

UNITED STATES PATENT OFFICE.

RICHARD VARLEY, OF ENGLEWOOD, NEW JERSEY, ASSIGNOR TO THE AUTOCOIL COMPANY,
A CORPORATION OF NEW JERSEY.

IGNITION SYSTEM FOR EXPLOSION-ENGINES.

No. 915,391.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed June 4, 1908. Serial No. 436,543.

To all whom it may concern:

Be it known that I, RICHARD VARLEY, a citizen of the United States, residing at Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Ignition Systems for Explosion-Engines, of which the following is a full, clear, and exact description.

This invention relates to ignition systems for explosion engines, and more particularly to an arrangement by which the duration of the primary circuit closure is varied with respect to the stroke of the engine.

The ordinary circuit controlling device for an ignition system is driven by the engine and closes the circuits of an induction coil, or, more generally, a plurality of induction coils at fixed intervals and for a predetermined duration or "dwell." The longer the period of circuit closure or dwell, the more certain the ignition becomes, but, on the other hand, a long circuit closure consumes an excessive battery current, and, in many cases uselessly, since the engine ordinarily operates properly with very short current duration. Some means for regulation is desirable, especially as the controlling device is driven by the engine so that the primary dwell is less at high speeds than at low speeds.

It is the principal object of my present invention to have the primary circuit closure or dwell controllable so as to be suited to the conditions.

In my co-pending application, Serial No. 436,542 filed herewith, I have set forth a construction for effecting the above described purposes, which includes separate controllers, or banks of segments having a common rotatable element and having the different series or banks of segments or contacts of different angular extents, which are adapted to be used in multiple or parallel circuits at certain times. The present application covers another form of the broad invention, also making use of segments of different angular extents in different series or banks, which are, at certain times, connected in series with one another and, at other times, used individually to change the primary "dwell." The present application is therefore distinguished from my co-pending application by the fact that in the present application the primary "dwell" is always shortened by

connecting in a series circuit two segments or contacts of different angular extent, while, in said co-pending application, the primary "dwell" is lengthened by including two segments or contacts of different angular extent in a multiple circuit. The present invention more particularly consists in the features of construction and combination as hereinafter set forth and finally particularly pointed out in the appended claims.

In the drawing: Figure 1 is a diagrammatic view showing a circuit controller and ignition system embodying the principles of my invention. Fig. 2 is a vertical sectional view of the controller. Fig. 3 is a partial sectional view on the line III—III of Fig. 2. Fig. 4 illustrates a still further modification.

In the form of the invention shown in Figs. 1, 2, and 3, there are provided a plurality of induction coils $C^1 C^2 C^3 C^4$. B designates the battery or current source, and 1 denotes broadly a circuit controller adapted to close the primary circuits of the coils in a predetermined order and in such a manner that the duration of the primary circuit closure or "dwell" can be varied. The controller 1 preferably includes a casing or housing 2 of insulating material, having an upper bank of segments 3 and a lower bank of segments formed by a single metallic ring 4 which is cut away along spaced sections 5 at its interior surface. In this way there are presented a number of portions 6 of the ring, which form the equivalent of segments or contacts. The ring 4 is embedded or surrounded by insulating material, so that the contact portions 6 of the ring are alone exposed at the interior surface of the insulating housing 2. 8 designates the revoluble element of the controller, which may be made in any desired way, so as to prevent two separate arms in rotatable engaging relation with segments 3 and the contacts 6, respectively. For this purpose the separate arms are located in different planes corresponding to the planes of said segments and contact ring. I prefer the construction shown, making use of a flier 9 fixed to the shaft 10 and having sets of arms 11 and 12, respectively carrying the spring pressed rollers 13 and 14. The roller 13 is adapted to engage the segments 3, while the roller 14 revolves in the path of the contacts 6. The rollers are preferably disposed on diametrically opposite sides of the shaft 10, so as to give a balanced

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SAMUEL BARTLEY AND WILLIAM O. BARTLEY, OF CALHOUN, ILLINOIS.

