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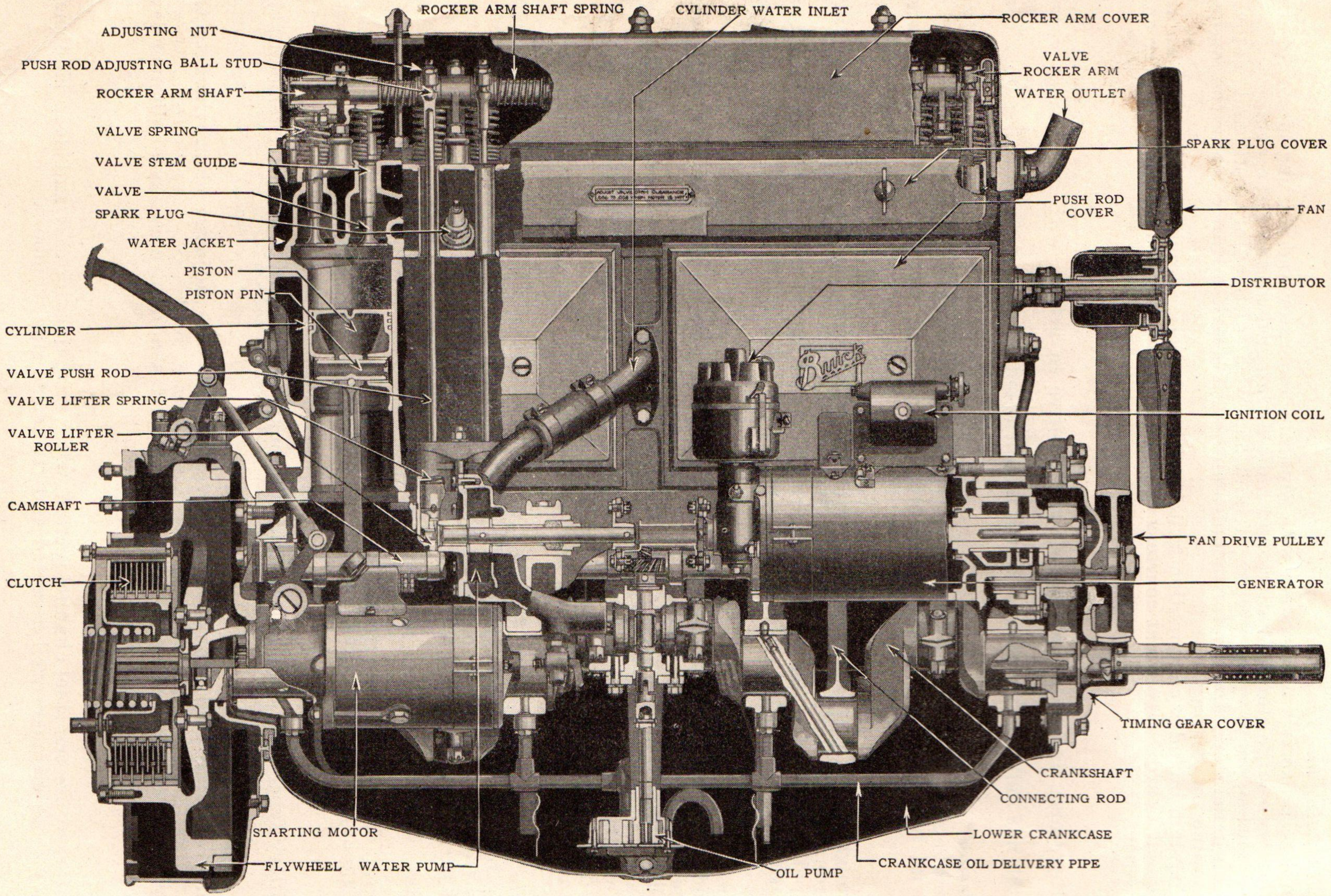
REFERENCE BOOK

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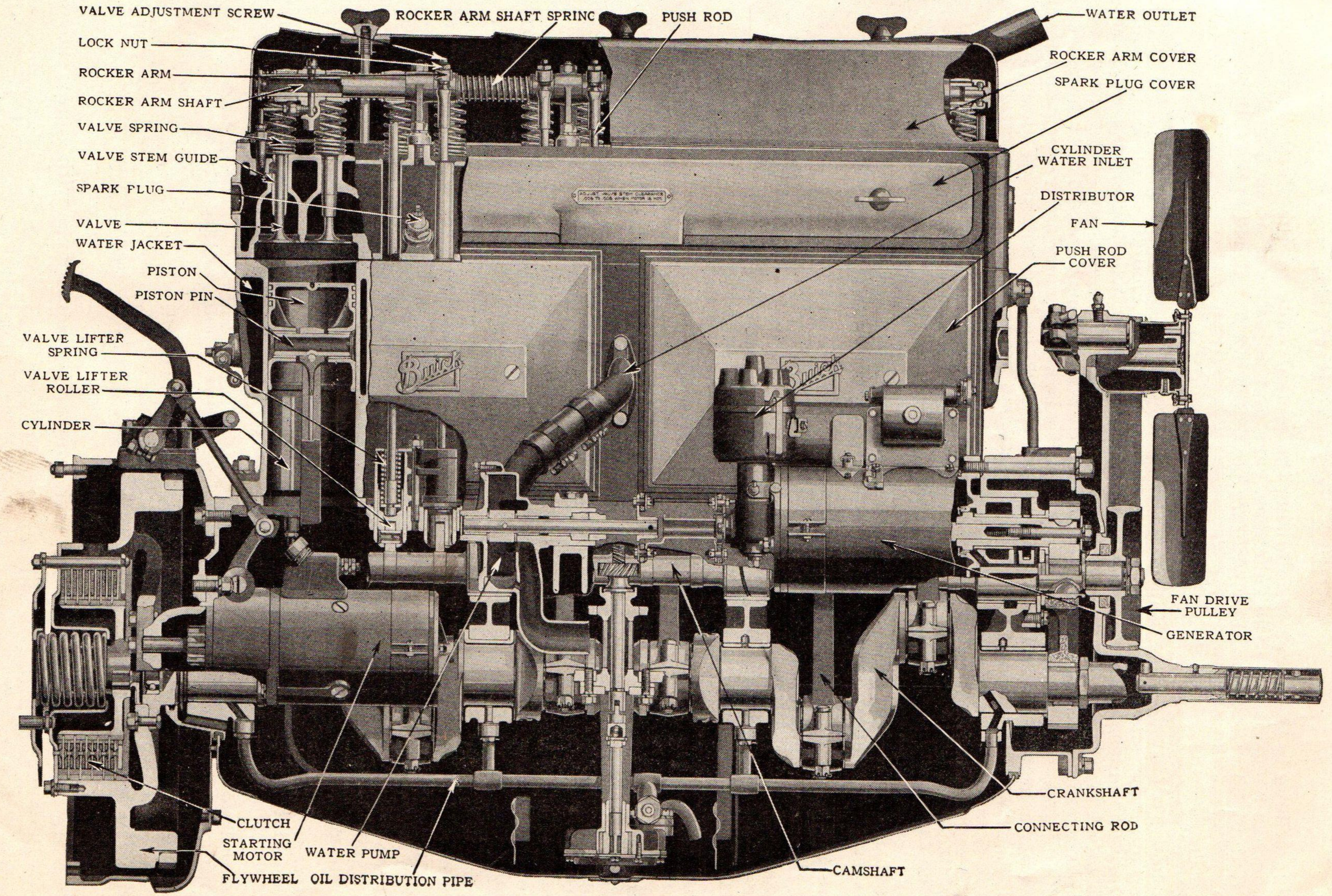
1926

STANDARD SIX
MASTER SIX

Buick



SIDE SECTIONAL VIEW OF STANDARD SIX ENGINE



SIDE SECTIONAL VIEW OF MASTER SIX ENGINE

OPERATION AND CARE

In describing in the chapters following the several units of the Buick car, detailed consideration has been given to the functions, care and adjustment of each unit. The more essential features in connection therewith are particularly emphasized in the following brief summary:

1. Lubrication

In cold weather driving, dilution of the crankcase oil and therefore, impairment of its lubricating qualities, may become excessive, and a complete change of oil is recommended at least every 500 miles. Under the usual conditions of warm weather driving, and the addition of fresh oil from time to time to keep the level at the "full" mark on oil level gauge, together with the operation of the oil-filter, it should not be necessary to make a change oftener than every 3000 miles. Under certain driving conditions, a change at less frequent intervals may be possible in warm weather, but it is advisable to check the operation of the oil filter every 500 miles. The lubrication chart should be studied and its recommendations covering the chassis in general observed systematically.

2. Cooling System

Keep radiator filled within three inches of top with clear water in summer and an anti-freezing mixture in winter.

Keep fan belt tightened, particularly in hot weather.

Inspect water pump packing nut frequently and tighten if necessary.

3. Brakes

Keep brakes in proper adjustment. Do not use for "stunt" performances.

4. Steering

Keep steering mechanism properly adjusted and well lubricated.

Inspect front wheel alignment frequently and adjust if required.

5. Clutch

Do not "ride" clutch pedal or slip clutch.

6. Starting

Release starting pedal immediately the engine begins to fire.

Do not keep "choke" button out too long else flooding of cylinders with gasoline will result. Do not continue cranking engine with starter if ignition does not take place promptly.

Do not race engine immediately upon starting nor drive the car at high speeds until engine has been thoroughly warmed up. Failure to observe this caution very often results in scoring of pistons and cylinders.

7. Fuel

Do not attempt carburetor adjustments without thorough knowledge of method and necessity for adjustment.

Push "choke" button in about three-quarters of the way the moment engine starts to fire and all the way in as soon as engine has warmed up. Heat control lever should be set at top or "heat on" position in starting, and carried at such position between top and middle of slot as will be determined by weather conditions and the character of driving to be done.

8. Battery

Keep battery plates covered with distilled water and all connections properly tightened.

Register new car battery with Exide authorized service station for systematic inspection.

9. Transmission

Shift gears on a hard pull and relieve the engine of unnecessary strain.

Depress clutch pedal fully when shifting gears.

Do not shift into reverse when car is moving forward.

10. Springs

Keep the spring clips tight and the shackle bolts free and well oiled.

11. Tires

Test tire pressure frequently and maintain same in accordance with figures shown in table on model plate on front side of dash.

12. Care of Paint

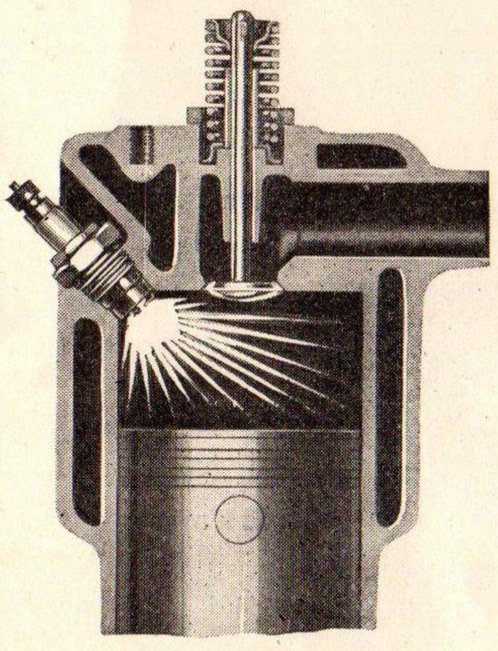
See instructions under "General Care of Car," page 56.

POWER SYSTEM

ENGINE

Buick is the pioneer builder of valve-in-head engines for motor cars, which principle of design it has followed for more than twenty years. The present commanding position of Buick in the automotive industry is due in considerable measure to its consistent adherence to this type of construction. There are a number of very important advantages in the valve-in-head design and these will be readily apparent in a consideration of the following points:

1. The gasoline engine is that type of machine which derives its power from the heat developed in burning a mixture of fuel and air within its cylinders. The type of engine, therefore, that consumes in the highest degree the heat units in each charge of fuel and air, will show the greatest efficiency and economy in service, other things being equal. Of all internal combustion engines this condition is most closely met in the valve-in-head type which has the smallest area of combustion chamber surface and consequently less dissipation of the heat of combustion through the walls. The contrary obtains, however, in that type of engine with the valve pockets in the sides of the combustion chamber thereby necessitating a greater area of combustion chamber surface and consequently a greater percentage of heat wastage. The thermal efficiency of the valve-in-head type is highest, which means that the largest possible amount of energy is developed from a given fuel consumption and, from the owners' point of view, this provides greater economy in operation.



COMBUSTION CHAMBER

2. In obtaining perfect combustion two conditions must be provided: The cylinders must be completely cleared of all burned gases before a fresh charge of fuel and air is admitted. Spark plugs must be so located that rapid ignition may be obtained, otherwise slow and therefore wasteful combustion will take place. The location of the valves in the cylinder head and directly over the pistons and the position of the spark plugs in the valve-in-head type of engine meet these two conditions.

3. Important from the standpoint of maintenance will be found the accessibility of the valves and the valve actuating mechanism, a feature which will commend itself to all owners who may desire personally to take care of minor maintenance operations.

The Four Strokes

The Buick engine is a four-stroke cycle engine. It takes four strokes of the piston or two revolutions of the crank for each explosion or working stroke. The four strokes are as follows:

(a) **Suction Stroke**. The intake valve opens and the piston moving down draws a mixture of gas and air into the cylinder from the carburetor.

(b) **Compression Stroke.** Intake and exhaust valves closed, the piston moving up compresses the mixture of gas and air into a highly combustible condition.

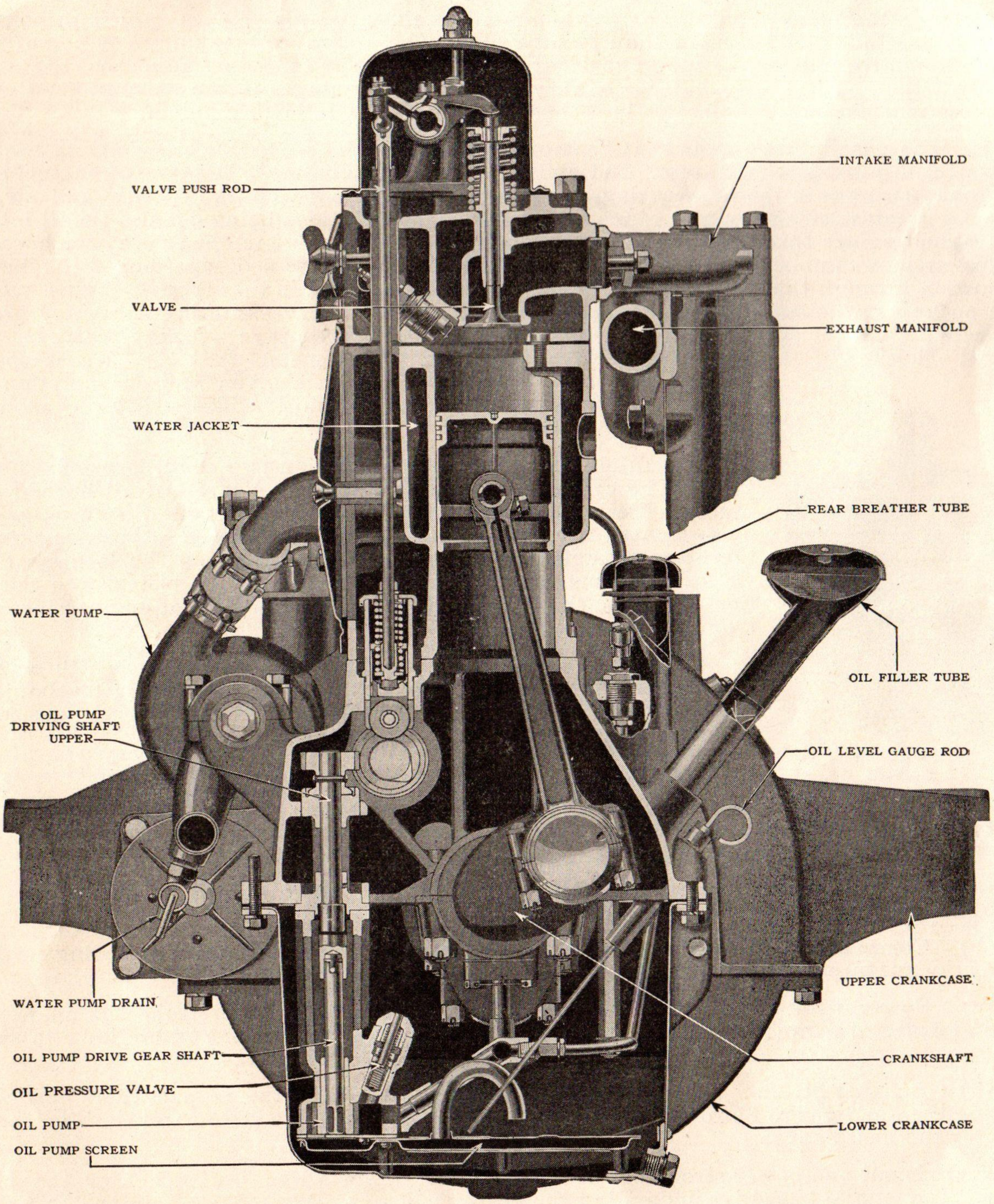
(c) **Power Stroke.** When the piston has reached the top of the stroke the spark plug fires and causes an explosion of the compressed gas mixture, forcing the piston down to supply the power.

(d) **Exhaust Stroke.** The intake valve remains closed and the exhaust valve now opens, allowing the dead gas to be forced out on the upward stroke of the piston and clearing the cylinder for the next charge.

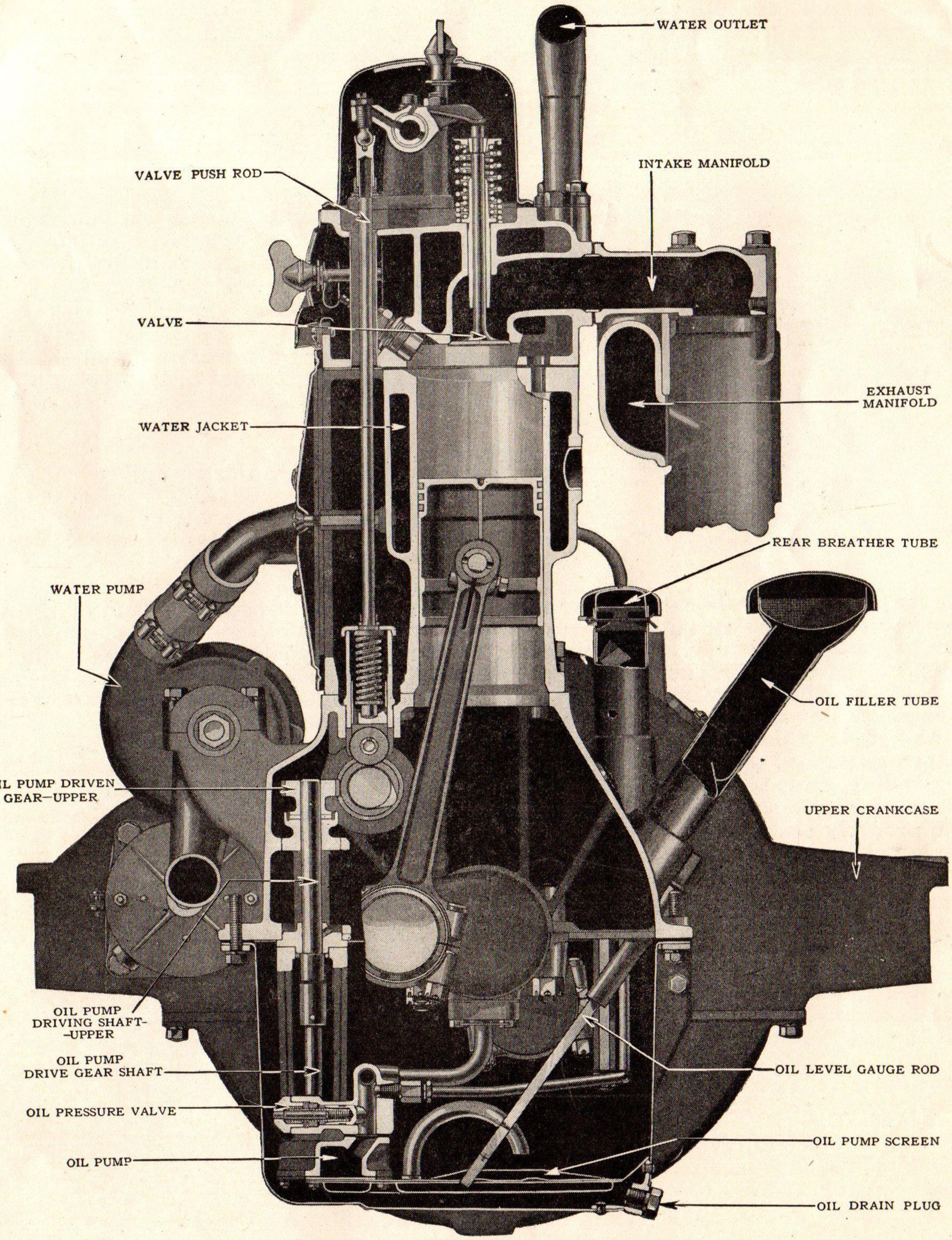
There is but one power stroke out of the four, the other three preparing for the power stroke. The engine has six cylinders but the crankshaft actually receives only three impulses every revolution.

Piston

The piston is attached to the upper end of the connecting rod by means of a hardened and ground pin, the driving power being transmitted through the connecting rods to the crankshaft and from this point on through the clutch and transmission to the rear axle and wheels.



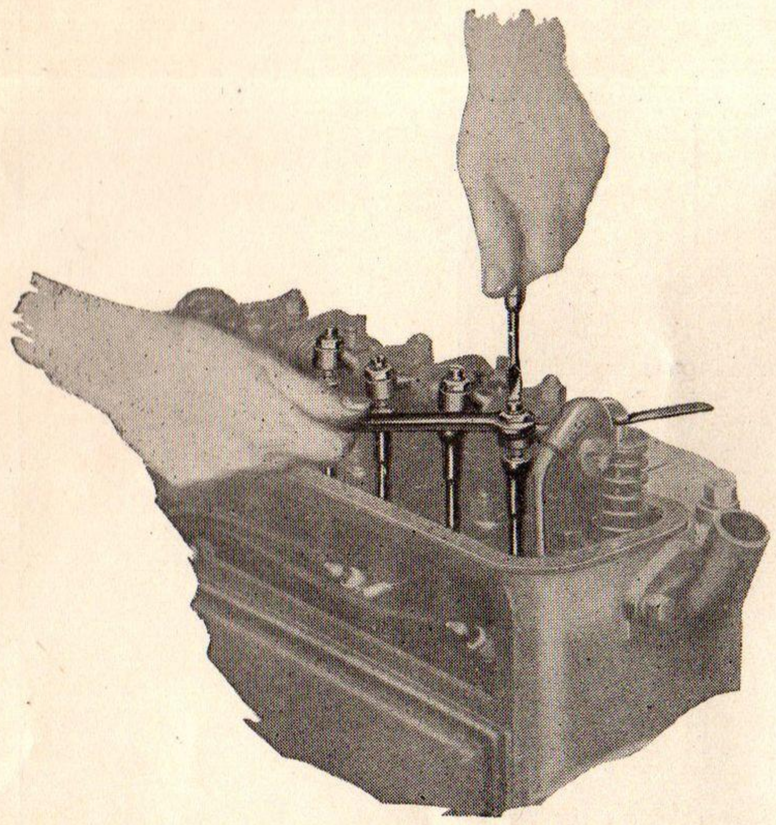
END SECTIONAL VIEW OF STANDARD SIX ENGINE



END SECTIONAL VIEW OF MASTER SIX ENGINE

Connecting Rods

Connecting rods are attached to the crank pins of the crankshaft. The natural wear of the crank pin and connecting rod bearings may be taken up by removing, as may be necessary, one or more of the thin shims provided between the rod and its cap. This work should be done by an experienced mechanic, as the rods and pistons must be maintained in proper alignment.



PUSH ROD ADJUSTMENT

Crankshaft

The large diameter crankshaft is of high carbon steel, drop-forged and heat-treated and is supported by four bearings.

Camshaft

The camshaft is made of low carbon steel, drop-forged, case-hardened and is supported by four bearings. The cams are forged integral and shaft is driven through helical gears.

Valves

The valves (inlet and exhaust) are operated off the cams by means of valve lifters, push rods and rocker arms, opening at the exact point in the cycle determined by the angular relation between the camshaft and crankshaft.

Adjusting Push Rods

Push rods should be adjusted only when engine is normally hot, the usual method being by means of a feeler as illustrated in sketch, with the engine idling. However, if not practiced in this method, the owner may proceed as follows:

Turn engine with hand crank until intake valve closes in cylinder in which adjustment is to be made. Move cover from inspection hole in flywheel housing and continue cranking until top dead center or "1-6" mark on flywheel may be seen through the inspection hole. Both valves may then be adjusted by means of adjusting screw and lock nut on end of rocker arm, and clearance between rocker arm and valve stem should be from .006 to .008 inch when engine is hot, preferably the latter figure for best performance of the engine. Be sure that lock nuts are set up tight.

CAUTION: Closer adjustment than the above will cause trouble, such as loss of power, hard starting, poor gasoline economy, burning and warping of valves, necessity for their frequent grinding, and the blowing out of muffler. For the first 500 miles operation of the new car, the push rods should not be adjusted closer than .010 inch, in order that the valves may become properly seated.

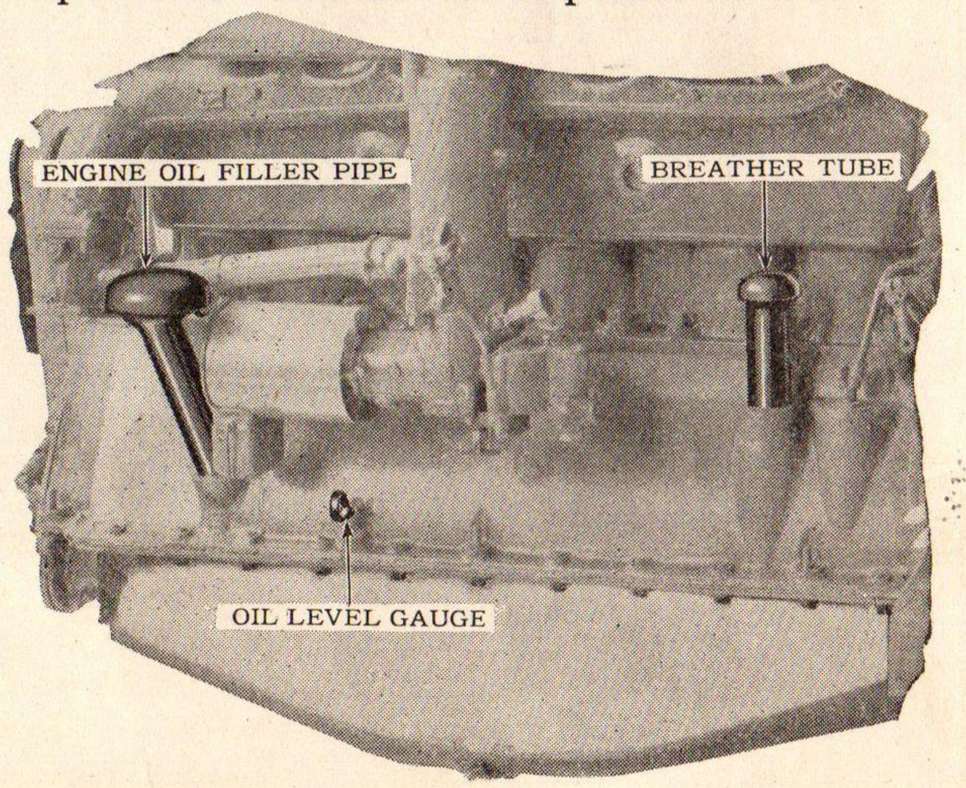
Valve Timing

The crankshaft gear is one-half the diameter of the camshaft gear, thus driving the camshaft at one-half the speed of the crankshaft. The camshaft gear, therefore, is meshed with the crankshaft gear in such manner that the valves open and close at exact points in the inlet and exhaust strokes. These gears are set in such relation to one another that the position of the pistons and the valves is correctly timed when the punch marks are in line with one another. The tooth and the space, each bearing a single punch mark, are meshed together. **This setting must be adhered to strictly.**

Engine Lubrication

The oil is placed in the engine through the oil filler pipe, which is located on the left side of the engine. The amount of oil in crankcase is accurately measured by an oil level gauge located on the left side of the engine on the upper crankcase and should be maintained to the "full" level as indicated by this gauge.

Oil from the reservoir in the lower half of the crankcase is drawn through a strainer into the gear pump enclosed in the lower crankcase.



OIL FILLER AND OIL LEVEL GAUGE

The oil pump forces the oil through distributing pipes to the four crankshaft bearings and through holes drilled in crankshaft to the six connecting rod bearings.

A second supply line from pump carries oil under pressure through the oil filter mounted on right side of dash, to the hollow rocker arm shaft from which it is distributed to the rocker arm bearings and ball ends of push rods. From the front end of rocker arm shaft, the oil is carried to the timing gear case, furnishing lubrication for the gears and also the front camshaft and water pump shaft bearings.

Oil thrown off from the connecting rod bearings forms a heavy mist within the crankcase which lubricates the pistons, piston pins, cylinder walls, cams, valve lifters and the three camshaft bearings within the crankcase.

If indicator hand on pressure gauge should fall to zero while engine is running, the engine should be immediately stopped and an investigation made to determine the reason.

Oil Circulating Pump

The oil pump consists of two small gears enclosed in a tight fitting housing and driven by a vertical shaft and spiral gears from the camshaft. As the gears turn, they take the oil between their teeth and the housing, carry it around to the outlet and force it to flow through the distributor pipe. The pump is automatic in action and requires no attention or adjustment, except the addition of fresh oil to the crankcase reservoir as often as necessary to keep the oil level up to the "full" mark on oil level gauge.

Oil Pressure Gauge

The oil pressure gauge merely indicates circulation of the oil and does not show when the supply in the crankcase reservoir is running low. Watch and test the oil level in the crankcase by reading oil level gauge.

CAUTION: Do not attempt to determine oil level while engine is running. Wipe oil level gauge clean before taking reading.

Oil Filter

The function of the oil filter is to remove from the crankcase all particles of dirt and carbon not already eliminated from circulation by the oil pump screen. When the filter is entirely free of dirt, its capacity is such that the quantity of oil in crankcase will pass through the filter approximately every five minutes, at a car speed of 25 miles per hour. This rate of flow will gradually decrease until such time as filter ceases to function, due to clogging, and when this occurs it is necessary to replace the filter cartridge.

The filter is provided with a by-pass valve which, in case of clogged filter, allows oil to flow directly from oil pump to rocker arm shaft. To determine if oil is passing through filter turn the valve handle located on front side of filter, to horizontal position and if oil flows from valve, the filter is operating.

CAUTION: When testing operation of filter, engine must be warmed up and running. Be sure that valve handle is turned back against upper post after making this test.

