

UNITED STATES PATENT OFFICE.

WILLIAM L. VOELKER, OF ELIZABETH, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CONSOLIDATED STERLING INCANDESCENT GAS LAMP COMPANY, OF NEW JERSEY.

MATERIAL FOR AND PROCESS OF MANUFACTURING HOODS, &c., FOR INCANDESCENT GAS-LIGHTS.

SPECIFICATION forming part of Letters Patent No. 562,441, dated June 23, 1896.

Application filed October 14, 1895. Serial No. 565,682. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM L. VOELKER, a citizen of the United States, and a resident of the city of Elizabeth, Union county, State

of New Jersey, have invented certain new and useful Improvements in Materials and Processes for the Manufacture of Hood, Mantles, or Gratings for Incandescent Gas-Lights, of which the following is a specification.

This invention relates to improvements in materials and processes for the manufacture of hoods, mantles, or gratings for incandescent gas-lights.

In particular it relates to such materials compounded of camphor, gun-cotton, and one or more of the oxids of the metals of the alkaline earths, such as lime and magnesia, or of the earths proper, as zirconia or thoria, or the salts of the same.

The material is prepared in the following manner: The gun-cotton is ground in water to a fine pulp in a machine similar to those used in making paper-pulp. This pulp is then subjected to high pressure in any suitable perforated vessel to expel the water and surplus liquid. The pulp slightly damp is now ground up with the camphor and oxid or salts adapted to the purpose, the camphor and metallic oxid or salt being previously well ground together. The preferable proportions for this mixture are as follows: twenty parts of camphor, forty parts of oxid or salt of metal, or metals as aforesaid, and forty parts of gun-cotton by weight. It will be understood the oxids or salts and the camphor have been reduced to impalpable powders. When the materials are thoroughly mixed, the resultant mass is again put under a high pressure in the perforated receiver and squeezed dry and consolidated. The mass is then transferred to a strong cylindrical vessel open at the top. The opening is then closed with a tight plunger, which is forced down on the mass by hydraulic pressure, and the cylinder heated at the same time in some suitable manner, as by means of steam, hot air, or other source of heat, to a temperature of about 150° centigrade. The heat liquefies the camphor and enables it to dissolve the gun-cotton. In a short time a

very thorough and intimate admixture of the aforesaid substances takes place and the mass, having the consistency of putty, is then removed from the vessel. In order to designate the nature of the substance which is thus produced, I have termed it "celluoxide." After the mass is removed from the vessel, as aforesaid, pieces or blanks having the well-known shape suitable for forming a cone are stamped out, rolled into a conical shape, and the edges cemented together, which may be effected by moistening with oil of cassia and pressure. The conical structure thus produced will constitute a mantle which when placed over the flame of a suitable gas-burner and burned out, thereby removing all the volatile ingredients, will give light by incandescing.

The mass produced as hereinbefore described may also be formed into filaments by being forced through fine holes of a die. These filaments are very tough and may be reeled on spools; and mantles or hoods may be knitted, woven, or braided of the filaments. The mass may also be formed into suitable molds, and hollow hemispherical or cone-shaped cups can be formed which after being perforated in any suitable manner will constitute mantles or hoods, becoming incandescent at a high temperature. The mass may also be forced into a properly-arranged die, and the finished mantle produced, the mass penetrating all the fine thread-like channels of the die, and on removing the plunger of the die the skeleton web-like structure produced may be removed without breaking.

Should the mass become hard by exposure, before it is worked in any of the aforesaid manners, to the atmosphere, it is only necessary to heat it from 125° to 150° centigrade and it will become plastic again.

Should it be desired to cast the mantles or the blank hoods, the mass will take on any degree of fluidity necessary for this purpose, on the addition of alcohol, ether, or other solvent. The mixture may be poured into plaster or other porous molds, the excess poured off, and a film of the celluoxide will remain in the mold, varying in thickness according

to the time the mixture is allowed to remain in the mold, and also according to the viscosity of the mixture. The mixture may also be advantageously used for soaking hoods or
5 mantles for incandescent gas-lighting that are formed of woven or knitted filaments of cotton, silk, wool, or asbestos, and similar substances, since after soaking the hoods will dry tough and hard and retain their shape
10 better and be more durable in the gas-flame when thus treated.

The essential feature of the process of preparing the celluloxide is the subjecting of the ingredients to simultaneous pressure and
15 heat at the time the admixture takes place, and instead of first forming the mass in the manner hereinbefore described, and then subjecting it to heat and pressure, the camphor being liquefied by the heat, I may first dis-
20 solve the camphor in alcohol, then add the powdered salts or oxids of the metals or earths to the solution, and then spread this resultant solution over the sheets of gun-cotton, building layer upon layer in this order
25 until the proper thickness is attained. The whole is then pressed in any suitable manner, as through rollers, to expel the surplus liquid, and the mass is then put under great hydraulic pressure for a considerable time, as twenty-

four hours, and heated while under pressure. 30
This method of proceeding is plainly the equivalent of that hereinfore described.

Now, having described my improvements, I claim as my invention—

1. A compound for hoods or mantles of in- 35
candescent gas-lights composed of camphor, gun-cotton and metallic oxids or salts, substantially as described.

2. A hood or mantle for incandescent gas-
lights, composed of oxids or salts of the 40
metals or alkaline earths, and celluloid, substantially as described.

3. The process hereinbefore described of making materials for hoods or mantles for in-
candescent gas-lights, consisting in mixing 45
together gun-cotton, camphor and metallic oxids or salts, expelling superfluous liquid therefrom and heating the mass under pressure.

In testimony that I claim the foregoing as 50
my invention I have signed my name, in presence of two witnesses, this 9th day of August, 1895.

WILLIAM L. VOELKER.

Witnesses:

BERNARD J. ISECKE,
HENRY V. BROWN.