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C. A. HENRY

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ELECTRIC CONDENSER FOR HIGH TENSION IGNITION CIRCUITS

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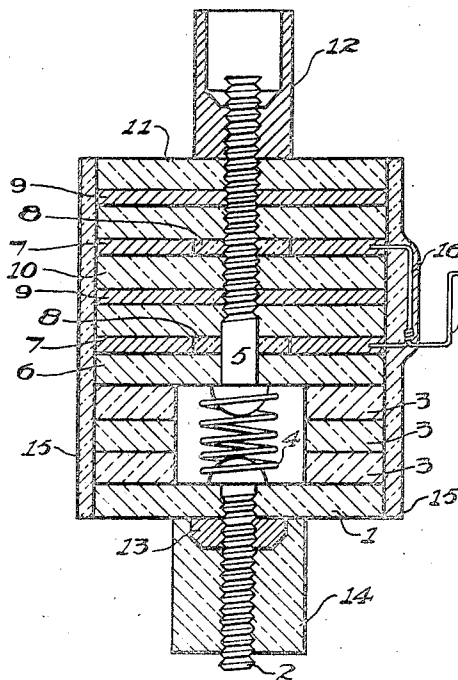


Fig. 1.

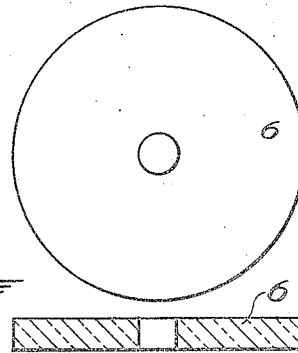


Fig. 4.

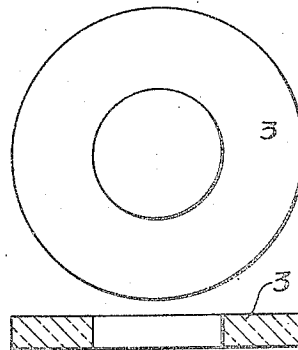


Fig. 5.

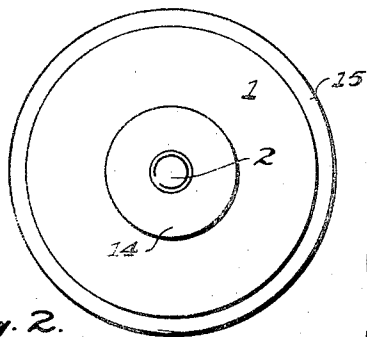


Fig. 2.

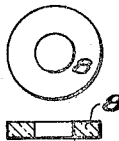


Fig. 7.

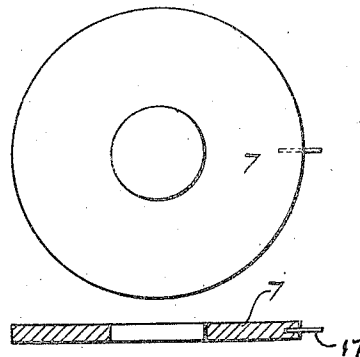


Fig. 6.

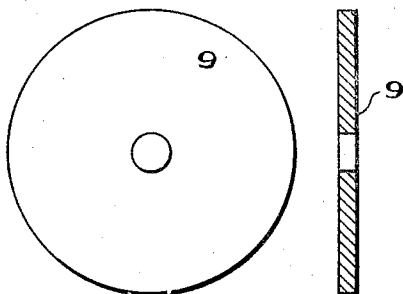


Fig. 3.

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ELECTRIC CONDENSER FOR HIGH-TENSION IGNITION CIRCUITS

Application filed November 7, 1928. Serial No. 317,732.

This invention relates to new and useful improvements in electric condensers for high tension ignition circuits such as are used on internal combustion engines.

5 The principal object of my invention is to provide a substantially and compactly constructed electric condenser and resistance unit in combination, which will operate efficiently in a high tension or secondary circuit.

10 Other important and incidental objects will be brought out in the following specification and particularly set forth in the subjoined claims.

In the accompanying drawings Figure 1 is a vertical section of my invention, showing the resistance coil with screw connections in side view. Figure 2 is a bottom plan view of the same. Figure 3 is a plan and radial-sectional view of a primary plate of the condenser. Figure 4 is a plan and radial-sectional view of a condenser dielectric. Figure 5 is a plan and radial-sectional view of one of a plurality of insulating washers which surround the resistance coil. Figure 6 is a plan and radial-sectional view of a secondary plate, with a view of a ground wire connected therewith. And Figure 7 is a plan and radial-sectional view of one of the small washers which insulate the secondary plates from the central core.

Referring to the accompanying drawings for a detailed description of my invention, the numeral 1 designates an insulating disc formed with a central hole for receiving an electrical conducting screw 2. A plurality of discs 3 similar in size and material to the disc 1 but having a larger central hole rest upon the latter, thereby forming a receptacle for loosely receiving a resistance coil 4, one end of which permanently engages the head of the screw 2 to form an electrical connection therewith. The other end of the coil 4 makes a similar connection with the head of a screw 5, due to the expanding force of this coil which is sufficient to hold it in tight contact with the head of the said screw.