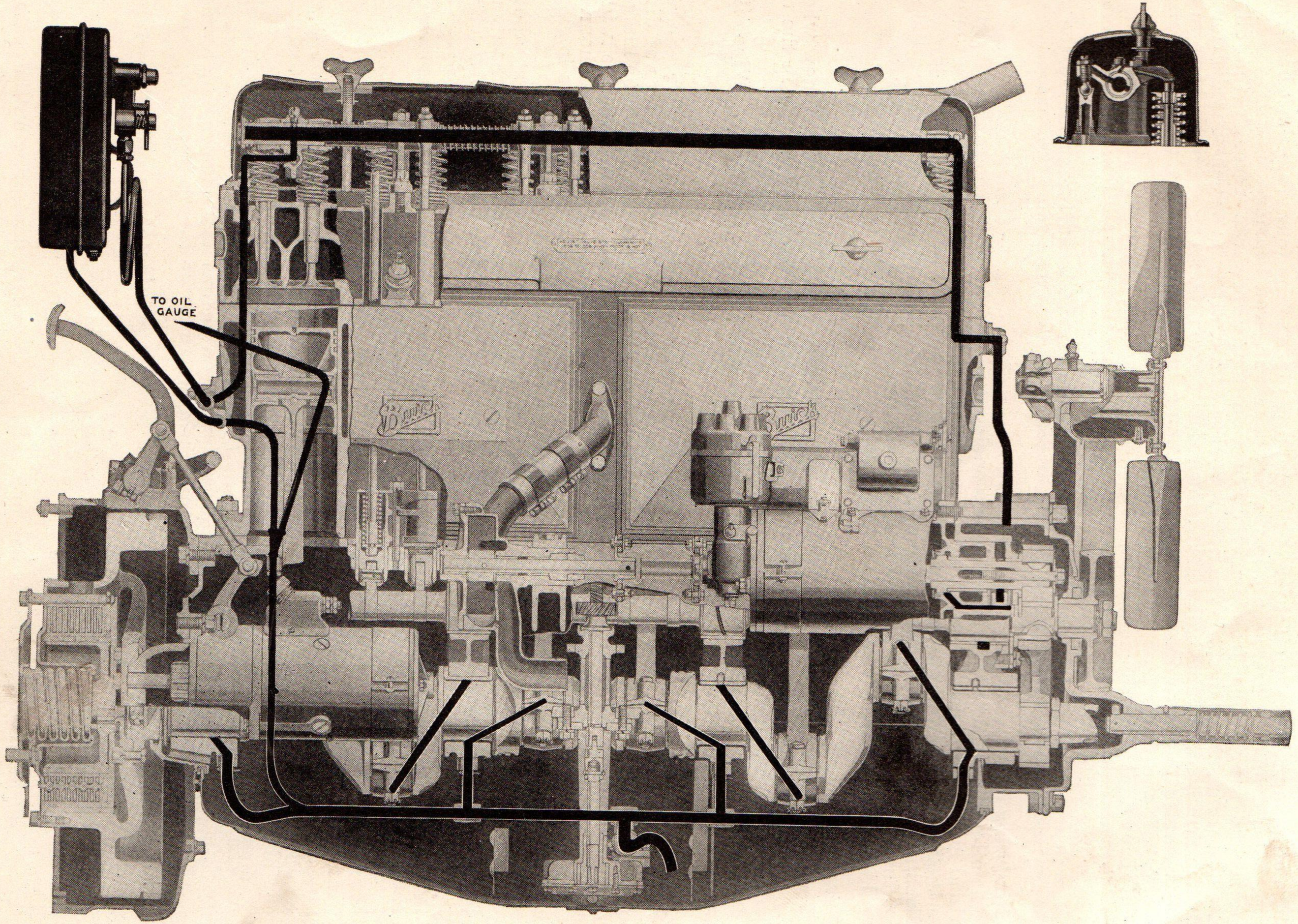
Crankcase Dilution

Crankcase dilution, or the thinning out of the lubricating oil in the engine, is a subject which deserves the serious consideration of every automobile owner. This dilution is caused by the unburned fuel which, despite the many great improvements in carburetion, finds its way between pistons and cylinder walls into the lower crankcase. Present day fuels require a much greater amount of heat for proper vaporization than those of a few years ago, and in designing the carburetor unit every effort has been made to provide the required amount of heat.

The result of crankcase dilution is excessive wear on pistons and rings, cylinder walls and engine bearings, due to the fact that the lubricating qualities of the crankcase oil have been impaired.

The car owner may avoid excessive dilution in the operation of his car by observing the following suggestions:

1. Avoid use of "choke" longer than necessary.
2. Do not idle engine or drive at extremely slow speeds for long periods of time.
3. Drain the crankcase at regular intervals, the frequency depending on the season and the conditions under which the car is operated.
4. Do not flush crankcase with kerosene.



PRESSURE FEED OILING SYSTEM WITH OIL FILTER

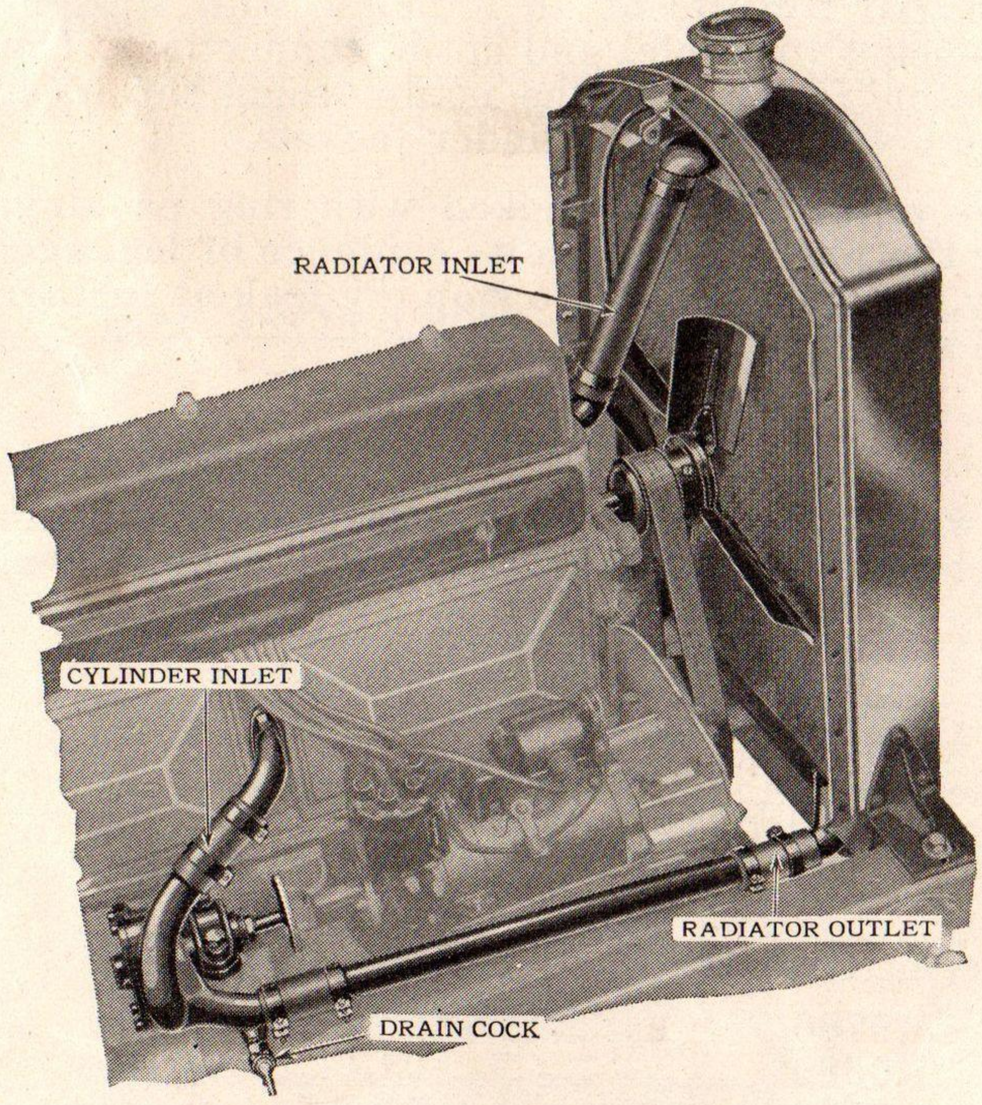
5. It is advisable occasionally, particularly in cold weather, to drop the lower crankcase and clean thoroughly, at the same time cleaning the oil pump strainer.

6. Keep the engine in good mechanical condition. See that the compression is good; that the ignition system functions properly and that the carburetor is correctly adjusted.

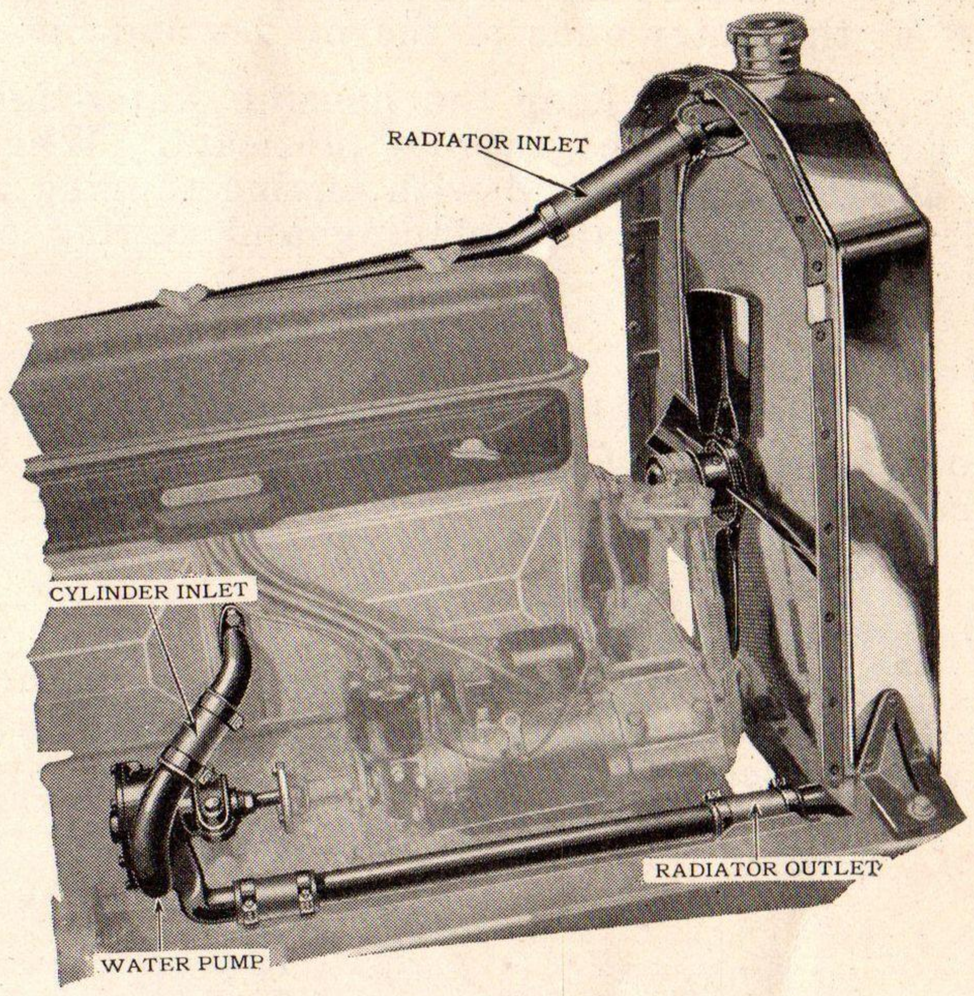
7. An engine in good condition and in proper adjustment should show some appreciable amount of oil consumption. Check the amount of oil in crankcase at regular intervals. If supply does not diminish, it indicates excessive dilution and an inspection of the engine should be made to determine cause for same.

COOLING SYSTEM

The cooling system includes the radiator, water circulating pump and fan.



STANDARD SIX



MASTER SIX

Radiator

The radiator consists of an upper and lower tank connected by many narrow passages in the core. The hot water from the engine enters the upper tank and gradually flows through the passages in the core to the lower tank while a current of air is circulated through the openings in the core by the fan. An outer shell encloses the radiator and supports it on the frame of the car. Water capacity of cooling system is 3 gallons for Standard Six models and 4½ gallons for Master Six models.

Fan

The fan is mounted on a bracket on the cylinder block in Standard Six models, and on a bracket on the timing gear case in Master Six models, being driven in both models by a flat belt from a pulley on the end of the camshaft. In the Master Six, the tightening of belt is automatic but in the Standard Six, this adjustment is accomplished by loosening the clamp bolt at upper end of fan bracket, pushing the latter as far to the left as possible, holding it in position and tightening the clamp bolt.

The fan is mounted on a plain bearing which is lubricated under pressure by a gear pump which draws the oil from a reservoir in the fan hub. A stand-pipe inside the hub shell is provided to control the oil level.

A filler screw is provided and with the filler hole at top, insert sufficient quantity of oil so that when fan is rotated and filler hole is at bottom, the excess oil will drain off. When oil ceases to run out, the quantity remaining in fan hub is sufficient for lubrication of bearing for approximately 5000 miles and filler screw may then be replaced, making sure that it is properly tightened.

CAUTION: Use engine oil only, not grease as the pump will not deliver it to the bearing.

If the belt is greasy, wash with a clean cloth or stiff bristle brush and gasoline. If adjustment will not take up looseness in belt, it should be replaced.

Water Pump

The water pump is of the centrifugal type and consists of an impeller with straight blades fastened to the shaft, and a water-tight housing with inlet and outlet connections. The gravity pressure of the water carried in the radiator, forces it to the pump which throws it off at the outer ends of the blades and out of the housing to the cylinder jackets.

In order to keep the housing water-tight, the pump shaft is packed with ring packing, impregnated with graphite lubricant. Whenever the packing nut shows evidence of leakage, it should be tightened with engine running slowly, but only enough to stop the leak as further tightening will cause binding and cutting of the shaft.

Draining

To drain cooling system, open drain cock in water pump inlet on Standard Six and drain cock in bottom of radiator on Master Six. Do not store car without draining cooling system thoroughly.

Anti-Freezing Mixture

In cold weather, the cooling system should be drained and filled with a solution that will not freeze when car is allowed to stand. The best anti-freezing mixtures are composed of denatured alcohol and water as follows:

Alcohol	Water	Specific Gravity	Freezing Point
20%	80%	.9780	19° F. above zero
30%	70%	.9680	10° F. above zero
40%	60%	.9570	2° F. below zero
50%	50%	.9430	18° F. below zero

As alcohol tends to evaporate more rapidly than the water, thus raising the freezing point of the solution, it is necessary to add alcohol at frequent intervals. With the aid of a hydrometer the specific gravity of the solution can be determined and the corresponding freezing point obtained from the foregoing table. In making specific gravity determinations, care should be taken to have the temperature of the solution being tested between 55° and 65° F. or serious errors will result.

Solutions containing calcium chloride and similar compounds tend to corrode the metal parts of the cooling system and are not recommended.

Cleaning

Once or twice a year, particularly in the spring after the use of alcohol or other anti-freezing mixtures it is advisable to clean the cooling system. In performing this operation, the following suggestions may be found of assistance:

First drain the system thoroughly and after dissolving a pound of sal soda or a half pound of lye in five gallons of water, pour this mixture in the radiator after straining through a cloth. Run the engine slowly for five minutes and then drain the cleansing mixture. Again

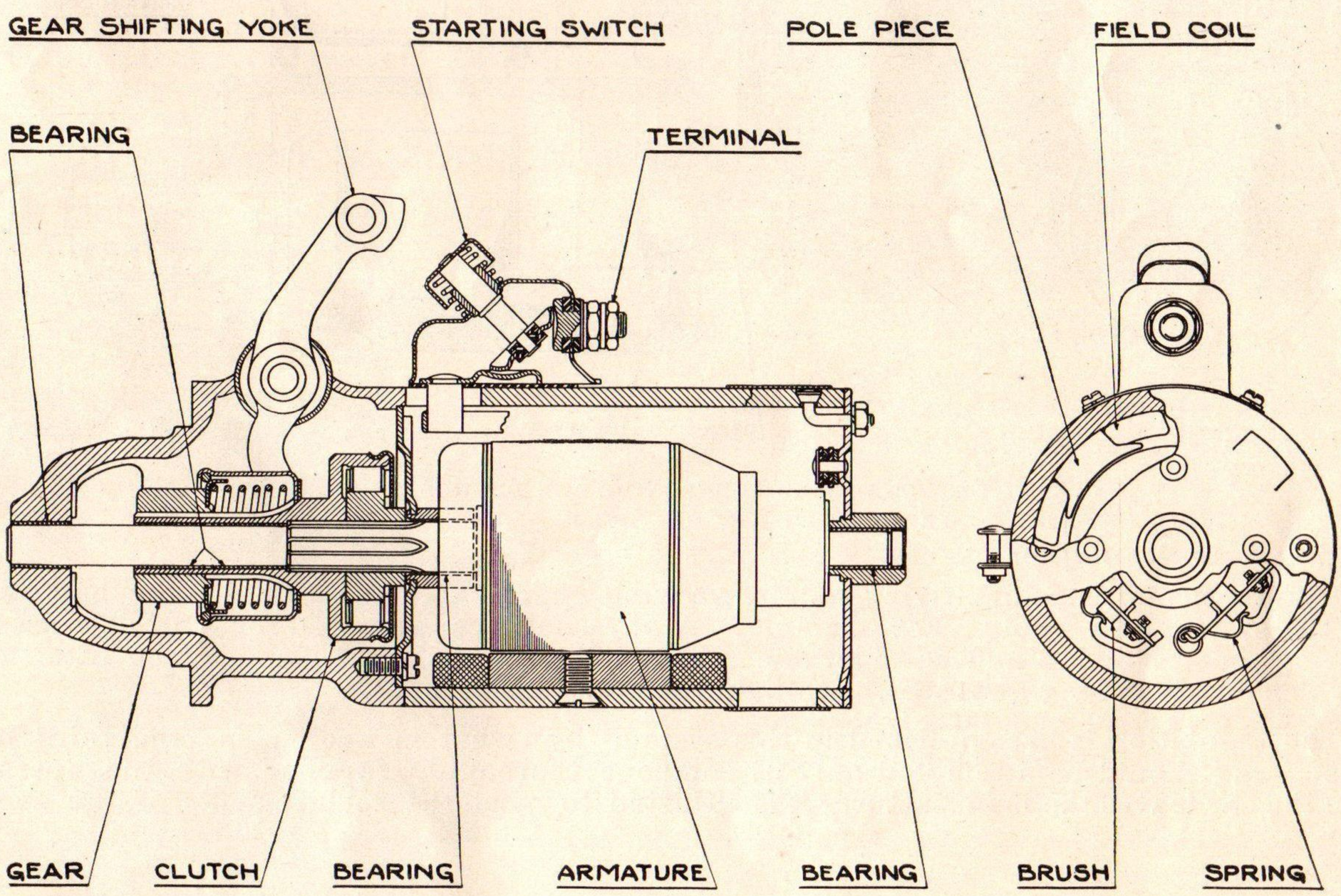
fill the system with clear water, running the engine as before; and after draining this thoroughly, the radiator may be refilled for use. Thorough flushing of the system after using the cleansing mixture is essential in view of the detrimental action of such mixtures on the hose connections.

It is further suggested that contact of the cleansing mixture with the enameled or painted surfaces will injure the finish.

CAUTION: Never pour cold water in the radiator when its water content is extremely low and the engine very hot as cracking of the water jacket may follow. Give the engine an opportunity to cool off before adding cold water.

STARTING, LIGHTING AND IGNITION

The Delco system of starting, lighting and ignition is used on all models. This system consists of starting motor, generator, ignition coil, combination lighting and ignition switch and courtesy light or dimmer switch. It is of the six-volt, single wire or grounded type, the engine and the frame of the car forming the return side of the electrical circuit.



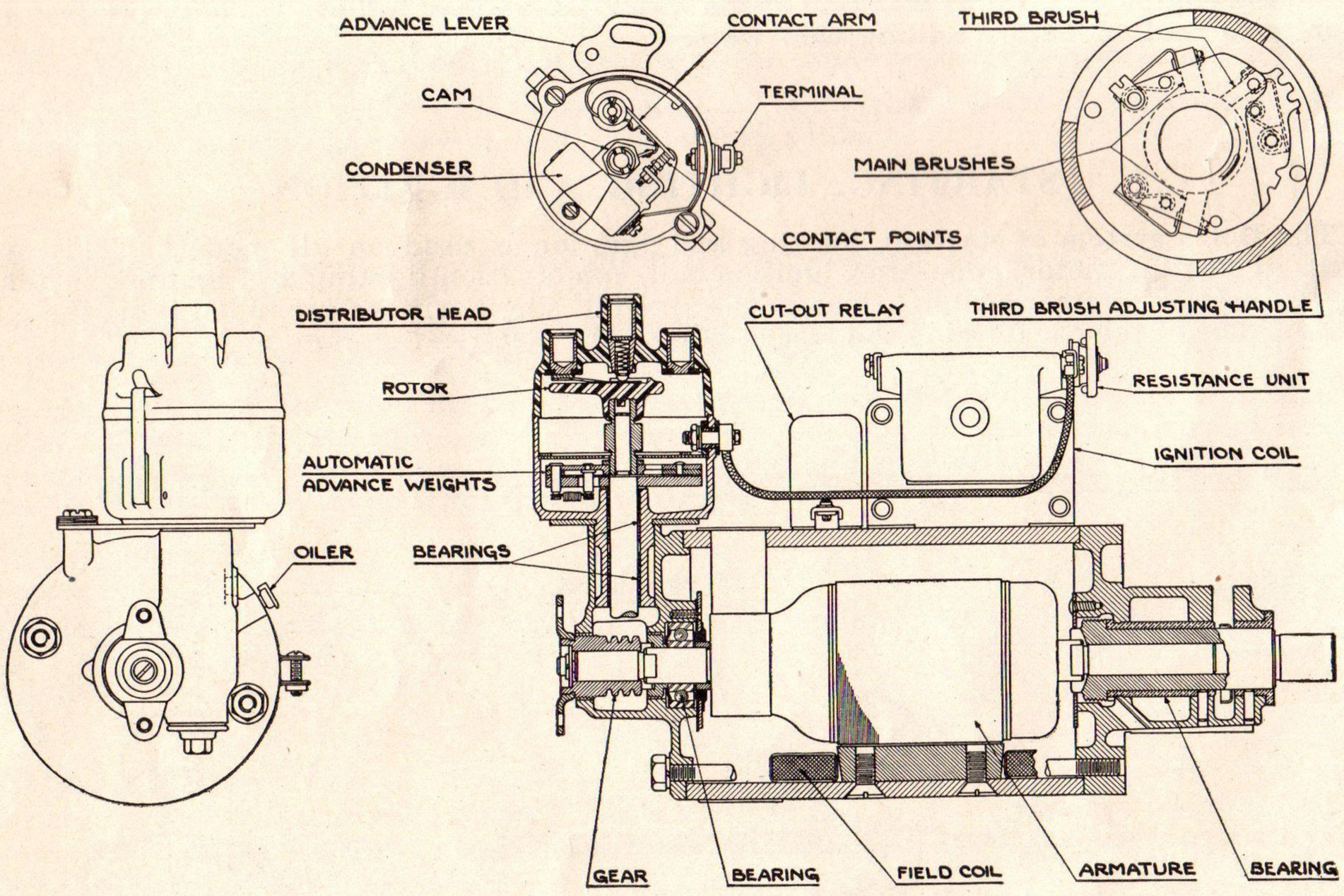
SECTIONAL VIEW—STARTING MOTOR

Starting Motor

This unit serves the purpose of cranking the engine for starting. The initial movement of the starter pedal causes the starting pinion to engage with the teeth on the flywheel and further movement of the pedal closes a motor switch on top of the starting motor. This completes the electrical circuit and cranks the engine. The starter pedal should be released as soon as the engine begins to fire.

Generator

The purpose of the generator is to provide current for lighting and ignition and in addition, a sufficient amount to keep the storage battery in a properly charged condition. Current for lighting and ignition is supplied by the storage battery when the engine is stopped and during car speeds under approximately eight miles per hour.



SECTIONAL VIEW—GENERATOR AND DISTRIBUTOR

Charging Rate Regulation

Different conditions of driving require varying charging rates to obtain the best results from the system as a whole. For example: A physician's car operated for short distances and requiring much starting and considerable use of lights, needs a higher charging rate than a car which is driven long distances, with lights seldom turned on.

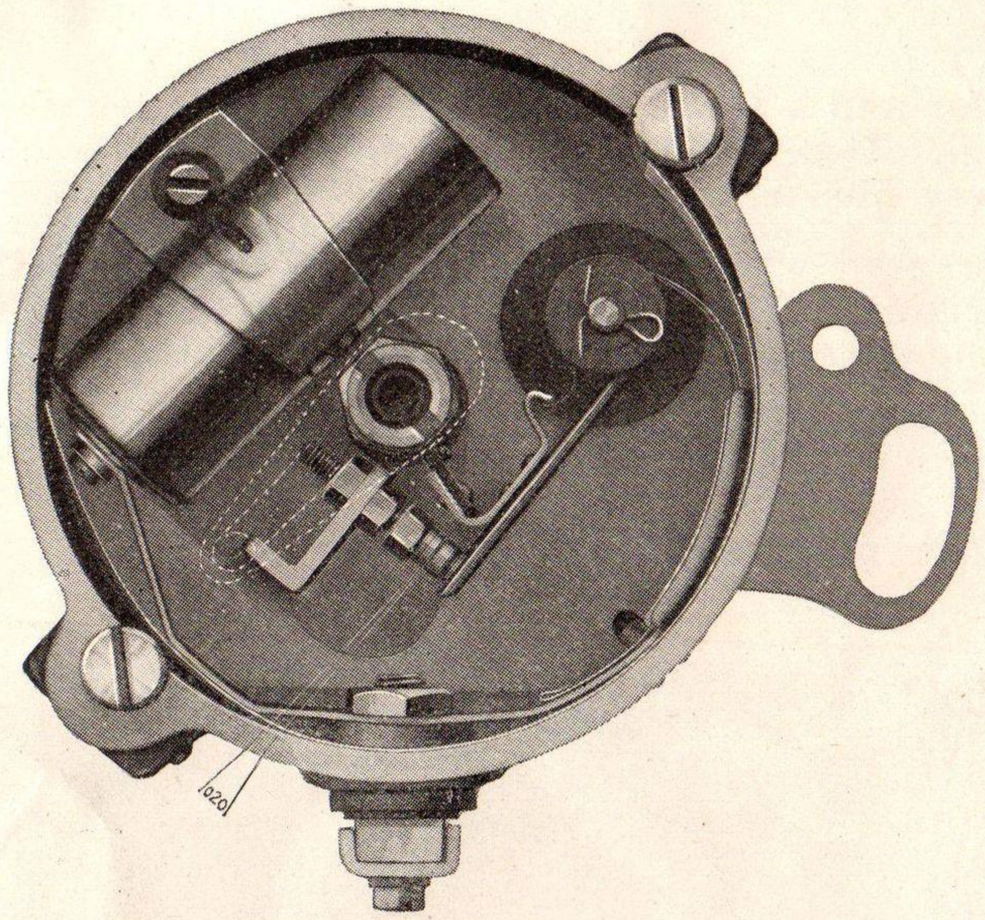
The regulation is accomplished in this system by what is known as "the third brush method" and should be attempted only by someone thoroughly familiar with the operation. When the car leaves the manufacturer it is adjusted to meet the requirements of the average driver.

Distributor

The distributor is mounted on the rear end of the generator and its purpose is to bring about the proper timing and distribution of the ignition current.

At normal engine speeds the spark advance is automatically regulated within the distributor but under certain conditions of driving the spark lever on the steering wheel should be used to retard or advance the spark.

The spark should be retarded during the starting operation and at slow idling speeds, or when engine labors under heavy pull. Under all other conditions it should be fully advanced.



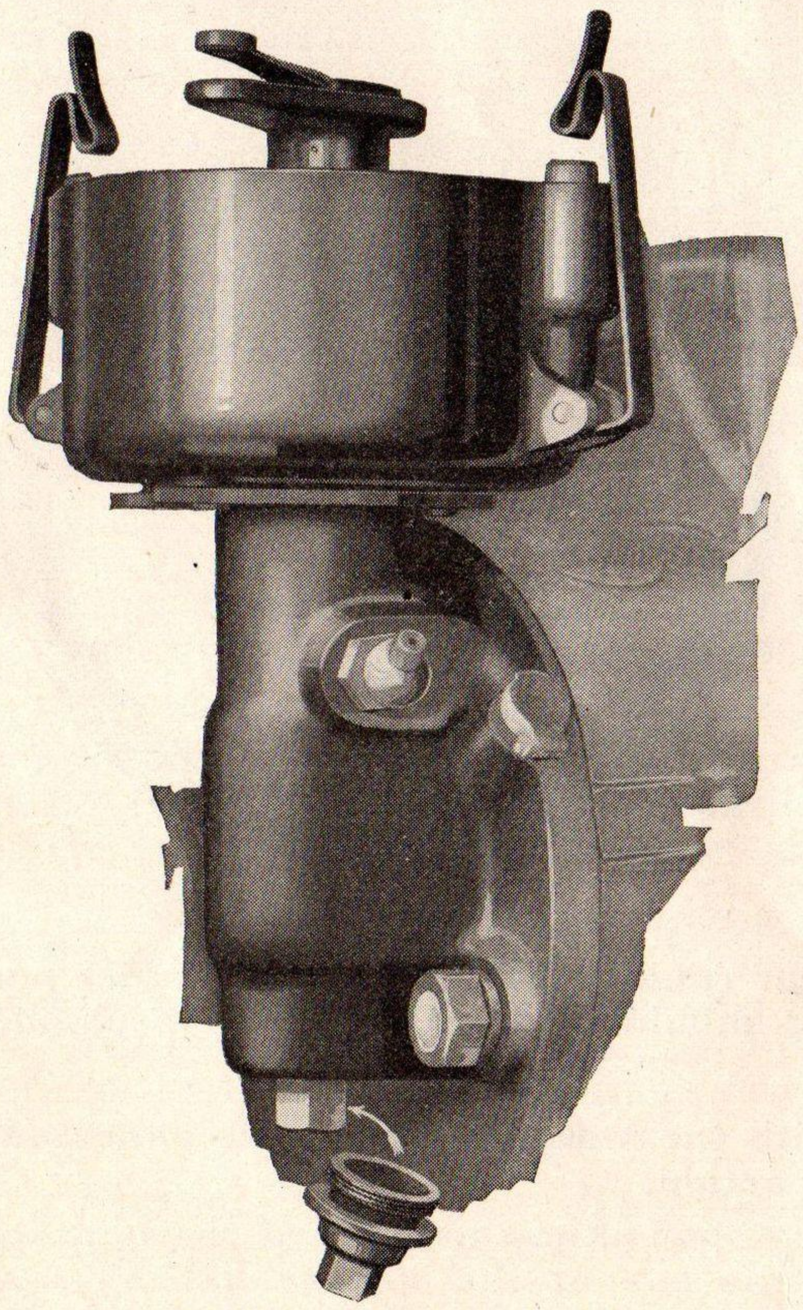
BREAKER POINT ADJUSTMENT

Timing the Ignition

The ignition is correctly timed when the car leaves the factory. However, if it becomes necessary for any reason to re-time the ignition proceed as follows:

1. Fully advance spark lever on steering wheel.

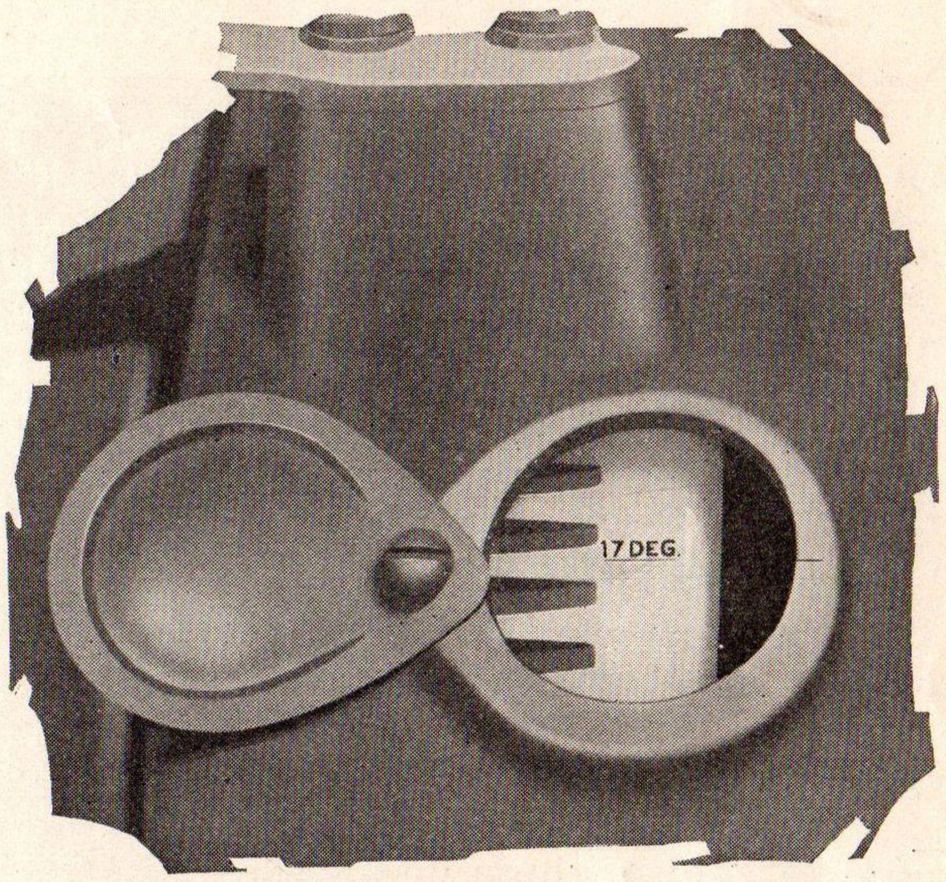
2. Remove cover from top of engine so that valve action may be noted.



