

No. 879,246.

PATENTED FEB. 18, 1908.

F. W. COX.
COMMUTATOR FOR ELECTRIC APPARATUS.
APPLICATION FILED APR. 4, 1906.

Fig. 1

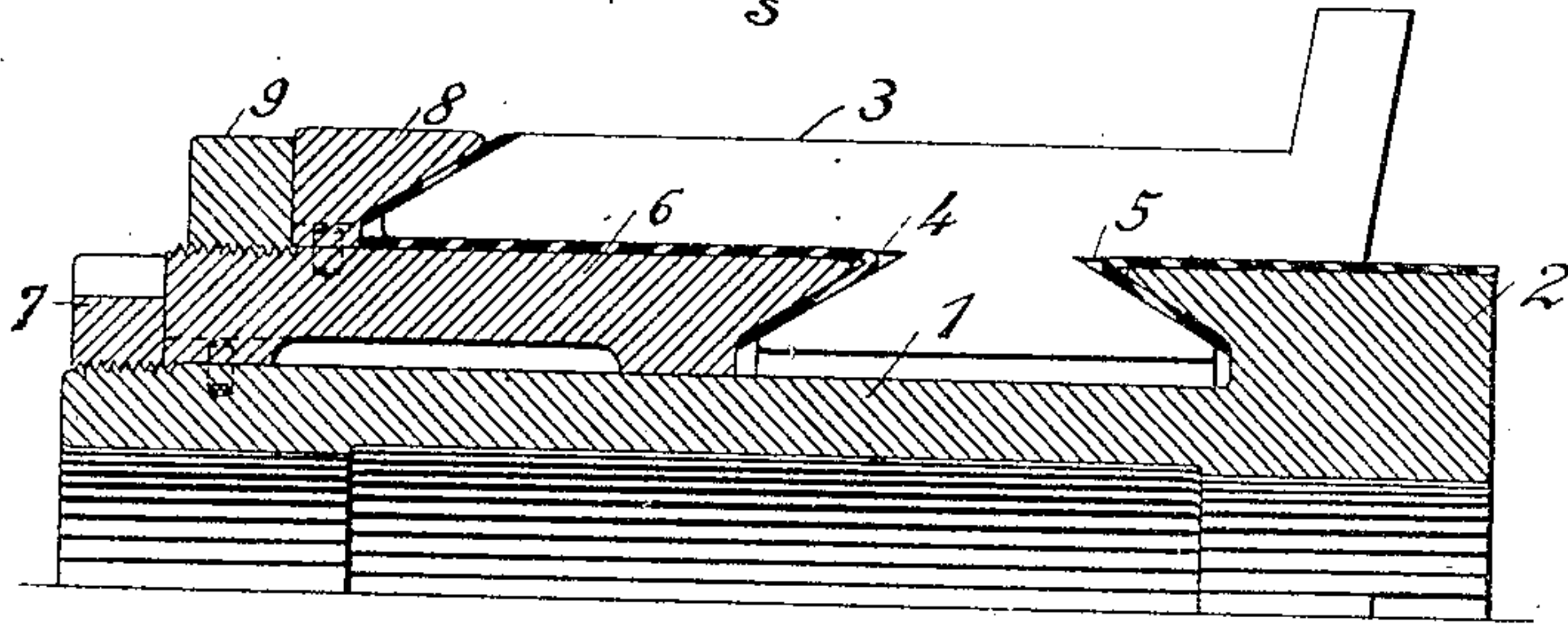


Fig. 2

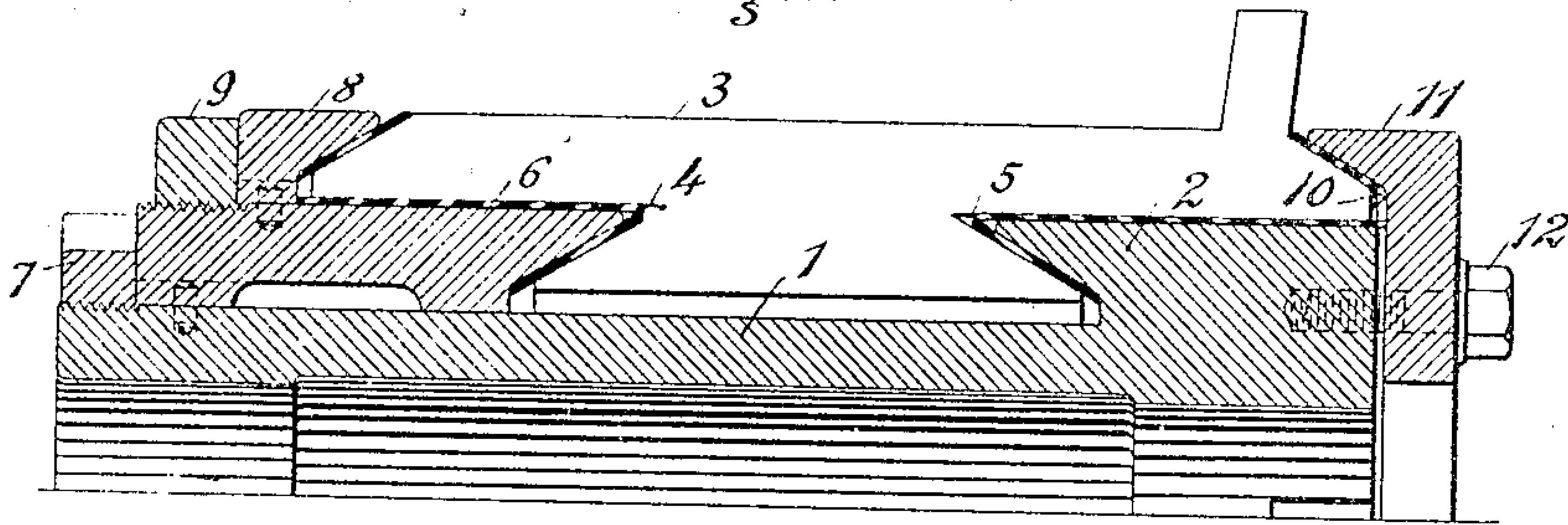
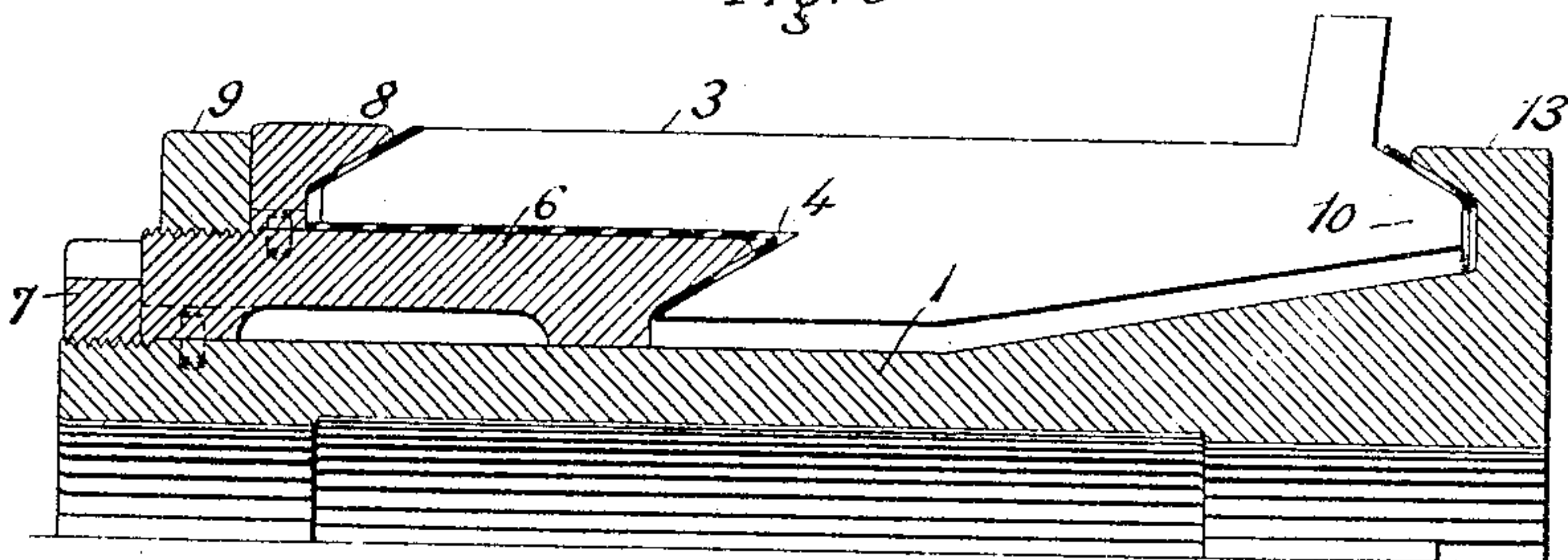


Fig. 3



WITNESSES:
Camille Boulin
R. J. Clearborn

INVENTOR
Frederick W. Cox
BY
Thos. J. Carr
ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERICK W. COX, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE
ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

COMMUTATOR FOR ELECTRIC APPARATUS.

