

Instruction Book

DOVER

COMMERCIAL SUPER-SIX



JULY
1929

SERIAL NO. 10001
AND UPWARD

HUDSON MOTOR CAR COMPANY
DETROIT, MICHIGAN, U. S. A.



Instruction Book

D O V E R

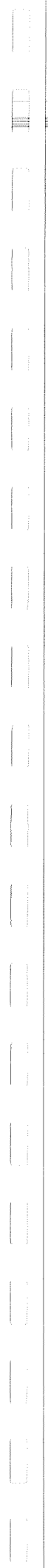
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Foreword

The owner's greatest contribution to the long life and satisfactory operation of a commercial car is to assure himself that it is regularly and adequately lubricated. Too much importance cannot be attached to this simple but essential rule.

The Dover Commercial Super-Six is soundly and ruggedly built, and, if given the attention which it deserves, will prove itself as among the most economical commercial cars, in total costs, which may be found in the market.

Both for periodic inspection and for adjustments which will keep the mechanism at best efficiency, it is suggested that the commercial cars be taken to authorized Hudson-Essex Service Stations, where skilled and trained mechanics will be found.

Only genuine Hudson-Essex replacement parts should be used.

The suggestions in this Instruction Book cover all the operations an owner should attempt; all work which is not entirely and thoroughly understood should be left to authorized Hudson-Essex Service Stations.

Warranty

The factory obligation with respect to replacement of alleged defective parts is fully covered by our warranty as follows:

"We warrant each new vehicle manufactured by us, whether passenger car or commercial vehicle, to be free from defects in material under normal use and service, our obligation under this warranty being limited to making good any part or parts thereof which shall, within ninety (90) days after delivery of such vehicle 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 warranty is expressly in lieu of all other warranties expressed or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our vehicles.

This warranty shall not apply to any Dover commercial car which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability or reliability or which has been subject to misuse, negligence, or accident, or which shall have been operated at a speed exceeding the factory rated speed, or loaded beyond the factory rated load capacity.

We make no warranty whatever in respect to tires, rims, ignition apparatus, tops, upholstery, horns or other signaling devices, batteries, speedometers, or other trade accessories."

HUDSON MOTOR CAR COMPANY
Detroit, Michigan

*The factory does not participate in any labor costs incident to the replacement of parts under the warranty.
The warranty under which Dover commercial cars are sold will be interpreted by the Distributor or
Dealer from whom the vehicle was purchased.*

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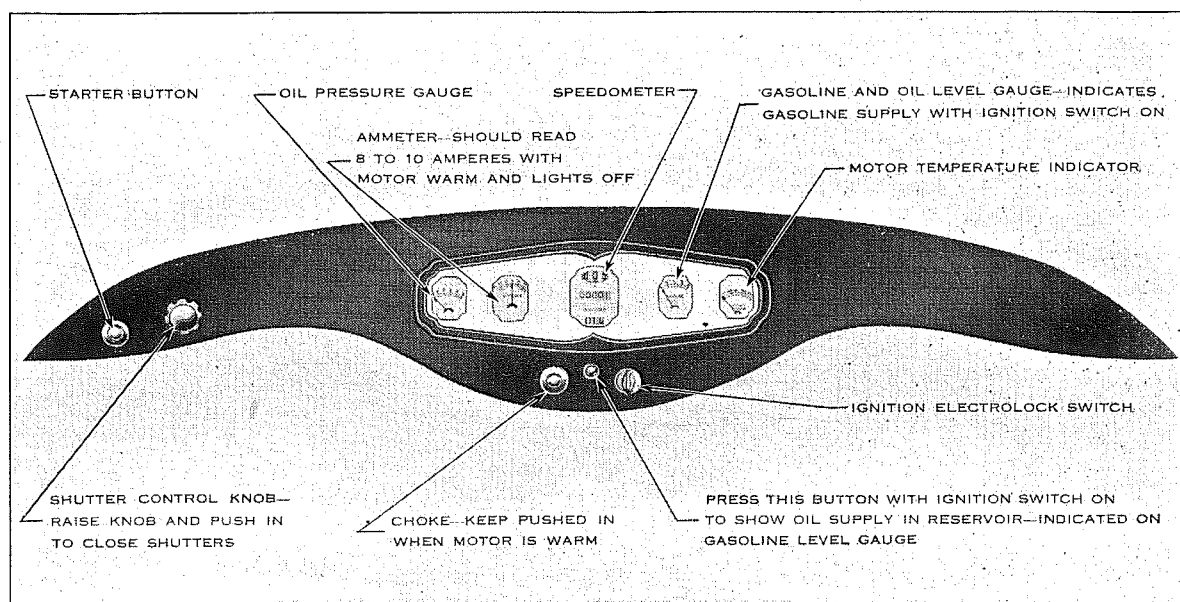
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Instrument Panel



Starting the Motor

The proper procedure in starting a cold motor is as follows:

Insert the key in the ignition electrolock and turn it $\frac{1}{4}$ turn clockwise. Pull the choke button out as far as it will go. Pull out starter button and crank motor until it fires, then return choke not more than $\frac{1}{8}$ of an inch from maximum "out" position. Open throttle slightly with foot accelerator. Choke should be left in this position until motor warms up, and then gradually returned to a position consistent with smooth motor operation. Confine the use of the choke to starting a cold or partially cold motor, being sure that it is pushed all the way in when the motor has been warmed sufficiently to so permit.

To obtain maximum performance and efficiency the shutter control button should be regulated so that the motor temperature will agree with the directions on the motor temperature indicator on the instrument board.

