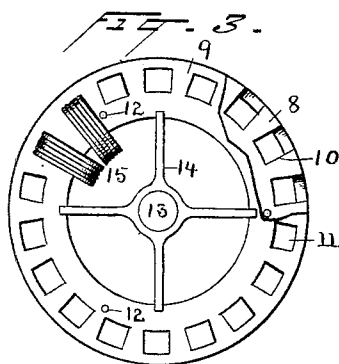
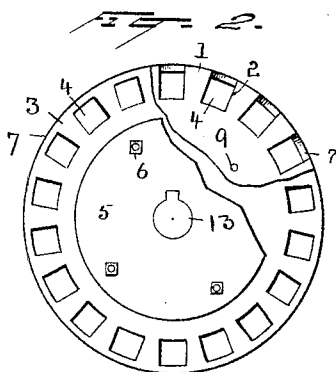
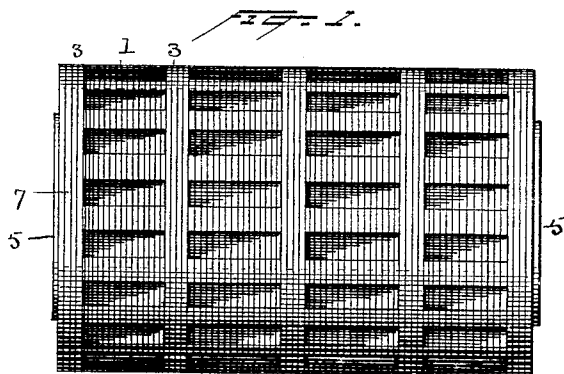


(No Model.)

H. F. PARSHALL.  
ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 480,740.

Patented Aug. 16, 1892.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 480,740, dated August 16, 1892.

Application filed December 11, 1891. Serial No. 414,719. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE FIELD PARSHALL, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Armatures, of which the following is a specification.

The present invention relates to the construction of armatures for dynamo-electric machines or electrical motors. The armature to be described is of the drum or ring type, having teeth and grooves around its periphery and adapted to have the armature-coils wound in the grooves, as in the well-known Pacinotti armatures. The main advantage of armatures of this class over those with smooth cylindrical cores is that the metal of the core comes nearer the polar faces of the field-magnet, and this lessens the magnetic resistance, so that less energy is required to excite the field-magnets, or so that with the expenditure of a certain energy a much less weight of wire is required in the magnetizing-coils. The advantage of the core with toothed or grooved periphery over the type of armature with perforations near its periphery, sometimes spoken of as the "Wenstrom type," is in the facility with which the armature-conductor can be insulated from the metallic body of the core and the facility with which the grooves are formed. Furthermore, with the toothed or grooved armature-core, the wire is easily inspected during the process of winding, so that any faulty insulation can at once be discovered and remedied. In armatures having the conductors led through holes of the character above referred to this is not the case, since when the conductor is once drawn in it is impossible to see whether or not the insulation is abraded or otherwise imperfect. In armatures having the toothed or grooved cores, after the armature-coils are in place, it is customary to secure them by transverse bands or wires passing around the armature, and it frequently happens that these bands or wires become broken, thereby allowing the wire of the coil to get out of place. The breaking of these bands or wires may be due to unequal expansion, caused by heat between the bands

or wires and the core itself or to the centrifugal strain due to rotation of the armature, or it may be due to other causes. This difficulty I propose to overcome by putting between the toothed disks of which the core is built up a number of disks or plates with their peripheries entire, but having perforations near their peripheries, the perforations being so arranged as to come in line with the grooves formed by the teeth of the other disks, the metal on the outer side of the perforations serving the function of the binding bands or wires already referred to.

In the accompanying drawings, which illustrate my improvement, Figure 1 is a plan view of the armature-core. Fig. 2 is an end view of an armature-core with parts broken away, and Fig. 3 is an end view of a different form of armature.

In building up my armature I provide two forms of disks or plates. The plates 1 are formed with notches 2 at regular intervals around their peripheries, while the plates 3 have instead of the notches perforations 4 so arranged that when the plates are put together in the order indicated in Fig. 1 the perforations 4 will come in line with the notches 2. The plates 1 are of iron, and may be insulated or uninsulated from each other, and it is evident that the form and number of the teeth may be largely varied. The plates 3 may be of magnetic or non-magnetic material, such as iron, fiber, or bronze. When the desired number of plates have been placed alternately, as indicated in Fig. 1, to give the desired length of armature-core, the plates are clamped together by any suitable means. Such means are indicated in the drawings by disks 5 at the ends of the armature, and the bolts 6, passing through the core and serving to draw the disks together. The disks 5 are shown as terminating just within the line of perforations 4; but they may be of the same diameter as the disk 3 and have holes corresponding therewith. It will be seen that the core, built as desired, is practically a toothed or grooved core—that is, a core on which the coils will be open to the air and to inspection, but that the disks 3 provide means for secur-

ing the armature-coils in the open grooves without the use of the bands or wires extending around the core, as above indicated, since the coils are threaded through the perforations 4, and the material of the disks at the points 7 serve the function of the binding-wire. With this construction, when the armature-coils are being wound, the wire is open to inspection very nearly to the same extent that it is in the regular toothed armature, while at the same time the wires are secured to the periphery of the core as efficiently as with those cores made up entirely of perforated disks.

The armature shown in Fig. 3 differs from that described above only in the fact that rings 8 9 are employed in place of disks 1 3, the rings 8 being provided with notches 10 and the rings 9 with perforations 11. In this armature the rings are shown secured by bolts 12, passing directly through the core, and the armature is supported on the shaft 13 by any suitable spider 14. In this figure two armature-coils 15 are shown in place, the other coils being omitted from this figure, and all the coils being omitted from Fig. 2.

It will be apparent that the gist of my improvement does not reside in the particular details of form and arrangement described, but that it consists, broadly, in the interposi-

tion of the perforated sections in the length of the armature.

What I claim is—

1. A toothed or grooved armature-core with one or more perforated sections interposed between grooved sections, said perforations coming in line with the grooves, substantially as described.

2. An armature-core built up of alternating sections of notched and perforated plates, substantially as described.

3. The combination of several notched iron plates placed together so that the notches are in line with each other, forming grooves, and plates having perforations, said plates being interposed at one or more points between the notched plates, the perforations coming in line with the notches, substantially as described.

4. An armature-core built up of sections, a part of the sections being perforated and having their peripheries entire, and the other sections being open in line with said perforations, substantially as described.

This specification signed and witnessed this 7th day of December, 1891.

HORACE F. PARSHALL.

Witnesses:

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