

UNITED STATES PATENT OFFICE.

JAMES HART ROBERTSON, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE METAL FABRIC COMPANY, OF SAME PLACE.

METAL-COATED FIBROUS MATERIAL.

SPECIFICATION forming part of Letters Patent No. 653,887, dated July 17, 1900.

Application filed May 1, 1899. Serial No. 715,233. (Specimens.)

To all whom it may concern:

Be it known that I, JAMES HART ROBERTSON, a citizen of the United States, residing in the borough of Brooklyn, city and State of New York, have invented certain new and useful Improvements in Metal-Coated Fibrous Material, of which the following is a full and true description.

The object of my present invention is to coat fibrous material with metals, thereby giving to such fibrous material the general surface appearance in metal of the material which is so coated and to obtain a material or product so coated.

It is desirable that the coated product shall resemble as nearly as possible the original fibrous body, having the interstices or openings as clear as possible from metal, and this result I attain with special success by the process hereinafter described.

My new product consists of, preferably, a knitted, woven, or knotted fabric of any configuration or ornamentation subjected to carbonization to form a base and then coated with a metallic coating, so that the finished metallized product shall be of the same configuration and ornamentation as the base.

In making my new product I take a fibrous body or a woven, knitted, or knotted fabric and thoroughly carbonize it by any known means, taking care to preserve whatever may be the original configuration, and I then place the carbonized material in the plating-bath of an electrodepositing apparatus and electrically deposit a film or coating of metal thereon in the ordinary ways. This carbonized material will readily take the metallic coating, and this coating will correspond exactly in surface configuration or ornamentation to the original fabric which forms the base and will inclose and envelop the carbonized base on all sides. A method of carbonizing which I have successfully employed is as follows: I first treat the fabric by dipping in a ten-per-cent. solution of sulfuric acid. After drying I put the fabric in a crucible and pack the joints of the crucible to exclude oxygen. The crucible is then heated gradually to a white heat, then cooled slowly, and the carbonized fabric is carefully removed.

The fibrous material when carbonized is in condition to resist the action of the acids of the plating-bath and receive an electrically-deposited film or coating of metal, and this metallic coating, in view of the fact that the carbonized body is itself a conductor of electricity, may be directly deposited upon the carbonized fibrous material without the use of any intervening substance or without the necessity of further preparing said base. The carbonized base is immersed in the plating-bath, care being taken not to break up its structure, (which may have been considerably weakened by reason of the carbonization,) and the metal of the anode of whatever kind is deposited thereon. By reason of the fact that any interstices and open-work which may belong to the carbonized base are entirely free of any conductive or protecting material the metal enters into said interstices and openings and is deposited evenly all around the carbonized threads, resulting in an exact surface reproduction in metal of the original fibrous material.

This invention is very useful for the production of "metallized lace" or kindred fabrics. Heretofore there has been much difficulty in the reproduction in metal of lace, as either expensive dies had to be used to stamp imitations out of metal or when the metallizing of the fabrics themselves was attempted the solutions or materials used in preparing the fibers to resist the acids of the plating-bath and to enable the fabric to retain the metallic deposit have filled or clogged the interstices or openings, sometimes resulting when the plating is finished in a practically flat instead of an open-work surface.

I am aware that a carbon filament for an incandescent lamp has been electroplated for a portion of its length, as shown by Edison's patent, No. 264,653, and do not claim such. As I regard my invention as essentially different therefrom. The novel article described and claimed in this application consists of a carbonized fibrous material having a pattern or configuration and an electrodeposited continuous metallic coating directly applied thereto and covering and conforming to the pattern or configuration of the carbonized

material. The words "pattern or configuration" thus used are not defined by the smooth carbon filament bent into "horseshoe shape," as shown in the before-mentioned Edison
5 patent, but by a pattern or configuration on or in the carbonized fibrous material, which pattern or configuration is made to appear in and adorn the finished article.

My process results in a great cheapening of
10 the manufacture, and the result is far more accurate and satisfactory than is possible even by the most expert workmanship when stamping or casting processes are employed.

When the metallic surface is to be of gold
15 or other precious metal, a basic coating of copper or other inexpensive metal may be first applied to the carbonized body.

What I claim and desire to secure is—

1. As a new article of manufacture, carbonized material bearing a pattern or configuration, and having an electrically-deposited continuous metallic coating directly applied

thereto and covering and conforming to the said pattern or configuration of the carbonized material, substantially as described. 25

2. As a new article of manufacture, a carbonized textile fabric having interstices or openings, and having an electrically-deposited continuous metallic coating directly applied to the carbonized threads, reproducing the interstices or openings of the carbonized fibers in the coating, substantially as described. 30

3. As a new article of manufacture, a carbonized knitted, knotted or woven fabric, having an electrically-deposited continuous metallic coating directly applied thereto, substantially as described. 35

In witness whereof I have hereunto signed my name this 29th day of April, 1899.

JAMES HART ROBERTSON

In presence of—

JAMES J. COSGROVE,
W. H. BERRIGAN, Jr.