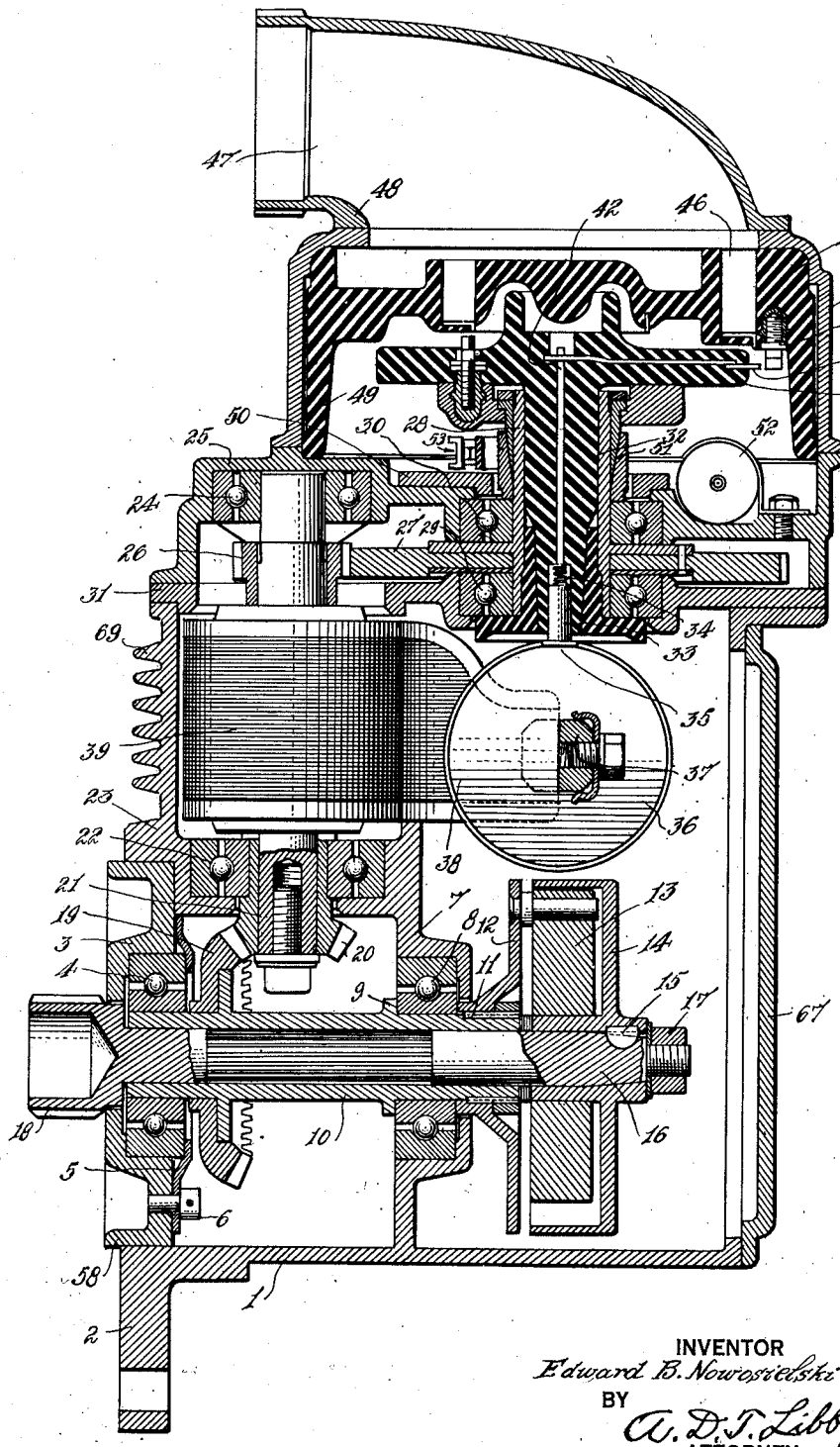
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MAGNETO CONSTRUCTION

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MAGNETO CONSTRUCTION

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This invention is directed to a new type of construction of a magneto electric generator for furnishing ignition current to the spark plugs of an engine.

