Jan. 5, 1937. C. F. REIS 2,066,696

MOUNTING STRUCTURE FOR MAGNETOS

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Fig. 1.

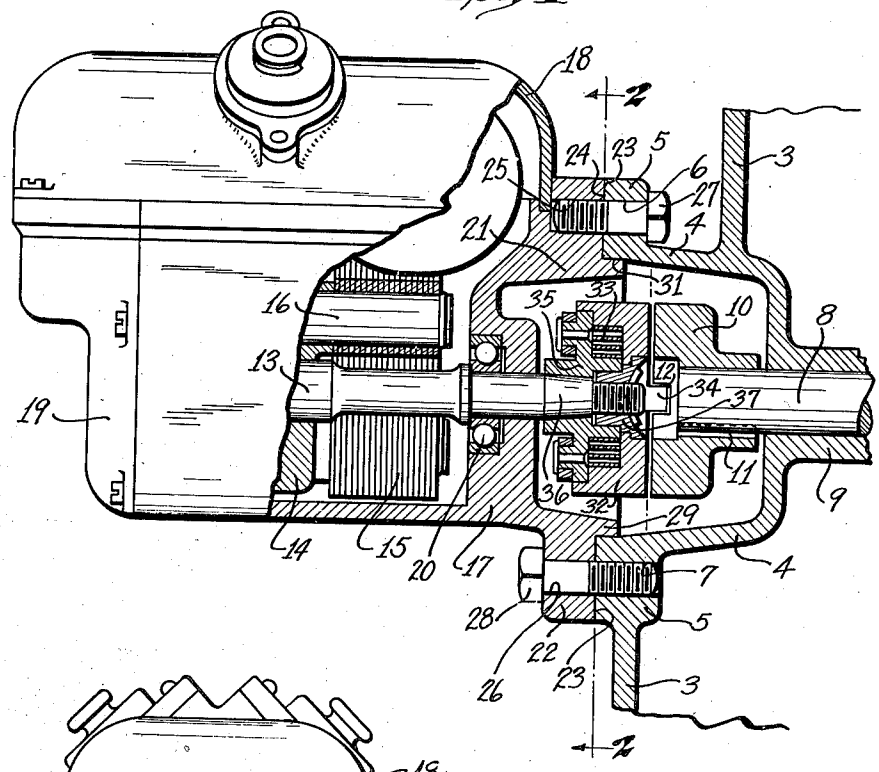
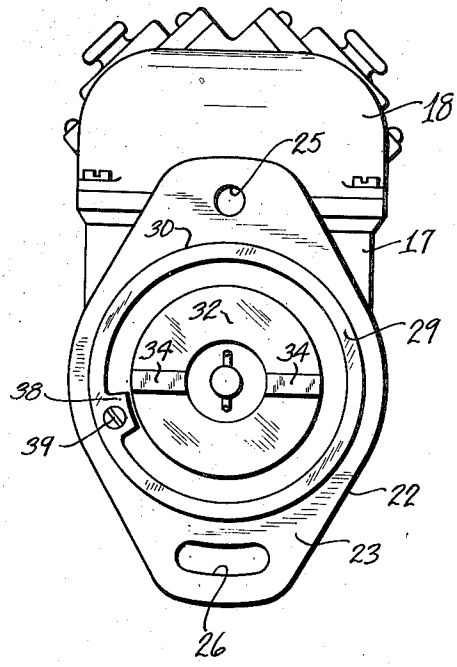


Fig. 2.



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MOUNTING STRUCTURE FOR MAGNETOS

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9 Claims. (Cl. 123—149)

This invention relates to improvements in mounting structures for magnetos, and more particularly to an improved flange mounting constituting a bracket or support enabling a detachable connection of a magneto to the frame or case of an engine with which it is associated, the arrangement being such as to provide, by or between companion housing elements, a space for the accommodation of an impulse coupling or the like.

