C. B. MILLS.

COMMUTATOR CYLINDER.

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1,362,029.

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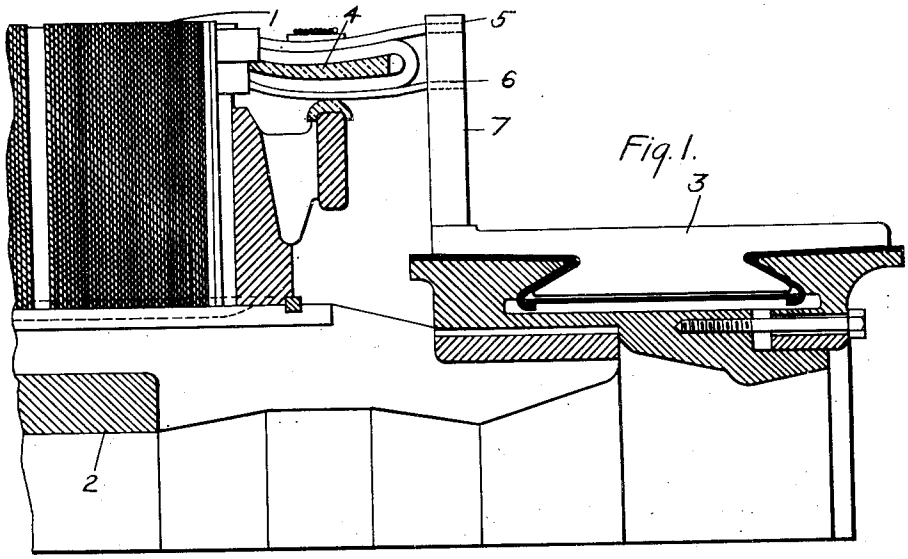
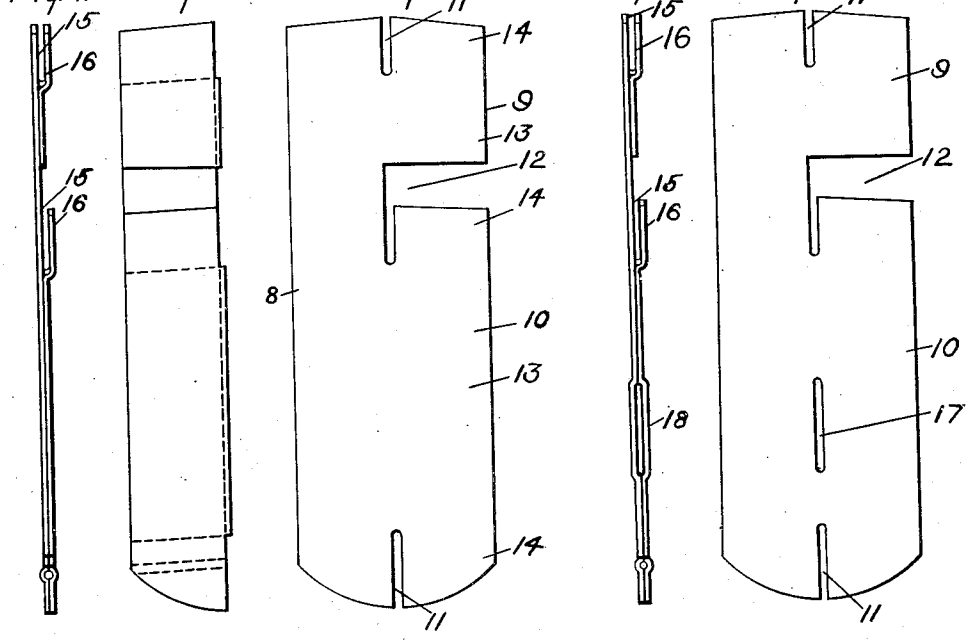


Fig. 1.



WITNESSES:

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COMMUTATOR-CYLINDER.

1,362,029. Specification of Letters Patent. Patented Dec. 14, 1920.

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To all whom it may concern:

Be it known that I, CHESTER B. MILLS, a citizen of the United States, and a resident of East McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Commutator-Cylinders, of which the following is a specification.

My invention relates to commutator cylinders for dynamo-electric machines and it has special relation to means for connecting armature conductors to the conducting bars of such cylinders.

The object of my invention is to provide a novel form of connection between the armature conductors and the necks of the commutator bars that shall be simple and inexpensive to manufacture and that will result in a saving of labor and material and will minimize the possibility of short circuits.

One type of commutator neck that has been employed considerably consists of two straps of copper welded or riveted together to which the two armature leads are connected at a single point. On account of the leads leaving the armature at different radial distances, it is necessary to bend either one or both of these leads in order to bring them together at a single point to be connected to the commutator neck. In bending the leads, they are frequently brought into close engagement with coil ends with which they differ widely in voltage, which may result in a flash-over, causing a short circuit.

