V. M. ALLEN.

COMMUTATOR CYLINDER.

APPLICATION FILED NOV. 1, 1917.

**1,358,691.** Patented Nov. 16, 1920.

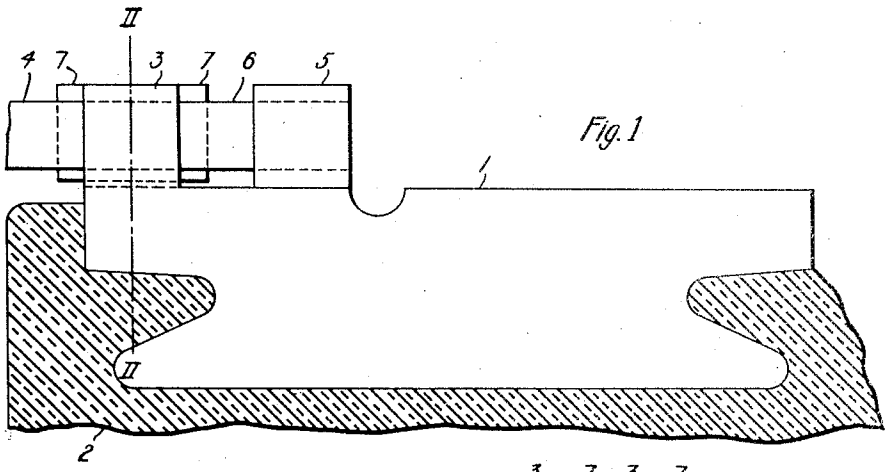



Fig. 1

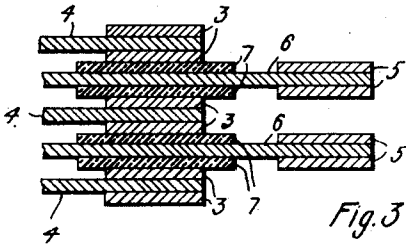



Fig. 3

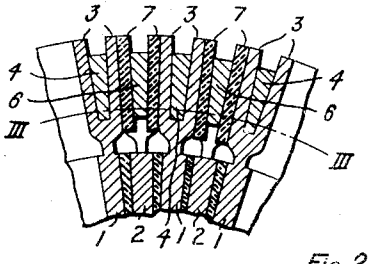



Fig. 2

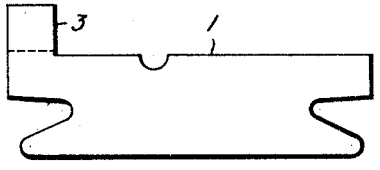



Fig. 4

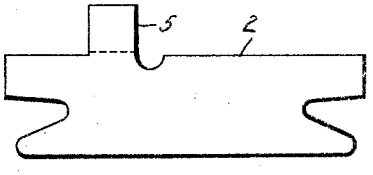



Fig. 5

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## COMMUTATOR-CYLINDER.

1,358,691. Specification of Letters Patent. Patented Nov. 16, 1920.

Application filed November 1, 1917. Serial No. 199,627.

*To all whom it may concern:*

Be it known that I, VERO M. ALLEN, a subject of the King of Great Britain, and a resident of Cantley, in the county of Chester, England, 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 commutator cylinder in which a large number of conducting bars may be embodied in a cylinder of a given diameter than has heretofore been possible.

As heretofore constructed, a commutator bar comprised a longitudinal portion so placed as to extend parallel to the machine axis and a radially extending portion at right angles thereto, usually known as the "neck," to be connected to an armature conductor. The number of bars in a commutator cylinder of a given diameter is not limited by the width of the bar, which may be made relatively narrow, but by the combined widths of the necks, the armature leads at the points where they are connected, and the insulation between adjacent necks. This limitation has given rise to some difficulty in designing commutator cylinders having a large number of commutator bars, without unduly increasing the diameter, as, for instance, commutator cylinders for use in high-voltage direct-current machines.

In the accompanying drawing, Figure 1 is a sectional view of approximately one half of a commutator cylinder constructed in accordance with my invention. Fig. 2 is a sectional view of the commutator portion shown in Fig. 1, the section being taken along the line II—II. Fig. 3 is a sectional view of the commutator portion shown in Fig. 2 taken along the line III—III thereof. Figs. 4 and 5, are detail views of two forms of conducting bars used in my invention.

Referring to Figs. 1 and 2, the commutator cylinder comprises sets of conducting bars 1 and 2 which are circumferentially arranged upon a suitable supporting member. The bars 1 are provided with necks 3, to which are electrically connected to armature leads 4. Each bar 1 is of the form shown in Fig. 4, in which the neck is located at one end thereof, whereas each bar 2 is provided with a neck 5 intermediate its ends, as best shown in Fig. 5. The bars 1 and 2 are alternately arranged so that the armature leads 6 which are connected to the necks 5 are disposed between adjacent necks 3 of the bars 1 and are separated therefrom by pieces of insulating material 7, which project beyond the edges of the necks 3, as shown in Figs. 2 and 3.

By assembling a commutator cylinder in the manner described, so that the necks of alternate bars are at different distances from the end of the commutator cylinder, a larger number of bars may be used than would otherwise be possible, as previously pointed out.

While I have shown one form of my invention and described in detail one application of the same, 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. In a dynamo-electric machine, a commutator cylinder comprising a plurality of sets of alternately disposed conducting bars provided with radial necks, the necks of the respective sets being disposed at different distances from the end of said cylinder.

2. In a dynamo-electric machine, a commutator cylinder comprising a plurality of sets of conducting bars provided with radial necks, the necks of the respective sets being disposed at different distances from the end of said cylinder, and leads connected to certain of said necks and extending between and insulated from the remainder of said necks.

3. In a dynamo electric machine, a commutator cylinder comprising two sets of conducting bars one set of which has its necks located at the extreme ends thereof and the other set of which has its necks located intermediate the ends, the bars of said sets being disposed alternately around said commutator cylinder.

4. In a dynamo electric machine, a com-

mutator cylinder comprising a plurality of conducting bars, the necks of one set of alternate bars being at the extreme ends thereof and the necks of the other set of alternate bars being intermediate the bar ends, and leads extending between, and insulated from, the necks at the end of cylinder.

In testimony whereof, I have hereunto subscribed my name this fourth day of October, 1917.

VERO MARSHALL ALLEN.

Witnesses:
FREDERICK NIXON,
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