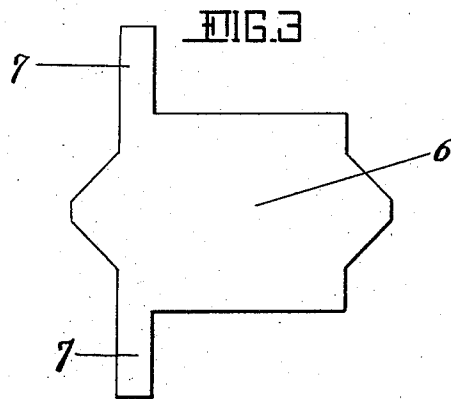
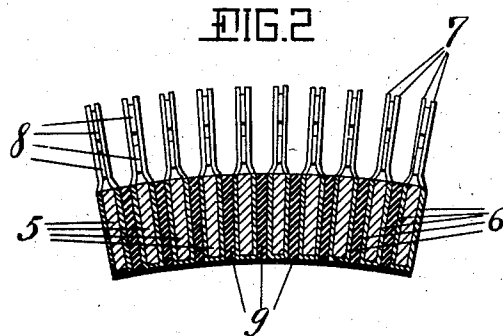
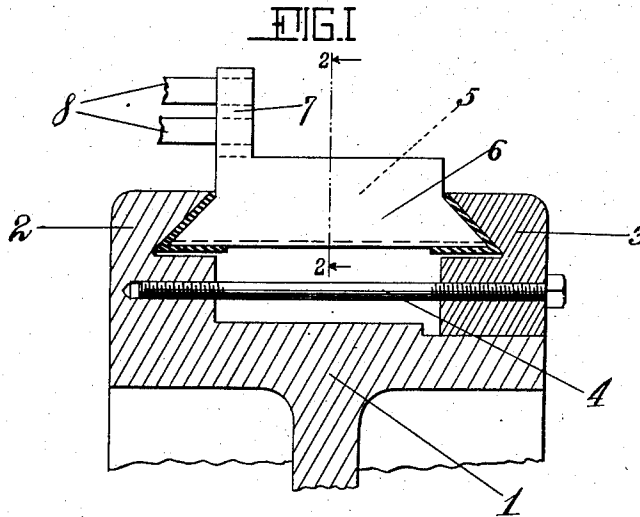


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COMMUTATOR.
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Patented May 6, 1913.



Witnesses:
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Geo. W. Kerr.

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UNITED STATES PATENT OFFICE.

JAMES BURKE, OF ERIE, PENNSYLVANIA, ASSIGNOR TO BURKE ELECTRIC COMPANY,
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COMMUTATOR.

1,061,251.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed December 21, 1906. Serial No. 348,841.

To all whom it may concern:

Be it known that I, JAMES BURKE, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Commutators, of which the following is a full, clear, and exact specification.

My invention relates to dynamo electric machines, and particularly to the construction of commutators or other current interrupting or circuit changing devices of similar character.

In the construction of commutators, it is the common practice to make the segments of copper on account of its good conductivity, toughness and other desirable properties. Each segment is made in one solid piece and as there must be means for clamping the segments to their support and also extensions for connecting the armature winding, the size of each segment becomes considerable. This amount of copper makes the total cost large. Moreover, it is customary to mill the extension of each segment, particularly on large machines, in order to provide a recess for the connection of the armature conductors. This increases the labor required and consequently the cost.

The object of my invention is to overcome these and other objections and at the same time preserve the advantages secured by the use of copper.

My invention will be understood from the following description and accompanying drawings, in which,

Figure 1 is a longitudinal section through a portion of a commutator embodying my invention; Fig. 2 is a cross section on the line 2—2 of Fig. 1 showing a portion of the commutator segments; and Fig. 3 is a development of one of the enveloping stampings.

In Fig. 1, the main cylindrical support is indicated at 1. This is shown as having an extension 2 and an undercut therein to receive and hold one end of each segment in place. At the opposite end of the segments, an undercut ring 3 is fitted to the support 1 and when forced up by the usual bolts as 4, will hold the segments firmly in place. Each segment is a composite one and comprises a main portion 5 adapted to be engaged by the parts 2, 3 and will preferably be made wedge shaped as shown in Fig. 2 and as is common in forming the solid cop-

per segments. Outside of the part 5 is an enveloping sheet of metal 6 which incloses the inner portion 5 of the sides and inner edge. This sheet 6 is provided with two extensions 7, 7, one from each side, and is adapted to receive between them conductors 8 from the armature windings which may be soldered in the usual manner to secure good electrical contact. The inner portion 5 of each segment is preferably made of iron, or may be made of some other metal or composition which is less expensive than copper. The enveloping sheet 6 is preferably made of copper, but may however, be made of other metals or compositions of relatively high conductivity compared with that of the inner portion. The enveloping part 6, may be made from sheet metal and stamped out to the form desired, such as shown in Fig. 3. The stamping will then be forced around the inner part so that in future handling and assembling, the composite segment may be worked as a solid integral piece. The engaging surfaces of the enveloping stamping and body portion will preferably be tinned and sweated together and so secure good electrical contact. After assembling the segments with the usual insulation 9, the whole will be clamped together and the outer surface turned off smoothly in the usual manner. In making connection to the armature conductors, it is simply necessary to secure the conductors between the two extensions 7.

By my invention, the conductivity of the segment as a whole may be made ample, and on account of the large surface contact and pressure between the copper and iron, good electrical connection is secured, which may be improved if the copper and iron are tinned and sweated together. Also on account of the edges of the segment being made of copper, the segment will not deteriorate on account of sparking to the extent that it would if made wholly of iron. This is important as it has been shown in practice that segments made wholly of iron very rapidly roughen at the edges and require constant attention and turning down. With my improved construction, the iron is protected from sparking and consequently does not become rough from that cause.

While I have shown and described one embodiment of my invention, it will be un-

derstood that changes may be made in the form of construction and in the materials used without departing from the scope thereof as indicated by the following claims.

5 Having thus described my invention, I declare that what I claim as new and desire to secure by Letters Patent, is,—

1. In a circuit changing device, a segment embodying an inner main portion containing iron and an outer portion of copper serving as the trailing portion of the segment, said outer portion being formed of sheet copper enveloping said inner main portion and having an extension adapted to be electrically connected to a conductor.

2. In a circuit changing device, a segment embodying an inner main portion of conducting material of relatively high corrodibility by arcs or sparks, and an outer portion serving as the trailing portion of the segment, said outer portion being formed of relatively thin copper embracing said inner main portion and adapted to be electrically connected to a conductor.

25 3. In a commutator, a segment comprising an inner main part of relatively long tread, and an outer part of relatively short

tread serving as the trailing part of the segment, said outer part being of a material of relatively high conductivity and of relatively low corrodibility as compared with the material of said inner main part, said outer part enveloping said inner main part and adapted to be connected to a conductor.

4. In a commutator, a segment comprising an inner main part containing iron and of relatively long tread and an outer part of copper of relatively short tread serving as the trailing part of the segment, said trailing part enveloping said inner main part and having extensions for electrical connection to a conductor.

5. In a circuit changing device, a segment embodying a main portion of iron-containing material, and a portion of copper disposed on the trailing side thereof, said copper portion being adapted to be connected to a conductor.

In testimony whereof I affix my signature, in presence of two witnesses.

JAMES BURKE.

Witnesses:

L. K. SAGER,
GEO. N. KERR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."