An object of the invention consists in the provision of improved housing provisions for a magneto coupling which may be of impulse type and, through the agency of the housing parts, providing an economical bracket or support by which a magneto may be secured to a frame or casing element of an associated engine.

Yet another object of the invention is attained in an improved flange mounting for the purpose noted, and which embodies a substantially dust-tight compartment for a magneto coupling which may be of impulse type, the flange connection being such as to obviate the use of gaskets, washers, or similar expedients between the companion elements of the mounting.

Yet a further object is attained in the provision of an improved mounting for securing a magneto or the like in overhung relation to an associated engine, and so constructed that companion flange elements are interengaged in a manner to insure the correct placement and alignment of the magneto with respect to the engine frame.

Yet a further object is attained in the provision of a flange mounting for magnetos, comprising companion flanged elements so connected as to be susceptible of relative angular adjustment, whereby to avoid niceties of location of tapped or other openings for the reception of holding elements such as screws or bolts.

Other objects will be in part apparent, and in part set forth in the following detailed description of a presently preferred exemplary embodiment of the invention, considered in connection with the accompanying drawing, in which:

Fig. 1 is a sectional elevation of a magneto and portions of an associated engine frame or housing to which the invention is applied, the sectional portions of this figure being taken along a vertical plane coincident with the axes of the timing and magneto shafts, and Fig. 2 is an end elevation of the magneto of Fig. 1 as viewed along line 2—2 thereof.

Referring now by numerals of reference to the drawing, there is indicated at 3 a wall element of an engine frame or casing, and which for purposes of the present description may be considered as a vertical wall of an engine crankcase. The wall portions shown are merged into a cup-shaped structure 4 projecting externally of the engine casing proper, and embodying an externally projecting vertical faced flange 5. The flange 5 is provided with a plurality, preferably two drilled and/or tapped openings 6 and 7, shown as located diametrically opposite each other, with one above and the other below the cup structure 4.

A magneto drive shaft 8, which may be considered as the usual timing shaft, is conveniently journalled in a bearing portion 9, constituted by an internal extension of the cup structure 4, the timing shaft projecting externally of the engine within the structure 4, to receive a coupling head 10 secured to the shaft as by a key 11. This head is centrally countersunk and provided with say a pair of radial recesses 12 serving to receive, as hereinafter appears, correspondingly located lugs on the campanion coupling head of the magneto.

The magneto selected to illustrate the invention, is of rotating field type embodying a shaft 13 by which is carried a rotor 14, laminated pole shoes 15 and pole pieces 16, one of which is shown in the drawing. No detailed description of these parts is necessary, since they constitute, per se, no part of the present invention. The magneto frame, casing or housing is illustrated at 17 and consists preferably of a non-magnetic die-cast alloy such as an alloy of aluminum. Closure of the structure 17 is completed at the top by a detachable cover 18, and at the free end by a plate 19. The anti-friction bearings 20 are disposed within a suitable recess therefor, formed say in the casting constituting the casing 17.

As appears in Fig. 1, the casing 17 is extended from the driving end of the magneto to form a cup-shaped portion 21, embodying an external flange 22 provided with a face 23 lying in a vertical plane, and preferably corresponding in area and extent to a similar vertical face 24 of the flange 5 of the engine casing structure. The flange 22 is provided in locations corresponding to those of the openings 6 and 7, with companion recesses or openings 25 at the top, and 26 at the bottom of the magneto flange. The uppermost of these openings 25 is, by preferance, tapped to receive a cap screw 27, while the lowermost opening 26 is preferably arcuately slotted, and of course free of threads. This arrangement enables the insertion from the magneto side, of a cap screw 28, the opening 7 being preferably

tapped to receive the threaded shank of the latter screw.

