



No. 572/31.

APPLICATION DATED

5th February, 1931.

INCLUDING COGNATE

No. 2128/31.

Applicant (Actual Inventor) ... FEARON HENRY JOPLIN.
Application and Provisional Specification Accepted 18th February, 1931.
No. 572
Application and Provisional Specification Accepted 13th July, 1931.
No. 2128
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of "Patents Act 1903-1921."
Acceptance Advertised (Sec. 50) ... 11th February, 1932.

Classes 02.4; 02.3.

Drawing attached.

COMPLETE SPECIFICATION.

"Improvements in electric motors."

I, FEARON HENRY JOPLIN, of 18 Wentworth Street, Eastwood, near Sydney, New South Wales, Australia, Engineer, hereby declare this invention and the manner in which it is to be performed, to be fully described and ascertained in and by the following statement:—

This invention relates to electric motors of small dimensions such as are used for driving domestic sewing machines, domestic culinary devices, knife grinder wheels and the like. It has been devised with the object of simplifying and cheapening construction whilst submitting to some loss in efficiency. The almost negligible cost of current consumed in motors of this type makes it unnecessary to consider high efficiency in their design, but low cost and simplicity are material objectives.

The stator is a yoke ring or frame constructed of two semi-cylindrical ring castings with integral interior pole pieces. The two halves are fitted together with a non-magnetic shim, as for instance paper, in the diametral joint, to break magnetic continuity. The split extends centrally through

diametrically opposite pole pieces so that one half of each pole piece is on a different sector of the stator yoke ring from the other half of it. Excessive heating referable to eddy currents in the pole pieces is reduced within practical limits because of the breaking of magnetic continuity in the pole pieces as well as in the stator yoke ring.

The armature may be a ring armature but for low cost low power motors is a cast trefoil with each of the three pole pieces sawn through from the shaft hole to the periphery, in the plane of the shaft. The saw cuts do not extend fully across the pole pieces; sufficient metal is left at one end of the armature to support the otherwise divided-up pole pieces as an integral structure. A non-magnetic bush is fitted in the shaft hole of the armature. In the case of ring armatures the dividing saw cuts are alternated end for end in the neighboring armature teeth.

In the drawings left with Provisional Specification in Application No. 572/31:—

Fig. 1 is a transverse section through the field magnet core. The adjacent half pole

pieces A carry a winding B as if they were one core, and the other adjacent pole pieces C are similarly wound, as shown at D;

Fig. 2 is an end elevational view of the 5 armature core;

Fig. 3 is a side elevational view of the armature core with end bracing rings E separated by insulating material seated in ring grooves and held by nuts on the shaft. 10 The dividing slots G and H are cut right hand and left hand respectively, leaving the toothings isolated from each other except by integral connections at alternate ends.

Fig. 4 is a section on the line 4—4 Fig. 2; and

Fig. 5 is an elevational view of one of the bracing rings.

The accompanying drawing, (Fig. 6) is 20 a perspective view of a "trefoil" armature core in which N are the pole pieces, O the oval stems of the pole pieces, P the hub, Q a bush of non-magnetic metal for magnetically isolating the shaft from the armature core, and R the saw slots which divide 25 the pole pieces and the hub longitudinally but so as to leave an uncut portion at the distant end to provide mechanical support for the pole pieces on the hub. The saw slots extend through the hub as well as 30 through the pole pieces.

The subdivision of the field yokes which carry the pole pieces of dynamo electric machines is a well known practice which is 35 followed chiefly to obtain certain mechanical advantages. It is believed, however, that in all known cases the yoke is divided intermediate the pole pieces. In the construction used in the present invention division 40 of the field structure is effected for electrical reasons, and the divisions cut the pole pieces, so that each pole piece becomes a two-part member with a magnetic insulating film in its joint face.

45 Having now fully described and ascertained my said invention and the manner

in which it is to be performed, I declare that what I claim is:—

1. A dynamo electric machine of limited dimensions having internal heat losses referable to eddy currents in the field and armature cores reduced by splitting said cores in the plane of the shaft line and separating the parts by non-magnetic packing inserted in the splits. (Provisional Application No. 572/31.) 5 10

2. A dynamo electric machine of limited dimensions having internal heat loss referable to eddy currents in the field magnets reduced by splitting the field cores and the yoke ring which carries them in the plane of the shaft and separating the parts by non-magnetic packing inserted in the splits. (Provisional Application No. 572/31.) 15

3. A dynamo electric machine of limited dimensions containing a ring armature core having heat loss referable to eddy currents in said core reduced by splitting the pole pieces and the hub on the plane of the shaft, leaving an unsplit portion of sufficient dimensions to support the hub and the pole pieces on the shaft. (Provisional Application No. 572/31.) 20 25

4. A dynamo electric machine according to Claim 3 in which the respective pole pieces are slitted at alternate ends. (Provisional Application No. 572/31.) 30

5. A dynamo electric machine of limited dimensions containing a cast trefoil armature, having heat loss referable to eddy currents in the core of said armature reduced by splitting the pole pieces and the hub on the plane of the shaft, leaving an unsplit portion of sufficient dimensions to support the hub and the pole pieces on the shaft. (Provisional Application No. 2128/31.) 35 40

Dated this 3rd day of November, A.D. 1931.

FEARON HENRY JOPLIN,

By his Patent Attorneys,

SPRUSON & FERGUSON. 45

Witness—M. Murray.

FIG. 1.

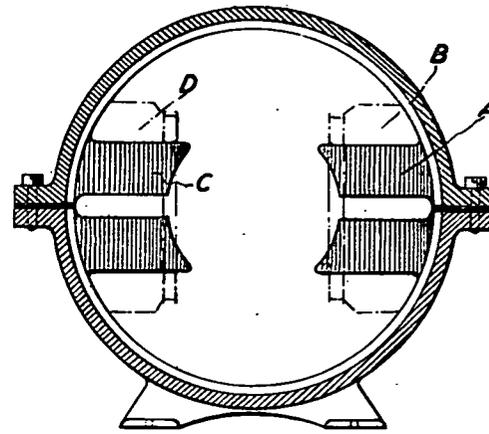


FIG. 4.

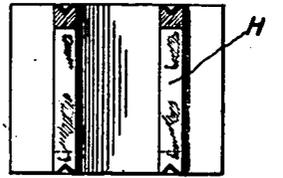


FIG. 5.



FIG. 2.

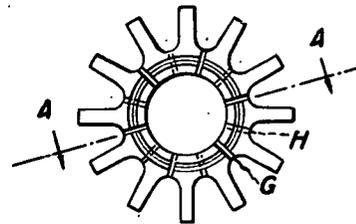


FIG. 6.

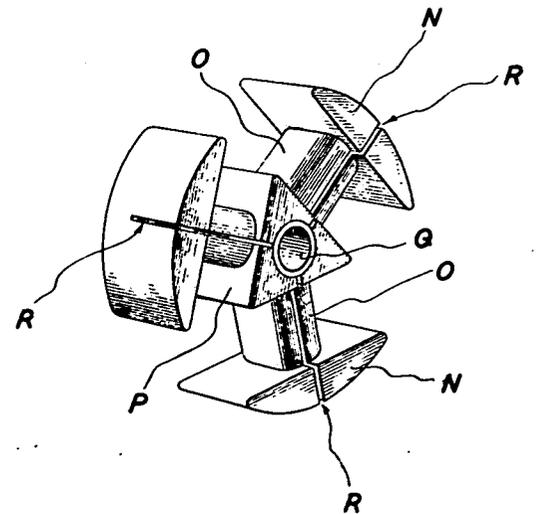


FIG. 3.

