(No Model.)

W. HORNBERGER.

COMMUTATOR.

No. 448,040. Patented Mar. 10, 1891.

Fig. 1.

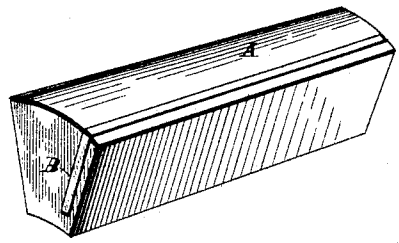


Fig. 2.

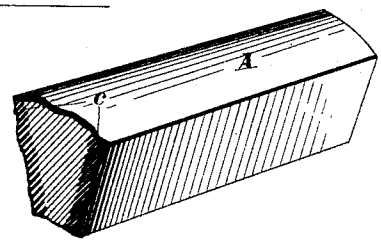
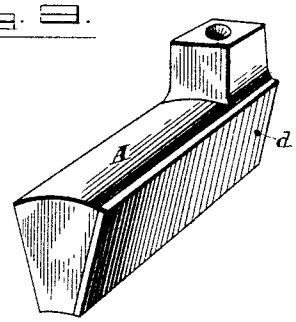


Fig. 3.



Witnesses
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WILLIAM HORNBERGER, OF ELKHART, INDIANA.

COMMUTATOR.

SPECIFICATION forming part of Letters Patent No. 448,040, dated March 10, 1891.

Application filed August 2, 1890. Serial No. 360,741. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HORNBERGER, of Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Commutators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a perspective view of a commutator-section embodying my invention. Fig. 2 is a similar view illustrating a modification of the invention. Fig. 3 is a perspective view of a third modification or form of the section.

My invention relates to commutators of electrical machines—such as dynamos and other machines—wherein a strong current of electricity is generated or employed; and its object is to prevent or greatly diminish the "sparking" common in such machines between the brush and commutator-sections, and to prevent or mitigate the destructive effect of the sparking upon the metal of which the commutator-sections are composed; and therefore the invention consists in re-enforcing the side edges of the commutator-sections by harder metals, in the manner substantially as hereinafter clearly set forth and claimed.

The commutators as ordinarily made are in segments, and as the brush impinges successively against the revolving segments a disruptive spark is produced at the meeting edges of adjoining segments, which spark is destructive to the metal of the segments at the edges thereof, which are gradually eaten away, thus destroying the surface of the commutator, which should be perfectly cylindrical, and cause the brush to jump or vibrate at the meeting edges of the sections, increasing the fault of sparking and still further impairing the efficiency of the machine. To remedy these defects I re-enforce the metal of the commutator-sections at the edges where the brush will pass from them, so that the sections will not wear so rapidly and will not be destroyed by sparking. In Fig. 1 the section A of the commutator has a longitudinal groove B in it parallel with and along its side, in which is inserted and secured a thin strip of hardened steel or other metal, which will not wear so rapidly as the main body of the section.

In some cases I can harden or bronze the edges or edge of the sections, as indicated at *c*, Fig. 2, or I braze or otherwise secure a strip of hard metal *d* to the side edge or edges of the section, as in Fig. 3. Either of these presents a hard edge which resists the breaking-down effect of the spark and thus preserves the entire surface of the segment, as the breaking down always begins at the edges and works backward over the surface of the sections.

In the drawings but one of the several sections is illustrated, several of them being assembled to form a commutator, as is understood in the art. The above construction of the sections insures a uniform surface to the commutator and good and even contacts between the commutator and brush, thus increasing the efficiency of the dynamo by preventing wasting of energy in excessive sparking. The sections ordinarily employed round down at the edges until the commutator has a series of longitudinal grooves at the edges of the sections, causing the brushes to jump and break contact and increasing the objectionable sparking.

The plates or strips or hardening may be on both side edges of each section; but it is most important to have them on the sides where the brush leaves the sections.

Having described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. For a commutator, a section having a side edge protected or strengthened by metal of greater density or hardness, substantially as and for the purpose set forth.

2. A metallic commutator-section having a body of soft metal and its side edge or edges re-enforced by hardened metal to prevent sparking, substantially as described.

3. A commutator-section having a groove along its side edge and a strip of hard metal inserted in said groove, for the purpose and substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM HORNBERGER.

Witnesses:

JAMES DUSHANE,

WILL G. CRABILL.