

1,008,206.

Fig.2.

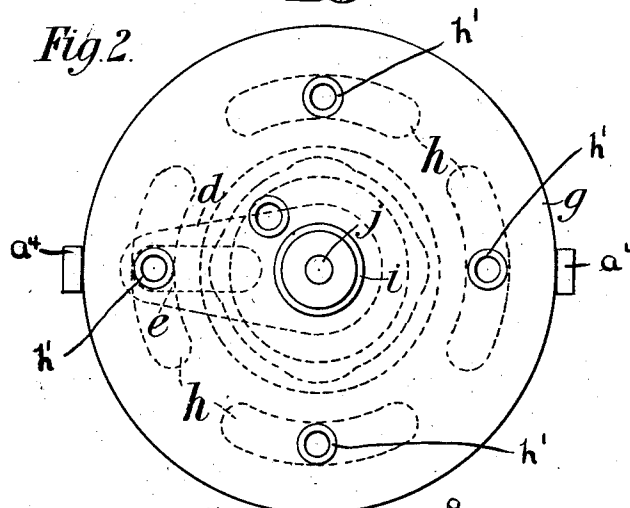
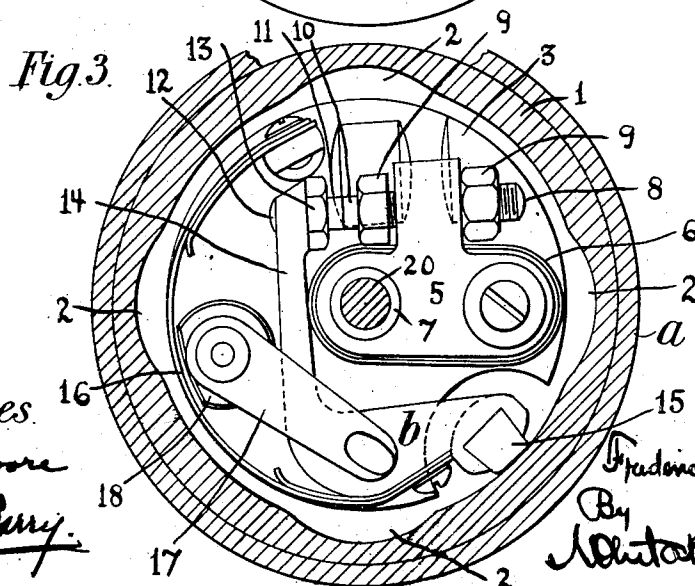


Fig.3.



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UNITED STATES PATENT OFFICE.

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DISTRIBUTER FOR ELECTRIC-ACCUMULATOR IGNITION-GEAR.

1,008,206.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed February 23, 1910. Serial No. 545,451.

To all whom it may concern:

Be it known that I, FREDERICK RICHARD SIMMS, a subject of the King of Great Britain, residing at Welbeck Works, Kimberley Road, Willesden Lane, London, England, have invented new and useful Improvements in and Connected with Distributors for Electric-Accumulator Ignition-Gear, of which the following is a specification.

My invention relates to distributors designed for use in connection with ignition gear the current for which is supplied by an accumulator such as is commonly used in connection with the motors of self-propelled vehicles.

According to my invention I mount a contact maker and breaker and a distributing device upon a common spindle which is rotated from any convenient revolving portion of the engine to which the gear is fitted, such for example as the half-speed shaft.

In a suitable arrangement for carrying out the invention I make use of a rotary contact maker and breaker of a type such as is commonly employed in connection with magneto-ignition gear, the said contact maker and breaker being mounted upon a spindle designed to be rotated say from the half-speed shaft of the engine as above mentioned. The contact device as it rotates makes and breaks the electric circuit at the times required and in conjunction with the said device there is also mounted upon the spindle a distributor which comprises an arm or plate of insulating material which is keyed upon the spindle so as to rotate with the distributor and which carries a conducting brush designed to make connection between a central ring and a series of peripheral segments which are mounted in an insulating disk or the equivalent. The said peripheral segments are in electrical connection with the sparking plugs of the motor cylinders, so that their number corresponds with the number of such plugs. With this arrangement it will be understood that as the contact making and breaking device rotates, the circuit is made and broken at the required intervals, and simultaneously with this making and breaking the rotary distributor completes the circuit with each of the sparking plugs in succession. The construction also provides for the ready removal of the exterior casing and of the arm of the distributor to afford accessibility to

the contact making and breaking device, and also to facilitate the adjustment of the platinum contacts thereof.

