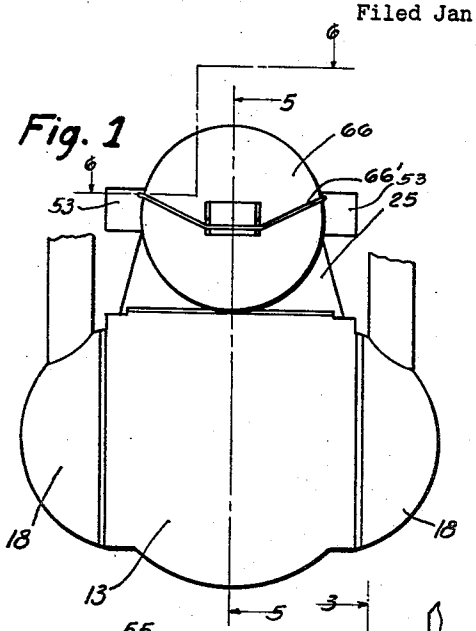
Nov. 21, 1939. A. V. PELLET 2,180,546

MAGNETO ATTACHMENT

Filed Jan. 30, 1939 2 Sheets-Sheet 1

Fig. 1



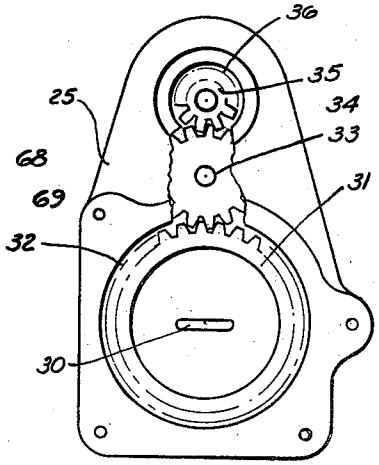


Fig. 3

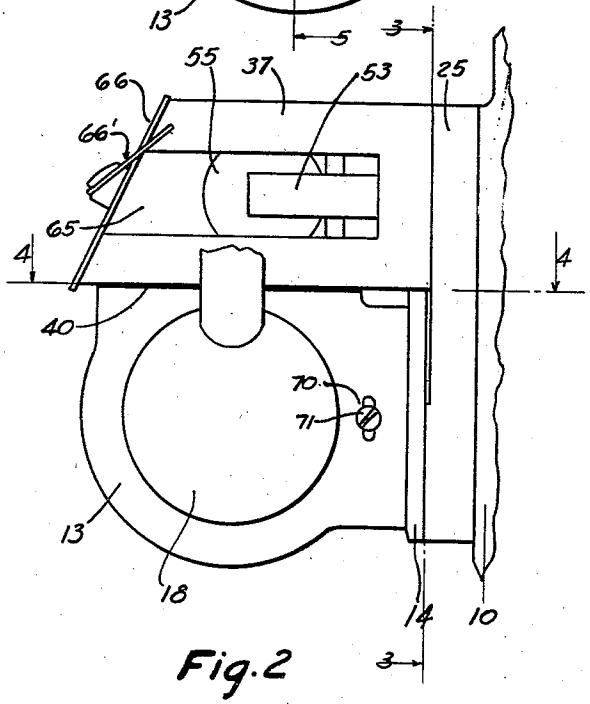


Fig. 2

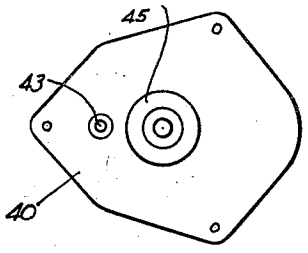


Fig. 4

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Nov. 21, 1939. A. V. PELLET 2,180,546

