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ELECTROGRAPHITIC BRUSH PROCESSING

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5 Claims. (Cl. 171—325)

This invention relates to a process for treating electrographitic contact brushes.

In employing electrographitic brushes in intimate contact with a copper surface, such as in commutator service, it is found that a black copper sulphide film is formed on the copper surface. Such sulphide film, although having no detrimental electrical effect, is objectionable in appearance and creates serious prejudice against the use of the brushes.

An object of this invention is to provide for treating electrographitic contact brushes to remove impurities therefrom.

A more specific object of this invention is to provide a process for treating electrographitic contact brushes containing sulphur to reduce the sulphur content and produce a brush that will not tarnish or corrode contacting surfaces with which it is adapted to be employed.

Other objects of this invention will be apparent from the following description when taken in conjunction with the appended claims.

Electrographitic brushes are generally compounded by mixing different solid forms of carbon with a liquid binder and subjecting the mixture to heat and pressure. Different forms of solid carbon, such as lamp black, petroleum coke, pitch coke, natural or artificial graphite or the like, are employed in conjunction with a liquid binder, such as coal tar pitch, tar or the like, in forming the electrographitic brush. Sulphur is usually contained as an impurity in these materials. In some of the materials only a minor portion of sulphur is found. This minor portion is sufficient when taken in conjunction with the sulphur content of the other materials of the brush to react in the presence of moisture when the brush is in intimate contact with a copper surface to form an undesirable black sulphide film on the contacting copper surface.

In compounding the brush from the solid form of carbon and the liquid binder, the baking and graphitizing of materials converts the sulphur content of the brush to a sulphide state of oxidation. In order to remove the sulphur impurities from the compounded electrographitic brush, the brush may be subjected to a treatment suitable for causing a reaction of the sulphur in the sulphide state of oxidation to form a gas, hydrogen sulphide, which may easily be removed from the brush.

In practicing this invention, the compounded brushes are placed in a substantially closed container and steam at some suitable temperature is admitted thereto. Upon admission to the container, the steam penetrates the semi-porous compounded brush and hydrolyzes the sulphur compounds in the brush to form the gas, hydrogen sulphide. Since there is an excess of steam admitted to the container, the hydrogen sulphide formed through the reaction of the steam with the sulphur compounds is carried out of the brush as the excess steam is drawn from the container. Steam at a temperature of 200° C. passed through the substantially closed container containing the brushes for a period of time of about five hours is very effective in removing or reducing the sulphur compounds to extremely small quantities.

Where the steam treatment is not effective in removing all of the sulphur compound, it is found that the small quantities remaining, of the order of about .025% or less, are in a state of oxidation other than the sulphide. In this form of oxidation, the sulphur has no tarnishing effect on copper. After the brush is subjected to the steam wash, even though it contains the small quantities of sulphur hereinbefore described, the brush may be employed in intimate contact with copper in the moist atmosphere without any tarnishing effect thereon.

After the impurities are removed or reduced as hereinbefore described, the compounded brush may be placed in a closed container and subjected to a vacuum to remove any remaining moisture.

Since it is desirable to provide a binder for the brush to prevent the admission of moisture thereto during service, a suitable binder such as gum or resin, natural or synthetic, may be admitted to the closed container while the brush is under a vacuum and in a dry condition. After the impregnating agent is admitted to the closed container, the vacuum is removed and pressure is applied to aid in the impregnation of the brush. When the brush is thoroughly impregnated with the impregnating material, it may be removed from the closed container and baked at a temperature suitable for curing the impregnating agent.

The brushes as treated by the hereinbefore described process are found to have good electrical characteristics and to overcome the objections to the brushes known to the prior art, in that it is possible to employ the brushes in service in intimate contact with copper in a moist atmosphere without any tarnishing effect thereof.

I claim as my invention:

1. A process of treating electrographitic contact brushes in which sulphur is present compris-

ing, placing the brush in a substantially closed container, and flowing steam through the brush in the container to remove the sulphur.

2. A process of treating electrographitic contact brushes in which sulphur is present comprising, placing the brush in a substantially closed container, and flowing steam at a temperature of between 150° C. and 300° C. through the brush in the container to remove the sulphur.

3. A process of treating electrographitic contact brushes in which sulphur is present comprising, placing the brush in a substantially closed container, and flowing steam at a temperature of about 200° C. for a period of time of about five hours through the brush in the container to remove the sulphur.

4. A process of treating electrographitic contact brushes in which sulphur is present comprising, placing the brush in a substantially closed container, flowing steam through the brush in the container to remove substantially all of the sulphur, drying the substantially sulphur-free brush, and impregnating it with a binder.

5. A process of treating electrographitic contact brushes in which sulphur is present comprising, placing the brush in a substantially closed container, flowing steam through the brush in the container to remove substantially all of the sulphur, removing the substantially sulphur-free brush from the container, drying the substantially sulphur-free brush, and impregnating it with a binder.

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