TIMING ADJUSTING SCREW

Breaker Points

The breaker points are carried in the distributor housing below the rotor, and their function is to interrupt the low tension (or battery) current at the proper time to produce the spark. The points should be so adjusted that the clearance between them when the contact arm is directly on top of cam, is exactly the thickness of the gauge on the distributor wrench, which is approximately .020 inch. The distributor wrench is included in the car's standard tool equipment.



FLYWHEEL MARKING

3. With the hand crank turn the engine until intake valve of No. 1 cylinder closes. Continue to turn engine until the seventeen-degree mark on flywheel rim is in line with the mark on edge of sight hole in left side of flywheel housing.

4. Take off distributor head and remove hex cap at bottom of distributor housing. Loosen the timing adjustment screw (hex head) at lower end of distributor shaft. Adjustment screw should be so loosened that rotor turns freely. Turn rotor until breaker arm is on the nose of cam, then adjust the breaker points to .020 inch gap, which is the thickness of feeler on distributor wrench. Set rotor in a position approximately under No. 1 contact button in distributor head. Tighten timing adjustment screw slightly so that rotor does not turn freely. Turn rotor backward until the contacts are just closing on front side of No. 1 lobe of cam. Rotate rotor forward to take out movement of automatic advance. Hold rotor in this position by hand, while completely tightening the adjusting screw (hex head) at bottom of distributor. Replace hex cap and distributor head.

Generator Lubrication

An oiler is located at the rear of the generator and a few drops of engine oil are required each 500 miles to lubricate the generator bearing. Zerk connection is provided on the distributor housing and should receive attention every 500 miles.

The track in the distributor head should be treated with a small amount of vaseline jelly two or three times during the first 2000 miles of driving. The track will then become glazed and thereafter it is necessary only to wipe out the distributor head with a clean cloth.

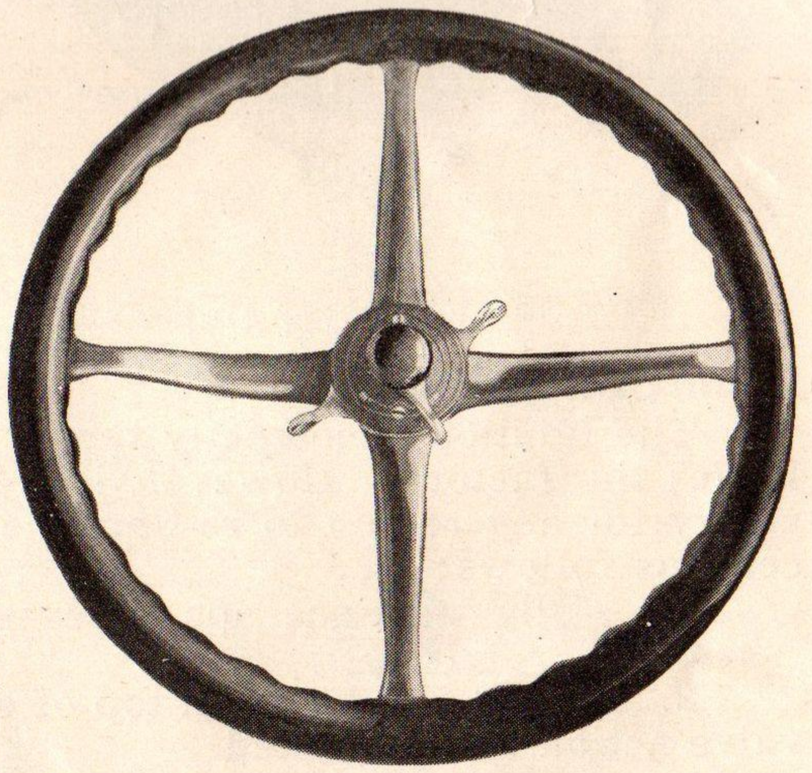
A small amount of vaseline jelly should be applied to the surface of the breaker cam each 1000 miles.

Do not for any reason place oil or grease on the commutators of the generator.

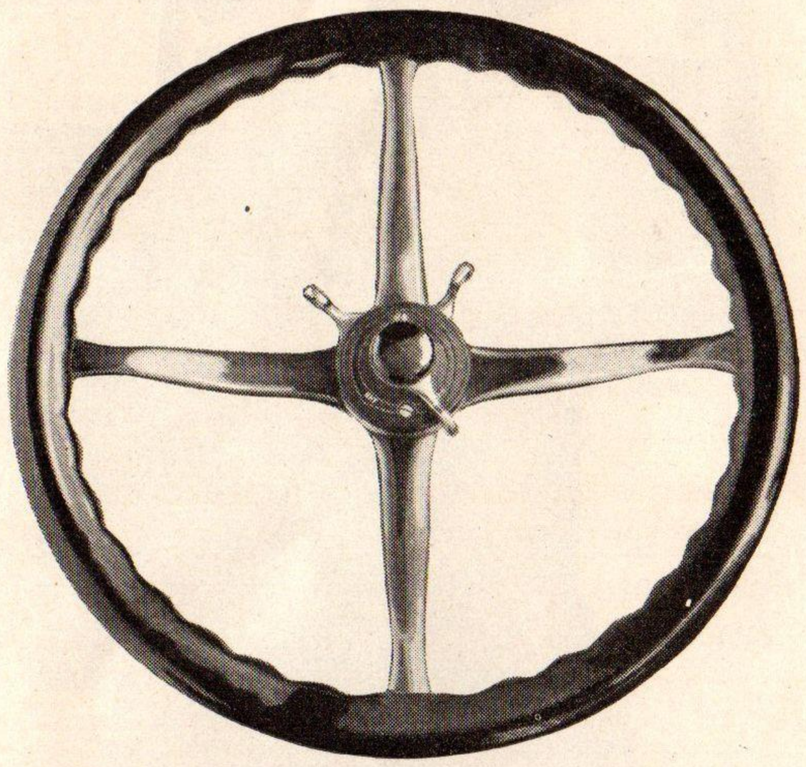
Spark Plugs

Pay particular attention to the condition of the spark plugs and their gaps. The plugs both inside and outside, should at all times be kept free from accumulation of oil and carbon. The gaps should be adjusted to provide an opening of approximately .025 inch or the thickness of the gauge attached to the distributor wrench. If these gaps are too large, it is quite probable that difficulty will be experienced in starting the engine. Misfiring almost certainly will result, particularly on a hard pull, and the general operation of the engine will be poor.

The firing order of the cylinders, or the sequence in which ignition occurs, is 1-4-2-6-3-5.



STARTING POSITION



DRIVING POSITION

Lighting and Ignition Switch

A combination lighting and ignition switch is used to control these circuits and that between the generator and the battery.

The left-hand lever controls the ignition circuit. It should not be left in the "on" position when the engine is not running because the battery will be discharged.

The right-hand lever controls all lights except the instrument board lamp which is operated by a button at the top of the switch dial, the courtesy or dimmer lights controlled by lever on top of steering wheel, and the dome, pillar and tonneau lights which are operated by separate switches.

Ammeter

The ammeter indicates the net amount of current that the generator is supplying to the storage battery when the engine is running or the amount of current the battery is furnishing for lights when the engine is not operating.

Should the ammeter indicate "discharge" with the car running more than eight miles per hour without lights, the electrical equipment and wiring should be checked by a mechanic familiar with the system.

CAUTION: Do not attempt to operate the system with the storage battery disconnected, as serious damage to the apparatus may result from such action.

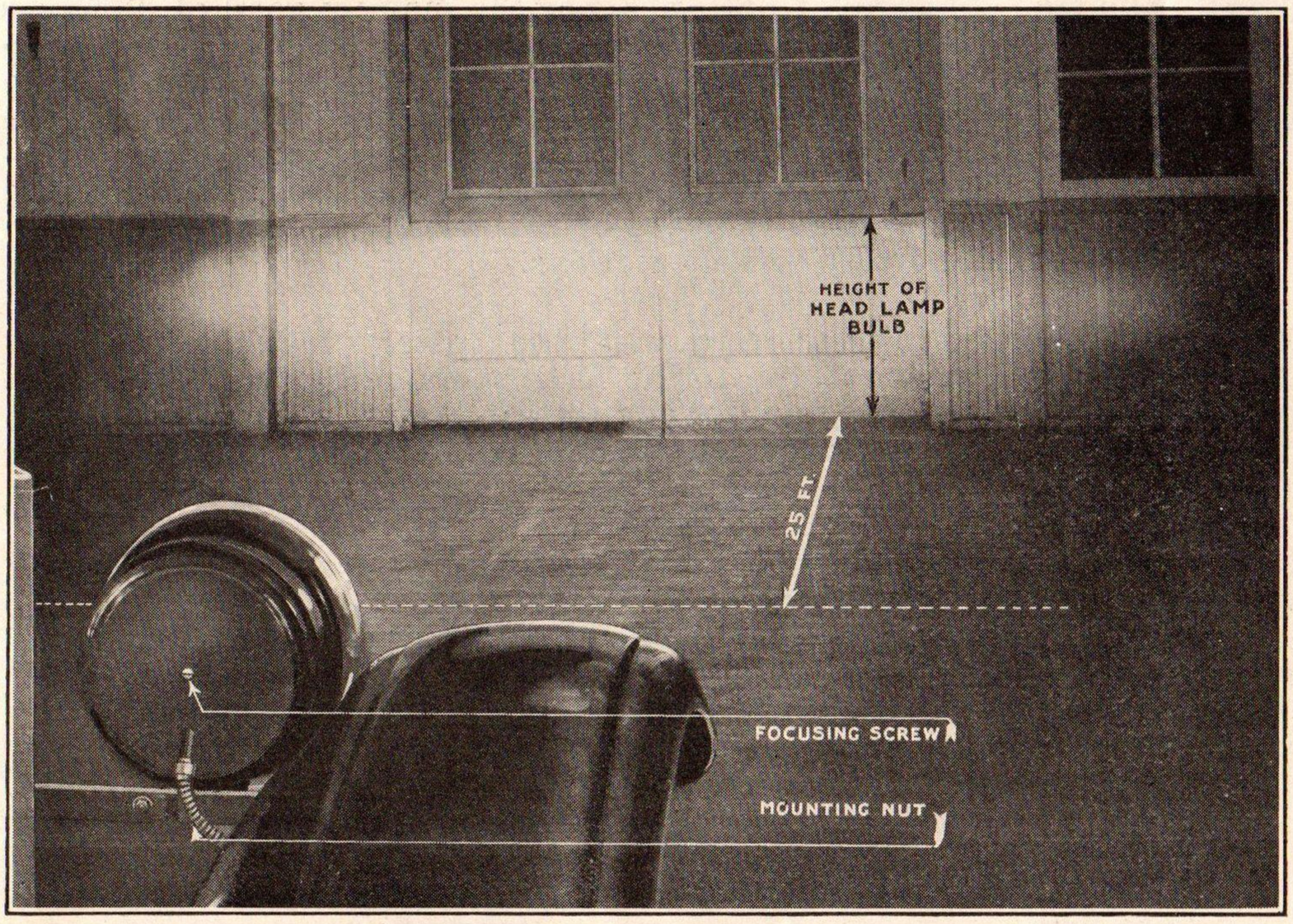
Do not remove the generator or attempt to change any connections at back of the ignition and lighting switch without first disconnecting the lead from one of the storage battery terminals.

LAMPS

The lamp bulbs used in the lighting system have a voltage rating of 6 to 8 with candle power as follows:

Head lamps: 21 c. p., both filaments, double contact.

Tail lamp Instrument lamp Parking lamps Tonneau lamp	3 c. p., single contact.
Dome lamp Pillar lamps	6 c. p., single contact.



HEAD LAMP FOCUS

Head Lamp Adjustment

Head lamps should be adjusted to comply with state or local requirements, and reference to the illustration will show the pattern of the light when lamps are correctly adjusted. This adjustment will be obtained by observing the following procedure:

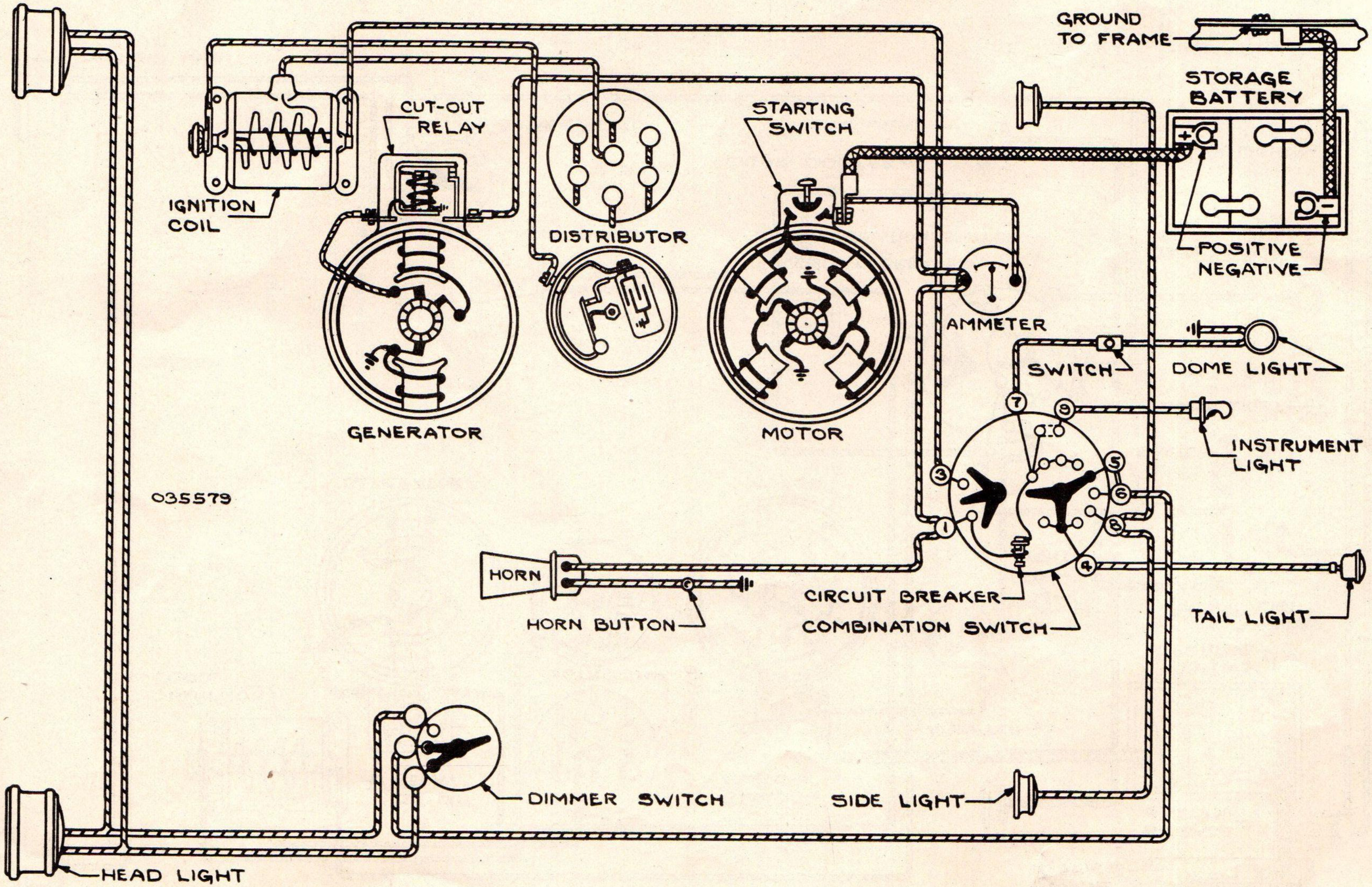
1. With the rear seat of the car fully loaded, car should be placed on a level driveway in such a position that the fronts of the head lamps are 25 feet from a smooth vertical surface — such as a wall or garage door—preferably of light color. The center line of car should be at right angles to surface of wall or door.

2. Measure the distance from the ground to the head lamp bulb and mark a horizontal line on the wall or door at this height.

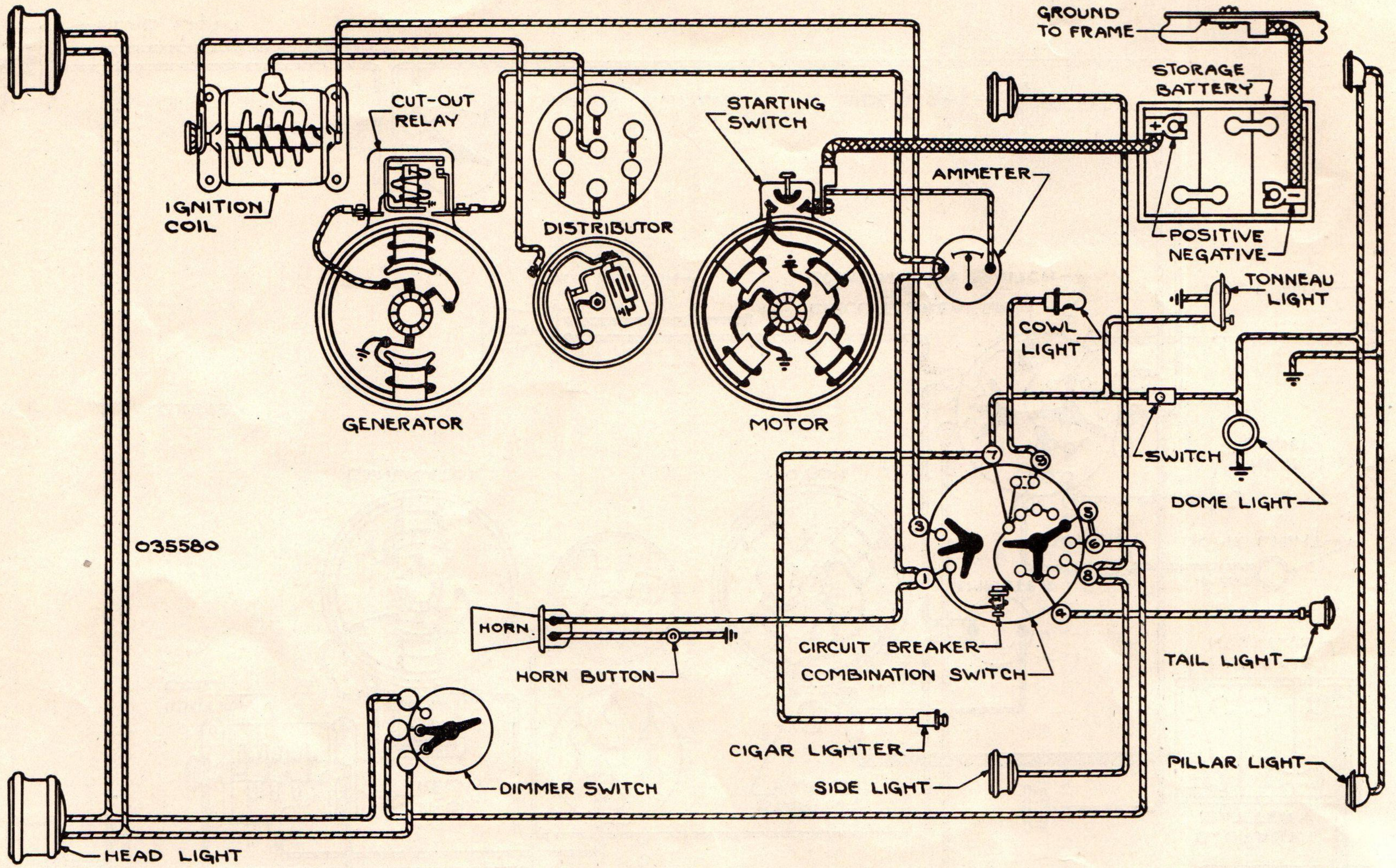
3. Switch on the lights to the bright or driving position and cover up the beam from one lamp while the other is being adjusted. Turn the focusing screw (see illustration) on the back of the lamp to the right or left until the beam produces the narrowest vertical strip of light on the surface of the wall or door—25 feet away.

4. Loosen the lamp mounting nuts slightly and tip lamps up or down until the top cutoff of the light pattern comes just below the horizontal line on the wall. Place a straight edge across the fronts of both lamps and see that lamps are so adjusted that both bear flat against the straight edge. Then see that nuts are tightened. It is advisable to again notice the pattern of the light on the wall to be sure that it has not been changed during the process of tightening the lamp mounting nuts.

Careful study of the illustration will assist greatly in making the proper adjustment and having adjusted one lamp as above, the same procedure should be followed in adjusting the other.



WIRING CIRCUIT DIAGRAM FOR STANDARD SIX



WIRING CIRCUIT DIAGRAM FOR MASTER SIX

ELECTRICAL ADJUSTMENTS

The electrical system provides practically continuous service and satisfactory operation, because of the excellence of design and manufacture of its component units. However, minor difficulties may arise and the following suggestions may be found of practical benefit to the owner in the care and operation of the car.

Starting motor fails to crank engine when starter pedal is fully depressed.

(a) With ignition switch "off" turn engine over with hand crank to determine if there is any mechanical condition which prevents the engine from being cranked by starter.

(b) Test the battery with hydrometer to determine if sufficiently charged. If hydrometer is not available, turn on lights and note if they dim perceptibly when starter pedal is depressed. If they do, it is an indication that the battery is not fully charged.

(c) Examine the battery terminals and see that both are tight and free from corrosion.

(d) See that the battery ground connection to the frame is tight and clean, also make sure that all terminals are well soldered to the cables.

If the difficulty is not located in wiring or connections and even though battery is not fully charged, engine can usually be started with hand crank when switch is in "on" position and spark lever advanced not more than one-third of the way.

The same tests should be followed if the starting motor cranks too slowly to start the engine.

Lights

Lights will not burn with lighting switch turned on.

(a) Turn the ignition switch to "on" position. Ammeter should show discharge of approximately four amperes, although it may be necessary to move spark lever through its entire range to obtain this reading. If this discharge is indicated, the circuit from battery to combination switch is in order. If no discharge is registered, the circuit is not complete due to either loose connections or broken wire.

(b) Turn light switch to all positions to see if any lights will burn. If one or more lights burn inspect wires from the switch to the lamps, connections at the lamps and the lamp bulbs. Tighten all terminals on the switch.

(c) In case no lights burn and the ammeter shows discharge, examine the copper contacts on the circuit breaker mounted on the back of the switch. The faces of the contacts should be clean and meet squarely with sufficient spring tension to hold them together.

(d) If the circuit breaker contacts are in good condition and all connections tight, removal of the entire switch is necessary and this should be undertaken only by a competent mechanic.

Circuit breaker vibrates when the lights are on.

(a) This indicates a short in one or more of the light circuits. Turn the switch successively to each lighting position; if the breaker vibrates in all positions, the ground is in the tail light circuit. If in one position only, then the ground occurs in that particular circuit.

Lights flare up as engine is speeded up.

This indicates a loose connection in circuit from battery to generator, a corroded battery terminal, or poor contacts either in switch or at generator brushes.

Lamps have short life and must be replaced frequently.

(a) Examine lamps for proper voltage rating (six to eight volts).

(b) Check all wires for loose connections, particularly battery terminals and ground connections.

Lamps are dim.

(a) Examine to see if lamps are of proper voltage rating.

(b) Old lamps do not have same brilliancy as new ones.

Ignition

Engine fails to fire when cranked with starting motor.

(a) Turn on the headlights and note whether they dim when the starting motor is used. If so, test the battery for condition of charge.

(b) Remove the high tension wire from any one of the spark plug terminals and hold it ¼ inch from the base of the spark plug while the engine is being turned over with the starting motor. The spark should jump the gap readily, but if it does not, the difficulty is in the coil, condenser or ignition circuit and these three units should be checked by a competent electrician.

(c) Examine the distributor head and rotor and all high tension wires to the plugs for broken down insulation.

(d) Inspect spark plugs. See that they are not short circuited by oil or carbon and that gaps are .025 inch.

Engine fires irregularly.

(a) Examine spark plugs, as directed in paragraph (d) above.
(b) Inspect breaker points for proper clearance and cleanliness.
(c) Check high tension wires to spark plugs for poor insulation.

Ammeter shows discharge when ignition and light switches are "off."

Disconnect wires from one terminal of ammeter. If ammeter hand does not return to zero, ammeter is incorrect and there is no fault in other parts of the electrical system. If ammeter hand returns to zero it indicates fault is in switch or wiring and car should be taken to service station for inspection.

Generator

Generator does not charge battery.

Have electrical system inspected immediately by authorized service station as follows:

(a) Test all wires and connections from battery through starting motor terminal, ammeter, switch and generator for open circuits, and check operation of cut-out relay.
(b) Examine all generator brushes for good seats and spring tension.
(c) Turn on lights to see if the ammeter is in working order.
(d) Examine the internal switch contacts.

Ammeter readings are reversed.

(a) Examine battery to see if negative terminal is grounded; if not, reverse the battery terminals.
(b) Reverse wires on ammeter.

FUEL

The fuel system consists of gasoline tank, gas lines, vacuum tank, gasoline cleaner, intake manifold and carburetor.

Vacuum

Gasoline supplied from the tank at the rear is drawn to the vacuum tank by the vacuum created by the suction strokes of the pistons. The gasoline flows by gravity from the vacuum tank to the carburetor.

Vacuum Tank

The vacuum tank has four connections, three at the top and one at the bottom. The lower connection leads to the carburetor through the cleaner; one of the top connections leads to the intake manifold of the engine; one to the main gasoline tank and the third is a vent.

The tank consists of two chambers, and between the upper filling chamber and the lower emptying chamber there is a partition in which is placed a flapper valve. This valve is kept closed by a vacuum in the upper chamber. As gasoline is drawn into the upper chamber it gradually lifts the float until it has risen enough to operate a set of levers which shut off the suction valve and at the same time open the air valve. When this occurs, the admission of air into the upper chamber allows the flapper valve leading to the lower chamber to open, thus replenishing the gasoline supply in this chamber.

The lower chamber is always under atmospheric pressure due to its connection with the air vent tube at the top of the vacuum tank. As soon as the gasoline in the upper chamber allows the float to drop below a certain level, the levers connected to the float close the air valve and open the suction valve automatically, and the process of filling the upper chamber is repeated.

There is a small strainer where the tube from the gasoline tank enters the vacuum tank, and this strainer should be removed and cleaned once every 1000 miles to prevent its becoming clogged.

At the bottom of the vacuum tank there is a small drain plug which should be removed periodically and a small amount of gasoline drained to remove any sediment.

Should it be necessary to refill the vacuum tank, remove the plug at the top of the tank and pour in about one pint of gasoline.

Reference Book

Emblem of Satisfaction

1926 MODELS

STANDARD SIX

26-20	Two-Door Sedan	5 Passenger
26-24	Roadster	2 Passenger
26-25	Touring	5 Passenger
26-26	Coupe	2 Passenger
26-27	Four-Door Sedan	5 Passenger
26-28	Coupe	4 Passenger

MASTER SIX

26-40	Two-Door Sedan	5 Passenger
26-44	Roadster	2 Passenger
26-45	Touring	5 Passenger
26-47	Four-Door Sedan	5 Passenger
26-48	Coupe	4 Passenger
26-50	Sedan	7 Passenger
26-51	Brougham Touring Sedan	5 Passenger
26-54	Sport Roadster	2 Passenger
26-54C	Country Club Special	3 Passenger
26-55	Sport Touring	4 Passenger

Buick Motor Company

Division of General Motors Corporation

Flint, Mich., U. S. A.

FLINT PRINTING CO.. FLINT, MICH.

(b) Remove the high tension wire from any one of the spark plug terminals and hold it ¼ inch from the base of the spark plug while the engine is being turned over with the starting motor. The spark should jump the gap readily, but if it does not, the difficulty is in the coil, condenser or ignition circuit and these three units should be checked by a competent electrician.