Breaking-in Instructions

Keep Radiator Full—Keep Oil Reservoir Full

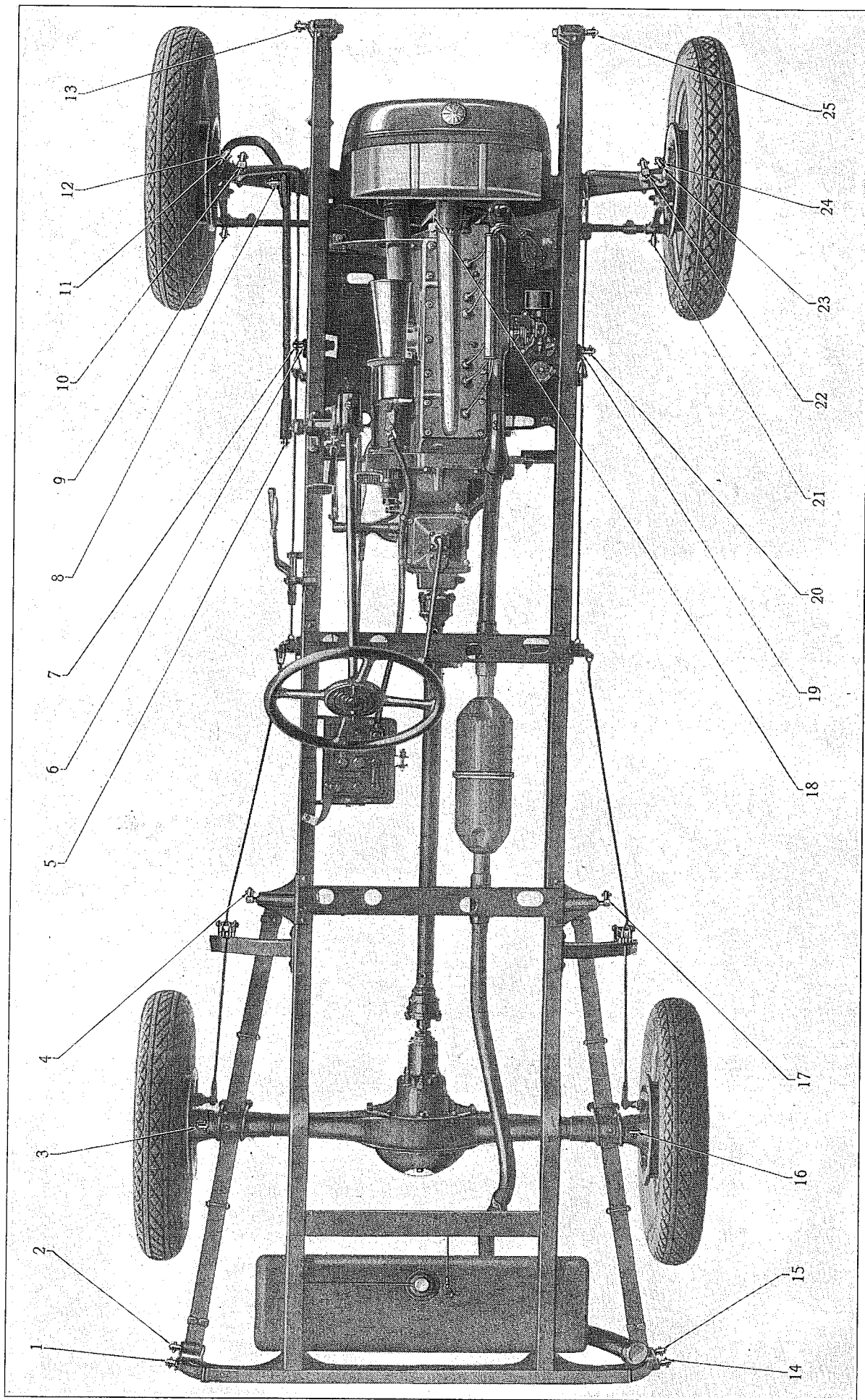
Drain and refill both after first 250 miles.

Heat is a major consideration on a new motor. *Do not allow motor to over-heat.*

Do not exceed 35 miles per hour during first 500 miles.

Check ignition timing after first 1000 miles, re-set if necessary to full advance to compensate for running-in of timing chain. Instructions page 18.

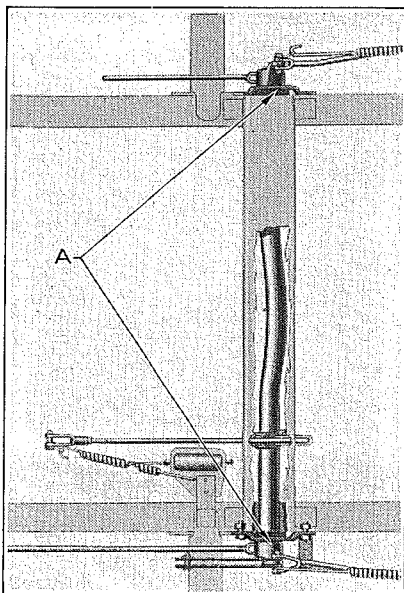
Check carburetor adjustment. A more economical setting can usually be obtained after the limbering-up period. Instructions page 16.



CHASSIS LUBRICATION CHART

Once a week fill the oil gun furnished with the car and lubricate at all 25 points shown in the illustration. Count them as you go to eliminate chances of missing any.

THOROUGH—LUBRICATION—REGULARLY

Brakes—Use Motor Oil

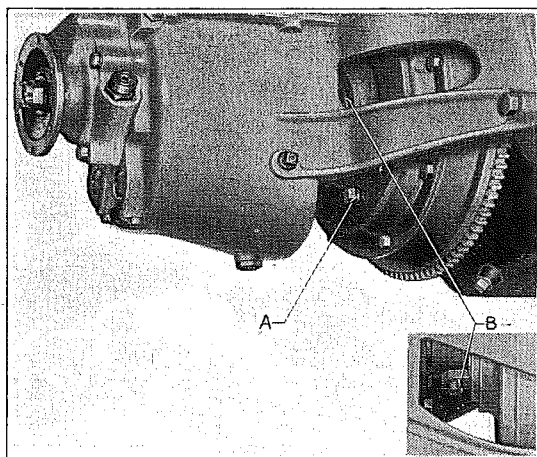
Saturate felt wicks "A" with motor oil every 1000 miles.

Oil all joints in brake linkage not provided with lubricating fittings every 1000 miles.

Do not oil or grease parts inside brake drum.

Clutch—Use 8 Oz. Light Motor Oil. In Cold Weather Use 6 Oz. Light Motor Oil and 2 Oz.

