R. W. COFFEE.

CIRCUIT CONTROLLER.

APPLICATION FILED MAY 15, 1906. RENEWED JAN. 3, 1908.

912,447. Patented Feb. 16, 1909.

Fig. 1.

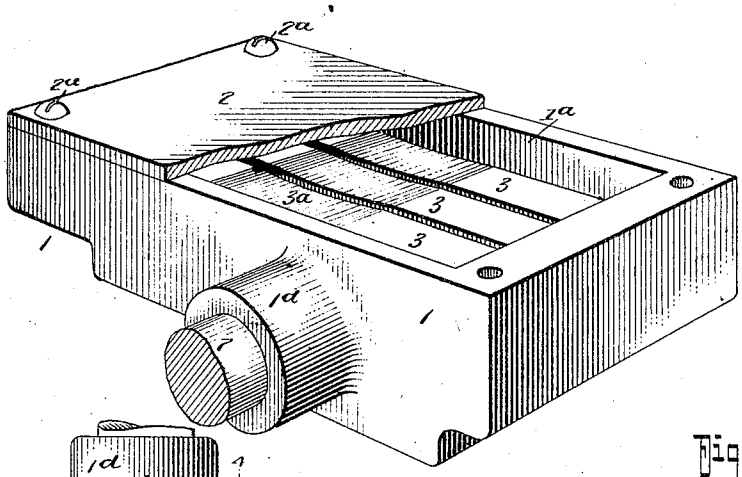


Fig. 2.

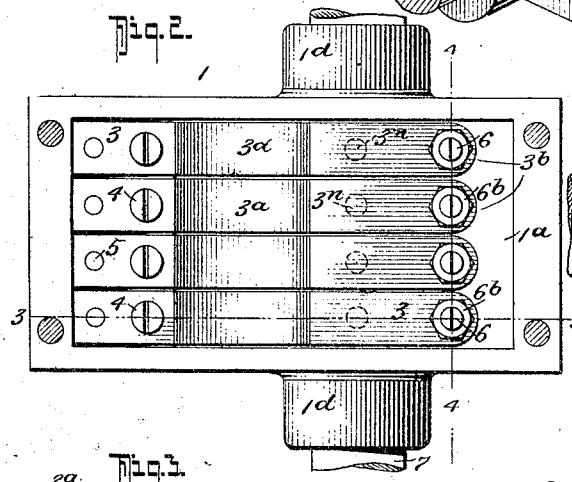


Fig. 4.

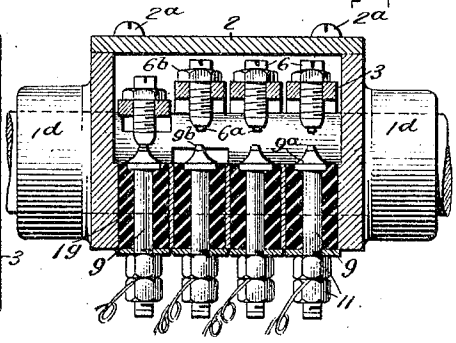


Fig. 3.

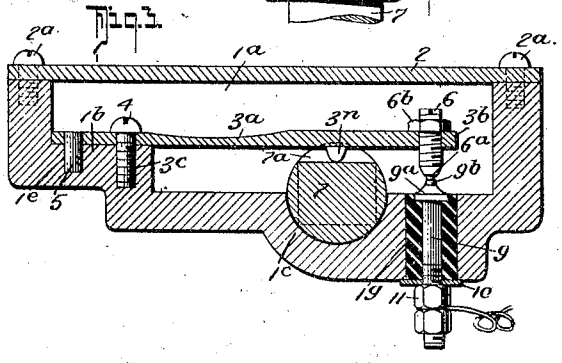


Fig. 6.

