June 2, 1959 P. C. KLINE 2,889,418

IGNITION DISTRIBUTOR

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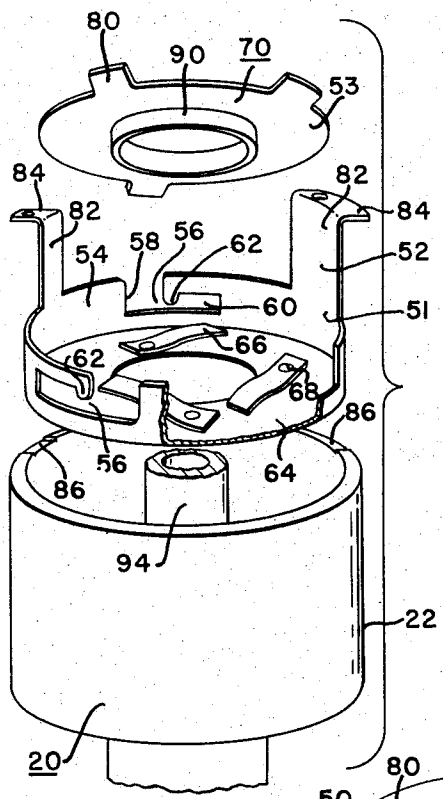

Fig. 2

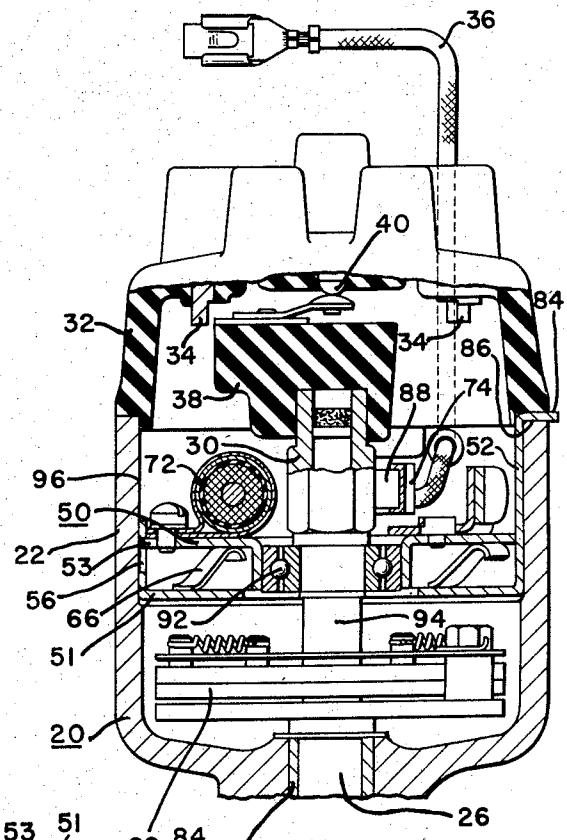

Fig. 1

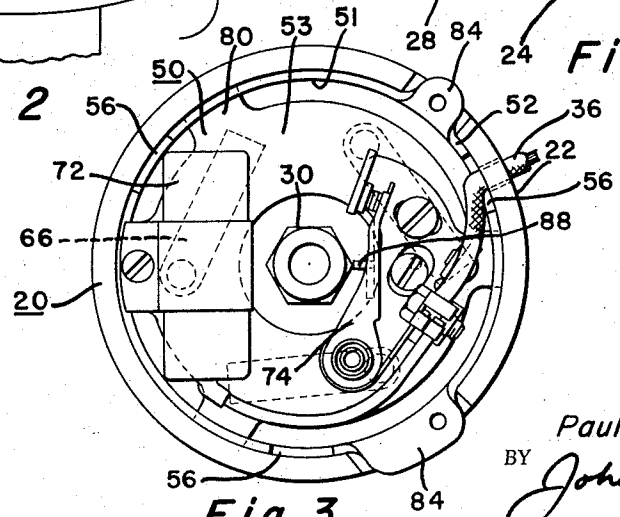

Fig. 3

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2 Claims. (Cl. 200—19)

This invention relates to ignition distributors and is more particularly concerned with an arrangement of distributor parts which will permit a circuit breaker assembly to be replaced in the distributor without the use of tools.

