

UNITED STATES PATENT OFFICE.

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MANUFACTURE OF CARBONS FOR ELECTRIC LIGHTS.

SPECIFICATION forming part of Letters Patent No. 264,988, dated September 26, 1882.

Application filed March 7, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Carbons for Electric Lights, of which the following is a specification.

In another application of even date herewith I have described a conductor for incandescent lamps composed of structureless homogeneous carbon, and specified non-fibrous or amorphous cellulose as the material from which such carbons may be produced. This substance in a generally or commercially useful condition is obtained, as is set forth in said application, by the proper treatment or deoxidation of cellulose after having been brought to the conditions of the well-known collodion or celluloid. Carbons made from non-fibrous or amorphous cellulose as thus produced I have found to give results of the most satisfactory nature, which appear to be due mainly to their perfect homogeneity, density, and high specific resistance. I have also found that serviceable carbons possessing in a measure these qualities may be produced by another process of manufacture, in which homogeneous and practically amorphous cellulose is obtained, from which strips may be cut or stamped and carbonized. This process forms the subject of my present application.

It is well-known that a gelatinous substance may be produced by dissolving cellulose—for example, cotton, liuen, or paper—with cupra ammonium, sulphuric acid, or other menstrua. This fact I take advantage of in the following manner: I first dissolve thoroughly any desirable quantity of cellulose in one or other of the above-named solvents, and from the resulting gelatinous substance I form sheets or strips in several ways, according to its consistency. If the proportion of the solvent used be small, the sheets may be formed by passing the substance through rolls or by pressing it between flat plates. If produced in a more fluid state by using an increased proportion of solvent, the sheets are formed by pouring the solution on a flat surface, permitting it to spread. When

the sheets have dried sufficiently to permit handling they are washed with proper solutions to remove the non-volatile compounds used in the process of manufacture. If, for example, cupra ammonium be the solvent used, a weak solution of ammonia should be employed, as it prevents precipitation of oxide of copper in the material. In case sulphuric acid be the solvent, an alkali, and preferably one that is volatile—such as ammonia—should be used to neutralize the acid and form sulphate of ammonia, which may be either washed out or allowed to remain in, as it volatilizes when heat is applied. By this preparation homogeneous sheets are formed that possess the same chemical characteristics as cellulose, in contradistinction to nitro-cellulose, and leave a residue on carbonization resembling in many respects the carbon described in my application above referred to. From these sheets I cut, stamp, or otherwise form strips of the desired shape for the conductors of incandescent lamps, which I then carbonize in the manner described in my application of even date herewith, and mount and use them in any of the usual forms of incandescent lamp.

It may be stated that the blanks or strips may be cut from the sheets previously to the purifying process described, and then immersed in the proper solutions.

I do not wish to be understood as limiting myself to the precise method of manufacturing the above-described substance or carbons, as the same may be capable of numerous though immaterial variations.

From the above it will appear that in the production of a homogeneous carbonizable material from ordinary cellulose I may employ any solvent that destroys the fibrous structure of the cellulose without changing the chemical condition, and leave it in a condition substantially such as that described.

Cellulose thus treated or prepared differs from that described by me elsewhere as a commercial article of manufacture, in that it is more or less brittle, opaque, and not as dense. It forms, however, a valuable substance for the manufacture of carbon conductors, mainly for reasons herein specified.

Having now described my invention, what I claim is—

1. The method or process herein described of producing homogeneous carbonizable cellulose by dissolving fibrous cellulose, forming the solution or jelly into sheets, and treating the same for the removal of the acids and impurities, substantially as set forth.

2. The method or process herein described of manufacturing carbon conductors for incandescent lamps by dissolving fibrous cellulose, forming the solution or jelly into sheets, re-

moving the impurities and non-volatile compounds therefrom, cutting, stamping, or otherwise forming from the sheets the blanks for the conductors, and carbonizing them, all as set forth.

In testimony whereof I have hereunto set my hand this 6th day of March, 1882.

EDWARD WESTON.

Witnesses:

HENRY A. BECKMEYER,
JOHN P. DENGLER.