

E. W. RICE, JR.
INSULATING MATERIAL.

APPLICATION FILED MAR. 15, 1909. RENEWED APR. 19, 1911.

1,049,918.

Patented Jan. 7, 1913.

Fig. 1

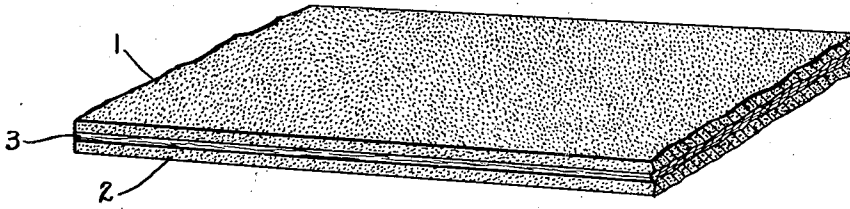
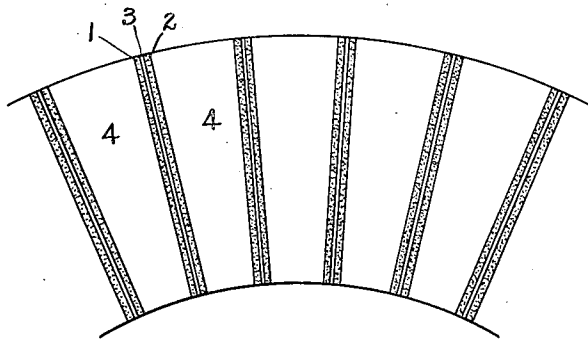


Fig. 2



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWIN W. RICE, JR., OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

INSULATING MATERIAL.

1,049,918.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed March 15, 1909, Serial No. 483,447. Renewed April 19, 1911. Serial No. 622,133.

To all whom it may concern:

Be it known that I, EDWIN W. RICE, JR., a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Insulating Material, of which the following is a specification.

My invention relates to materials having high insulating qualities which enable them to be used for insulating parts of electrical apparatus having different potentials. The invention is especially designed for insulating the segments of the commutators of dynamo-electric machines. One of the best known materials is mica, which has great mechanical strength and very high insulating and heat-resisting properties, so that it is especially valuable in building up commutators; but mica comes in comparatively thin sheets, and when a thick sheet is required it must be built up from several thin ones. This building process cannot be carried very far, since the mica varies in thickness and the piling up of a number of sheets produces an unevenness in gage which is very objectionable. Moreover, the mica does not wear down as fast as the copper segments of the commutator, so that in time the surface of the commutator becomes rough by reason of the projecting edges of the mica strips, causing the brushes to jump and spark.

The object of my invention is to provide a substitute for the thick mica sheets which shall have requisite mechanical strength and flexibility and high insulating and refractory qualities, can be made of any desired thickness and of uniform gage, and which will be hard and incompressible, will not shrink, and will wear away as rapidly as the commutator, so as to preserve a smooth surface thereon.

In the pending application of Gustav A. Dreher, Serial No. 469,767, filed Dec. 29, 1908, there is set forth a process of making an insulating material composed mainly of kaolin, powdered glass, silico, asbestos and silicate of soda, the resulting compound being a smooth, hard sheet, accurate in thickness and of uniform gage, having high dielectric and heat-resisting properties, and sufficiently friable to wear evenly with the copper segments of a commutator when

used to insulate said segments from one another. Owing, however, to the danger of cracks and holes and to the possibility of minute particles of foreign substances creeping into this compound either during its manufacture or by reason of impure raw materials, I have designed the present invention to meet this objection.

My invention consists in an insulating sheet composed of two or more thicknesses of the aforesaid compound with interposed sheet or sheets of mica. The mica may be quite thin, and yet have good mechanical and insulating properties. Its presence between the layers of the compound absolutely prevents any short circuit through the sheet from one commutator segment to another due to cracks or other imperfections in said compound. The thinness of the mica is such that it readily crumbles away as rapidly as the compound, and thus no objectionable projecting edges are formed when used between commutator segments.

In the accompanying drawing, Figure 1 is a perspective view of a piece of my improved insulating material, and Fig. 2 shows how it is used in building up a commutator of alternate segments of copper and insulation.

The layers 1 and 2 are composed of the compound hereinbefore referred to, and to which the name of "commutite" has been given. The thin sheet 3 of mica is interposed between the layers of the "commutite" in the manner clearly shown in Fig. 1. Strips of this built-up material are placed between the copper segments 4 of a commutator, and are adapted to produce a strong and efficient insulation between said segments, and to wear off evenly with the copper in service.

While the drawing shows but one sheet of mica placed between two layers of "commutite", it is evident that this number and arrangement are not essential, but that the number of sheets and layers can be varied and that their arrangement can be altered to meet the necessities of the case and I accordingly do not desire to restrict myself to the particular arrangement of parts herein shown and described.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. An insulating material for separating

parts of electrical apparatus having different potentials, consisting of layers of "commutite" and mica.

2. Insulating material consisting of a thin sheet of mica, and a layer of "commutite" on each side thereof.

3. A commutator having insulating material between the bars built up of layers of alternately tough and friable material.

10 4. A commutator having insulating ma-

terial between the bars built up with thin layers of mica and layers of more friable insulating compound.

In witness whereof, I have hereunto set my hand this 9th day of March, 1909.

EDWIN W. RICE, JR.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.