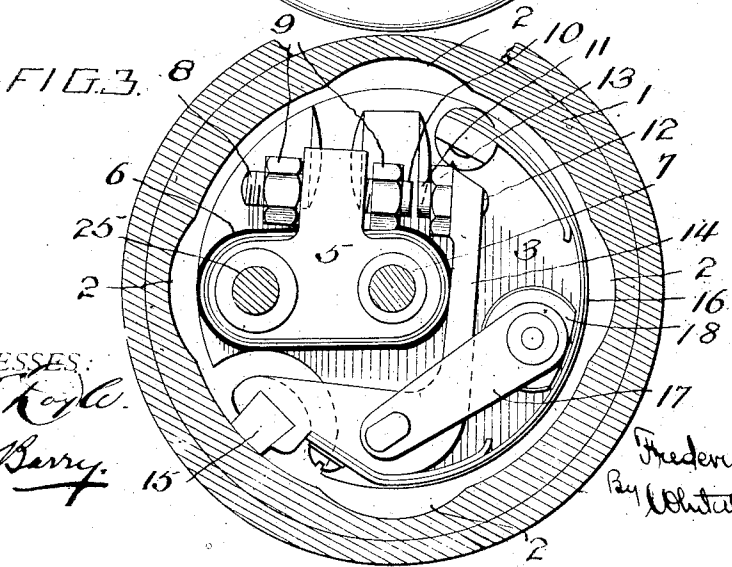
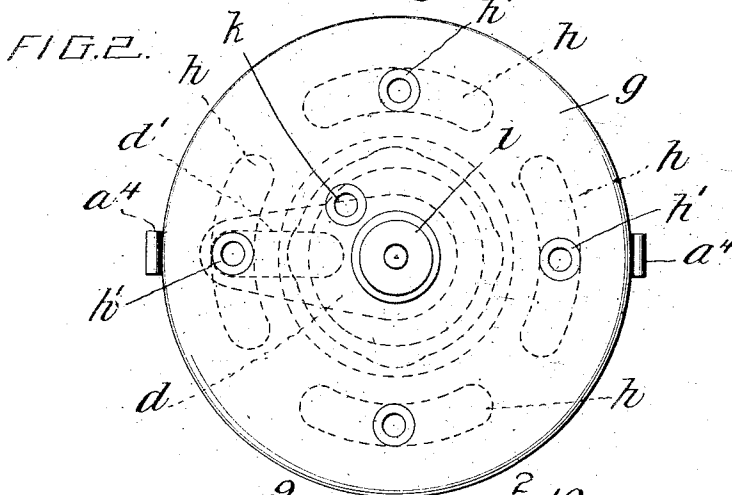
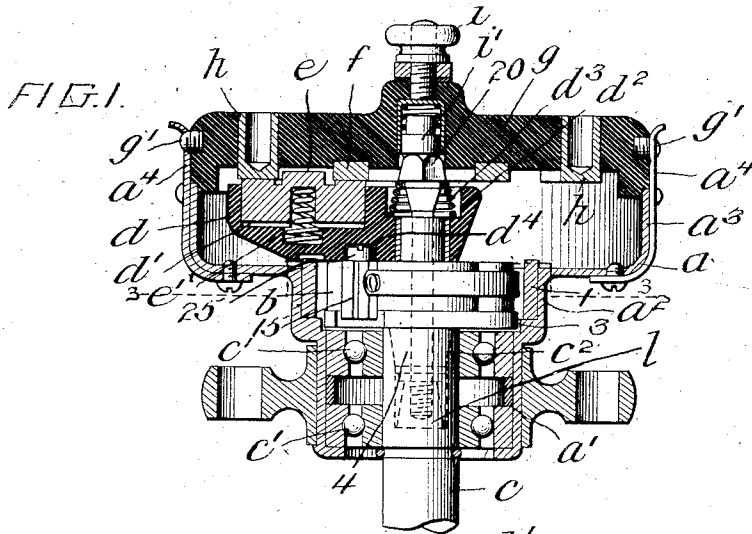


F. R. SIMMS.
DISTRIBUTER FOR ELECTRIC IGNITION GEAR.
APPLICATION FILED JAN. 16, 1911.

1,036,356.

Patented Aug. 20, 1912.



WITNESSES:

A. F. Koyler.

R. E. Barry.

INVENTOR

Frederick J. Simms

By Whitaker & Wood
Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK R. SIMMS, OF LONDON, ENGLAND, ASSIGNOR TO THE SIMMS MAGNETO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DISTRIBUTER FOR ELECTRIC IGNITION-GEAR.

1,036,356.

Specification of Letters Patent.

Patented Aug. 20, 1912.

Application filed January 16, 1911. Serial No. 603,012

To all whom it may concern:

Be it known that I, FREDERICK R. SIMMS, a subject of the King of Great Britain, residing at London, England, have invented certain new and useful Improvements in Distributers for Electric Ignition-Gear; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention consists in the novel features hereinafter set forth reference being had to the accompanying drawings which show an embodiment of the invention selected by me for purposes of illustration and the invention is fully disclosed in the following description and claims.

