HIGH-TENSION MAGNETO-IGNITION SYSTEMS.

THE REMY HIGH-TENSION MAGNETO.

THE Remy magneto is an American machine, and although it is not yet established in this country on a commercial basis, it will naturally have a certain amount of interest to British motorists, even if it is merely on account of its origin, for what is done in the United States seldom fails to become of importance sooner or later to the inhabitants of the British Isles.

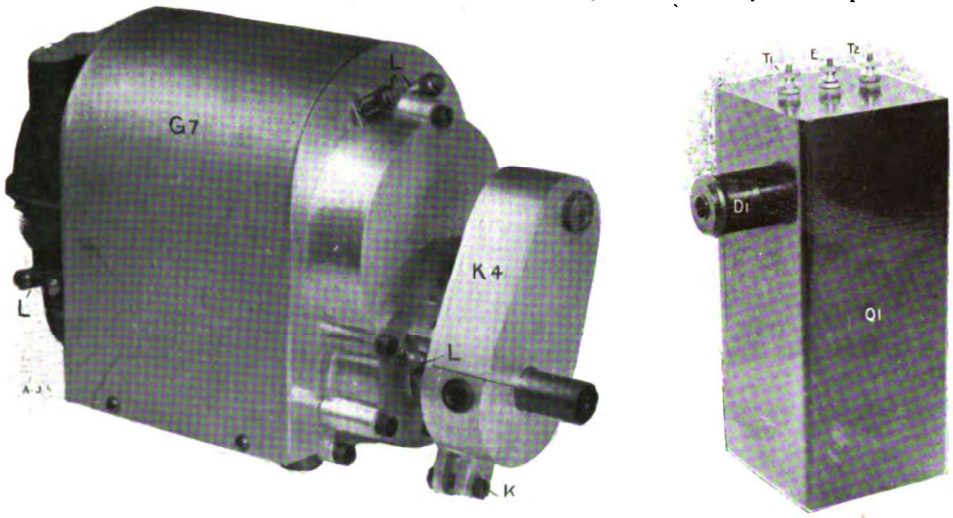

Fig. 1.—The Remy System.—View of the complete apparatus, showing on the left the magneto, and on the right the induction-coil, which is enclosed in a separate case. The low-tension contact-breaker is enclosed in the box, K¹, which is rocked bodily about the armature-spindle, B, for timing the ignition.

In placing on the market a high-tension magneto system, the Remy Electric Company, of Indiana, have adopted the separate induction-coil principle, making use of a machine for the magneto proper which does not differ largely from the pure low-tension type with which they have also had considerable experience.

Although, in the main, of orthodox construction there are nevertheless certain features on the Remy high-tension magneto which stamp it as original, even if it is rather in the method of arrangement than in any broad principles that any novelty exists. One of the first peculiarities which stands out prominently is that the machine is provided with adjustable pole pieces which are inter-connected with the timing mechanism so that the "maximum" position of the armature can be altered to suit the instant at which the primary circuit is interrupted by the contact-breaker. With this principle our readers are already familiar from our description of the Gianoli system, in which adjustable pole-pieces formed, it will be remembered, one of the many original features. In the Remy machine they are arranged to all intents and purposes in exactly the same way, and, connected rigidly to them, is a rocking-plate, carrying the low-tension contact-breaker, to which the timing-lever is connected. Ordinarily all that is done when varying the time of ignition on most magnetos is to throw over the rocking-plate so that the contact-breaker-lever occupies a different position relative to the cam on the armature shaft. In the Remy machine, however, this is accompanied by a partial rotation of the adjustable pole-pieces so that the displacement of the contact-breaker mechanism effects a corresponding movement of the "maximum" position of the armature, the circuit being thus always interrupted at the "maximum" position.

Except for this particular feature, the Remy magneto calls for no special comment as its construction follows sufficiently closely upon ordinary lines to be considered as standard practice. The more important details are illustrated in the photographs and drawings which accompany this article, these including a view of the complete apparatus in Fig. 1, a sectional drawing of the magneto in Fig. 2, a view of the magneto partly dismantled in Fig. 3, the armature being shown separately in Fig. 4, and two diagrams of connections in Figs. 5 and 6 respectively.

From these, the general arrangement of the parts will be self-evident, and it only remains to give a brief description of the leading features.