It may be desired that the vertical faces 23 and 24 be machined so as to engage snugly. This requirement will however depend upon the niceties of casting of the parts 17 and 3, and if these castings are of good quality machining is unnecessary. However in order to insure substantial axial alignment of the timing shaft 8 and the magneto shaft 13, and to facilitate the detachable mounting of the magneto, it is my preference to provide an external circular projection 29, extended from the cup structure 21. This element which is of annular form may be if desired, and by preference is, externally machined, to provide thereon a cylindrical seating surface 30. The surface 30 closely engages a corresponding internal surface 31 formed just inwardly of the margins of the opening into the cup-shaped structure 4. It is thus seen that the elements 4 and 29 telescopically engage and serve not only as a primary support for, but also establish the correct position of the magneto so as to insure a close and accurate alignment of the shafts 13 and 8. It will appear that these parts coact to permit, upon loosening the cap screws 27 and 28, any desired final adjustment in angular position of the magneto, due to the provision of the arcuate slot 26. The arrangement of flange 29, seated internally of the flange 5, specifically engaging in the disclosure the seat 31, provides a step joint between the flanges, the rabbeted, undercut or shouldered aspect of the structure making for a seal between the engine- and magneto-carried members sufficient to keep out all dust and moisture, and, as noted, to obviate the use of packing elements of any nature.

Provision for the mechanical connection of the magneto shaft with the coupling head 10, is found in a companion coupling head 32 shown as constituting one of the housing and drive elements of an impulse coupling indicated generally at 33, Fig. 1. The impulse coupling 33 is or may be of the type disclosed in Letters Patent No. 1,805,598 granted to me May 19, 1931, although any other suitable type of coupling may of course be employed.

Driving connection from the coupling head 10 to the coupling element 32 is established, in the example disclosed, through a pair of radial driving lugs 34, Fig. 2. These may consist of radially projecting steel inserts cast in place in a non-magnetic structure constituting the head 32, in accordance with the disclosure of the patent heretofore cited. The radial ribs 34 project from the head 32 and engage the recesses 12 in the head 10 so as to establish driving connection between the shafts 8 and 13, merely upon making the flange connection between parts 5 and 22. As is seen from Fig. 1, the impulse coupling assembly, generally indicated at 33, includes a companion element 35 which, unlike the coupling head 32, is secured to the shaft 13, this securement being through the agency of a tapered portion 36 on the magneto shaft, with or without a key (not shown), and a nut 37 disposed in countersunk portions of the coupling elements 32 and 35.

It is my preference in forming the portions 21—31 of magneto housing 17, to cast within the cuplike part of this structure as an integral element thereof, a lug 38 (Fig. 2), which projects radially and inwardly of the hollowed portion. The element 38 receives a stop lug 39, which projects rearwardly of the element 38, and engages under certain conditions, the free ends of the pawls (not shown) of the impulse coupling. The purpose and function of such a member are generally understood, being described fully in the patent heretofore noted, the material descriptive portions of which are incorporated herein by this reference.

Due to space arrangements and presently preferred location of magnetos, particularly for use on tractors, airplanes, automobiles, and other vehicles employing internal combustion engines, there has developed an increasing demand for an overhung magneto mounting of flange type, of which this disclosure constitutes an improved example. It will have appeared from the description that the described structure admirably attains, at a low cost, all requirements of a flange mounting such as to permit all necessary latitude of adjustment, serves to obviate the need for washers, gaskets and like elements, and to constitute a substantially dust-proof inclosure for an impulse coupling. The arrangement described has the further advantage of enabling the location of the impulse coupling at the driving end of the magneto, so as to provide for accessibility incident to any service requirements. It will appear that the described mounting is simple in construction, reasonable in cost of production, and in all other respects fully attains the several objects heretofore enumerated.

While I have described the invention by making reference to an embodiment selected for the purpose of disclosure, it will be understood that many changes may be made in the parts as well as in their combinations and arrangement, without departing from the full intended scope of the invention as defined by the appended claims.

