F. H. LORING.

COMMUTATOR FOR DYNAMO ELECTRIC MACHINES.

APPLICATION FILED DEC. 31, 1907.

902,424. Patented Oct. 27, 1908.

Fig. 2.

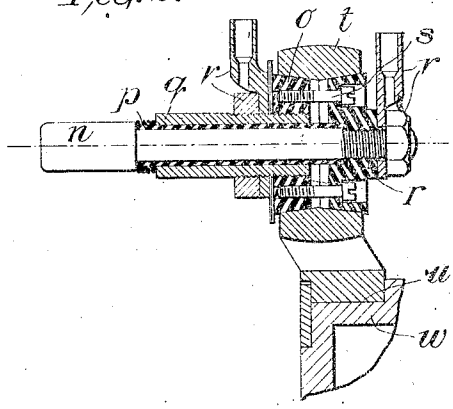


Fig. 1.

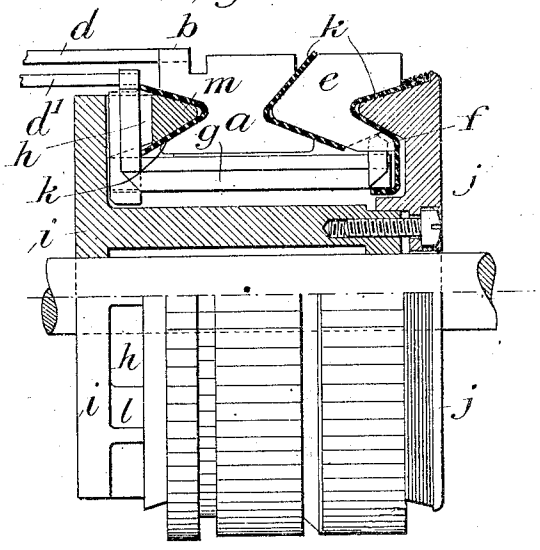
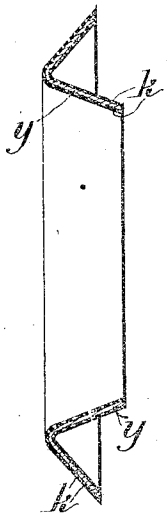


Fig. 3.



Witnessed.

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UNITED STATES PATENT OFFICE.

FREDERICK HENRY LORING, OF LONDON, ENGLAND.

COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES.

No. 902,424. Specification of Letters Patent. Patented Oct. 27, 1908.

Application filed December 31, 1907. Serial No. 408,733.

To all whom it may concern:

Be it known that I, FREDERICK HENRY LORING, a citizen of the United States of America, residing at 7 Doughty street, London, England, have invented certain new and useful Improvements in and Relating to Commutators for Dynamo-Electric Machines, of which the following is a specification.

My invention comprises a multiple commutator, and concentric brush-holder studs, for supporting the brushes therefor.

The object of my invention is to provide two or more segmental commutators in juxtaposition which can be built up and insulated in a substantial manner, without necessarily occupying appreciably more space than a single commutator of equivalent conducting capacity.

It is a further object of mine to afford a simple and straightforward mechanical construction, which will not be much more expensive to build than a single commutator of usual design.

Figure 1 is a side elevation partly in radial section of my improved commutator construction. Fig. 2 is a sectional view illustrating my improved arrangement of concentric brush-holder studs. Fig. 3 is a sectional view of a dished plate covered with insulation material.

According to my invention, I provide two or more independent commutators, which "V" or "recess" into each other after the manner of a nest of dishes as typically illustrated in Fig. 1. Referring to this figure, the commutator *a* next to the armature core has the usual slotted ends *b* or is provided with "risers" to take the wires *d* of one winding. The next commutator *e* has lugs or slotted portions *f* on its inner bore which take copper strips *g*. These pass along underneath the first-named commutator, and rise up through peripherical openings *h* provided in the supporting shell *i* and are connected to the wires *d'* of the second winding. An end-plate *j* clamps the commutators together, somewhat in the usual manner. Micanite or other suitable insulation *k* is used between all the V-faces, and the L-strips may be taped, enameled with porcelain, or otherwise suitably insulated, inasmuch as they may be somewhat crowded, in order to make room for the webs *l* on the shell, which join integrally with the solid V-ring *m* next to the first commutator.

Referring to Fig. 2, the brush-holder-stud comprises a solid round rod *n* which screws firmly into an insulating block *r* preferably of tapering cylindrical exterior. On this rod is slipped a micanite or insulating tube *p*. A brass tube *q* is slipped over the aforesaid tube, and, being threaded at the supporting end, is screwed into an insulating block *o* of practically the same shape as the one for the round solid rod. Any hard and tough insulating material, may be used for the above blocks. These blocks are drawn together with small steel screws *s* against corresponding taper surfaces formed on an arm *t* which is arranged to admit of a slight rotational movement by the usual seating *u* on the front bearing-bracket *w*. By means of the above arrangement, two independent brushes may be insulated from each other on the one supporting stud. Suitable nuts and connectors *v* are introduced so that terminal wires may be attached to each insulated part.

My invention is not limited to the detailed construction hereinabove described. For example in some cases it may be preferable to employ grooves shaped differently from the V-shaped ones shown.

I am not aware that commutators have ever been assembled closely in the particular manner hereinabove described, side by side, and this feature of my invention affords a more convenient and compact arrangement of parts with the result that standard machines can be more easily converted for instance into variable speed motors or variable or multi-voltage generators, or machines requiring two commutators. In some cases I arrange the insulation between the commutators as a lining on both sides of a dished steel plate as shown in section in Fig. 3, in which *k* is the insulation and *y* the dished steel reinforcing plate.

What I claim is:—

1. A commutator device comprising a supporting shell, a number of independent multi-bar commutators arranged side by side coaxially and externally to the said shell, integral projections being formed on the end face of one commutator and entering recesses in the end face of the adjoining commutator, an extension on said supporting shell having peripheral openings therein, and inner connections from one commutator brought through the said peripheral openings.

2. A commutator device comprising a supporting shell, two independent multi-bar

commutators arranged side by side and externally to said supporting shell, a V-shaped projection integral with one commutator, a V-shaped recess in the adjoining commutator, insulation material between said V-shaped surfaces, an extension on said supporting shell formed integrally therewith and having peripheral openings therein, inner connections from one commutator brought through the said peripheral openings, and means to hold the assembled parts together.

3. The combination with a commutator device comprising independent multi-bar commutators arranged side by side on a common supporting shell and having projections on one commutator entering recesses in the adjoining commutator, of stationary concentric brush holder supports insulated from one another, and insulating blocks to which the said supports are attached, said insulating blocks being drawn toward each other against opposite seatings formed in a supporting arm.

4. The combination with a commutator device comprising two independent multi-bar commutators arranged side by side coaxially on a common supporting shell, one commutator having a V-shaped projection entering a corresponding recess in the adjoining commutator, and insulating material between said V-shaped surfaces, of stationary concentric brush holder supports comprising a solid stud screwed into an insulating block, an insulating sleeve thereon, a brush holder tube on said sleeve and a second insulating block into which the said sleeve is screwed, a supporting arm having openings, and means for clamping said insulating blocks in said openings.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK HENRY LORING.

Witnesses:

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H. D. JAMESON.