

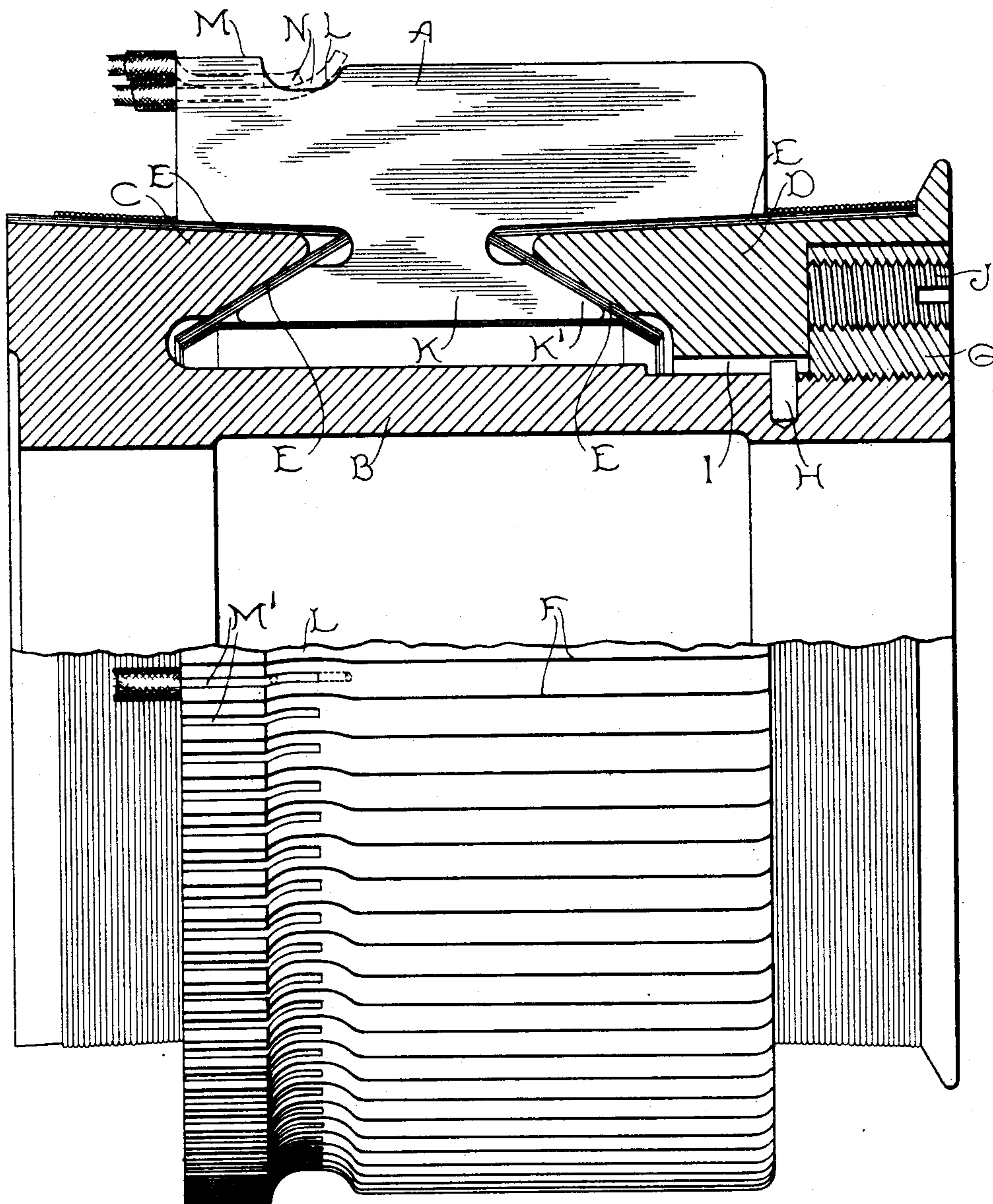
No. 608,299.

Patented Aug. 2, 1898.

W. B. POTTER.
COMMUTATOR.

(Application filed Apr. 27, 1898.)

(No Model.)



WITNESSES.

A. H. Abell.

A. F. Macdonald.

INVENTOR.

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UNITED STATES PATENT OFFICE.

WILLIAM B. POTTER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, OF NEW YORK.

COMMUTATOR.

SPECIFICATION forming part of Letters Patent No. 608,299, dated August 2, 1898.