INSULATOR.

No. 915,406.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed June 17, 1908. Serial No. 433,993.

To all whom it may concern:

Be it known that we, SAMUEL BARTLEY and WILLIAM O. BARTLEY, citizens of the United States, residing at Calhoun, in the county of Richland and State of Illinois, have invented new and useful Improvements in Insulators, of which the following is a specification.

This invention relates to electric-wire supports and insulators of the type shown in our Letters-Patent Number 826,916, granted July 24, 1906, wherein a sectional insulator is held within a divided or sectional casing, and constitutes an improvement upon the construction of insulator disclosed therein; the particular object of the present invention being, first, to provide means for preventing the entrance of rain, snow or sleet at the ends of the casing and to protect the adjacent portions of the wire, and, second, to provide means for securing an effective ventilation of the insulator or circulation of air through the same and around the clamped portion of the wire.

In the accompanying drawing, Figure 1 is a front elevation of the insulator, with the lower end of the supporting pin broken away. Fig. 2 is a bottom plan view of the top section of the insulator casing and the insulator section contained therein. Fig. 3 is a top plan view of the bottom section of the insulator casing and the insulator section contained therein. Figs. 4 and 5 are vertical transverse sections taken on different lines through the closed insulator.

Referring to the drawing, the numeral 1 designates the supporting pin of the device, which may be of the construction set forth in our aforesaid patent to secure the insulator to a pole or other support, and which is fixed to and depends from the lower half or section 2 of the insulator casing 3, which includes a similar upper half or section 4. The casing 3 is thus composed of two longitudinally-divided or semicircular sections, as shown, the bottom one of which is adapted to be rigidly secured to a suitable support.

Suitable means are provided for connecting and locking the two sections together, which may be the same as that disclosed in our patented structure. As illustrated, the bottom section 5 is formed on one side with a pair of receiving or keeper hooks 5, one located near each end thereof, which hooks are adapted to receive retaining lugs 6,

formed upon the contiguous side of the top section 4. The opposite or front sides of the casing sections 2 and 4 are respectively provided at an intermediate point with locking lugs 7 and 8, adapted to be engaged by a locking plate 9. The plate is formed with an oblong opening to adapt it to be fitted over upon said lug, the lug 7 being provided with an undercut surface 10 and the lug 8 with a series of locking teeth 11, for a locking engagement of the plate therewith, as fully set forth in said patent. Any other suitable type of connecting and locking means may, however, be employed.

Arranged within the casing sections 2 and 4 are the sections 12 and 13 of a divided insulator, which insulator sections are of semicircular form to accord with the shape of the casing sections in which they respectively fit in a snug and secure manner. These insulator sections may be formed of glass, porcelain, rubber, fiber or any other suitable insulating material, and the meeting faces thereof are provided with central coinciding recesses 14 for the passage of the wire, which extends longitudinally through the casing, the said recesses being preferably of angular form so that the walls thereof will firmly clamp the wire in position.

In order to provide for the free passage of the wire and to obviate liability of contact between the same and the casing, the sections of the casing are respectively formed with semicircular openings 15 and 16 of sufficient diameter to dispose the metal of which the casing sections are preferably made a distance away from the wire. When the casing sections are closed the wire will extend longitudinally through the recesses 14 and openings 15 and 16, and in order to protect the adjacent portions of the same and to prevent entrance of rain, snow or sleet to the ends of the casing, the ends of the top section 4 are provided with semicircular hoods or shields 17 to overhang the wire and extend outward a sufficient distance to guard the openings.

The insulator sections are respectively provided in their meeting faces with outwardly flaring cavities or recesses 18 and 19 which communicate at their inner ends with the recesses 14 and at their outer ends with the respective openings 15 and 16, and intersecting the said cavities 18 in the lower insulator section 12 are ventilating ports or pas-