It is well known that ignition breaker point assemblies must be periodically replaced in distributors for internal combustion engines. Heretofore, when breaker point assemblies were replaced in distributors, tools were necessary and a time consuming operation was involved. This has been found to be not entirely satisfactory when the units were serviced in the field as frequently these units had to be serviced under adverse climatic conditions such as extreme cold which made it very difficult to manipulate the tools necessary to accomplish the replacement. The distributor structure according to the present invention will eliminate the difficulties described and will permit the replacement of the breaker point assembly in the distributor without the use of the tools and may be even accomplished by a person wearing gloves, as there are no small parts which must be manipulated and installed in the distributor. In the distributor, according to the present invention, when it is desired to replace the breaker point assembly, it can be accomplished very easily by simply removing the distributor cap and breaking the bayonet connection between the breaker point assembly plate and a means carried by the distributor housing. After the plate assembly is removed, a new assembly can be installed by merely aligning lugs which are carried by the plate in bayonet slots in the means and pressing the plate assembly in position into the distributor against the force of springs to the bottom of bayonet slots whereby, when the plate is rotated into the bayonet slots and released it will be securely held by the springs in the housing.

It is an object, therefore, of the present invention to provide an ignition distributor with a breaker point assembly which may be installed in the distributor without the use of tools.

Another object of the present invention is to arrange the breaker point assembly parts in an ignition distributor so that the assembly is held in position in the distributor by the distributor cap and housing.

A further object of the present invention is to maintain the breaker point assembly in proper position in the distributor by a bayonet connection which will permit the replacement of the breaker points in the distributor without the use of tools.

Another object of the present invention is to maintain the breaker point assembly in position in the distributor by a resilient means.

A still further object of the present invention is to maintain the breaker point assembly in a distributor by resilient means which will hold the plate of the assembly in bayonet slots and thus provide a distributor wherein the breaker point assembly can be installed without the use of tools.

Another object of the present invention is to maintain the breaker point assembly in position by means of bayonet slots and resilient means which constantly maintain a plate of the assembly in proper position in the distributor.

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 cross-sectional view of a portion of an ignition distributor incorporating the breaker point assembly according to the present invention.

Figure 2 is an exploded view showing in perspective certain parts of the distributor in Figure 1.

Figure 3 is a top plan view of the breaker point assembly as used in the distributor in Figure 1.

The distributor **20** as shown in the drawing is of the conventional type and includes a housing **22** which is provided with a bearing **24** to journal the shaft **26**. The shaft **26** is rotatable in housing **22** and is connected with a conventional centrifugal advance mechanism **28** which will vary the angularity of the distributor cam **30** in response to the rotation of shaft **26**, as is well known to those skilled in the art. The distributor is also provided with a conventional distributor cap **32** which has a plurality of stationary contacts **34**. The distributor rotor **38** which is driven by an extension on cam **30** will provide a momentary circuit between the stationary contact **40** of the cap and the stationary contacts **34** and thereby complete the circuit to the spark plugs, not shown. The parts heretofore described are all conventional and well known. Positioned within the housing **22** is a breaker point assembly **50** which is formed according to the present invention. This breaker point assembly **50** is carried in the distributor between the centrifugal advance mechanism **28** and the distributor rotor **38** and is formed so that it can be installed in the distributor housing without the tools which are normally required when the conventional breaker point assemblies are installed or replaced in distributors.

The breaker point assembly **50** includes a support assembly **51** and a plate **53** both clearly shown in Figure 2. The support assembly **51** includes a cup-like member **52** which has an annular vertical extending outer wall **54** wherein three bayonet slots **56** are circumferentially located. Each of the slots **56** are formed as shown and have a vertical opening **58** which is connected to a horizontally extending opening **60**. Positioned between the openings **58** and **60** is a downwardly extending lug **62**. The bottom wall **64** of member **52** carries the resilient means which are shown as three spaced upwardly extending springs **66**. These springs **66** each have one end secured to the bottom wall **64** by means of rivets **68** and are bent to extend upwardly as shown in Figure 1.