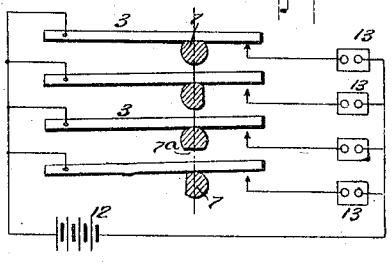
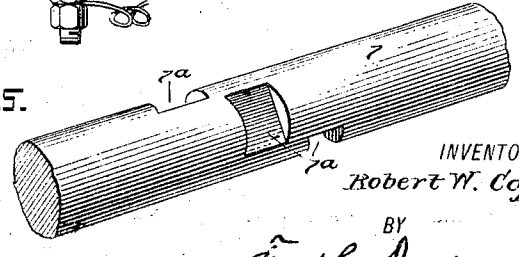


Fig. 5.



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CIRCUIT-CONTROLLER.

No. 912,447. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed May 15, 1906, Serial No. 316,916. Renewed January 3, 1908. Serial No. 409,239.

To all whom it may concern:

Be it known that I, ROBERT W. COFFEE, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Circuit-Controllers, of which the following is a specification.

My invention relates to certain new and useful improvements in circuit controllers for sparking devices for use in connection with explosive engines and the like, and the invention has particularly for its object to provide a contact maker and breaker for controlling the flow of current in the sparking circuits of a plurality of explosive engines, and particularly for controlling the circuits of a plurality of explosive engines connected to a common power transmitting shaft.

Generically, the invention comprises a plurality of fixed contacts, and movable or spring contacts therefor together with means for successfully moving the movable contacts out of and into engagement with the fixed contacts that coöperate therewith.

Heretofore circuit makers and breakers of the type used in explosive engines have usually been constructed of a rotary contact arm adapted to successively engage a series of relatively fixed contacts arranged in the arc of a circle around the axis of rotation of the rotary arm, said contacts being yieldable if desired. The objection to this type of contact maker, is that it is not adapted for use at a high rate of speed and hence is inapplicable to engines operating under more than ordinary speed of rotation. In such engines, when run under high speed, the relatively fixed contact is often "thrown off" and misses engagement with the rotatable arm. To overcome these objections, I produced the form of mechanism herein described, which eliminates the possibility of any of the series of contact points from failure to connect. As more fully described, the rotary shaft makes one revolution for each contact, thereby giving much longer time for the spring to return to its normal position while rotating at high speeds. Ordinarily, one cam or notch operates a plurality of contacts consequently at high speeds the spark at the plugs are very irregular, and the charge in the cylinder does not explode.

In the drawings:—Figure 1, is a perspective view of my invention. Fig. 2, is a top plan view thereof, the housing or cover being removed. Fig. 3, is a vertical longitudinal section on the line 3—3 of Fig. 2. Fig. 4, is a cross section on the line 4—4 of Fig. 2. Fig. 5, is a perspective view of the rotary shaft. Fig. 6, is a diagrammatic view hereinafter specifically referred to.

Referring now to the accompanying drawings in which like letters and numerals of reference indicate like parts in all of the figures, 1 designates a housing having a chamber 1^a and a seat 1^b, a shaft receiving portion 1^c and bearings 1^d, as will be clearly understood by reference to Figs. 2 and 3 of the drawings. The housing 1 is provided with a cover 2 that is secured over the chamber 1^a by screws 2^a. Secured to the seat 1^b and spaced apart at suitable intervals are flat fingers 3 having a thin portion 3^a to render the free end 3^b of the fingers springy. The fingers 3 are secured to the seat 1^b by screws 4 passing through apertures 3^c and are held from lateral movement by pins 5 passing through the fingers 3 and into the apertures 1^c in the seat 1^b as shown in Fig. 3. Each finger 3 has its free end 3^b provided with an adjustable contacting screw 6, platinum tipped, as at 6^a and held in place by a check nut 6^b. Mounted in bearings 1^d is a rotatable shaft 7 rotated by any means (not shown) as may be found desirable. The shaft 7 has notches or flattened portions 7^a in its faces one for each finger 3 and arranged one in advance of the other. The housing 1 is also provided with a plurality of apertures 1^e, directly beneath the contact screws 6, in which insulating bushings, surrounding the contact pins or bolts 9, are held. The pins 9 have heads 9^a, platinum tipped, as at 9^b to coöperate with the screws 6 and their platinum tips and they also have a screw threaded portion 9^c to receive the insulating washer 10 and the nuts 11—11 to which the wire terminals of the respective sparking circuits connect.