Referring to the drawings, Figure 1 is a sectional view of a combined distributor and contact maker and breaker embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a sectional view on line 3-3 of Fig. 1 with the distributor arm and its securing screw and spring removed.

The embodiment of my invention which I have selected for purposes of illustration is a combined circuit breaker and maker and distributor such as is used in ignition systems in connection with the explosive engines of motor propelled vehicles in connection with an accumulator or battery, for producing ignition sparks in the several cylinders of the engine at the proper times and in the proper sequence.

The object of my present invention is to so mount the distributor arm that it may be held rigidly connected with the rotating shaft or part which moves it, when in operative condition, and in the proper relative position or location with respect to the circuit maker and breaker, but at the same time provision is made whereby on removing the cover of the distributor the distributing arm may be moved freely around to expose the parts beneath it for examination or adjustment without loosening any of the parts and without the use of extraneous tools or implements and without danger of losing the correct operative location of said arm. In the present embodiment of my invention, I accomplish this result by so connecting said arm that it is capable of movement longitudinally of the rotating part to which it is connected to permit said

arm to disengage and to reengage a locating device which interlocks with said arm and is carried by the circuit maker and breaker, and said arm is held normally in its inner position with respect to said rotary part by a spring, all as hereinafter more fully described.

In the embodiment of my invention selected for purposes of illustration and shown in the accompanying drawings, *a* represents the casing of the device, provided with a sleeve portion *a'*, a recessed portion *a²* for containing the contact making and breaking device, and an outer portion *a³* of larger diameter, which is closed by a cap or cover *g*, detachably secured thereto, in this instance by means of studs or projections *g', g'* on the cap, which engage apertures in spring plates *a⁴, a⁴*, secured to the enlarged outer portion of the casing.

c represents the spindle on which the device is mounted, and which is designed to be rotated from any convenient revolving portion of the engine to which the device is fitted, as for example, the half speed shaft. The spindle *c* is mounted in bearings (ball bearings *c', c'* being herein shown) in the sleeve portion *a'* of the casing, and is provided at its inner end with a tapered recess *c²* as indicated in dotted lines.

Within the recessed portion *a²* of the casing is located the contact maker and breaker *b* shown in Fig. 3, and which comprises the following parts: 1 represents a steel ring fitted into a recess in the wall of the casing, and provided on its inner face with four cut out or recessed portions 2. 3 is a metal plate or disk provided on its lower face with a tapered sleeve 4, fitting and keyed in the recess *c²* in the end of the spindle *c*. Secured to the disk 3 is a T-shaped boss 5 insulated therefrom, as indicated at 6 and provided with a sleeve 7 shown in elevation in Fig. 1, concentric with the disk 3. The central portion of the T-shaped boss is provided with an adjusting screw 8 provided with set nuts 9, and carrying at one end a platinum contact 10. 11 is a similar platinum contact on the end of a screw 12 provided with a set nut 13, and carried by one end of an L-shaped contact lever 14, pivotally mounted on the disk 3, and having its other end provided with a friction heel 15 of fiber which bears against the inner face of the ring 1, and is held in

engagement therewith by a spring 16. 17 is a plate secured to a boss 18 on the disk, and having its other end bearing upon the pivotal connection of the lever 14 to hold it in place.

It will be obvious that when the disk 3 is rotated, with respect to the casing, the fiber heel 15 will slide upon the steel ring 1, and hold the platinum contacts 10 and 11 separated except when the heel 15 enters the four recesses 2, when the spring 16 will actuate the lever to cause the contact 11 to engage the contact 10.

d represents the rotating arm of the distributor which is formed of insulating material, as vulcanite, and is provided with an aperture having an internal bushing fitting upon but longitudinally movable on the sleeve 7 of the insulated block 5. The arm d is permanently secured in place by a screw 20 and elastic washer d^3 , the screw 20 passing through the sleeve 7 and engaging the spindle c , but said screw is insulated from the spindle, to avoid establishing a connection between the block 5 and the "ground" or frame of the engine. In the drawings I have indicated a part 1 in a recess in the spindle which is engaged by the threaded part of the screw and this may be of insulated material or of metal, with insulation between it and the walls of the recess in the spindle in which it is fitted. Beneath the head of the screw 20 is an elastic washer d^3 (in this instance a coiled spring) which as hereinafter described presses down upon the arm d and holds it normally in its operative position. The spring d^3 lies in a recess d^2 in the upper face of the arm d , as shown.

