

F. W. REEVES.
COMMUTATOR.
APPLICATION FILED DEC. 4, 1909.

994,480.

Patented June 6, 1911.

FIG. I.

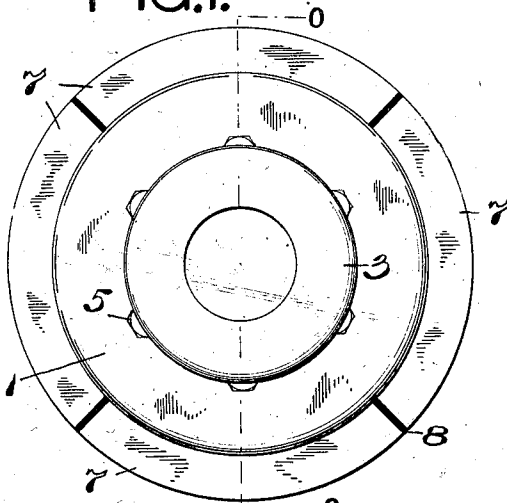


FIG. III.

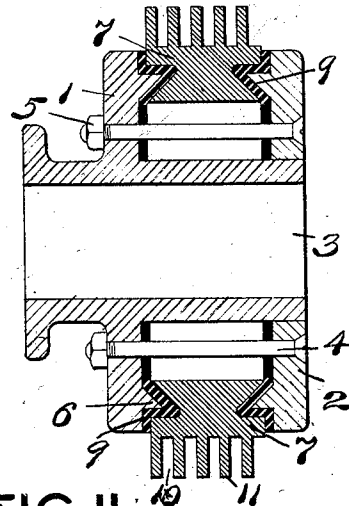


FIG. IV.

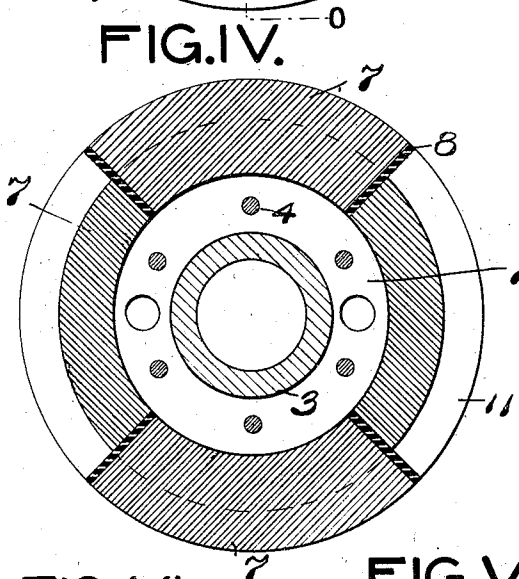


FIG. II.

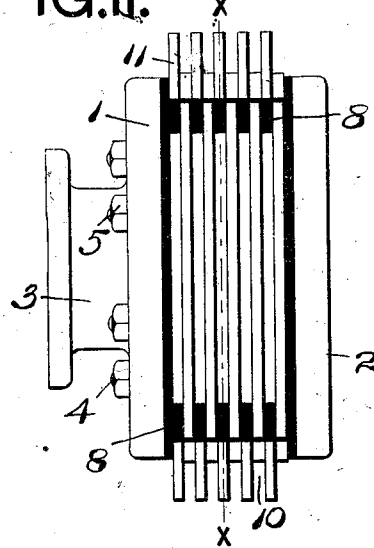
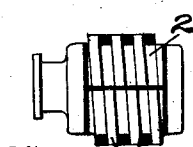
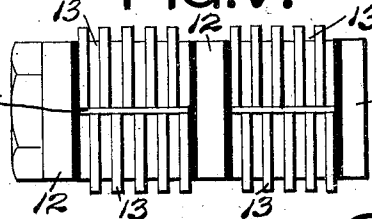


FIG. VI.



Witnesses
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FIG. V.



By

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UNITED STATES PATENT OFFICE.

FREDERICK W. REEVES, OF PITTSBURG, PENNSYLVANIA.

COMMUTATOR.

994,480.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed December 4, 1909. Serial No. 531,289.

