

UNITED STATES PATENT OFFICE,

HENRY W. FISHER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO STANDARD UNDERGROUND CABLE COMPANY, A CORPORATION OF PENNSYLVANIA.

FORMING COMPOUND BODIES OF DIFFERENT METALS.

1,005,629.

Specification of Letters Patent.

Patented Oct. 10, 1911.

No Drawing.

Application filed June 16, 1909. Serial No. 502,516.

To all whom it may concern:

Be it known that I, HENRY W. FISHER, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Methods of Forming Compound Bodies of Different Metals, of which improvements the following is a specification.

My invention relates to improvements in methods of forming compound bodies of metal and the object of my improvement is to produce such articles of compound character which shall be more intimately united, and for that reason more serviceable than articles of that general character as have heretofore ordinarily been made. The articles of this general nature may be made of metals of different kinds, and the metals may be of different classes and characters, and my invention is not in its broader aspect limited to any particular metals or to any particular combination of metals, but the invention finds its peculiar application in the preparation of blanks from which are formed sheets, rods and wires for electrical installation work, the body of which is formed of iron, upon which is applied a coating of copper. By iron of course is meant not only pure iron but the various modifications and alloys of iron which are in extensive practical use. By copper is meant not only pure copper but its alloys as well.

In a co-pending application filed June 16, 1909, Serial No. 502,515, I have described and claimed in general terms an operation which is my invention, and which consists in electro-plating an iron core or body with copper, carrying on the process of electro-plating at a temperature as great as the melting-point of copper, and then adding, if so desired, a supplemental body of metal to the iron body so electro-plated. In that earlier specification I have described that this supplemental body of metal, whether of copper or of some other material which readily unites with the electro-plated coating, is applied either by electrolysis at normal temperature or by casting in a mold about the previously electro-plated iron core. In my present application I lay specific claim to the electrolytic deposit of this supplemental body of metal

upon the previously electroplated core, this electrolytic deposit being formed at ordinary temperature.

In the practice of my invention, I employ as an electrolyte for the initial electro-plating a solution of copper which may be maintained in the liquid state at a temperature as high as the melting-point of copper, such a copper solution may conveniently be a solution of cupric chlorid in borax, or it may be cupric chlorid or fluorid in borax or in an alkaline chlorid such as chlorid of sodium or chlorid of potassium. The operation, as I have described it in my said application, is to provide a cell of suitable refractory material and place within it the flux and the copper salt and bring them to the melting point of copper; which is about 1913° F., at which temperature the flux will contain the copper salt in solution. I then introduce into such electrolyte the body of iron to be electro-plated, as the cathode, and I preferably introduce, as the anode, a stick of graphite, or I may make the inner wall of the cell itself the anode, making the proper connections, and in that case the wall of the cell will preferably be faced with graphite. Electrolysis then progresses at this high temperature and the plated coating being laid down at a temperature at which the copper is molten, instead of being porous and spongy and imperfectly adhering to the surface of the iron, is compact, and adheres closely to the iron surface. When this electrolytic operation has progressed sufficiently to form a plating of desired amount, the operation is stopped, and thereafter, according to my present invention, the already plated blank is provided with a further layer of metal, which may be either copper or some other metal which will readily unite with copper, deposited upon the previously electro-plated surface by electro-plating in the manner in which that operation is usually practiced; that is, at substantially normal atmospheric temperature. This supplemental body of deposited metal will of course be less compact than the initial layer of plating, but it will be compacted by further treatment to which such blanks are ordinarily subjected in reducing them to sheets, wires, and other forms; but, being either of identical material with the initial electro-plated layer, or of a metal which readily

unites with that initial layer, the adhesion of the whole will be more perfect than is the case where the entire added body is electro-plated upon the iron at normal temperature.

It will be understood that my invention is not limited in its application to the use of copper and iron, but may be generally employed in the formation of articles in layers of metals of different kinds.

I claim as my invention:

1. The herein described method of forming articles of different metals which consists in electro-plating upon the surface of a body of one metal a layer of another metal at a temperature as high as the melting-point of such second named metal, and then making electrolytic deposit of a third body of metal upon the body of metal electro-plated as aforesaid.

2. The herein described method of forming articles of different metals which consists in electro-plating upon one body of

metal a second body of metal at a temperature as great as the melting-point of the metal of which said second body is composed, and then electrolytically depositing upon such electro-plated body a second deposit or body of metal, said second electrolytic operation being performed at substantially normal atmospheric temperature.

3. The herein described method of coating iron with copper which consists in electro-plating a body of iron with copper at a temperature as great as the melting-point of copper, and then electro-plating a further deposit of copper upon such copper-coated body at substantially atmospheric temperature.

In testimony whereof, I have hereunto set my hand.

HENRY W. FISHER.

Witnesses:

CHARLES BARNETT,
FRIEDA E. WOLFF.