(No Model.)

R. E. BALL.

COMMUTATOR FOR DYNAMO ELECTRIC MACHINES.

No. 261,520. Patented July 25, 1882.

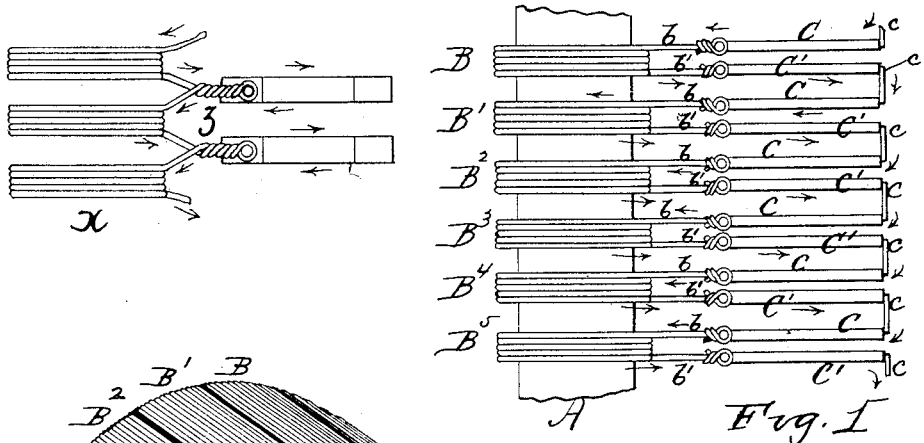

Fig. 1

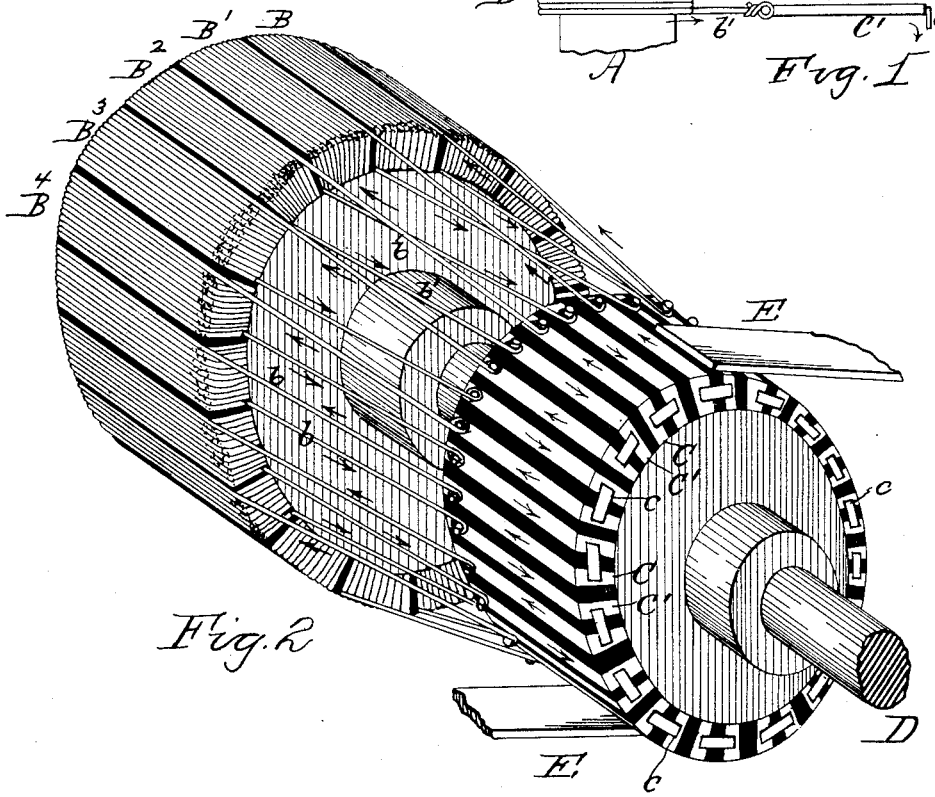

Fig. 2

WITNESSES:
George Smith
William Alexander.

INVENTOR,
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UNITED STATES PATENT OFFICE.

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COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 261,520, dated July 25, 1882.

