

G. F. DREHER.

INSULATING COMPOUND AND PROCESS OF MAKING THE SAME.

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1,064,893.

Patented June 17, 1913.

Fig. 1.

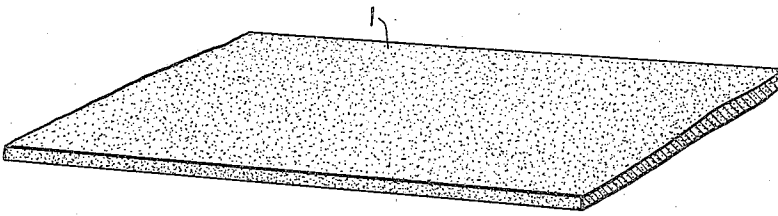
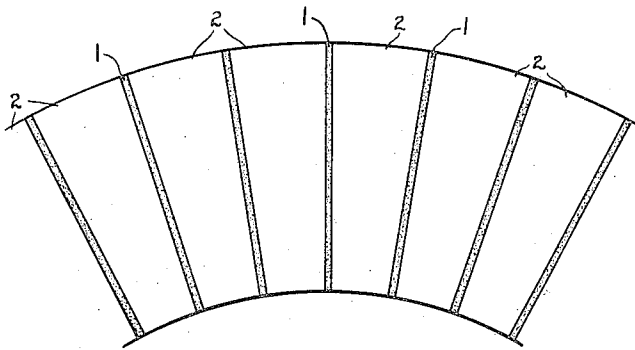


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

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INSULATING COMPOUND AND PROCESS OF MAKING THE SAME.

1,064,893.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed December 29, 1908, Serial No. 469,767. Renewed January 12, 1911. Serial No. 602,278.

To all whom it may concern:

Be it known that I, GUSTAVE F. DREHER, 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 Compounds and Processes of Making the Same, of which the following is a specification.

This invention relates to a new insulating material for use in electrical apparatus, and to the process of making the same. The material finds a special field of service in dynamo electric machines, where it is employed to insulate from each other the segments of the commutators. Heretofore mica and various other insulating materials have been used for this purpose, but there are certain objections in practice to these substances, which I have endeavored to overcome by my invention. It is highly desirable to have an insulating material which will wear off equally with the copper segments, so that no projecting ridges will be left to cause chattering and sparking at the brushes. My improved compound is found in practice to wear down smoothly so that the surface of the commutator remains in good condition and requires no dressing off even after long service.

In the accompanying drawing, Figure 1 represents a piece of my improved insulating compound ready for insertion into a commutator, and Fig. 2 shows a portion of a commutator in which the segments are separated by sheets of my material.

In proceeding to make the insulating material hereinbefore referred to, I prepare a powder composed of certain proportions of dry kaolin, or kaolin and lime, and lime, glass, green silko and red silko. The preferred proportions are 237 parts of dry kaolin, 37 parts of finely powdered glass, 88 parts of green silko (powdered slate) and 2 parts of red silko. These ingredients are reduced to a fine powder and thoroughly mixed together. I then add a certain quantity of asbestos staple, preferably in the proportion of 30 parts of staple to every 70 parts of the mixture; making 156 parts of asbestos for the above-named quantity of the mixture. This compound is run through what is known to asbestos manufacturers as the "wet machine," from which it emerges in the form of sheets. To these sheets is then applied silicate of soda, preferably by

immersing said sheets in a tank filled with this substance at a specific gravity of 35 degrees Baumé. After saturation, the sheets are removed from the tank and dried in the open air. When dry they can be reduced to the proper thickness, preferably by milling or grinding with sand cylinders. I then place these sheets between flat iron plates and clamp them together in piles, so that a quantity can be subjected at the same time to pressure, preferably in a hydraulic press, and varying from 750 to 1000 pounds to the square inch. This insures the sheets being true planes. The flat iron plates are then secured in clamped relation upon the sheets by bolts and upon removal from the press, the clamped sheets are introduced into gas-heated furnaces and fired at a high temperature, preferably about 450 degrees centigrade, more or less.

The sheets produced by this process are stiff, and they are capable of resisting a heavy pressure, so that they can be assembled with the segments of a commutator and the whole compressed into shape without injury to the insulation. In service, the edges of these plates will wear equally with those of the segments, so that the surface of the commutator is kept in a smooth and satisfactory condition for a long time. The dielectric qualities of the compound have been found to be excellent.

Fig. 1 of the drawing shows a sheet 1 of my improved insulating compound, and Fig. 2 shows a portion of a commutator consisting of segments 2 separated by thin sheets 1 of the insulating material. But in addition to its use in commutators, this material is applicable in many other places where the conditions are such as to call for an insulating substance having rigidity and the capacity to resist high temperatures and high voltages.

I do not desire to restrict myself to the particular ingredients or the particular proportions mentioned herein, since it is apparent that they may be changed and modified without departing from my invention.

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

1. An insulating compound comprising a refractory earth in powdered state, asbestos and silicate of soda compressed and fired under pressure at high temperature.

2. An insulating compound composed of

refractory earth, lime, asbestos and silicate of soda compressed and fired under pressure at high temperature.

3. An insulating compound composed of
5 kaolin, glass, silko, asbestos and silicate of soda, compressed and fired at high temperature.

4. An insulating compound composed of
10 about 46 per cent of kaolin, 7 per cent. of powdered glass, 17 per cent. of powdered slate and 30 per cent. of asbestos staple, soaked in silicate of soda, compressed and fired.

5. The process of making an insulating
15 material which consists in mixing together dry kaolin, powdered glass, powdered slate (silko) and asbestos staple, forming into

sheets, soaking in silicate of soda, compressing, and firing.

6. The process of making an insulating 20 material, which consists in mixing together dry kaolin, powdered glass, silko, and asbestos staple, forming the compound into sheets, treating said sheets with silicate of soda, drying, subjecting said sheets to a 25 pressure of several hundred pounds to the square inch, and then firing them at high temperature.

In witness whereof, I have hereunto set
my hand this 28th day of December, 1908. 30

GUSTAVE F. DREHER.

Witnesses:

HELEN ORFORD,

BENJAMIN B. HULL.