Kerosene



The clutch filler plug shown at "A" in illustration is accessible by removing one of the bolts at the side of the flywheel pan, the cap screw holding the rear end of the flywheel pan to the transmission and swinging the pan to one side.

The proper amount of lubricant for the clutch is 8 oz. as stated above. That amount should not be added, however, unless the clutch has been drained. If the clutch has not been

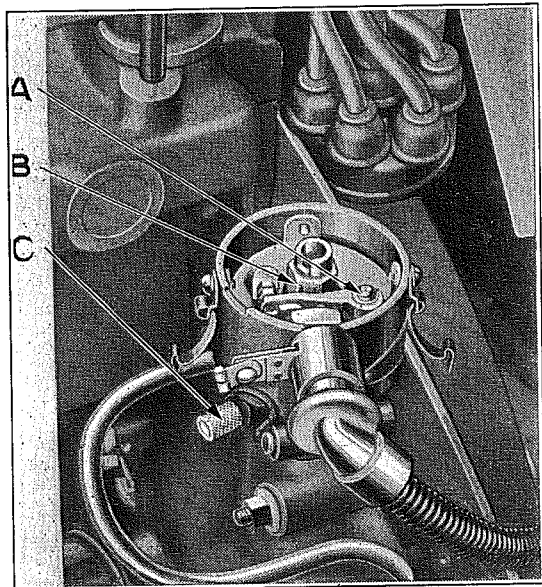
drained, add only sufficient lubricant to bring the level up even with the bottom of the filler plug hole when that hole is in the lowest position possible. An oil gun adaptable for draining as well as filling should be used.

Drain and refill every 1500 miles.

The clutch throwout bearing plug shown at "B" in the illustration should be removed and bearing packed with fibre grease every 3000 miles. A grease gun is necessary for this operation.

THOROUGH—LUBRICATION—REGULARLY

Distributor—Use Motor Oil

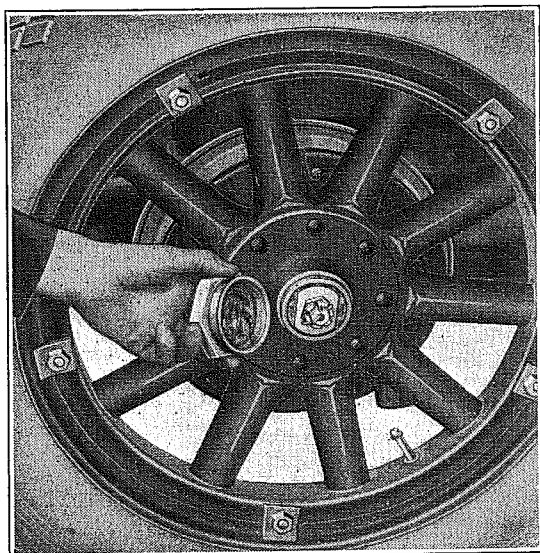


Fill distributor base to the level of the oil cup "C" with motor oil every 2000 miles.

Coat rotor shaft "B" lightly with vaseline or light cup grease every 2000 miles.

Apply a few drops of oil at "A" every 2000 miles.

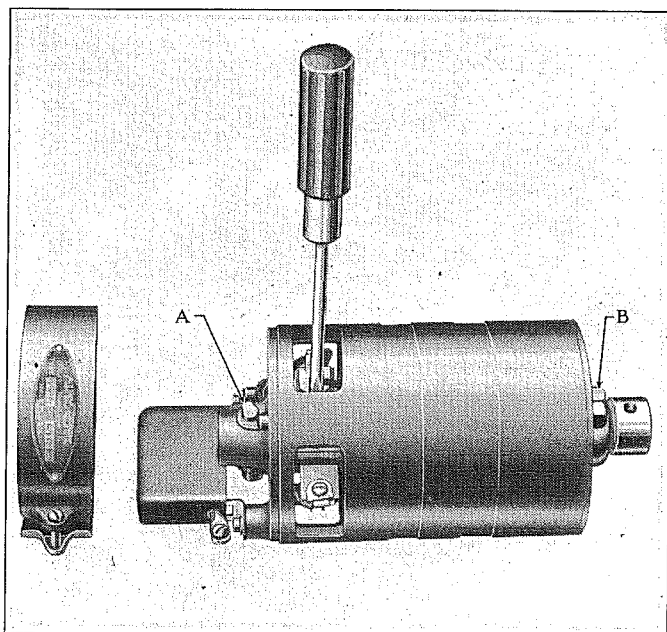
Front Wheel Bearings—Use Cup Grease



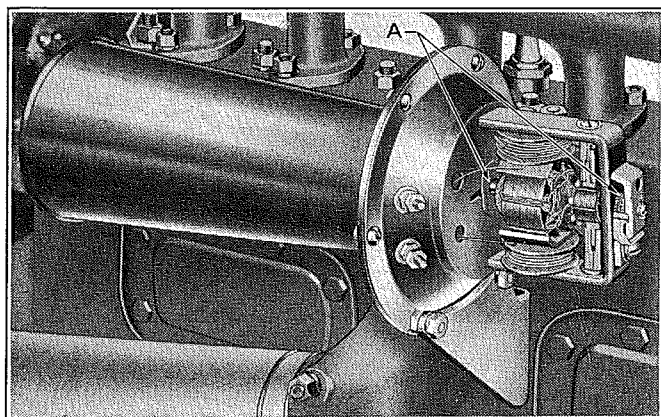
Keep hubs and hub caps filled with medium heavy cup grease. Remove hub caps and inspect frequently as illustrated.

Every 3000 miles remove wheels, wash out hubs and bearings with kerosene and repack with good cup grease.

THOROUGH—LUBRICATION—REGULARLY

Generator—Use Motor Oil

Three or four drops of light motor oil at points "A" and "B" in the illustration every 1000 miles.

Horn—Use Motor Oil

The horn should be lubricated occasionally. Remove cover and saturate wicks "A" every 2000 miles.