In certain types of engines, especially those used in aeroplanes, weight and space are important items which must be taken into consideration in the design of the ignition generator. Usually there is more available space in a vertical direction than in a horizontal direction, so it is one of the objects of my invention to provide an ignition generator in which the parts are constructed and assembled so as to materially shorten the length of the generator and thereby bring the center of gravity thereof closer to the mounting support of the generator. This reduces the vibration in the magneto as well as wear on the parts, thereby increasing the life of the generator.

Another object of my invention is to provide a construction whereby the total weight of the magneto is reduced over prior art constructions.

Another object of my invention is to provide an ignition generator in which the parts are so arranged as to facilitate assembly and disassembly of the machine.

These and other objects will be appreciated by one skilled in the art of construction of magneto generators, by a reading of the specification taken in connection with the annexed drawing, wherein:

Figure 1 is a vertical, sectional view through one form of construction.

In the drawing there is shown a magneto housing including a frame member 1 having a mounting flange 2 for attaching the generator to an engine part. The frame 1 carries a support 3 carrying an anti-friction bearing 4 which is held in place by a member 5. The member 5 is held in place by screws 6. The frame also carries a second support member 7 carrying a bearing 8, the inner race of which is positioned against an annular shoulder 9 integral with a sleeve or hollow shaft 10 which is supported by the bearings 4 and 8. The sleeve 10 has splines 11 which serve to fasten a member 12 comprising a driven element of an automatic timing device herein specifically considered as an automatic advance device and generally referred to by the numeral 13. The driving member 14 of the automatic advance coupling 13 is fastened by a key 15 to the drive shaft 16 supported concentrically within the sleeve 10. The member 14 is held in place by a nut 17 on the end of the shaft 16. The drive end of the shaft 16 has splines 18 to receive an engine driving gear, or this end of the shaft may be formed directly with gear teeth for meshing with a suitable engine driving gear. Fastened to the sleeve 10 is a bevel gear 19 adapted to mesh with a cooperating gear 20 carried on the end of the rotor shaft 21, the drive end of which is supported in the bearing 22 carried by the frame member 23.

The opposite end of the rotor shaft is supported by a bearing 24 carried in a frame member 25. This shaft end of the rotor carries a pinion 26 adapted to mesh with the distributor gear 27 which is mounted on the hollow distributor shaft 28, which in turn is supported by bearings 29 and 30, the latter bearing being carried in the frame member 25, while the bearing 29 is carried in a frame member 31. The distributor shaft 28 carries a distributor finger 32 which has a brush 33 pressed by a spring 34 into engagement with the contact 35 carried by the ignition coil 36. The coil 36 has a core 37 mounted in cooperative relation with pole pieces, one of which, 38, is shown extending into cooperative relation with the permanent magnet 39 comprising part of the rotor structure.

It is understood that the permanent magnet is made with the necessary number of poles and laminated pole shoes to provide the proper distribution of the magnetic flux from the magnet to the coil, the rotor and distributor gears heretofore referred to being arranged to give the right number of ignition impulses or sparks from the coil to serve the engine on which the generator is mounted.

The distributor disc 40 has a distributing finger 41 connected to the conductor 42 extending to the contact brush 33.

Mounted within the removable frame member 43, is a distributor block 44 carrying the necessary contacts 45 which are connected through cables entering the holes 46 in the distributor block. The outgoing cables pass through the orifice 47 of the shielding member 48, it being understood that a shielding pipe or tube is adapted to be connected to the member 48. The distributor block 44 has a depending annular rim 49 of considerable length which engages the member 25 and is held thereon by the frame member or cap 43. A circuit breaker plate 50 is carried by the frame member 25, and has a circuit breaker mechanism 53 mounted thereon. This circuit breaker mechanism is actuated in the usual way by a cam 51 which is carried by the distributor shaft 28. A condenser 52 is mounted for cooperation with the circuit breaker in the usual manner.

