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IGNITION DISTRIBUTOR WITH CAM AND BREAKER PLATE LUBRICATION MEANS

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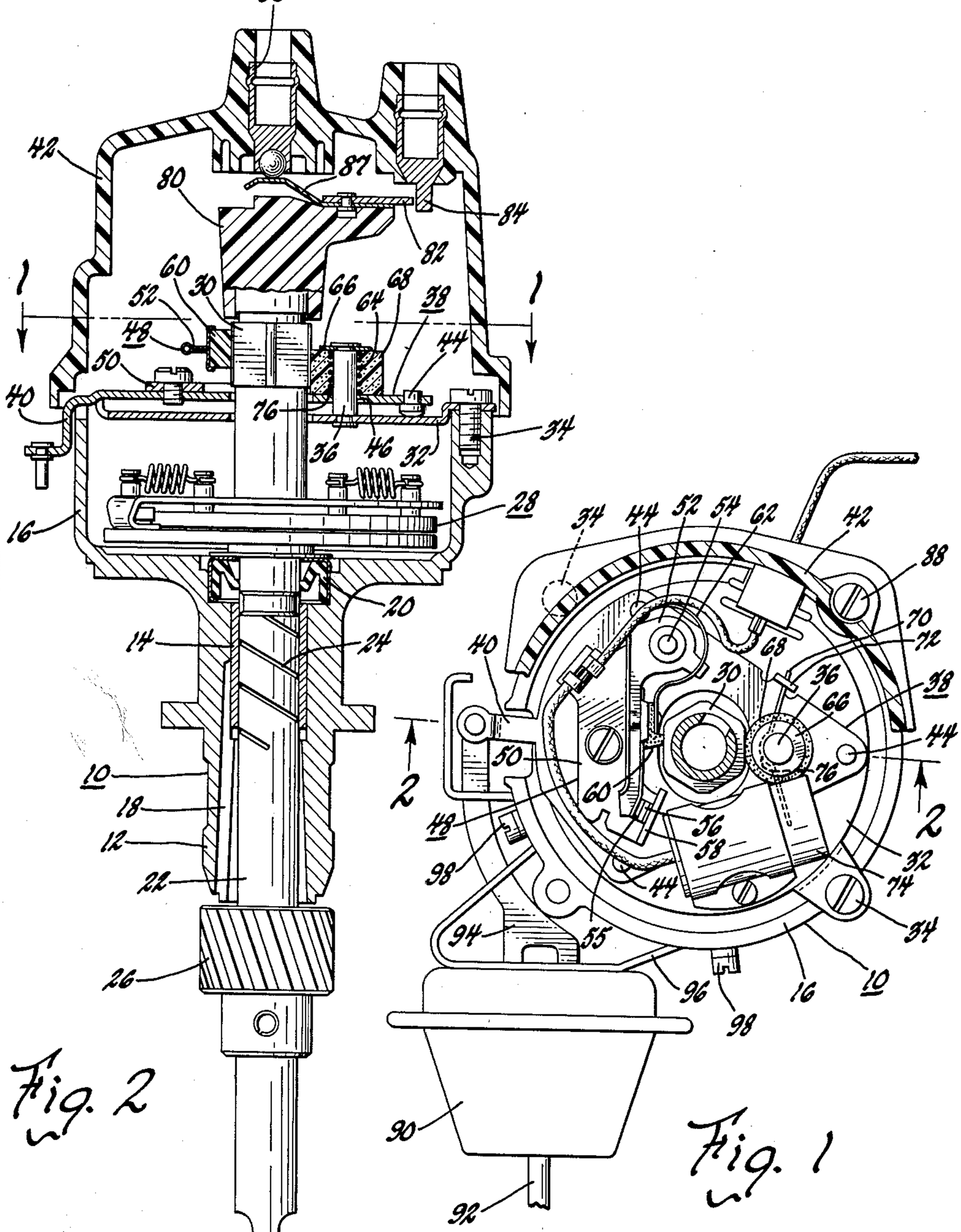

Fig. 2

Fig. 1

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1

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IGNITION DISTRIBUTOR WITH CAM AND BREAKER PLATE LUBRICATION MEANS

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This invention relates to ignition distributors for controlling the spark timing of internal combustion engines.