Application filed February 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, R. EDWARD BALL, a citizen of the United States, and residing in the city, county, and State of New York, have invented certain new and useful Improvements in Commutators for Dynamo-Electric Machines, of which the following is a specification, reference being had to the accompanying drawings, wherein—

Figure 1 is a diagram illustrating my invention; and Fig. 2 is a perspective view, showing the same.

My invention has relation to commutators for dynamo-electric machines, especially applicable to that class of machines wherein the bobbins or coils of the armature are connected to form a close circuit, and has for its object to so construct the commutator and connect thereto the ends of the bobbins of such armatures that the currents generated in the latter will pass to and find a circuit through a pair of commutator-blocks, and thereby avoid undue sparking on the commutator.

Heretofore the ends of close-circuited armature bobbins or sections have been secured together and to the commutator-blocks, substantially as shown at *x* in the accompanying drawings—*i. e*, the inner end of one section is coupled to the outer end of the succeeding section, and such coupled or twisted ends were both connected to the same block in the commutator, as shown at *z*—the result whereof is that when the resistance in the armature ring or sections is small there is undue sparking on the commutator.

My invention has for its object to remedy such defect; and it accordingly consists in connecting the outer and inner end of each armature-bobbin to separate commutator-blocks and then coupling such blocks in pairs, thereby providing circuit for the circulation of the currents through the commutator-blocks, so that when the resistance of the armature-ring is small the currents generated therein are compelled to pass to and circulate successively through every pair of said commutator-blocks.

Referring to the accompanying drawings, Fig. 1 shows the manner of connecting the inner and outer ends of each armature bobbin or section to separate commutator-blocks and the coupling of the latter in pairs. In said figure, A represents the armature-ring, and B B′ B², &c., the bobbins or sections of wire wound thereon, and *b* and *b′* are the ends of said sections. C C′ represent commutator-blocks connected at their outer ends by strips of copper or other suitable conductors, *c c*. The ends *b* of each section are connected to the blocks C′. Such mode of connection couples each armature-section directly to the commutator-blocks, so that said sections have no direct connection with each other, as shown. Hence a current generated in one section must pass through commutator-blocks C C′ before it can traverse the next succeeding section, as shown by the arrows in said figure. Consequently, no matter how great may be the resistance in the armature-ring, the currents generated in the bobbins pass through a pair of commutator-blocks before said currents can flow to the next succeeding bobbin. Consequently there is less liability of sparking occurring on the commutator.

In Fig. 2 I have shown the armature and commutator rings mounted upon a shaft, D, and E E indicate the brushes. I have shown the blocks C C′ as being connected by the conducting-strips *c c;* but the latter, if desired, may be dispensed with and blocks C C′ brought close enough together, yet insulated from each other, that they may be connected by a drop of solder. The latter, being a conductor, allows the current to pass from one block to the other.

I have not described nor shown any particular mode of securing the commutator-blocks together, as such results may be accomplished in any suitable or usual manner.

From the foregoing it is evident that there must be in the commutator-ring twice as many blocks C C′ as there are sections B B′, &c., on the armature-ring, while in the close-circuited armatures as heretofore constructed, and as shown at *x*, there is but one block for every armature-bobbin, or, in other words, the number of bobbins and commutator-blocks are the same. It is also evident that there can be no short circuiting between the bobbins or sections of the armature when the ends of such bobbins are coupled or connected to separate armature-blocks in accordance with my invention.

What I claim as my invention is—

1. An armature for dynamo-electric ma-

chines, having each end of every bobbin thereof connected to a separate block in the commutator-ring and such blocks coupled together in pairs, so that a current generated in one of said bobbins must pass to and through a pair of commutator-blocks before passing to a succeeding bobbin, substantially as shown and described.

2. In combination with an armature of a dynamo-electric machine, a commutator therefor having twice as many blocks as there are bobbins or sections on the armature-ring, so as to provide for each end of every such section being connected to a separate commutator-block, such blocks being coupled in pairs, substantially as shown and described.

3. An armature for dynamo-electric machines, the bobbins or sections whereof are disconnected from each other, each end of every bobbin being connected to a separate block in the commutator, such blocks being coupled together in pairs, and thereby forming an indirect connection for said bobbins, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of February, 1882.

R. EDWARD BALL.

Witnesses:
GEORGE SMITH,
WILLIAM ALEXANDER.