Access to the ignition coil is obtained by removing the cover 67. If desired, the frame parts adjacent the rotor may be made with flutes or corrugations 69 to provide a greater cooling area.

Since the sectional view herein shown serves to illustrate the general construction of the magneto of my invention, it will be understood that other detailed views of my invention are not herein necessary to show as my invention may be changed in these and other details without departing from the scope thereof.

What I claim is:

1. In a magneto including a housing: the combination of a pair of concentric shafts journalled to said housing, the inner one of said shafts having bearing surfaces engaging interior surfaces of the outer one of said shafts and adapted at one end for connection with an engine; a rotor structure journalled to said housing and drivingly connected to said outer shaft; and an automatically controlled timing device located exteriorly of said outer shaft and connected between the same and said inner shaft.

2. In a magneto including a housing: the combination of a pair of concentric shafts the inner one of which has bearings engaging the interior surface of the outer shaft, and said outer shaft having bearings in said housing; a rotor journaled in said housing at right angles to said shafts; right-angle gearing coupling one of said shafts to said rotor; a member secured to said outer shaft; and a timing control connecting said member to a projecting end portion of said inner shaft.

3. In a magneto including a housing having a mounting face at one end and a rotor journalled therein: the combination of a pair of concentric shafts journalled one within the other and both to said housing, both of said shafts terminating within said housing and the inner one of said shafts projecting through said mounting face and adapted for connection with an engine; gearing coupling the outer one of said shafts to said rotor; a timing control between said shafts at their inner ends; and a closure on said housing removable to expose said timing control.

4. In a magneto including a housing having a mounting face at one end thereof and partitioning forming a gear chamber in said housing adjacent said mounting face: the combination of a pair of concentric shafts journalled to said housing in said mounting face and partitioning, said shafts being also journalled one within the other and both having inner ends terminating within said housing outside said gear chamber; gearing in said chamber for coupling the outer one of said shafts to a flux-controlling rotor; an automatic advance coupling between said shafts at their inner ends; and a removable wall section included in said housing at the end thereof opposite said mounting face, the removal of which section exposes said advance coupling.

5. In a magneto comprising a magnetic system including a flux-controlling rotor, and a current system including a coil associated with said magnetic system: the combination of a housing having partitioning walls forming two chambers therewithin, one of said chambers containing said coil; a drive shaft extending through the other of said chambers and terminating in said one chamber; a shaft journalled in said housing and having portions in each of said chambers; gearing in said other chamber for coupling said second shaft with said rotor; an automatic advance device in said one chamber between said shafts; and a closure for said one chamber removable to expose both said advance device and said coil.

6. A magneto construction comprising a housing; a drive shaft journalled to said housing; a sleeve journalled on said shaft; an automatic advance coupling between said shaft and sleeve; a rotor journalled to said housing and geared to said sleeve; magnetic field means associated with said rotor, including an ignition coil having a high tension contact; a timer-distributor shaft journalled to said housing in axially parallel relation to said rotor, and geared to the shaft of said rotor; a distributor member carried by said timer-distributor shaft and having an axial stem extending to said coil; and a contact member on said stem in engagement with the high-tension contact of said coil.

7. A magneto construction comprising, a frame with housing members, a sleeve rotatably supported between two of said housing members, a drive shaft carried within the sleeve, an automatic advance coupling operatively connecting the shaft and sleeve, a driving gear on the sleeve, a rotor structure including a magnet carried by the frame at right angles to the sleeve and shaft and having a gear in mesh with said driving gear, field pole pieces carried by the frame for picking up magnetic flux from said magnet, an ignition coil having a core bridging said pole pieces and also having a high-tension contact, a distributor block positioned within a frame housing member above the ignition coil, a timer-distributor shaft carried by the frame in a vertical position and drivingly connected to the rotor structure by gears lying in a horizontal plane, a cam-and-distributor member carried by the timer-distributor shaft and having a stem projecting downwardly to a point near the coil with a contact member engaging said contact on the coil and a circuit breaker mechanism carried by an interior frame member in cooperative relation with said cam.

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