J. D. IHLDER.

ARMATURE CORE.

APPLICATION FILED DEC. 8, 1904.

996,927. Patented July 4, 1911.

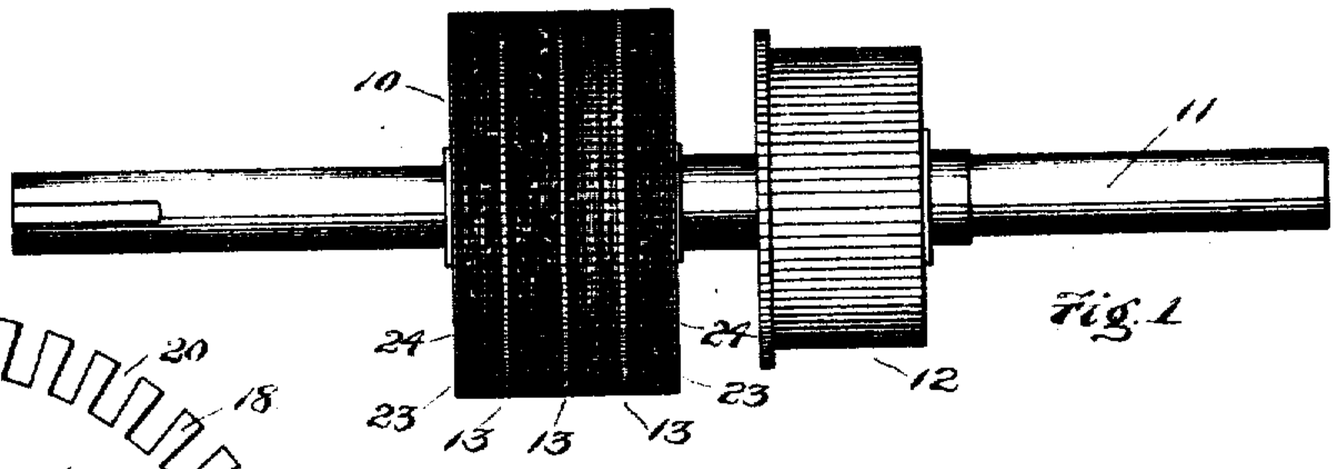


Fig. 1

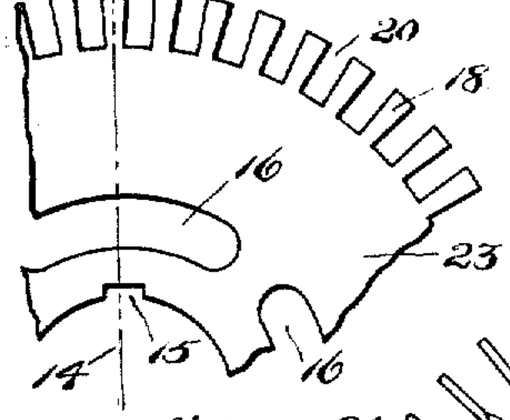


Fig. 2

