June 14, 1932. C. H. DAVIS, JR 1,863,299

IGNITION DEVICE

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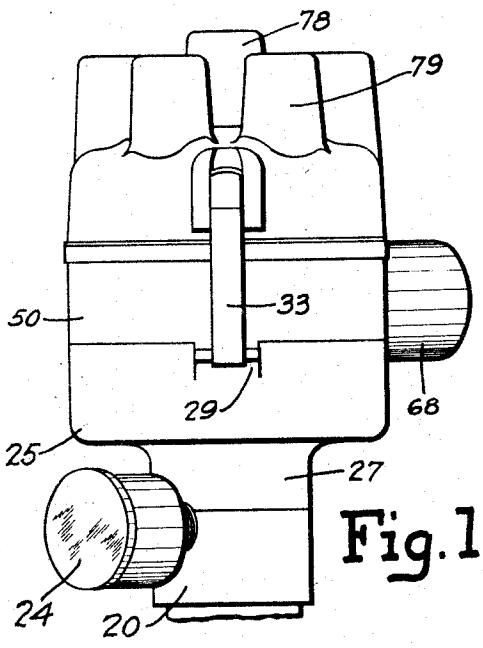


Fig. 1.

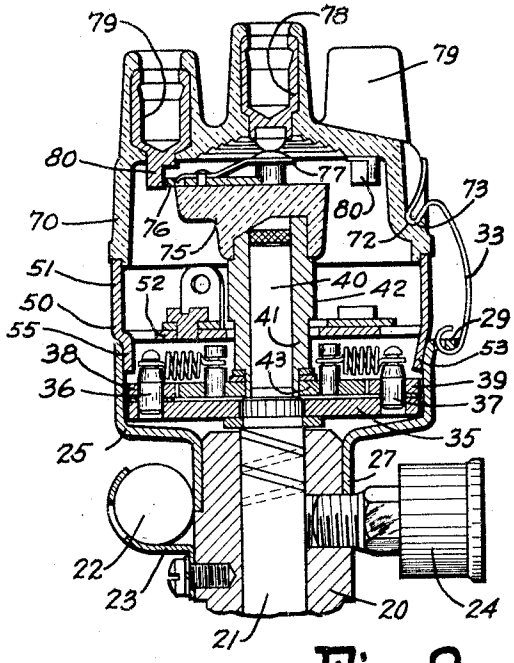


Fig. 2.

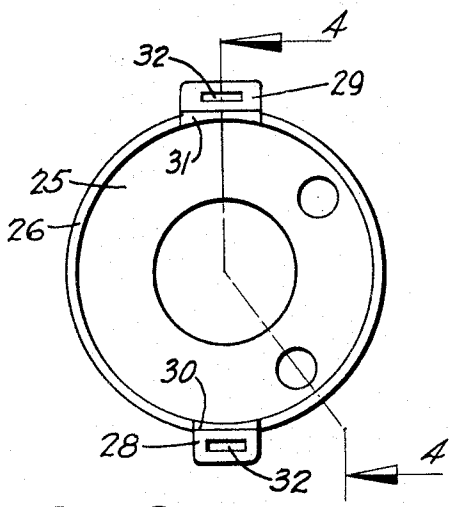


Fig. 3.

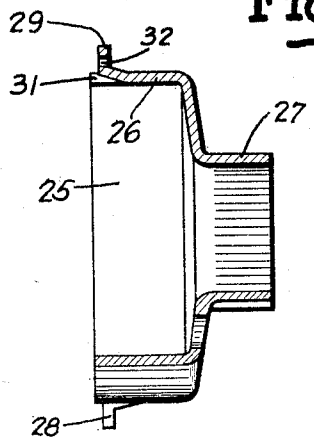


Fig. 4.

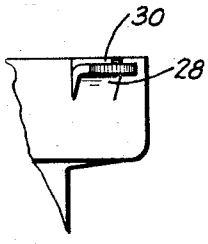


Fig. 5.

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IGNITION DEVICE

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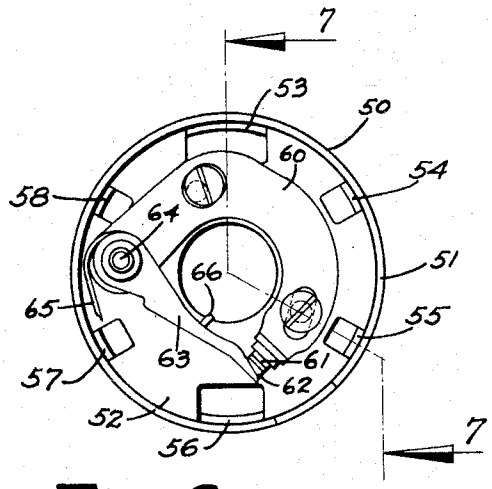


Fig. 6.

