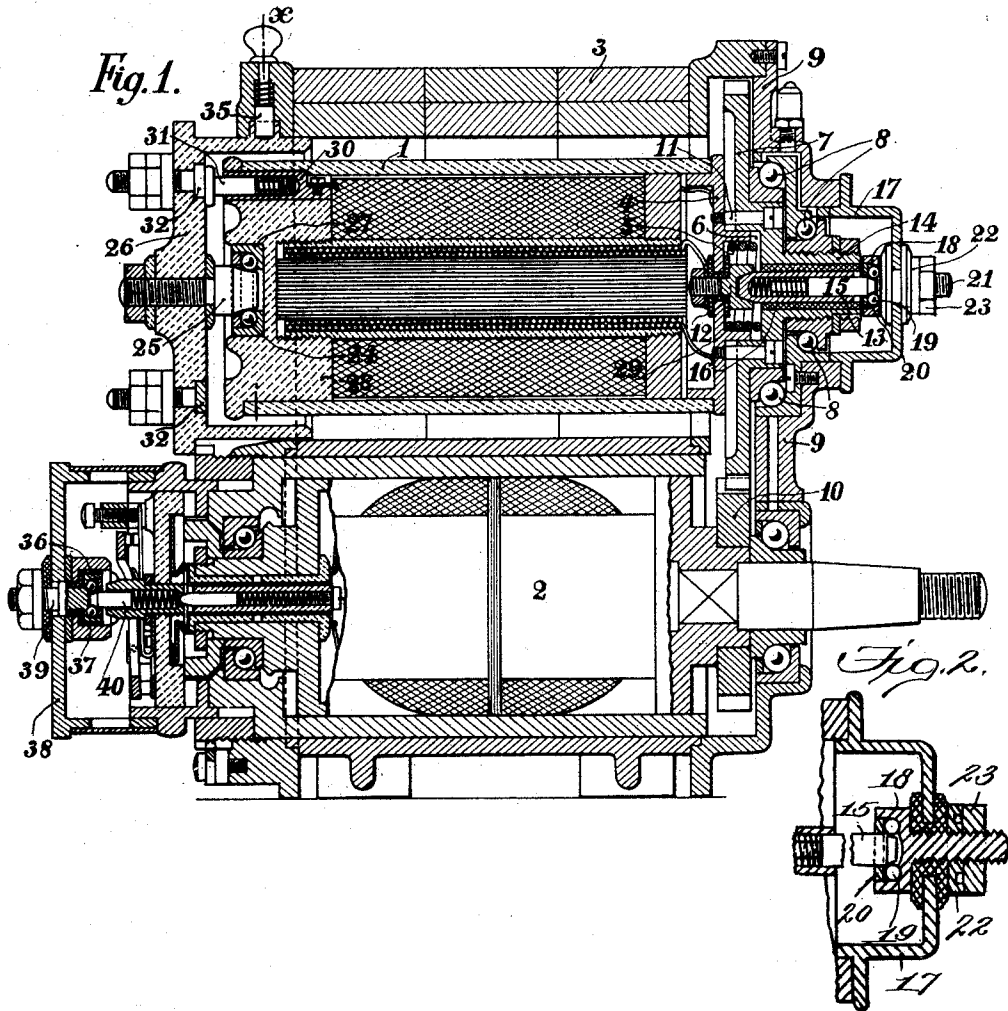


F. H. ALSTON.
ELECTRIC IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED JAN. 24, 1910.

979,912.

Patented Dec. 27, 1910.



WITNESSES

W. H. Norris
W. H. Norris

INVENTOR *Frank H. Alston*

By *James L. Norris*
W. H. Norris

UNITED STATES PATENT OFFICE.

FRANK HERBERT ALSTON, OF BIRMINGHAM, ENGLAND, ASSIGNOR OF ONE-HALF TO
BOULTBEE BROOKS, OF BIRMINGHAM, ENGLAND.