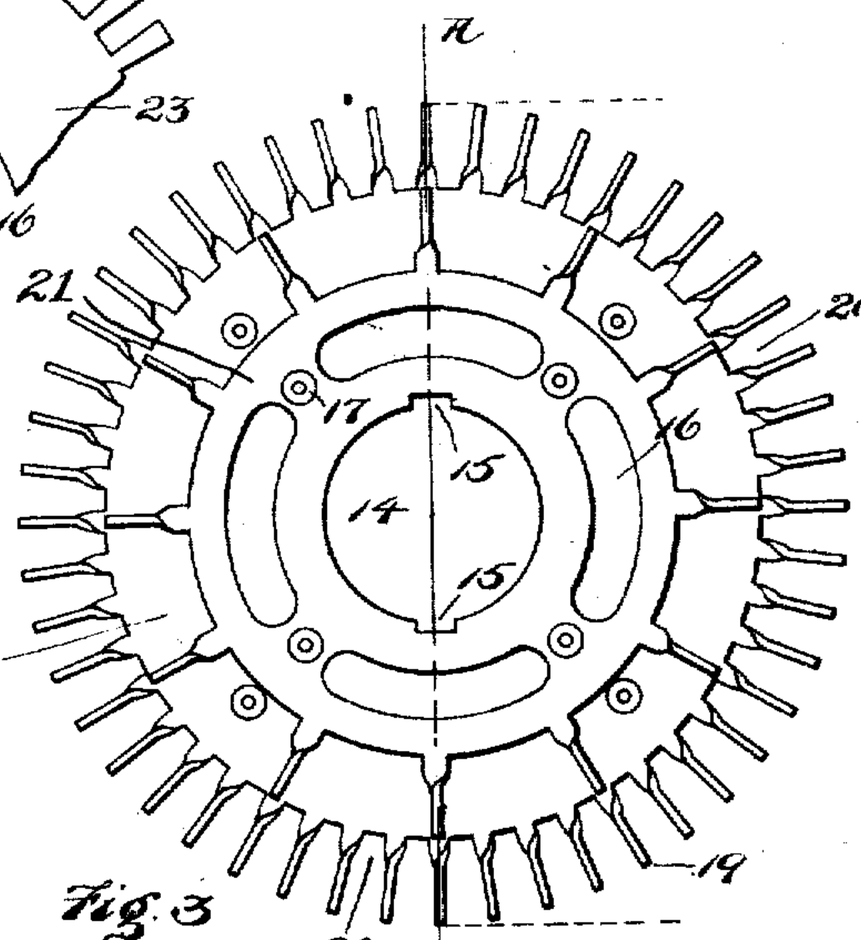


Fig. 3

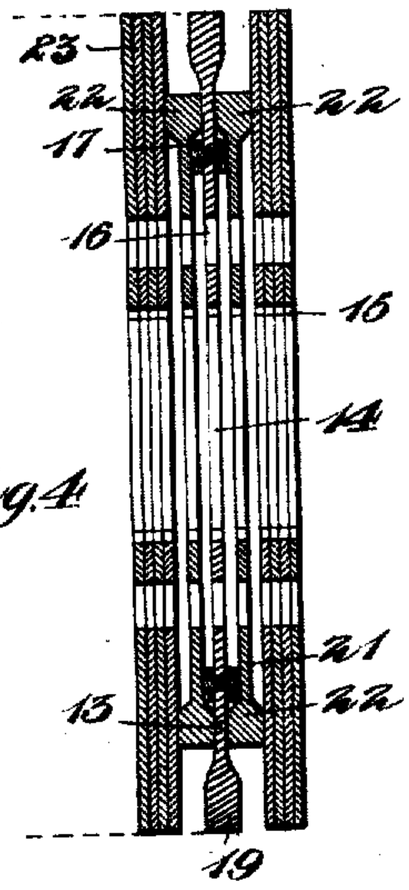


Fig. 4

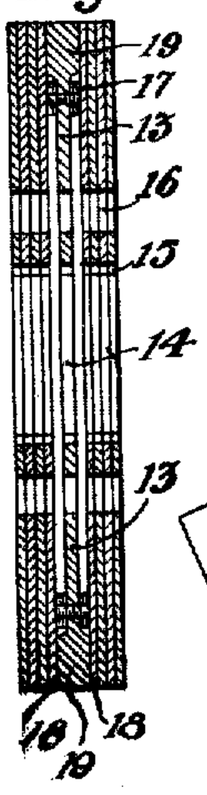


Fig. 8.

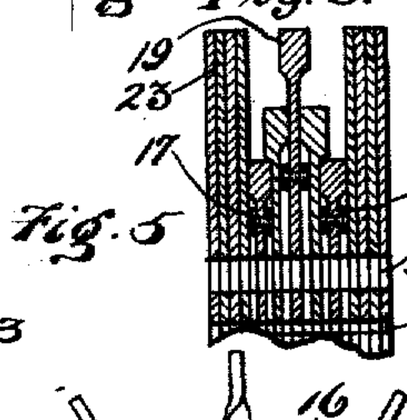
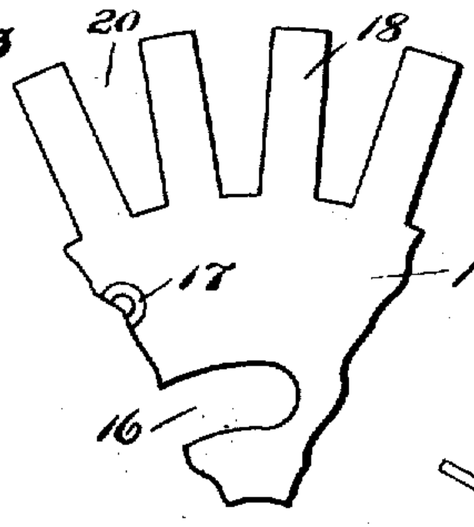


