avenue, Brondesbury Park, London, England, have invented certain new and useful Improvements in Processes for Manufacturing Electric Incandescence Bodies, of which the following is a specification.

The object of my present invention is to produce electric incandescence bodies in the form of very closely wound spirals suitable for use in glow lamps, *i. e.* spirals having their convolutions as close to one another as possible without being actually in electrical contact when ready for operation in the lamp, etc.; and the invention consists in forming such closely wound spiral as above defined and providing same with a coating or covering for the purposes as hereinafter defined and removing such coating or covering only after the said closely wound spiral has been mounted on its final support for use in the lamp, etc.

In carrying out my present invention I proceed as follows:—I take a wire or metallic filament of any suitable gage and wind it into the form of a very closely wound spiral or series of spirals (which I will hereinafter refer to as the "spiral") and either before or after or during winding same into such spiral form, as aforesaid, I provide same with a thin coating or covering of any suitable material and in any suitable manner; as for example before winding I may provide such wire or metallic filament with an oxid coating (for instance with an oxid of its own metal or of a different metal or material) or with a metallic coating by the electrodeposition thereon of a different metal; and then wind such coated wire into a closely wound "spiral" with the convolutions thereof touching and as closely packed or compressed together as possible; and after thus forming such closely wound spiral and after the said spiral has been mounted on its final support I then remove the aforesaid thin coating or covering by dissociation or by electrolytic action or chemical action or otherwise *e. g.* by vaporization in a vacuum or inert gas. I thus form a very closely wound spiral (suitable for use as an electric incandescence body in a glow lamp, etc.) having its convolutions as close to one another as possible without being actually in electrical contact when ready for operation

in the lamp, etc. This closely wound spiral is or advantageously may be provided with straightened or other than spiral end portions by which same may be connected to the leading in wires or supports, and such de-coating of the spirally formed wire may be effected before such "spiral" is inserted in the lamp envelop or in some cases after insertion in the lamp envelop for instance when an oxid coating or the like is employed then same may be removed while the lamp is on the pump *i. e.* during the exhaustion of the lamp and this removal may be caused or assisted by raising the "spiral" to a sufficiently high temperature to dissociate the oxid coating and at same time cause the spiral to "set."

According to one convenient method of carrying out my present invention which I find works satisfactorily in practice, I select a tungsten molybdenum or other suitable wire of suitable length and gage and produce a coating of oxid on the surface of this wire. I then wind the oxidized wire into closely wound spiral form as aforesaid and provide a length of straight or more or less straight wire at either end, which straightened extremities are connected to the leading in wires or supports within the lamp.

During the process of "pumping" current may be passed through the spiral filament so as to raise the latter to a sufficiently high temperature to cause dissociation of the oxid coating whereupon the oxygen will be removed by the pump and the spiral wire or filament will then remain in a fixed position with the convolutions slightly spaced apart and with a clean polished metallic surface only. The pumping may thereafter be continued and the lamp sealed off in the usual manner either with or without the admission of any suitable inert gas or gases as may be desired.

I find in practice that the convolutions of the spiral do not tend to spring together after removal of the oxid in the manner above described, and apparently this is due to the fact that the metal itself is heated, before the oxid coating is removed, sufficiently to destroy all tendency for the convolutions to close together. For this reason it is sometimes preferable to select a heat resisting coating.

It will be obvious that many materials may be used as the coating of the filaments without departing from the spirit of my

present invention provided such coating (for example lime, cotton, varnish, collodion, etc.) is capable of being removed from the filament after the latter has been mounted in position on its final support; and moreover, the oxid coating if employed could be produced on the surface on the spiral after winding; or the tungsten molybdenum or other wire could first be coated with copper, then formed into the "spiral," and the copper could then be removed as hereinbefore described after which the ordinary manufacturing process could be continued.

My present invention is applicable to other purposes as well as lamps for example to electric heaters or any other analogous purposes, but it is of special utility in lamp manufacture.

What I claim is:—

1. The herein described process of manufacturing electric incandescence bodies, suitable for use in glow lamps; which consists in winding a wire or metallic filament into a closely wound spiral, providing such closely wound spiral either before, or after, or during winding with a coating for the purpose of separating the convolutions from actual electrical contact with one another, and removing said coating from said closely wound spiral only after the latter has been mounted on its final support for use in the lamp, substantially as and for the purposes hereinbefore set forth.

2. The herein described process of manufacturing electric incandescence bodies, suitable for use in glow lamps, which consists in winding a wire or metallic filament into a closely wound spiral, providing such closely wound spiral either before, or after, or during winding with an oxid coating for the purpose of separating the convolutions from actual electrical contact with one another, and removing said coating from said closely wound spiral only after the latter has been mounted on its final support for use in the lamp, substantially as and for the purposes hereinbefore set forth.

3. The herein described process of manufacturing electric incandescence bodies, suitable for use in glow lamps; which consists

in electrolytically coating with another metal a wire or metallic filament, winding said coated wire or metallic filament into a closely wound spiral, providing such closely wound spiral with a coating for the purpose of separating the convolutions from actual electrical contact with one another, and removing said coating from said closely wound spiral only after the latter has been mounted on its final support for use in the lamp, substantially as and for the purposes hereinbefore set forth.

4. The herein described process of manufacturing electric incandescence bodies, suitable for use in glow lamps; which consists in electrolytically coating with another metal a wire or metallic filament, winding said coated wire or metallic filament into a spiral having the convolutions thereof as close to one another as possible without being actually in electrical contact when ready for operation in the lamp, providing such closely wound spiral with a coating for the purpose of separating the convolutions from actual electrical contact with one another, and removing said coating from said closely wound spiral only after the latter has been mounted on its final support for use in the lamp, substantially as and for the purposes hereinbefore set forth.

5. The herein described process of manufacturing electric glow lamps which consists in winding a wire or metallic filament into a closely wound spiral providing such closely wound spiral either before, or after, or during winding with a coating for the purposes of separating the convolutions from actual electrical contact with one another, mounting such coated spiral on its final support for use in the lamp and thereafter removing said coating from said spiral before finally sealing off the lamp substantially as and for the purposes described.

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

CHARLES ORME BASTIAN.

Witnesses:

EDWIN GANDER,
H. D. JAMISON.