MAGNETO ATTACHMENT

Filed Jan. 30, 1939 2 Sheets-Sheet 2

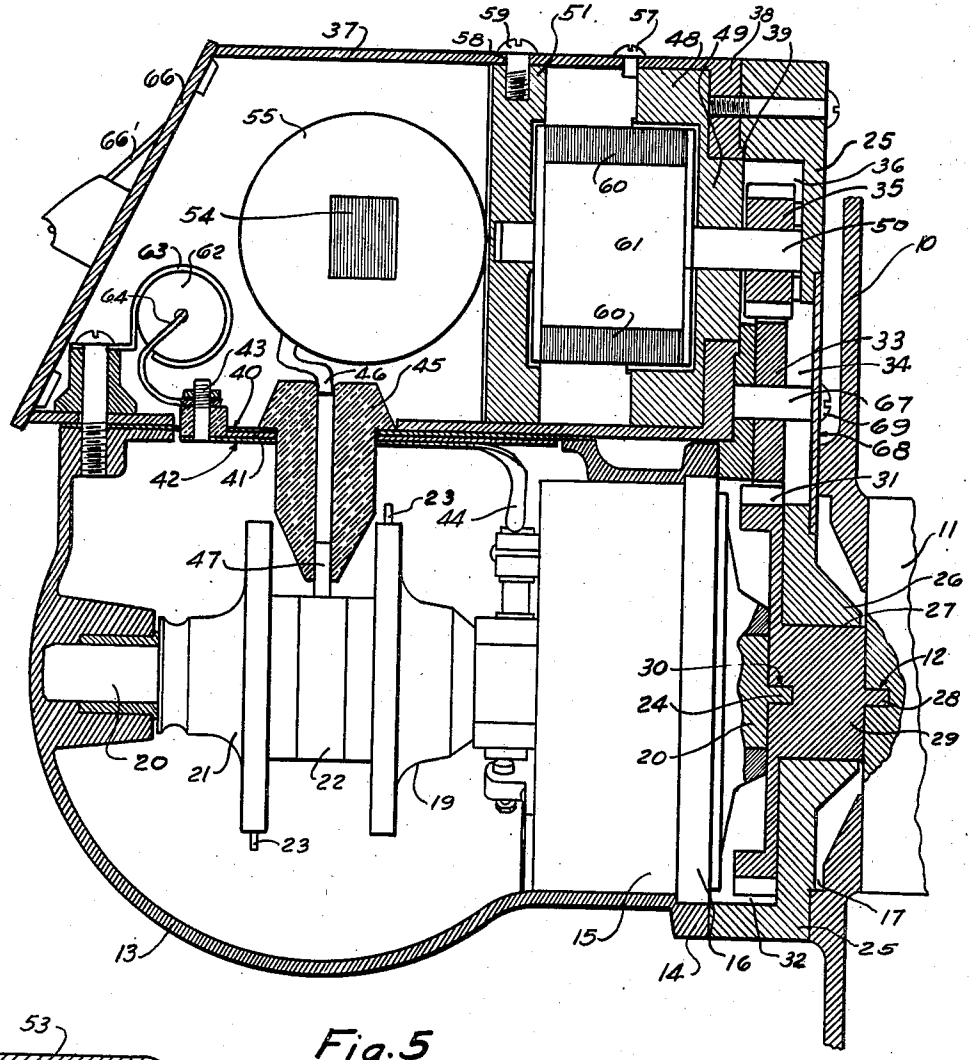


Fig. 5

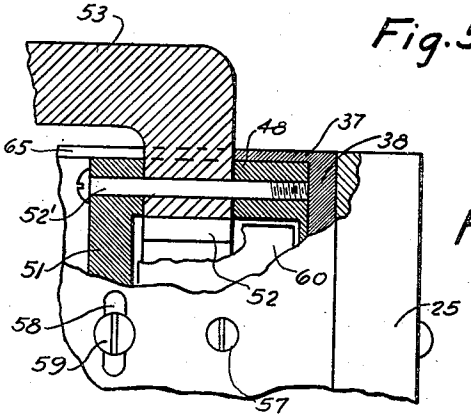


Fig. 6

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MAGNETO ATTACHMENT

August Victor Pellet, Chicago, Ill.