No. 879,246.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK W. COX, 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 Commutators for Electric Apparatus, of which the following is a specification.

My invention relates to commutators for dynamo-electric machines and it has for its object to provide improved means for securing and supporting the segments of relatively long commutators such as are subjected to high speed operation.

Commutators for dynamo-electric machines, as heretofore constructed, have usually comprised a plurality of bars or segments, a bushing having an annular V-shaped projection at one end which was stationary relative thereto and an adjustable clamping ring near its other extremity. The clamping rings, which were forced toward each other by any convenient means, such as a nut, screw-threaded onto the outer extremity of the bushing, or clamping bolts which passed through holes in the rings, were adapted to engage complementary notches in the commutator segments. If this construction is used for very long commutators, such as are required for machines which are adapted to receive or to deliver relatively large values of electric current, the commutator segments show a tendency to bulge outwardly in the middle by reason of the centrifugal forces to which they are subjected, particularly in high speed operation. This difficulty has been avoided in some instances by fastening a ring around the middle of the outer surface of the commutator but such a ring diminishes the surface of the commutator which is available for engagement with brushes or current collectors and must be insulated from the commutator segments.

According to my present invention I fasten the commutator segments securely in position without the use of an external ring and employ a supporting bushing which is similar to those employed in the prior art.

Figure 1 of the accompanying drawings is a longitudinal section of one-half of a commutator the segments of which are supported in accordance with my invention and Figs. 2 and 3 are similar views showing modified supporting structures.

Referring to Figs. 1 and 2, the commutator illustrated comprises a supporting bushing 1 having an annular V-shaped projection 2 near its inner end and a plurality of bars or segments 3 which are provided with notches 4 and 5. The notches 5 are engaged by the annular V-shaped projection 2 which constitutes a relatively stationary clamping ring, and a clamping sleeve 6, which is adjustably mounted near the other end of the bushing 1, is adapted to engage the notches 4 in the segments. The sleeve 6 may be adjusted by means of a nut 7 which is screw-threaded onto the outer end of the bushing 1 and serves to force the stationary and movable clamping rings toward each other. The outer ends of the segments 3 are beveled and are engaged by a clamping ring 8 which is adjustably mounted upon the sleeve 6 and which may be adjusted by means of a nut 9 that is screw-threaded onto the outer end of the sleeve. The commutator segments of Fig. 2 are provided with projections 10 at their inner ends which are beveled and which may be engaged by a clamping ring 11. The clamping ring 11 is attached to the inner end of the bushing 1 by any convenient means, such as bolts 12.

The arrangement shown in Fig. 3 is similar to that of Figs. 1 and 2 except that the beveled end projections 10 of the commutator bars are engaged by an annular projection 13 near the inner end of the bushing 1 which corresponds to the projection 2 of the other figures. By making the notches 4 near the middle of the segments and making the sleeve 6 of considerable length, the commutator segments may be securely held in position irrespective of their length and of the speed at which the commutator is operated.

The supporting means illustrated is specially advantageous in that the adjustment of the movable clamping rings may readily be effected from the outer end of the commutator and in that the entire construction is relatively simple and durable.

Although I have shown and described a specific arrangement I desire that only such limitations be imposed as are indicated in the appended claims.

I claim as my invention:

1. In a commutator, the combination with a single set of unitary segments, and a support therefor having an integral clamping

ring at one end, of a main adjustable clamping ring and a supplemental adjustable clamping ring mounted upon the main adjustable ring.

5 2. In a commutator, the combination with a single set of unitary segments having beveled outer ends, and a support therefor, of an adjustable clamping sleeve which engages a notch near the middle of the segments, and a clamping ring adjustably
10 mounted on the sleeve to engage the beveled ends of the segments.

3. In a commutator, the combination with a single set of unitary segments having
15 beveled outer ends, and a support therefor having an integral clamping ring, of an adjustable clamping sleeve which engages notches near the middle of the segments, and

a clamping ring adjustably mounted on the sleeve to engage the beveled ends of the segments. 20

4. In a commutator, the combination with a single set of unitary segments having beveled ends, and a support having an integral clamping ring near its inner end which
25 engages notches in the segments, of an adjustable clamping sleeve mounted on the support, and an adjustable clamping ring mounted on the sleeve to engage the beveled ends of the segments. 30

In testimony whereof, I have hereunto subscribed my name this 28th day of March, 1906.

FREDERICK W. COX.

Witnesses:

C. B. AUDEL,
BIRNEY HINES.