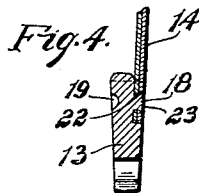
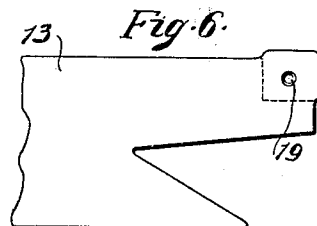
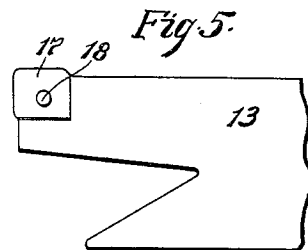
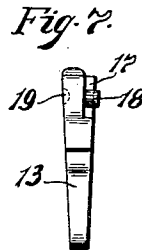
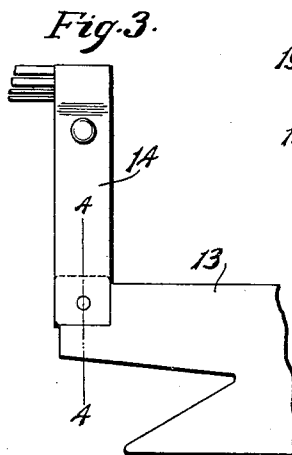
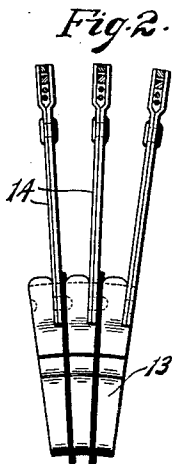
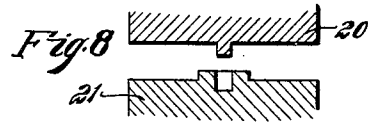
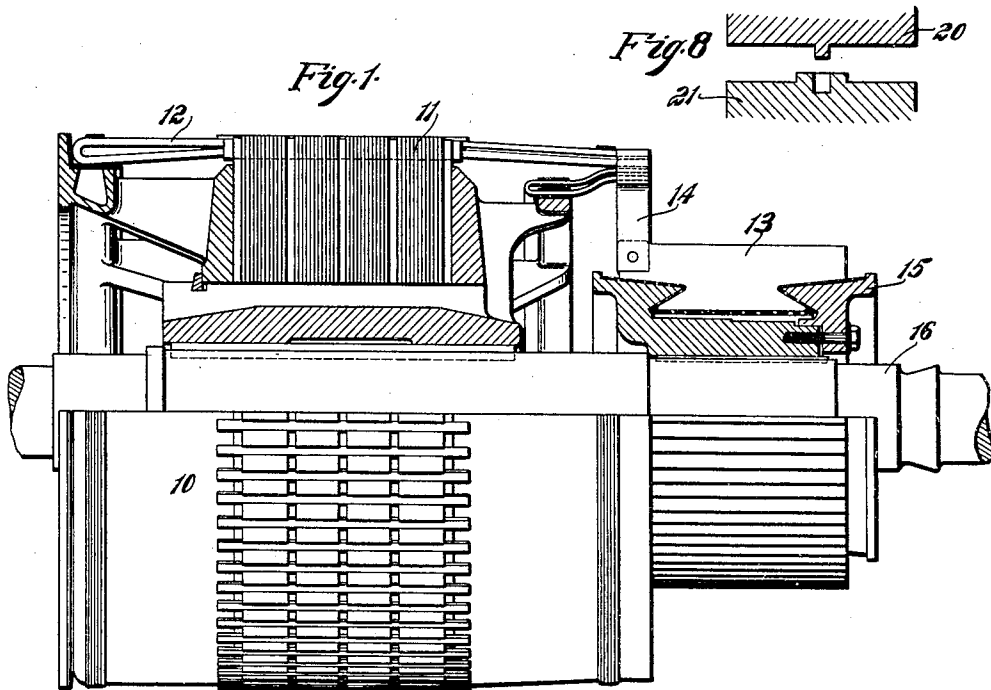


B. ELSHOFF.
DYNAMO ELECTRIC MACHINE.
APPLICATION FILED SEPT. 14, 1905.

1,030,061.

Patented June 18, 1912.



Witnesses:

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By

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Attorney.

UNITED STATES PATENT OFFICE.

BERNARD ELSHOFF, OF CINCINNATI, OHIO, ASSIGNOR TO THE BULLOCK ELECTRIC MANUFACTURING COMPANY, A CORPORATION OF OHIO.

DYNAMO-ELECTRIC MACHINE.

1,030,061.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed September 14, 1905. Serial No. 278,515.