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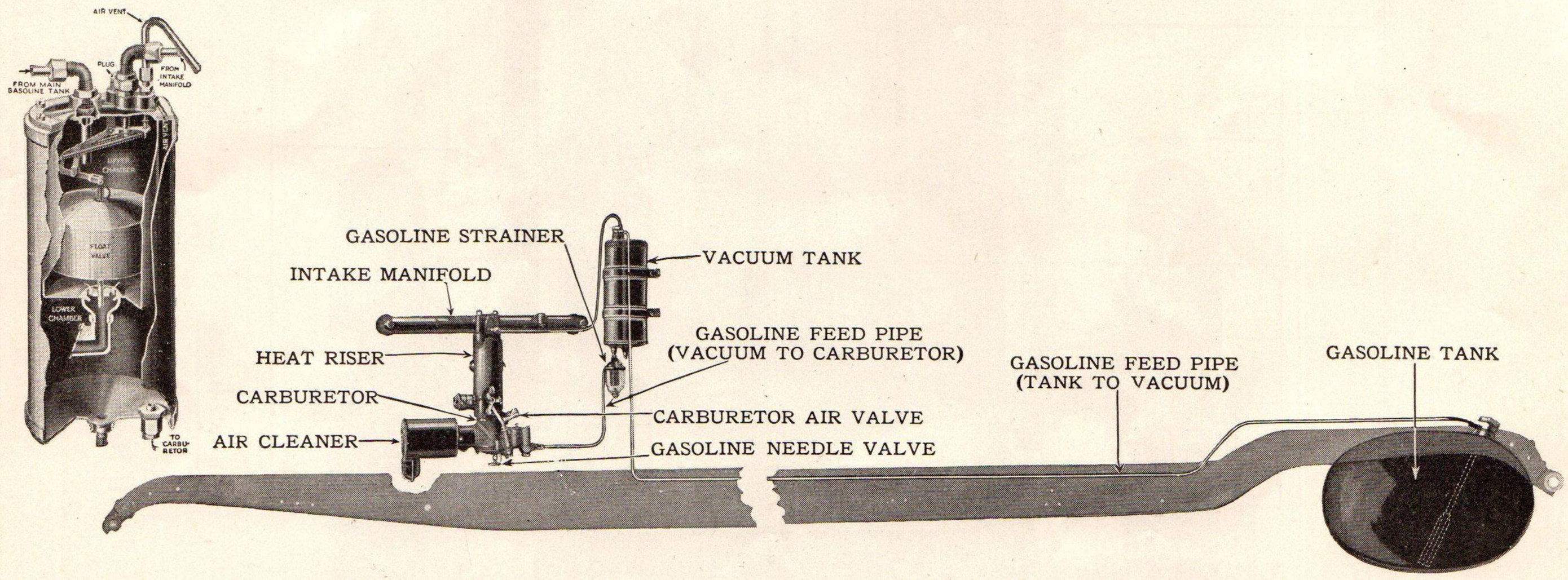
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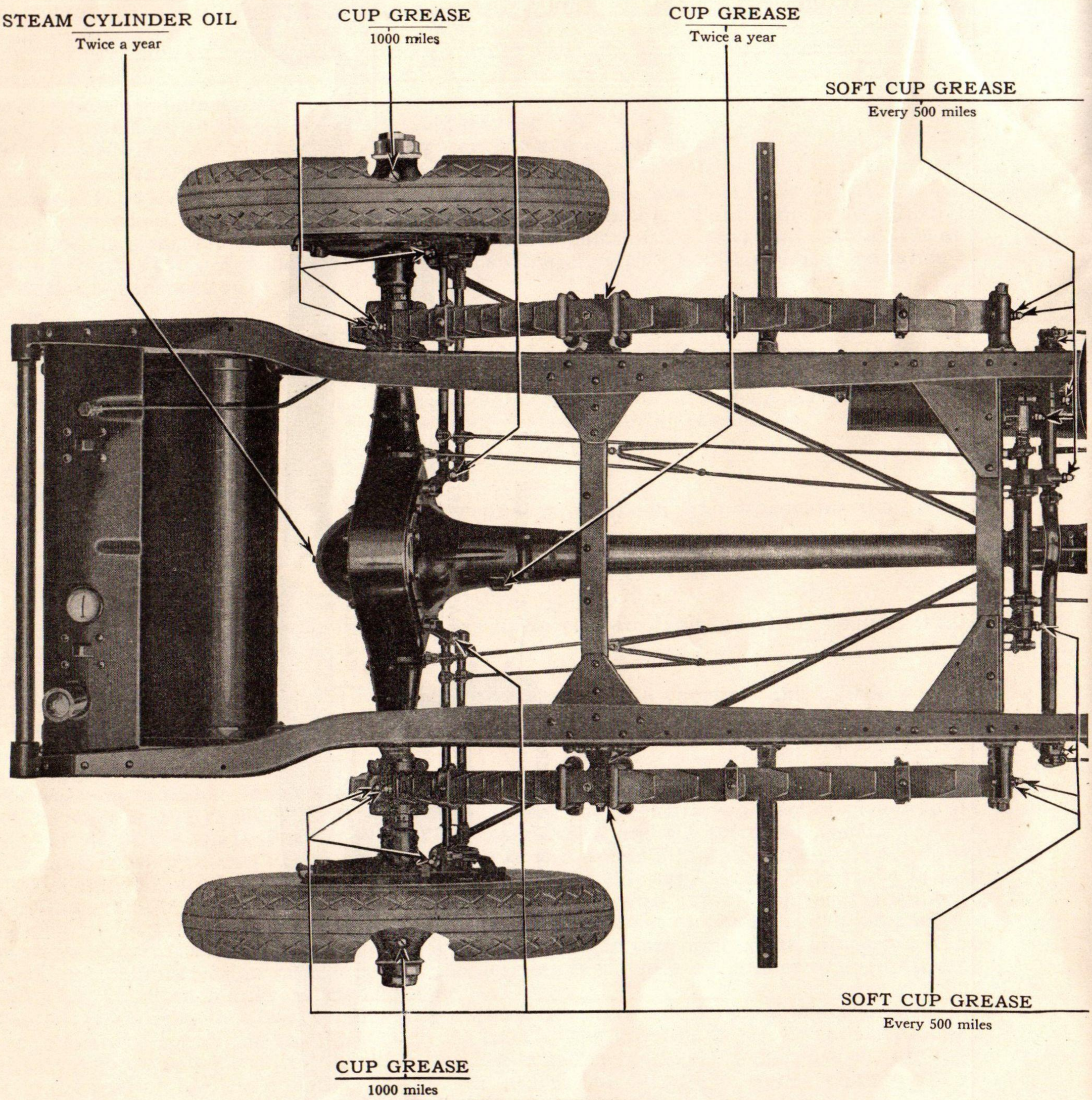
There is a small strainer where the tube from the gasoline tank enters the vacuum tank, and this strainer should be removed and cleaned once every 1000 miles to prevent its becoming clogged.

At the bottom of the vacuum tank there is a small drain plug which should be removed periodically and a small amount of gasoline drained to remove any sediment.

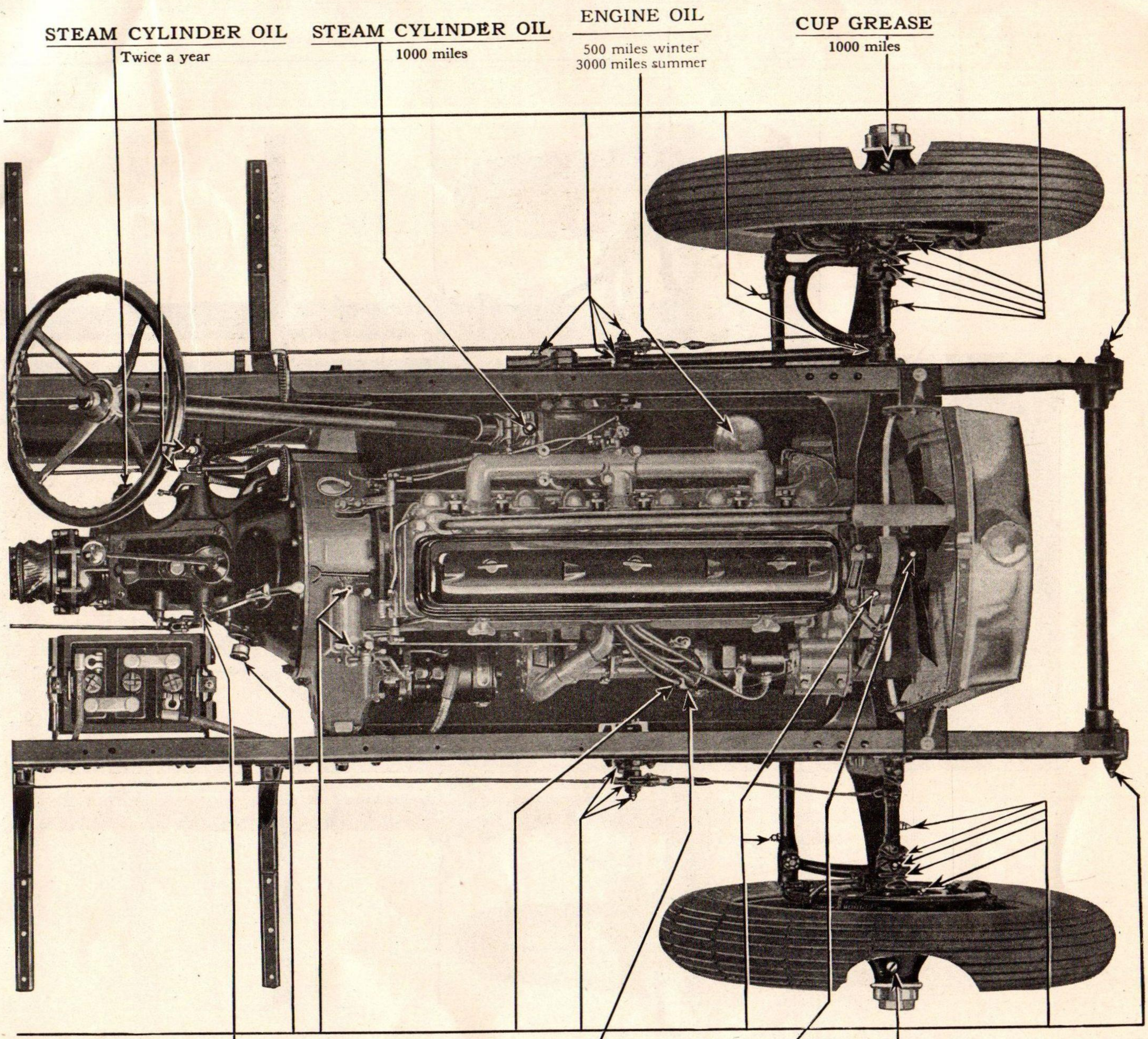
Should it be necessary to refill the vacuum tank, remove the plug at the top of the tank and pour in about one pint of gasoline.



GASOLINE SYSTEM



All Brake Connections and Other Small Wearing Parts Should



Be Lubricated with Engine Oil at Regular Lubrication Periods

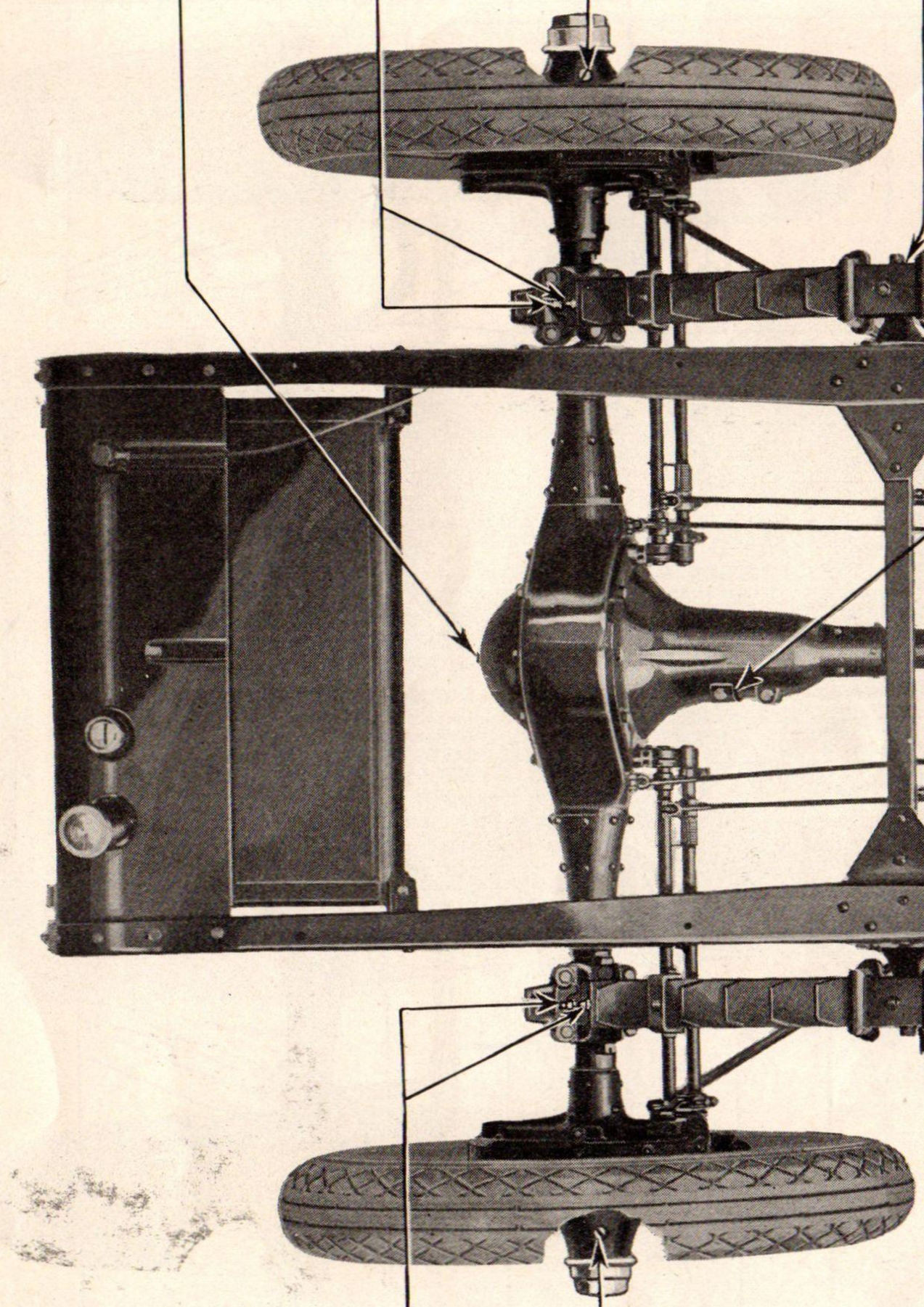
STEAM CYLINDER OIL
Twice a year

CUP GREASE
1000 miles

CUP GREASE
Twice a year

ST

SOFT CUP GRE
Every 500 mile



SOFT CUP GREASE
Every 500 miles

CUP GREASE
1000 miles

All Brake Connections and Other Small Wearing Parts Should

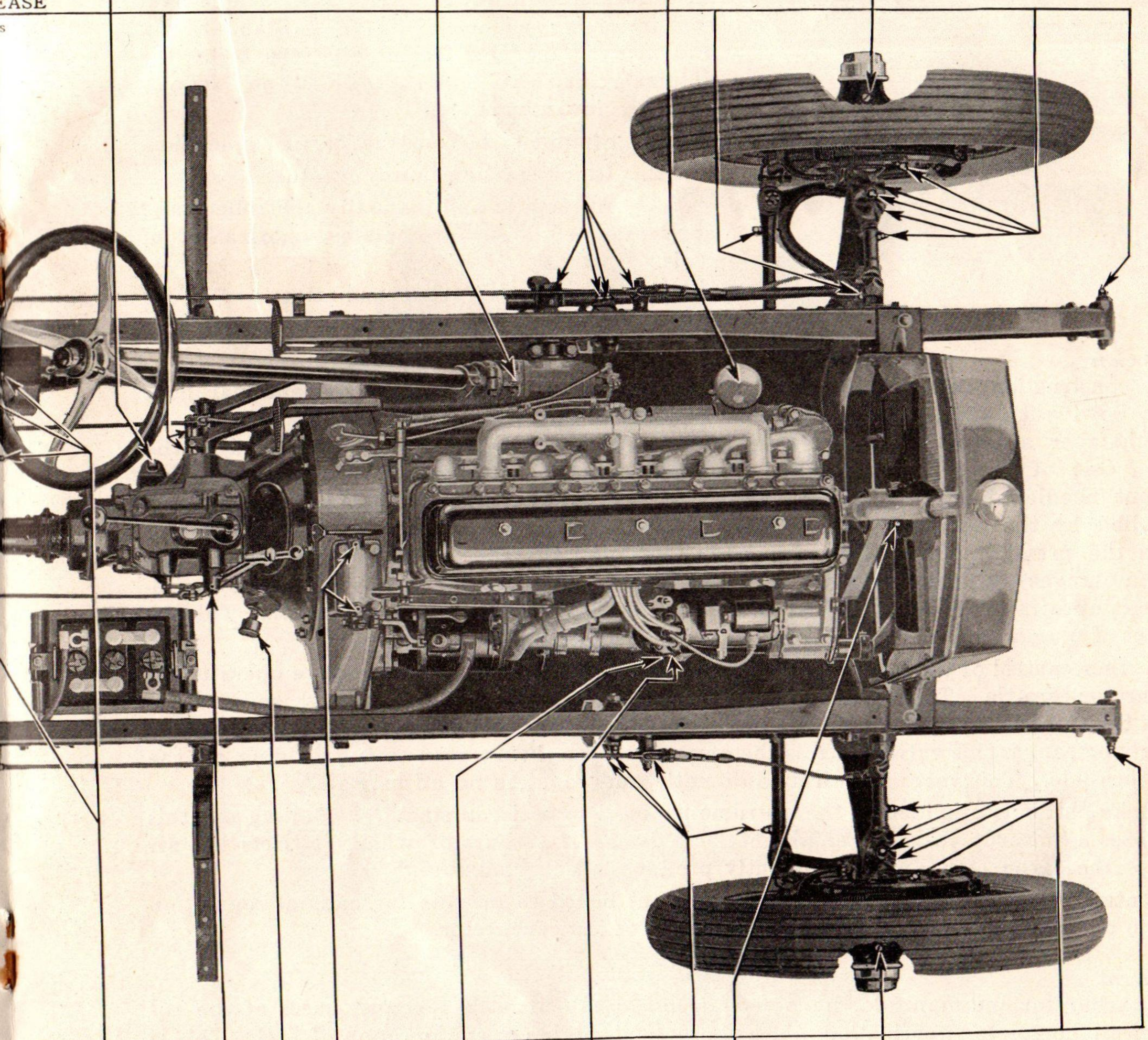
TEAM CYLINDER OIL
Twice a year

EASE
s

STEAM CYLINDER OIL
1000 miles

ENGINE OIL
500 miles winter
3000 miles summer

CUP GREASE
1000 miles



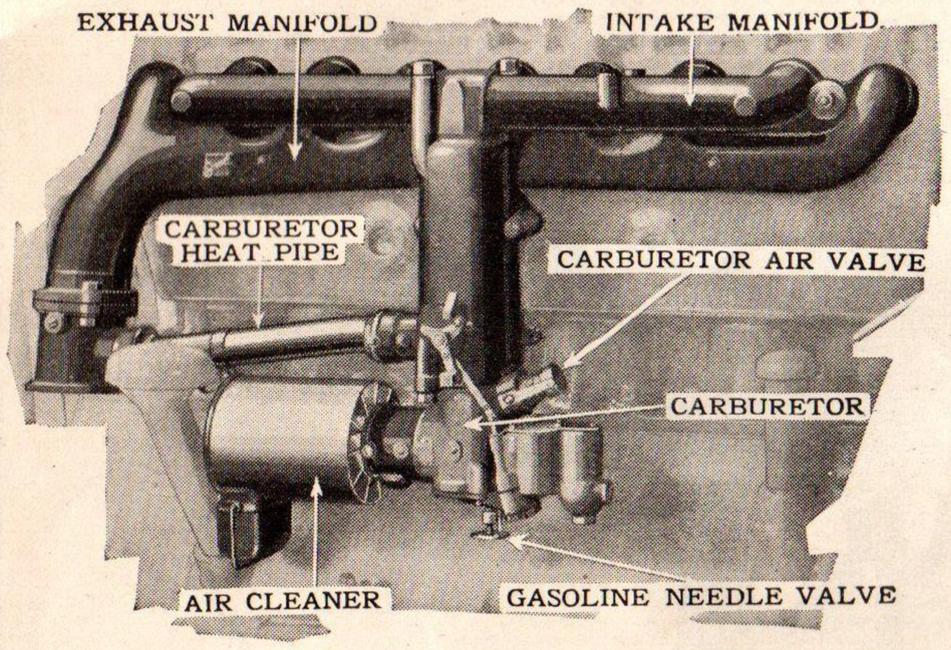
ENGINE OIL
Every 500 miles

ENGINE OIL
5000 miles

CUP GREASE
1000 miles

Be Lubricated with Engine Oil at Regular Lubrication Periods

CARBURETOR



CARBURETOR AND MANIFOLD

The carburetor is the instrument which measures the fuel charges for the engine and automatically mixes them with the proper amount of air to form a highly combustible gas. The Marvel carburetor is used, model "T-3" on Standard Six and model "T-4" on Master Six, this being the automatic air valve, heat controlled type. Its outstanding advantages are:

1. Simplicity of construction and operation.
2. Quick starting in any weather.
3. Automatic and manually controlled heat application to ensure complete vaporization of fuels.
4. Economy in fuel consumption.
5. Ease of adjustment.

Construction

The construction embodies a main body or mixing chamber and a conventional float chamber bowl with fuel strainer attached at point of entrance of fuel to bowl. Within the mixing chamber are two nozzles which proportion the amount of gasoline used in the mixture. One of these nozzles, called the "low speed," is regulated by the gasoline adjustment needle at the bottom of carburetor and the other, called the "high speed," is controlled by the automatic air valve. An air adjustment screw is provided which regulates the pressure of the air valve spring enclosed therein. Within this screw is also enclosed a plunger connected by a link to the air valve. The function of this plunger is to provide a resistance in addition to that of the air valve spring to assist in acceleration. This arrangement of plunger and air valve screw is termed the dash pot.

A further control of the high speed jet is provided by the fuel metering valve operated by the carburetor throttle. This valve provides the maximum fuel feed to the "high speed" nozzle when the throttle is fully opened for high speeds and for quick "pick up." During the ordinary driving ranges this valve controls the amount of fuel being used thus providing all the economy possible. This valve is entirely automatic and requires no adjustment.

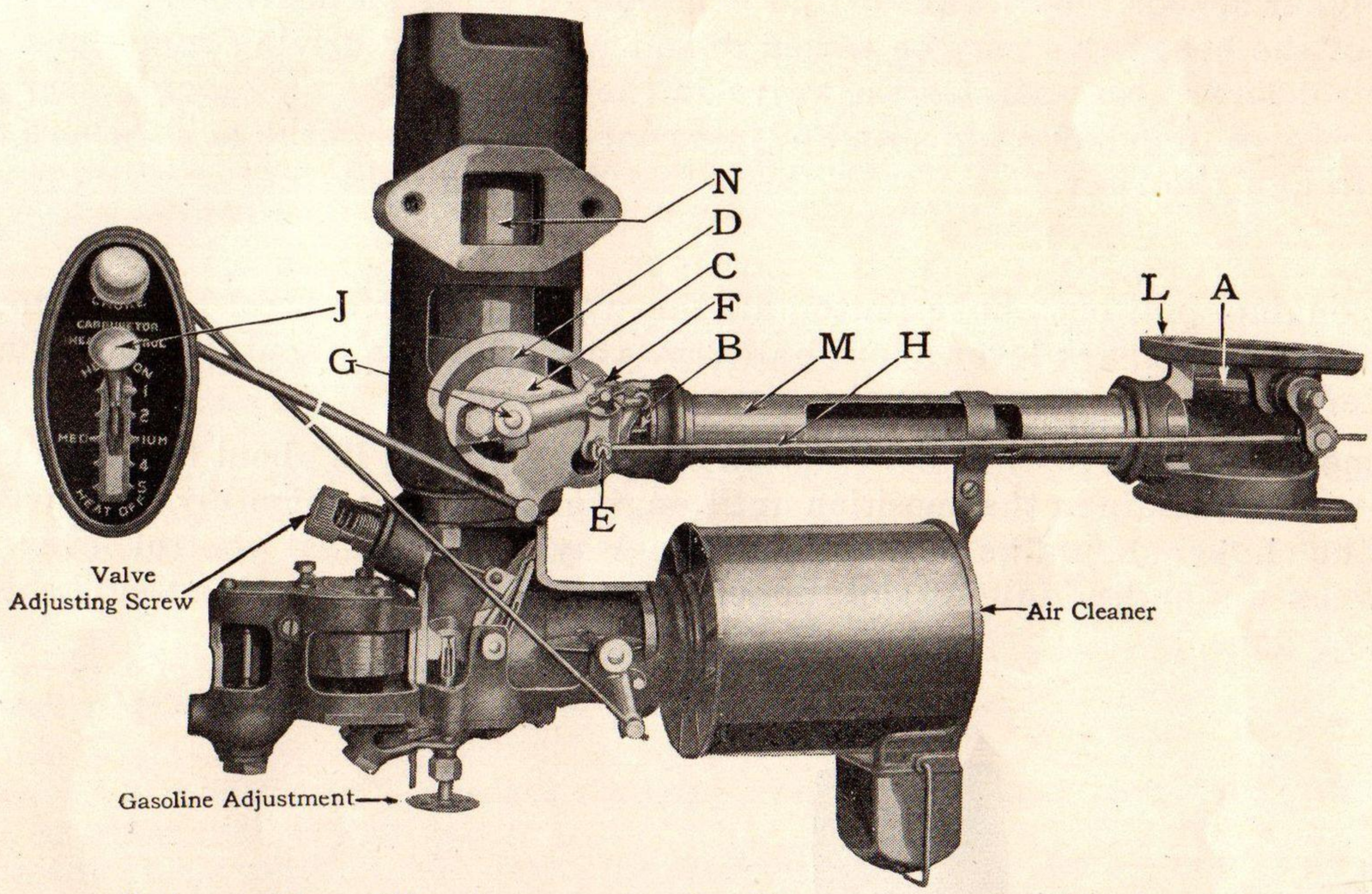
A choke button is provided on the instrument board to assist in starting. Pulling out this button closes a butterfly valve in the air intake passage of carburetor which restricts the air opening of the carburetor, and consequently produces a richer mixture.

A control lever is also placed on the instrument board to provide for manual regulation in addition to the automatic heat control mechanism of the carburetor.

Heat Control

The carburetor and manifolds have been designed to utilize the exhaust gases of the engine to ensure complete vaporization and a consequent minimum consumption of fuel. This is accomplished by the use of a double walled riser between the carburetor and intake manifold. The riser is connected to the exhaust manifold in such a manner that the exhaust gases pass between the walls of the riser and through an outlet tube back to the exhaust pipe. The amount of heat thus furnished to the riser and carburetor is controlled by two valves; one in the exhaust pipe and one in the outlet tube of riser heat jacket.

The valve in the exhaust pipe is connected to the throttle lever of carburetor in such a manner that the greatest amount of heat is had in the riser when the throttle is only partly open, as in idling and at slow speeds, and a decreasing amount as the throttle is opened

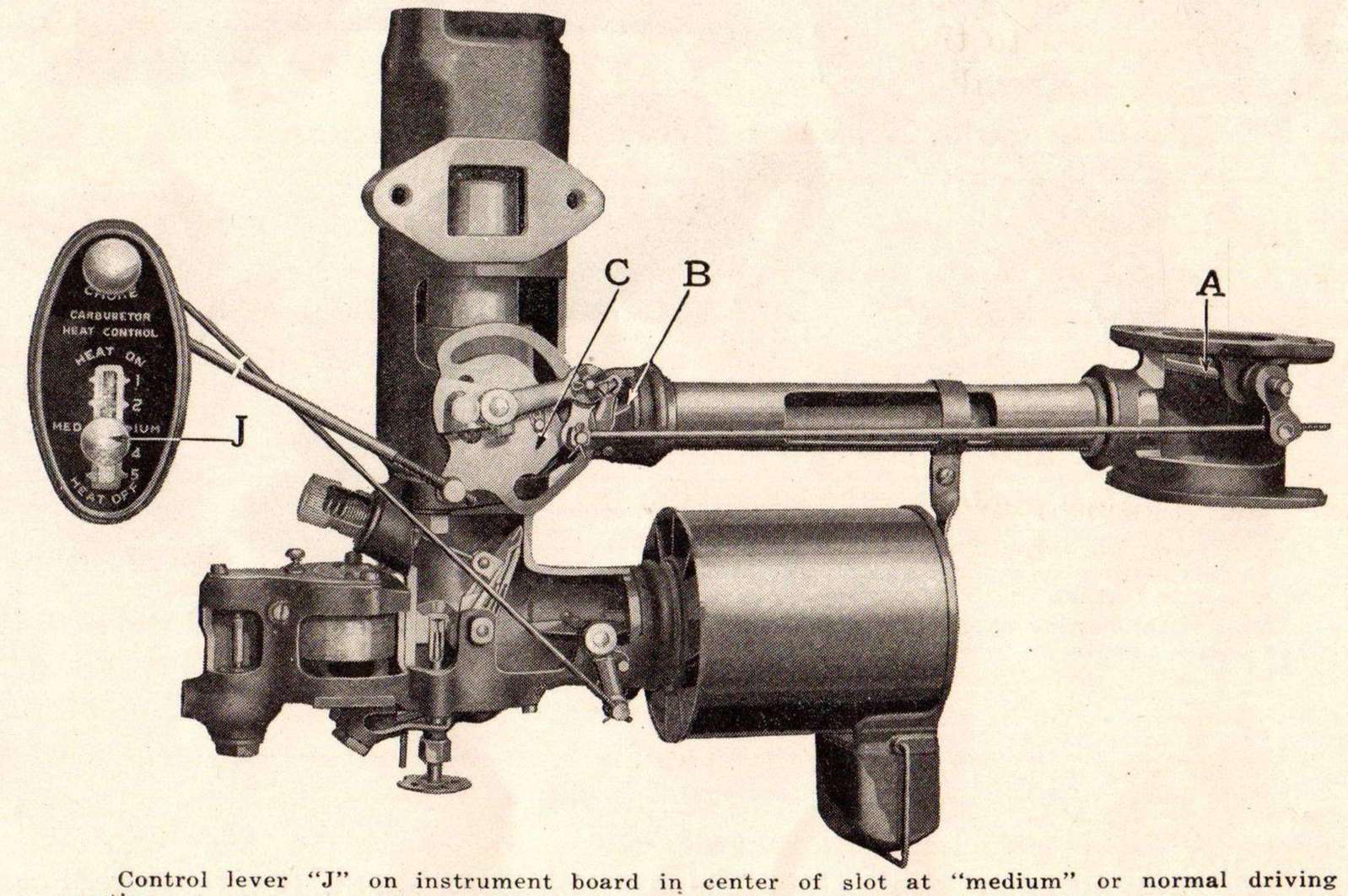


Heat control lever "J" on instrument board at No. 1 or "heat on" position.

Valve "A" in main exhaust pipe closed and valve "B" in outlet of carburetor body wide open.

Gases from exhaust manifold enter at opening "N" and pass through riser jacket, returning to exhaust pipe below valve "A."

As throttle is opened, valve "A" remains closed up to approximately 40 miles per hour then opens with wide open position of throttle.



Control lever "J" on instrument board in center of slot at "medium" or normal driving position.

Valve "A" nearly closed and valve "B" partly closed, restricting flow of hot gases through riser jacket. As throttle is opened, valve "A" will also open quickly.

This setting of control lever may be used when engine is thoroughly warmed up and lower position should not be used except in extremely hot weather.