Application filed April 27, 1898. Serial No. 678,948. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. POTTER, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Commutators, (Case No. 834,) of which the following is a specification.

My invention relates to commutators for dynamo-electric machines, and has for its objects to improve their construction and also to reduce the cost of manufacture.

In the accompanying drawing, which shows an embodiment of my invention, I have shown a commutator partially in section and partially in elevation.

The commutator-segments A are mounted on a cast-metal shell B, which is provided at one end with a conical flange C, formed integral therewith, and at the other with an adjustable clamping-ring D. The clamping-ring and flange are each provided with two conical surfaces, which engage corresponding surfaces on the segments and hold the latter in place. Between the conical surfaces of the clamp and the corresponding surfaces of the segments are layers of insulating material E, which insulate the segments from the supporting-shell, and between the segments are strips of mica F for insulating the segments from each other. The clamping-ring D is held in place and adjusted by the nut G, and is prevented from turning by the pin H, which enters a slot I, formed therein. The nut G is prevented from loosening and rotating backward by means of one or more screws J.

In commutators, and particularly those designed for railway-motors, it is desirable to make the segments of considerable depth, so that they may be turned down from time to time as they become worn, and also to economize in the use of stock. It has been customary heretofore to provide each segment with an outwardly-extending ear to which the armature-lead was soldered or to make the segment straight across the outer surface and to slot the end nearer the armature to receive the lead. The first method is objectionable, as it necessitates making the segment a drop-forging or else wasting considerable metal in cutting the ear out of solid

stock. The second method is good so far as metal saving is concerned, but it is very hard to remove the armature-leads when it is desired to repair the armature or commutator, and the solder employed is liable to run down between the commutator and the armature, causing a short-circuiting of two more commutator-segments. It is difficult with this construction to secure the leads in place, as the slot is not open to inspection, and it becomes a matter of experience to determine whether or not the lead is properly secured.

To overcome the objections above pointed out, at the same time restricting the metal in each segment to the least possible amount, the segments A are cut from rolled copper or composition, or, if preferred, drop-forgings may be employed. The under side of each bar is provided with a lug K, having angular or conical clamping-faces K', with which the conical flange C and the adjusting-ring D engage. The outer or face side of each segment is made substantially straight, although the portion M may be slightly above or below the wearing-surface of the commutator, with which the brushes make contact. It will be seen that by this construction there is very little waste metal, as the segment can be cut from a flat rectangular bar the width of which is no greater or practically no greater than the distance between the wearing-surface of the segment and the lower edge of the clamping-lug K.

The portion M of each segment is slotted at M' to receive the armature-leads N, and between the portion M and the wearing-surface is a circumferential slot or groove L, into which the lead-slots N extend. Formerly it was necessary to cut all of the leads N to the proper length before placing them in the lead-slot, a matter involving considerable trouble; but by using groove L the leads may be extended, as shown in dotted lines, and the necessity of trimming the ends of the leads obviated until after they are securely soldered in place, when they may be cut with a cold-chisel or turned off in a lathe.

A further advantage of the construction shown is that it enables the man who solders the leads to see whether or not the slot is filled with solder. In turning down the commuta-

tor the groove L acts as a guide to prevent cutting the ends of the leads so long as the wearing-surface is above the bottom of the slot-leads.

5 In addition to the advantages derived by my improved construction in assembling the commutator and armature it is of great assistance in removing the leads, as the point of a tool can be readily inserted under the lead
10 and the lead forced out, the solder being first softened by a heated iron.

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

15 1. In a commutator, the combination of a shell, a plurality of segments mounted thereon and insulated from each other and the shell, each segment being substantially straight across the outer or face side, slots in each segment for the reception of an armature-lead,
20 and a groove near one end of the commutator extending circumferentially, into which the slots for the leads extend.

2. In a commutator, the combination of a plurality of segments separated from each other by a layer of insulating material, each
25 segment being substantially straight across the outer or face side, and provided with an armature-lead slot and a lug for securing it to a support, and a circumferential groove into which the lead-slots extend at a point be-
30 low the wearing-surface of the commutator.

3. As an article of manufacture, a commutator-segment, having a substantially straight side which forms the outer or face side of the commutator when assembled, a lead-slot
35 M', a groove L into which the slot extends, and a securing-lug K.

In witness whereof I have hereunto set my hand this 23d day of April, 1898.

WILLIAM B. POTTER.

Witnesses:

A. H. ARMSTRONG,
PETER P. SHERRY.