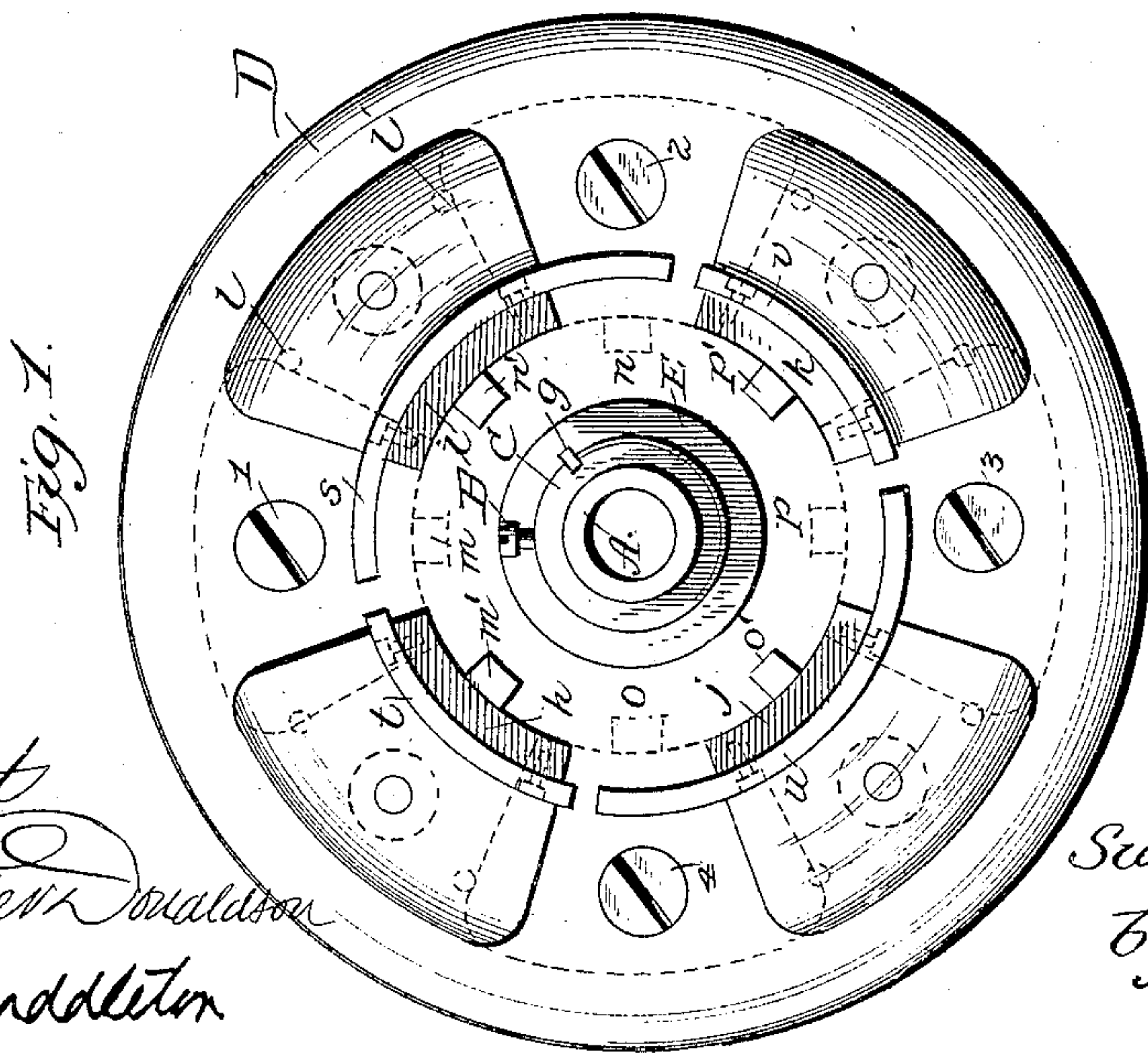
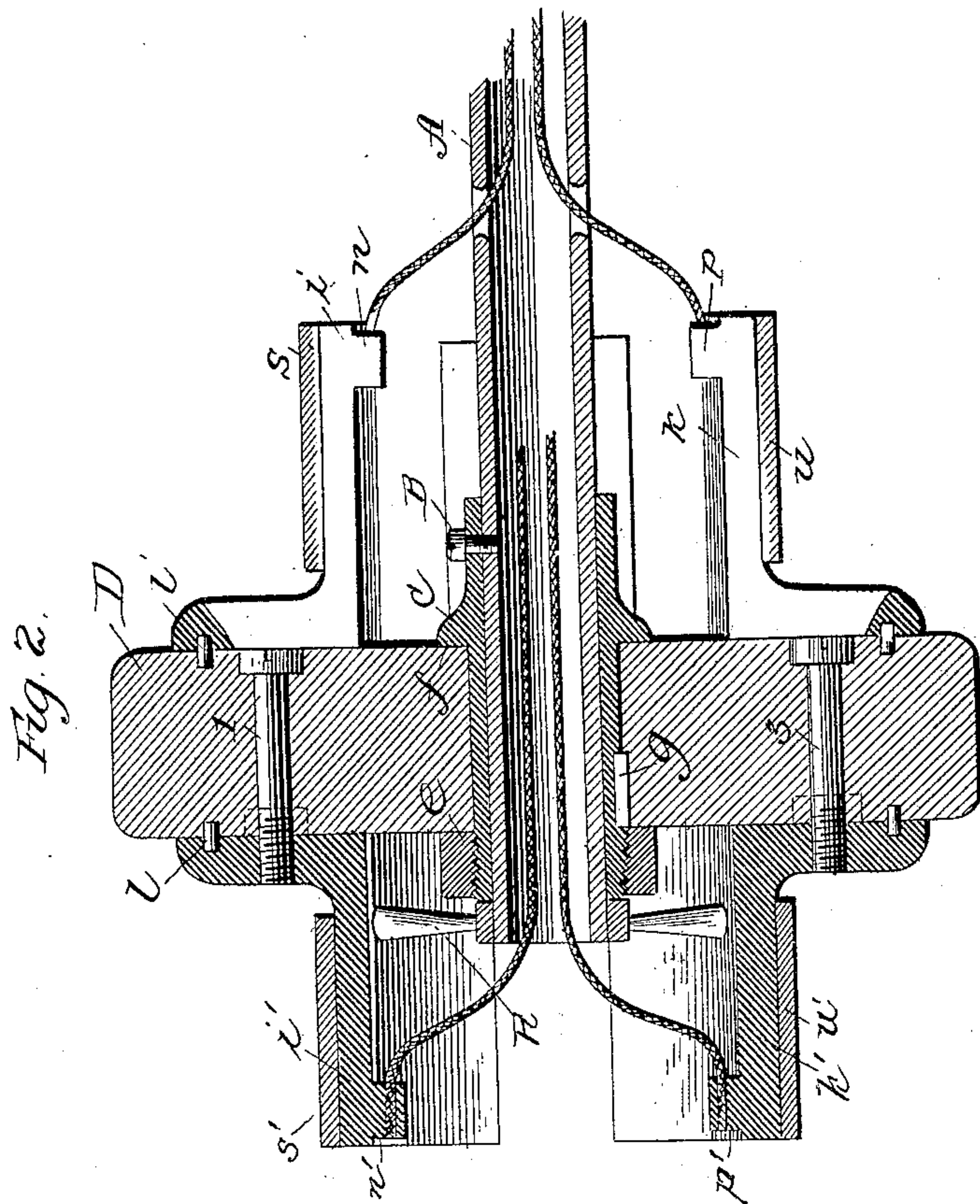


