

UNITED STATES PATENT OFFICE.

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METHOD OF PREPARING GRAPHITIZED VULCANIZED FIBER.

1,379,156.

Specification of Letters Patent.

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No Drawing. Original application filed December 14, 1920, Serial No. 430,711. Divided and this application filed January 31, 1921. Serial No. 441,166.

To all whom it may concern:

Be it known that I, EDWARD G. ACHESON, Jr., a citizen of the United States, residing at Niagara Falls, in the county of Niagara, State of New York, have invented certain new and useful Improvements in Methods of Preparing Graphitized Vulcanized Fiber; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in graphitized vulcanized fiber, and in methods of preparing the same and the invention has for its object to provide a material of the character specified, especially adapted for bearings, or for any purpose wherein a measure of lubrication is desired, or wherein electrical or thermo-conductivity is desired, and for any other purpose for which such material may be useful.

The improved material is composed of vulcanized fiber, containing a lubricant, as for instance graphite distributed throughout, and it may be prepared by different methods. For instance, in my co-pending application, Serial No. 430,711, filed 14 December, 1920, of which the present application is a division, the material is prepared by mixing finely pulverized graphite with the fiber while still in the beater, the graphite being in a state of suspension in the liquid of the beater. In the present application a formed web of paper is treated with graphite in colloidal form, as by passing the web of paper through a bath or baths containing the graphite in this form. Afterward the web so treated is subjected to the action of a suitable gelatinizing agent, as for instance zinc chlorid, and is then shaped, washed, and seasoned, in the manner usually employed in the well-known method of making vulcanized fiber.

The improved material while it is especially adapted for use in bearings and the like, wherein lubrication is desired, is yet of value in other connections, as for instance where electrical or thermo-conductivity is desired in the material. The graphite provides such conductivity.

While the methods above set forth are preferred methods, yet they may be modi-

fied. It will be understood also that it is not essential that the graphite be in colloidal form, since it may be applied in any other form that may be suitable for the purpose.

One of the features of the invention is the distributing of the graphite throughout the body of the material in such manner that every part of the material will contain the graphite. It is obvious that in special cases however, it might be desirable and will be feasible to distribute the graphite somewhat unevenly through the body. The essential feature of the process is the incorporation of the graphite with the cellulose material before such material is converted into vulcanized fiber, so that the graphite will be well distributed and will impart the desired new characteristics to the final product.

The distribution of the graphite throughout the body of the cellulose material is accomplished by the mode of applying the graphite. That is when the graphite is applied to the fibers after they have been formed into a web or sheet of paper, the distribution of the graphite is accomplished in part by the penetration of the graphite, especially if it is colloidal in the body of the web. But such distribution is accomplished mainly by superposing a number of the said moist webs or sheets of paper upon each other, thus building up a thicker sheet composed of several layers, which is then thoroughly washed and cured to produce the finished product, consisting of vulcanized fiber containing graphite uniformly distributed throughout the body thereof.

In the use of the term "colloidal," I do not limit myself to graphite in a state of sub-division such that it will remain in indefinite suspension in the vehicle, but in any state of sub-division sufficiently small that it will penetrate the body of the paper with the vehicle.

I claim.

1. The step in the preparation of graphitized fiber, which consists in treating a formed paper web with graphite in colloidal form.

2. A method of preparing graphitized fiber, which consists in treating a formed paper web with graphite in colloidal form, treating the web with a gelatinizing agent,

and afterward washing and seasoning the web.

3. A method of preparing graphitized fiber, which consists in treating a formed paper web with graphite, treating the web with a gelatinizing agent, and afterward washing and seasoning the web.

4. The step in the preparation of graphitized fiber, which consists in treating a formed paper web with graphite in a finely divided form.

In testimony whereof I affix my signature.

EDWARD GOODRICH ACHESON, Jr.