(No Model.)

C. W. JEFFERSON.

FLEXIBLE MICA INSULATING SHEET.

No. 563,379. Patented July 7, 1896.

Fig. 1.

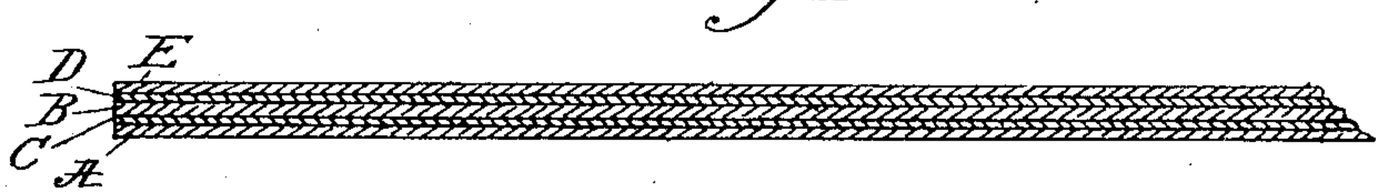


Fig. 2.

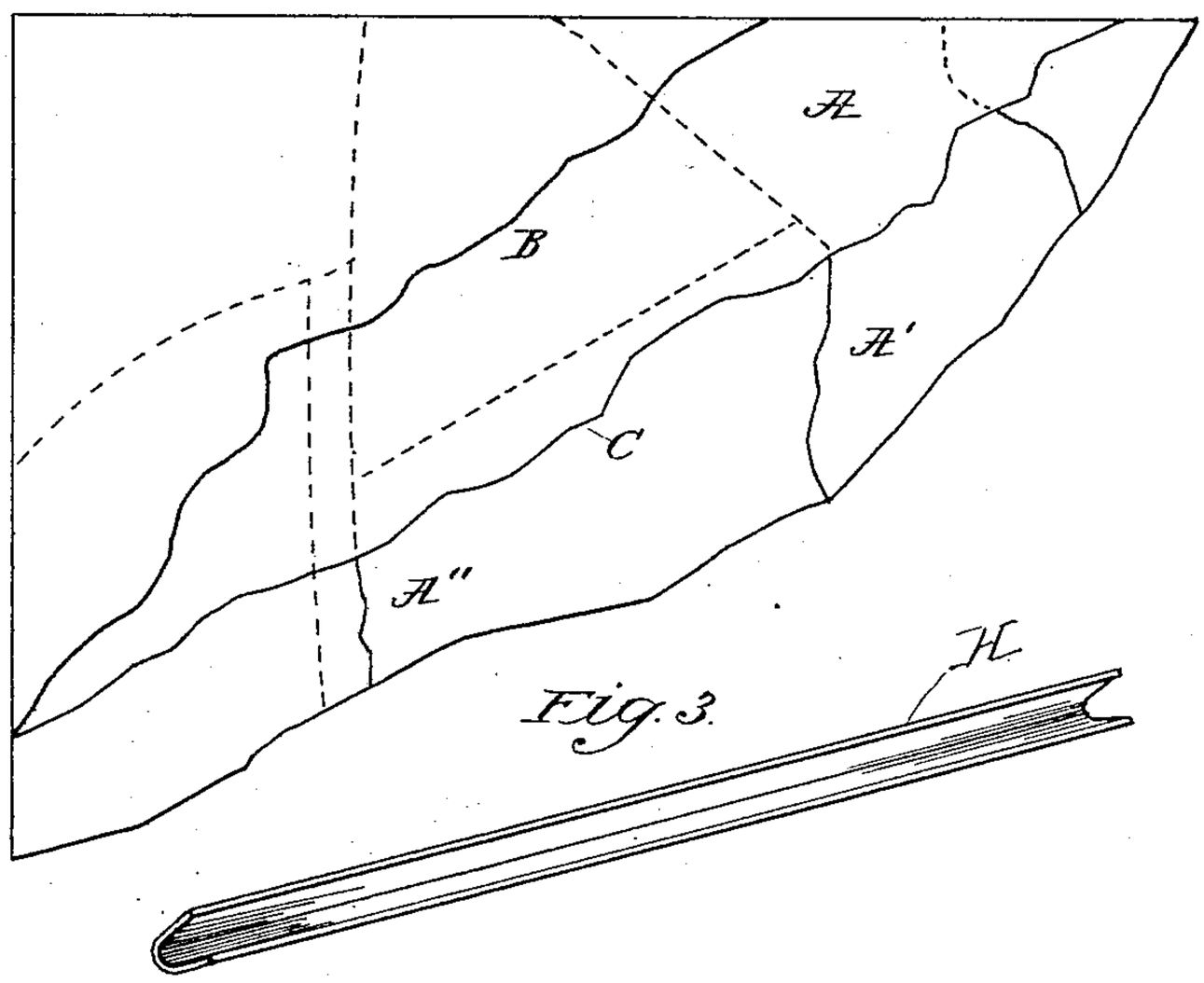
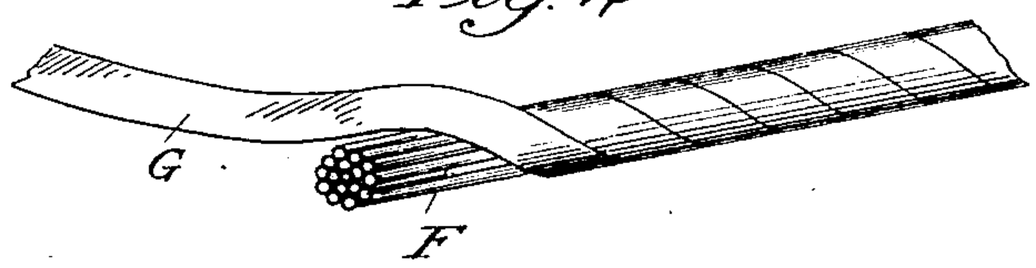


Fig. 3.

