REMY

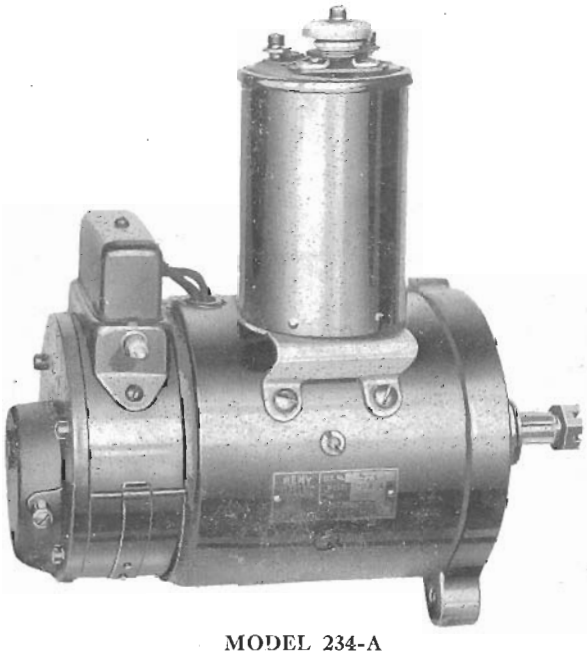
STARTING—LIGHTING—IGNITION

FOR

OAKLAND MODEL 34-B

Instruction Book 501 SEPTEMBER 1917

IGNITION-GENERATOR



MODEL 234-A

RELIABLE performance of Remy apparatus, year after year, is the attainment of years of experience in meeting the exacting requirements of many different engine designs.

The Remy Electric Company has grown to be the largest specialist in electrical equipment for the motor car, devoting its immense plant exclusively to such manufacture.

Knowing that periodical inspection of a few simple parts, is the surest preventative of trouble in the best of apparatus, the Remy Electric Company desires that every owner shall have a clear working knowledge of the electrical equipment which plays so essential a part in the car's performance.

For the convenience of its patrons, the Remy Electric Company maintains a national service system. (See list on page 15.)

The Oakland car is equipped with a Remy Generator of the most compact cylindrical form, which supplies the Storage Battery with all current required for starting, lighting, and ignition. The Ignition Coil is mounted upon the body of the Generator, and the Relay is mounted upon the removable dust-tight cover which clamps around the commutator end of the Generator.

Regulation of the current output of the Generator is provided by the well-known third-brush method, supplemented by the Remy Patented Thermostat Control of the charging rate.

OILING

The armature shaft rotates quietly in large sleeve bearings, the front bearing is so arranged that it will constantly be lubricated by the oil in the engine timing gear case. The rear bearing is provided with a large oil well with a wick feed so designed as to insure a constant circulation of oil as long as the oil well is not allowed to run actually dry. Fill this oil well every 1000 miles with good light oil to the level of the oil inlet.

COMMUTATOR AND BRUSHES

A removable dust-tight cover around the commutator end of the generator, provides easy access to the commutator and brushes. Inspection twice in a season will forestall any tendency to score the commutator, such as dirt causing poor brush contact. The commutator wears naturally to a brownish color in normal use, but if it appears black or scored, the surface should be smoothed with a piece of fine No. 00 sand-paper. ***Never use emery cloth for this purpose.*** Blow out all dust and see that the brushes swing freely on their pivots, so that the spring tension holds them in good contact with the commutator.

The brushes used with this Generator are of special carbon-copper composition, and under average conditions will last indefinitely. If replacement should be necessary for any cause, do not use cheap, inferior substitutes, but obtain from the Remy factory, Service Branches or Parts Stations, brushes which have been selected from tests proving their good conductivity and wearing quality.

THIRD-BRUSH REGULATION

The current output of the Generator is regulated at all speeds by means of the third-brush construction, in which the field winding of the Generator, instead of being connected across the two main brushes, as in ordinary shunt-wound type, is connected from one main brush to a third brush.

The Generator starts to charge at a low driving speed, and delivers its full charging current at average driving speed. Above average speeds, the third-brush regulation reduces the current automatically, so that the battery is not subjected to an excessive charge rate, if the car is driven at high rates of speed.