One of the objects of this invention is to provide an ignition distributor wherein means are provided for lubricating the bearing means that pivotally supports the breaker plate of the distributor and for lubricating the cam of the distributor with a single unitary lubricating wick.

Another object of this invention is to provide a lubricant wick for the bearing means of a breaker plate which comprises a foam material that is impregnated with a high temperature grease of low volatility that is suitable for use in the vicinity of the breaker contacts of the distributor. This wick may be formed of a polyurethane foam material which may have, for example, 45 to 80 cells per lineal inch.

A further object of this invention is to provide an ignition distributor wherein the breaker plate is pivoted on a fixed post and wherein resilient means are provided to urge the breaker plate towards the post. With this arrangement, a central opening in the breaker plate which receives the post has a wall which is constantly urged into engagement with the post.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

FIGURE 1 is a sectional view of an ignition distributor taken along line 1—1 of FIGURE 2.

FIGURE 2 is a sectional view taken along line 2—2 of FIGURE 1.

Referring now to the drawings, the reference numeral 10 generally designates a base assembly or housing for the ignition distributor of this invention which may be formed of a suitable metal material such as die cast aluminum. The housing 10 has a lower section 12 supporting a bearing 14 and an upper generally cup-shaped section 16. The section 12 is fluted at 18 in order to provide lubrication for the bearing 14. A suitable seal 20 is disposed above the bearing as is clearly apparent from FIGURE 2.

The bearing 14 supports a shaft 22 that has a spiral lubricating groove 24. The shaft 22 carries a conventional gear assembly 26 which is driven by a suitable gear on an engine.

The shift 22 drives a centrifugal advance mechanism generally designated by reference numeral 28 which is operable to adjust a cam 30 relative to the shaft 22. The centrifugal advance mechanism 28 may be of any well known construction and is responsive to the speed of rotation of the shaft 22 and adjusts the cam 30 relative to the shaft in accordance with this speed of rotation.

The upper end of the cup-shaped section 16 of the housing 10 supports a plate 32. This plate is secured to the top end of portion 16 of the housing 10 by means of a plurality of screws 34. The plate 32 carries a post 36 which is welded at its lower end to the plate 32.

The post 36 serves as a bearing or pivot for a breaker plate generally designated by reference numeral 38. The breaker plate 38 is generally triangularly shaped and has an integral arm 40 which extends through a suitable slot formed by the top end of the housing section 16 and the distributor cap 42. The breaker plate 38 carries three

2

bearings or buttons 44 which may be formed, for example, of nylon, porous metal, rolled bronze or other suitable materials. One end of the bearings is slidable on the top wall of the fixed plate 32 as is clearly apparent from the drawing. It is seen that the post 36 passes through an opening 46 formed in the breaker plate 38 and that the breaker plate 38 can therefore pivot around the longitudinal axis of the post 36.

The breaker plate 38 carries a breaker contact set 48 which includes a plate 50 that is secured to the breaker plate 38. A breaker arm 52 is pivoted to a post 54 which in turn is secured to the plate 50. The breaker arm 52 carries a breaker contact 55 which cooperates with a breaker contact 56 that is supported on an upturned lug 58 formed integral with the plate 50. The breaker lever 52 carries the usual rubbing block 60 which is urged into engagement with the cam 30 by a flat spring 62.

The bearings or buttons 44 which are carried by the breaker plate 38 are urged into engagement with the fixed plate 32 by a spring 64 which is disposed between the breaker plate 38 and a washer 66 that is secured to the top end of the post 36. A lubricant wick 68 is provided which has a central opening and an outer cylindrical configuration. This wick is slipped over the spring 64 and the post 36. This annular lubricant wick 68 is formed of an open cell polyurethane foam having, for example, 45 to 80 cells per lineal inch. The polyurethane foam is impregnated with a high temperature grease of low volatility. The grease can be applied to this wick by a rubbing in process. By way of example but not by way of limitation, a lubricant wick having a .60 inch diameter can be saturated with from .7 to .9 gram of grease.

