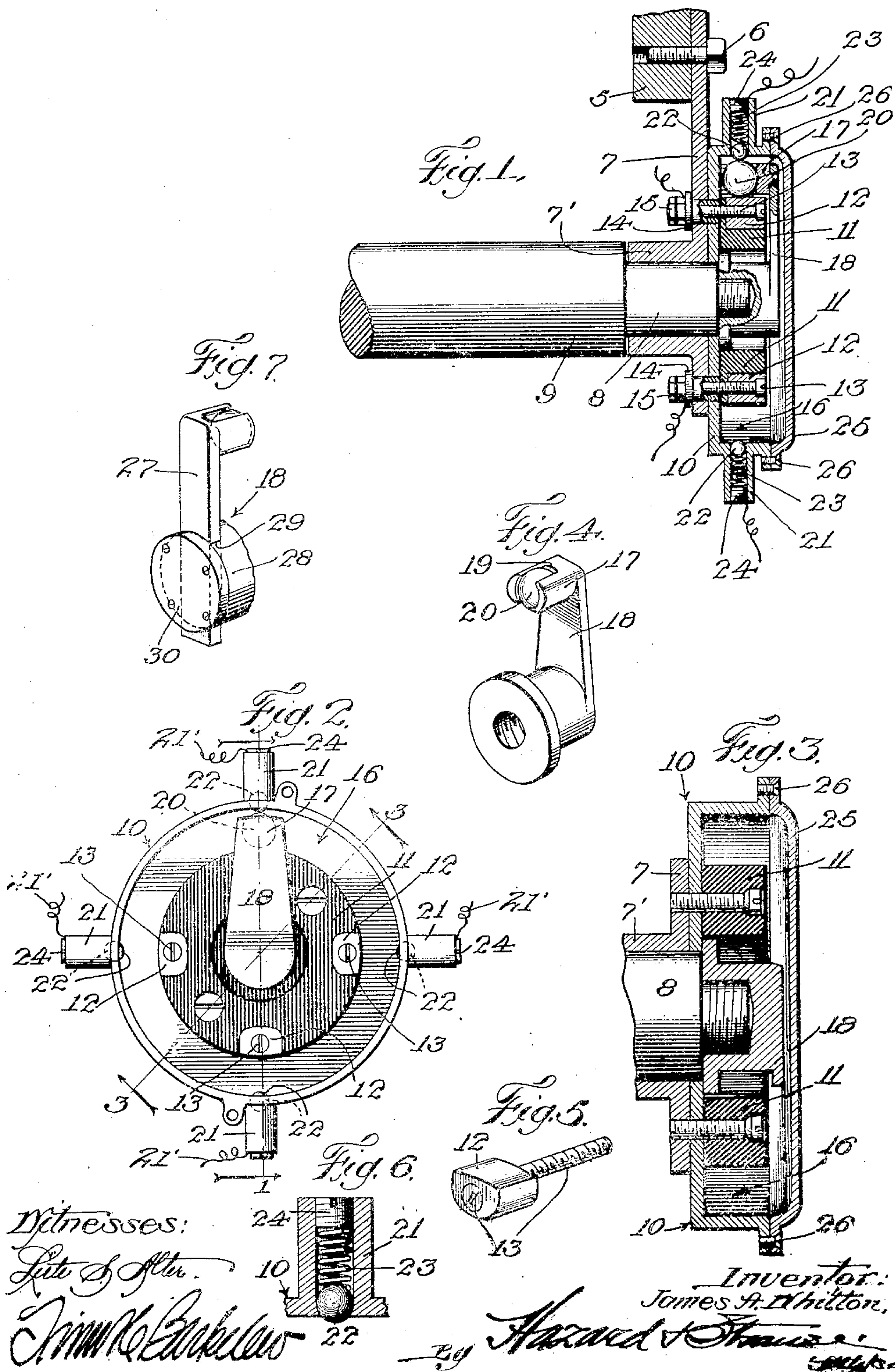


J. A. WHITTON.
 SPARK IGNITION DEVICE FOR EXPLOSIVE ENGINES.
 APPLICATION FILED NOV. 26, 1907.

924,863.