In the accompanying drawing:—Figure 1 is a longitudinal section partly in elevation of a combined distributor and contact maker and breaker, made according to my invention. Fig. 2 is a plan view thereof, and Fig. 3 is a section on the line 3—3, Fig. 1, drawn to a larger scale.

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 plan 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, 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.

It will be obvious that when the disk 1 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 fitting upon the sleeve (7), and is held in place by a long screw 20, passing through said sleeve, and the disk 1, and engaging a threaded aperture in the spindle *c* as shown in the drawings. The arm *d* is secured to rotate with the spindle *c* and the disk 1.

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 sleeve *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 1, 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* to be connected with the source of electrical energy, the other wire from which will be grounded in the usual manner. The terminal *i* is provided within the cap with a spring actuated pin or stud *i'* which bears upon the center screw 20.

It will be seen that the construction provides for great accessibility to the interior parts of the device. By pressing one of the spring plates *a'* outward, the cap can be instantly removed, and this is all that it is necessary to do in order to replace the brush *e*. By removing the screw 20, the arm *d* and the disk 1 with its attached parts can be removed to facilitate inspection or repair or for adjusting the platinum contacts.

What I claim is:

1. The combination with a casing, of a spindle extending into the same, a contact breaker in said casing having a rotary part provided with a part for interlocking with the spindle, and with a sleeve concentric with the axis of said rotary part, a distributor fitting upon said sleeve, a single screw passing through said sleeve, the rotary part of the circuit breaker and the interlocking portion thereof, and engaging the spindle, and a detachable cover for said casing, whereby on the removal of said cover the said screw is immediately accessible to permit the parts secured thereto to be removed.

2. The combination with a casing, provided with a bearing portion, a recess to receive a contact breaker, and a concentric recess of larger diameter communicating therewith, of a spindle engaging the bearing portion, a contact breaker in the smaller recess, comprising a stationary ring fitted in said recess, and provided with recessed portions on its inner face, and a rotary part within said ring, having an interlocking engagement with the spindle, and provided with a movable part to engage said ring, and provided further with a concentric sleeve projecting into the recess of larger diameter, a distributor arm engaging the said sleeve, and adapted to rotate with the rotatable part of the contact breaker, a screw extending through said sleeve, and said rotatable part of the contact breaker and engaging the spindle to hold said parts in fixed relation, but permitting the ready disconnection of said parts, a brush carried by said arm, and a removable cover provided with contacts engaged by said brush.

3. The combination with a casing, of a spindle extending into the same, a contact breaker in said casing having a rotary part connected with said spindle and a distributor in said casing having a detachable rotary arm operatively connected with said spindle, a cover for said casing provided with a ring contact, and a series of concentric contact segments, a single brush for engaging said contact ring and segments located movably in a recess in said arm, a spring for holding said brush in frictional engagement with said contacts, and means for detachably securing said cover to said casing.

4. The combination with a casing provided with two concentric cylindrical recesses, of different diameters, a contact breaker located in the recess of smaller diameter, having a rotary part, a distributor arm operatively connected with said rotary part and located in the recess of larger diameter, said arm being provided with a brush receiving recess extending longitudinally thereof, a brush located in said re-

cess, a spring in said recess for forcing the brush outwardly, a detachable cover engaging the recess of the casing, of larger diameter, and provided on its inner face with contact devices located at different distances from the center of the cover, in positions to be simultaneously engaged by said brush, said cover holding said brush in the recess in said distributor arm.

- 10 5. The combination with a casing provided with two concentric cylindrical recesses, of different diameters, a contact breaker located in the recess of smaller diameter, having a rotary part, a distributor
15 arm operatively connected with said rotary part and located in the recess of larger diameter, said arm being provided with a brush receiving recess extending longitudinally thereof, a brush located in said recess,
20 and provided on its lower face with a recess, a spring engaging said recess, and the bottom of the recess in the distributor arm, a detachable cover provided on its inner face with contacts located at different distances
25 from its center and adapted to be engaged simultaneously by said brush, said cover being provided with lateral pins, spring

clips on the casing for engaging said pins, a spindle for driving the contact breaker and distributor arm and a single screw extending from a point immediately beneath the cover, through said arm and the rotatable part of the contact breaker and engaging the spindle.

6. The combination with a casing, of a spindle extending into the same, a circuit making and breaking device within the casing, having a rotary part detachably secured to said spindle, a distributor comprising a detachable rotary arm, operatively connected for rotation with said spindle, a cover for said casing detachably secured thereto, and distributor contacts carried by said cover, and a brush carried by said rotating arm, for engaging said contacts, and a securing screw within said casing, passing through said distributor arm and the contact making and breaking device and engaging the said spindle for securing the said parts together.

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