It is pointed out that lubricant wick 68 performs a dual lubricating function. The lubricant wick 68 will lubricate the post 36 so that the breaker plate 38 can pivot on the post 36 with a minimum of friction. In addition, the outer surface of the lubricant wick 68 engages the cam 30 to provide lubrication for the outer surface of the cam and therefore to provide lubrication between the cam and the rubbing block 60.

The ignition distributor of this invention has a spring 70 formed of a piece of wire which urges the breaker plate 38 in such a direction that a portion of the wall that forms the hole 46 is held in tight engagement with a part of the post 36. It is seen that one end of this spring 70 engages an upturned lug 72 of the breaker plate 38. The opposite end of this spring engages a bracket for the condenser 74. The middle portion 76 of the spring is curved and will engage either the spring 64 or the post 36 to crowd the breaker plate 38 against the post 36. In this connection, it is pointed out that a suitable bushing may be disposed between the post 36 and the hole 46 in the breaker plate 38.

The shaft 22 drives a conventional rotor 80 carrying an electrode 82 which cooperates with the fixed electrodes 84 located in the distributor cap 42. The center electrode 86 of the distributor cap engages a resilient contact 87 which is connected with the electrode 82. The distributor cap 42 is supported by the top end of the portion 16 of the base or housing 10 as is well known to those skilled in the art and can be secured thereto by one or more fasteners 88.

The arm 40 of the breaker plate 38 is operated by a diaphragm in a conventional vacuum unit 90 which has an intake pipe 92 that is connected with the intake manifold of an engine. The actuating rod 94 which is connected with the diaphragm of the vacuum unit 90 shifts the arm 40 and the breaker plate 38 around the pivot point 36 to provide the required vacuum advance for the ignition distributor. The vacuum unit is fixed to the cup-shaped portion 16 of the base 10 by a bracket 96 and fasteners 98.

While the embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. An ignition distributor comprising, a base member, a shaft rotatable in said base member, a cam driven by said shaft, a breaker plate carrying breaker contact apparatus which is operated by said cam, means supporting said breaker plate for pivotal movement around an axis which is off-set from the longitudinal axis of said shaft including post means, and a lubricating wick having an internal surface disposed around said post means.

2. An ignition distributor comprising, a base member, a shaft journalled for rotation in said base member, cam means driven by said shaft, a plate member fixed to said base member, a breaker plate carrying breaker contact apparatus that is operated by said cam means, post means extending from said plate member and passing through an opening in said breaker plate whereby said breaker plate can pivot around the axis of said post means, and an annular lubricating wick disposed around said post means said post means being off-set from the longitudinal axis of said shaft.

3. The ignition distributor according to claim 2 wherein the lubricating wick is formed of polyurethane foam material which is impregnated with a high temperature low volatility grease.

4. An ignition distributor comprising, a base member, a shaft rotatable in said base member, cam means driven by said shaft, a breaker plate carrying breaker contact apparatus which is operated by said cam means, a support plate fixed to said base member, post means fixed to said support plate and passing through an opening formed in said breaker plate, said post means forming a pivot for said breaker plate, and an annular lubricating wick containing a lubricant encircling said post means and engageable with said cam means for lubricating both said post means and said cam means.

5. The ignition distributor according to claim 5 wherein the lubricating wick is formed of an open cell polyurethane material which is impregnated with a grease.

6. An ignition distributor comprising, rotatable shaft means, cam means driven by said shaft means, a breaker plate carrying breaker contact apparatus that is operated by said cam means, pivot means offset from the longitudinal axis of said cam means for pivotally supporting said breaker plate for movement with respect to said cam means, and an annular lubricating wick containing a lubricant disposed around said pivot means for lubricating said pivot means.

7. An ignition distributor comprising, a base member, a shaft rotatable in said base member, cam means carried by said shaft, a support plate secured to said base member, a breaker plate carrying breaker contact apparatus that is operated by said cam means, a post secured to said suupport plate passing through an opening formed in said breaker plate whereby said breaker plate is pivoted to said support plate, bearing means supported by said breaker plate and engageable with said support plate for providing a sliding bearing between said breaker plate and support plate, a coil spring encircling said post means having a section engageable with said breaker plate and an end section engageable with means which extend from said post means for urging said bearing means into contact with said support plate, and an annular lubricating wick surrounding said post means and coil spring for lubricating the pivot between said post means and breaker plate.

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