

E. P. LEE.
COMMUTATOR.

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1,349,003.

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Fig. 1

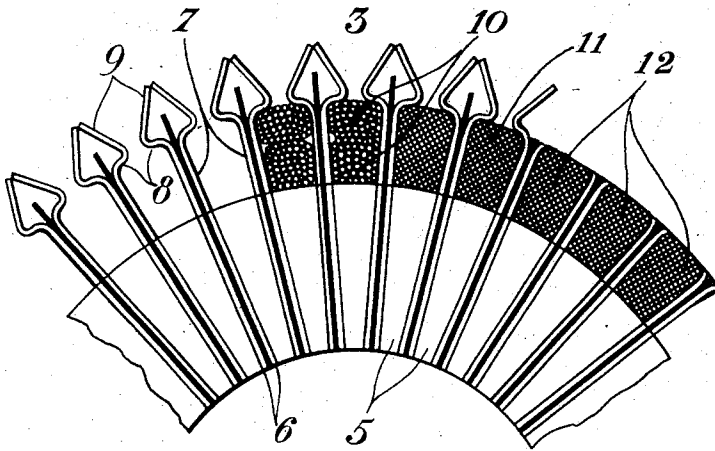
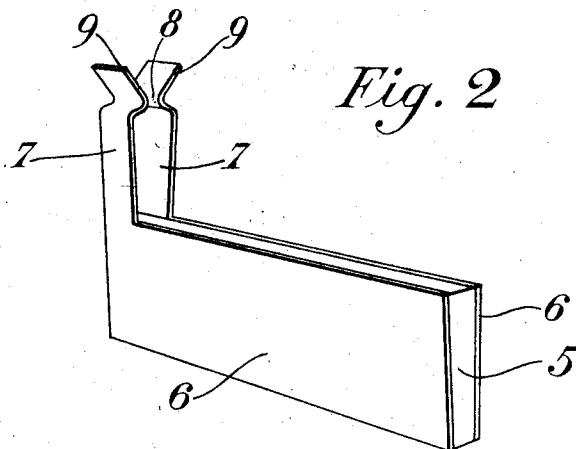


Fig. 2



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UNITED STATES PATENT OFFICE.

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COMMUTATOR.

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To all whom it may concern:

Be it known that I, EARLE P. LEE, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Commutators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Armatures of dynamo-electric machines are frequently wound with stranded conductors or cable comprising numerous small strands of wire inclosed in a braided sheath. The ends of the cable, constituting the armature-leads, are introduced laterally into the slots or throats of the commutator-risers, in the process of winding the armature, and difficulty has been experienced in holding them temporarily in place during the completion of the winding and the subsequent operation of soldering them to the risers.

The object of the present invention is to provide an improved method of, and means for, forming the connections between the leads and the risers, in the manufacture of dynamo-electric machines, by the use of which the difficulty just referred to is eliminated, and convenient provision is made for securing the leads temporarily in the risers.

To the foregoing end it is proposed to use risers which, in their original form, are provided, near the outer ends of their wire-receiving throats, with inward projections which are so shaped as to permit the introduction of the wires without difficulty, but to prevent them from springing out again. After the wires have been soldered in the risers the outer extremities of the risers, including said projections, may be cut off, as they are then superfluous.

In the accompanying drawings Figure 1 is a fragmentary end-elevation of a commutator embodying the present invention, together with armature-leads introduced into some of the risers, and Fig. 2 is a perspective view of one commutator-bar provided with a riser formed in accordance with the invention.

The invention is illustrated as embodied in a commutator in which each bar is compound in structure, comprising a central

body-portion 5 and two lateral members 6 of sheet-metal. This construction is not novel in itself, and is not essential to the present invention, but it is shown herein because it lends itself with particular facility to an embodiment of the invention.

The riser of each bar is produced by providing the members 6 with upward projections 7 at their inner ends, these two projections together constituting a single riser, and being equivalent to the integral riser used where the commutator-bar as a whole is of integral construction.

The present invention resides particularly in the formation given to the outer ends of the two arms 7 of the riser. The sheet-metal is bent first inwardly and then outwardly, so as to produce shoulders or abutments 8 which constrict the throat between the two members 7, while the extremities 9 beyond these shoulders are inclined from each other so as to provide wide but tapering passages for the introduction of the armature-leads.

In the operation of winding the armature the bared ends of the stranded leads or cables may be easily introduced, by a lateral movement, between the projections 8, into the inner part of the throat in the riser, as shown at 10 in Fig. 1, and they are then retained in place with sufficient security by the shoulders 8, during the completion of the winding operation, the necessity of binding or clamping devices of any sort for this purpose being thus entirely avoided. After the winding is finished the leads are soldered in place, as shown at 11 in Fig. 1, in the usual manner. The parts 8 and 9 of the risers may then be cut away, as shown at 12 in Fig. 1, preferably by a turning operation, since their functions have been performed and they have become superfluous.

It will be apparent that the invention may be carried out in various forms differing more or less, in detail, from that hereinbefore described and illustrated in the drawings. Although the novel form of riser is of particular utility in connection with stranded leads, it may also be usefully employed with solid conductors, since the members of the riser, especially when made of sheet-metal, may have sufficient elasticity to permit them to yield and admit the conductors or leads between the abutments 8,

Where so used the abutments may be reduced in size so as only slightly to restrict the throat of the riser.

The invention claimed is:

- 5 1. In the manufacture of a dynamo-electric machine comprising a commutator and a cable-wound armature, the method of making commutator connections which comprises: forming the risers of the commutator
10 with lead-receiving throats which are restricted near their outer ends; forcing the armature-leads laterally into said throats; soldering the leads in place; and cutting away the restricted portions of the risers.

2. A commutator-riser, for use in the 15 manufacture of dynamo-electric machines, comprising two members adapted to receive, between them, the armature-leads, said members having, near their outer ends, opposed surfaces which first converge and then 20 diverge, so as to provide abutments to retain the armature-leads temporarily in place during the construction of the armature.

3. A commutator-riser, as in claim 2, 25 formed by two sheet-metal members bent to the required form.

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