To all whom it may concern:

Be it known that I, FREDERICK W. REEVES, citizen of the United States, residing at Pittsburg, N. S., in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Commutators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in commutators for electric generators and motors, and has for its objects the improvement thereof to eliminate or reduce the heating occasioned therein to a minimum, whether it be due to friction between the same and attending brushes, to sparking, or to other causes, by forming the operating periphery of the commutator in such manner as to cause the same to shift its contact with the brushes, as well as to cause a circulation of air thereabout during rotation.

With the above object in view, the invention consists of certain improvements, combination and arrangement of parts as will be hereinafter more fully described and pointed out in the appended claims.

In the accompanying drawings which form a part of this specification, I have illustrated my improved commutator in various ways, wherein—

Figure I, is a rear elevation of the same. Fig. II, a side elevation. Fig. III, a longitudinal section, on the line O—O of Fig. I. Fig. IV, is a transverse section, on the line X—X of Fig. II. Fig. V, is a longitudinal side elevation of a modified form of the commutator. Fig. VI, is a similar view of another modified form, said device having like detail parts, in all views, except Figs. V and VI, designated by numerals of like character.

The structure disclosed in said drawings, comprises a pair of clamping heads 1 and 2 between which the commutator segments or bars are secured, the former head having integral therewith a sleeve 3 to engage over the armature shaft where it is suitably secured in operative position, the latter head being removably fitted upon the free end of

the sleeve, said heads being secured to one another by means of bolts 4 passing there-through and provided with nuts 5, each head having formed upon its inner face portion an annular commutator segment retaining flange 6, said flange being of wedge shape in cross-section with the taper wholly, but not necessarily, upon the inner portion thereof.

The commutator segments, or bars, 7, are here shown as being but four in number, separated from one another by a strip of insulating material 8 extending thereacross, which segments are provided at each side with a groove corresponding in cross-section with that of the annular flanges of the heads, being insulated from the heads by the interposed insulating rings 9. These commutator segments or bars, are each provided upon their exterior or working surface with a plurality of alternate grooves and ribs 10 and 11 respectively, the raised portions or ribs constituting the working surfaces and are each of a width corresponding to the width of the grooves. In positioning these segments or bars, every alternate one is reversed, so as to cause the ribs of one to aline with the grooves of the adjacent one, as shown.

By constructing a commutator in the above manner, it will be readily apparent that when the brushes (not shown) are brought in contact with the ribbed working surface thereof that the points of contact will be alternately shifted in the passing of each succeeding segment under the brushes. This constant shifting of frictional contact, in a back and forth manner, together with the induced current of air occasioned by its alternate alined groove and ribbed segmental structure, allows the adjacent portions to alternately be subjected to friction and a blast of cool air, thus avoiding heating as well as reducing the tendency to spark during operation.

As the improvements are applicable to collector rings as well as commutators, I have, at Fig. V, shown a pair of such rings mounted upon a suitable holder 12, the various segments 13 which are assembled to form the respective rings each having the spaces therebetween filled with a strip of metal 14 so that the segments of each ring will be as a unit.

At Fig. VI, I have shown a side elevation of a modified form of commutator, in which

the grooves and ribs 20 and 21, respectively, are spirally inclined, so as to effect a more gradual change of contact with the brushes instead of an abrupt one as in the former

5 case.

Having thus shown and described my invention, what I claim and desire to secure by Letters Patent is:

1. In a commutator, a plurality of insulated segments each having a plurality of transversely disposed alternate ribs and grooves in its face.

2. In a commutator, a plurality of insulated segments each having a plurality of transversely disposed alternate grooves and

ribs in its face, the grooves of one segment alining with the ribs of the adjacent one.

3. In a commutator, a plurality of insulated segments each having a plurality of transversely disposed alternate grooves and ribs in its face, the grooves of one segment alining with the ribs of the adjacent one, said grooves and ribs being of the same dimensions in cross-section.

In testimony whereof, I affix my signature in presence of two witnesses.

FREDERICK W. REEVES.

Witnesses:

C. B. MILLIGAN,

R. S. HARRISON.