THERMOSTAT CONTROL

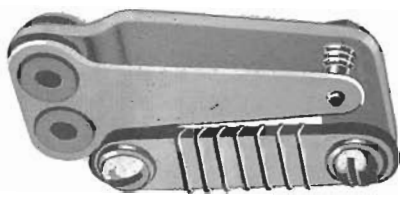
The battery is called upon for considerably more current in winter than in summer, because of the increased use of lights, and longer application of the Starting Motor required to start a stiff, cold engine. Furthermore, since the condition of the streets in winter imposes slower driving, the battery does not receive even the normal amount of recharge from the ordinary type of Generator, and as a result, it has been found necessary on some makes of cars to have the battery charged several times during the winter at considerable inconvenience.

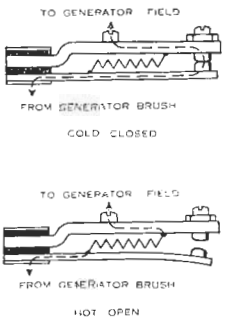
A larger capacity generator could not safely be used, without some means of protecting the battery from over-heating which a continuous high charge rate would cause, especially in the summer time, and with serious consquent damage to the plates and a material shortening of the battery's life.

The Remy Patented Thermostat Control has made it possible to furnish a Generator of still larger current capacity needed for winter usage, by reducing the charging current automatically whenever the battery tends to heat up. The Thermostat insures against the overheating of the battery, which a continuous high charge rate

would cause, with consequent damage to the plates, especially in the summer time. The Thermostat thus insures not only maximum battery life, but enables the highest charging rate to be used which the battery may safely receive at different temperatures.

The Thermostat is composed of a resistance unit, two silver contact points, and a spring blade holding one of the contact points. The blade is made of a strip of spring brass welded to a strip of nickel steel—a combination which warps at its free end when heated, due to the greater expansion of the brass side. The blade is riveted through insulation washers to the bracket permanently, and the spring tension is fixed so that it holds the two contacts firmly together at low temperatures, but as soon as the temperature rises to approximately 175 deg. F. the blade bends, and separates the contacts.



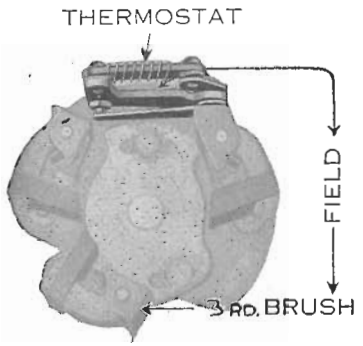


When the Thermostat contacts are closed, full field current passes through them and permits full current output from the Generator. After the engine has been run for a sufficient time tending to heat up the battery, the automatic Thermostat inserts the resistance into the field circuit, and thus reduces the output.

THIRD-BRUSH ADJUSTMENT

If it should be considered necessary to change the current output of the Generator, it is advisable to have this done only by a service man, since the correct output depends upon the battery condition and the temperature. Adjustment should be made only after the Generator has cooled down to atmospheric temperature. The current output can then be reduced by turning the small screw at the commutator end of the Generator slightly to the left, or in a counterclockwise direction, but this should never be done unless it is certain

that the battery receives from day to day, more charging than is desirable, resulting in frequent replenishing of water due to evaporation. A reduction of but one or two amperes in the maximum current output rate would in all probability be sufficient.



BRUSH RIGGING INSIDE

Unless most of the driving in summer is made up of unusually long daylight runs with few stops, and with little or no use of the lamps, the Thermostat will be found to control the current output without any attention to this adjustment whatever.

LOW CURRENT OUTPUT

The protection which the Thermostat affords against continuous high charge rate, permits the use of the highest charging current that the battery can safely receive. The maximum charging current is 18—20 amperes, from a cold start, and this is reduced by Thermostat Control to approximately 13—14 amperes after a period of running depending entirely upon the speed and the atmospheric temperature. The reduction may therefore occur within a few minutes or not at all if the weather is cold or the stops are frequent, but it will always occur before the battery reaches an excessive temperature.