In order to eliminate the possibility of a short circuit, the leads have been brought out from the armature and attached to the necks of the commutator bars at the same radial distance at which they left the armature, and a spacing block has been inserted between the two armature leads and between the two strips forming the commutator neck in order to prevent radial movement of the armature leads. This necessitates either welding or riveting the spacing blocks in position and prevents the commutator neck from having radial openings to admit both armature leads, which, especially in machines of large size, is very desirable.

Another type of commutator neck in common use consists of a piece of conducting material attached to the commutator bar and extending radially therefrom and having pieces of copper riveted or welded to the sides thereof to provide radial openings to admit the armature leads to the openings provided therefor. A serious objection to this type of commutator neck is that the amount of labor necessary to manufacture and assemble these parts is large.

By my invention, I provide a commutator neck formed of a single piece of conducting material having radial openings to admit the armature leads at different radial distances corresponding to the points at which the leads leave the armature. The use of such a commutator neck results in a saving of material and labor and reduces the length of the rotating element of the machine without, in any way, impairing its functioning ability.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a portion of a dynamo-electric machine constructed in accordance with my invention; Fig. 2 is a front elevational view of a punching employed in making the commutator neck shown in Fig. 1; Fig. 3 is a front elevational view of the punching shown in Fig. 2 after it has been bent to shape; and Fig. 4 is an end elevational view of the neck shown in Fig. 3. Fig. 5 is a front elevational view of a punching employed for constructing a commutator neck which embodies a slight modification of my invention; and Fig. 6 is a side elevational view of a commutator neck formed therefrom.

Referring more particularly to the drawing, I have shown a laminated core member 1 mounted upon a spider 2 which also supports a commutator cylinder 3. Coil ends 4 project from the laminated core member 1, and leads 5 and 6 thereof are connected to the commutator cylinder 3 by means of commutator necks 7, details of which are shown in Figs. 3 and 4.

In Fig. 2 is shown a punching which comprises a main body portion 8 and auxiliary body portions 9 and 10 which are partially separated therefrom by means of longitudinal slots 11 at the ends thereof and a substantially L-shaped slot 12, one part of which extends longitudinally with respect to the main body portion 8 and the other part of which extends at right angles thereto to separate the auxiliary body portions 9 and 10.

The finished commutator neck, as shown

in Figs. 3 and 4, is formed by bending the auxiliary body portions 9 and 10 back upon the main body portion 8, a suitable spacer (not shown) being preferably employed in order that portions 13 of the auxiliary body portions 9 and 10 shall be bent parallel to, and into engagement with, the main body portion 8 and that portions 14 thereof, which are adjacent to the slots 11 shall be bent parallel to the main body portion 8 but slightly spaced therefrom, thus providing radially disposed seats 15 and 16 for the armature leads.

Figs. 5 and 6 are views of a punching and a finished commutator neck, respectively, embodying a modification of my invention, in which an additional slot 17 is formed in the punching and an additional seat 18 is provided in the finished commutator neck by means of which armature cross connectors may be joined thereto.

While I have shown my invention in a plurality of forms, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various minor changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or are specifically set forth in the appended claims.

I claim as my invention:

1. A commutator bar neck consisting of a single piece of conducting material comprising a main body portion and auxiliary body portions partially separated therefrom by slots, certain parts of said auxiliary portions being bent back against said main body portion and the remander of said portions being bent parallel to said main body portion but not into engagement therewith.

2. A commutator bar neck consisting of a single piece of conducting material comprising a main body portion and extensions thereof partially separated therefrom by slots, the portion of the extensions adjacent said slots being bent parallel to, but not into contact with, the said main body portion and the portion of the extensions not adjacent said slots being bent parallel to, and into contact with, said main body portion.

3. A commutator bar neck consisting of a single piece of conducting material comprising a main body-portion and auxiliary body portions partially separated therefrom by longitudinal slots, the parts of the auxiliary portions adjacent the slots being bent parallel to, but not into engagement with, said main body portion and the remaining parts of the auxiliary portions being bent into engagement with said main body portion.

4. A commutator bar neck consisting of a single piece of conducting material comprising a main body portion and auxiliary body portions partially separated therefrom by longitudinal slots at the ends of said piece of conducting material and by a substantially L-shaped slot intermediate the ends, one part of which extends longitudinally of said piece of conducting material and the other part of which extends at right angles thereto, the parts of said auxiliary portions adjacent said slots being bent substantially parallel to, but not into engagement with, said main body portion and the remaining parts of the auxiliary portions being bent parallel to, and into engagement with, said main body portion.

5. The method of making commutator necks which consists of bending a laterally and longitudinally slotted strip of conducting material upon itself along the line of its longitudinal slots, partially into engagement and partially into spaced relation to form seats for the reception of armature leads.

In testimony whereof I have hereunto subscribed my name this 28th day of Nov., 1917.

CHESTER B. MILLS.