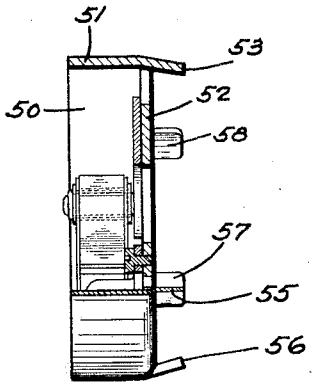


Fig. 7.

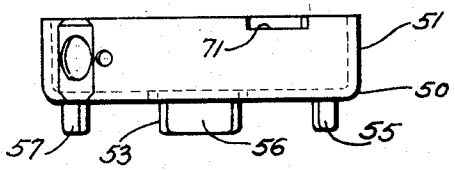


Fig. 8.

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UNITED STATES PATENT OFFICE

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IGNITION DEVICE

Application filed May 29, 1930. Serial No. 456,982.

This invention relates to improvements in ignition devices for internal combustion engines.

It is among the objects of the present invention to provide a compact ignition device for an internal combustion engine, of simple structure and design, which may be produced commercially at a minimum cost.

Another object of the present invention is to provide an ignition device comprising inter-fitting portions made up of formed sheet metal whereby to reduce production costs.

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

In the drawings:

Fig. 1 illustrates the ignition device in side elevation.

Fig. 2 is a vertical sectional view taken through the ignition device.

Fig. 3 is a plan view of the base housing.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 3.

Fig. 5 is a fragmentary view of the base housing illustrating one of the angular ears struck from the side wall thereof.

Fig. 6 is a plan view of the top housing, a part of the interior of the ignition device being shown in this view.

Fig. 7 is a sectional view taken substantially along the line 7—7 of Fig. 6.

Fig. 8 is a side view of the top housing showing the ears thereof which are adapted telescopically to engage the base housing.

Referring to the drawings, the ignition device comprises a bearing block 20 which is adapted rotatably to support the drive shaft 21 of the ignition device. Although not shown in the drawings, this drive shaft 21 is to be operatively connected with any suitable driving mechanism of the engine for which this ignition device provides sparking impulses. A condenser 22 is secured to the bearing 20 by a bracket 23. A grease cup 24 is provided on the bearing 20.

The ignition device comprises a base housing 25, cup-shaped, having an annular side wall 26. A tubular extension 27, of lesser diameter than the annular side wall 26, fits snugly upon one end of the bearing 20 so that the drive shaft 21 in said bearing extends coaxially into and through the cup-shaped housing 25. At diametrically opposite points, angular ears 28 and 29 are struck from the side wall 26 of the cup-shaped housing 25, the angular ear 28 being of lesser width than the angular ear 29. By striking out the angular ears 28 and 29 from the side wall 26, gaps 30 and 31 respectively are formed in said side wall. Each angular ear 28 and 29 has a slot 32 in which one end of a hook member 33 is hingedly secured.

The base housing 25 contains the speed responsive controlling device of the ignition unit. This device comprises a disc-like plate 35 attached to the drive shaft 21 in any suitable manner. Posts 36 and 37 are secured to the plate 35, these posts having the centrifugal weight members 38 and 39 pivotally secured thereto, respectively. A reduced end 40 on the portion of the drive shaft 21 extending through the base housing 25, has a tubular sleeve 41 rotatably supported thereon, which sleeve 41 provides the interrupter operating cam 42, having a suitable number of lobes, not shown. The sleeve 41 is operatively connected with a lever 43, which in turn is operatively connected with the centrifugal weights 38 and 39, so that rotation of the drive shaft 21 is transmitted from the disc-like plate 35, through posts 36 and 37 and their respective weight members 38 and 39 to the lever 43, which is operatively connected with the tubular member 41. At a predetermined speed, the weight members 38 and 39 will move relative to their respective posts 36 and 37 so that they will exert an added rotative force upon the lever 43 whereby the tubular member 41 providing cam 42 will be rotated in addition to the rotation thereof by the drive shaft 21, thus accelerating the time of circuit interruption and thus advancing the time of sparking impulses. This type of speed controlled spark adjusting mechanism is fully described in the application of John T. Fitzsimmons,

Serial No. 234,100, filed Nov. 18, 1927, and forms no part of the features of this invention.