In case maximum current cannot be obtained apparently to exceed 15 amperes when the Generator has had time to thoroughly cool down, determine if the ammeter pointer indicates correct zero, with the engine at rest and all lights and ignition turned off. If low current persists even before the Thermostatic drop occurs, see "Commutator and Brushes" and "Third-Brush Adjustment."

In case all charging current stops entirely after a few minutes run, but returns to maximum when the Generator is cool, see "Thermostat Resistance."

THERMOSTAT RESISTANCE

The Thermostat Resistance acts as a protective fuse to the Generator in case the battery or generator charging circuit should ever become disconnected in operation from either accident or neglect, as the Resistance wire would then burn out and prevent the Generator windings from being damaged.

A new Resistance Unit should be installed before the generator charging circuit is connected again. If the generator circuit be connected again without installing a new resistance unit, the Generator will produce full charging current at the start, but after the car has been run long enough to cause the Thermostat to open, the output will drop to zero, since the burnt-out resistance cuts off the field current entirely. Under this condition the Thermostat Contact Points will arc and flash badly at the time the Thermostat opens, and for that reason a new Resistance Unit should be installed promptly or else the contact points will be destroyed. The Thermostat Resistance is made as an easily replaced unit.

THERMOSTAT ADJUSTMENT

The Thermostat is substantially made to withstand the most excessive vibration without impairing its operation, but its accuracy would surely be destroyed by prying the contacts apart.

RELAY

The Relay is simply an automatic switch for connecting and disconnecting the battery charging circuit. If the battery were left connected to the Generator when the engine stops or when the car is driven too slowly for the Generator to charge, reverse current would flow from the battery, back through the Generator windings, and would soon exhaust the battery. The Relay is therefore provided to act like a check valve, permitting the charging current to flow to the battery when the Generator is driven fast enough to produce current, and opening the circuit when the engine slows down or stops, so the battery current cannot flow in the opposite direction.

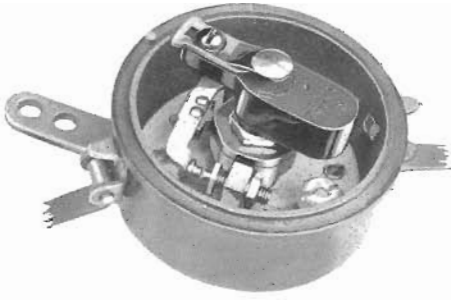
The Relay showing the illustration with the cover removed, is composed of two contactpoints, a movable arm with a spring hinge, and a simple electro-magnet. The spring holds the contacts apart when the engine comes to rest; but when the Generator is driven at sufficient speed to develop voltage equal to battery voltage, the "shunt" coil is energized and pulls down the arm, thus closing the contacts through which the Generator current can reach the battery. The charging current must also pass through the "series coil" which increases the magnetism and insures that the arm will he held down to a firm contact.

As soon as the engine slows down or stops, the Generator no longer energizes the shunt coil, yet the arm would stay down, due to a slight "Residual" magnetism, but as soon as current starts to flow from the battery back through the Generator, and thus reverses through the series coil, the magnet is demagnetized and the contact is released.

CONTACT POINTS

If the Relay contact points become dirty or worn unevenly, they may be cleaned by passing between them a piece of fine No. 00 sandpaper. Blow out all dust to allow clean flat contact. Use care not to spring the arm, or to change either the opening or the spring tension. The spring tension is correctly set to operate at the proper time for connecting and disconnecting the points, which should have a maximum opening of .020″ to .025″.

IGNITION—CIRCUIT BREAKER



To produce a spark at the spark plug, it is necessary to close and open the battery circuit each time through the Ignition Coil, and this action is accomplished by the Circuit Breaker shown above at the left, with the cap removed at the right.

The Circuit Breaker comprises two contact points, one being stationary, while the other is carried at the free end of a pivoted arm. The six-faced rotating steel piece, called the "cam," has accurately ground corners which bear in rotation against the fibre block in the arm, and cause the contact points to open and close at correct intervals.

CONTACT POINTS

Contact points should have a maximum opening of .020″ to .025″, or the thickness of the gauge on the side of wrench furnished for adjusting the contact point opening. We recommend a periodical inspection of the points every 1,000 miles. If found to be worn unevenly or dirty, these may be cleaned by passing between them a fine flat file, or preferably a piece of No. 00 sandpaper.

