

N. W. STORER.
 ARMATURE WINDING FOR DYNAMO ELECTRIC MACHINES.
 APPLICATION FILED JAN. 3, 1906.

975,476.

Patented Nov. 15, 1910.

Fig. 1.

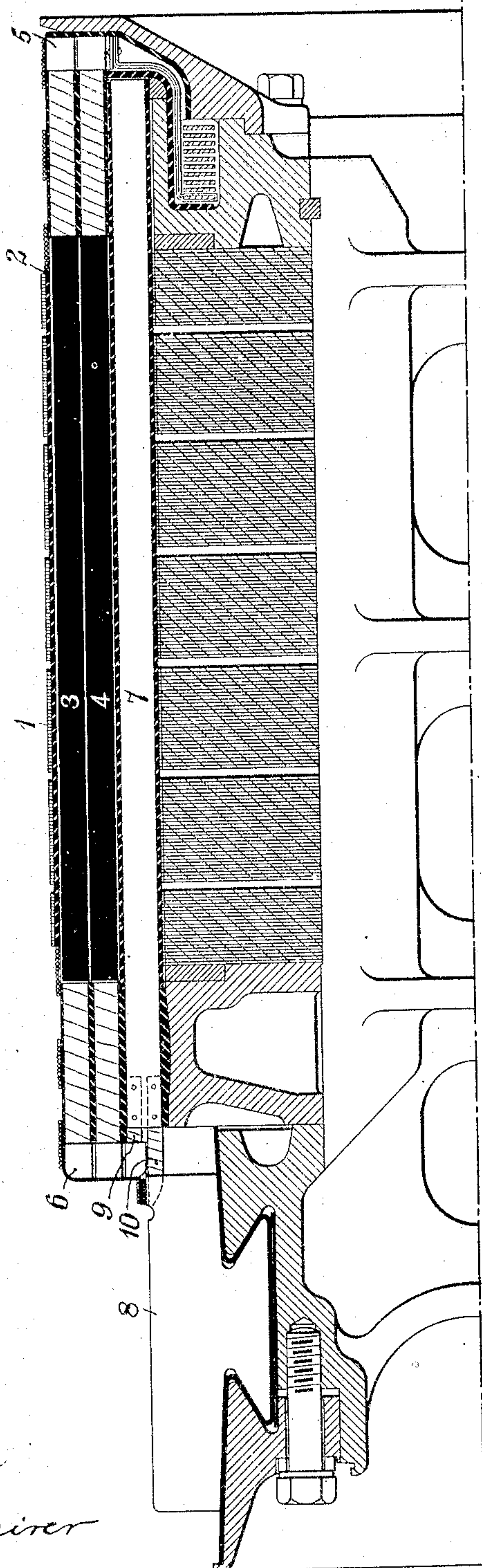


Fig. 3.