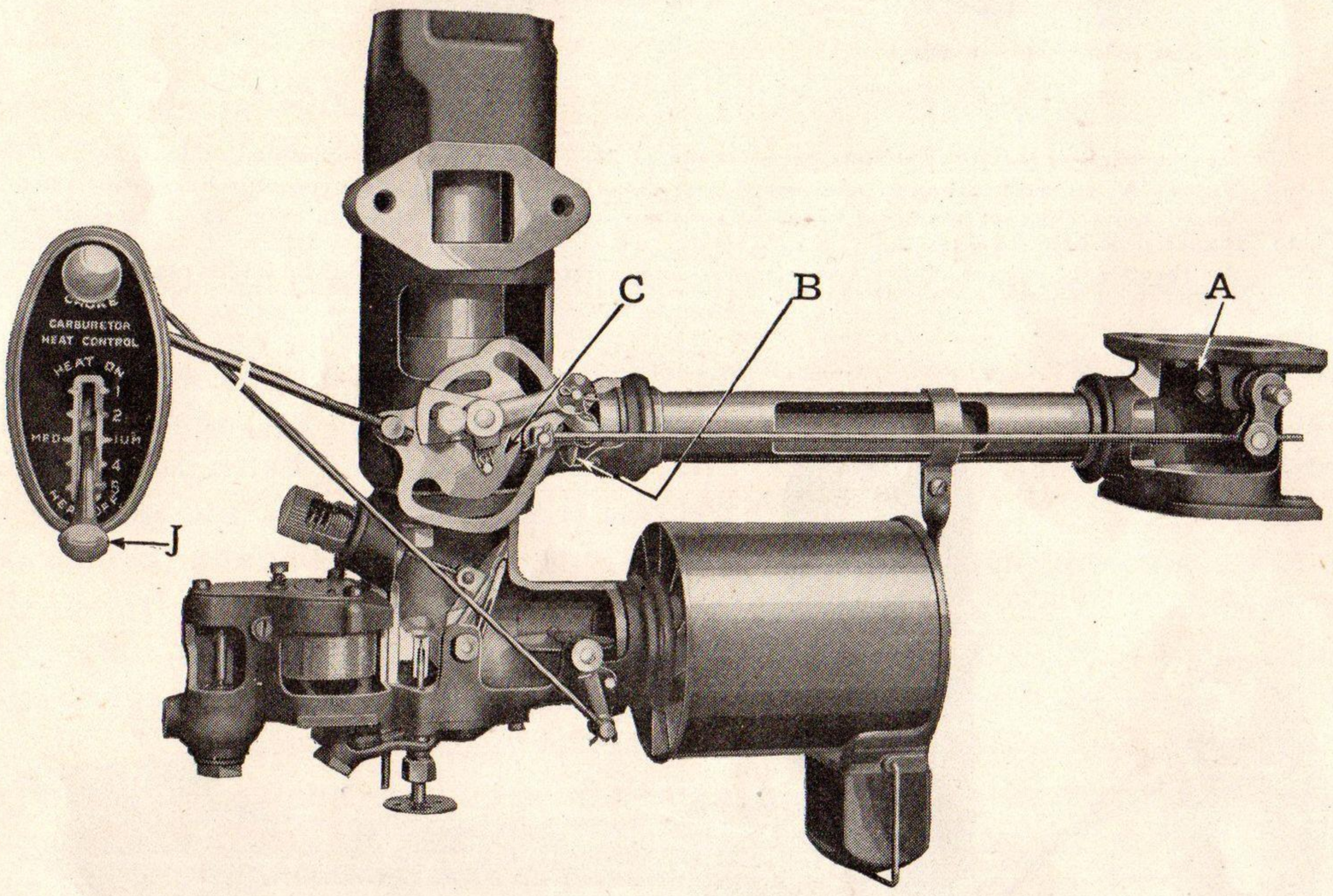
further for higher speeds. By means of the heat control lever on instrument board, this automatic action of the heat valve may be varied to suit weather and driving conditions.

The control lever also operates the valve in the outlet of the carburetor riser simultaneously with the valve in exhaust pipe, and adjustment may be had to the point where no exhaust gases pass through the riser.

Starting

To start engine, pull out choke button all the way, set heat control lever at top or "heat on" position. Advance spark lever about halfway, throttle lever about one-quarter way and depress starter pedal.

The moment engine fires, the choke button should be pushed in about three-quarters of the way and allowed to remain in that position until engine is running smoothly. After engine has warmed up, the choker should be pushed in all the way and the heat control lever set in any position between top and middle of slot, depending upon weather conditions and the character of driving to be done.



Heat control lever "J" on instrument board at bottom of slot or "heat off" position.
Valve "A" half open and valve "B" fully closed.
In this setting no exhaust gases pass through riser jacket. As throttle is opened, valve "A" will also open further.
This is the setting used during extremely hot weather or under certain heavy road conditions when engine appears to lose power because of too much heat.

It should be remembered that the position of the heat lever largely controls the "pick up" and acceleration of the car. Therefore, if driving in traffic where quick acceleration is desired, drive with the heat control lever between "heat on" and "medium," never below "medium" in town driving, for best all around performance. On straightaway driving, the heat lever may be set to "medium" and only in extreme cases of very hot weather should it ever be set at the bottom or "heat off" position.

Adjustment

No change should be made in the carburetor adjustment until after an inspection has been made to determine if the trouble is not in some other unit. It should be noted that the vent hole is open in filler cap of main tank; that the gasoline lines are clear; that there is gasoline in the gas supply line; that there are no leaks at connections between carburetor and engine; that the ignition system is in proper condition and that there is even compression in all cylinders.

If it is necessary to test adjustment or to make a readjustment, proceed as follows:

Set air screw so that the end is flush with the end of ratchet set spring above it. Turn gasoline adjustment to the right very carefully so as not to injure the needlepoint, until the valve is closed gently against its seat. Then turn to the left approximately one complete turn, which will bring the notch in the disc handle directly below the guide post above it. This notch is placed in disc at the factory and indicates the setting for the best power and economy.

Start the engine in the usual manner and place heat control lever on No. 2. After engine has thoroughly warmed up push choker button in all the way and set the air screw for good idling. It may be necessary to turn to left for more air or to right for less air to obtain smooth even running.

If the engine idles too fast with throttle closed, the latter may be adjusted by means of the throttle lever adjusting screw.

Rich Mixture

An over-rich mixture will cause the engine speed to fluctuate and "roll" at an idle speed, and "lope" at intermediate speeds.

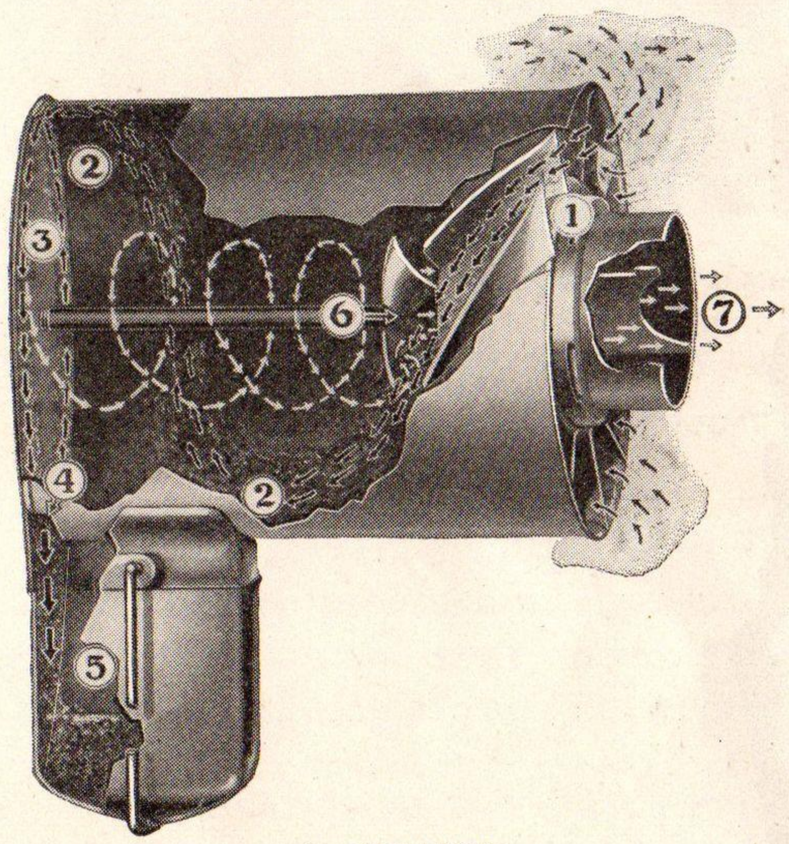
To remedy this condition, cut down the fuel or increase the air, or both, and keep the heat control lever at center mark in slot and lower only if weather is extremely hot.

Lean Mixture

Generally, the best adjustment is obtained with the fuel and air valves set as previously described. It must be remembered that too lean a mixture (as well as over-rich mixture) causes over-heating and loss of power and is not as economical as an adjustment which provides just the proper proportion of gasoline and air.

Air Cleaner

There is no question but that much of the wear occurring in the various parts of an automobile engine has been due to the presence of dirt and carbon in the lubricating oil. Most of the dirt finds its way into the engine through the carburetor air intake, and recognizing the desirability of eliminating this source of wear, all 1926 models are equipped with an air cleaner, attached to the carburetor air intake.



AIR CLEANER

The AC air cleaner is used, this operating on much the same principle as that utilized in the ordinary cream separator, that is, centrifugal force separating two elements of different specific gravity. The operation will readily be understood from the following description:

1. The suction stroke of the engine draws the air through the directing vanes of the cleaner, which give it a rapid, rotating motion, spirally.

2. Centrifugal force separates the dust particles from the air, throwing them against the inside wall of the cleaner.

3. The spiral motion of the dust along the inside surface of the cleaner wall brings it to the rear circular end.

4. The dust is then forced through a small outlet and

5. Collects in a removable container.

6. The clear air moves spirally through the center portion of the cleaner until it strikes the directing plate and leaves the cleaner.

7. The current of clear air leaves the cleaner in a straight line and enters the carburetor.

CAUTION: The container at the bottom of the air cleaner in which the particles of dust and dirt have been collected, should be removed at least once during each season and cleaned out.

FOREWORD

In preparing this reference book, effort has been made to present only such information as will be of assistance in keeping the performance of the Buick car up to its normal high standard, having in mind as well, simplicity of language and convenience for ready reference. It deals with such adjustments and recommendations as to care which seasonal changes may require and minor operations which the owner might wish to perform himself or which emergencies might make necessary.

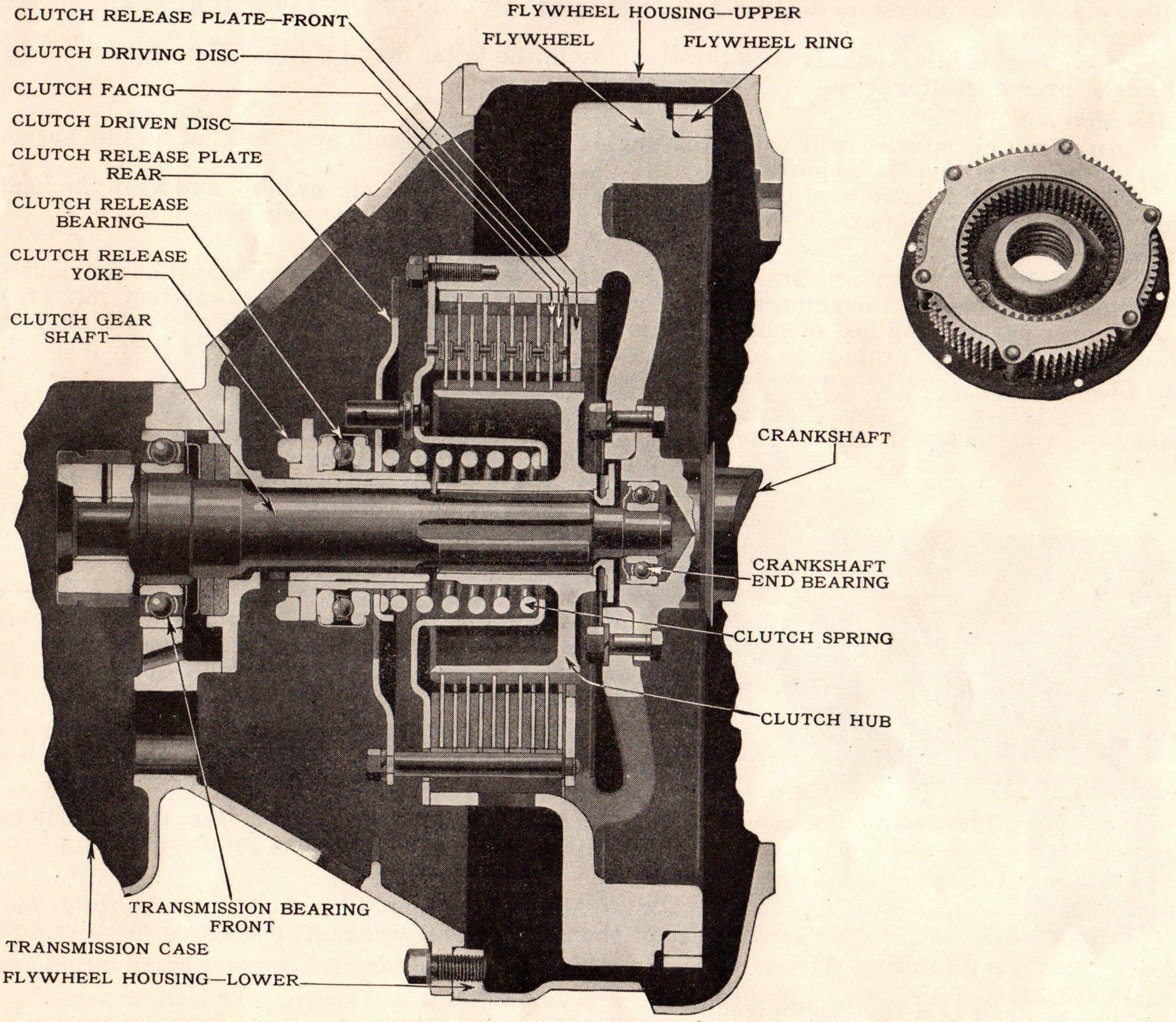
Keep this book in your car. It is dedicated to your convenience and satisfaction with your purchase, not so much with the idea of helping you out of trouble as to help you in keeping away from it.

BUICK MOTOR COMPANY

THE DRIVING SYSTEM

CLUTCH

In setting a motor car in motion, it is first necessary to start the engine and then, with the engine running, to start the car. This necessity is met by introducing between the engine and transmission a coupling device which, at the will of the operator and by means of a pedal, establishes a rigid connection between the engine and transmission or breaks this connection as may be required in operating the car. In the Buick design, the device by which this is accomplished is known as a multiple disc clutch. The ease of operation of the Buick clutch constitutes one of the many important advantages of the Buick product, a point which has commended itself to all owners, particularly women drivers, for several years.



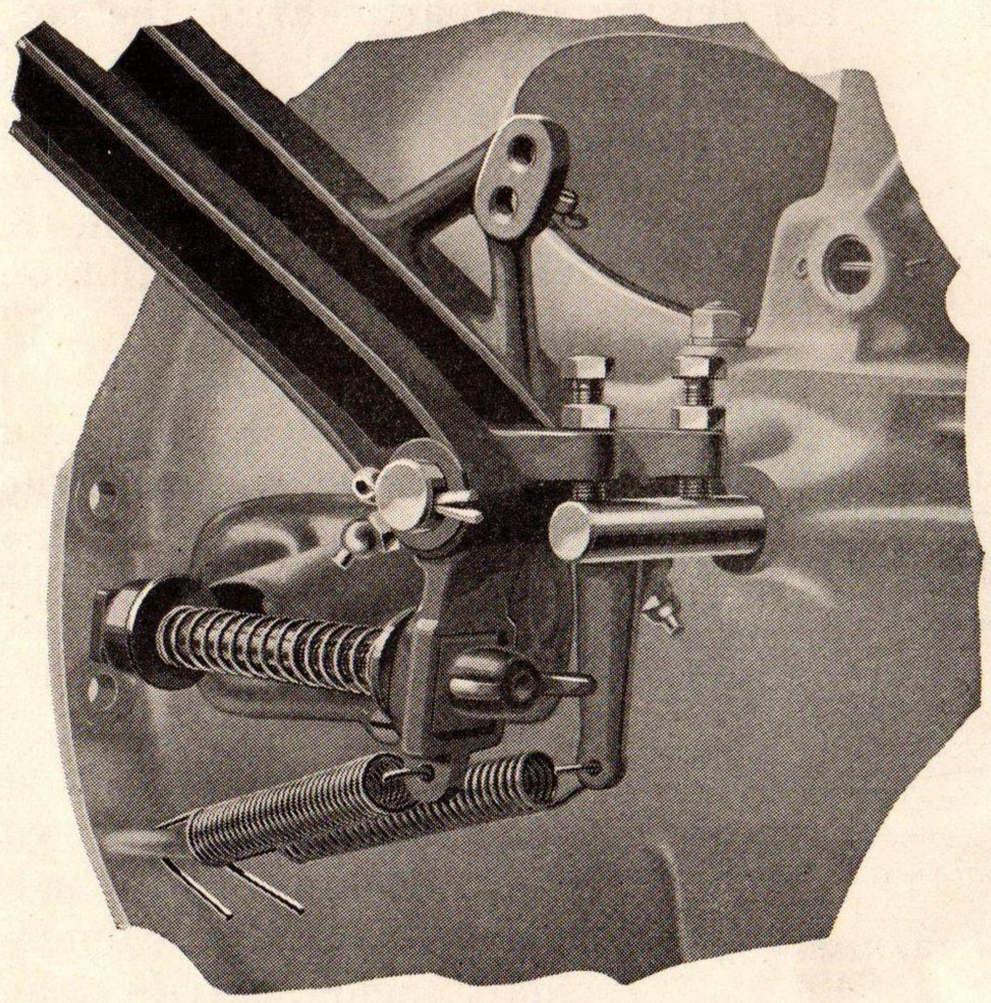
CUT-AWAY VIEW—CLUTCH ASSEMBLY

This type of clutch consists of a number of plates, the alternate ones being lined on both sides with friction facing. When the pedal is depressed, the clutch plates separate, and as a consequence there is no driving connection between the crankshaft and the rear axle. When the pedal is released, the plates are brought together by the clutch spring and the resulting

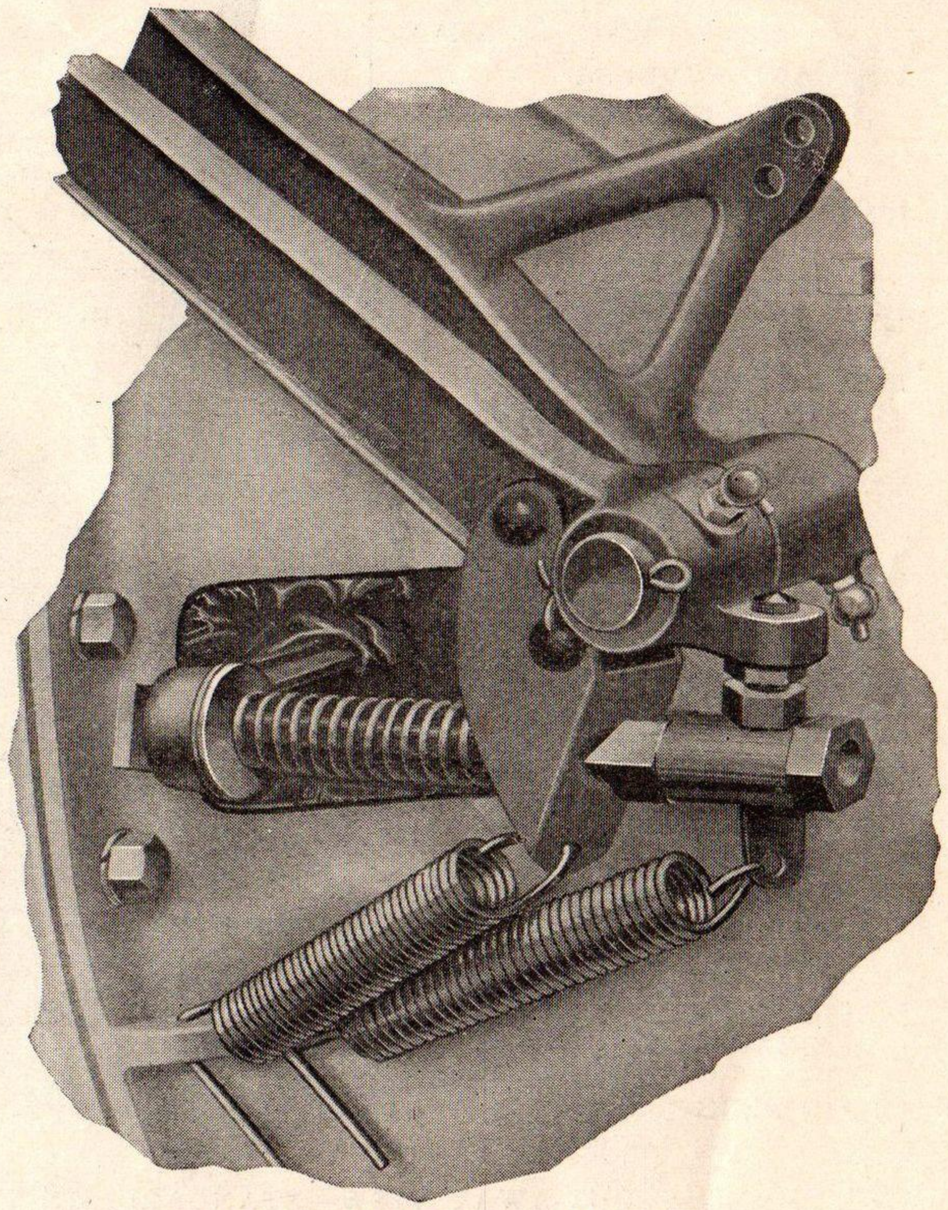
friction causes the clutch to revolve as a unit and thereby establishes a direct driving connection between the engine and the rear axle, when the transmission control lever is in other than neutral position.

Adjustment of Clutch Pedal

Correct functioning of the clutch depends upon the proper adjustment of the clutch pedal movement. If in releasing, the pedal strikes the toe-board before the clutch is fully engaged, adjustment should be made by means of the screw provided on the rear side of the clutch pedal hub. This screw regulates the distance between the clutch pedal and the under side of toe-board, and in correct adjustment, this distance should be approximately 3/16 inch.



CLUTCH PEDAL ADJUSTMENT
STANDARD SIX



CLUTCH PEDAL ADJUSTMENT
MASTER SIX

When correctly adjusted, it should be possible to depress the clutch pedal approximately 1 inch before pressure of the clutch spring is felt. To obtain this adjustment, an adjusting nut is provided on the rear end of the clutch release rod at the lower end of the pedal, this nut regulating the clearance between the release bearing and the clutch.

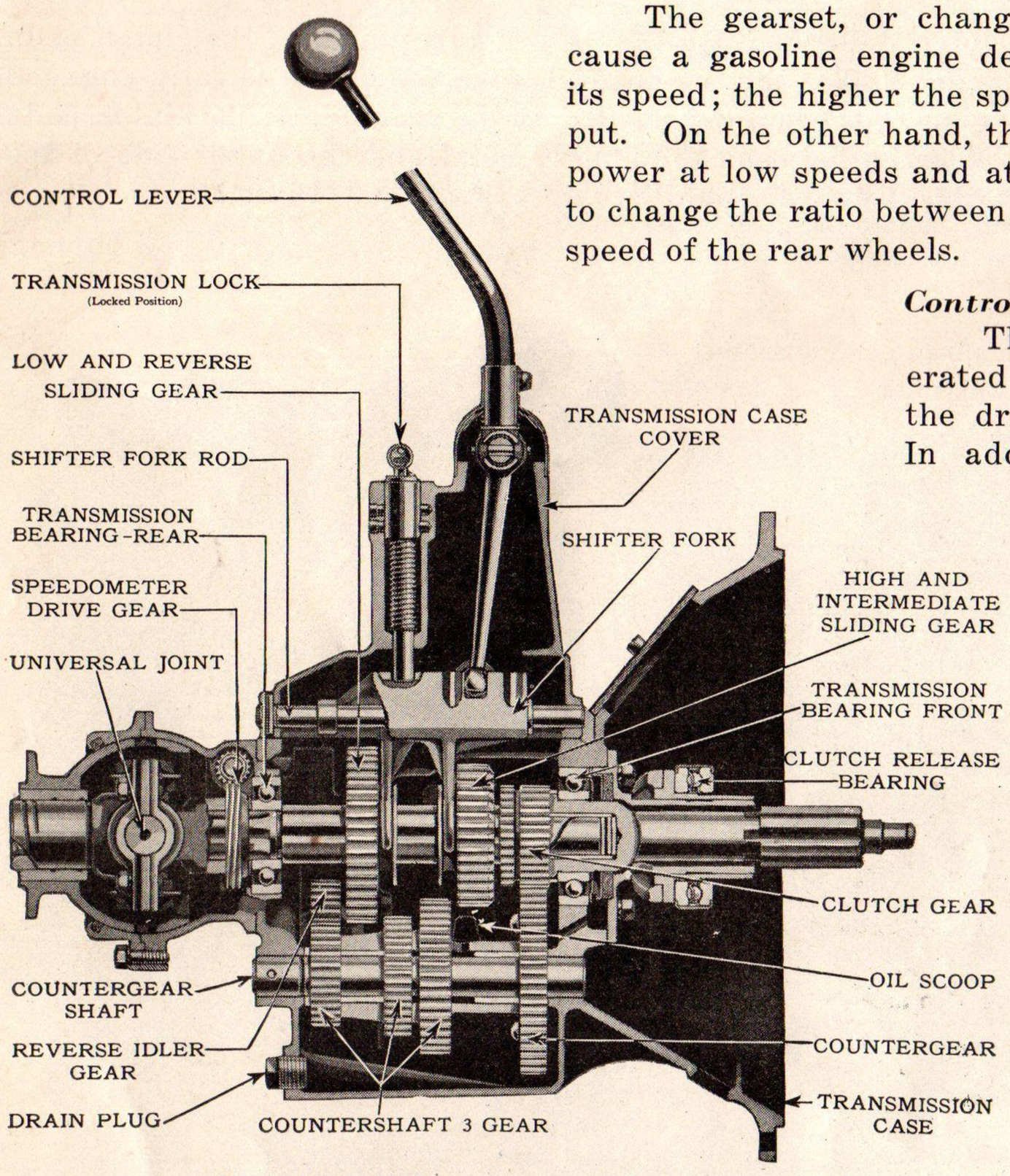
Lubrication of the clutch release bearing is provided by means of a grease cup, conveniently placed and which should receive attention every 500 miles. **Do not oil or grease the clutch plates.**

Riding the Clutch

Driving with the foot continuously on the clutch pedal is commonly described as "riding" the clutch. This habit will result in excessive wear of the clutch plate facings and a slipping clutch, as well as a noisy release bearing.

TRANSMISSION

The transmission system includes all those parts which transmit power from the engine to the rear wheels but generally the transmission gearset alone is understood by this term.



CUT-AWAY VIEW—STANDARD SIX TRANSMISSION

The gearset, or change speed gear, is necessary because a gasoline engine develops power in proportion to its speed; the higher the speed, the greater the power output. On the other hand, the car frequently requires more power at low speeds and at such times the gearset is used to change the ratio between the speed of the engine and the speed of the rear wheels.

Control Lever

The transmission gearset is operated by a control lever located in the driving compartment of the car. In addition to neutral the control lever can be shifted to four positions: Low speed, intermediate, high and reverse. The illustration on page 41, lettered "N" neutral, "L" low, "I" intermediate, "H" high and "R" reverse, indicates the several positions of the lever in making gear shifts.

Gearset

The change speed gears are carried on two shafts, the lower of which is known as the countershaft and carries the counter-gears, while the upper or main shaft carries the sliding gears. The main shaft is mounted in a ball bearing at its rear end and runs in a bronze bearing in the clutch gear at its forward end.

The countershaft is stationary and the counter-gears revolve on it. The reverse idler gear is mounted on a separate shaft to one side of countershaft and is in constant mesh with one of the counter-gears. The sliding gears are mounted on the main shaft in such a manner that they can be moved along to engage with one or the other of the counter-gears.

The high and intermediate sliding gear is provided with internal teeth on its forward side so that it can be moved over the clutch gear to lock the main shaft and clutch gear together.

Neutral Position—"N"

The clutch gear is directly connected to the engine when clutch is engaged and consequently turns in the same direction, but the counter-gear, being in constant mesh with the clutch gear revolves in the opposite direction. When the control lever is in neutral position, neither of the sliding gears is in mesh with any other gear and therefore the main shaft does not turn.

First Speed Position—"L"

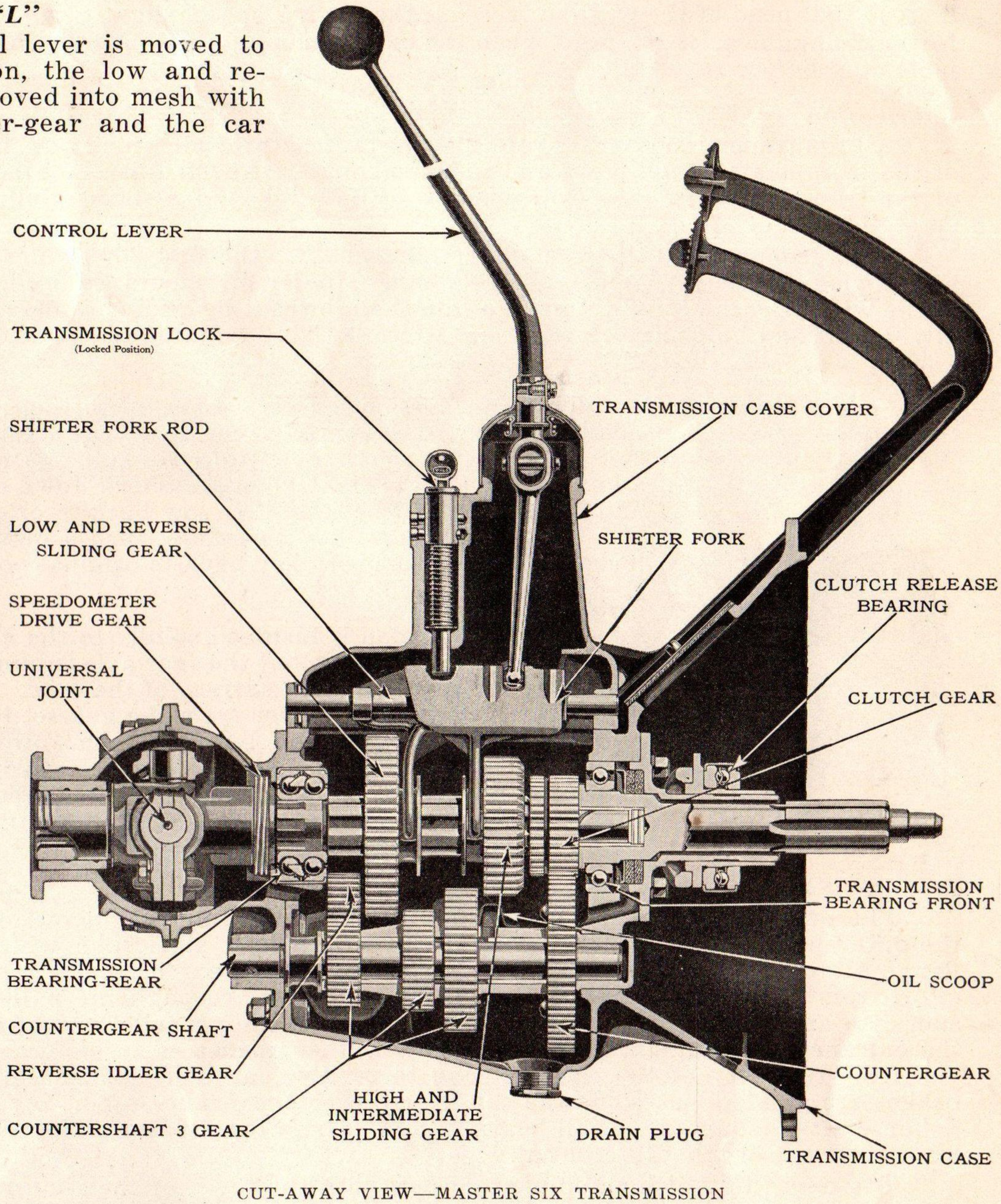
When the control lever is moved to the first speed position, the low and reverse sliding gear is moved into mesh with the low speed counter-gear and the car moves forward.

Second Speed Position—"I"

When the control lever is moved to the second speed position, the low and reverse sliding gear is drawn out of mesh with the counter-gear and the high and intermediate sliding gear is moved back into mesh with the intermediate speed counter-gear. In this position the main shaft also turns in the same direction as the engine.