Fig. 4



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FLEXIBLE MICA INSULATING-SHEET.

SPECIFICATION forming part of Letters Patent No. 563,379, dated July 7, 1896.

Application filed March 16, 1895. Serial No. 541,996. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILKIN JEFFERSON, a subject of the Queen of Great Britain, and a resident of Schenectady, county of Schenectady, and State of New York, have invented certain new and useful Improvements in Flexible Mica Insulating-Sheets, (Case No. 6,) of which the following is a specification.

Heretofore mica sheets were employed for the purpose of electrically insulating electrical conductors, as, for example, the laminæ of field-magnets, the grooves in armature-cores, commutators, armatures, and other elements employed in manufacturing electrical machinery and instruments. Difficulties were met in view of the expense of large sheets of mica. Later small mica scales were employed in such a manner as to obtain large workable sheets, for example, as shown in my former patents, No. 483,653, dated October 4, 1892; No. 491,707, dated February 14, 1893; No. 491,708, dated February 14, 1893; No. 497,324, dated May 16, 1893, and No. 500,902, dated July 4, 1893.

The invention set forth in the specifications of the above patents have been carried out in practice, but certain important difficulties have been experienced. In all of the said inventions I employed liquid cement, which, in its cold and dry state, is brittle. I am now able to produce a product in which the cementing material is dry, in sheet form, pliable and flexible to the highest degree at all ordinary temperatures.

The article forming the basis of my claims is illustrated in the accompanying drawings, wherein—

Figure 1 is a cross-section of a portion of an insulating-sheet largely magnified in thickness. Fig. 2 is a plan of the same. Fig. 3 is a perspective of a mica trough for armature-grooves to illustrate one of the forms into which the sheet may be cut and bent. Fig. 4 is a perspective view of an application of the invention.

The lowest layer A of the whole sheet is formed of mica scales, of which the edges may simply abut, as at A′, or overlap each other, as at A″. Above this layer of mica is a sheet of fibrous material B, which may be paper or cloth. Between the fibrous sheet and the mica is what is known in commerce as "gutta-percha tissue" C. Next comes a second tissue D, and then another mica layer E, and the layers may be repeated in the same or different relative orders until the desired thickness is obtained.

It has been found that if the gutta-percha tissue forms the outer coating of the sheet the finished sheets cannot then be so satisfactory, because when packed away they stick to each other, and also stick too much to the articles in which they act as insulators.

The whole product is heated until the gutta-percha tissue becomes adhesive, and it is then pressed, and, consequently, when the sheet becomes cool the layers adhere to one another and form such a flexible sheet that it can be bent like cloth or paper into any form.

The old product forming the basis of the above-named patents is, as compared to this new product, hard and stiff, and cannot be bent to any appreciable extent without breaking unless heat is first applied, whereas the new product can be bent in its cold state as well as the old product can when heated. This is illustrated in Fig. 3, where H represents a trough made by bending the sheet into the U form indicated.

My invention may be modified. For example, the fibrous material may be entirely omitted, so that the sheet consists of, first, a layer of mica, then of the gutta-percha tissue, and then again of mica. It is important to notice that cloth may be employed among the different layers, but it should be understood that there is always a layer of gutta-percha tissue between any two layers of other material.

In the manufacture and use of underground cables it has been found difficult to properly protect the electric conductor or cable from moisture and other conductors which assist in leakage. My invention as above described solves this problem, as illustrated in the construction in Fig. 4, where F is a cable, and G is a strip, consisting of alternate layers of gutta-percha tissue and other materials, as described with reference to any of the preceding figures. This strip is wound around the conductor spirally, so as to form a complete covering.

I claim as my invention—

1. An electric insulator, in sheet form, consisting of layers of fibrous and mica sheets, and gutta-percha tissue between any and every two of said layers.

2. An electric insulator, in sheet form, consisting of layers of mica scales, and adhesive gutta-percha tissue between any and every two of said layers.

3. An electric insulator, in sheet form, consisting of a fibrous sheet, a gutta-percha tissue held thereon by adhesion, mica scales held to the gutta-percha tissue by adhesion, a second sheet of gutta-percha tissue upon the mica, a second sheet of fibrous material upon the gutta-percha tissue, and so on, in the same order to any desired thickness.

4. A freely-pliable insulating medium, comprising mica laminæ, connected by a stable normally-yielding binding agent, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 1st day of March, 1895.

CHARLES WILKIN JEFFERSON. [L. S.]

Witnesses:
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