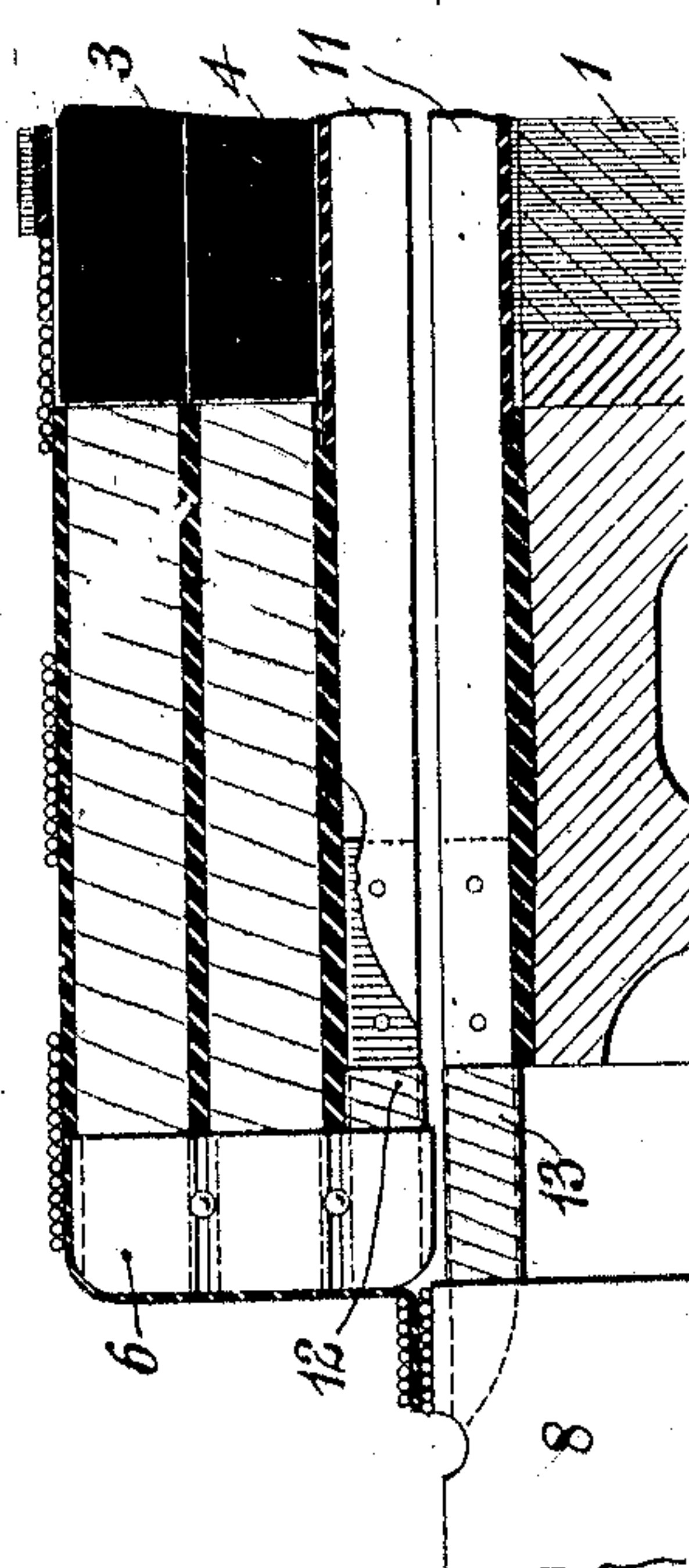
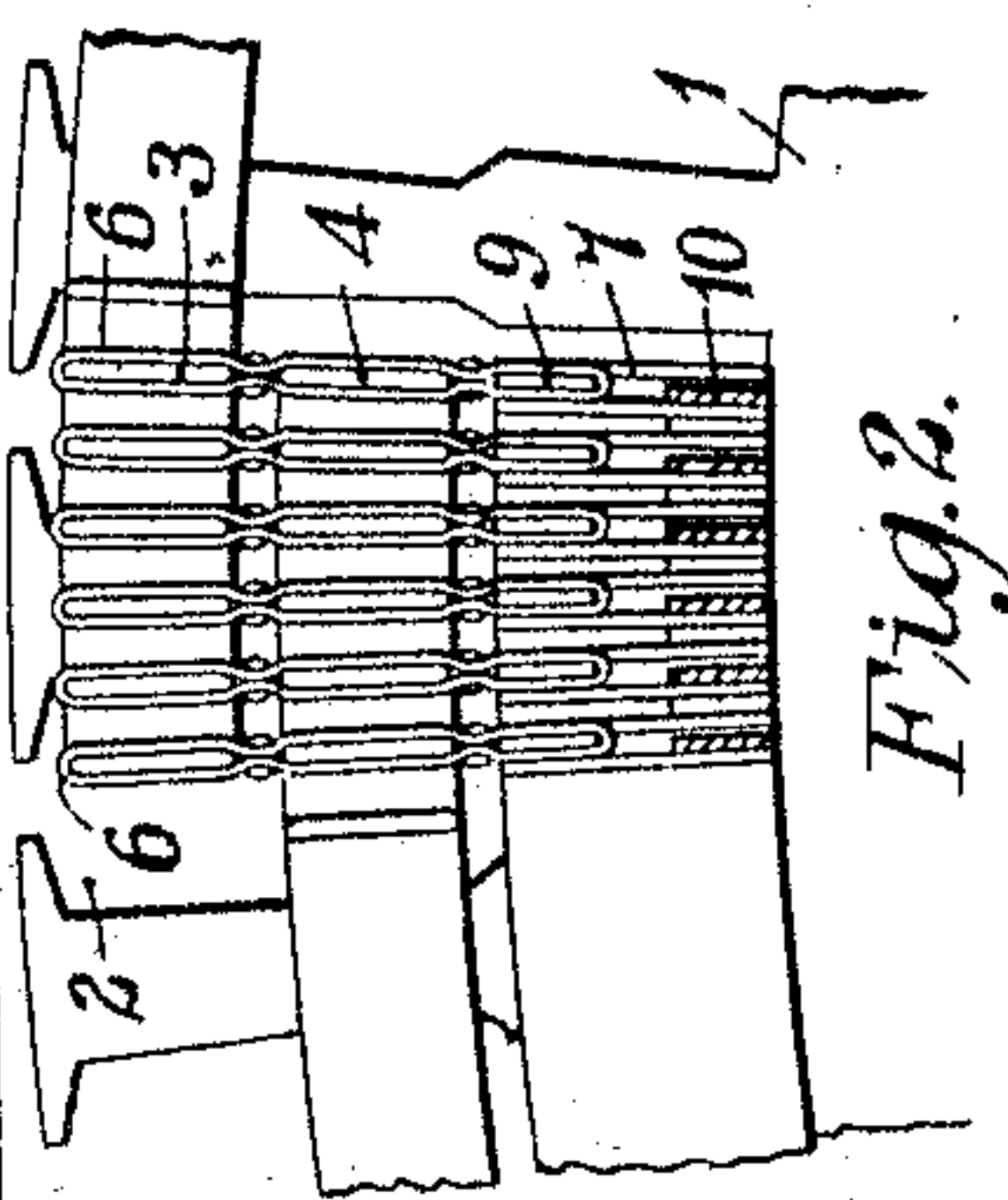


Fig. 2.