Patented June 15, 1909.



UNITED STATES PATENT OFFICE.

JAMES A. WHITTON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO JOHN W. MILLER, OF LOS ANGELES, CALIFORNIA.

SPARK-IGNITION DEVICE FOR EXPLOSIVE-ENGINES.

No. 924,233.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed November 26, 1907. Serial No. 403,878.

To all whom it may concern:

Be it known that I, JAMES A. WHITTON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Spark-Ignition Devices for Explosive-Engines, of which the following is a specification.

My invention has relation to that class of electrical igniting devices for gasoline or other explosive engines wherein a spark or series of sparks is caused to pass between the terminals located in the explosion chamber of said engine, said terminals being connected with the secondary coils of the induction coil in which the current is induced by the making and breaking of the circuit in the primary coils, the device for making and breaking the primary current being controlled by the engine, and in such connection my invention is particularly applicable to a device for making and breaking a primary circuit.

The principal object of my invention is to provide a device for making and breaking the circuit in the primary coil in the induction coil at the proper time to induce a high potential in the secondary coil of the induction coil and to cause a spark, or series of sparks to jump across the space between the terminals connected with the secondary coils and located within the combustion or explosion chamber of the explosive engine, which device shall be simple, durable, and efficient in its action to insure at all times the proper ignition of the charge contained within the explosion chamber of the engine.

Another object of my invention is to provide a device in which the contact in the revoluble arm is movable so that undue wear is avoided on the contact points.

Another object is to provide spring actuated means whereby the revoluble contact will at all times and under all conditions insure a perfect contact with the stationary or fixed contacts.

I accomplish these objects by means of the device described herein and illustrated in the accompanying drawings, in which:—

Figure 1,—a cross section of my device taken on line 1—1 of Fig. 2, mounted upon the half time shaft of an explosive engine. Fig. 2,—is a face view of my device with the cover removed. Fig. 3,—is a vertical section taken on line 3—3 of Fig. 2. Fig. 4,—is

a detail perspective view of the revoluble contact arm. Fig. 5,—is a perspective detail view of one of the stationary contacts. Fig. 6,—is a cross section detail through one of the spring pressed or movable contacts. Fig. 7,—is a perspective detail view of a modified form of the revoluble contact.

In the drawings I have shown the device as being rigidly secured to the frame of the machine, but it may be so mounted that the position of the stationary contacts may be instantly changed so as to advance or retard the spark at will.

Referring to the drawings 5 represents a portion of the frame of a motor driven vehicle to which is secured by bolts 6 a base plate 7. This base plate is provided with a centrally disposed apertured sleeve 7' which is adapted to be mounted on the reduced end 8 of the half time shaft 9 of an explosive engine (not shown). Secured to base 7 is a metallic cup shaped member 10 which is provided with an annular insulating ring 11, preferably formed of fiber. This ring is provided with a number of stationary contacts 12, in this case, represented as four in number, which are secured therein by screws 13 which extend through the bottom of member 10 and base plate 7 (being properly insulated therefrom by washers 14) and form terminals 15 from which the wires run to the primary and secondary coils of the induction coil (not shown). It will be understood that there are as many stationary contacts as there are cylinders. The annular ring 11 is smaller in diameter than the inside diameter of the cup shaped member 10, thus forming a race-way 16 in which the lower outer end 17 of a revoluble contact arm 18 rotates. This contact arm is in screw threaded engagement with the outer threaded end of the half time shaft 9. The lower outer end 17 of arm 18 is provided with an opening or cage 19 in which is loosely mounted a metal contact ball 20. This ball is carried by arm 18 and is adapted to engage during the revolution of the shaft with the stationary contacts 12 mounted in the outer edge of insulating ring 11.

The periphery of the cup shaped member 10, is provided with sleeves 21 (which are preferably grounded by wires 21') preferably cylindrical in form and correspond in number to the stationary contacts 12. These sleeves are disposed diametrically opposite

the stationary contacts 12. The inner ends of these sleeves 21 are swaged slightly inwardly so that steel contact balls 22 will be pressed in place therein. These balls 22 are held in toward the inner ends of sleeves 21 by means of compression spring 23, the tension of the spring being regulated by a screw plug 24.