Application January 30, 1939, Serial No. 253,559

12 Claims. (Cl. 123—149)

This invention relates to a magneto attachment for internal combustion engines. More specifically it relates to an auxiliary attachment structure for converting an ignition system using a battery as a source of current into a system employing a magneto.

Practically all engines built for passenger cars are equipped with battery ignition. Due to the mass production of such engines they are much lower priced than engines of the same size and horse power built for special purposes, such as for marine and aircraft use. Moreover such engines are available in all parts of the country in used or second hand condition at very nominal prices.

The principal object of the present invention is to construct a novel magneto drive and attaching means. A more specific object is to construct a magneto adaptor means for converting an engine from battery to magneto ignition. Another object is to use the major portion of a battery ignition system with the additional parts required for the magneto and its supporting and driving mechanism. A more specific object is the provision of a magneto adaptor for engines having a distributor housing mounted on the front of the engine and driven directly from the cam shaft.

The above objects and others which will be apparent from the detailed description to follow are accomplished by utilizing the distributor housing of a conventional battery ignition system and inserting a bracket or gear housing between the housing and the portion of the engine which supports it. The magneto is then mounted on the bracket occupying the space normally occupied by the coil of the battery ignition system which is not needed for magneto ignition.

In the drawings: Fig. 1 is a front view of an engine structure showing a magneto embodying the invention.

Fig. 2 is a side elevation of the structure shown in Fig. 1.

Fig. 3 is section taken on the line 3—3 of Fig. 2, and may be considered as a front elevation of the attaching bracket.

Fig. 4 is a section taken on the line 4—4 of Fig. 2.

Fig. 5 is a vertical section taken on the rotating shaft axes of the distributor and the magneto rotor, substantially on the line 5—5 of Fig. 1.

Fig. 6 is a section taken on the line 6—6 of Fig. 7.

In the drawings in Figs. 2 and 5 a broken away portion 10 of the front end of an engine block is shown. This portion may be the front cover plate as shown in the Ford Patent 1,963,657 June 19, 1934. It is for an ignition system of the type shown in said patent that the magneto attachment of this invention was designed and built. An end 11 of the engine cam shaft is provided with a slot or keyway 12 to one side of a diameter of the shaft.

A distributor and breaker mechanism housing 13 is provided with a flange 14 by which it is secured to the cover plate 10 with cap screws. The housing 13 is a part of the regular battery ignition shown in the Ford patent above referred to. The breaker mechanism may also be the same and has therefore been shown only in outline. A cylindrical casing 15 having a flange or annular rib 16 is mounted for angular adjustment in the open flanged end of the housing 13 with the flange or rib 16 fitted in an annular recess formed around the opening in the casing. A portion of the casing 15 projects beyond the flange 14 and is adapted to normally fit in a recess 17 formed in the cover plate 10 concentric with the cam shaft 11.

The housing 13 is formed with circular openings at each side, over which conventional distributor covers 18 are mounted. Said covers carry the terminals for distributing the sparks in timed sequence to the spark plugs of the engine. The top of the housing 13 is open, being surfaced around the opening for mounting a coil when using a battery ignition system.

A distributor rotor 19 is rotatably mounted in the housing 13. The rotor includes a shaft 20 and a molded distributor 21 of a non-conducting material. A current collecting ring 22 is connected with terminals 23 properly placed around extensions molded on the distributor. The front or outer end of the shaft 20 is mounted in a bearing provided in the front end of the housing. The rear end of said shaft is carried in a bearing provided in the casing 15 not showing in the drawings but shown in detail in the prior Ford patent.

The rear end of the rotor shaft 20 is provided with an integral off-center driving lug or key 24 adapted to engage the slot or keyway in the shaft 11 when the distributor is used for battery ignition.

The parts have been described which are common to a battery ignition system and the magneto ignition system constituting the invention. To make the change-over the coil is re-

moved and discarded and the distributor housing is removed for assembling the magneto supporting and driving means.