Adjustment of the gap between the contacts is made by loosening the lock nut next to the post, with the wrench furnished, turning the adjusting screw, then locking the nut again.

Do not oil these contact points. Every 1,000 miles, however, a slight trace of vaseline placed on the fibre block or on the cam, will keep the cam from rusting.

CONDENSER

The Condenser is simply an electrical reservoir which prevents injurious arcing or flashing at the Circuit Breaker contact points. The Condenser is sealed up in the Coil case, permanently protected. It is electrically connected across the Circuit Breaker points, through the Coil terminals, as may be seen in the Wiring Diagram.

IGNITION DISTRIBUTOR

Each spark plug of the engine is connected by a heavily insulated wire to one of the terminals on top of the Distributor Cap. These terminals have alloy metal extensions on the under side of the Cap as shown in the illustration on page 7 at the right. The center terminal for the high tension cable to the Ignition Coil, has a carbon button on the under side of the Cap which makes electrical contact with the spring which is a part of the Segment. The Segment fits upon the shaft only in the one correct position relative to the cam, so

that, as it rotates, it always comes opposite the correct extension in the Cap, to conduct the spark to the proper cylinder, when the cam separates the Circuit Breaker contact points.

The outer edge of the distributor Segment rotates close to the terminal extensions without quite touching them, so that there is no wear due to rubbing contacts.

The distributor Cap in which terminals are embedded, is moulded Condensite, a material which possesses great moisture-proof and insulating properties even under excessive heat. The special alloy metal blade of the Segment is embedded in a block of the same material.

DISTRIBUTOR OILING

The Distributor is provided with a grease cup, which should be kept full of medium grease and turned to the right two or three turns every 1000 miles of running to force a little grease into the bearing.

TIMING TO THE ENGINE

With the circuit breaker in full retard position the circuit breaker contact points should just start to separate or open when the engine is turned past dead center.

If it should ever be necessary to retime the Ignition Distributor, proceed as follows: Open all compression cocks and turn the engine by hand till the intake valve of cylinder number one (next to the radiator) opens and closes, and till the mark U. D. C. 1-6 on the flywheel is in top center position. When this has been done the piston of cylinder number one is just starting down on its working stroke. Next place the Distributor Advance Lever in full retard position. Remove the Distributor Segment by pulling it up off of the shaft, disclosing the nut that locks the cam. Unscrew and remove this nut. Loosen the cam from its snug fit on the taper of the shaft by prying up, rapping it at the same time. Use care not to mar the smooth surface of the cam. Reset cam by moving it in the direction it rotates until the circuit breaker contact points just start to separate, and in

this position rap cam down to make it fit snugly on the taper. Replace and tighten down nut. It will be noted that the cam also bears the pin that drives the Segment, and when setting the cam see that this driving pin is opposite the small pin in the rim of the Distributor body casting which locates the distributor cap. When the segment is placed back upon the shaft the metal blade of the segment will be opposite the extension of the Distributor Cap terminal directly over the locating notch in the edge of the Distributor Cap. This terminal is to be connected to the spark plug of cylinder number one. The next Distributor Cap terminal in a clockwise direction to be connected to the spark plug of cylinder number five, the next to number three, next to number six, next to number two, and next and last to number four.

SPARK PLUGS

Failure of spark is sometimes due to the gap in the spark plug becoming clogged with carbon or oil. This gap should measure .030″.

Too large a gap may cause missing on a hard pull or when accelerating at very low speeds. With too small a gap, the engine may operate unevenly at idling speeds and miss at higher speeds. With spark plugs having more than one gap, the shortest gap should be as stated.

IGNITION COIL

The current from the battery does not have sufficient pressure or "Voltage" to jump the gap of the spark plug, and therefore the Ignition Coil is provided which transforms the battery current into high tension current. The high tension current is conducted by a heavily insulated wire from the terminal on the side of the Coil to the center terminal of the Distributor, which then directs the spark to the cylinders in proper order of firing. The return circuit for the high tension current from the spark plug is through the engine and metal parts of the car, back to the metal base of the Coil.

