

# UNITED STATES PATENT OFFICE.

ACHILLE MARIE PLAISSETTY, OF PARIS, FRANCE.

## MANUFACTURE OF INCANDESCENT MANTLES, &c.

SPECIFICATION forming part of Letters Patent No. 683,981, dated October 8, 1901.

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*To all whom it may concern:*

Be it known that I, ACHILLE MARIE PLAISSETTY, a citizen of the United States of America, residing at Paris, France, have invented  
5 a certain new and useful Improved Manufacture of Incandescent Mantles, Filaments, and the Like, (for which application for Letters Patent has been made in Great Britain, No. 63, dated the 2d day of January, 1899, and  
10 in France, No. 280,552, of July 22, 1898,) of which the following is a specification.

Nitrates, azotates, and similar compounds obtained by the combination of rare earths or metals—such as thorium, lanthanum, zirconium, cerium erbium, silver platinum, &c.—  
15 either alone or mixed together and heated to a high temperature become decomposed into oxids and owing to the contraction that they undergo under the influence of heat give under  
20 the action of a flame from a Bunsen burner, &c., a powerful light, and by the application of the process to be described a considerable economy of gas as compared with  
25 that used in incandescent gas-burners hitherto used is effected. The process is chiefly based on the transformation of these nitrates or azotates into the state of oxid before the  
30 incineration of the mantles, thus doing away with the preliminary burning off by blowpipes in order to remove the water which the  
constitutive filaments of said mantles contain before the denitrification of the pyroxylin mixed  
35 with said nitrates or azotates in the shape of baskets, sets of thread, ordinary mantles, single threads, &c., so that the very fact of submitting for the first time the lighting-body  
thus constituted to the action of the burner causes the instantaneous disappearance of  
40 every organic impurity and an instantaneous production of incandescence, resulting in an intense light, the color of which may be varied according to the nature of the salts or mixtures of salts employed.

In the practical application of the process  
45 filaments are used made of a syrupy solution of incandescent salts—for instance, a mixture of nitrate of thorium and cerium—mixed with collodion consisting of nitrocellulose or pyroxylin dissolved in crystallizable acetic  
50 acid, acetone, &c., the filaments spun or prepared from such solution being afterward oxidized or denitrified by soaking them for, say,

two to three hours in a bath of sulfid of ammonium or calcium, whereby the nitrocellulose becomes transformed into an inexplorable organic product and the nitrates into hydrated oxids. The filaments are then submitted to a water-bath for several hours and then dried at a temperature of from 150° to 175° centigrade for several hours to remove  
55 all traces of humidity. I thus obtain a new product composed of inexplorable organic matter and incandescent salts transformed into oxids, the water having been completely driven off by drying at a very high temperature. This new product, used in the manner  
60 hereinafter indicated, has only to be placed on the burner, when it will become incandescent as soon as the burner is lighted. If the filaments were not subjected to the action of  
65 such a high temperature, the incandescent bodies could not have been formed when coming in contact with an ordinary flame, but would have had to be burned previously in the same manner as is characteristic of all other  
70 systems. The filaments thus transformed into oxid no longer require the long and expensive operation of incineration or calcination by means of a blowpipe, as required by ordinary  
75 incandescent mantles. An ordinary burning off for a few minutes on any Bunsen burner, or even on an ordinary burner, is sufficient to make them ready for producing an incandescent light. In this way mantles prepared  
80 according to this invention can and ought preferably to be supplied in a flexible and not fragile state, their fragility being only produced by the burning off for the purpose  
85 of rendering them ready for use. Once burned, as explained, the filaments prepared according to this invention do not undergo  
90 any contraction under the action of the flame of the burner on which they are used, as there is only the organic impurity to be removed, while the rare earths are in the state of oxid,  
95 owing to the denitrification of the pyroxylin after the spinning or manufacture of the mantle, and a light equal to that of azotates or nitrates transformed into oxid according to the  
100 burning processes hitherto known is obtained.

The described process has great advantages over all other hitherto known processes for obtaining incandescent light by gas, petroleum, &c. Some of these advantages are



as follows: great intensity of light, great economy of gas, the removal of serious drawbacks inherent to the extraordinary fragility and to the breaking of the ordinary mantles during the manufacture of the fabric, the incineration by blowpipes, the application of collodion, the removal of the collodion, the putting into boxes, packing, and placing said mantles on the burners, and great facilities of transport and ease of application without the necessity of the numerous precautions required in the manipulation of ordinary mantles.

The process may be used for any incandescent lighting by gas, petroleum, alcohol, &c., whether it be for public or private use. For public use it enables very powerful burners to be arranged by adding to the burners already used a crown of filaments suspended over the flame of various burners, which enable a double illuminating power to be obtained without increasing the expenditure of gas and without in any way changing or altering the burners in use.

I do not claim the mixture or any particular mixture of illuminating or incandescent salts, as I may use those usually sold under the name of "incandescent salts," of which the calcined residue usually contains about ninety-nine parts of thorium oxid and one part of cerium oxid, or for producing colored light I may employ zirconium, erbium, yttrium, lanthanum, didymium, chromium salts, or mixtures of such salts, according to the color of light which it is desired to obtain.

I claim—

1. The herein-described method in the manufacture of incandescent filaments, consisting in dissolving nitrocellulose in crystallizable acetic acid to a syrupy consistency, adding incandescent salts to the solution, spinning the mixture into filaments, oxidizing said filaments by treating them with a metallic sulfid, washing said filaments in water and drying them at a high temperature, substantially as described.

2. The herein-described method in the manufacture of incandescent filaments consisting in dissolving nitrocellulose in crystallizable acetic acid or acetone, adding a mixture of incandescent salts consisting chiefly of nitrate of thorium, spinning said mixture into filaments, soaking the filaments for two to three hours in ammonium sulfid, washing said filaments in water for several hours and finally drying them at a temperature of from 150° to 175°, centigrade, substantially as described.

3. The herein-described steps in the method of manufacturing incandescent filaments, which consist in dissolving nitrocellulose in crystallizable acetic acid to a syrupy consistency and adding thereto incandescent salts.

In witness whereof I hereto set my hand in the presence of the two subscribing witnesses.

ACHILLE MARIE PLAISSETTY.

Witnesses:

LOUIS SULLIGER,  
EDWARD P. MACLEAN.