Fig. 5



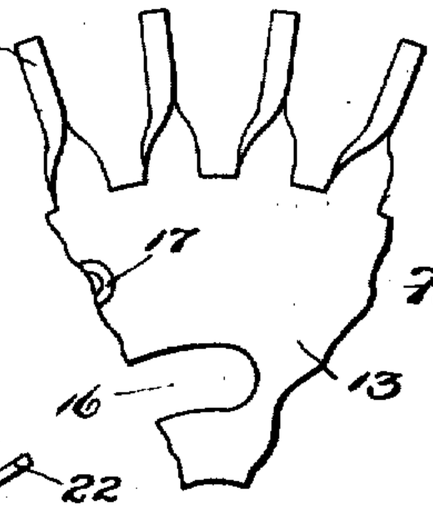


Fig. 6

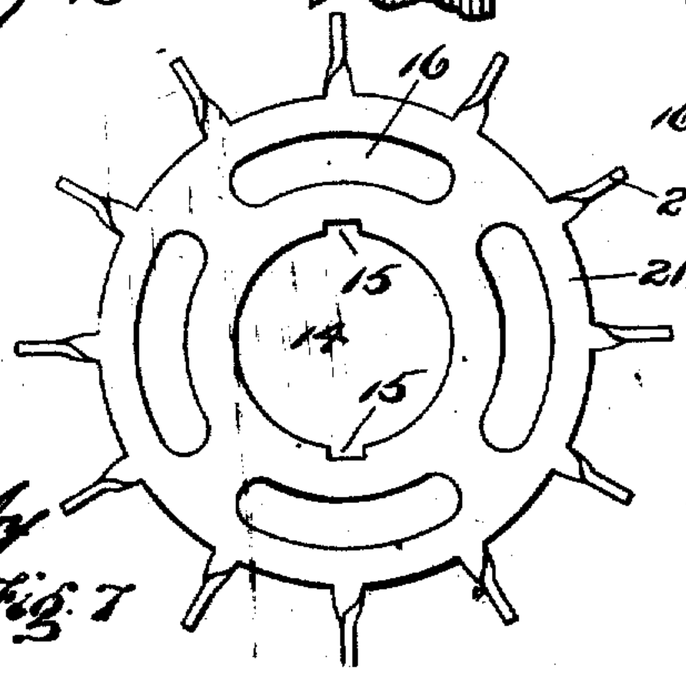


Fig. 7

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ARMATURE-CORE.

996,927. Specification of Letters Patent. Patented July 4, 1911.

Application filed December 8, 1904. Serial No. 236,053.

To all whom it may concern:

Be it known that I, JOHN D. IHLDER, a citizen of the United States, residing at New York city, county of New York, State of New York, have invented certain new and useful Improvements in Armature-Cores, of which the following is a specification.

My invention relates to armature cores such as are used in dynamo-electric machines and its purpose is to provide a ventilated core of improved construction.

I will describe a core constructed according to my invention and point out the novel features thereof in claims.

Referring to the drawings, Figure 1, is a side elevation of an armature core constructed according to my invention. Fig. 2 is a view of a portion of one of the disks of which the armature is built up. Fig. 3 is a view in side elevation, showing one of the large spacing disks, and also a superposed disk of smaller diameter. Fig. 4 is a sectional view of a portion of an armature core where the disks shown in Fig. 3 are used, and the section being taken through the line A—B of Fig. 3. Figs. 5 and 6 are enlarged views of a part of one of the large disks shown in Figs. 3 and 4. Fig. 7 is a view in side elevation of one of the smaller or auxiliary spacing disks, which may be used in conjunction with the large disks. Fig. 8 is a sectional view of one form of my invention in which the large spacing disks are employed. Fig. 9 is a fragmentary sectional view showing the use of a plurality of spacing disks of successively decreased diameters.

Like characters of reference designate similar parts in all of the figures.

The armature core shown in Fig. 1 comprises a number of disks 23 of suitable material, such as soft iron, mounted upon a shaft 11 in the usual manner. The outside disks 24 are preferably made of thicker material than the others. These disks may be slotted on their outside periphery in the well-known way for the purpose of forming longitudinal grooves in the finished core into which wires or other electrical conductors may be placed. Fig. 2 is a partial view of one of these disks showing a preferred form. The periphery is formed into alternate teeth 18 and grooves 20. The sides of the grooves are usually made parallel so that they are of the same width at the top and the bottom. The center of each disk is cut away as shown at 14 to fit a part of the shaft 11 and one or more keyways 15 are provided to fit over a feather or feathers on the shaft 11. A series of slots 16 is formed through the surface of each disk. The outside disks 24 are substantially the same as those just described but it is preferable to make them of thicker material for the purpose of strengthening the structure. At one or more places in the core are inserted spacing disks 13 the construction and purpose of which will be fully set forth hereinafter. The disks may be fastened together in any of the well-known ways. A commutator 12 is also shown affixed to the shaft 11, but it forms no part of this invention.