The Coil supplied with this system has been especially developed so that an exceptionally efficient spark is produced at all speeds. It possesses the further distinct advantage of operating satisfactorily on as low as 2½ volts, should the battery voltage ever fall that low due to indiscriminate use of the Starting Motor or lights, or to other causes.

TESTING THE COIL

If total failure of spark cannot be traced to poor wiring connections, or dirty Circuit Breaker points, look under the small cup on

the top of the Coil, which contains the resistance wire and see if it is intact.

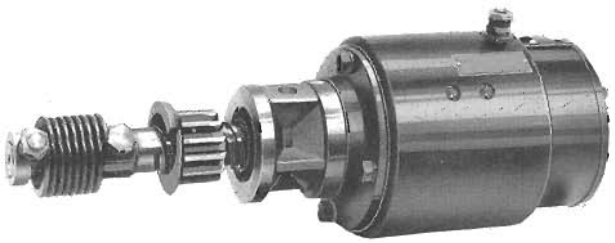
To test for spark failure apparently due to the Ignition Coil, first determine if current is reaching the Coil. Turn the Ignition Switch on, then short-circuit momentarily, the two terminals on top of the Coil, which are connected through the Ignition Switch to the battery; if there is no flash to indicate current, there is evidently a loose connection or a ground in the wiring to the Coil.

The coil windings may be tested by closing and opening the Circuit Breaker contacts by moving the lever quickly with the fingers, using care not to spring the lever in any way; while this is being done, hold in contact with the base of the Coil, a wire or metal piece with one end within 1/8 inch of the high tension side terminal of the Coil; a spark will jump across the gap when the Coil is all right.

A further test of the Coil "primary" winding may be made by connecting a lamp in series with 110 volts across the two terminals on the end of the Coil, with ignition turned off. If the lamp lights, both the Coil winding and the resistance unit are all right.

If one of the testing wires be connected to the base of the Coil and the other is brushed across the side terminal, a small spark there indicates that the winding is all right. This "secondary" winding is of such high resistance that even 220 volts would not light a lamp in series across its terminals.

STARTING MOTOR



The Remy Starting Motor is of the four-pole, series wound type, of very compact and sturdy construction. The Starting Motor is designed to furnish ample power to crank the engine at a high rate of speed, consuming the minimum amount of current commensurate with the demand for positive operation.

A Bendix transmission is used which engages and disengages the Starting Motor with the engine automatically. The entended shaft

of the Starting Motor carries a hardened steel sleeve upon which is cut a screw thread. Operating upon this sleeve is a steel pinion having a lateral travel of about one and one-half inches for engaging the gear teeth on the flywheel. A helical steel spring serves as a flexible coupling between the Starting Motor and the engine, and it also facilitates engagement of the gears, and absorbs all shocks.

When the Starting Motor is supplied with current, its armature being free starts to revolve at a high rate of speed. The pinion, by reason of its inertia, tends to lag behind the rotation of the shaft, whose screw thread thus draws the pinion into mesh with the gear teeth of the flywheel; but as soon as the engine starts firing, its increased speed of rotation threads the pinion back in the opposite direction, thus disengaging the Starting Motor from the engine.

A large starting torque is obtained in this way, by bringing the Starter pinion into mesh with the flywheel while the Motor is running at high speed. This engaging device is entirely automatic, and also "fool-proof," for if the starting switch should accidentally be pushed while the engine is running, the Starter pinion would be thrown against the faster revolving flywheel teeth, and be immediately thrown back without meshing and without damage.

The commutator and brushes of the Remy Starting Motor are designed to carry very heavy current without injury, and under normal conditions will require little attention from the operator during the life of the car. The position of the rocker-ring upon which the brushes are mounted, should never be changed, as this is determined upon and the ring accurately set at the factory.