The ignition device comprises also a top housing 50, having an annular side wall 51 and a bottom wall 52. A plurality of angular ears 53, 54, 55, 56, 57 and 58 are struck from the bottom wall 52 of this top housing, these angular ears being so shaped and formed relative to each other that they are adapted telescopically to engage the annular wall 26 of the base housing 25, as shown in Fig. 2. The angular ear 56 of the top housing 50 is of a width adapted to fit into the gap 30 formed in the side wall of the base housing 25 by the striking out of the ear 28. The angular ear 53 of the top housing 50 is of a width adapted to fit into the gap 31 formed in the side wall 26 of the housing 25 by the striking out of the ear 29, so that ears 56 and 53 of the top housing 50 fit into gaps 30 and 31, respectively, of the base housing 25 to close these gaps in the base housing and also properly to locate the top housing upon the base housing so that the top housing may be placed upon the base housing in only the proper position.

The top housing 51 contains the standard ignition circuit breaker which comprises a bracket 60, carrying stationary contacts 61 adapted to be engaged by the movable contact 62 carried by the breaker lever 63. Breaker lever 63 is pivotally supported on a post 64 carried by the bracket 52, said breaker lever being urged into contact closing position by a resilient spring conductor 65, one end of which is in electrical engagement with the ignition unit terminal post 68, shown in Fig. 1, but eliminated for the sake of clarity in Fig. 6. This terminal post is insulatingly supported by the annular wall 51 of the top housing 50. Breaker lever 63 has a rubbing block 66 adapted to be engaged by the lobes of the cam 42 to break the engagement of contact 62 with 61 and thereby interrupt the primary circuit of the ignition device.

As shown in Fig. 2, a distributor cap 70, of any suitable insulating material, fits upon the top housing 50, a notch 71 in the peripheral edge of the annular wall 51 of said top housing receiving an extension in the peripheral edge of the distributor cap properly to locate said distributor cap upon the top housing. The top housing has two, diametrically opposite recesses 72 which receive the hook ends 73 of the hook members 33 whereby the distributor cap 70 is secured upon the top housing 51 and at the same time top housing 51 is maintained in proper position upon the base housing 25. Thus hook members 33 maintain the ignition unit properly assembled.

A rotor 75 is carried at the upper end of the tubular member 41, said rotor having a conductor plate 76 provided with a spring contact 77 which engages the central high tension terminal 78 of the distributor cap. About this central high tension terminal 78 are arranged a plurality of high tension terminals 79, substantially in circular row, said high tension terminals 79 having end portions 80 extending into the distributor cap in juxtaposition to the circular path through which the conductor plate 76 of the rotor 75 travels within the distributor cap. From this it may be seen that the sparking impulses from the central terminal 78 are directed to the various posts 80 of the terminal 79 in proper order, these terminal posts 79 being connected with the various sparking plugs of the engine.

From the aforegoing it may be seen that applicant has provided an ignition unit consisting of two cup-shaped housings of formed sheet metal, these housings having integral members for maintaining them in proper assembled relation.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. An ignition device comprising, in combination, a base housing having angular ears struck from its peripheral edge, forming diametrically opposite gaps in the side of said housing; a top housing having angular ears struck from the bottom wall thereof which telescopically engage the base housing and enter the gaps therein properly to locate the top housing upon the base housing and to close said gaps; a distributor cap fitting upon the top housing; and hooks secured to the ears and engaging the cap to hold it upon the top housing and the latter upon the base housing.

2. An ignition device comprising, in combination, a circuit interrupter; means for operating said interrupter; a base housing having diametrically arranged, angular ears struck from the side wall thereof; a top housing for the interrupter having angular ears struck therefrom which telescopically engage the base housing to support the one upon the other, certain of said angular ears fitting into the gaps in the base housing formed by the angular ears struck therefrom to close said gaps and to locate the top housing preferably upon the base housing; a distributor cap on the top housing; and spring clips hingedly secured to the angular ears of the base housing and having hook ends engaging the distributor cap to hold it upon the top housing and the latter upon the base housing.

3. An ignition device comprising, in combination a bearing member; a base housing attached to said bearing member, said base housing having angular ears struck from its side wall, one ear being wider than the other,

forming gaps in said side wall; a top housing having angular ears struck from its bottom surface which telescopically engage the base housing, certain of the top housing ears fitting into the gaps in the side wall of the base housing to close said gaps and properly to locate the top housing upon the base housing; a distributor cap fitting upon the top housing; and hooks hingedly secured to the angular ears of the base housing and engaging the distributor cap to hold it upon the top housing and the latter upon the base housing.

In testimony whereof I hereto affix my signature.

CHARLES HALL DAVIS, JR.