To all whom it may concern:

Be it known that I, BERNARD ELSHOFF, citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Dynamo-Electric Machines, of which the following is a full, clear, and exact specification.

This invention relates to dynamo electric machines and especially to the construction of the commutators of such machines and the fastening means between the commutator bars or segments and the armature leads or commutator connectors.

It is essential in making the connections between the commutator segments and the armature coil leads, to secure perfect electrical contact and a considerable degree of mechanical strength. A further essential from a commercial standpoint is that the connections should be made without the expenditure of much time and labor.

The object of my invention is therefore to simplify the method of making the connections and to still provide a connection which will have the requisite mechanical and electrical properties.

My invention in one of its aspects, consists of a commutator bar having an integral lug or rivet by means of which the commutator and connector are adapted to be securely fastened together.

In another aspect my invention consists in the combination of a commutator bar having a depression or recess and an integral lug or projection, and a connector seated in said recess and riveted to said segment by said lug or projection.

In still another aspect my invention consists in the method of fastening a commutator connector to a segment, which consists in forming in the side of the segment a depression and an integral lug, then seating in the depression a connector having an opening to receive the lug; and then preferably expanding or riveting the lug whereby the connector and segment will be held firmly together.

In the accompanying drawings which illustrate my invention, Figure 1 is an elevation, partially in section, of an armature equipped with my invention; Fig. 2 is an end view of a plurality of commutator segments having leads attached in accordance with my invention; Fig. 3 is a partial ele-

vation of a commutator bar with the armature lead attached thereto; Fig. 4 is a partial section along the line 4-4 of Fig. 3; Fig. 5 is a partial elevation of a commutator segment; Fig. 6 is a partial elevation from the opposite side of the segment; Fig. 7 is an end view of the bar before the lead is attached; and Fig. 8 is a representation of one form of the punching dies used in my method.

Referring now to the figures of the drawing, the armature 10 is provided with a laminated core 11 and armature coils 12, the latter being connected to the commutator segments 13 by the leads or connectors 14. The commutator is mounted in the frame 15 which is fastened to the shaft 16 in the customary manner.

In carrying out my method only two steps or operations are required to fasten the segments to the armature leads or connectors. Each commutator segment is provided, in a single step or operation, by means of two dies or embossing tools, with a depression 17, preferably rectangular in shape and of a depth just equal to the thickness of the lead or connector, and near the center of the depression with a lug, projection, or rivet 18 adapted to fit into an opening in the armature lead. At the same time the depression and projection are formed on one side of the segment, the metal directly opposite the projection on the other side of the segment is preferably depressed as shown at 19 in order that the projection may be slightly longer than the depth of the depression or thickness of the lead or connector, for riveting purposes. The form of the dies which could be used in this punching or embossing process is shown in Fig. 8 at 20 and 21. It is to be understood, however, that the representations in this figure are not those of the actual dies used, but that the figure serves merely to illustrate the first step of my process.

A connector or lead 14 which is provided with a hole or opening 22, near the lower end, is fitted into the depression 17 and the rivet or projection is received into the opening. The opening 22 is preferably counter-sunk at its outer face as at 23 to provide a space for the head of the rivet. The lower end of the connector preferably conforms in shape to that of the depression and fits snugly therein so that there will be no tend-

ency for the connector to rotate. The connector or lead and segment are preferably next riveted together by swaging or expanding the end of the projection or rivet.

5 The expanded end of the lug or rivet fills the countersunk portion 23 of the opening 22 and is flush with the outer face of the connector. The connector and segment are thus firmly held in engagement. This riveting
10 process may be done by hammering or in a suitable press.

It will be seen that the operation is extremely simple and that little time and labor are required. The connection furthermore
15 has proven to be sufficiently strong for all purposes. I therefore aim in the appended claims to cover all modifications and changes which do not involve a departure from the spirit of the invention.

20 What I claim as new, is:—

1. In combination, a commutator bar having a rectangular depression in one side thereof, and an integral lug or projection
25 in said depression, and a connector fitting snugly in said rectangular depression and

having an opening receiving the lug, said lug being expanded or riveted to hold the segment and connector together.

2. In combination, a commutator bar having a depression in one side thereof and an
30 integral lug or projection in said depression, and a connector, fitting snugly in said depression and having a countersunk opening receiving the lug, said lug being expanded or riveted to hold the segment and connector
35 together.

3. A step in the method of fastening a commutator connector to a commutator segment, which consists in simultaneously
40 forming in one side of a segment a depression and an integral lug and on the other side of the segment opposite the lug a recess whereby the length of the lug will be increased.

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

BERNARD ELSHOFF.

Witnesses:

ARTHUR F. KWIS,
FRED J. KINSEY:

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