The outer end of the arm d is provided with a recess d' of unequal diameters, having its greater diameter longitudinally of the arm, and in said recess is located a contact brush or block e preferably of carbon. The said brush e is pressed outward against the cap g by a spring e' engaging a recess in the brush, and having a portion of larger diameter engaging a recess in the bottom of the brush recess in arm d . The cap g is provided with a central contact ring f and with contact segments h , four of which are shown, to engage the brush, and the segments are each provided with sleeves h' to receive connectors by means of which they can be connected to the several igniters of the engine cylinders. The relative arrangement of the parts is such that as the spindle is rotated carrying with it the disk 3, and arm d , the brush e is brought into contact with one of said segments h , each time the contacts 10, 11 are brought together, thereby giving a spark at each of the igniters in succession.

The cap or cover g is provided with a terminal i which is connected with the pri-

mary winding of an induction coil, the other end of which winding is connected with one terminal of an accumulator or battery, the other terminal being grounded through the frame of the engine. The primary circuit may be traced through the circuit breaker from the terminal i to the screw 20 (by means of a spring actuated pin or stud i' connected with terminal i), thence to sleeve 7, contacts 10 and 11, disk 3 to spindle c , and thence to ground through the frame of the machine. The secondary coil is connected to the primary coil at one end, the other end being connected to ring f by means of sleeve k (Fig. 2) thence by brush e to the segments h , thence to the several igniters, in sequence, and thence to ground through the machine frame. These circuits are so well understood by those skilled in the art that I have not deemed it necessary to illustrate them.

The elastic washer 20 before referred to consists in this instance of a coiled spring which is decreased in diameter near the top to fit beneath the shoulder of the screw head, as shown. This construction permits the arm d to be moved lengthwise of the screw, when the cover g is removed, as will be readily seen, without loosening the screw. The arm d must be held when in operative position in a predetermined relation to the contact maker and breaker, and I provide the said arm and the contact maker and breaker with interlocking parts which determine the location of the arm, but which can be disengaged by moving the arm d lengthwise of the screw. These interlocking locating devices may be constructed in many ways. In the present instance, I have shown the lower or inner face of the arm d provided with a locating recess d^4 which interlocks with the projecting head 25 of the screw which passes through the block 5 and secures it to the plate 3 of the circuit maker and breaker.

It will be seen that the construction shown and described affords great accessibility to the parts of the device without the use of any tool or tools. For example the cover g can be removed by springing outward one of the plates a^4 , thus giving access to the inclosed parts of the apparatus, and by pulling the arm d outward and compressing the elastic washer, the interlocking locating devices are disengaged and the arm d can be swung entirely around to permit of an examination of the parts of the circuit maker and breaker which would be otherwise concealed by the arm, and to facilitate the adjustment or repair of said parts or the lubrication of the same, without loosening the screw 20. In the same manner the arm d can be drawn outward, swung into its proper position and the locating devices re-interlocked, when it is restored to its normal posi-

tion and to its correct location with respect to the circuit maker and breaker.

The screw 20 can be removed if it is desired to remove the circuit breaker and maker from the casing for repairs.

What I claim and desire to secure by Letters Patent is:—

1. The combination with a rotatable circuit breaker, of a distributor arm permanently connected therewith by a pivotal connection, for permitting the rotation of said arm with respect to the circuit breaker, without disengaging said pivotal connection, said arm and said circuit breaker being provided with disconnectible locating devices for normally holding the said arm in a fixed and predetermined relation with said circuit breaker.

2. The combination with a rotatable circuit breaker, of a distributor arm permanently connected therewith by a pivotal connection for permitting the rotation of said arm with respect to the circuit breaker, said circuit breaker and distributor arm being provided with interlocking locating devices for normally holding said arm in fixed and predetermined relation with the circuit breaker, said arm being movable in a direction longitudinally of its pivotal connection to disengage said interlocking devices without disengaging said pivotal connection.

3. The combination with a rotatable circuit breaker, of a distributor arm connected therewith by a pivotal connection for permitting the rotation of said arm with respect to the circuit breaker, said arm and circuit breaker being provided with interlocking devices for holding the arm in fixed relation with said circuit breaker, said arm

being movable upon said pivotal connection in a direction longitudinally thereof, to disengage said interlocking devices without disengaging said pivotal connection, and means for permanently securing said arm upon its pivotal connection including a yielding washer, engaging said arm and normally holding said interlocking devices in engagement.

4. The combination with a rotatable circuit breaker provided with a pivotal part secured thereto, a distributor arm loosely mounted on said pivotal part, and movable longitudinally thereof, a locating projection carried by said circuit breaker, said arm having a recess to engage said projection, a securing screw and a yielding washer engaging said screw and bearing upon said arm to normally hold it in engagement with said locating projection.

5. The combination with a rotatable circuit breaker provided with a pivotal part secured thereto, a distributor arm loosely mounted on said pivotal part, and movable longitudinally thereof, a locating projection carried by said circuit breaker, said arm having a recess to engage said projection, a securing screw passing through said pivotal part, and a coiled spring located between the head of the screw and said arm for holding the arm in engagement with the locating projection.

In testimony whereof I affix my signature, in the presence of two witnesses.

FREDERICK R. SIMMS.

Witnesses:

MORTIMER STIEFEL,
WILLIAM A. SCHULER.