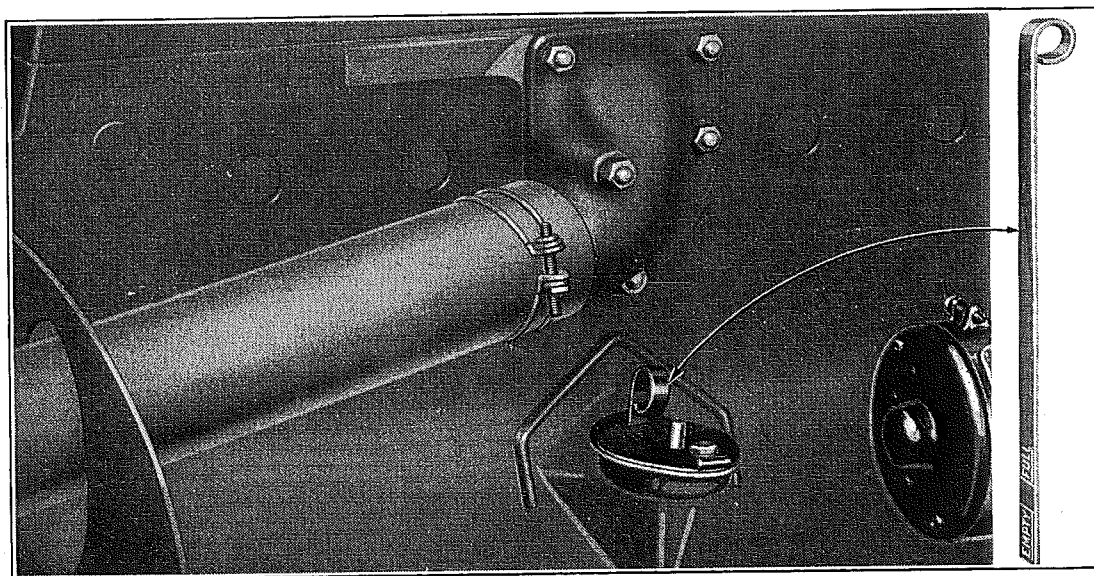
Hood Ledge Lacings—Use Motor Oil

Saturate lacings with motor oil frequently to remove squeaks and preserve lacing.

Hood Locks—Use Motor Oil

Lubricate hood locks occasionally by injecting a few drops of oil through hole in handle.

THOROUGH—LUBRICATION—REGULARLY

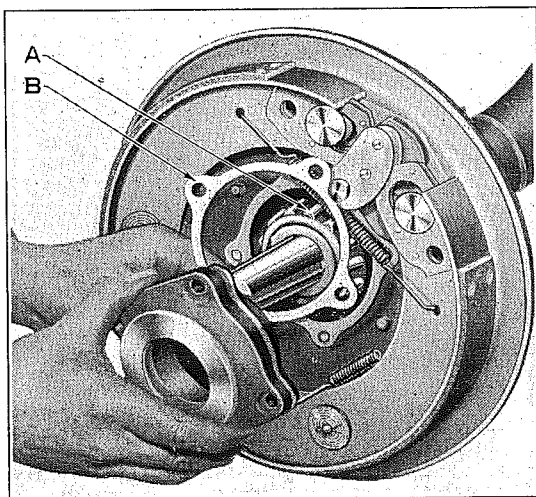
Motor—Use Light-Grade Oil—Medium Heavy Body

In cold weather use only high-grade oil, medium heavy body, which will flow at low temperatures.

Consult your dealer if you are in doubt as to what oil to use.

The oil pressure gauge on the instrument panel must always register when the motor is running.

The amount of oil in the reservoir is indicated by the method shown on the instrument panel, illustration page 7. A bayonet gauge is also provided at oil filler. See illustration above. Every 250 miles add sufficient oil to bring level up to the full mark. *Drain the reservoir and replenish with new oil at 500-mile intervals, adding 5 quarts.*

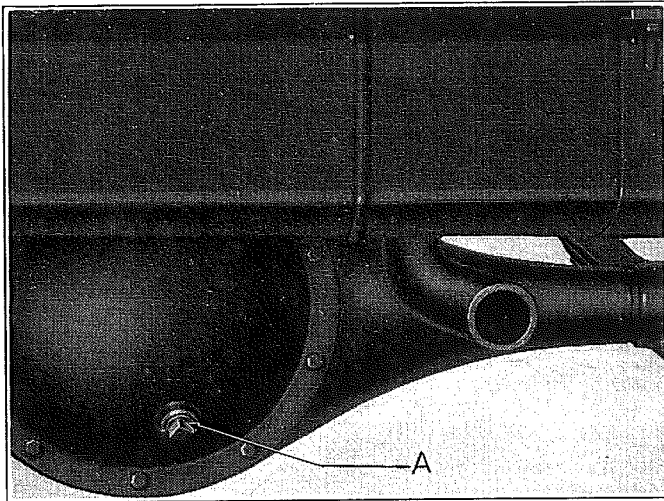
Rear Wheels—Use Cup Grease

Every 3000 miles remove wheels and bearing retainers. Remove bearings "A" and wash in kerosene.

Repack with good cup grease.

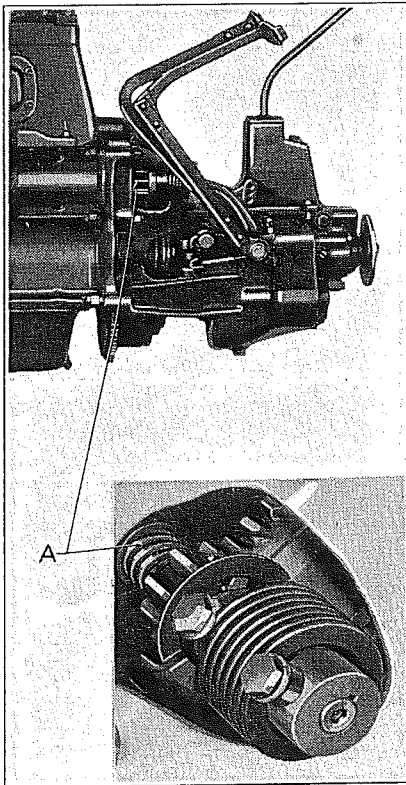
Be sure that shims "B" are returned to their proper place.

