UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

MANUFACTURE OF FILAMENTS FOR INCANDESCING ELECTRIC LIGHTS.

SPECIFICATION forming part of Letters Patent No. 370,124, dated September 20, 1887.

Application filed April 20, 1883. Serial No. 92,398. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in the Manufacture of Incandescing Conductors for Electric Lamps, (Case No. 561,) of which the following is a specification.

The object of this invention is to produce efficient and durable incandescing conductors for electric lamps, said invention consisting in a process of manufacturing carbon filaments to be used for this purpose.

This process may be generally described as follows: The filament of suitable material is first carbonized, then placed in a temporary vacuum-chamber and heated to high incandescence. It is then dipped in a solution of carbonizable material, dried and recarbonized, and is then ready for use. I prefer to employ filaments of natural vegetable fibrous material—such as bamboo—though I may employ paper or thread, and any of these materials may be parchmentized before carbonization, if desired. The filament is carbonized by heat in a closed flask or chamber, and under strain or pressure, or both. It is then placed in a receiver and connected in an electric circuit. The receiver is exhausted of air, the current is applied, and the filament is heated to a degree of incandescence higher than that at which it is intended to be permanently used. This sets the filament in its bent shape and renders it flexible and elastic. It is removed from this temporary receiver and dipped in a solution of sugar or other carbonizable material, with which it becomes impregnated, and any defective spots are filled with this carbonizable material. The filament is then recarbonized, preferably in a furnace, as before, the whole becoming a homogeneous structure. This is attached to wires and placed in the lamp-globe, which is exhausted and sealed off in the usual manner. Instead of recarbonizing in a furnace, however, the filament may be placed in the lamp, said lamp exhausted, and the recarbonization accomplished by an electric current *in vacuo*.

What I claim is—

1. The process of making an incandescent conductor for electric lamps, consisting in first carbonizing a filament of suitable material, then heating said filament to incandescence in a vacuum, then dipping said filament into a solution of carbonizable material, and then carbonizing the whole, substantially as set forth.

2. The process of making an incandescent conductor for electric lamps, consisting in first carbonizing a filament of suitable material, then heating said filament to incandescence in a vacuum, then dipping said filament into a solution of carbonizable material, and then recarbonizing by electrical heating in a vacuum, substantially as set forth.

This specification signed and witnessed this 12th day of April, 1883.

THOS. A. EDISON.

Witnesses:
H. W. SEELY,
EDWARD H. PYATT.