Sept. 7, 1954 A. BUCHMANN 2,688,714

DISTRIBUTOR FOR MULTICYLINDER INTERNAL-COMBUSTION ENGINES

Filed May 13, 1952

Fig. 1

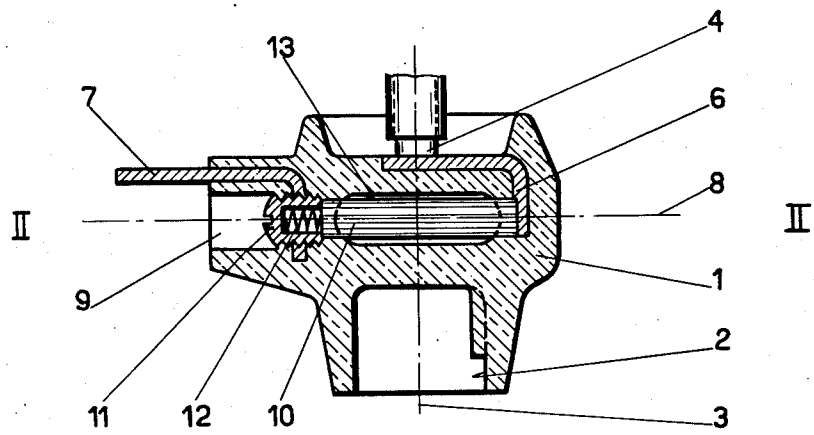
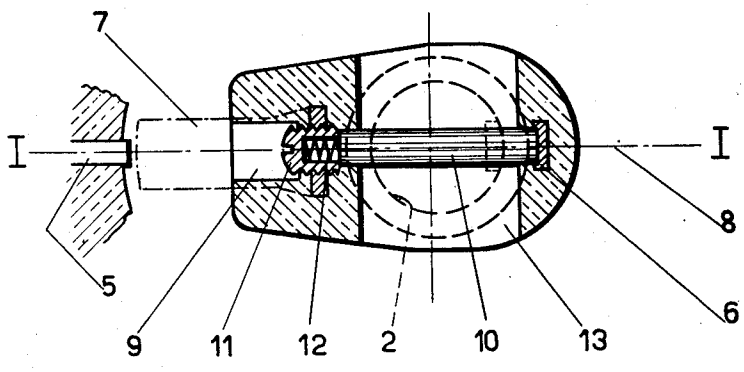


Fig. 2



INVENTOR:
ALBIN BUCHMANN
BY:

Patented Sept. 7, 1954 2,688,714

UNITED STATES PATENT OFFICE

2,688,714

DISTRIBUTOR FOR MULTICYLINDER INTERNAL-COMBUSTION ENGINES

Albin Büchmann, Soleure, Switzerland, assignor to Scintilla Ltd., Soleure, Switzerland

Application May 13, 1952, Serial No. 287,631

Claims priority, application Switzerland May 19, 1951

11 Claims. (Cl. 315—291)

1

The present invention relates to a distributor for multi-cylinder internal combustion engines.

Various devices have been provided for preventing interference in radio and television reception which is caused by unscreened ignition systems of motor vehicles. These devices generally take the form of high-ohmic resistors which are connected to the leads of the spark plugs of the engine. The mounting of suppressors of this type is quite complicated and expensive because the number of suppressors must equal the number of spark plugs and because it is necessary to cut each lead to each spark plug and connect the thus-formed lead ends of each lead to the terminals of a support which carries a suppressor element.

One of the objects of the present invention is to overcome all of the above disadvantages.

An additional object of the present invention is to provide a means for supporting a single suppressor to be used successively with each spark plug as the latter are fired.

A further object of the present invention is to provide a rotor, for the distributor of an internal combustion engine, which is capable of supporting therein a suppressor which may be successively located in the circuits of the several spark plugs as the latter are fired.

A still further object of the present invention is to enable a suppressor of the above type to be cooled during operation of the engine.

Yet another object of the present invention is to mount a suppressor in a distributor rotor in such a way that balanced centrifugal forces are set up during turning of the rotor.

The objects of the present invention also include the provision of a distributor rotor which is of a relatively simple construction and capable of having a suppressor easily attached to and removed therefrom.