The spacing disks 13 are usually made by taking a disk like those already described but with the slots 20 cut deeper and with the teeth 18 instead of the slots 20 made with parallel sides. Fig. 5 is an enlarged view of a portion of a disk 13 showing the shape of the teeth and slots just described. The outer portion of each tooth 18 is then turned or twisted around 90° so as to be at right angles to the plane of the disk. Then they are in the position shown at 19 in Fig. 6. This is also shown clearly at 19 in the sectional views Figs. 4, 8 and 9. These spacing disks also have the openings 16 made in them in the same relative position as are the openings 16 in the disks 23. Buttons 17 may be provided on the spacing disk 13 as shown in Figs. 3 and 4. They are attached to both surfaces of the disk and are of such thickness that the combined thickness of the two buttons and the disk is the same as the width of the teeth 19.

When the core is assembled the openings 16 will form longitudinal passages through it so that the core is partially hollow. The spacing disks 13 hold the laminations apart at one or more places on the core and provision is thus made for the passage of air through the core so that it is effectually ventilated. The twisted teeth 19 rest upon the teeth 18 of the armature disks as shown in Fig. 8 so that they do not interfere with the slots in the core which receive the electrical conductors. The buttons 17 which are sometimes added to the spacing disks 13 also serve the purpose of holding the armature disks a fixed distance apart and when used tend to make the structure more rigid.

The auxiliary spacing disks 21 shown in Figs. 3, 4 and 7 of the drawing are sometimes used in conjunction with the main spacing disks 13. The outside diameter of these auxiliary spacing disks is practically equal to the diameter of a circle whose circumference is indicated by the outer row of buttons 17 and it is intended to put an auxiliary disk inside the main disk. When the armature core is of large diameter several of these auxiliary disks may be employed, (Fig. 9) each of smaller diameter than the other and fitting within the circumference of a given circle as above indicated. In this manner the spacing disks and core disks are prevented from buckling and the ventilating spaces are kept open.

I have described the above means for constructing a ventilating armature as applied to an armature core of a specific form, but it is applicable also to other forms wherever it is desired to provide means for ventilation and circulation of air.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of my invention, and I desire therefore not to be limited to the precise construction herein disclosed.

Having thus fully described my invention, what I claim and desire to have protected by Letters Patent of the United States is:—

1. In an armature core for dynamo-electric machines, the combination of laminations, and a plurality of spacing disks of successively reduced diameters located adjacent each other and having their opposing faces separated by air spaces.

2. In an armature core for dynamo electric machines, the combination of laminations, and spacing members of successively decreased sizes, said spacing members having laterally projecting portions forming contact with each other but holding their body portions spaced apart.

3. In an armature core for comparatively large dynamo-electric machines, the combination of a plurality of disks, and a plurality of spacing disks of different diameters and each having laterally projecting teeth.

4. An armature core provided with the usual disks, and a plurality of spacing disks, some of the members of which are of different diameters from the others, and each provided with lugs projecting laterally from the plane of its surface.

5. An armature core having the usual disks, and a plurality of spacing disks, some of the members of which are of different diameters from the others, and each provided with teeth twisted so as to present a projecting edge from the plane of its surface.

6. An armature core having the usual disks, and a plurality of spacing disks, several members of which are of successively reduced diameters, and each having lugs projecting laterally from the surface of such spacing disks.

7. In an armature for dynamo electric machines, the combination with the usual laminations, of a spacing disk of the size of said laminations or nearly so and comprising laterally projecting teeth, and an additional disk of smaller diameter and having lateral projections in contact with said first-named disk.

8. The combination with laminations, of a spacing disk having lateral projections, a smaller spacing disk having projections in contact with said first-named spacing disk, and spacing buttons located between the body portions of the larger and smaller disks.

9. The combination with a central spacing disk for laminations of an armature core, of spacing disks of reduced diameter on opposite sides of said central disk and provided with peripheral lateral projecting spacing teeth, and spacing lugs between the central disk and the disk on either side of the same.

10. The combination with a spacing disk for the armature of a comparatively large dynamo-electric machine, said spacing disk having peripherally and laterally projecting teeth, of a second spacing disk of reduced diameter and having peripherally and laterally projecting teeth in contact with the body portion of said first-named disk, and spacing devices between said disks located nearer the axis of the armature than said spacing teeth.

11. The combination with a spacing disk for a comparatively large armature of a dynamo-electric machine, of a spacing disk of reduced diameter and having peripheral spacing members in contact with the body portion of said first-named disk, and spacing buttons or lugs between said disks inside the circumferences of said peripheral spacing members.

12. The combination with the usual laminations of a core for dynamo-electric machines, of a spacing disk therefor having laterally twisted peripheral teeth, and two auxiliary spacing disks each having laterally twisted projecting teeth in contact with the body portion of said first-named disk.

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