The principal element in the magneto attaching means is a combined bracket and gear supporting and housing member 25. The lower portion of the member 25 is shaped to correspond to the flange on the housing 13 and fits between said flange and the cover plate 10 when the elements are assembled. Openings for securing cap screws are provided in the member 25 in alignment with threaded openings in the flange 14.

The lower portion of the member 25 is provided with a boss 26 in which a bore 27 is formed axially aligned with the cam shaft and the rotor shaft. An off-center lug or key 28 on a stub shaft 29 rotatably mounted in the bore 27 as a bearing is adapted to form a driving means by engagement in the keyway 12. A keyway 30 formed in the other end of the shaft 29 receives the key 24 on the rotor shaft.

The stub shaft 29 carries integral therewith a gear 31 mounted in a cylindrical recess or chamber 32 formed in the member 25 from the front wall. The gear 31 meshes with a gear 33 positioned in a recess or chamber 34 formed in the member 25 from the back wall thereof. A gear 35 meshing with the gear is located in a recess or chamber 36 formed in the upper portion of the member 25 from the front side thereof.

A substantially cylindrical magneto casing 37 has an annular mounting flange 38 at the back end provided with an annular centering rib 39 fitted in a recess formed around the open side of the chamber 36 as shown in Fig. 5. A plurality of cap screws, one of which is shown, rigidly secures the casing 37 to the attaching member 25. The bottom of the casing 37 lies along the top of the housing 13 directly above a closure plate 40 fitted over the opening in the top of housing 13.

The cover plate 40 is rigidly secured by three screws to the housing 13. An insulating member 41 is positioned against the lower surface of the plate 40 to which a conducting member 42 is secured. Said member extends from a post 43 extending upwardly through an opening in the plate 40 to a prong 44 which extends downwardly to contact a portion of the insulated side of the breaker mechanism.

A high tension insulator 45 extends downwardly through the plate 40, the member 41 and the member 42. Said insulator receives a high tension terminal 46 and carries a carbon contact brush 47 which engages the collecting ring 22 on the distributor 21.

An annular magneto supporting member 48 has a sleeve like extension 49 which serves as a bearing for a magneto shaft 50. When the entire structure is assembled the extension 49 fits into the mounting flange 38 of the casing 37. The shaft 50 extends into the bracket member 25 and carries the gear 35 previously described.

The other end of the shaft 50 is rotatably supported by a second supporting member 51 which is slideably fitted into the casing 37 spaced from the member 48. Said members are spaced apart by arcuate pole pieces 52, the entire assembly being held together by screws 52' passing through one supporting member and the pole pieces and being threaded into the other member.

The pole pieces 52 are connected to elbow-shaped flux carrier members 53 which also connect with a flux carrying core 54 extending through a coil 55. It is to be understood that the pole pieces, the members for completing the flux field and the core 54 are all laminated to make for greater efficiency.

The magneto which consists essentially of the supporting members 48 and 51 and the associated parts is held in the casing against movement forwardly by a set screw 57. Limited radial movement is provided for time adjustment by a slot 58 in the casing 37 and a screw 59 extending through the opening and threaded into the member 51.

The magneto shaft 50 carries a magnet 60 mounted by means of a non-magnetic material 61 on the shaft. Such magnets are well known and any type of mounting may be used by the magneto of this invention. The coil 55 is provided with a grounded low tension terminal and a terminal from the low voltage primary side of the coil which connects with the post 43 previously described. A condenser 62 is connected by a conductor 63 with the frame and by a conductor 64 with the low tension terminal 43. One side of the high voltage or secondary winding of the coil is fastened to the terminal 46 previously described. The other end of the secondary is grounded to the frame.

As the elbow portions 53 project beyond the casing 37, slots 65 are formed lengthwise in the sides of the casing to allow assembly or repair. Said slots are of a width sufficient to permit the required angular adjustment of the magnet in the casing. A cover plate 66 is fitted over the front end of the casing 37 being removably held in position by a spring bail 66'.

