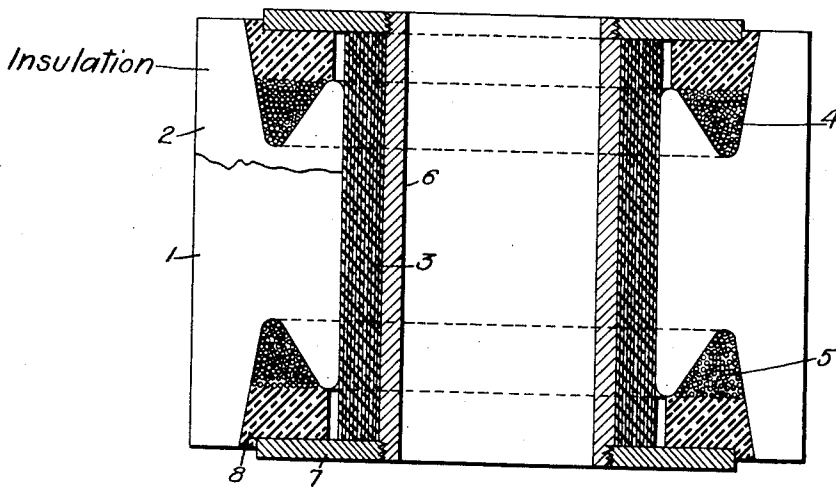


W. H. KEMPTON.
COMMUTATOR CYLINDER.
APPLICATION FILED MAY 28, 1919.

1,401,708.

Patented Dec. 27, 1921.



WITNESSES:

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COMMUTATOR-CYLINDER.

1,401,708.

Specification of Letters Patent.

Patented Dec. 27, 1921.

Application filed May 28, 1919. Serial No. 300,431.

To all whom it may concern:

Be it known that I, WILLARD H. KEMPTON, a citizen of the United States, and a resident of Wilkesburg, 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 to other structures in which the assembled conducting and non-conducting portions are held in position by reinforced molded rings of non-conducting material.

The primary object of my present invention resides in the provision of a commutator-cylinder construction of such character that a damaged commutator cylinder may be readily repaired.

In Patent No. 1,284,524, dated Nov. 12, 1918, and issued to the Westinghouse Electric & Mfg. Company, is disclosed a molded commutator cylinder in which the alternately arranged conducting and insulating sections are partially embedded in a body of molded insulating material and in which cord reinforcing rings of molded insulating material are embedded in the molded body and seated in grooves formed by notching the ends of the conducting and insulating sections. This provides a very simple and strong commutator-cylinder construction as the reinforced rings firmly hold the conducting sections in place. Such a commutator cylinder, however, can be repaired only with considerable difficulty and expense.

One of the objects of my present invention is to construct a commutator cylinder possessing many of the advantages of the molded commutator cylinder described in the above-referred-to patent but of such character that, in case it becomes "burned out" or shorted from excessive sparking, the damaged parts may be readily removed and replaced by new parts.

A still further object of my invention consists in accomplishing the foregoing desirable results without decreasing, in any way, the efficiency of the commutator cylinder.

Referring more particularly to the drawing which shows a diametral, sectional view of a commutator cylinder constructed in accordance with my invention, alternate con-

ducting and insulating segments 1 and 2, respectively, are arranged in annular relation, to form a hollow cylinder, with their inner edges engaging against the outer periphery of an insulating tube 3. This tube may be of any suitable material but may preferably comprise superimposed or wrapped layers of fibrous sheet material impregnated with a heat-hardened binder, such as a phenolic condensation product.

The ends of the conducting and insulating segments 1 and 2 may preferably be notched so that, when they are assembled, they may provide annular, ring-receiving grooves 4 to seat reinforced retaining rings 5 of insulating material. These rings 5 may be of the character disclosed in the above-referred-to patent, being formed of a suitable filler impregnated with a hardened binder as, for example, a phenolic condensation product, so as to insure good mechanical strength with high insulating properties. Preferably the rings or, at least, those portions thereof which seat in the grooves 4 are reinforced by strands of cord extending around and around the rings as indicated in the drawing.

The tube 3 may be fitted snugly about a hollow cylindrical sleeve or hub 6, preferably of metal, by means of which the commutator cylinder may be attached to a shaft (not shown). The ends of this sleeve or hub may preferably project beyond the body of the commutator cylinder and are adapted to receive end clamping plates 7 which are screwed upon the ends of the sleeve to engage snugly against the ends of the tube 3 and the outer exposed faces of the reinforcing rings. Preferably, the outer faces of the reinforcing rings may be recessed to provide annular seats 8 to receive the outer portions of the clamping plates to insure proper centralization of the various assembled parts.

When constructing a commutator cylinder in accordance with my present invention, I prefer, after assembling the alternate conducting and insulating segments about the rings 3 and sleeve 6, to coat the grooves formed by them with a varnish of suitable character, such as a bakelite or shellac varnish, to provide a seat for the reinforcing rings. If this is done, the assembled commutator cylinder may be heated

sufficiently to insure proper seating of the parts and curing of the varnish. In some instances, in place of the varnish, pieces of loose textured paper impregnated with the
5 varnish may be disposed in the grooves to provide seats for the rings, the varnish of these pieces of paper being cured in the same manner after the commutator cylinder is completely assembled.
10 Obviously, a commutator cylinder constructed in accordance with my invention will possess many of the advantages inherent in molded commutator cylinders of the character disclosed in the patent referred to.
15 At the same time, in case the commutator cylinder becomes injured, because of shorting of the conducting members, from excessive sparking or the like, it may be readily dis-assembled, so that the injured parts may
20 be replaced by new parts after which the commutator cylinder may be quickly re-assembled and made ready for use.

Since many changes in the details of construction may be made without departing
25 from the spirit of my invention, no limitations are to be imposed upon it other than those indicated in the claims.

I claim as my invention:

1. A commutator cylinder comprising a metallic sleeve, a tube of insulating material
30 surrounding the sleeve, alternate conducting and insulating segments provided with notches arranged in annular relation about the tube, windings of cord impregnated with
35 a hardened binder disposed in the notches and means detachably securing the segments with relation to the sleeve while maintaining the conducting segments insulated therefrom.

2. A commutator cylinder comprising a
40 metallic sleeve, a tube of insulating material surrounding the sleeve, alternate conducting and insulating segments provided with notches at their ends arranged in annular
45 relation about the tube, windings of cord impregnated with a hardened binder disposed in the notches and clamping plates detachably securing the segments with relation to the sleeve while maintaining the conducting segments insulated therefrom. 50

In testimony whereof, I have hereunto subscribed my name this 22nd day of May 1919.

WILLARD H. KEMPTON.