

(No Model.)

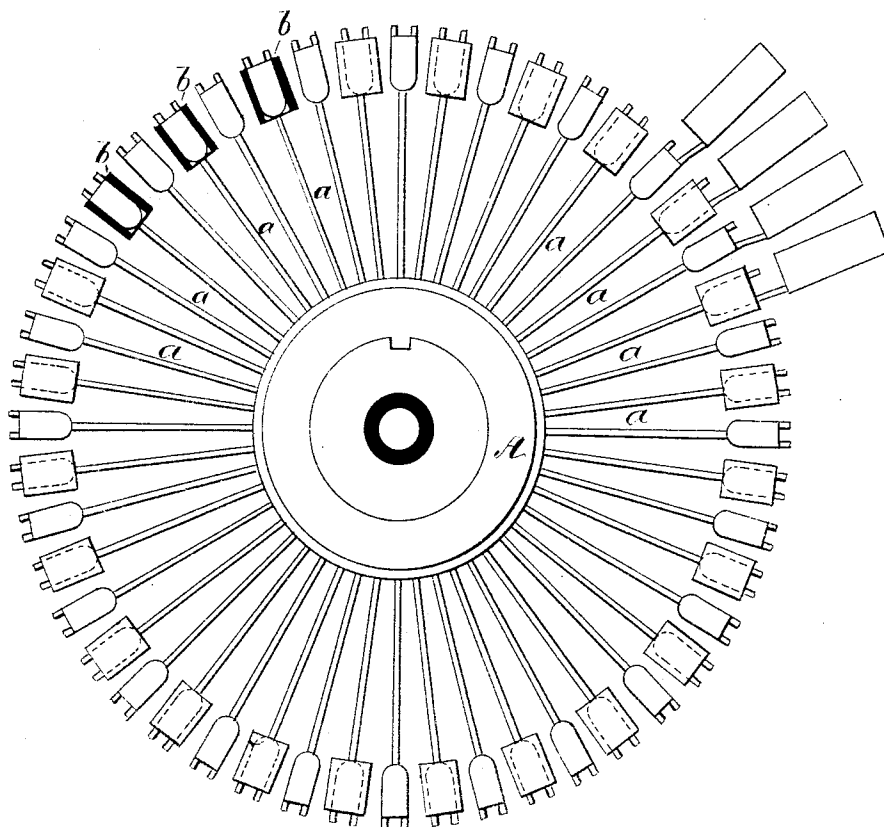
H. L. FEE.

COMMUTATOR FOR DYNAMO ELECTRIC MACHINES.

No. 513,460.

Patented Jan. 23, 1894.

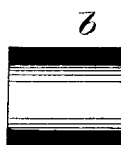
*Fig. 1*



*Fig. 2*



*Fig. 3*



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

HARRY LEE FEE, OF NEW ORLEANS, LOUISIANA.

## COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 513,460, dated January 23, 1894.

Application filed July 26, 1893. Serial No. 481,472. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY LEE FEE, of New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful  
5 Improvements in Commutators for Dynamo-Electric Machines, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

10 Figure 1 is a front elevation of my improved commutator. Fig. 2 is an end elevation of the insulating thimble; and Fig. 3 is a longitudinal section of the same.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to provide an improved means for preventing the short-circuiting of coils of armatures of the class in which the terminals of the coils are connected  
20 with flexible arms extending radially from the commutator wires.

My invention consists in the combination with the commutator wires, of insulating thimbles slipped over their free ends, for preventing contact between the outer ends of the bars, all as will be hereinafter more fully described.

In the class of dynamo-electric machines in which the connection between the bars of the  
30 commutator and the terminals of the wire coils forming the armature winding is made by a series of radial bars projecting from the commutator bars, it has been found that under some conditions the radial bars vibrate, sometimes to such an extent as to bring the adjacent bars into contact, thereby short-circuiting some of the coils of the armature, causing them to be burned out.

In some machines, insulating blocks have  
40 been arranged between the bars but special sockets must be provided to hold them in place, which is objectionable for several reasons. I have devised a means of insulation

which may be easily applied, or detached, and requires no alteration in the construction of 45 the bars.

The following is a description of the invention: The commutator A, is provided with a series of commutator bars forming the commutator cylinder, and to each commutator  
50 bar is attached an arm *a* extending radially from the inner end of the bar, and the outer ends of the arms *a* are bored to receive the ends of the armature coils. The commutator thus constructed is of a well known form. 55 When a dynamo having a commutator of this kind is in motion, the arms *a* are apt to spring, bringing the free ends of adjacent arms into contact, thereby short-circuiting the coils of the armature.

My improvement consists in placing upon the enlarged outer ends of the arms *a*, detachable insulating thimbles *b*, made of hard rubber or analogous material, and while a thimble may be placed on the extremity of  
65 every arm *a*, I prefer to place them on alternate arms, as shown in Fig. 1. In this case each thimble answers for insulation of the arm by which it is carried and of the adjacent arm. By means of this device I am enabled to effectually prevent electrical contact of the outer free ends of these arms. The form of the thimble will be varied to adapt it to machines of different sizes and kinds.

Having thus described my invention, I 75 claim as new and desire to secure by Letters Patent—

The combination with the radial conducting arms of a commutator, of the detachable insulating thimbles which are applied to the  
80 free ends of said arms and surround the same, as shown and described.

HARRY LEE FEE.

Witnesses:

JNO. J. WARD,  
DAAIOW SVOW.