

No. 656,177.

Patented Aug. 21, 1900.

J. T. H. DEMPSTER.

COMMUTATOR.

(Application filed June 8, 1900.)

(No Model.)

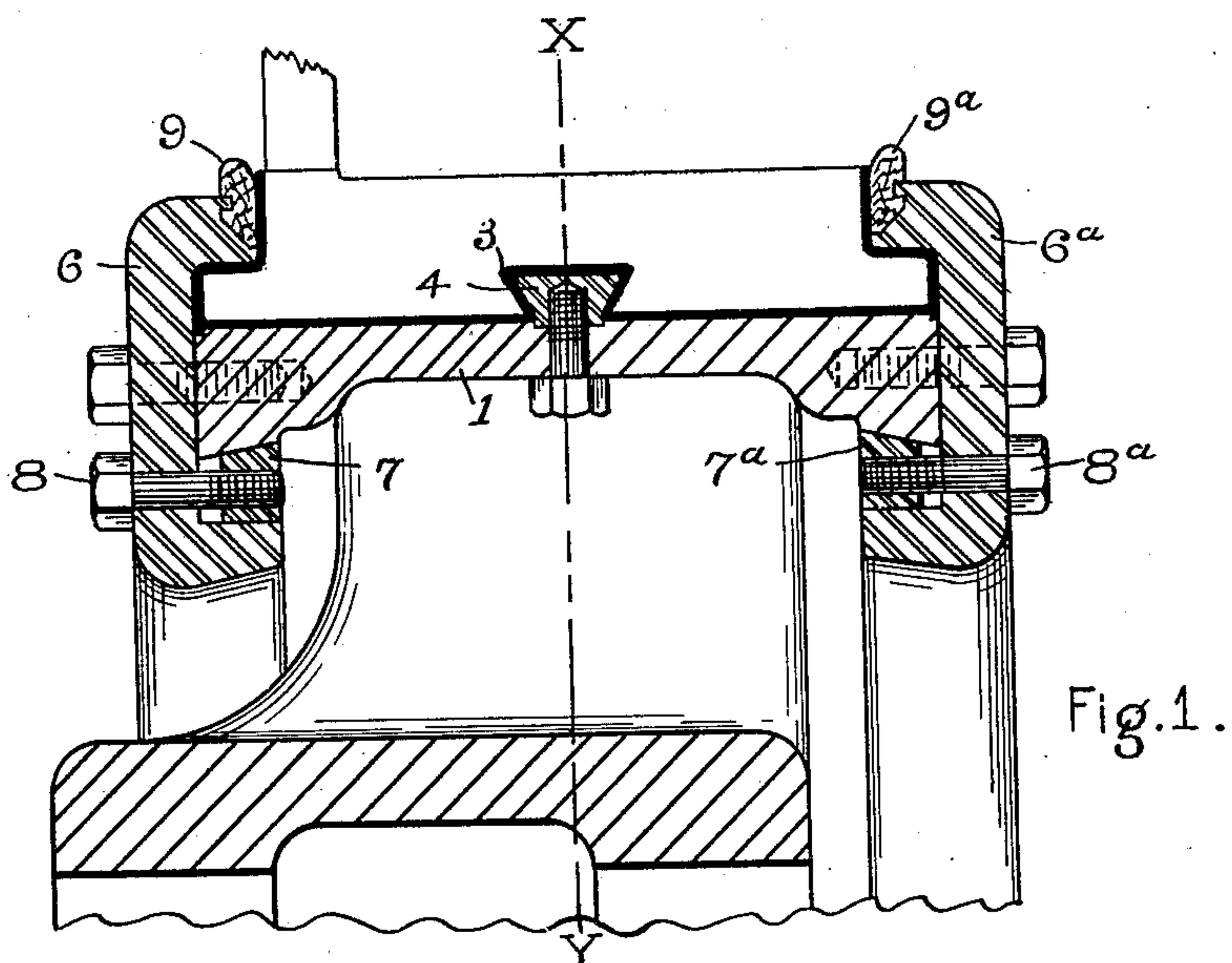


Fig. 1.