High Speed Position—"H"

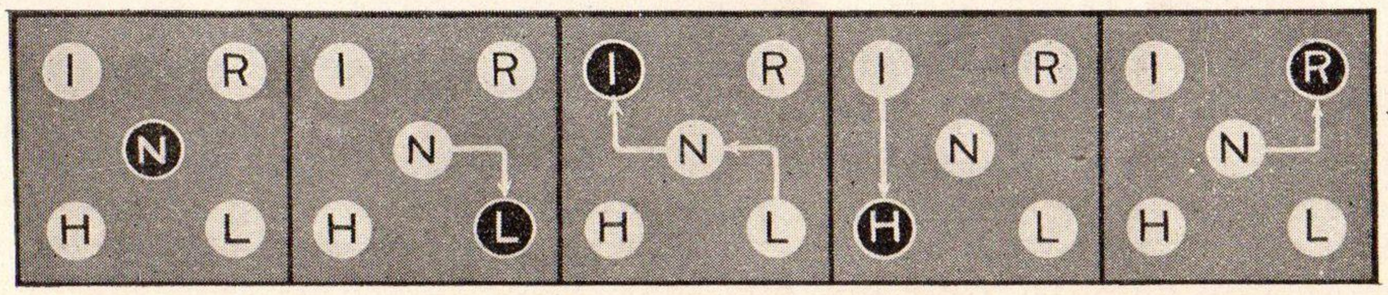
When the control lever is moved to third, or high speed position, the high and intermediate sliding gear is disengaged from the intermediate speed counter-gear and moved forward on the main shaft until the internal teeth slip over and engage the teeth of the clutch gear, locking the main shaft and the clutch gear together, thus giving the engine a "direct drive" to the rear axle.



CUT-AWAY VIEW—MASTER SIX TRANSMISSION

Reverse Speed Position—"R"

When the control lever is moved to the reverse speed position, the low and reverse gear is moved into mesh with reverse idler gear and the main shaft then revolves in a reverse direction from that of crankshaft and when clutch is engaged, car is driven backward.



GEAR-SHIFT DIAGRAM

High to Lower Speed

When it is necessary in traffic, heavy roads, or on hills to change from a higher to a lower speed, release the clutch and move the gear shifting lever into the desired position.

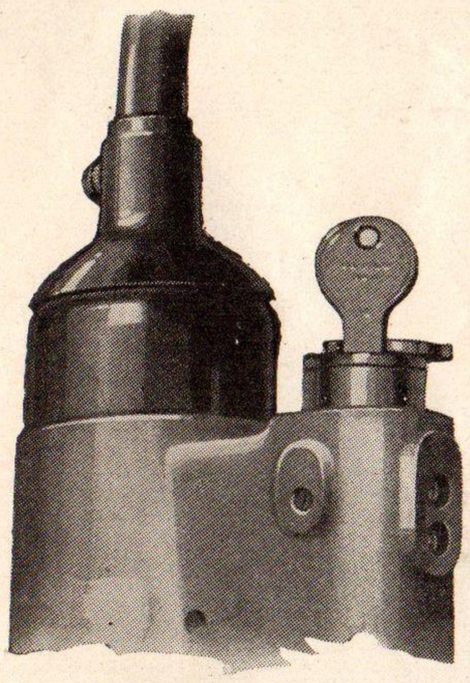
Reduce the speed of the car and increase the engine speed slightly when making the change. **Never change to a lower speed when the car is running fast.** Always bring the car to a complete stop before reversing.

Lubrication

All the transmission gears run in a constant bath of oil which also lubricates the bearings of the main shaft, clutch gear and universal joint. An oil filler hole is provided on the side of the transmission case for introduction of new oil, and a drain plug at the bottom allows emptying and cleaning.

It is recommended that the oil be changed after the first 2000 miles of driving and thereafter twice a year. A good grade of steam cylinder oil should be used, but at the beginning of the winter season it is advisable to thin the lubricant by adding a quantity of engine oil. Usually, a half and half mixture will meet winter driving conditions.

Transmission Lock



TRANSMISSION LOCK

The transmission lock is connected to the gear shift of the transmission, locking the control lever in neutral position.

To lock, first see that control lever is in neutral, insert the key, turn a quarter turn to the right, then press lock down even with lock housing and holding in that position turn key back to original position.

To unlock, insert key as before, turn a quarter turn to right and lock is released, then turn key back to original position.

Universal Joint

The transmission is fastened solidly to the engine which in turn is fastened to the car frame, but the rear axle is hung on springs and must be free to follow the uneven surface of the road. In order to allow continuous transmission of power from the gearset to the rear wheels, the universal joint is interposed between them. It consists of two yokes held at right angles to each other by means of two universal joint rings and four cap screws. It is encased in a ball-shaped housing, which prevents the entry of road dirt, etc., and is automatically lubricated by the oil from the transmission.

Propeller Shaft

The propeller shaft transmits the power from the universal joint to the driving gears of the differential. It is enclosed for its entire length in a steel tube which carries the driving flange attached to the universal joint housing on the rear of the transmission. The driving effort from the rear wheels is transmitted by this tube through the ball joint to the transmission case and the frame of car. The tube protects the propeller shaft and its bearings against the entrance of foreign matter. In addition, it compensates torque reaction, that is, it prevents the tendency of the axle housing to revolve around the shafts when power or the brakes are applied—as when the car is driven or the brakes used. At its rear end the propeller shaft is mounted on ball bearings and carries the driving pinion which meshes with the large ring gear on the differential.

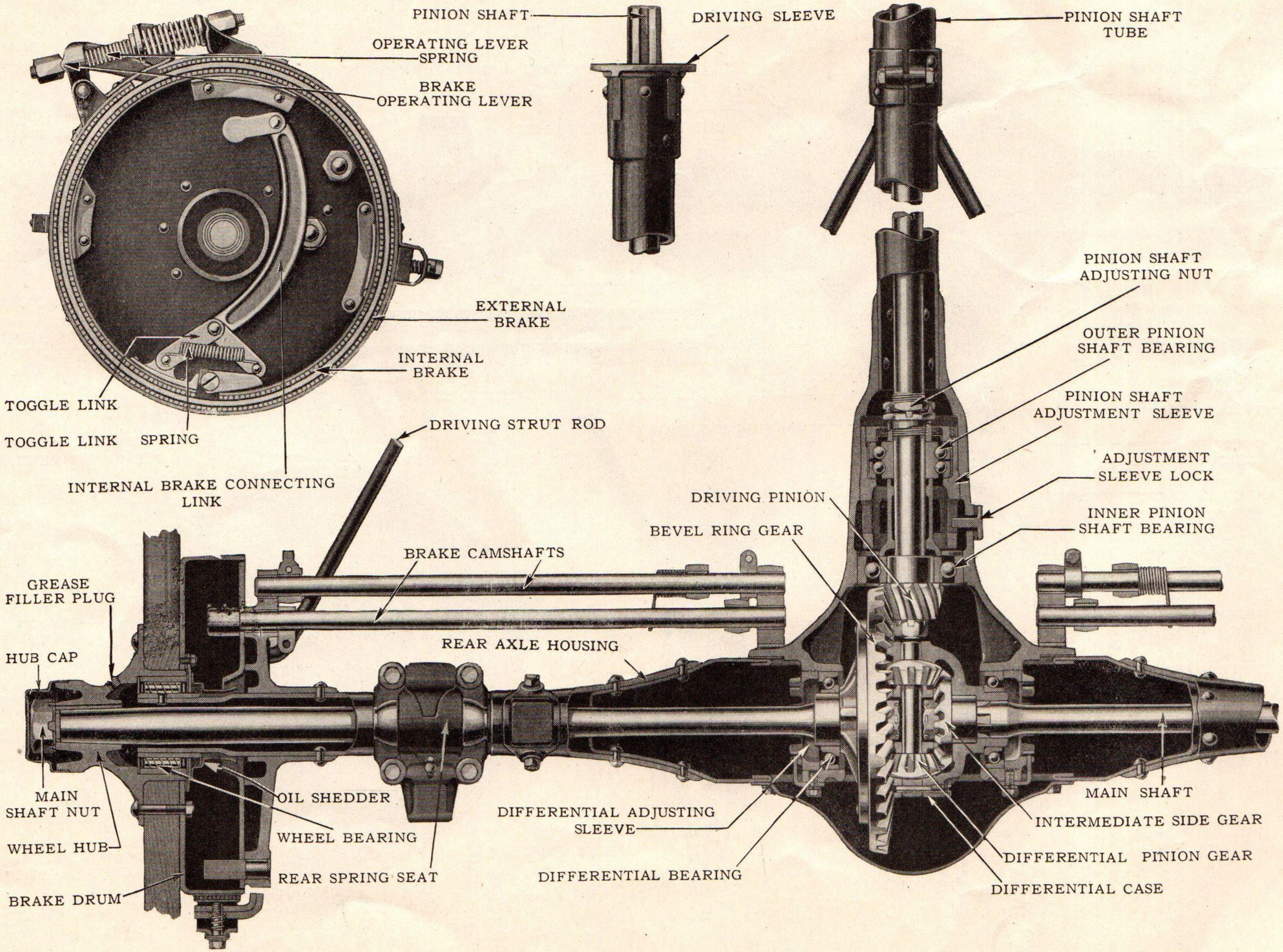
The depth to which the pinion meshes with the teeth of the ring gear is adjustable, and adjustment may be made by removing the cover plate on the right side of pinion flange and loosening the adjusting sleeve clamp screw. The sleeve which carries the outer bearing can then be turned to adjust the position of the pinion.

Adjustment of the pinion shaft should be made only by an experienced mechanic. In case of difficulty, take car to the nearest Buick dealer or Authorized Service Station.

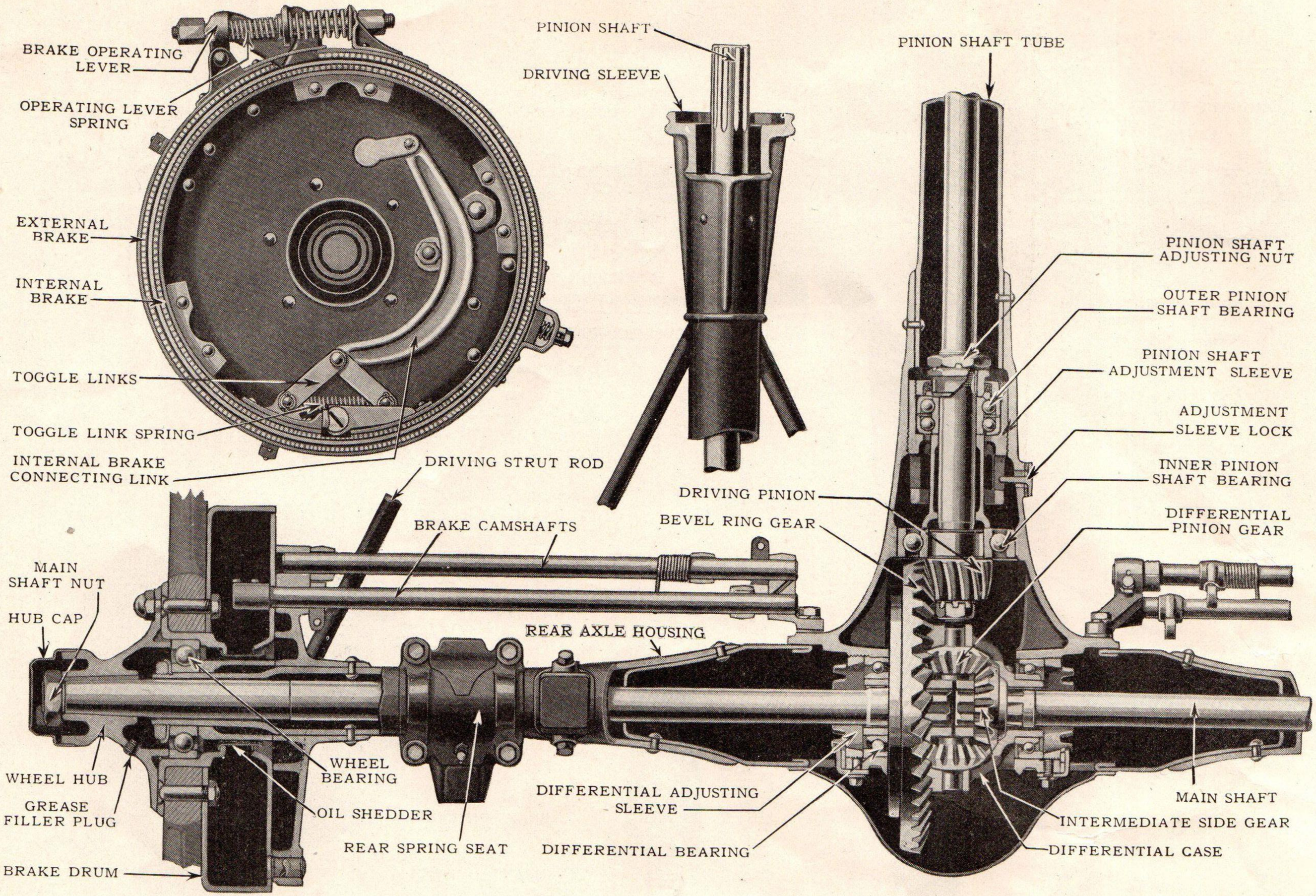
REAR AXLE

The rear axle assembly includes the propeller shaft, differential, axle shafts, brakes and wheels and constitutes the final element in the driving mechanism.

The Buick rear axle design, embodying a single universal joint and a long torque tube, presents many advantages in a consideration of the method of transmitting the driving effort of the rear wheels to the frame of the car. With this construction, it is possible to operate the car under its own power even though one or both rear springs may have been broken, which cannot be done in the design in which the driving effort is transmitted through the springs.



CUT-AWAY VIEW—STANDARD SIX REAR AXLE



CUT-AWAY VIEW—MASTER SIX REAR AXLE

The Differential

In rounding a turn, it is obvious that the wheel on the inside has the shorter path to follow. In wagon construction for example, all the wheels are free to turn on their axles and they therefore automatically accommodate themselves to the different distances they have to cover; hence, the inside wheels rotate a fewer number of times (cover a shorter distance) than those on the outside.

This is not true of the rear wheels of a motor car, although it is of the front ones. In the former case they are keyed fast to the axle shafts and must turn with them. As a result, in rounding a turn, one wheel would slide or scrape around, were not some device employed to eliminate this action by automatically decreasing the speed of the inside wheel.

This requisite is met by the use of the differential, which allows one rear wheel to rotate a greater number of times than the other. Thus, when a car is running along a straight stretch of road, both rear wheels roll at the same rate of speed—or approximately so—and cover the same distance, but when turning a corner the inside wheel rotates at a slower rate and therefore covers a shorter distance. It is this device, also, that permits of one of the rear wheels, when it is jacked up, being driven while the other remains at rest.

Briefly, the differential enables the rear wheels to turn simultaneously at different rates of speed whenever this may be necessary.

Adjustment

The position of the differential and driving gear with respect to the driving pinion, may be adjusted by removing the cover plate on the rear of the housing, and moving the lock keys entirely out of the slots in the adjusting nuts at either side of differential case. Loosen nuts on studs which hold the bearing cap. Adjusting nuts may now be turned but they should be turned a like amount. By means of these adjusting nuts differential can be moved toward or away from the pinion. When proper adjustment is secured, replace locks, tighten nuts on studs and replace cover plate.

Adjustment should be made by an experienced mechanic and in case of trouble, car should be taken to nearest Buick dealer or Authorized Service Station.

The differential and its bearings run in a continual oil bath introduced through the filler plug in the axle housing. The old oil should be drained off, differential washed out with gasoline or kerosene and fresh oil introduced twice a season.

Rear Wheels

The rear wheels in Standard Six models rotate on Hyatt roller bearings, and in Master Six models, on New Departure ball bearings, these requiring no adjustment. The bearings are lubricated through a grease plug in the hub flange and should receive this attention every 1000 miles.

In Standard models, the wheels are attached to the tapered ends of axle shafts and driven by keys in shafts and hubs. In Master models, the wheels are held on ends of axle housing by means of large hex nuts and locked with special lock washers.

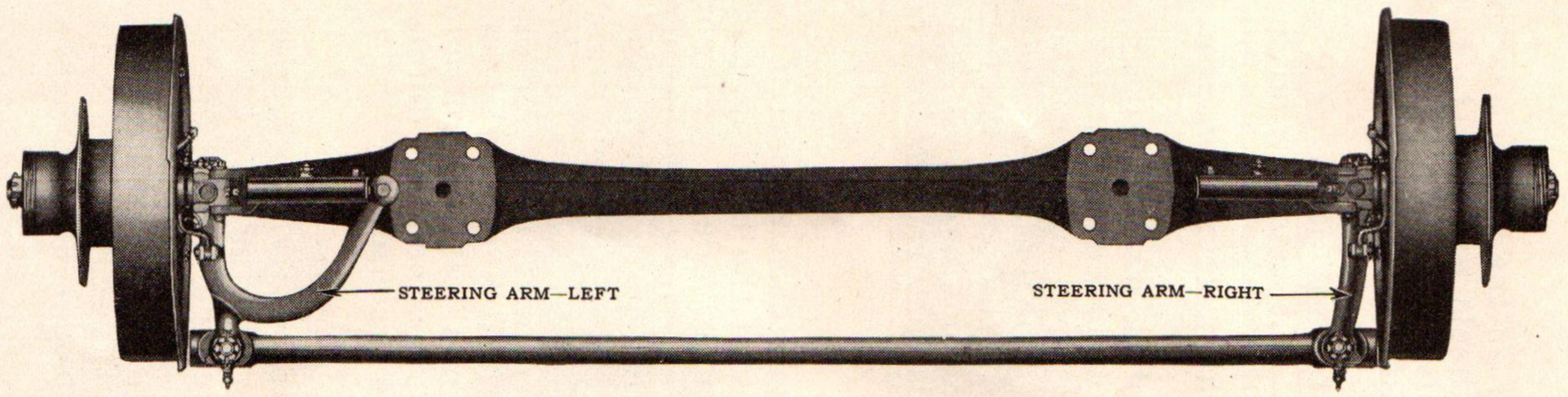
FRONT AXLE

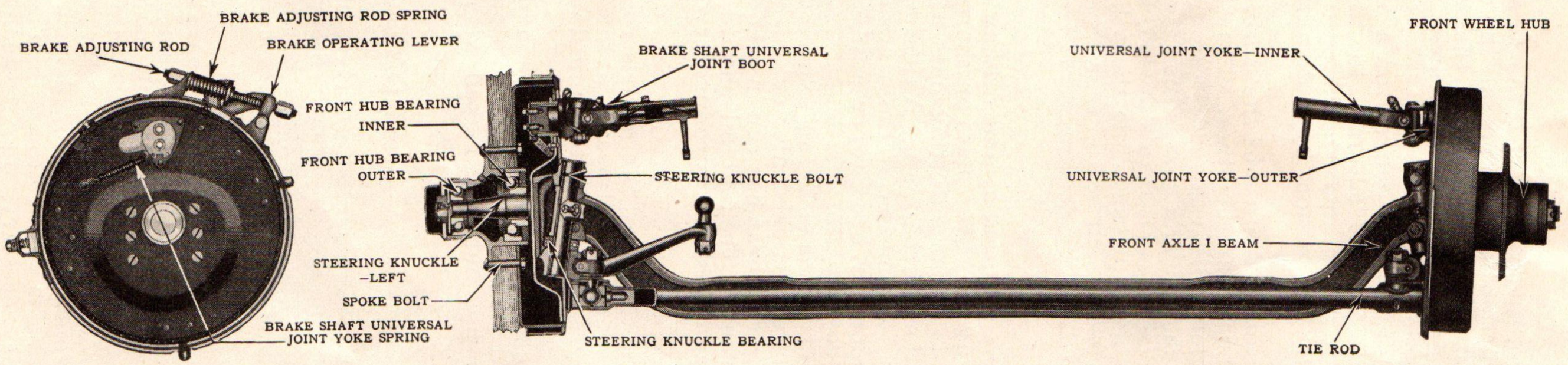
The front wheels are mounted on steering knuckles pivoted to the front axle, so that they may be turned by the steering gear. Steering arms attached to the knuckles are connected by an adjustable tie rod, and the left steering arm has a third arm which connects to the steering gears by means of the steering connecting rod.

Tie Rod Adjustment

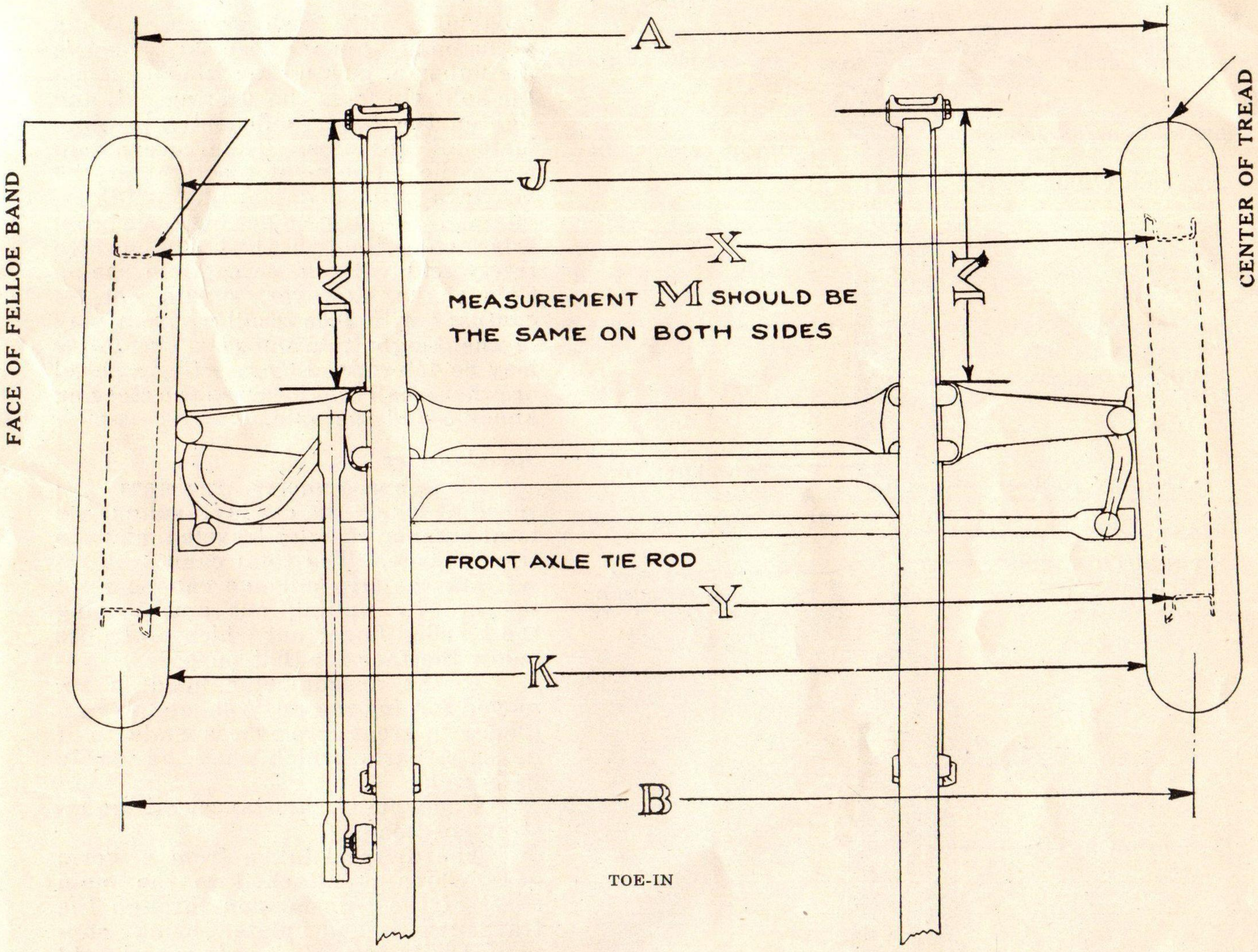
The front wheels do not stand exactly parallel but are set at an angle, and kingbolts are also set at an angle. These angles have been carefully figured to provide easy handling of the car. Reference to the illustrations will indicate the proper alignment of the front wheels.

Measuring at the inside corner of the rim base, the distance between the wheels at front side should be 3/16 inch less than at the rear. If this measurement is made between tire centers, the difference should be 5/16 inch, or if between inside faces of tires, it should be ¼ inch. This setting is called "toe-in." The wheels are correctly set at the factory, but should realignment be necessary, due to accident, slight adjustment may be made by shifting shims in the tie rod ball stud sockets and greater adjustment by resetting the steering arms.

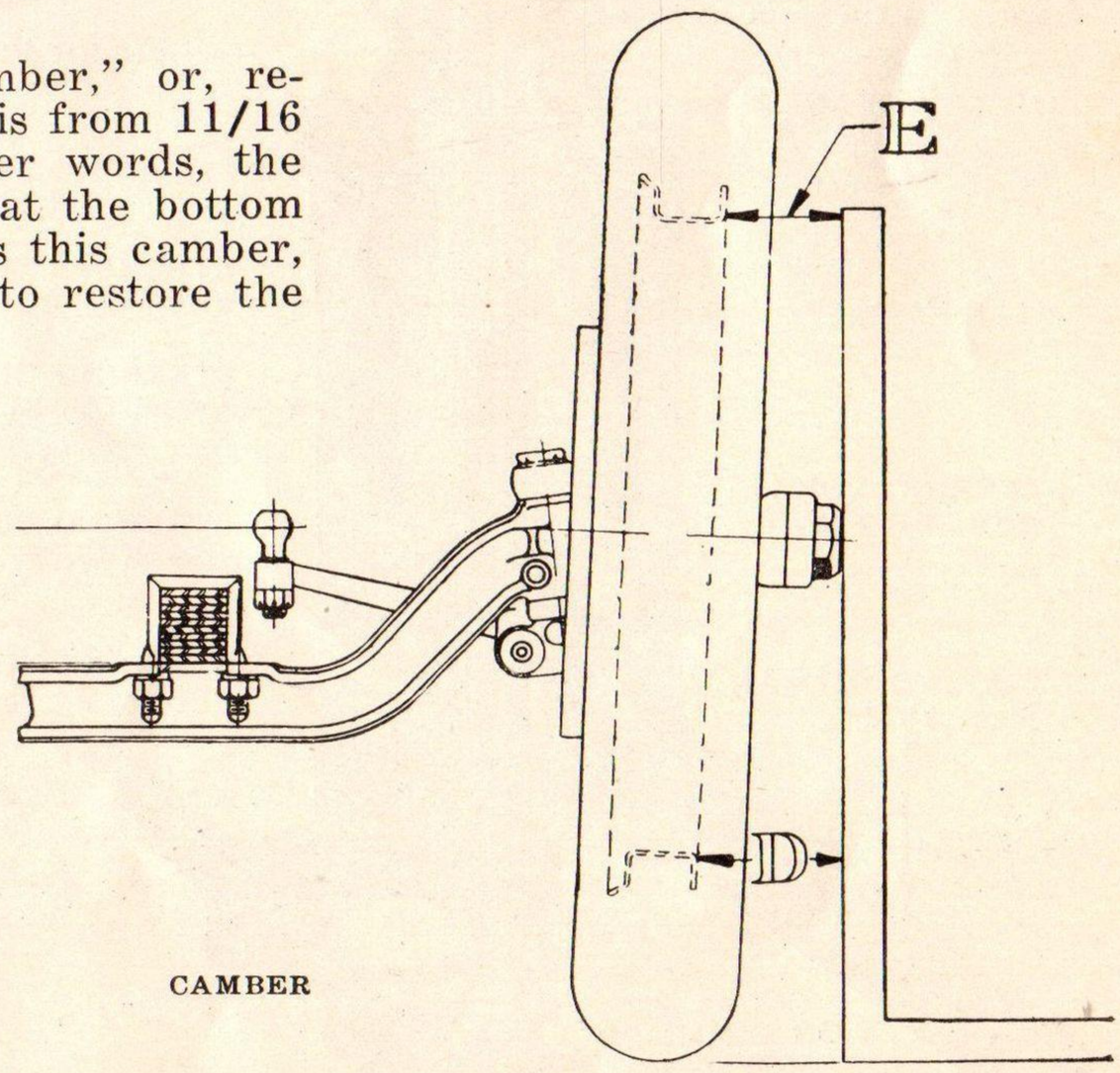




FRONT AXLE ASSEMBLY



The front wheels are also set with a "camber," or, referring to the illustration, the measurement "D" is from 11/16 inch to 15/16 inch greater than "E" or in other words, the wheels are from 1⅜ inches to 1⅞ inches closer at the bottom than at the top. If accident or collision changes this camber, it is necessary to straighten the axle or spindles to restore the original setting.



CAMBER

Front Wheels

The front wheels rotate on ball bearings, of which there are two in each hub. The bearings are lubricated through a grease plug in the hub flange, and by filling the hub caps with soft cup grease. In mounting the wheels, care should be exercised to thoroughly fill the bearings with grease, and also the space between the bearings.

Bearing Adjustments

The front wheel bearings require adjustment from time to time, as well as periodical inspection, cleaning and

WARRANTY

The automobiles furnished by the Buick Motor Company are warranted to be free from defects in material and workmanship under normal use and service, our obligation under this guarantee being limited to making good at our factory any part or parts thereof, which shall within ninety days after delivery to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective; this guarantee being expressly in lieu of all other guarantees expressed or implied, and of all other obligations or liabilities on the part of the Buick Motor Company, and we neither assume, nor authorize any person to assume for us any liability in connection with the sale of Buick automobiles.

This guarantee shall not apply to any Buick automobiles which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect their stability or reliability, nor which have been subject to misuse, negligence or accident.

The Buick Motor Company makes no guarantee whatever in respect to tires, rims, ignition apparatus, horns or other signalling devices, starting devices, batteries, speedometers or other trade accessories, inasmuch as they are usually guaranteed separately by their respective manufacturers.

The Buick Motor Company reserves the right to make changes in design or add any improvements on Buick cars at any time without incurring any obligation to install same on cars previously purchased.

BUICK MOTOR COMPANY
Flint, Michigan

ORDERING BUICK PARTS

For the benefit and convenience of owners, Buick Authorized Service Stations have been established throughout the country. These places carry a supply of genuine Buick parts, and all requests for parts should be placed with them. If some particular part is not available, the dealer can obtain it promptly from the factory branch or distributor.