With the above objects in view, the present invention mainly consists of a distributor rotor having a body of electrically non-conductive material adapted to be rotatably mounted on the distributor and being formed with a free space. A first electrical conductor, adapted to receive current from a source of electricity, is connected to this body for rotation therewith and has a portion located in said free space of said body. A second electrical conductor is connected to said body for rotation therewith and also has a portion located in said free space of said body. This second conductor is spaced from the first conductor and is adapted to successively contact the distributor points. Thus, when a suppressor is

2

located in this free space and electrically connected to the above-mentioned first and second conductors, the suppressor will complete a circuit through these conductors and will be successively associated with each of the spark plugs as the latter are fired to prevent interference in radio and television reception. The free space in which the suppressor is located passes through the rotor body and is located about an intermediate portion of the suppressor so as to cause air to pass over the same, during operation of the engine, to cool the suppressor. The suppressor is mounted in the rotor body in a symmetrical position with respect to the axis of rotation of the rotor body so as to prevent the creation of unbalanced centrifugal forces.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a central, elevational, sectional view through a rotor constructed in accordance with the present invention and taken along line I—I of Fig. 2; and

Fig. 2 is a sectional plan view of the structure of Fig. 1 taken along line II—II of Fig. 1.

Referring now to the drawings, there is shown in Fig. 1 a rotor having an electrically non-conductive body 1 adapted to be mounted on a distributor for rotation about the axis 3. The body 1 has a bottom recess 2 provided with a keyway and adapted to receive a part of the distributor which is rotated so that the rotor body 1 will be positively rotated about the axis 3.

An electrical conductor 4, leading from a source of electricity, such as the battery of the vehicle, contacts an L-shaped electrical cooductor 6 which is partly embedded in the rotor body 1 with one arm of the electrical conductor 6 being normal to and intersecting the axis of rotation 3 and the other arm of the electrical conductor 6 being parallel to the axis of rotation 3.

A second L-shaped electrical conductor 7 also is partly embedded in the rotor body 1 and is adapted to successively pass by the points 5 during rotation of the rotor body 1, one of these points 5 being diagrammatically illustrated in Fig. 2 in association with the conductor 7, part of which is shown in dot-dash lines in Fig. 2. This conductor 7 also has a leg normal to the

axis of rotation 3 and another leg parallel to this axis.

The rotor body 1 is formed with a bore 9 having an axis 8 extending in a direction normal to and intersecting the axis of rotation 3. A part of the conductor 7 extends across this bore 9 and a part of the conductor 6 is located at an end of the bore 9. The bore 9 is threaded at the part thereof adjacent to the conductor 7, and the latter is formed with a threaded opening forming a continuation of the threaded part of bore 9 so that a plug 11, which is electrically conductive, may be threadedly mounted in the bore 9 and extend across the threaded opening of conductor 7.

The bore 9 is adapted to receive the cylindrical suppressor 10 which is a high-ohmic resistor and bears at one end against the conductor 6 to be electrically connected thereto. Suppressor 10 bears at its other end against the plug 11, the latter serving to maintain the suppressor 10 in a fixed position on the rotor body 1. The parts are designed so that the cylindrical suppressor 10 is symmetrically located with respect to the axis of rotation 3 to prevent unbalanced centrifugal forces during rotation of the rotor. The plug 11 is hollow and carries therein a spring 12 which bears against the suppressor 10 to prevent any variations in the location of the latter due to vibrations which may be set up during operation of the distributor.

The rotor body 1 is provided with a transverse opening 13 forming together with the bore 9 a free space in which the suppressor 10 is located. This transverse opening 13 is located about an intermediate part of the suppressor 10, extends in a direction normal to the axis of rotation 3 and axis 8 of bore 9 and passes completely through the rotor body 1 so as to provide an air passage which causes air to pass over the suppressor 10 during rotation of rotor body 1 to cool the suppressor. It will be noted that the suppressor is in contact with the rotor body 1 only at relatively small opposite end portions of the suppressor so that the latter is cooled over almost the entire length thereof.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of distributors for multicylinder internal combustion engines differing from the types described above.

While the invention has been illustrated and described as embodied in distributor rotors for multi-cylinder internal combustion engines, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A rotor for an ignition distributor to be used in a multi-cylinder internal combustion engine, said rotor comprising, in combination, a body of electrically non-conductive material adapted to be rotatably mounted on the distributor for rotation about a predetermined axis and being formed with a free space extending all the way through said body and across said axis; a first electrical conductor adapted to receive current from a source of electricity, being connected to said body for rotation therewith, and having a portion located adjacent said free space on one side of said axis; and a second electrical conductor connected to said body for rotation therewith, being spaced from said first conductor, and also having a portion located adjacent said free space of said body on an opposite side of said axis, said second conductor being adapted to successively contact the points of the distributor, whereby an electrically conductive suppressor, for preventing interference to radio and television reception, may be located in said free space of said body, extending across said space, and electrically connected to said conductors to complete a circuit through the same.

