

# UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

## MANUFACTURE OF CARBON CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 301,024, dated June 24, 1884.

Application filed November 28, 1883. (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 Carbon Conductors from Plastic Compounds, of which the following is a full, clear, and exact description.

My present invention relates to the manufacture of carbon conductors for incandescent lamps from the material described by me in a patent granted September 26, 1882, No. 264,987, and which I designate "non-fibrous" or "amorphous" cellulose.

The object of the invention is to produce sheets or films of this material in better mechanical condition for the manufacture of the carbonized conductors than is practicable by the processes heretofore employed by me.

The simple process of manufacturing the material is to convert cellulose—such as cotton waste, linen, or paper into pyroxyline—this in turn either into collodion or homogeneous or solid pyroxyline, by means of solvents, and to form the same into sheets or films, which are dried and then reconverted into chemically-pure cellulose by exposure to the action of reducing agents, such as ammonium sulphide. From the compound collodion or solid pyroxyline, when in a pure state, there are difficulties in obtaining smooth and even sheets, available for the manufacture of carbon conductors, mainly on account of the great shrinkage that takes place. I therefore mix with these compounds an oil, such as any essential oil, camphor, or any of the materials used in the manufacture of plastic material from pyroxyline. When the oil has been added, the collodion or celluloid is poured upon smooth plates and allowed to spread out in a comparatively thin film. It is then dried as far as possible, cut into sheets, and passed between rolls, by which the sheets are reduced to the desired thickness; or other well-known methods of obtaining sheets of the material may be followed. For example, the compound may be formed into blocks and cut up by suitable instruments into thin sheets. The sheets are then immersed in

such solvents as will remove the oil or other material added, and leave only the collodion or homogeneous or solid pyroxyline. For removing the oils, gasoline, benzole, or the like may be used. For removing camphor, alcohol is preferable, and so on for any material added to the collodion or celluloid one of its solvents is used for removing it. When foreign matter has been removed from the sheets of collodion or celluloid, they are immersed in a bath of ammonium sulphide or equivalent reducing agent, and brought back to the chemical condition of cellulose. The sheets are then washed and dried and cut up into blanks, which are carbonized in the usual manner. By thus adding the oils or equivalent substances to the collodion or celluloid for the purpose of forming a plastic material that is very readily worked and reduced, and then removing the same before exposing the collodion or celluloid to the action of the reducing agents, the process of producing carbons of a very perfect kind is greatly facilitated. Sheets of more uniform thickness and density are produced, from which carbons differing but slightly in electrical resistance may be made.

I am aware that in the manufacture of plastic materials from pyroxyline it is common to mix oils and other substances with the same to form a plastic base, and such I do not claim; but

What I regard as my invention is—

The improvement in the manufacture of carbon conductors from amorphous or non-fibrous cellulose, which consists in mixing with collodion or homogeneous pyroxyline an oil or equivalent substance, rolling or forming the compound into the desired shape, then removing the oil or other substance by solvents, then converting the compound into cellulose by reducing agents, and forming the carbons from the same, all as set forth.

In testimony whereof I have hereunto set my hand this 23d day of November, 1883.

EDWARD WESTON.

Witnesses:

HENRY A. BECKMEYER,  
RICHARD W. BLOEMEKE.