July 21, 1936. E. KLAIBER 2,048,161

DYNAMO-ELECTRIC MACHINE FRAME

Filed March 6, 1935

Fig. 1

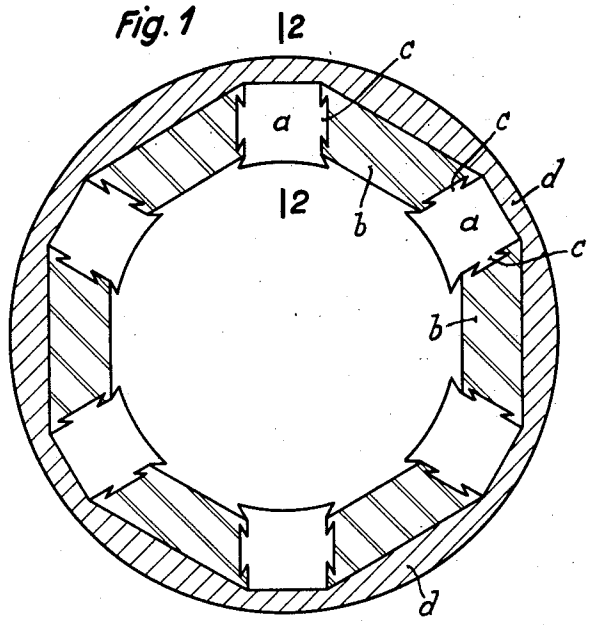
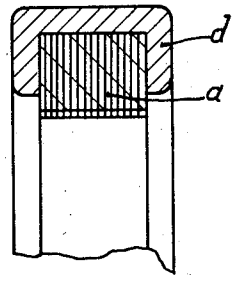


Fig. 2



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DYNAMO-ELECTRIC MACHINE FRAME

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4 Claims. (Cl. 171—252)

This invention relates to dynamo-electric machines and more particularly to such forms as magnetos of any type having a permanent magnet system as the magnetic exciting means. In the past it has been necessary to assemble the frame, magnets and poleshoes, and accurate construction required machining of the component parts to close limits. Likewise in the revolving magnet type of magnetos, the rotor demanded very painstaking and accurate assembly. According to the invention set forth in the following specification, all close machining and assembly work is obviated by positioning the poleshoes in a suitable mould and pouring the molten permanent magnetic alloy around them to form a casting en bloc.

One object of this invention is to produce a permanent magnet system for dynamo-electric machines which is more efficient and is of lower magnetic reluctance.

Another object is to provide a permanent magnet system which can be more rapidly and economically produced.

A further object is to provide a cast permanent magnet system having poleshoes embedded therein, with a die cast housing formed about the structure.

Still another object is to provide a cast permanent magnet system having embedded or cast-in poleshoes, which eliminates threaded fastening means with accompanying higher magnetic reluctance.

Other objects and advantages will be in part specifically set forth and in part be obvious when the following specification is read in connection with the drawing, in which:

Fig. 1 is an end view showing, as an example, one form of a field or stator structure of a magneto, having cast magnets with poleshoes embedded therein, and an outer die cast housing; and Fig. 2 is a section taken on line 2—2 of Fig. 1 and shows a laminated poleshoe and the surrounding housing.

Referring in more detail to Fig. 1, the letter *a* represents laminated poleshoes having dovetail projections *c* or any other suitable type of locking means. The poleshoes *a* are placed in a suitable mould in proper spaced relation and a permanent magnet alloy *b* is poured in molten form into the intermediate spaces. The alloy is one of high coercive force, preferably of the aluminum-nickel-iron type. It flows around the dovetail projections *c* to produce upon hardening a unitary ring structure comprising poleshoes and alternate bar magnets. This ring structure is placed in a suitable die casting mold and a housing *d* of aluminum or other non-magnetic material is formed about the outer periphery thereof.

In magnetos of the revolving magnet type, the magnet and poleshoe assembly may be produced in a similar manner, either with or without the non-magnetic housing *d*.

Under the older methods of assembly the preformed magnets and poleshoes must first be carefully machined to insure as good a joint as possible, and then screws or rivets inserted to hold the component parts together. Even with the most careful workmanship it was very difficult, if not impossible, to secure joints of uniformly low magnetic reluctance, and to insure the continuance of such joints. The magnet structure here presented is unitary, with no possibility of becoming loosened under severe service conditions, and with no possibility of moisture or corrosive substances entering by way of joints and abutting surfaces.

After completion, the poleshoes may be machined if necessary, and the permanent magnets *b* are magnetized by known methods after the generating winding with its magnetic conducting structure is in place.

It is apparent that many changes and modifications may be made by anyone skilled in the art without departing from the spirit and scope of the invention as defined in the following claims.

What is claimed is:

1. The method of making a permanent magnet excitation system for dynamo electric machines which comprises supporting a plurality of poleshoes in spaced relation, casting a molten magnetic alloy between opposed surfaces of said spaced poleshoes, casting a non-magnetic housing about said alloy and poleshoes, and magnetizing said alloy.

2. The method of making a permanent magnet excitation system for dynamo electric machines which comprises supporting a plurality of poleshoes in annular spaced relation, casting a molten magnetic alloy between opposed surfaces of said poleshoes to form an annular self-supporting structure, and magnetizing said alloy.

3. The method of making a permanent magnet excitation system for dynamo electric machines which comprises providing a plurality of poleshoes with projections on opposite surfaces thereof, supporting said poleshoes in spaced relation, casting a molten magnetic alloy between opposed surfaces of said poleshoes and around said projections, and magnetizing said alloy.

4. The method of making a permanent magnet excitation system for dynamo electric machines which comprises providing a plurality of poleshoes with projections on opposite surfaces thereof, supporting said poleshoes in annular spaced relation with said projections in relative opposition, casting a molten magnetic alloy between said poleshoes and around said projections to provide an annular self-supporting structure, and magnetizing said alloy.

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