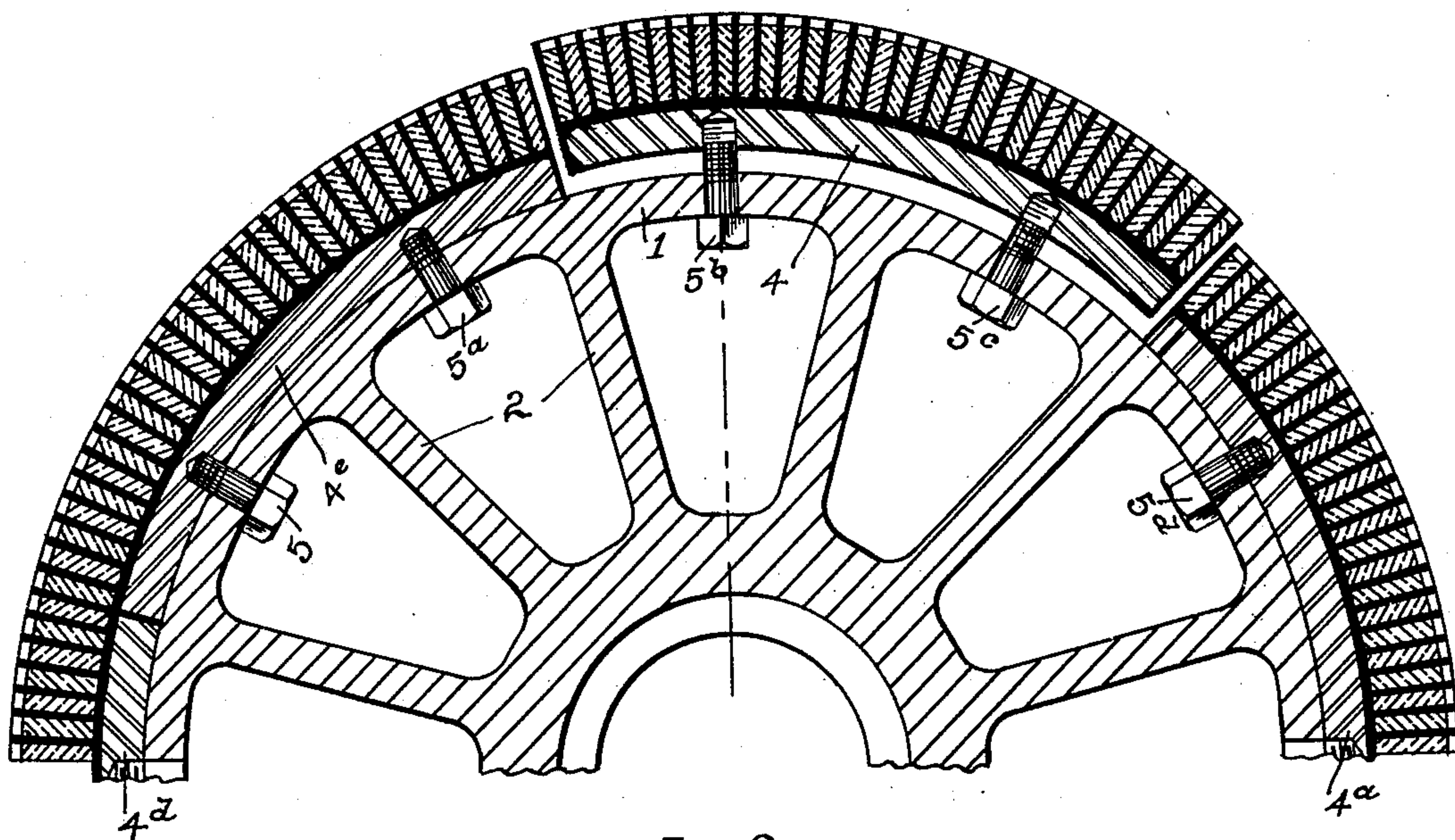


Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN T. H. DEMPSTER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, OF NEW YORK.

COMMUTATOR.

SPECIFICATION forming part of Letters Patent No. 656,177, dated August 21, 1900.

Application filed June 8, 1900. Serial No. 19,536. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. H. DEMPSTER, a subject of the Queen of Great Britain, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Commutators, (Case No. 1,515,) of which the following is a specification.