THOROUGH—LUBRICATION—REGULARLY

Rear Axle—Use High-Grade Differential Oil—Heavy Body

The oil supply in the axle housing should be kept level with the lower edge of the filler plug opening "A."

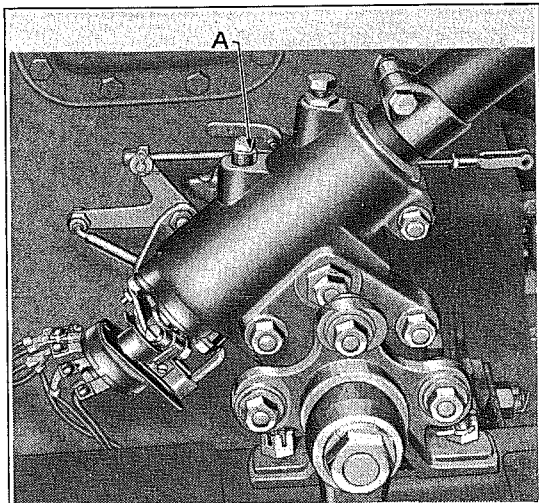
Every 3000 miles remove lower cap screw shown in illustration. Drain, flush out and refill.

Starting Motor—Use Kerosene on Spiral

The starter armature revolves on graphite bushings which require no lubrication.

The spiral "A" shown in the illustration should be lubricated every 3000 miles with a small amount of kerosene.

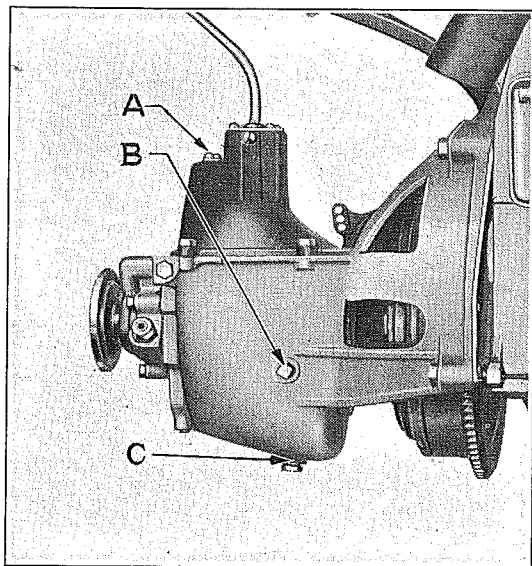
THOROUGH—LUBRICATION—REGULARLY

Steering Gear—Use High-Grade Gear Oil—Heavy Body

Keep steering gear case filled to the level of the filler plug "A" shown in the illustration.

Throttle Control Rods and Levers

Oil or grease all accelerator connections. Throttle linkage should work with a snap. Grease choke wire occasionally to eliminate sticking.

Transmission—Use Transmission Oil—Do Not Use Grease

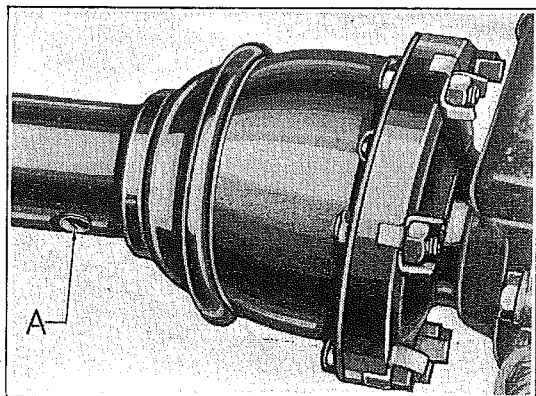
The transmission oil level plug shown at "B" in the illustration should be removed to determine the necessity of adding more lubricant.

If no oil drips from the opening, replenish at "A" until the level has been raised sufficiently for it to do so.

Remove plug "C." Drain, flush out with kerosene and refill every 5000 miles.

THOROUGH—LUBRICATION—REGULARLY

Universal Joints—Use Fibre Grease

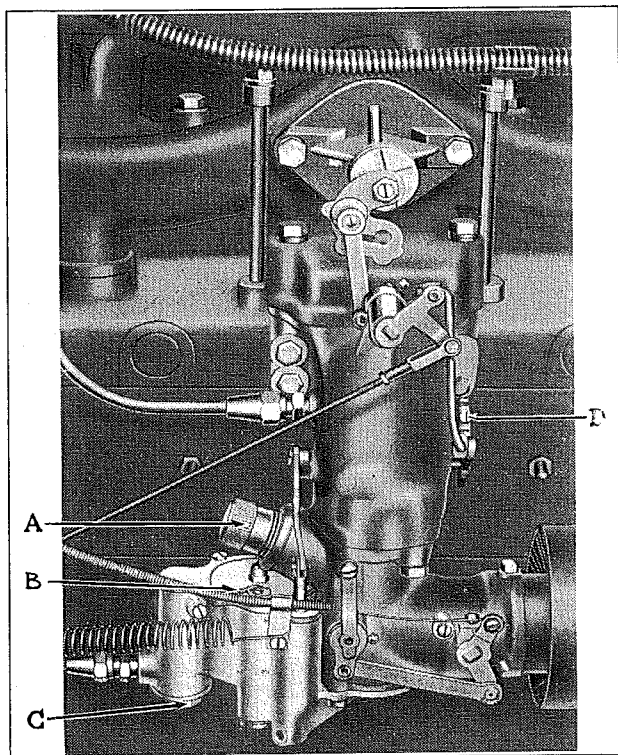


Remove plugs "A" at both joints and add sufficient lubricant to bring level up to approximately half full every 1000 miles.

Comprehensive—TUNING AND INSPECTION—Frequently

Motor

Carburetor



Spark plugs and breaker points must be cleaned, spark gaps properly spaced and all residue in gasoline passages removed before adjusting the carburetor.

Clean carburetor filter screen "C."

Note: Remove filter glass on vacuum tank to stop flow of gasoline to carburetor while cleaning. See illustration, page 27.