Cup shaped member 10 is provided with a cover 25 secured thereto by means of screws 26 which provide a dust proof covering for the contacts.

In Fig. 7 I have illustrated another form of contact arm in which the arm 27 is longitudinally self adjusting, this being accomplished by forming the arm into two parts, the arm 27 and the screw threaded cap or base 28, a slot 29 being formed in the top of the base in which the arm 27 is adapted to operate. A cap plate 30 prevents arm 27 from becoming disengaged from the slot 29. By means of this construction any wear on the stationary contacts will be provided for as the spring pressed balls 22 in the sleeves 21 will force the arm provided with the revoluble contact ball inwardly, thus insuring at all times a perfect electrical contact.

It will be noted from the foregoing description that I have provided an ignition device which is positive in its action and whose contacts will not become fouled, and which will do the work it was designed for in an efficient manner.

It will be further noted that I have provided a device in which the revoluble contact rotates in a race-way thereby insuring a perfect contact with the stationary contacts no matter how unstable the frame may become from wear or other causes.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In an ignition device for explosive engines the combination of a revolving circuit maker and breaker provided with a revoluble contact, a casing having a race-way provided with a plurality of stationary insulated contacts in which race-way the revoluble contact is adapted to rotate, and means secured to said casing mounted adjacent said race-way whereby said revoluble contact is pressed into engagement with said stationary contacts during the rotation of the revoluble contact.

2. In an ignition device for explosive engines, the combination of a plurality of stationary insulated contacts, said contacts secured to a casing, of a revolving circuit maker and breaker, the outer end of said circuit maker and breaker provided with a loosely mounted metallic contact ball, and means secured to said casing and adapted to force said contact ball into engagement with said stationary contacts as the circuit maker and breaker revolves.

3. In an ignition device for explosive engines, the combination of a plurality of stationary insulated contacts secured to a casing, said casing provided with a race-way, a revoluble contact arm having a metallic contact ball loosely mounted in the outer end thereof, and a series of spring pressed metallic balls mounted in the casing opposite the stationary contacts said balls adapted to press the metallic contact ball in the revolving arm against the stationary contacts.

4. In an ignition device for explosive engines the combination of a revolving circuit maker and breaker provided with a radially adjustable revoluble contact, a race-way in which said self-adjusting contact is adapted to rotate, and a plurality of stationary insulated grounding contacts located adjacent said race-way.

5. In an ignition device for explosive engines, the combination of a revolving circuit maker and breaker provided with a radially slidable revoluble contact, a race-way in which said self-adjusting contact is adapted to rotate, a plurality of stationary insulated contacts located adjacent said race-way, and spring operated grounding means mounted adjacent said race-way whereby said revoluble contact is forced into engagement with the stationary contact during the rotation of the revoluble contact.

6. In an ignition device for explosive engines, the combination of a revoluble circuit maker and breaker provided with a revoluble contact ball, a raceway in which said contact ball is adapted to rotate, the inner wall of said raceway being formed of an insulating material and provided with a plurality of stationary contacts, and means secured in said outer wall adapted to press the contact ball into engagement with the stationary contacts as the ball is rotated.

7. A device of the class described, comprising a casing having an insulating ring of smaller diameter than said casing concentrically secured thereto, said ring and casing forming a raceway, a plurality of metallic contacts rigidly secured to said insulating ring in combination with a revoluble circuit maker and breaker provided with a revoluble contact, said contact adapted to rotate in said raceway, and a plurality of spring operated grounding contacts secured to said casing opposite the metallic contacts, whereby a circuit is completed through said grounding contacts as the contact ball is pressed into engagement with the contacts secured to the insulating ring.

In witness that I claim the foregoing I have hereunto subscribed my name this 17th day of November, 1907.

JAMES A. WHITTON.

Witnesses:

EDMUND A. STRAUSE,
OLLIE PALMER.