An insulating disc 6 as shown in Figure 4, having the same diameter as the discs 1 and 3, receives the screw 5 in a hole in its central portion. Resting on this disc 6 is one of a pair

of secondary condenser plates 7, 7 with a central hole as shown in Figure 6 to receive an insulating washer 8. Through the latter the screw 5 passes to prevent an electrical connection between the plates 7 and said screw. 55

One of a pair of primary plates 9, 9 formed with a central hole, as shown in Figure 3, is next received by the screw 5 and makes an electrical connection with the said screw. On top of this plate 9 is placed a dielectric 10 similar to the disc 6 in size. (See Figure 4.) 60

Then the other secondary plate is fitted on the screw 5 and insulated therefrom by a washer 8. Over this plate is placed another dielectric 10 and the other primary plate 9. 65 The latter makes an electrical connection with the screw 5. An insulating disc 11 received by the screw 5 covers the plate 9.

A brass socket 12 with a uniform bore, has a threaded hole in its central bottom portion for screwing onto the threaded end of the screw 5, thereby serving as a means for holding the condenser plates and dielectrics firmly together. The threaded end of the screw 5 projects upwardly into the socket 12. (See Figure 1.) 75

A nut 13 is applied to the threaded end of the screw 2 to hold the latter securely on the disc 1. The exposed portion of this nut and the screw 2 are covered by a cylindrical rubber collar 14, with the exception of the extreme end of the screw 2 which is left unprotected for making an electrical connection to be described. (See Figure 1.) 80

It is necessary that the insulating discs, dielectrics and condenser plates have the same diameter for permitting a sleeve 15 of insulating material to be slipped over their edges to protect them. This sleeve has embedded in one side a wire conductor 16 which forms an electrical connection between the pair of secondary plates 7, 7 and one end of a ground wire 17. (See Figure 1.) 85

The discs 1, 3 and 6 are joined by an adhesive preparation, and the same means is used for holding the discs and plates firmly in the sleeve 15. 95

The insulating discs, the dielectrics, and the sleeve 15 are preferably of a fibrous material, but any insulating material may be 100

used. The resistance coil 4 is drawn from nichrome having a low specific resistance of approximately .15 ohms.

In construction, my condenser and coil employ parts which are formed with few operations and are easily and readily assembled.

In operation, my invention is particularly adapted to be quickly attached to the ignition system of any motor vehicle employing a high tension secondary coil by merely removing the coil wire from its socket in the distributor head and inserting the rubber collar 14 with the screw 2 therein as far as possible to make an electrical connection between the distributor and said screw. The end of coil wire is then inserted in the socket 12 to make an electrical connection with the projecting end of the screw 5. The heavy insulation on the coil wire will serve to hold the wire firmly in said socket. The rubber collar 14 is cut to fit firmly in the coil socket of the distributor, and the ground wire 17 is attached to any metallic part of the engine to complete the installation of my device.

Thus I provide a condenser and resistance unit that is simple and inexpensive in construction, very compact, substantial and readily attached for operation. The result is that the intensity of the spark in the cylinder is greatly increased due to the electrical charge which accumulates in the condenser. And the resistance coil aids in preventing any leakage to the distributor and associated parts while the condenser plates are being charged.

Having described my invention, I claim:

1. A device of the type described comprising a plurality of primary plates, a plurality of secondary plates alternately placed between said primary plates, dielectrics separating said plates, a core passing through said plates and making an electrical connection with the primary plates, a ground connection to said secondary plates, a resistance coil in contact with the other end of said core, a terminal on said coil, and an insulating cylinder receiving said plates and coil for the purpose specified.

2. A device of the type described comprising a series of primary plates and secondary plates disposed in alternate relation to each other, dielectrics disposed between said plates, an electrode passing through said plates and dielectrics, and in contact with the primary plates, a ground connection to said secondary plates, and a sleeve of insulating material surrounding said plate and dielectric assembly.

3. A device of the type described comprising a series of primary plates, a series of secondary plates in alternate relation to the primary plates, dielectrics between said plates, a terminal passing through both series of plates and dielectrics in contact with

said primary plates, washers insulating said secondary plates from said terminal, a ground connection to said secondary plates, a plurality of insulating members, a resistance coil passing through said members, one end of said coil in contact with said terminal, another terminal on the other end of said coil and projecting through the outside insulating member, and an insulating cylinder applied to said assembled primary, secondary and insulating members for the purpose specified.

4. A device of the type described, comprising a series of alternately spaced primary plates, secondary plates and dielectrics, a terminal passing through said assembly and in contact with the primary plates, a ground connection to the secondary plates, a second terminal, a resistance between said terminals, and a cylinder surrounding the second terminal excepting its outer end, for insertion in the distributor head of an internal combustion engine.

In testimony whereof I have hereunto set my hand this 6th day of November, 1928.

CASHLY A. HENRY.