The magnets are of course of the horseshoe type, and in this case are built up from six separate elements arranged in three sets of two. These are enclosed within

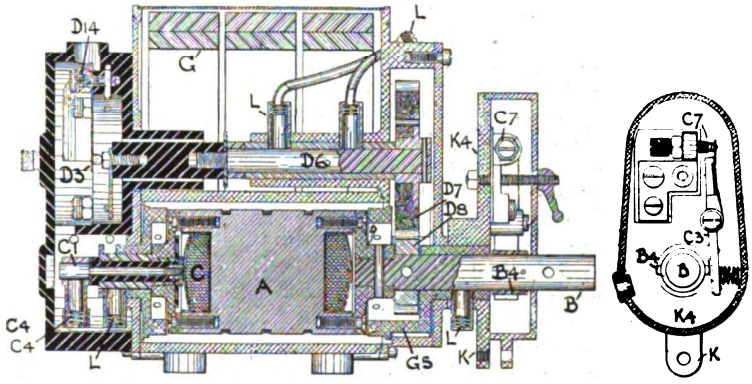

Fig. 2.—The Remy System.—Sectional drawing showing the internal construction of the magneto, and illustrating the arrangement of the low-tension contact-breaker, which is mounted as a separate unit on the opposite end of the machine to that at which the low-tension brush-gear is situated.

a sheet aluminium case mounted on an aluminium base-plate, G¹, being fastened in the usual way by stout screws to the cast-iron pole-pieces, G², which are held in place from beneath by screws passing upwards through the base-plate. Actually forming part of the magnets, although in the complete machine appearing more as if they belonged to the armature, are the adjustable pole-pieces, G⁵, which consist of cast-iron shields mounted on brass discs or end plates which ride upon the armature-spindle. Passing across above the fixed pole-pieces is an aluminium cover-

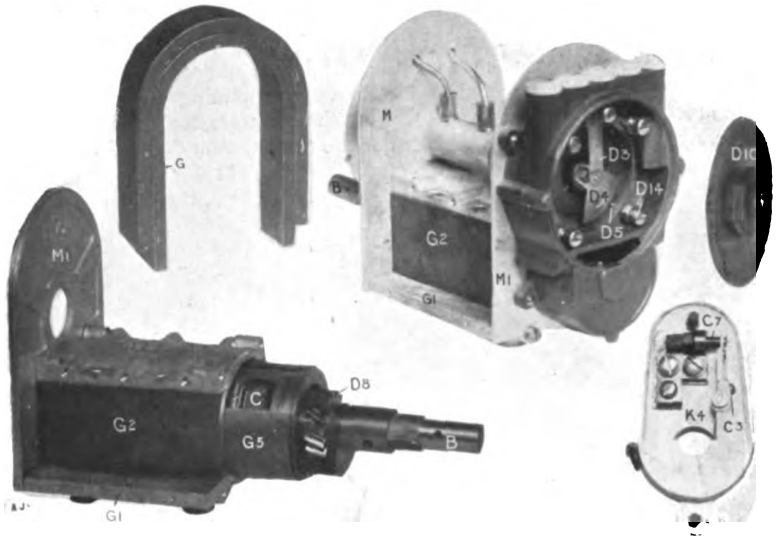

Fig. 3.—The Remy System —Views of the magneto partly dismantled. On the left the magnet base plate to which the pole-pieces are attached is shown with the armature partly withdrawn. Above is a pair of the magnet elements, alongside which is another view of the partly dismantled magneto looking on the opposite end, and showing the high-tension distributor mechanism. Beneath is a view of the low-tension contract-breaker shown separately.

plate which, together with the aluminium bearing-plates, M and M¹, serves to protect the armature from dust or other extraneous matter. The armature itself is built up in much the usual way, and has a solid core, A, on which the single coil of wire, C, is wound. This core is of the shuttle type and is carried between brass end-plates, B⁵, which are fixed to it by screws passing into the iron. Rigidly fixed to these end-plates are the two halves of the armature-spindle, B and B¹, respectively, the former being used to carry the spur-wheel by which the magneto is driven. At each end the actual bearing surface is formed by the boss of the brass plates which carry the adjustable pole-pieces, and these in turn rest in corresponding bearings formed in the aluminium bearing-plates, M and M¹. Lubrication is effected by means of felt wicks, which are saturated with oil as occasion requires. These lubricators, L, are prominent in most of our illustrations, and especially so in sectional drawing Fig. 2.