To install the magneto attachment of this invention the regular distributor is removed and the coil and cover plate for the distributor housing is removed. The cover plate 40 is then fastened on the housing. The magneto casing 37 and the bracket 25 are then assembled on the housing 13. The lower portion of the bracket is shaped to fit the centering means on the housing 13 and on the engine cover plate 10. By means of cap screws the entire assembly is then rigidly secured in position on the engine.

To support the intermediate gear 33 a stub shaft 67 is carried by the rear end of the magneto casing 37. A closure member 68 fitting in a recess formed around the compartment 34 is secured in position by a screw 69 threaded into the stub shaft 67.

As described above, the magneto which fits into the casing 37 as a unit is held in position by the set screw 57 in the casing 37. The screw 59 passing through the slot 58 in the casing 37 provides an adjusting means for angular adjustment of the magneto for timing. An adjustment is also shown for angular adjustment of the breaker casing 15 with respect to the housing 13 for timing the breaker points. In Fig. 2 a slot 70 in the housing and a screw 71 passing through the slot and threaded into the casing 15 constitute the adjusting means.

It is to be understood that the magneto attachment of the invention has been shown only in one form for use on a particular type of ignition system, and that a particular type of magneto and magneto mounting has been shown. Applicant, however, claims as his invention all forms and structures for application on all ignition systems coming within the scope of the appended claims.

What I claim is:

1. A magneto attachment for ignition systems having a distributor housing secured to an engine with a removable driving connection between a rotating part of the distributor and a shaft of the engine comprising a bracket adapted to be mounted between the housing and the engine, a driving element carried by said bracket and engageable by said shaft for rotation therewith, a magneto carried by said bracket and means for driving said magneto from said driving element.

2. A magneto attachment for ignition systems having a distributor housing adapted to be secured to an engine with a removable driving connection between a rotating part of the distributor and a shaft of the engine comprising a bracket adapted to be mounted between the housing and the engine, a gear on said bracket mounted for rotation on the axis of the shaft and engaged with said shaft and the rotating distributor part, a magneto carried by said bracket and means for driving said magneto from said gear.

3. In an engine equipped for battery ignition and having a distributor housing adapted to be mounted on a portion of the engine, containing a distributor and driven from an engine shaft, and in combination therewith a magneto attachment comprising a gear housing and supporting member mounted between the distributor housing and the engine and extending upwardly above said housing, a magneto adapted to be mounted over the distributor housing and connected to the supporting member, and means on the gear-supporting member for driving said magneto.

4. In an engine equipped for battery ignition and having a distributor and breaker housing mounted on a portion of the engine containing a distributor and driven from a shaft, a magneto attachment comprising a gear-supporting member adapted to be mounted between the distributor housing and the engine and extending upwardly above said housing, a magneto adapted to be mounted directly on the distributor housing, and gearing in the gear-supporting member for driving said magneto.

5. In an engine equipped for battery ignition and having a distributor housing adapted to be mounted on a portion of the engine and containing a distributor driven from an engine shaft and in combination therewith, a magneto attachment comprising a gear housing and supporting member mounted between the distributor housing and the engine and extending upwardly above said housing, a magneto casing connected to the bracket above the distributor housing a magneto mounted in said casing having a shaft extending into the gear supporting member, a gear mounted on said shaft, a second gear mounted in the bracket in axial alignment with the engine shaft, and a third gear connecting the first mentioned gears.

6. A magneto attachment for ignition systems having a distributor housing adapted to be secured to an engine and a distributor mechanism in said housing provided with a removable driving connection with a shaft of the engine comprising a bracket adapted to be mounted between the housing and the engine, a gear rotatably mounted on said bracket in alignment with the engine shaft with driving connections with said shaft and the distributor mechanism, a magneto casing secured to said bracket, a magneto fitted in said casing having a magneto shaft projecting into the bracket member, a gear mounted on said shaft, and a third gear mounted in the bracket in driving relationship with respect to the other gears.

