No. 641,012. Patented Jan. 9, 1900.

G. HEIDEL.

BRUSH FOR DYNAMO ELECTRIC MACHINES.

(Application filed Mar. 27, 1899.)

(No Model.)

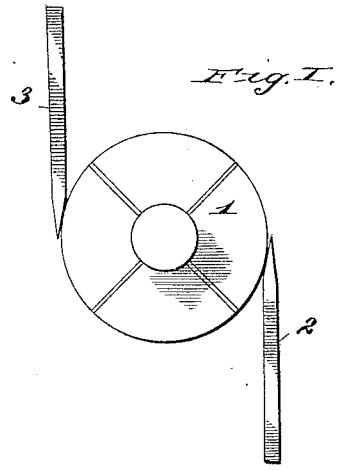

Fig. I.

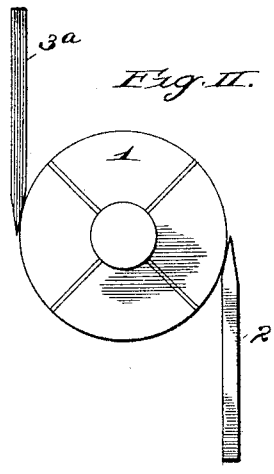

Fig. II.

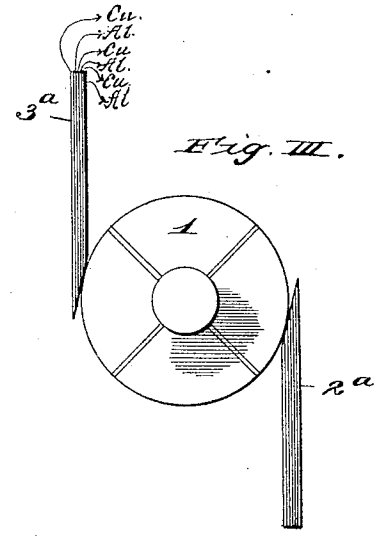

Fig. III.

Witnesses—

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UNITED STATES PATENT OFFICE.

GUSTAVOS HEIDEL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE GLOBE ELECTRIC COMPANY, OF SAME PLACE.

BRUSH FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 641,012, dated January 9, 1900.

Application filed March 27, 1899. Serial No. 710,646. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVOS HEIDEL, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Brushes for Dynamos or Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to brushes for use in dynamos or electric motors; and it consists in a negative brush made of aluminium in lieu of such brushes as heretofore commonly constructed of copper or carbon.

Figure I is an end view of a dynamo or motor commutator, showing in edge view a pair of brushes bearing against said commutator, said brushes being of solid form and one of them being of aluminium and the other of different material, such as copper or carbon. Fig. II is a similar view to Fig. I, illustrating an aluminium negative brush of layer form used in combination with a brush of other material of solid form. Fig. III is a similar view to Figs. I and II, showing both the aluminium and the opposing brush of layer form.

1 designates the commutator, which may be of any ordinary form of construction.

2 designates a positive brush of such material as copper or carbon adapted to bear against the commutator in the usual manner. This brush, as shown in Figs. I and II, is of solid form, while in Fig. III, I have shown a brush 2^a composed of sections or layers.

3 designates a negative brush of aluminium which, as shown in Fig. I, is of solid form and adapted to bear against the commutator 1. In Figs. II and III, I have shown the aluminium negative brush 3^a as of sectional or layer form, as the brushes may be of either form of construction, according to desire or preference.

In some instances where the negative brushes are made of layer form I make up such brushes of layers of aluminium interspersed with layers of copper or carbon, and in this way I produce a brush that combines the benefits of aluminium with those of copper or carbon.

I have discovered by experiment that a brush constructed of aluminium, or largely of that metal, when used in connection with a commutator of an electrical machine in the position to receive current from the commutator—that is to say, when used as a negative brush—possesses qualities superior to a brush constructed of any other material, and that such superiority is manifested not only in the effect which the brush has upon the commutator—to wit., avoiding cutting action on the commutator-plates and the development of the fine dust which fills in between the plates and results in more or less short-circuiting—but such superiority is likewise manifested in reducing the resistance at the point of contact and insuring an increased flow of current. I have distinctly noticed in my experiments that these effects or results are incident to the use of the material aluminium for the negative or current-receiving brush and not incident to its use as a positive or current-transmitting brush.

I claim as my invention—

1. As a new article of manufacture, a negative brush for dynamos or electric motors composed of aluminium.

2. As a new article of manufacture a negative brush for dynamos or electric motors, composed of layers of aluminium combined with layers of other material such as copper or carbon.

GUSTAVOS HEIDEL.

In presence of—
E. S. KNIGHT,
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