

UNITED STATES PATENT OFFICE.

OSCAR WIEDERHOLD, OF EAST ORANGE, NEW JERSEY.

MANUFACTURE OF MANTLES.

SPECIFICATION forming part of Letters Patent No. 662,481, dated November 27, 1900.

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To all whom it may concern:

Be it known that I, OSCAR WIEDERHOLD, a citizen of the United States, residing at East Orange, Essex county, State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Mantles, of which the following is a specification.

My invention relates to the manufacture of mantles; and it consists in the article of manufacture hereinafter claimed.

In describing my invention I will point out definitely and in detail one process of manufacturing my said mantles without thereby limiting myself to the process described and with the further understanding that the word "mantle" is to be construed as meaning any incandescible body capable of being brought to a state of incandescence by a flame of high temperature, such as the Bunsen flame. Let it be assumed that I desire to produce six hundred mantles of No. 80 Clark thread. I then proceed as follows: I take one kilogram of nitrate of thorium in pulverulent condition and add thereto one per cent. of nitrate of cerium and dissolve the said nitrates in two kilograms of water. I saturate ordinary thread mantle-webbing with this solution and dry the same and sew up the head of the mantle. If I desire to make a soft mantle, I put the said mantle on a form, preferably a glass form, and apply thereto with a brush a solution consisting of gasolene and five per cent. of paraffin and three per cent. chemically-pure lampblack or other carbon. In case it is desired to make a so-called "hard" mantle I take the mantle after the head has been sewed and the cellulose burned out in the usual manner and shape the said mantle over a Bunsen flame. The mantle thus produced is dipped into a solution of flexible collodion, which contains a three-per-cent. proportion of carbon, preferably chemically-pure lampblack. The mantle produced by the process, whether hard or soft, is grayish approaching black in hue. This mantle when burned off in the usual manner attains a much softer state than the ordinary thoria mantle, and consequently has a greater candle-power. I am also of the opinion that the thoria is left in its original condition—that is to say, it does not take up a sufficient quantity of additional oxygen to cause objectionable shrinkage or to detract from its incandescent properties. My theory of the process is this: It is well known that thoria when at a high tem-

perature has an extraordinary affinity for oxygen, and when a thoria mantle is burned off the oxygen attacks the thoria, which, becoming less oxidized, shrinks, and the mantle is thereby distorted, and at the same time the incandescing properties of the thoria are diminished. Carbon when used with the thoria, as described, seems to have a greater affinity for oxygen than the thorium compound has, and consequently the carbon is attacked by the oxygen, and not the thorium, with the excellent results above mentioned.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. As a new and useful article of manufacture, a mantle comprising in its structure a refractory oxid having an affinity for oxygen, and a substance associated therewith capable of combining with oxygen to prevent further oxidation of the oxid, whereby shrinkage of the mantle is prevented, substantially as described.

2. As a new and useful article of manufacture, a mantle comprising in its structure a refractory oxid and free carbon for preventing further oxidation of the oxid.

3. As a new and useful article of manufacture a mantle composed of thoria and free carbon.

4. As a new and useful article of manufacture an incandescible mantle composed of a suitable support, a refractory oxid and a highly-reducible material, substantially as described to prevent injurious oxidation of the mantle during the burning-off process.

5. As a new and useful article of manufacture, a flexible mantle composed of a flexible support, a refractory oxid and a material containing loosely-bound carbon having great affinity for oxygen, the said mantle being non-shrinkable by burning off.

6. As a new and useful article of manufacture, a flexible mantle composed of a flexible collodion support, a refractory oxid and free carbon.

7. A new and useful composition of matter for impregnating mantles consisting of a refractory oxid and a carbonaceous material containing loosely-bound carbon capable of protecting the oxid from injurious oxidation.

OSCAR WIEDERHOLD.

Witnesses:

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