One end of the armature-coil, C, is connected directly to the iron core, the other is fastened to an insulated-rod, C¹, which passes through the armature-spindle and terminates in a small cylindrical knob at the outer extremity. Riding on this knob is a very neat collector which is always maintained in good contact by a spring-loaded brush, C¹, carried by the collector itself. From this collector-brush a wire is led to one of the low-tension terminals, T¹, on the induction-coil, the other terminal, T², being coupled up in turn to the terminal, C¹³, on the contact-breaker mechanism. This terminal, C¹³, is in electrical connection with the adjustment-screw, C⁷, which therefore, virtually forms the live end of the armature-winding. Pressing against it is the contact-breaker lever, C³, which is connected to earth. In this way the armature-coil is normally connected in a closed circuit, including the primary winding of the induction-coil, and the spark at the ignition-plug is caused to take place by the sudden interruption of the current due to the operation of the contact-breaker, C³. Although forming a

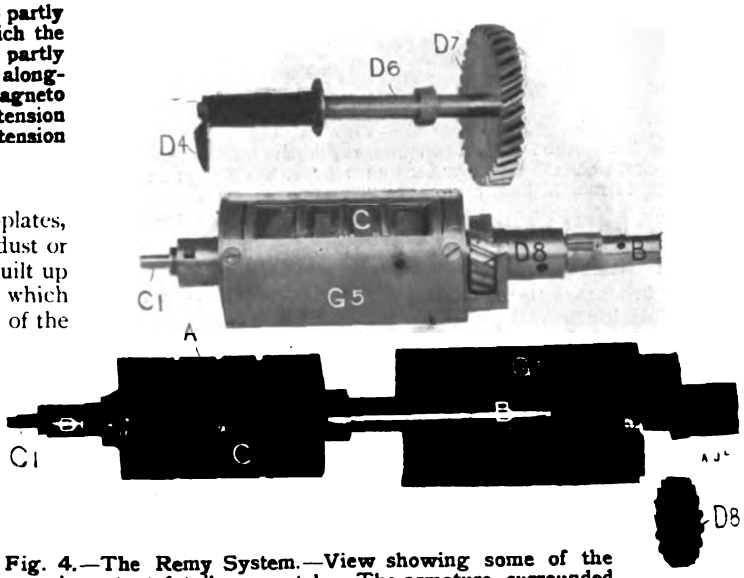

Fig. 4.—The Remy System.—View showing some of the more important details separately. The armature, surrounded by the adjustable pole-pieces, G⁵, has the distributor-spindle, D⁶, lying above it. Beneath, the armature is shown after it had been withdrawn from the pole-pieces, G⁵, which normally enclose it.

separate unit, the induction-coil is not provided with a trembler, but operates solely and entirely on the single quick-break, which is obtained from the contact-breaker. The contact-breaker itself is slightly different to that which is usually fitted on magnetos commonly in use in this country; for the cam, B⁴, on the armature-spindle, instead of positively forcing the contacts apart, is, on the contrary, employed in the opposite sense, by being used to close them against the action of a supplementary spring. It is, therefore, this spring which causes them to fly apart, and so give the necessary quick-break. In order to make this system work satisfactorily it

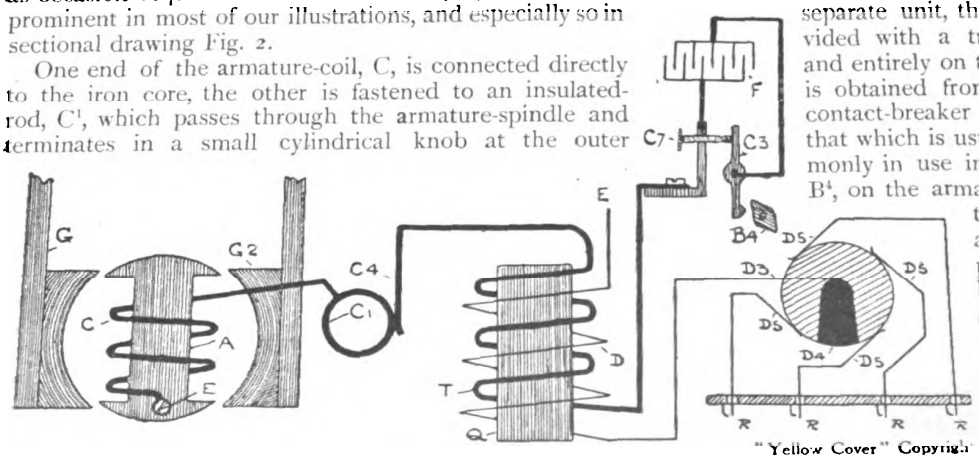

Fig. 5.—The Remy System.—Diagram of the internal electrical connections.