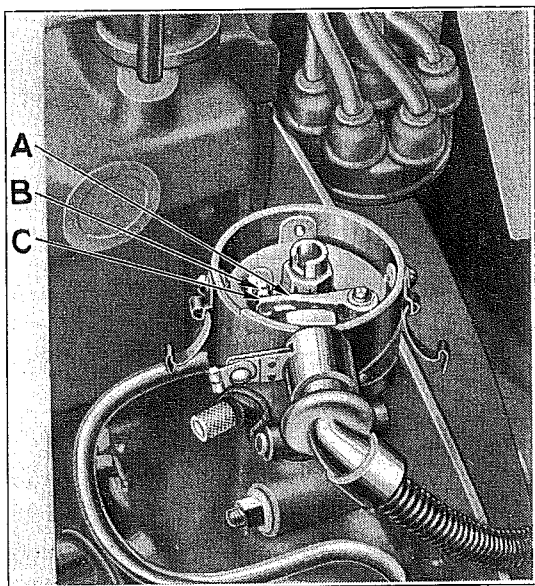
Adjust set screw "D" for faster or slower idling speed.

Adjust air screw "A" to change mixture for smoother idling.

Turn air screw until the end is flush with the end of the ratchet spring bearing against it. Warm motor to proper operating temperature. Turn air screw to the left until the motor hesitates, then to the right two or three notches at a time until the motor runs smoothly.

Set adjustment "B" for winter or summer driving. Proper locations shown on carburetor.

Distributor



Breaker points should be clean, flat and spaced .020" when at their maximum opening.

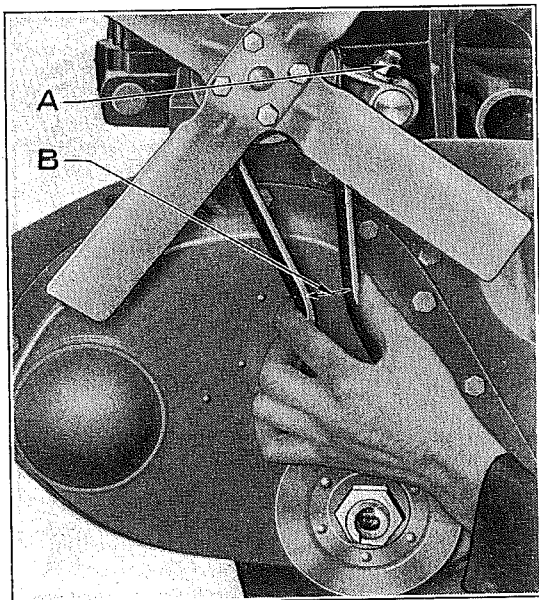
Remove distributor cap and rotor and inspect. A special breaker point file should be used for reconditioning them.

Crank motor by hand until the breaker arm fibre block is at the highest point on the cam as illustrated at "A." Then measure the opening between the points "C" with the gauge on the distributor wrench. Loosen lock nut and adjust at "B."

Comprehensive—TUNING AND INSPECTION—Frequently

Motor

Fan Belt

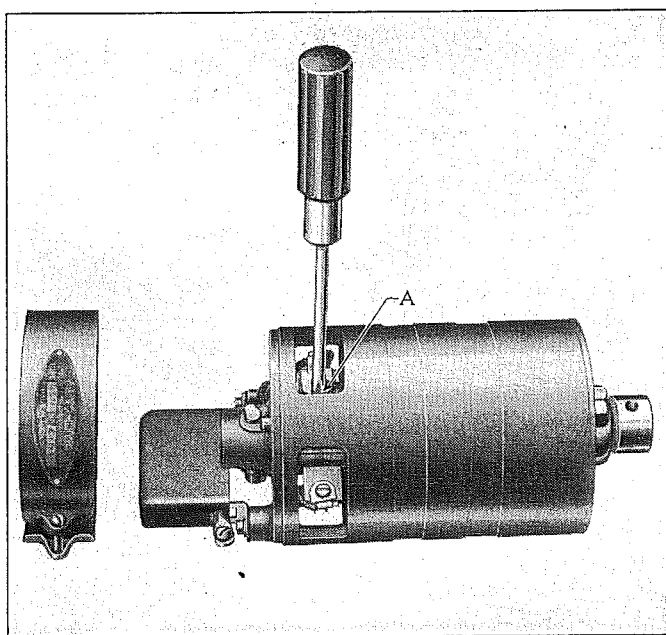


The fan belt must be kept at the proper tension to eliminate excessive wear on the fan bearing when too tight and slipping and causing the motor to overheat when too loose.

The illustration shows a method of testing the tension. Approximately $\frac{3}{4}$ " or the width of the average person's thumb as designated at "B" will insure the proper tension. Loosen lock nut "A" and adjust when necessary.

Do not allow dirt and grease to accumulate on the motor. Clean frequently with a cloth moistened in kerosene.

Generator



The ammeter should show 8 to 10 amperes charge at 25 miles per hour with motor warm and lights off.

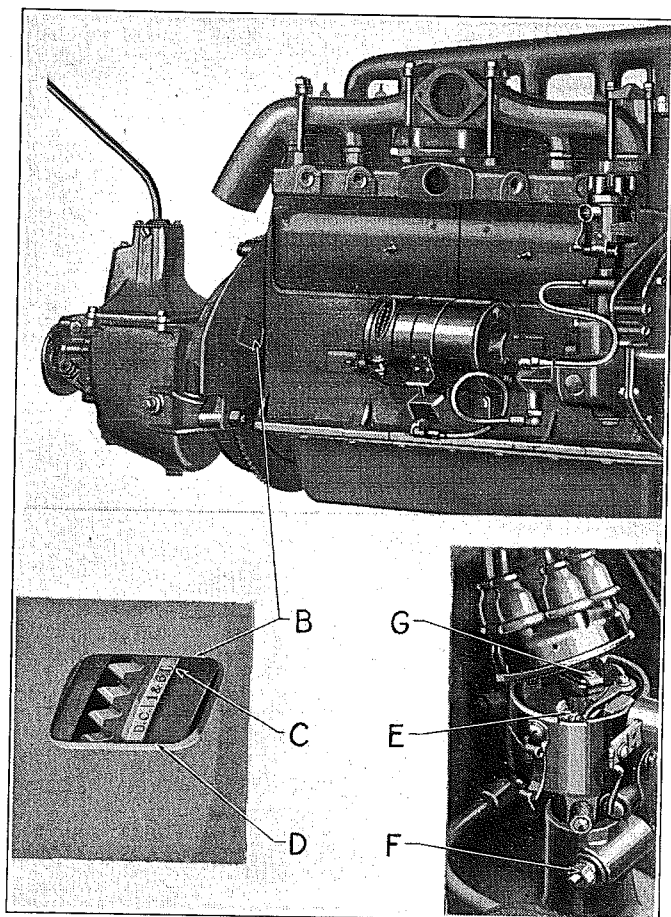
Check all terminals for loose connections.