In operation, the parts are connected as diagrammatically shown in Fig. 6 in which the battery is indicated by 12 and the respective sparking plugs of each engine by 13, the device as illustrated in the drawings being capable of use in connection with four engines. Each finger 3 has a nipple 3^a to coöperate with the shaft 7 and its flat portions. In operation, the shaft 7 revolves, and alternately and successively drops the fingers

onto the contacts 9, and then lifts them to their normal non-contacting position. Thus only one finger is in contact with its respective fixed contact at a time and there will be no possibility of more than one sparking plug operating at one time.

From the foregoing description, taken in connection with the accompanying drawings it is thought the complete operation, construction and numerous advantages of my invention will be readily understood by those skilled in the art to which it appertains.

What I claim is:-

1. A contact device comprising a casing having a seat, a plurality of springy contact fingers secured to said seat to normally lie parallel therewith, a plurality of fixed contacts carried by said casing and insulated from one another and adapted to be normally engaged by the springy contacts, a rotatable shaft projecting through said casing, said shaft engaging all of said springy contacts to normally hold them out of engagement with their respective fixed contacts, said shaft having a plurality of successively arranged notches for engaging said springy contacts at times to permit the springy contacts engaging the fixed contacts substantially as shown and described.

2. A contact device comprising a casing, a plurality of springy contact fingers mounted within the casing to lie in substantially the same plane with one another, a plurality of fixed contacts also mounted in the casing to lie in a plane different from that in which the springy contact fingers lie, adjustable contact points carried by each of said springy contacts and means coöperating with the springy contacts for normally holding the same out of engagement with the fixed contacts and for permitting the same to successively engage the fixed contacts, substantially as shown and described.

3. A contact device comprising a casing, a plurality of springy contact fingers mounted within the casing to lie in substantially the same plane with one another, a plurality of fixed contacts also mounted in the casing to lie in a plane different from that in which the springy contact fingers lie, adjustable contact points carried by each of said springy contacts and means coöperating with the springy contacts for normally holding the same out of engagement with the fixed contacts and for permitting the same to successively engage the fixed contacts, said last named means comprising a rotatable shaft having a plurality of successively arranged interrupted portions one for each springy contact finger, substantially as shown and described.

4. A contact device comprising a casing, a plurality of springy contact fingers mounted within the casing to lie in substantially the same plane with one another, a plurality of fixed contacts also mounted in the casing to lie in a plane different from that in which the springy contact fingers lie, adjustable contact points carried by each of said springy contacts, means coöperating with the springy contacts for normally holding the same out of engagement with the fixed contacts and for permitting the same to successively engage the fixed contacts, said last named means comprising a rotatable shaft, having a plurality of successively arranged interrupted portions one for each springy contact finger, each of said contact fingers having nipples for engaging said shaft, substantially as shown and described.

5. A contact device comprising a casing having a seat, a plurality of resilient fingers secured to said seat, to normally lie in one plane, a plurality of fixed contact members mounted in said casing and insulated therefrom and held in a plane at right angles to that containing the resilient contacts, said casing having bearings, a rotatable shaft mounted in said bearings and projecting through said casing, said insulated contacts adapted to rest against said shaft and be held out of engagement with the fixed contacts thereby, and said shaft having a series of depressions, one for each resilient contact to permit of said fixed contacts being engaged by said resilient contacts at times.

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