When ordering parts from the dealer or Service Station, it is absolutely necessary that the following information be given:

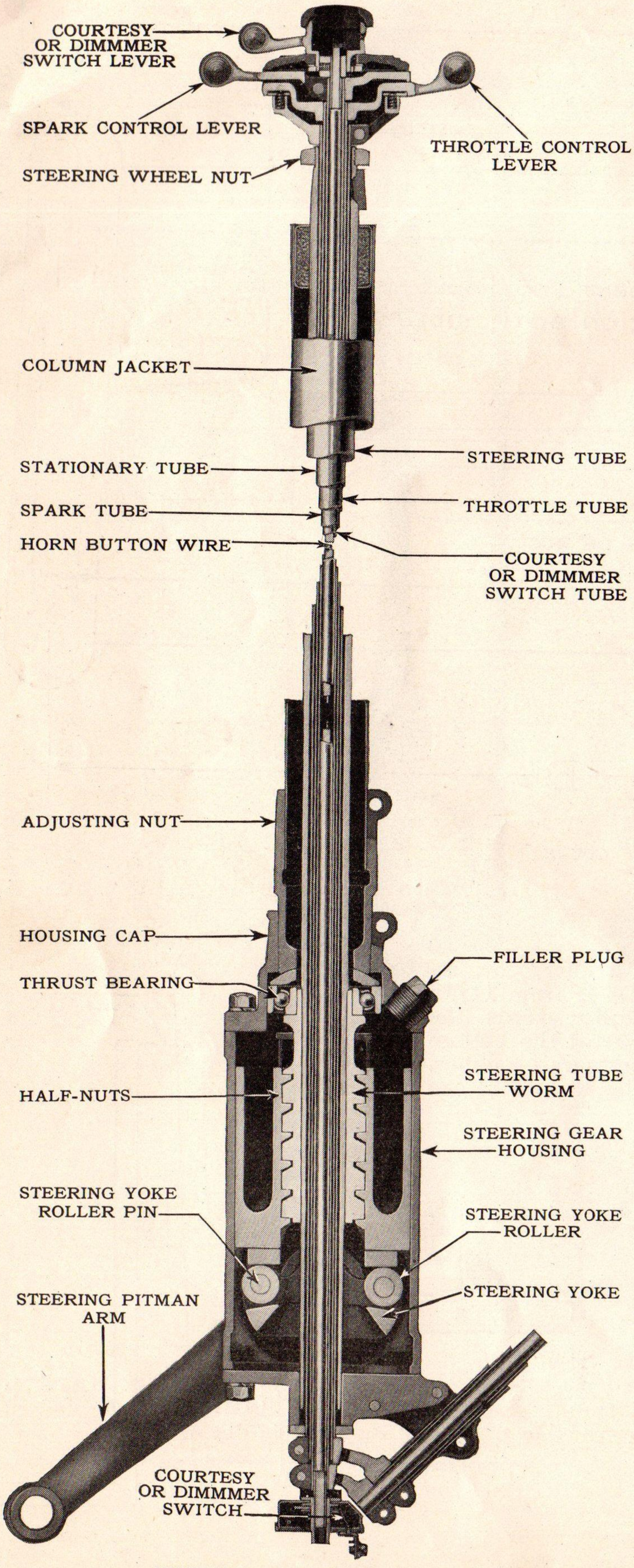
1. The car serial number (to be found on plate on right side member under front fender).

2. Quantity.

3. Part name.

4. State year, model and style of car (i. e., touring, roadster, etc.).

5. Shipping directions. Write name and address **accurately.** Give city, state and method of shipment: Parcel post, express or freight.



SECTIONAL VIEW—STEERING GEAR

repacking with fresh grease. When adjustment appears necessary, remove the hub cap, jack up the wheel, extract the split pin from the bearing nut, and tighten the latter sufficiently to eliminate all looseness. Take care not to make the adjustment too tight or the bearings will be damaged. In determining if the adjustment has been properly made, the wheel should revolve freely and without perceptible shake. This shake, however, should not be confused with that resulting from play in the kingbolt bushings. The latter may be determined by inserting a chisel or other small tool between the steering knuckle and the axle.

Speedometer

The speedometer registers the speed at which the car is traveling, the total number of miles traveled, and the trip mileage. The total cannot be reset, but the trip mileage can be reset to zero by pulling out and turning the knurled finger nut which protrudes below the face for that purpose.

If the speedometer head is removed for any reason, it should be handled with great care as it is made up of delicate parts which may be easily damaged.

Under no circumstances oil the instrument head.

The drive is taken from a worm gear which is attached to the main shaft of the transmission through the transmission end plate, being supported with suitable bearings and held in place by a set screw.

Steering Gear

The type of steering gear used is of the worm and split nut form of construction, and is both simple and reliable. Briefly, it consists of a double threaded tube engaging with two half-nuts, the whole being enclosed in a casing mounted on the frame.

A steering gear of this type is both positive and free in action and is designed to prevent transmission of road shocks to the steering wheel. The worm has ample threads to ensure long life, and frequent adjustment to compensate wear is therefore unnecessary. In addition, the half-nuts have hardened steel thrust blocks at their lower end which still further ensures against wear.

Adjustment

The steering wheel tube is provided with a large ball thrust bearing, mounted in the adjusting nut, the latter being screwed into the upper part of

the steering gear case. To compensate lost motion or looseness in the steering gear, loosen the clamp bolts and screw the adjusting nut down, securing tightly the clamp bolts when adjustment is completed. There should not be more than one-half inch lost motion at the steering wheel rim.

Do not screw the adjusting nut down so far that stiff steering results. When making the adjustment, it is advisable to jack up both front wheels, frequently turning the steering wheel to note whether steering is becoming stiffer than desirable.

Lubrication

Periodical lubrication of the steering gear and its connections is essential; for, in addition to minimizing wear, this lubrication will make for easy steering.

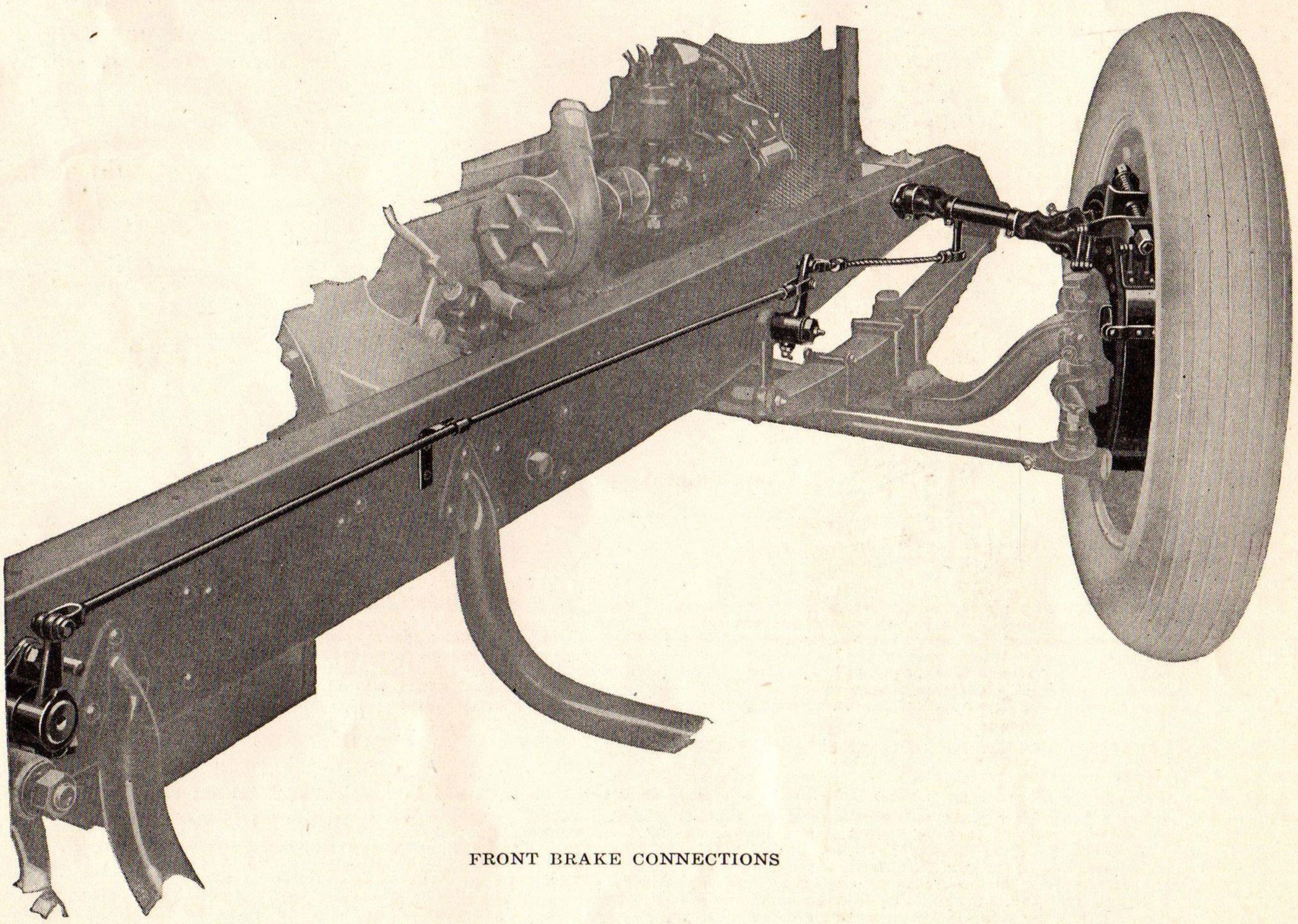
An oiling plug is provided in the steering gear housing and this should be kept filled with steam cylinder oil.

Zerk connections are provided at both ends of the steering connecting rod and on each of the tie rod ends and kingbolts and these should be filled with soft cup grease every 500 miles.

The spark and throttle bevel gears at the bottom of the steering gear should receive a little engine oil from time to time.

BRAKES

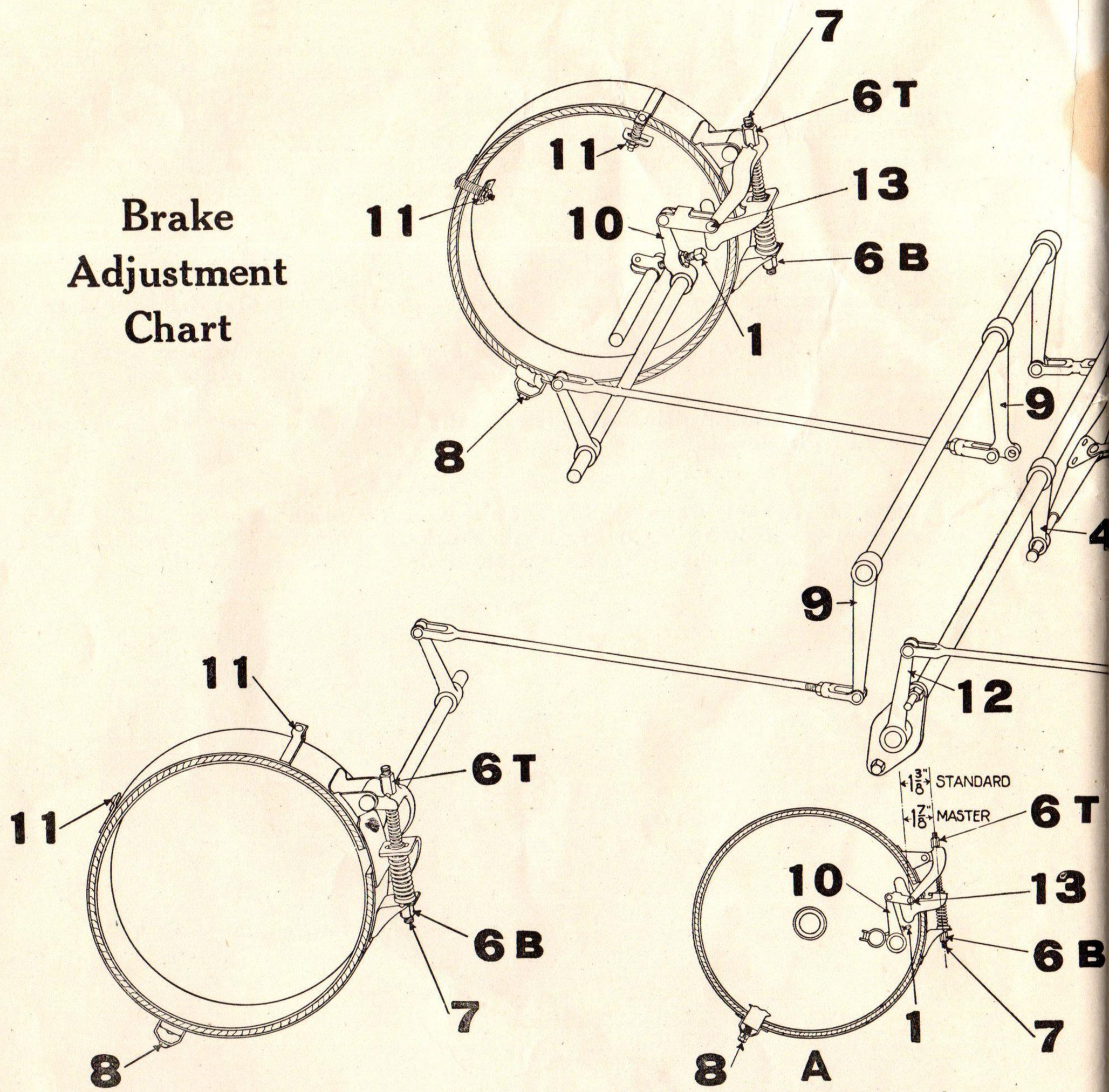
The four-wheel brake system supplied on all Buick cars for 1926 is of the same general design and construction as used on all Buick cars for two years, its efficiency and satisfactory performance having been demonstrated under all driving conditions.



FRONT BRAKE CONNECTIONS

In addition to greater safety in general driving and the reduction of skidding to a minimum, these brakes provide a means in emergencies for stopping in much shorter distances than with rear brakes only. **It is not expected, nor intended, that this brake installation shall be used for "stunt" purposes, or contrary to the established principles of safe and sane driving.**

Brake Adjustment Chart



Maximum braking effect and smoothness of operation, as provided in the design of the four-wheel braking system, are obtained when the following four conditions exist:

Pedal Travel—Pedal should travel five inches, and this travel will be had if band clearances and lever positions are correct.

Equalizer Action—When brakes are in release position, equalizer bar should be directly under and parallel to the long cross brakeshaft. When brakes are applied, equalizer bar should still be parallel to the shaft.

Band Clearance—A clearance of approximately 1/32 inch between lining and drum should be had for entire circumference.

Lever Positions—When brakes are in release position, levers should return to stops provided.

ADJUSTING BRAKES AND CHECKING RODS AND LEVERS

1. Jack up the four wheels.

2. Lubricate all working parts of the brake system. Care must be exercised in keeping all lubricant away from linings.

3. Try all working parts to determine if each shaft and connection is free. When brakes are released, foot pedal must come to within 3/16 inch of toeboard and levers should snap back against their stops as follows:

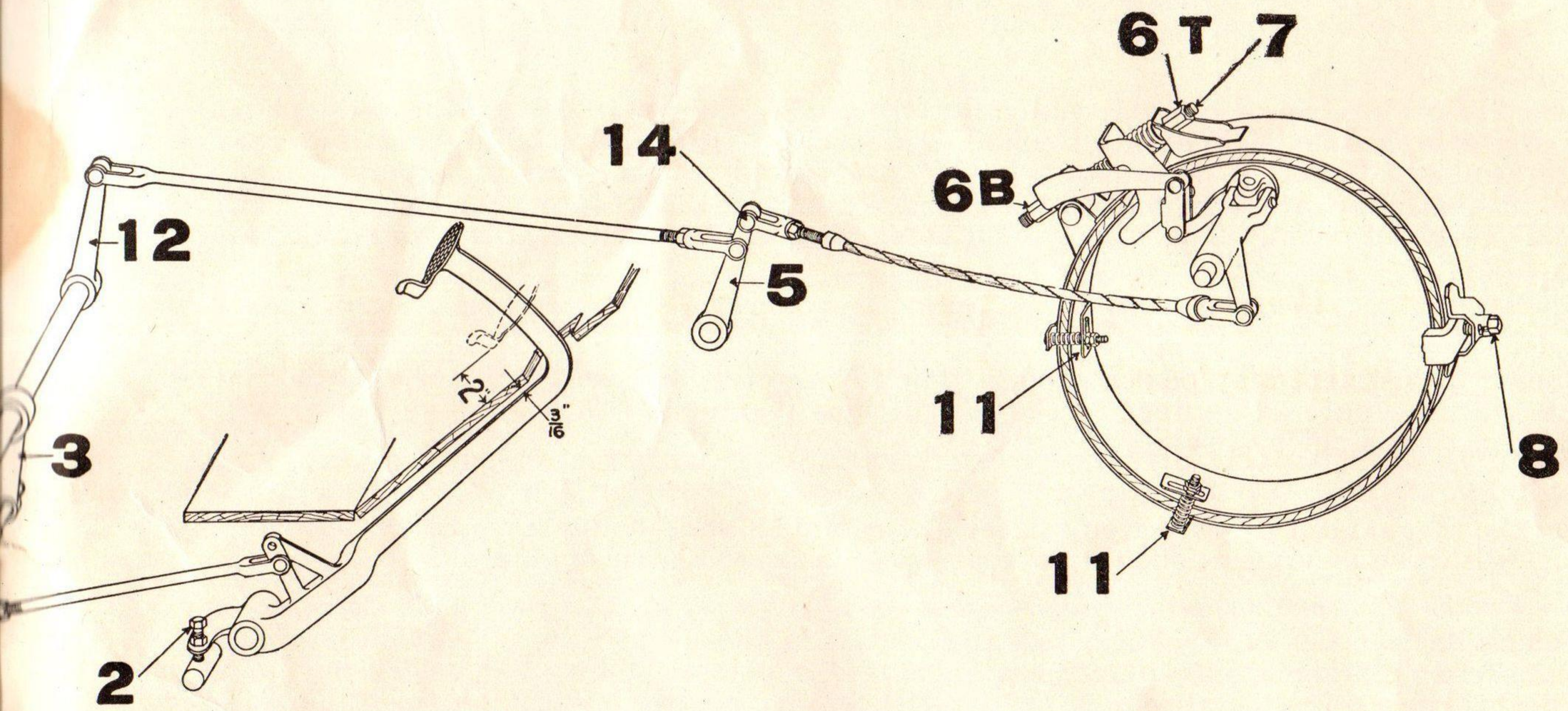
Rear brake lever stop screw No. 1 should return against clamp on hand brake camshaft. Correct setting of this stop screw will bring pin No. 13 in a position 1⅜ inches from center line of adjusting rod No. 7 for Standard and 1⅞ inches for Master models, this pin being located toward the axle. See view A.

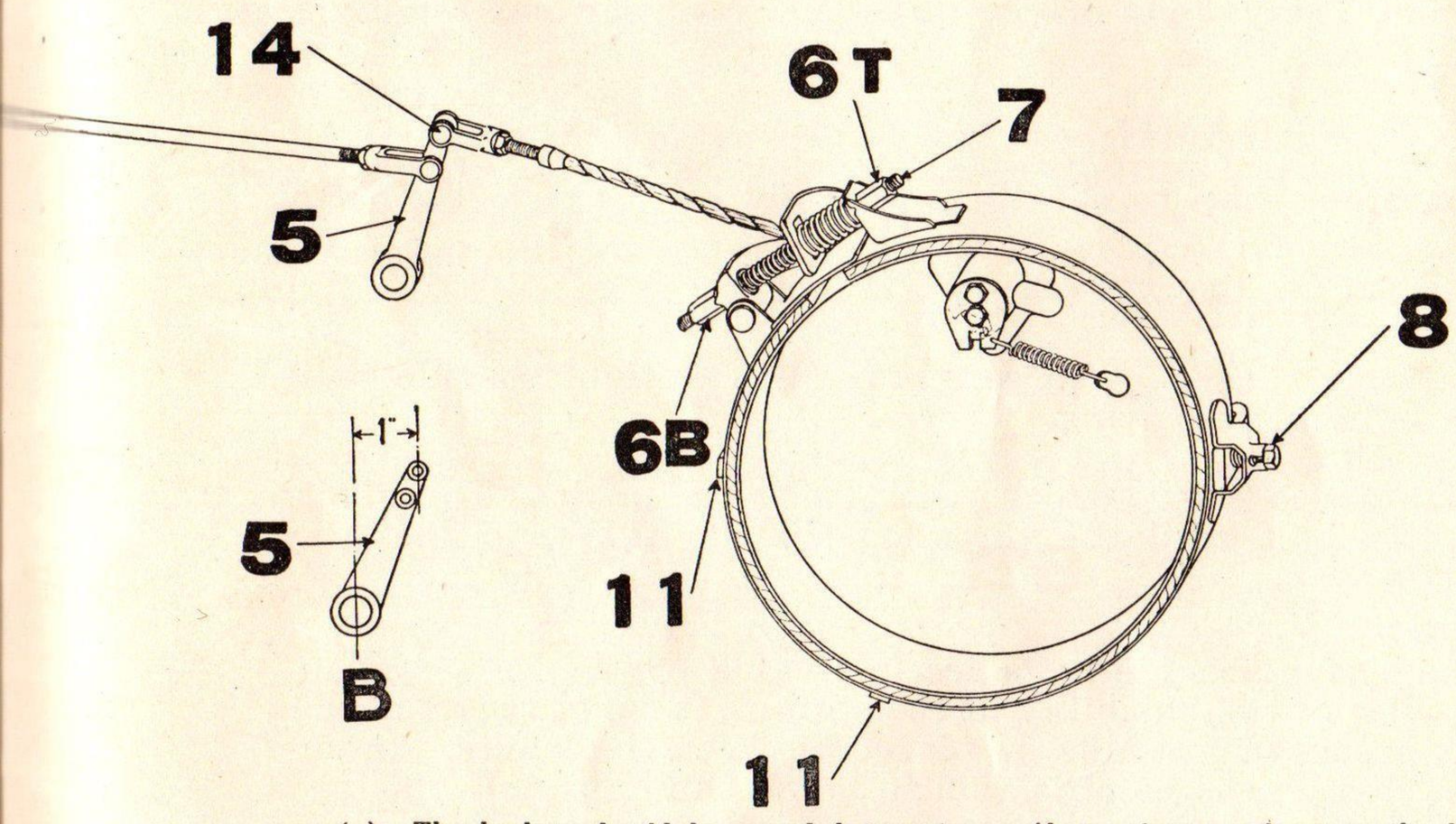
Stops for front brakes are located inside the brake drum and are not adjustable. To determine if front brakes return to full release, disconnect pin No. 14 and work brakes by hand, allowing them to snap into release position. Lever No. 12 should return against stop.

4. **Adjustment of Brakes**—The brake pedal should travel approximately five inches and the equalizer must set parallel to the supporting shaft when the brakes are released or locked. To obtain this proceed as follows:

(a) Release right front and rear brakes by turning adjusting nuts No. 6T and 6B and adjust left front and rear brakes as follows:

(b) Adjust at the brake anchor by turning adjusting screw No. 8 so that when the wheel is revolved the lining clears the drum at this point by 1/64 inch, then adjust brake band guides No. 11 on the lower side of front brakes and upper side of rear brakes to get approximately 1/32 inch clearance.





(c) The brakes should be rounded to get a uniform clearance between the lining and the drum. If flat spots are found in the bands, use a brake rounding tool between the lining and the drum but do not use a screwdriver or chisel.

(d) Obtain correct pedal travel (approximately 5 inches) and square pulling movement of equalizer by turning adjusting nuts Nos. 6T and 6B at the left front and rear brakes.

(e) **Note:** The clearance between the lining and the drum is governed by **two nuts,** No. 6T for the longer portion of the brake and No. 6B for the shorter portion. **Both long and short ends of brakes must have same clearance.**

(f) Adjust right front and rear brakes same as mentioned in paragraphs (b), (c) and (e) so that the right and left brakes in each set hold alike.

Lock nuts must be locked with proper wrenches. Do not use pliers.

5. If, in an exceptional case, the correct brake band clearance is not obtained by the foregoing adjustments, brake rods and cables should be checked for length. Proceed as follows:

Lever No. 12 must set against stop when brakes are released.

Brake Pedal—To get the proper position for the brake pedal, remove pin from yoke at rear end of rod and adjust the pedal by means of screw No. 2 for clearance of 3/16 inch between the toeboard and the pedal.

To Check Rear Rods and Levers—Lever No. 3 must set parallel to lever No. 4. If not, remove pins from adjusting yoke ends at levers No. 9 and with levers No. 10 and 12 against the stops, turn the yoke ends so that the holes in levers and yoke ends are in alignment. This will cause the equalizer to set parallel to the supporting cross shaft.

Brake Pedal Rod—With lever No. 12 setting against stop and lever No. 3 hanging straight down and with equalizer parallel to supporting shaft, turn adjusting yoke so that holes in yoke end and the center hole in equalizer are in alignment, and replace pin. This rod should be just short enough to take up any looseness between the equalizer and levers Nos. 3 and 4.

To Check Front Rods and Levers—With lever No. 12 setting against stop, the front pull rod should be of such length that the center of upper pin in lever No. 5 is one inch ahead of a vertical line through the center of the lever retaining bolt. See view B.

To Check Cables—With the front rods of the proper length as mentioned above, turn the wheels to the extreme right and adjust the right cable so that pin No. 14 can be replaced with the fingers, this is to be done, of course, with the brakes released and lever No. 12 and the front brakes setting against their respective stops. Adjust the left cable in like manner with the wheels turned to the extreme left.

Service Brakes

The service brakes are of the external contracting type and operate from the right pedal in the driving compartment. When this pedal is depressed, brakes on both front and rear wheels are applied. External contracting brakes are used because years of experience has demonstrated that they are the most satisfactory for service brake purposes, and are both quickly and easily adjusted. The brake band assemblies are interchangeable, front and rear.

Adjustment

Service brakes should require little adjustment and that little, only such as will follow the natural wear of the brake lining.

Whenever adjustment may be required, a Buick Authorized Service Station should be consulted, and the procedure as outlined in the instructions included with the brake chart, will provide the most satisfactory brakes.

Lubrication

The brake mechanism is lubricated by Zerk connections and should have attention every 500 miles. All brake clevis pins should be kept well lubricated with engine oil.

Emergency Brakes

The emergency brake in the Buick braking system is the usual internal expanding type which years of experience has demonstrated as the most satisfactory for emergency purposes. The brake is operated through the hand lever in the driving compartment, and is applied only at the rear wheels.

The emergency brakes should require little attention, and this little, the adjustment necessary in compensating for natural wear of the linings. By disconnecting the end of the emergency brake pull rod, and turning the yoke in proper direction, this wear may readily be taken up.

FRAME

The frame requires no attention other than to see that the body bolts are tightened as may be necessary.

SPRINGS

Broken springs are almost invariably caused by loose spring clips or tight shackle bolts, or subjection to some unusual strain in careless driving.

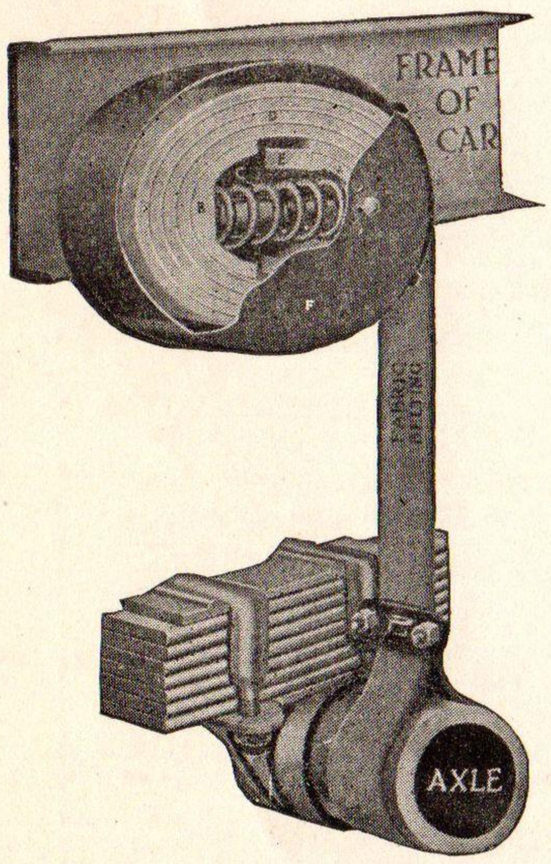
Keep the spring clip nuts tight at all times.

Spring eyes and shackles are subject to wear which will cause a rattle. To correct, loosen the shackle bolt nut and tighten bolt until the threaded shackle takes up the play, then tighten nut.

Lubrication

The spring shackle bolts are lubricated by the Zerk system.

In view of the flexibility of the springs, it is not recommended that oil, grease or graphite be placed between the leaves. In case of squeaks, there is no objection to oiling the clips and placing a small quantity of lubricant at the ends of the spring leaves.



SNUBBER

SNUBBERS

Front end snubbers are included as standard equipment on all Master Six models having 128-inch wheel base.

These should be readjusted after the new car has been driven approximately 500 miles and lubricated every 5000 miles.

Remove the cup or housing by taking out cap screw in the side of housing; then lubricate the stud in main casting, coil spring and face of sleeve casting with graphite grease of a good quality, but do not place any grease between the coils of belting.

Replace cup or housing and tighten cap screw.

WHEELS

The wheels are of the standard artillery type with large diameter spokes and large hub flanges.

The demountable rims are of the bolted-on type and may be removed from the wheels with the tire by the following operations:

Remove the dust cap and nut from air valve stem. With the rim wrench remove all of the nuts from the wedge bolts. Insert screwdriver end of the demountable rim wrench between the felloe and wedge to pry loose and remove wedges. The tire rim may then easily be removed.

To Replace Rim

In replacing the rim and tire, the foregoing operations will, of course, be reversed. Be sure that the wedges are drawn up evenly until all are tight, and after driving several miles, tighten again, as this will help to avoid worn wedges.

To Remove Tire from Rim

First, see that the tire is fully deflated before attempting the operation.

To take the rim out of the tire, lay rim and the tire flat with the notched side of driving plate up. Unlock rim by inserting screwdriver end of rim wrench into locking plate and turn until clear of driving plate. Insert screwdriver end of rim wrench in the notch in driving plate and pry the plate clear of the hole. Continue this operation until the end of rim which carries the driving plate is free from tire and rests on the side of the other end. With screwdriver end of rim wrench, pry the rim from the tire for the full circumference, holding the tire down firmly with the foot.

To Replace Tire on Rim

Turn the rim over so that the end with the valve stem hole is on top. Insert valve stem in hole in rim, work both tire beads into the rim for a distance to within approximately ten inches of the other end, turn tire and rim over, prying in on rim and forcing it into position with the foot. With screwdriver end of wrench, pry the rim into place so that the ends butt together. Lock rim by means of rim wrench and the tire is then ready for inflation.

TIRES

All 1926 models are equipped with "low pressure," straight side, cord tires, size 31x5.25 on Standard Six models and sixe 33x6 on Master Six models.

This equipment increases tire mileage, and, due to the low air pressure carried, absorbs small road shocks, thereby adding greatly to the length of life and riding qualities of the car.

Punctures may not be avoided, but a properly inflated tire is less likely to pick up nails than one under-inflated. Bruises, cuts and sand boils can generally be avoided by careful driving, but should be repaired as soon as they appear. Tires should not stand in gasoline or oil as the rubber will be softened. If the car is to be out of service any length of time, remove tires, deflate to a few pounds pressure and store in a cool, dark place. A large share of all tire trouble is due to lack of proper pressure; therefore, a gauge should be used and the tire inflated to recommended pressure at all times.

Tires are one of the largest items of upkeep, and by careful use the maximum mileage will result. After running over oiled roads wash the tires off with gasoline. Applying brakes too quickly or taking corners at high speeds will cause undue wear and damage.

Keep the front wheels in proper alignment.

When driving in car tracks, the rubber is cut off the tires and the sharp bending action on the side walls of the tires quickly breaks them down.

Attend to all small cuts at once.

Keep out of ruts.

Avoid scraping against curbs.

Use tire chains when necessary and be sure that the links are not drawn too tightly.

Do not drive with chains on dry roads.

Avoid bumps and severe jolts, quick starts, sudden stops and skidding.

Keep all brakes adjusted evenly.

Tire Pressure

Keep a tire gauge and test the air pressure frequently.

It is essential that this be maintained to the figure recommended in the following table, for each model, in order that satisfactory riding qualities may be had as well as maximum life of the tires.