ELECTRIC IGNITION APPARATUS FOR INTERNAL-COMBUSTION ENGINES.

979,912.

Specification of Letters Patent.

Patented Dec. 27, 1910.

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To all whom it may concern:

Be it known that I, FRANK HERBERT ALSTON, subject of the King of Great Britain, residing at Birmingham, England, have invented certain new and useful Improvements in Electric Ignition Apparatus for Internal-Combustion Engines, of which the following is a specification.

This invention relates to the contact arrangements or current collectors for conveying the current between relatively moving parts of electric ignition apparatus, and has for its object to dispense with the use of rubbing contacts where the current is to be conveyed axially or centrally from the one part to the other so as to lessen friction and wear. This object is proposed to be attained by employing special ball or roller bearing contacts or current collectors instead of the ordinary rubbing contacts.

Figure 1 of the accompanying drawings represents a section through a magneto-electric machine embodying the present invention; Fig. 2 is an enlarged section through the improved ball-bearing contact.

In the machine illustrated in Fig. 1, the induction coil of the system is utilized as the revolving part of the high-tension distributor, said coil, which is shown at 1, being driven from the armature 2, and arranged to revolve within a chamber formed by the space inclosed by the upper portions of the magnets 3. The one end of the primary winding is earthed and the other is connected to an insulated terminal stud 12 arranged to project from the center of the end cheek 4. The outer end of this stud is internally coned and is engaged by the correspondingly coned end of a plunger sleeve 13 slidably passing through the hollow boss 14 of the spur wheel 7 but revolving with the coil. The outer end of this sleeve 14 carries a plunger 15 forced outward by a spring 16, and having a coned extremity which engages with a ball-bearing contact or current collector arranged in accordance with this invention and carried by the removable screwed-on cap 17. This ball-bearing contact comprises a hollow cup or body part 18 within whose interior is arranged a ring of anti-friction balls 19 running upon races. The one end of the cup is open so as to receive the end of the spring plunger 15 which bears and runs upon the balls, thus

reducing friction and wear to a minimum. The balls are retained in position when not engaged by the plunger by a centrally-pierced closure disk 20 secured in the mouth of the cup after the balls have been inserted in place. The said cup or body 18 is carried by the end of a screwed shank 21 passing through, but insulated from the cap 17 so as to project from the outside, where it is fitted with a locking or fixing nut 22 and binding nut 23, thus forming the external terminal of the coil to which the low-tension current from the armature of the machine is brought, said current being thence conveyed through the ball-bearing contact and spring plunger to the primary winding of the revolving coil.

Ball-bearing contacts, similar to that represented at 18, 19, for conveying the low-tension current to the primary winding of the coil, may be employed on the magneto machine or other ignition apparatus wherever it is required to convey current (high or low tension) centrally or axially from a revolving part to a stationary part, or vice versa. For instance, it may be employed for conveying the low-tension current from the live end of the armature, or from a revolving contact breaker, to the external terminal. As shown, the cup 36 containing the balls 37 is carried by the end of the detachable contact breaker cap 38, the shank 39 passing therethrough to form the external terminal, while engaging with the balls is the spring loaded plunger or brush 40 connected with the contact breaker. Instead of balls being employed in the contact fittings above described, rollers may be used.

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

1. In electric ignition apparatus, an anti-friction current collector comprising a cup part provided with races, a ring of anti-friction devices running upon said races, a central plunger engaging with said anti-friction devices, yielding means associated with said plunger and adapted to normally keep it in engagement with the anti-friction devices, and means for retaining the anti-friction devices in place when not engaged by the plunger.

2. In electric ignition apparatus, an anti-friction contact comprising a cup part con-

taining a ring of anti-friction devices and a relatively rotating spring-influenced feeder brush adapted to engage said anti-friction devices, said cup being carried by a shank
5 passing through the part upon which the contact is mounted, and constituting an external terminal.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK HERBERT ALSTON.

Witnesses:

HENRY S. SKERRETT,

HENRY NORTON SKERRETT.