The plate assembly **70** carries the conventional condenser **72** and breaker arm assembly **74** and is of a diameter to be received in the cup-shaped member **52**. The plate assembly **70** is provided with radially extending lugs **80** on the plate **53** which are located and positioned to be received in the bayonet slots **56**. The cup-shaped member **52** also is provided with at least two upstanding lugs **82** which have outwardly turned portions **84** bent at right angles to the lugs and which are adapted to be received in notches **86** in the top wall of the distributor housing **22**. The upstanding lugs, or portions, **82** of the cup-shaped member are of sufficient length so that, when the support assembly **51** is installed in the housing **22** and the plate assembly **70** is assembled in the bayonet slots, the rubbing block **88** on the breaker arm will be in proper position relative to the distributor cam **30**.

The member **52** is held in position in the housing by the portions **84** in notches **86** when the distributor cap **32** is assembled and locked to the housing **22** by conventional means. The member **52** may also be screwed to the housing **22** if desired.

The plate assembly **70** is provided with a downwardly extending central flange **90** which is dimensioned to embrace the outer race of a ball bearing structure **92** which is suitably positioned on the shaft **94**.

From the above, it is apparent that the breaker point assembly **50** may be installed in the distributor by merely sliding it in place so that the lugs **84** seat in notches **86**. The rotor **38** is then assembled to the upper end of the shaft **94** and the cap **32** is assembled to the housing **22** and locked thereto to hold the breaker point assembly in place. When it is desired to replace the breaker arm **74** and/or the condenser **72**, it is only necessary to remove the cap **32** and rotor **38** and then press the plate assembly **70** downwardly and rotate the same to disengage the lugs **80** from the bayonet notches **60**. When this is accomplished, the springs **66** will urge the plate assembly **70** upwardly so that it can be removed without difficulty. In this connection, it is to be noted that the cup-shaped member **52** is not disturbed during removal of the plate assembly **70**.

When it is desired to install the plate assembly **70** in the distributor, the lugs **80** on the plate **53** are aligned with the openings **58** of the bayonet notches and the plate assembly **70** is pressed downwardly against the force of springs **66** so that the lugs **80** engage the bottoms of the bayonet slots **86**. Rotation of the plate assembly in this position will cause the lugs **80** to pass into the horizontal portions **60** of the slots whereupon release of the plate will permit springs **66** to raise the lugs into proper position and the assembly is complete.

From the above, it is apparent that this installation can be accomplished without the use of tools and in a minimum period of time. It is further manifest that the assembly **51** can be eliminated entirely by forming the bayonet slots directly in the wall **96** of the housing **22** and by securing the springs **66** to the internal walls **96** of the housing **22** since the only function of the support assembly **52** is to provide the bayonet slots and anchoring points for the springs **66**. Such modifications come fully within the scope of this invention.

While the embodiments of the present invention as herein disclosed constitute preferred forms, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. An ignition distributor, comprising in combination; a cup-like distributor housing a top wall having at least one notch therein and a vertical wall, a distributor cap adapted to be positioned on and secured to said housing and interfitting over said top wall, a cup-like member adapted to be positioned within the housing by dependent vertical wall portions which are coextensive with the vertical wall of the housing, positioning means integral with said depending wall portions adapted to cooperate and fit into the notch in said top wall of said distributor housing for positioning the member in predetermined relation to said housing, said cap when in position and secured to said housing holding said cup-like member in said predetermined position, said cup member including a plurality of spaced bayonet type slots in the depending vertical wall portions thereof, a breaker point assembly including a plate adapted to fit within the cup and to be carried solely thereby, said plate having peripheral lugs thereon adapted to be engaged in said bayonet type slots and resilient means disposed between the bottom of the cup-like member and the plate for urging the lugs into interlocking relation with said slots whereby the plate can only be removed from the cup-like member by compression of said resilient means for permitting the lugs to be disengaged from the slots.

2. An ignition distributor, comprising in combination; a distributor housing including a top wall having a plurality of notches, a distributor cap having a depending wall thereon adapted to fit within the housing and an end wall thereon adapted to fit on top of the housing, means for securing the cap to the housing, a removable cup-like member having outwardly extending lugs thereon adapted to fit in said notches in the top wall of the housing for positioning the cup within the housing whereby the cap, when in secured position, maintains the cup in fixed position within the housing, a breaker plate carrying a breaker point assembly and adapted to fit within the cup and to be carried solely by the cup, said cup and breaker plate assembly including cooperating means for removably locking the plate to the cup and resilient means disposed between the plate and the cup for urging the plate into locked position with respect to the cup, said plate being removable only upon compression of said resilient means.

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