Table of Recommended Tire Pressures

Model	Front	Rear	Model	Front	Rear
26-20	32	34	26-45	32	32
26-24	30	30	26-47	34	36
26-25	32	32	26-48	34	34
26-26	30	32	26-50	34	42
26-27	34	40	26-51	34	36
26-28	32	36	26-54	30	30
26-40	32	34	26-54C	30	32
26-44	30	30	26-55	34	36

GENERAL LUBRICATION

Systematic lubrication is essential to economical and satisfactory motor car operation and too much emphasis cannot be placed upon its importance. Buick owners are provided with a product of mechanical excellence but it must be realized that like any other piece of good machinery, it performs at its best only when it is properly lubricated. Every effort has been made to make Buick lubrication as simple and as automatic as possible as well as to make the lubrication points unusually accessible and convenient.

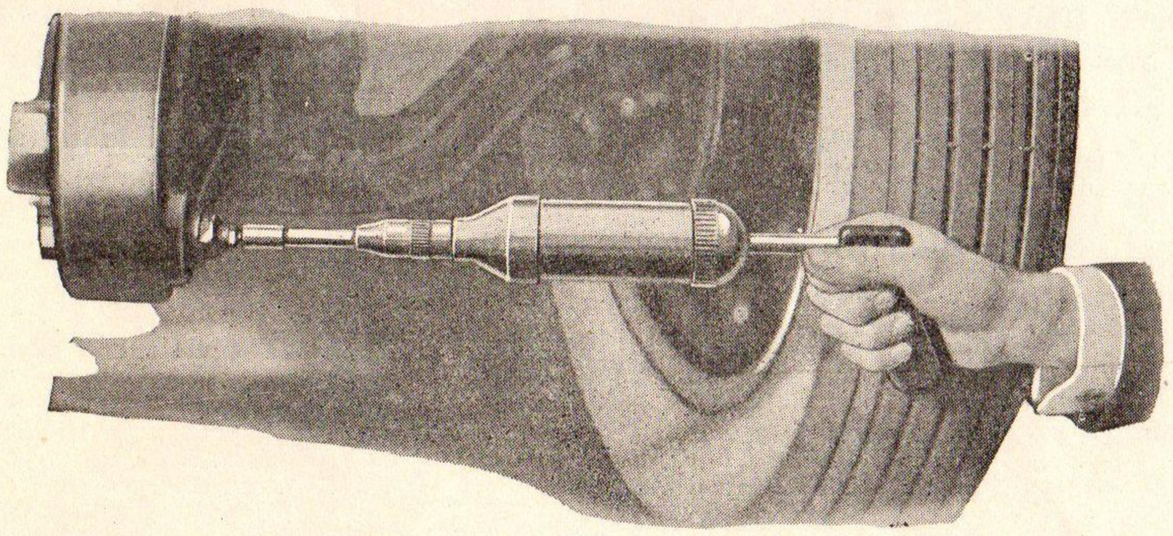
ENGINE

To ensure the proper lubrication of the engine, it is advisable to check daily, the amount of oil in the crankcase, using for this purpose the oil level gauge in the upper crankcase on left side of engine. The level should be maintained at the "full" mark on this gauge, and should it be necessary to add any oil, fill through the front breather or oil filler tube on left side of engine. For detailed information on "Engine Lubrication," see page 14.

The capacity of the oiling system in the Standard Six engine is 6½ quarts, including oil pan, cleaner, and all oil lines and pockets through the system, and in the Master Six engine, the capacity is 8 quarts. When draining and refilling the crankcase, however, the amount of oil necessary to show "full" on the oil level gauge is 5 quarts in the Standard Six and 6 quarts in the Master Six engine.

Zerk Lubricating System

All 1926 Buicks are equipped with the Zerk high pressure lubricating system which is clean in handling and both efficient and easy in operation.



ZERK COMPRESSOR

It consists of a compressor, and ball-check valve fittings located at the various points requiring lubrication and these fittings are so designed as to provide maximum convenience in lubricating the car.

Operating the Compressor

Before using the compressor, fittings should be wiped free of dust or dirt, to make sure that they will not be clogged or dirt forced into the bearings.

To force grease to the bearing, it is necessary only to place end of compressor on the fitting and push the handle, which may be accomplished very readily with one hand.

When pressure contact is made the rim of the nipple seats in the cup of the nozzle and effects a leak-proof seal at any angle within 25 degrees of the axis of the nipple.

During the forward stroke of the handle, the piston ejects the lubricant in the hollow stem through the nozzle, containing ball check, directly into the nipple.

The hollow stem is automatically refilled by vacuum suction, through an inlet which is opened by the piston at the end of the return stroke. To ensure full opening of the inlet, it is important that a complete return stroke be made.

Filling the Compressor

Remove the cap, pull out plunger and fill barrel with a good grade of soft cup grease, not too full but packed solidly to avoid trapping of air. After compressor is filled, it is necessary to prime the high-pressure unit. This is accomplished by placing nozzle against some solid object and pushing forward several quick and complete strokes until lubricant is worked through the high-pressure nozzle unit.

Lubricating Points

The charts shown on pages 30 to 33 will indicate the points in both Standard and Master Six models requiring lubrication, the recommended intervals and the kind of lubricant to be used. It should be realized that oily surfaces quickly collect dirt which, if reaching the various working parts, will cause premature wear. It is advisable therefore to keep all points of lubrication as free from dirt as possible.

For your convenience and ready reference the following table will call attention to the various lubricating points, the frequency of attention and the proper lubricant.

EVERY 500 MILES

Soft Cup Grease
Using Zerk Compressor

Front end of front springs, 2.
Front spring shackle bolt, upper, 2.
Front spring shackle bolt, lower, 2.
Front brake universal joint yoke block, 2.
Front brake universal joint yoke lever, inner, 2.
Kingbolts, 4.
Front brake disc brackets, 2.
Front axle tie rod, 2.
Drag link, front end, 1.
Drag link, rear end, 1.
Front brake pull rod idler lever, 2.
Distributor, 1.
Brake pedal, 1.
Clutch pedal, 1.
Clutch release bearing, 1. Hand grease cup only.
Brake shaft outside bracket, right, 1.
Brake shaft outside bracket, left, 1.
Brake cross shaft idler lever, 1.
Brake cross shaft double bracket, 1.
Cross member brake bracket, right, 1.
Cross member brake bracket, left, 1.
Rear spring shackle, 2.
Rear spring front end, 2.
Rear spring block, 2.
Rear spring, rear end, 2.
Rear spring seat to axle, 2.
Rear brake camshaft bracket, inner, 2.—Master Six only.
Rear brake camshaft in brake spider, 2.—Master Six only.

Engine Oil

Spark control gears and shaft, a few drops.
Hand brake lever pins, a few drops.
Brake clevis pins.
Generator housing, rear, a few drops in oil cup.
Emergency brake lever, a few drops.
Starter pedal shaft (through cover), a few drops.

EVERY 1000 MILES

Wheel hubs, 4, soft cup grease. (Zerk connections may be placed in threads of hubs and Zerk compressor used to fill hubs.)

Steering gear. Fill through plug hole with steam cylinder oil.

EVERY 2000 MILES, OR AT LEAST TWICE A YEAR

Remove filler cap on the left side of transmission case and fill to level of opening with steam cylinder oil. Inspect frequently.

Remove plug in rear of rear axle housing and fill to level of opening with steam cylinder oil. Inspect frequently.

Pinion shaft bearings, remove plate and insert soft cup grease.

Wipe out distributor head with cloth moistened with vaseline jelly. Do not use sandpaper or emery cloth.

Fan hub. (Remove screw, drain old oil and refill as directed on page 18 with engine oil every 5000 miles.)

GENERAL CARE OF THE CAR

Care of the Finish

The bodies of all 1926 models are finished in Duco, and the outstanding advantage of this finish to the car owner is the ease with which it may be kept clean and new looking. Duco is the hardest, toughest and most durable automobile finish ever developed, but if the owner desires to keep his car looking as it did when delivered to him, the finish must not be abused and the following cautions should be observed by the purchaser of a Duco-finished car:

The car should be cleaned at reasonable intervals, and while possible in some cases to clean with a dry cloth, it is usually best to wash the finish if the car is very dirty, particularly if grit or small sand particles may be present in the dirt. Should the finish, after washing, appear gray or white, thorough polishing is required and Duco Polish No. 7 is recommended for this purpose.

Care should be taken that no alcohol or anti-freezing mixture containing alcohol is spilled on the Duco finish, but if this does occur, it should be immediately wiped off.

The Duco finish will usually resist the action of dilute acids such as are present in battery solutions, but it is advisable to exercise care in keeping any acid, dilute or full strength, from the finish.

Duco Polish No. 7 may be used both as cleaner and polisher. If the car is only dusty, the dust may be removed with a dry cloth, and the polish then applied. If the car is dirty, it should be washed and dried, before applying the polish. Use a dry, clean cloth in rubbing off the polish and with thorough rubbing a fine luster will be obtained. If in cleaning and rubbing the finish traces of the color remain on the cloth, the owner need not be alarmed, as this represents a weathering or wearing action and does not appreciably affect the life of the finish.

Should the finish be damaged in any way, the owner should insist that repairs are made only by an authorized Duco re-finishing station.

Closed Car Upholstery

The upholstery material in closed cars is exposed to dirt and weather conditions which will cause wear and deterioration unless the proper care is given the upholstery. It is desirable at least once a month or more frequently if necessary, to clean the upholstery with a vacuum cleaner and a whisk broom.

If the material becomes spotted, Energine should be used for removing the spots, and when the Energine has thoroughly evaporated, apply a hot flat iron wrapped in a wet cloth. Steaming the fabric and rubbing lightly against the nap will raise the nap to its normal position.

Floor carpets may be cleaned by rubbing with a sponge soaked in gasoline.

Open Car Upholstery

Leather upholstery may be washed with pure soap and water, rinsing off the soap and drying with a moist chamois. Never use gasoline on leather upholstery.

Squeaks and Rattles

The body is attached to the chassis by hold-down or "body" bolts and between the body sill and chassis frame is placed an "anti-squeak" material. As the car is driven and the body weight compresses the anti-squeak and the body bolts seat themselves in the wood sills, these bolts may become loose. When this condition exists, the body will move on the chassis and squeaks and rattles will result. It is advisable to inspect the body bolts once a month, at least for the first few thousand miles of driving, and tighten them when necessary.

A small amount of grease or oil applied occasionally to door locks, striker plates, hinges and dove tail bumpers will be found helpful in preventing squeaks and rattles.

Tops and Curtains

Dust or dirt on the outside of the top should be removed with a sponge and soap suds, rinsing with clear water and then drying with chamois.

The inside of the top may be cleaned by brushing briskly with the nap, using a vacuum cleaner if available. Do not brush the windows in the storm curtains; they should be wiped with soft cloth or sponge dampened in alcohol. The curtains should not be folded and laid away when wet.

Storing the Car

If the car is to be laid up for any length of time and especially in the winter, the following suggestions should be observed: Drain the water from the cooling system, then run the motor not over one minute to dry out the cylinder water jackets.

Drain the crankcase. Flush out the old oil, then refill with fresh oil. It is also well to pour a little oil into each cylinder through the spark plug hole to prevent the interior from rusting. Clean the spark plugs and dip the ends into oil to prevent rusting and replace them.

Crank the engine for about 20 seconds with ignition switch off and the throttle closed. This ensures a distribution of the oil over cylinder walls and valve mechanism.

Disconnect the wires from the storage battery and remove battery to some dry place. It is best to take the battery to a battery service station, where it may receive a freshening charge at least once a month. It is well worth while to take care of the battery.

Go over the nickeled parts with a light coating of vaseline jelly or grease to prevent rusting. This should be removed with gasoline before putting the car back into service.

Jack up the front and rear axles and remove the tires.

If the tires are to be out of service for any length of time, they should be removed from the rims. The inner tubes should be put in the casing with a small amount of air pressure and the tires stored in some cool, dark place, preferably where there is a slight amount of moisture, since if they become too dry the rubber will harden and lose its elasticity. It is a good idea to wrap tires with cloth to protect them from heat.

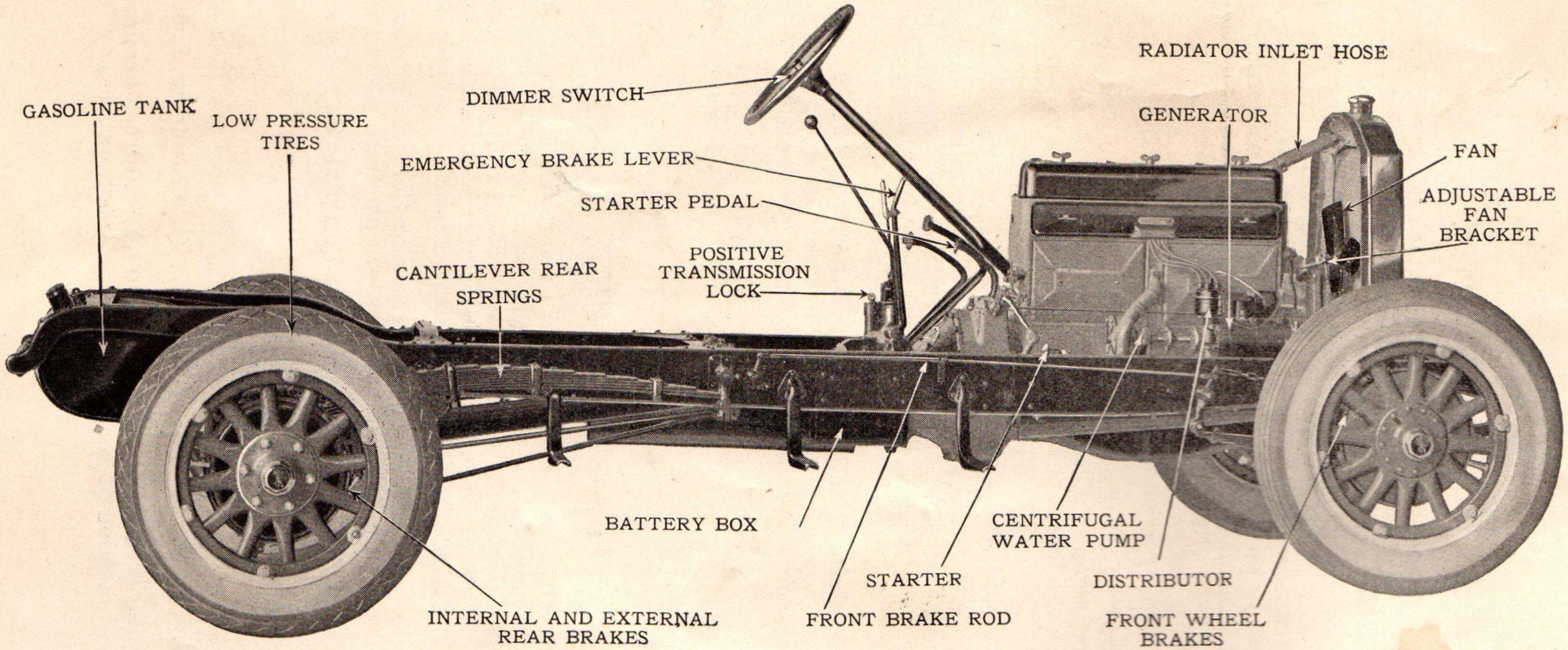
Remove all dust from top and upholstery, wash body clean, put the top and side curtains up and cover the car with heavy sheetings or a paper cover especially made for the purpose.

When putting the engine back into service again, remove the spark plugs, inject a small quantity of oil into each cylinder, crank the engine by hand for a few seconds, replace the plugs, turn the ignition "on" and after the engine has been started on its own power, run slowly for a few minutes.

FIRST AID SUGGESTIONS

In the operation of an automobile it is recognized that there may arise certain conditions causing poor performance or failure of the engine or power system to function properly and frequently the owner is not able to locate the cause from the symptoms in evidence. When this occurs and an authorized service station cannot be consulted conveniently, it is also realized that the owner should have at hand some simple suggestions which will enable him to drive the car to the service station for advice, should this be needed.

It has, therefore, been thought advisable to list in this book a limited number of suggestions which may be found of benefit to the owner in locating and correcting the minor difficulties encountered in the operation of the car. No attempt has been made, however, to include any instructions relative to the method of performing repair operations. Authorized service stations should be consulted whenever such repairs may be found necessary.



RIGHT SIDE VIEW OF CHASSIS

If the engine fails to start when cranked.

(a) Cylinders flooded with fuel by keeping choke button out too long. To correct, push choke button in completely and continue cranking with throttle closed until excess gasoline has been expelled from cylinders when ignition should occur. Not more than 20 seconds cranking should be required to clear the cylinders.

(b) No fuel in gas tank.

(c) Weak or no spark at spark plugs. The probable causes are discharged battery, loose or corroded battery terminals, burned or improperly adjusted breaker points in the distributor, loose or broken wires or connections, or spark plug points set incorrectly or fouled. The strength of the spark may be determined by disconnecting one of the spark plug connections and holding it about ¼-inch from the plug base while the engine is being cranked.

In case of a discharged battery it may still be possible to hand crank the engine and obtain sufficient spark to start. If loose or corroded terminals are found they should be tightened and cleaned. In case of burned breaker points, the metal adhering to the face of the point may be scraped off to provide temporary relief, and points adjusted to the distance shown on the distributor wrench (0.020 to 0.025). If the spark plugs are fouled, they should be cleaned and adjusted to proper gap (0.025).

If the engine stops.

(a) Examine gas tank supply, and make sure that the small vent hole in filler cap is open. If there is gas in the main tank, then test at the carburetor by depressing plunger on top of the float chamber, and if gasoline rises through the plunger hole, there is fuel in the carburetor and the system is functioning.

If no gasoline shows at carburetor, then test at vacuum tank by removing pipe plug from bottom of tank. If gasoline flows, replace pipe plug and close shut-off valve in the top of gasoline cleaner. Remove plug at bottom of strainer trap on carburetor and clean the strainer.

If no fuel flows from the vacuum tank when the plug in the bottom is removed, there is indicated either a stoppage or air leak in the line between the main and vacuum tanks, a sticking valve in the vacuum tank or dirt in the strainer at the top of the latter. To determine if fuel pipe between main and vacuum tanks is clear, disconnect at both ends and blow through pipe. The suction tube strainer in main tank should be examined when withdrawn. The strainer within top of vacuum tank may be removed by unscrewing the fitting to which main fuel pipe is attached to the tank.

(b) Test for spark at spark plugs. The method for making this test is described in a preceding paragraph under the heading "Weak or No Spark at Spark Plugs." If a good spark is obtained regularly, the trouble does not lie in the ignition system. If no spark occurs or the spark is weak, it indicates a discharged battery or loose connections. An examination should be made of wire connections at back of switch and ammeter and at coil and distributor. If these are found tight and in good condition, it is well to examine the battery terminals and ground strap.

If the engine misses regularly on one or more cylinders.

(a) The most probable cause is dirty spark plug or plugs. To locate, first idle engine slowly with retarded spark, then hold screwdriver against plug terminal and top of engine, thus short-circuiting the plug. Be careful to hold screwdriver by wooden handle, else a shock will result. Short-circuiting a plug which is not working will not change the engine speed. On the other hand it will cause the engine to slow down or stop if the short-circuit is established with a working plug. After the dead plugs have been thus located, they should be cleaned and adjusted, or replaced by new ones.

If the engine misses irregularly.

(a) Sticky valves or improper adjustment of push rods.

Engine oil, or kerosene if available, introduced around the valve stems, will help to free sticky valves. If push rods require adjustment see under "Adjusting Push Rods," page 14.

(b) Burned or improperly adjusted breaker points.

(c) Loose connections in low tension (or battery) circuit. Examine connections at back of ammeter and switch, and at side of distributor housing.

(d) Short-circuit in high tension wires due to broken down insulation. Inspect spark plug wires and heavy wire from coil to distributor head.

(e) Defective spark plug, or spark plug gaps more or less than .025 inch.

(f) Incorrect carburetor adjustment.

BUICK BRANCHES AND DISTRIBUTORS

Atlanta	Buick Motor Company, 241-243 Peachtree Street
Boston	The Noyes-Buick Company, 857 Commonwealth Ave.
Buffalo	Buick Motor Company, 1094-1100 Main Street
Charlotte, N. C.	C. C. Coddington, Inc., 432 West Trade Street
Chicago	Buick Motor Company, 2031 Calumet Ave.
Cleveland	The Ohio Buick Co., Buick Building, E. 19th, near Euclid
Cincinnati	Leyman-Buick Company, 630 Walnut Street
Dallas	Buick Motor Company, 1420-24 Young Street
Denver	McFarland Auto Company, Lincoln St. and 7th Ave.
Detroit	Buick Motor Co., General Motors Building, West Grand Boulevard
El Paso, Texas	Buick Motor Co., Corner Mesa Ave., and Montana St.
Flint	Buick Motor Company, 605 N. Saginaw Street
Grand Rapids, Mich.	Buick Motor Company, 60-66 Sheldon Avenue
Indianapolis	Buick Motor Company, 13th and Meridian Streets
Jacksonville, Fla.	Buick Motor Company, Monroe and Julia Streets
Kansas City, Mo.	Buick Motor Co., Admiral Boulevard and McGee Street
Lincoln, Nebr.	Nebraska-Buick Auto Co., 1300 Q Street
Memphis, Tenn.	Buick Motor Company, 739 Union Ave.
Milwaukee	Buick Motor Company, 156-160 Wisconsin Street
Minneapolis	Pence Automobile Co., Hennepin Ave., and 8th Street
New York City	Buick Motor Company, Broadway at 55th Street
New York City	General Motors Export Company, 224 West 57th Street
Oklahoma City	Buick Motor Company, 504-506 N. Broadway
Philadelphia	Buick Motor Company, 900 N. Broad Street
Pittsburgh	Buick Motor Company, Baum Boulevard and Rebecca St.
Rochester, N. Y.	C. L. Whiting, 342 East Ave.
Saginaw	Garber-Buick Company, 208-218 N. Washington Ave.
St. Louis, Mo.	Vesper-Buick Auto Co., Grand Ave., at Lindell Blvd.
Salt Lake City	Randall-Dodd Auto Co., 47-53 South Second St., East
San Antonio, Texas	Buick Motor Company, 300-2 Avenue C
San Francisco	Howard Auto Company, 1601 Van Ness Avenue
Seattle, Wash.	Eldridge-Buick Co., Eleventh Ave. and East Union
Washington, D. C.	Buick Motor Company, 1021 Fourteenth St., N. W.

UNITED MOTORS SERVICE BRANCHES

Atlanta	433-7 Peachtree Street
Boston	32 Brighton Ave.
Buffalo	1127-33 Main Street
Chicago	2521-27 S. Wabash Ave.
Cleveland	4019-4109 Prospect Ave.
Dallas	314 South Harwood Street
Denver	1332-38 Acoma Street
Detroit	417 Willis Ave., W.
Indianapolis	1133 N. Meridian Street
Kansas City	1416 McGee Street
Los Angeles	1317-19 S. Hope Street
Minneapolis	10-12-14 S. Tenth Street
New Orleans	1009-11 St. Charles Street
New York City	239-241 W. Fifty-sixth Street
Omaha	2512 Farnam Street
Philadelphia	342-44 N. Broad Street
St. Louis	312 N. Leonard Street
San Francisco	Van Ness at Clay
Seattle	1708-10 Broadway
Toronto, Canada	490 Yonge Street

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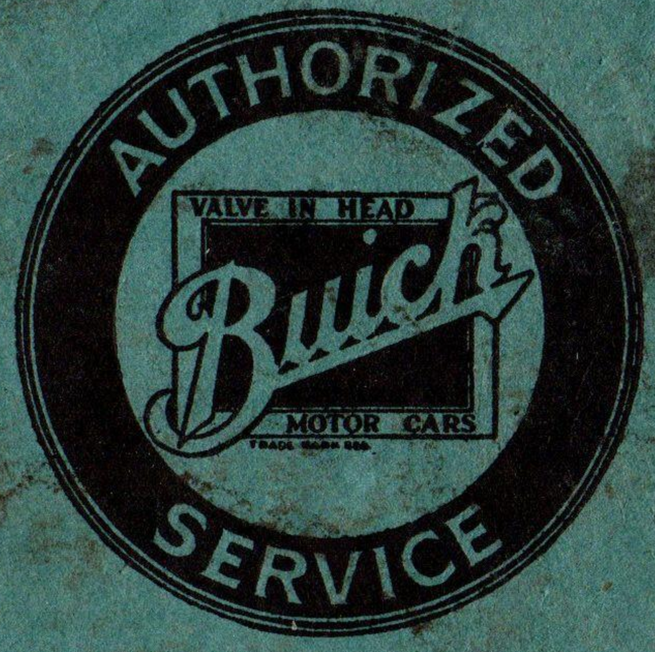
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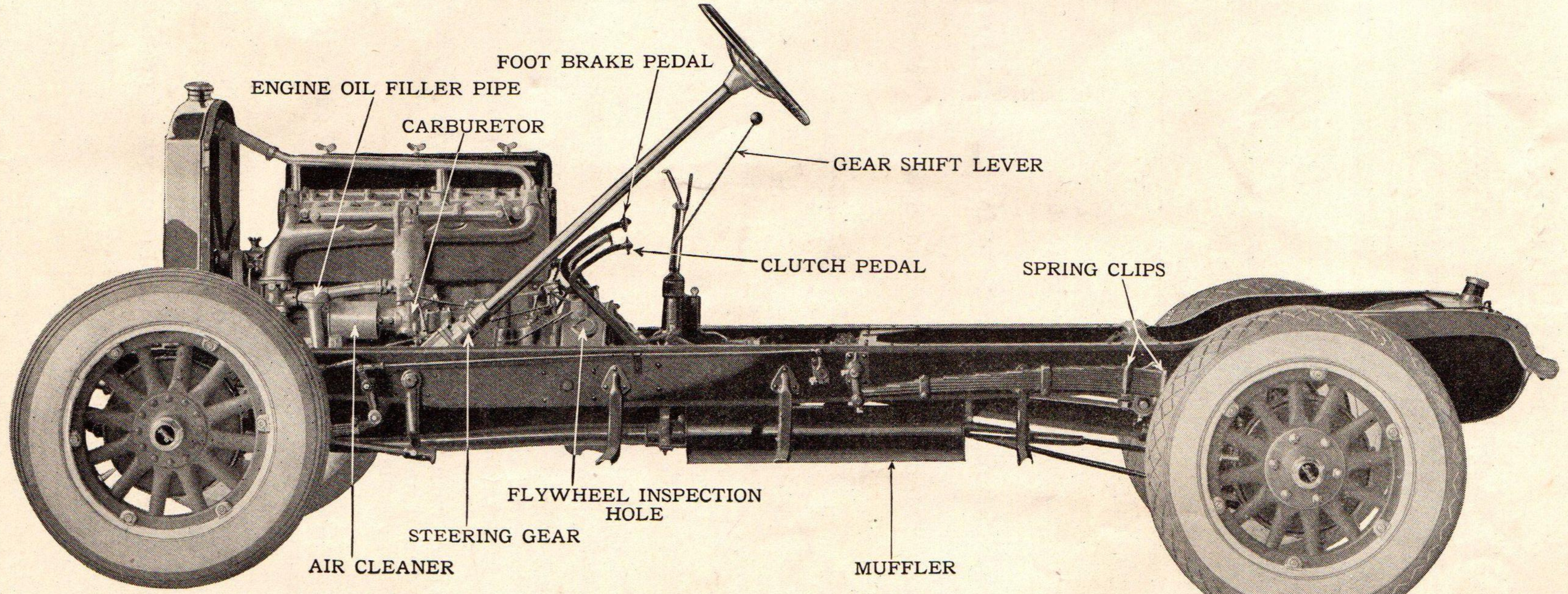
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MEMORANDUM

MEMORANDUM

MEMORANDUM


AUTHORIZED
VALVE IN HEAD
Buick
MOTOR CARS
SERVICE



LEFT SIDE VIEW OF CHASSIS

SPECIFICATIONS

Weights
Ask your Buick dealer for weights and license information.

H. P. Rating
S. A. E. or N. A. C. C.—Standard 23.4, Master 29.4.

Bore
Standard, 3⅛″; Master, 3½″.

Stroke
Standard, 4½″; Master, 4¾″.

Cylinders
Number of cylinders, 6.

Model Plate
On the front of the dash under the hood.

Serial No.
On plate on right side of frame, beneath front fender.

Engine No.
On plate on rear left side of upper crankcase in front of rear breather tube.

Wheel Base
Standard, 114⅜″; Master, Models 40, 44, 45 and 47, 120″, Models 48, 50, 51, 54, 54-C and 55, 128″.

Tread
56 inches.

Chassis Lubrication
Zerk lubrication system.

Engine
Six cylinder, four stroke cycle.
Valve-in-head type.
Unit power plant suspended at three points from main frame.
Cylinders cast en bloc of special iron alloy. Cylinder block and crankcase are separate castings.
Extra heavy crankshaft with double stud support, front and rear, four large bearings.
Properly balanced pistons and connecting rods.
Large valves mounted in detachable head readily accessible and operated by adjustable push rods.
Camshaft: Four bearings with cams forged integral with shaft.
Piston pins: Case hardened and ground.
Pistons: Three rings above piston pin.

Cooling
Water circulated by centrifugal pump, driven by spiral gears from camshaft. Fan driven by belt from pulley on camshaft.

Lubrication
Pressure feed system. Oil forced to all main and connecting rod bearings, also to rocker arms, push rods and timing gears. Cams, camshaft bearings, pistons and piston pins lubricated by oil mist thrown from connecting rod bearings.
Oil level gauge on crankcase and drain plug in bottom of crankcase.
Oil pressure gauge on instrument board.
Oil filter mounted on right side of dash.

Carburetor
Automatic float feed type supplied by vacuum system.
Automatic and manual heat control to insure proper vaporization at all engine speeds.
Air cleaner on carburetor intake.

Starting, Lighting ana Ignition

Complete Delco two unit system with separate generator and starting motor, operating in conjunction with large storage battery and built as integral parts of the engine.

High tension, jump spark system of ignition, with distributor, coil and cutout relay mounted on generator. Distributor includes automatic spark advance while the manual control is mounted on steering wheel.

The system includes combination switch with automatic circuit breaker, and an ammeter on instrument board. Headlight courtesy or dimmer position is controlled by lever on top of steering wheel.

Clutch

Multiple disc, dry plate type, smooth and positive in action, with adjustment very accessible.

Clutch has ball bearing release which is lubricated by grease cup.

Transmission

Selective sliding gear type, three speeds forward and one reverse.
Special heat-treated gears, positive interlocking hand control, integral with gearset.

Drive

Through single, large, automatically lubricated universal joint and fully enclosed propeller shaft, through spiral bevel gears in rear axle.

Propeller shaft housing connected directly to rear end of transmission by large ball housing enclosing universal joint. Both torque and drive taken through ball joint.

Rear Axle

Standard models have three-quarter and Master models full floating type, with weight of car carried entirely on the housing.

In the Standard axle, wheels are mounted on large Hyatt roller bearings and in the Master, on large New Departure ball bearings.

Differential mounted on New Departure cup and cone type ball bearings, and propeller shaft on double and single row New Departure ball bearings.

Spiral bevel type driving gears, fully adjustable.

Front Axle

Drop-forged and heat-treated I-beam section, reverse Elliott type.
New Departure cup and cone type front wheel bearings.
Ball thrust bearings on knuckles.

Brakes

Service, or foot brakes, external contracting on four wheels.
Emergency, or hand brakes, internal expanding on rear wheels.

Wheels

Artillery type, with large hub flanges, 12 spokes and 12 hub bolts each; demountable rims.

Steering Gear

Semi-irreversible split bronze nut and worm type, with adjustment provided to take up wear.

Horn button in center of, and spark, throttle and headlight courtesy or dimmer levers on top of steering wheel.

Frame

Reinforced pressed steel channel section, with exceptionally stiff and deep side members.
Heavy cross members well gusseted and riveted to side members.

Springs

Semi-elliptic type front; cantilever type rear.