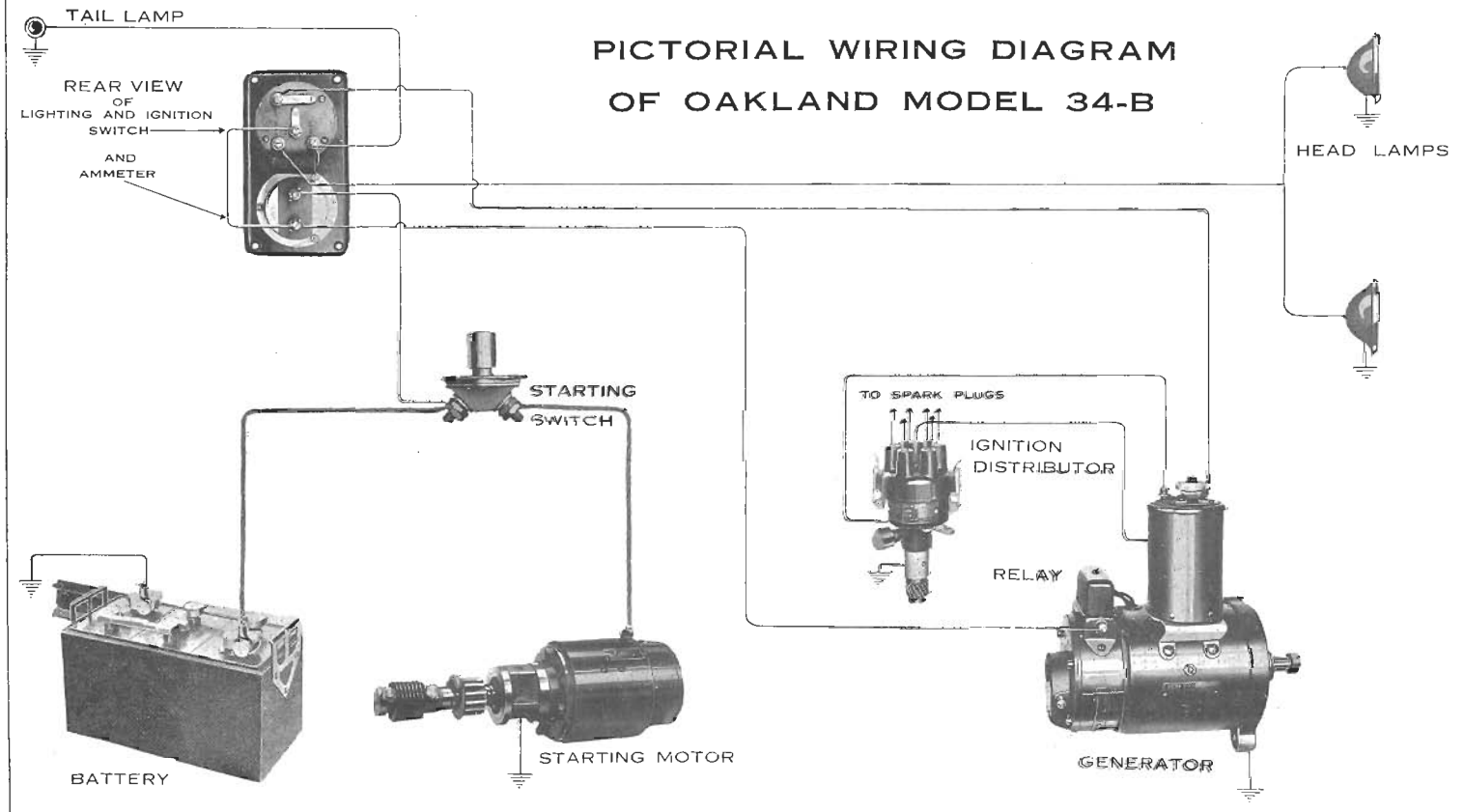
COMMUTATOR

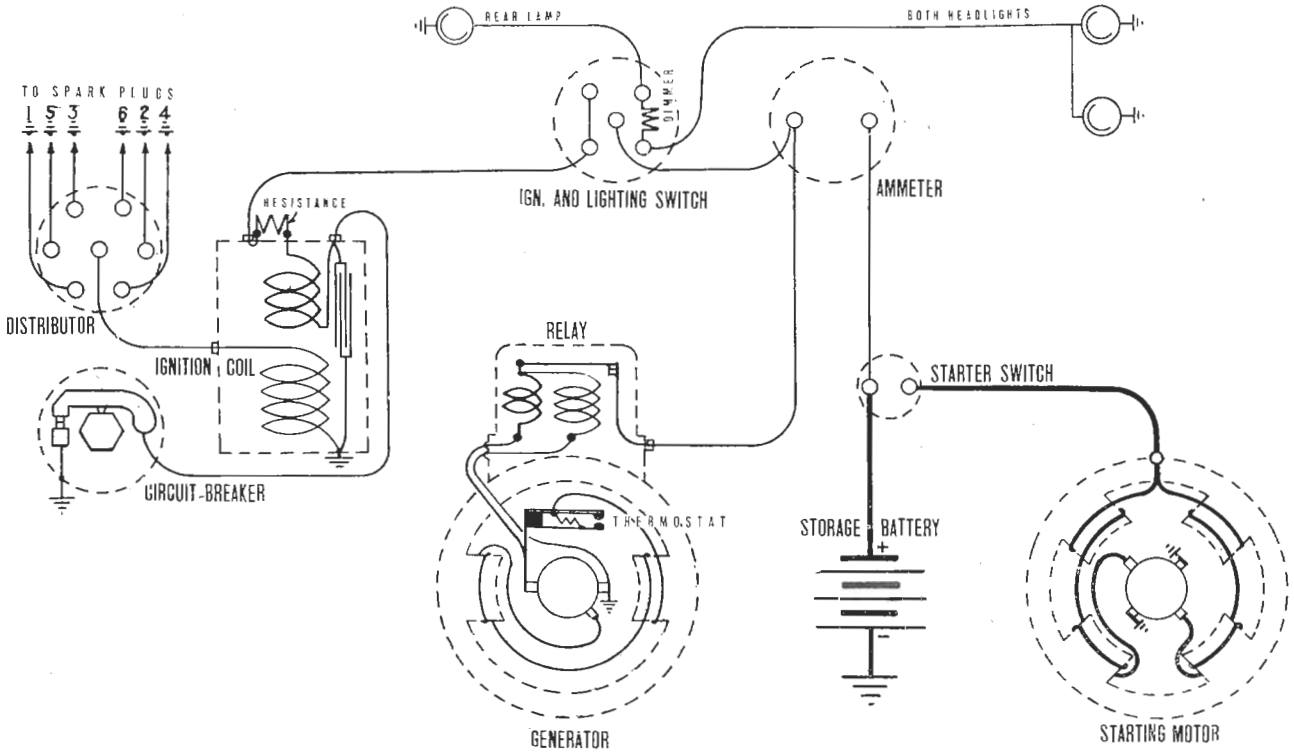
The commutator should be cleaned about once a year by an experienced man, the same as for the Generator. The removable cover makes the commutator and brushes easily accessible.

OILING

The bearings of the Starting Motor are generously proportioned and require only a few drops of good light oil every 1,000 miles to furnish ample lubrication under all ordinary usage.

PICTORIAL WIRING DIAGRAM OF OAKLAND MODEL 34-B




REAR LAMP
BOTH HEADLIGHTS
DIMMER
TO SPARK PLUGS
1 5 3 6 2 4
IGN. AND LIGHTING SWITCH
AMMETER
RESISTANCE
DISTRIBUTOR
IGNITION COIL
RELAY
STARTER SWITCH
CIRCUIT-BREAKER
THERMOSTAT
STORAGE BATTERY
+
-
GENERATOR
STARTING MOTOR

Service Branches and Stations have been established in the following motoring centers, where users of Remy equipment can be assured of prompt and efficient service:

Remy Electric Company Service Branches

Atlanta, Ga.	Denver, Col.	Minneapolis, Minn.
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Cleveland, Ohio	Kansas City, Mo.	London, England
	Los Angeles, Cal.	

Remy Service Stations

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Buffalo, N. Y.	Des Moines, Iowa	Pittsburgh, Pa.
Chicago, Illinois	Indianapolis, Ind.	Seattle, Washington
Cincinnati, Ohio	New Orleans, La.	St. Louis, Mo.
Columbus, Ohio	New York, N. Y.	Syracuse, N. Y.
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	Rochester, N. Y.	

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