I claim:

1. In combination with an engine casing structure, a hollow flanged projection thereon, a magneto, a magneto drive shaft extended into the said projection, a coupling on the drive shaft, a magneto casing having a hollow flanged projection adapted to mate with that on the engine casing structure, holding elements securing the flanges of said projections in assembled relation, and means within the flanged portions of the projections for determining alignment of the magneto with respect to the drive shaft, the hollow portions of the projections coacting in assembly, to provide a chamber for the accommodation of the magneto coupling.

2. In combination with an engine casing, a magneto, and a drive coupling therebetween, a mounting for supporting the magneto on the engine from one end of the magneto casing, said mounting including paired cupped structures formed respectively on the end of the magneto casing and on the engine casing, and coacting to form a chamber therebetween, for the reception of the coupling, the cupped elements being formed to provide a step-joint therebetween, and holding means for detachably securing the cupped portions in assembled relation.

3. In combination with an engine casing structure, a magneto including a magneto shaft, a magneto drive shaft, an overhung mounting for the magneto, including paired hollow projections, one thereof formed on the engine casing, the other on the magneto casing, shaft bearings beyond the hollow portions of the projections, an element of arcuate external aspect on one of the projections, a correspondingly shaped seat on the other projection adapted internally to receive the first element as a primary support for the mag-

neto, and holding elements by which the projections are detachably maintained in assembled relation.

4. In combination with an engine casing structure and a magneto, means for mounting the magneto by one end of its casing, to the engine casing, said means including a pair of extensions coacting to form a coupling chamber, one extension formed integrally with the engine casing and the other with the magneto casing, said extensions each being externally peripherally flanged, the flanges being apertured for the reception of threaded holding elements, and at least one of the apertures in one of the elements being of slotted form to permit angular adjustment of the magneto with respect to the engine casing.

5. In combination with a magneto and engine casing, combined means for detachably connecting the magneto to the engine casing and for housing an impulse coupling, said means including a pair of chambered extensions, one formed integrally with the engine casing and the other formed integrally of one end of the magneto casing, each of said extensions being flanged so as to provide a rabbeted connection between the extensions, a projection or lug internally of the hollow portion of one of said extensions, for engagement with a pawl member of the associated impulse coupling, the elements constituting the rabbeted connection between the extensions, constituting the primary support of the magneto through interengagement of the extensions, and threaded holding elements by which the magneto is maintained in assembly, in predetermined axial position.

6. An engine and magneto assembly including, in combination with the magneto and engine casing structures, the magneto shaft, a magneto drive shaft and a coupling for the shafts, a magneto supporting connection comprising a pair of mating extensions, one on the magneto and the other on the engine frame, the extensions coacting to form a chamber for the coupling, shaft bearings in the casing structures inwardly beyond the chamber, companion flanges located on the outer portions of said extensions, means for securing the flanges together, and means inwardly of the flanges constituting a primary support for the magneto.

7. An engine and magneto assembly including, in combination with the magneto and engine casing structures, the magneto shaft, a magneto drive shaft and a coupling for the shafts, a magneto supporting connection comprising a pair of outwardly opening cupped extensions, one on the magneto and the other on the engine frame, the cupped portions of the extensions cooperating with each other in assembly to form a chamber for the coupling, shaft bearings in the casing structures inwardly beyond the cupped portions, companion flanges located peripherally of said cupped portions, a pair of interengaging elements carried by the respective flanges and constituting a primary support for the magneto, and threaded elements for securing the flanges together to maintain the magneto in assembly with the engine casing structure.

8. A magneto housing having a one-piece end plate provided with a shallow depression arranged to enclose an impulse coupling; and means formed integral with said end plate for attaching said housing directly to an engine housing.

9. A magneto housing having a one-piece end plate provided with a shallow depression arranged to enclose an impulse coupling; and supporting means integral with said end plate for attachment of said housing directly to an engine housing, said supporting means including means for permitting angular adjustment of the magneto with respect to the engine.

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