WITNESSES:

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ARMATURE-WINDING FOR DYNAMO-ELECTRIC MACHINES.

975,476.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed January 2, 1906. Serial No. 294,428.

To all whom it may concern:

Be it known that I, NORMAN W. STORER, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Armature-Windings for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to armature windings for dynamo-electric machines and it has for its object to provide novel and improved means for connecting armature windings to commutator cylinder segments, whereby excessive heating of the armature structure may be avoided.

In alternating current motors of the commutator type, and in some other dynamo-electric machines, comparatively high resistance conductors are frequently employed to connect the armature windings to the commutator segments for the purpose of introducing resistance into the local closed circuits that are formed in the armature windings when adjacent commutator segments are engaged by the brushes. The resistance conductors are usually composed of German silver or other high resistance material and are in the form of thin strips or ribbons which, in many cases, cannot be conveniently connected to the commutator segments and to the armature winding. They are quite frequently placed in the armature core-slots under the winding, the armature structure aiding in conveying away the heat that is generated therein, but the heat generated in the portions of the conductors that lie between the core structure and the commutator cylinder cannot be so readily dissipated. I accordingly propose to secure short copper or other low-resistance connectors to the ends of the high resistance conductors, the connectors being given such form that they may be joined to the other parts with comparative facility. The aforesaid connectors are preferably brazed to the German silver before the strips are inserted in the armature slots, when it is comparatively easy to make an excellent connection capable of withstanding high temperatures, and are of such size and shape that the connections which must be effected after the armature is wound, viz., with the commutator bars and with the adjacent conductors, may most readily be effected. The connectors will usually be made of the same ma-

terial as the parts to which they are connected, so that the joint may readily be sealed with solder.

In the accompanying drawing Figure 1 is a longitudinal sectional view through a portion of an armature constructed in accordance with my invention, Fig. 2 is a transverse section of the structure shown in Fig. 1, and Fig. 3 is an enlarged longitudinal sectional view of a portion of a modification of the armature shown in Figs. 1 and 2.

An armature core 1, having the usual peripheral slots 2, is provided with a winding comprising a plurality of coil sections 3 and 4 that are located, respectively, in the upper and lower portions of the core slots, certain coil sections being connected together at one end of the armature by means of clips 5. The other ends of certain other coil sections are connected together and to corresponding ends of German silver or other comparatively high resistance conductors 7 by means of clips 6, the conductors 7 being folded flatwise upon themselves and located in the armature slots beneath the coil sections, their other ends being connected to commutator segments 8. The ends of the resistance conductors are not connected directly to the commutator segments 8 and to the clips 6 but are riveted and preferably brazed to narrower copper or other low resistance connectors 9 and 10 that are better adapted to be connected to the commutator segments 8 and to the clips 6, the joints being preferably soldered. The connectors 9 and 10 extend for some distance along the sides of the resistance conductors and serve thereby to reduce the resistances and the amount of heating in these portions of the circuits. It will, of course, be understood that the clips 5 and 6 are preferably soldered to the ends of the coil sections as well as to the connectors in order to provide good electrical connection between these parts. The connectors that are attached to opposite ends of the resistance conductors are arranged one above the other, as shown in Fig. 2, in order to avoid crowding of such parts in the circumferential space provided for them.

In Fig. 3 I have shown a resistance conductor 11 that is bent edgewise upon itself, connectors 12 and 13 being attached to the ends thereof mainly for the purpose of reducing the resistance of the portion that lies

between the armature core and the commutator cylinder.

If the resistance conductors are not folded upon themselves, it may be expedient to connect the ends thereof directly to the armature winding at the end of the armature remote from the commutator without the use of special connectors, such connectors being employed only at the ends that are connected to the commutator cylinder, but it will, of course, be understood that the connectors may be employed at either or both ends of the conductors.

I claim as my invention:

1. The combination with a slotted armature core, a winding located in the core slots, reversely bent relatively high-resistance conductors located in the core slots beneath the said winding, and a commutator cylinder, of conductors of lower resistance and less width than the aforesaid conductors connected to the opposite ends thereof and respectively

to the armature winding and the commutator cylinder segments and arranged in two concentric rows.

2. The combination with a slotted armature core, a winding located in the core slots, reversely bent relatively high-resistance conductors located in the core slots beneath the said winding, and a commutator cylinder, of conductors of lower resistance than the aforesaid conductors connected to the opposite ends thereof and respectively to the armature winding and the commutator cylinder segments and arranged in two concentric rows.

In testimony whereof, I have hereunto subscribed my name this 30th day of December, 1905.

NORMAN W. STORER.

Witnesses:

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