7. An ignition system for engines having a surfaced attaching face and a drive shaft with an end portion terminating adjacent said face, and, in combination therewith, a gear support and housing member fitted against the surfaced portion and extending upwardly therefrom, a distributor and breaker housing abutting said gear housing, said housing containing a rotor shaft mounted in alignment with the drive shaft, said housing member containing a driving gear mounted coaxially with respect to the rotor housing and being in driving engagement with the rotor shaft and the engine drive shaft, a magneto mounted above the distributor housing and secured to the gear housing member, a magneto shaft extending into said member and means for driving said shaft from the driving gear.

8. An ignition system for engines having a surfaced attaching face and a driving shaft with an end portion terminating adjacent said face, and, in combination therewith, a gearing support and housing member fitted against the surfaced portion and extending upwardly therefrom, a distributor housing abutting said gear housing and being fitted against the housing member, said distributor housing containing a rotor shaft mounted in axial alignment with the driving shaft, said housing member containing a gear rotatably mounted coaxially with respect to the rotor housing and being in driving engagement with the rotor shaft and the driving shaft, a magneto mounted above the distributor housing, a magneto shaft extending into the gear housing and a gear carried on said shaft.

9. An ignition system for engines having a surfaced attaching face and a cam shaft with a slotted end portion terminating adjacent said face, and, in combination therewith, a gearing support and housing member fitted against the surfaced portion and extending upwardly therefrom, a distributor housing abutting said gear housing and being fitted against the housing member, said distributor housing containing a rotor shaft mounted in axial alignment with the cam shaft and having a key engageable with the slotted end of the shaft, said housing member containing a gear rotatably mounted coaxially with respect to the rotor housing and being in driving engagement with the rotor shaft and the cam shaft, a magneto mounted above the distributor housing, a magneto shaft extending into the gear housing and a gear carried on said shaft.

10. An ignition system for engines having a surfaced attaching face and a drive shaft with an end portion terminating adjacent said face, and, in combination therewith, a gear support and housing member fitted against the surfaced portion and extending upwardly therefrom, a distributor and breaker housing abutting said gear housing, said housing containing a rotor shaft mounted in alignment with the drive shaft, said housing member containing a gear mounted coaxially with respect to the rotor housing, and being in driving engagement with the rotor shaft and the engine drive shaft, a second gear mounted above the first mentioned gear in driving relation with respect thereto, a magneto casing mounted above the distributor housing being secured thereto and to the gear housing member, a magneto mounted in said casing, a magneto shaft extending into said member and a gear carried on said shaft, said gear being in driving relationship with respect to the second mentioned gear.

11. An ignition system for engines having a surfaced attaching face and a drive shaft with an end portion having a driving slot terminating adjacent said face, and, in combination therewith, a gear support and housing member fitted against the surfaced portion and extending upwardly therefrom, a distributor and breaker housing abutting said gear housing, said housing containing a rotor shaft mounted in alignment with the drive shaft, said shaft having a driving key thereon, said housing member containing a driving gear mounted coaxially with respect to the rotor housing, said gear having a key engageable with the drive shaft slot and a slot engageable with the rotor shaft key, a magneto mounted above the distributor housing and secured to the gear housing member, a magneto shaft extending into said member and means for driving said shaft from the driving gear.

12. An ignition system for engines having a surfaced attaching face and a drive shaft with an end portion provided with an off-center slot terminating adjacent said face, and, in combination therewith, a gear support and housing member fitted against the surfaced portion and extending upwardly therefrom, a distributor and breaker housing abutting said gear housing, said housing containing a rotor shaft mounted in alignment with the drive shaft and provided with an off-center key, said housing member containing a gear mounted coaxially with respect to the rotor housing, said gear being engageable with the key and slot of the rotor shaft and the engine drive shaft, a second gear mounted above the first mentioned gear in driving relation with respect thereto, a magneto casing mounted above the distributor housing, being secured thereto and to the gear housing member, a magneto mounted in said casing, a magneto shaft extending into said member and a gear carried on said shaft, said gear being in driving relationship with respect to the second mentioned gear.

AUGUST VICTOR PELLET.