Clean commutator with a cloth moistened with a few drops of kerosene and check charging rate before changing adjustment. Adjust at "A," moving regulating brush away from you by the method shown in the illustration to increase and in the reverse direction to decrease the charging rate. Switch must be off if a screwdriver or other metal tool is used for making the adjustment.

Comprehensive—TUNING AND INSPECTION—Frequently

Motor

Ignition Timing



The ignition must be set to full advance and breaker points must be clean and properly spaced to obtain the maximum in power and efficiency from the motor.

To check the ignition timing proceed as follows:

Remove No. 1 spark plug. Crank motor by hand until the air issuing from the spark plug opening has almost completely subsided.

The markings on the flywheel shown at "B" should be partly visible with the motor in this position.

The flywheel should then be slowly turned until the line "C" exactly coincides with the lower edge of the peep hole as shown at "D." A good method of moving the flywheel a little at a time is to insert a heavy screw-

driver between the flywheel teeth and either the upper or lower edge of the peep hole, prying the flywheel in the direction desired.

Next inspect the breaker points "E;" they should be just starting to separate if the motor is properly timed.

Loosen lock nut "F" and turn the complete distributor slightly in the direction necessary until the breaker points agree with the above recommendation.

When the motor is in this position the rotor "G" will be pointing to the sector for No. 1 ignition wire. Following around the cap clockwise, replace the remaining wires, 5-3-6-2-4, consecutively, as shown in the illustration.

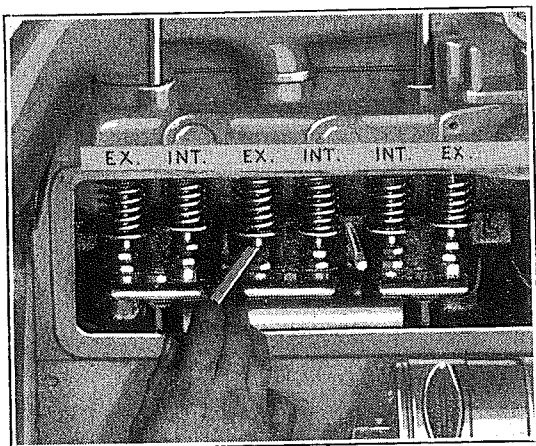
Spark Plugs

Remove spark plugs, clean and reset spark gaps to .018"—.020" every 2000 miles.

Comprehensive—TUNING AND INSPECTION—Frequently

Motor

Tappets

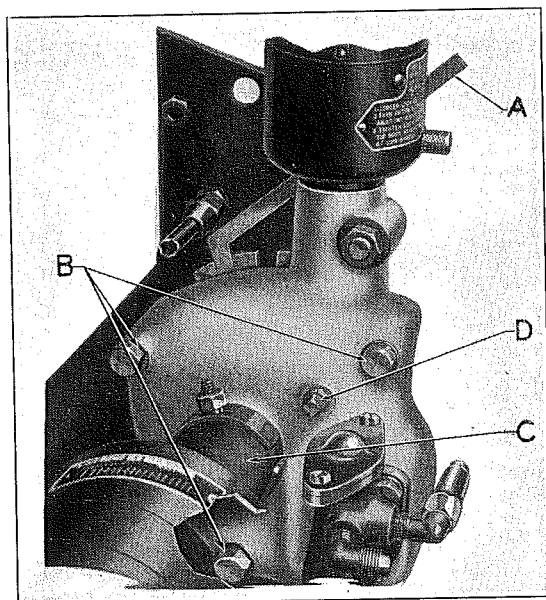


A minimum clearance of .004" for intake and .006" for exhaust valve tappets must be maintained, tested with motor at proper operating temperature. See illustration for method of measuring.

Always adjust tappets after grinding valves.

Tighten lock nuts securely after adjusting tappets.

Timing Chain



The timing chain should be inspected at the expiration of the first 1000 miles and at subsequent intervals of 4000 miles thereafter.

A to and fro movement of approximately $\frac{1}{8}$ " on the circumference of the coupling "C" (after the slack around the coupling bolt is taken up) should be maintained.

To adjust, loosen retaining bolts "B" (at certain stages of this adjustment the inside top bolt or the bottom bolt or both may pass through the notches in the eccentric, necessitating their removal). Insert special tool "A" in notch and

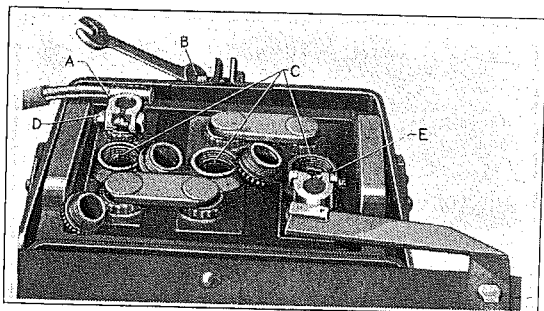
turn toward you until only the required movement is present. If trouble is experienced in replacing the bolts, back off the adjustment slightly, allowing them to slide into place.