The object of this invention is to provide a commutator for an electric machine that will be free from distortion under centrifugal or other strains, thus tending to keep the several bars of the commutator in perfect alinement during the entire period of service of the machine. It frequently happens in the protracted operation of dynamo-electric machines or other electrical apparatus in which a commutator is employed that the commutator-bars work loose and warp out of shape, some bulging out beyond the circle bounding the others, thus causing uneven wear and damage to the brushes. Results of this character are especially liable to happen where the commutator is large and driven at a high speed, the centrifugal thrust contributing to its bending out of alinement with the other bars on the commutator. I remedy this difficulty by locking the several bars of the commutator together, so that no one of them can slip with relation to the others, by means of a key passing through the several bars, but insulated therefrom. The key is formed sectional, each segment supporting and locking a number of contiguous commutator-segments. I preferably provide the keyway at or near the middle of the length of the bar, so as to bind the latter down against the supporting-drum for the commutator-bars.

In assembling the commutator the keys, with their segments, are set successively in place and fastened by bolts on the inside of the cylindrical support. The keys are carefully insulated from the commutator-segments by a lining of mica or other satisfactory material on the inner walls of the keyway. The last segment inserted after the balance of the commutator has been assembled may be insulated by strips of mica or similar material fastened over the end walls of the key-segment and its commutator-segments and the combined parts slipped into

place and bolted fast, after the fashion of the balance of the segments.

My invention therefore comprises in its broadest phase a commutator the several bars of which are mechanically locked together and to the commutator-support below the brush-tread and at a point between their ends to prevent distortion or displacement from heat, centrifugal thrusts, or other causes.

In the drawings, Figure 1 is a cross-section of part of a commutator embodying my improvements, and Fig. 2 is a sectional view on a plane indicated by the line X Y of Fig. 1.

1 represents the drum upon which the commutator is built, being connected with a central hub to fit the shaft by means of a spider 2. This construction is purely selective, however, as it is only necessary in carrying out my invention that the inner surface of the drum shall be accessible for inserting and manipulating the bolts. Each commutator-bar is cut with a keyway 3, undercut or dovetailed, as indicated in the drawings, to receive a key 4 4^a, &c., which binds it down upon the supporting-drum. This keyway is preferably cut at a central part of the commutator-bar in respect to its length, and sufficient clearance is allowed to admit of insulating-lining between the key and its way, which may be formed of mica or compound, as desired. The key-segments, with their groups of commutator-segments, are applied to the drum and then firmly clamped thereto by means of bolts 5 5^a, &c., and the final section inserted, as indicated in Fig. 2, having cemented or shellacked to its end walls a sheet of mica extending the full length of the commutator-segment, and thereby effectually preventing cross connection between the commutator-segments already in place and the final segments being inserted. After the parts thus far described are all in place, the end plates 6 6^a of the commutator are drawn up against the bars, suitable insulation being interposed, and tightened by means of beveled blocks 7 7^a, which may be drawn up by bolts 8 8^a in a manner already known in the construction of commutators. Between the segments and the end plates may be inserted a beading of insulating material 9 9^a, which may be also in sectional form. This, however, constitutes

no novel feature of my invention and involves a construction already practiced in the art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

- 5 1. A commutator for an electric machine, having its segments locked together at their bases between the ends of the bars by an insulated metallic fastening device to prevent buckling.
- 10 2. A commutator having its segments bound at a point between its ends by a fastening device bolted to the commutator-support to prevent buckling.
- 15 3. A commutator having its segments mechanically locked together between their ends by an insulated bar.
- 20 4. A commutator having its several segments provided with a keyway between the ends, and an insulated key threading the keyway secured to the commutator-support.
5. A commutator having its segments provided with an undercut groove in the base be-

tween the ends, and an insulated key extending circularly through the grooves, and means for binding the key to the commutator-sup- 25 port.

6. A commutator having its bars mechanically secured together in groups at a point between the ends of the bars.

7. A commutator having its bars mechanically secured together in groups at a point 30 between the ends of the bars, the several groups being secured to the commutator-support.

8. A commutator having its bars secured in 35 groups to a segmental bar of insulated metal, the several groups being bolted to the commutator-support.

In witness whereof I have hereunto set my hand this 6th day of June, 1900.

JOHN T. H. DEMPSTER.

Witnesses:

BENJAMIN B. HULL,
MABEL H. EMERSON.