April 22, 1947. H. R. TRAGESSER 2,419,301

MAGNETO MAGNETIC CIRCUIT

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Fig. 2.

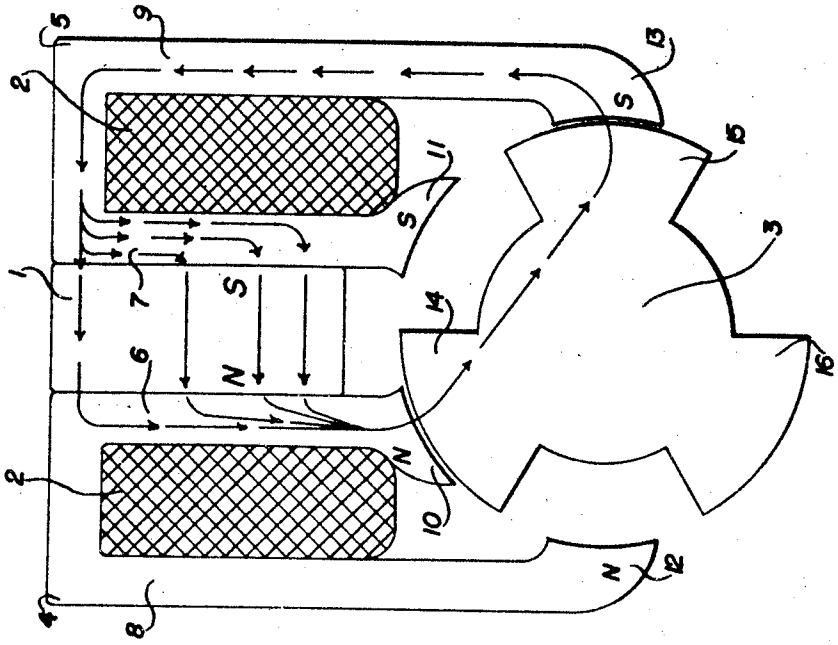
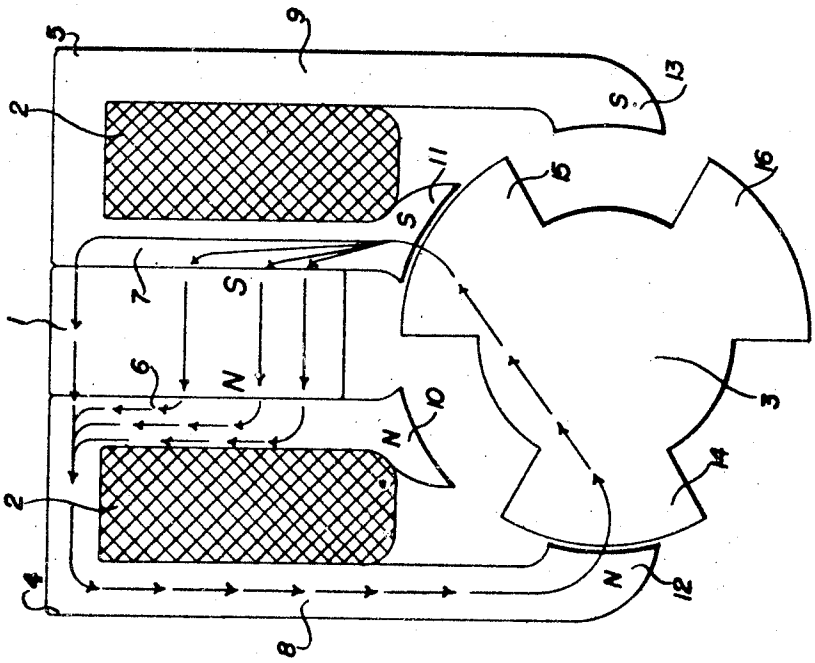


Fig. 1.



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MAGNETO MAGNETIC CIRCUIT

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9 Claims. (Cl. 171—209)

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This invention relates to a novel magnetic circuit for a fixed magnet, fixed coil type of magneto having a flux directing laminated iron rotor.

The object of the invention is to provide an improved magneto construction producing a complete and rapid reversal of flux through the coil and substantially eliminating the existence of leakage flux paths. A specific object is to provide a plurality of magnetic circuits so arranged with respect to the coil and permanent magnet that the revolving rotor will direct the flux alternately in opposite directions through the coil as the rotor revolves.

The preferred embodiment of the invention will now be described with particular reference to the accompanying drawing in which:

Figure 1 is a view showing the magnetic circuit through a magneto constructed according to the present invention in which the rotor is positioned to establish a particular flux path through poles, and

Figure 2 is a view showing the flux path established by movement of the rotor to a different position so as to reverse the flux through the coil.

The present magneto comprises a permanent magnet 1, a coil or generating winding 2, and a laminated iron rotor 3. Associated with the magnet 1 is a stator structure comprising a pair of similar laminated magnetic members 4 and 5 having short inner legs 6 and 7 and elongated outer legs 8 and 9. The inner legs 6 and 7 are positioned adjacent the north and south poles, respectively, of the magnet 1 and are provided with suitable pole pieces 10 and 11. The longer legs 8 and 9 extend outwardly on opposite sides of the rotor and are provided with pole pieces 12 and 13 respectively.