2. A rotor for an ignition distributor to be used in a multi-cylinder internal combustion engine, said rotor comprising, in combination, a body of electrically non-conductive material adapted to be rotatably mounted on the distributor for rotation about a predetermined axis and being formed with a free space extending all the way through said body and across said axis, said free space being substantially symmetrical with respect to said axis; a first electrical conductor adapted to receive current from a source of electricity, being connected to said body for rotation therewith, and having a portion parallel to said axis and located adjacent said free space on one side of said axis; and a second electrical conductor connected to said body for rotation therewith, being spaced from said first conductor, and also having a portion parallel to said axis and located adjacent said free space of said body on an opposite side of said axis, said second conductor being adapted to successively contact the points of the distributor, whereby an electrically conductive suppressor, for preventing interference to radio and television reception, may be located in said free space of said body, extending across said free space, and electrically connected to said conductors to complete a circuit through the same.

3. A rotor as defined in claim 2 and wherein a part of said free space of said body is in the form of a cylinder located between said portions of said conductors and extending in a direction normal to the axis of rotation of said body so that a cylindrical suppressor may be located in said free space.

4. A rotor as defined in claim 3 and wherein a second part of said free space of said body passes completely through said body in a direction normal to said axis of rotation and said cylindrical part of said space, said second part of said free space intersecting and being located about said cylindrical part thereof to provide air cooling of a suppressor supported in the cylindrical part of said space.

5. A rotor as defined in claim 2 and wherein said portion of one of said conductors is formed with a threaded bore adapted to receive a plug for holding a suppressor between said portions of said conductors and in said free space.

6. A rotor as defined in claim 5 and wherein an electrically conductive threaded plug is located in said threaded bore.

7. A rotor as defined in claim 6 and wherein said plug is formed with a recess facing the axis of rotation of said body and wherein a spring is mounted in said recess to press against an end of a supressor located in said free space between said portions of said conductors.

8. A rotor for an ignition distributor to be used

in a multi-cylinder internal combustion engine, said rotor comprising, in combination, a body of electrically non-conductive material adapted to be rotatably mounted on the distributor for rotation about a predetermined axis and being formed with a free space extending through the body across said axis; an elongated suppressor, for preventing interference in radio and television reception, mounted at opposite end portions on said body for rotation therewith and having an intermediate portion extending through said free space and being entirely out of contact with said body so as to be air-cooled when said body rotates; and electrically conductive means passing through said body and being electrically connected to said suppressor for conveying electrical current from a source of electricity, through the suppressor and to the points of the distributor.

9. A rotor as defined in claim 8 and wherein said suppressor extends in a direction normal to said axis of rotation and to the direction of said free space.

10. A rotor for an ignition distributor to be used in a multi-cylinder internal combustion engine, said rotor comprising, in combination, a body of electrically non-conductive material adapted to be rotatably mounted on the distributor for rotation about a predetermined axis and being formed with a free space extending through the body in a direction normal to said axis; a suppressor, for preventing interference in radio and television reception, mounted on said body for rotation therewith and having an intermediate portion extending through said free space so as to be air-cooled when said body rotates, said suppressor being symmetrically located with respect to said axis of rotation so as to produce balanced forces during rotation of said body; and electrically conductive means passing through said body and being electrically connected to said suppressor for conveying electrical current from a source of electricity, through the suppressor and to the points of the distributor.

11. A rotor for a distributor to be used in a multi-cylinder internal combustion engine, said rotor comprising, in combination, a body of electrically non-conductive material adapted to be

mounted on the distributor for rotation about a predetermined axis, said body being formed with a free space extending through the same in a direction normal to said axis and being symmetrical with the latter, and said body being formed with a pair of opposite bore portions communicating with said free space and being located along a second axis normal to said axis of rotation and the direction in which said free space extends, one of said bore portions being threaded in at least a part thereof; a first L-shaped electrical conductor adapted to successively contact the distributor points, being at least partially embedded in said body and having a portion parallel to said axis of rotation, extending through said threaded part of said one bore portion, and being formed with a threaded opening forming a continuation of said threaded part of said one bore portion; a second L-shaped electrical conductor adapted to be connected to a source of electricity, being at least partly embedded in said body and having a portion parallel to said axis of rotation and extending into the other of said bore portions; an elongated suppressor for preventing interference in television and radio reception, having opposite end portions one of which is located in said other bore portion against said second conductor and the other of which is located in said one bore portion spaced from said first conductor; and an electrically conductive, outwardly threaded plug threadedly engaging said threaded part of said one bore portion, passing through said threaded bore of said first conductor, and being located against said other end portion of said suppressor.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,570,084	Russell	Jan. 19, 1926
1,997,460	Fitzsimmons	Apr. 9, 1935
2,593,205	Short et al.	Apr. 15, 1952

FOREIGN PATENTS

Number	Country	Date
529,645	Great Britain	Nov. 26, 1940