is of course necessary to have some flexibility between the contacts themselves, and it is for this reason that the lever, C^3, has been provided with a leaf-spring extremity carrying the platinum point. The whole of this contact-breaker mechanism is mounted on a plate, K^4, which is in turn fixed to a sleeve forming a part of the adjustable pole-pieces. A suitable lug, K, serves as the necessary connection to the timing-lever, so that the entire gear, including the adjustable pole-pieces, can be rocked about the armature-spindle into any required position.

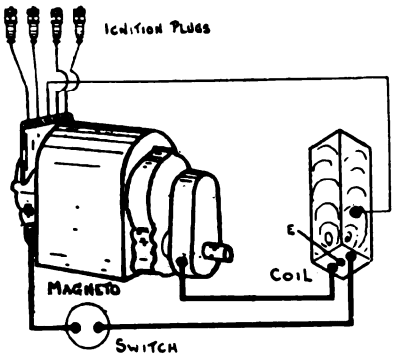

Fig. 6.—The Remy System.—Diagram of the external wiring, showing the method of coupling up the magneto on a car.

Although the induction coil is constructed as a separate unit, the high-tension distributing mechanism is arranged on the magneto itself, being mounted on a spindle, B^6, lying above the armature, which is driven by a spur-pinion on the armature-spindle. In order to make these gears as quiet as possible, the teeth of the spur-wheels are cut on the skew, while another interesting detail, which is very clearly illustrated in our sectional drawing, Fig. 2, is that the metal spindle, D^6, is curtailed and provided with an ebonite extension, to which the distributor-sector, D^4, is directly fastened. In this way the insulating material is reduced to a minimum, and the space occupied is also considerably less than would be the case if the metal spindle were the full length. On the other hand, this form of construction involves a considerable amount of overhang, but this is of small moment as there is no strain on the spindle other than that imposed by the end thrust of the skew cut spur-wheels and the slight direct pressure of the spring contact-brush, D^3, by which the high-tension current is delivered from the induction-coil to the distributor-sector, D^4. As the distributor revolves, this sector comes opposite to a series of brass collector-points, the current jumping across to each in turn in the form of a spark. These collector-points form part of the terminals, B^{14}, which are connected direct to the ignition-plugs, the wires being led in through neat sockets in the distributor-case, which at first sight look like plug-fittings.

Table of Reference Letters for the Remy High-Tension Magneto.

A Armature-core.	D^8 Spur-wheel on B.
B Armature-spindle, driving end.	D^{10} Cap over distributor.
B^1 Armature-spindle, free end.	D^{14} Terminals to plugs.
B^4 Cam.	E Earth.
B^5 Armature end-plates.	F Condenser.
C Armature-coil.	G Magnets.
C^1 Live end of C.	G^1 Base-plate.
C^3 Contact-breaker.	G^2 Magnet-poles.
C^4 Collector-brush.	G^4, G^5 Adjustable pole-pieces.
C^7 Adjustment-screw.	G^7 Cover-plate over magnets.
C^{12}, C^{13} Magneto terminal.	K Timing-lever.
D Secondary winding.	K^4 Rocking-plate.
D^1 Live end of D.	L Lubricators.
D^3 Feeder-brush.	M, M^1 Bearing-plates.
D^4 Distributor-sector.	O Induction-coil core.
D^5 Collector-points.	O^1 Induction-coil case.
D^6 Distributor-spindle.	T Primary of coil.
D^7 Spur-wheel on D^6.	T^1, T^2 Ends of T.

CLIMBING CUDHAM CHURCH HILL.—This hill, near Westerham in Kent, has become most popular for testing cars since it was "discovered and laid" in a run which we described in THE AUTOMOTOR JOURNAL of April 13th. One of the most recent conquests has been made by a 12-14-h.p. 4-cyl. Argyll, which is shown in the above photograph at the summit of the incline with five passengers on board. The point from which the photograph is taken gives a very vivid idea of the stiff incline. So confident are Messrs. Argylls, London, in the hill-climbing capacity of their cars that they are willing to allow prospective purchasers to make this test of the hill for themselves.