The pole pieces 10 to 13 are so spaced around the rotor that the rotor lobes 14 to 16 alternately bridge the poles 11 and 12, and 10 and 13, for every 60° increment of rotation. Thus in Figure 1 a flux path indicated by arrows is established through the rotor from pole 12 to pole 11, upwardly through the short leg 7, through the magnet from south to north, and again upwardly through the short leg 6. Wide air gaps effectively interrupt any flux path through poles 10 and 13.

Upon a 60° rotation of the rotor in either direction the flux path through the poles 11 and 12 would be broken and a new flux path would be established through the poles 10 and 13 as shown in Figure 2. It will be seen that the flux is now directed downwardly through the short legs 6

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and 7 thereby reversing the E. M. F. in the coil 2. By arranging the pole pieces in the manner illustrated and by making them of approximately one-half the width of the rotor lobes, the latter subtending angles of approximately 60° each, very rapid and complete reversals of flux take place through the coil as the rotor revolves.

The present arrangement employing a 3-lobed rotor is applicable for ignition purposes for a 6-cylinder engine where the magneto runs at one-half engine speed, but the invention is adaptable to engines with various numbers of cylinders by appropriately modifying the rotor lobes and pole pieces to give the desired frequency. The invention is accordingly not limited to the specific arrangement of the pole pieces or number of lobes in the rotor herein shown and described. All modifications of this arrangement falling within the scope of the appended claims are included in the invention.

I claim:

1. A magneto comprising a permanent magnet, a pair of stator members located on either side of said permanent magnet and each being provided with a pair of pole pieces, a generating winding around parts of both of said stator members, and a rotor arranged to direct the flux from said magnet through pairs of said pole pieces of opposite polarity alternately in such a manner as to alternately reverse the direction to flux through said winding.

2. A magneto comprising a permanent magnet, a flux directing rotor, a pair of plural legged stator members located on either side of said permanent magnet and forming a plurality of magnetic circuits between each pole of said magnet and said rotor, and a generating winding around one leg of each of said stator members arranged so that rotation of said rotor will make and break magnetic circuits through a leg of one of said stator members through a leg of opposite polarity of the other stator member to alternately reverse the flux through the winding.

3. A magneto comprising a permanent magnet, a stator element located on either side of said magnet and associated with each pole of said magnet, a pair of legs carrying pole pieces on each of said members, a generating winding around one leg of each of said members, and a single flux directing rotor associated with said poles and legs and adapted to make and break flux paths between pairs of said legs of opposite polarity to reverse the flux through said winding while retaining all of the magnetic material active at all times during the operation of said magneto.

4. A magneto comprising a permanent magnet, a pair of stator members located on either side of the permanent magnet, said stator member having short legs adjacent opposite poles of said magnet and having long legs remote from said magnet, a generating winding around said short legs, and a flux directing rotor associated with said poles and legs and arranged to establish flux paths through said short legs and magnet alternately to reverse the flux through said winding.

5. A magneto comprising a permanent magnet, a two legged stator member located on either side of said magnet and associated with each pole of said magnet, one leg of each member being adjacent said magnet and one leg of each member being remote from said magnet, a generating winding around said adjacent legs, and a flux directing rotor associated with said poles and legs and arranged to establish flux paths through said adjacent legs alternately to reverse the flux through said winding.

6. A magneto comprising a flux directing rotor, a permanent magnet having its magnetic axis arranged transversely with the axis of said rotor, a stator member located on either side of said magnet and associated with each pole of said magnet, said stator members having legs adjacent said magnet and legs remote from said magnet, and a generating winding surrounding said magnet and said adjacent legs with the axis of the winding radial to the rotor and normal to the axis of the magnet so that said rotor will establish flux paths through said adjacent legs and magnet alternately to reverse the flux therethrough and through said winding.

7. A magneto comprising a pair of stator elements, a permanent magnet located therebetween, each of said stator elements having a pair of legs of like polarity, a generating winding around one leg of each stator element, and a flux directing rotor associated with said legs and arranged to make and break flux paths through said winding-encircled legs and magnet alternately to reverse the flux through said winding.

8. A magneto comprising a generating winding, a pair of U-shaped stator members each having one leg within said winding and one leg outside of said winding, a single permanent magnet located between said stator members and magnetically bridging said inner legs within said coil and having its magnetic axis disposed transversely of the axis of said winding, and a single three-lobe rotatable flux distributor associated with said legs and arranged to direct the magnetic flux between pairs of said legs alternately, each of said pairs comprising one inner and one outer leg, to thereby reverse the direction of flux through said inner legs and said winding.

9. A magneto comprising a generating winding, a pair of U-shaped stator members each having a first leg within said winding and a second leg outside of said winding, a permanent magnet located between said stator members and magnetically bridging said first legs, and a rotatable flux distributor associated with said legs and arranged to direct the magnetic flux through said first legs alternately, to reverse the flux through said winding.

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