(No Model.)

S. H. SHORT.
COMMUTATOR FOR ELECTRIC MACHINES.

No. 408,265.

Patented Aug. 6, 1889.



Attest
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UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF COLUMBUS, OHIO.

COMMUTATOR FOR ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 408,265, dated August 6, 1889.

Application filed October 9, 1888. Serial No. 287,619. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY HOWE SHORT, of Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Improvement in Commutators for Dynamo-Electric Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improved commutator for dynamo-electric machines and electric motors; and its object is to provide a simple form of commutator, well ventilated by the use of air-currents, and practically unaffected by the heat or the flashing and sparking of the electric current.

Heretofore in cases where the insulating medium has been composed of inflammable material it often burns out under the heating of the parts, and I aim particularly to overcome this serious objection by using practically indestructible insulating material. I also aim to avoid the formation of recesses or ledges where dirt and oil may lodge and render short circuits liable.

In the drawings, Figure 1 represents a front elevation of my improved commutator, and Fig. 2 is a central vertical section through the same, a portion of the armature-shaft of the dynamo also being shown.

In the drawings, A represents the armature-shaft of the dynamo or motor. On this shaft is securely fastened by the set-screw B the metallic sleeve C. This sleeve carries a disk of insulating material D, which is preferably slate or some indestructible insulating material. This disk is clamped firmly on the sleeve C by the collars *e f* and provided with a key *g* to make it turn with the sleeve C. To one or both sides of the disk D are securely fastened the segments of the commutator *h i j k h' i' j' k'*, (*i'* and *k'* of one set only being shown,) in the manner shown in the drawings, by the screws 1 2 3 4, which pass through the slate disk D and enter the segments, the screws being headed and the segments adapted to the screw-threaded ends. The heads of the screws fit in countersinks

in the face of the insulating-disk. These segments are further secured in place by dowel-pins *l l'* on the inner faces of the segments, which fit corresponding recesses in the disk D. The segments in one side of the disk are placed out of line with those in the other side, as shown by dotted lines in Fig. 1. Lugs *m n o p* and *m' n' o' p'* project from the under faces of the segments, to which the wires from the various coils of the armatures are attached. These wires may come through a hollow shaft, as shown, or in any other convenient way well known to the art.

Upon the outer faces of the segments are securely fastened extra wearing-segments, (shown at *s t u v s' t' u' v'*, *s'* and *u'* of one set only being shown,) which may be replaced when worn out. Upon these wearing-segments the brush-contact is made. It is easily seen that the construction provides a hollow commutator in which there is nothing but air insulation between the segments, except where the attachment to the disk D is made. In the open ends of this hollow commutator I provide a fan R, made with wings set at an angle to either force air in or draw air out of the inner portion of the commutator, thus providing for excellent ventilation.

In this construction the segments of the commutator may be easily removed and replaced, as they are held simply by screws.

I claim as my invention—

In combination with an armature-shaft of a dynamo or motor, an insulating-disk D, angular segments *h i j k*, secured to each face alternating in position, each segment having a horizontal extension and a depending lug for attachment to the wires, and wearing-segments secured to the horizontal extensions, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIDNEY H. SHORT.

Witnesses:

FRANK L. MIDDLETON,
WALTER DONALDSON.