One-half pint of motor oil should be introduced through the pipe plug opening "D" whenever the distributor support housing has been removed.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

Battery



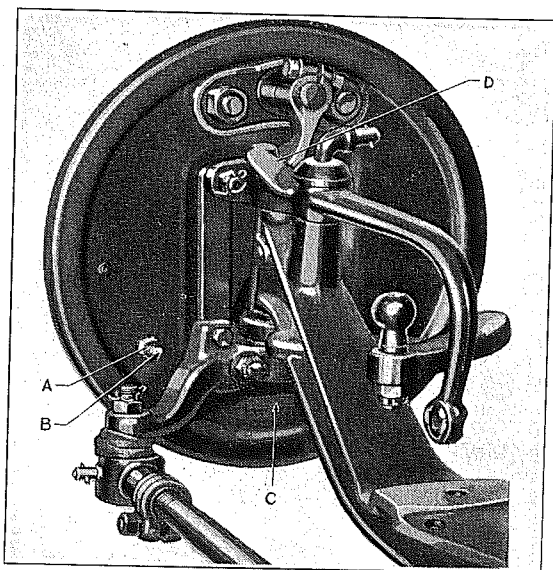
Disconnect terminal "A" from the battery. Clean thoroughly, coat with vaseline, replace and tighten securely.

Battery must be kept securely fastened in tray. Tighten at "B."

Keep plates covered. Add distilled water at regular intervals. Fill at "C."

Keep clamp bolts "D" and "E" tight at all times.

Brakes



All linkage must work freely and brakes be fully released before an accurate adjustment can be made.

Jack up all four wheels and make the following adjustment at each:

Loosen lock nut "A" and turn eccentric "B" in the direction the wheel revolves when the car moves forward until a slight drag can be felt when turning the wheel by hand. Tighten lock nut sufficiently to hold the eccentric in that position temporarily.

Remove cover plate "C" and with a screwdriver turn the adjusting screw wheel toward the rim of the backing plate until the pressure exerted against

the drum is such that the wheel can just be turned by hand. Back off the adjusting screw wheel until only a slight drag is noticeable. Centralize the brake shoes in the drum by loosening the lock nut "A" and turning the eccentric "B" until the wheel is just free of brake drag. Hold the eccentric in that position and tighten the lock nut.

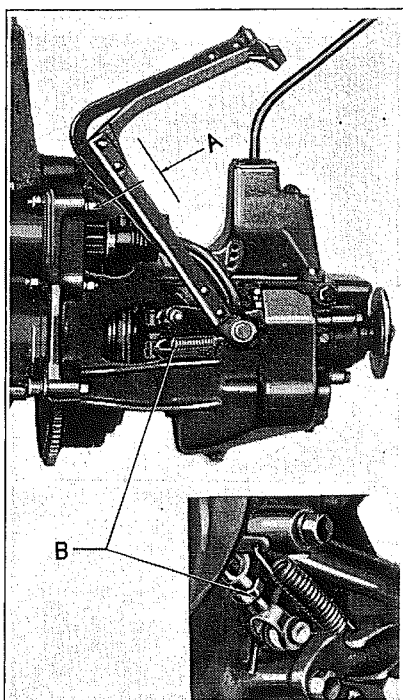
With the vehicle still jacked up depress the brake pedal about two inches and test for equalization by turning the wheels by hand. The pressure on each front wheel should be equal and in a similar manner the pressure on each rear wheel should balance.

A maximum of $\frac{1}{64}$ " clearance should be allowed at "D" to permit a slight amount of backlash.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

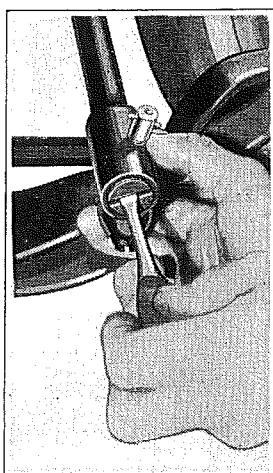
Clutch Pedal Adjustment



A clearance of at least $\frac{3}{4}$ " must be maintained between the clutch pedal and the toe board as illustrated at "A."

Adjust at point marked "B" in the illustration.

Drag Link Adjustment



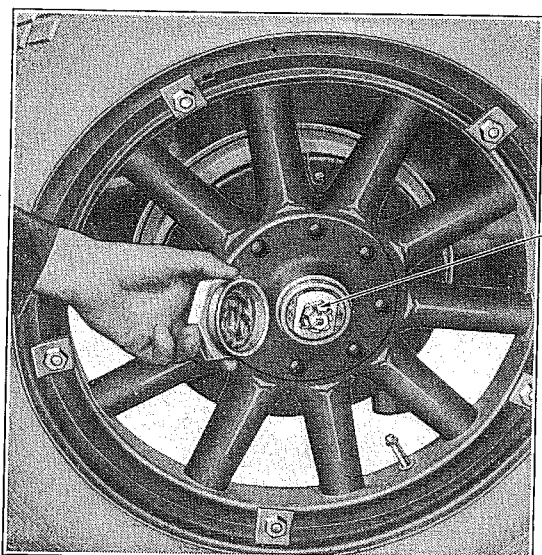
Remove excess play in drag link as shown in the illustration.

Adjusting plugs must be locked in position with a cotter key at all times.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

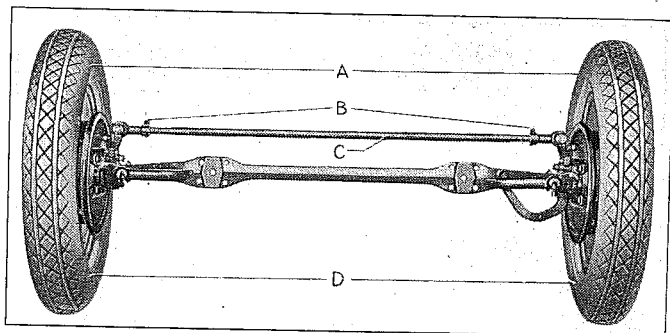
Front Wheel Bearings



Inspect front wheel bearings frequently. Remove all excess play. Do not tighten enough to bind bearing. Wheel must turn freely after adjusting.

Remove hub cap and tighten nut "A" shown in the illustration.

Front Wheel Alignment



A slight misalignment of the front wheels will cause unnecessary wear on the front tires, and in aggravated cases will be noticeable in hard steering.

Measure the distances "A" and "D" as shown in the illustration. The distance "A"

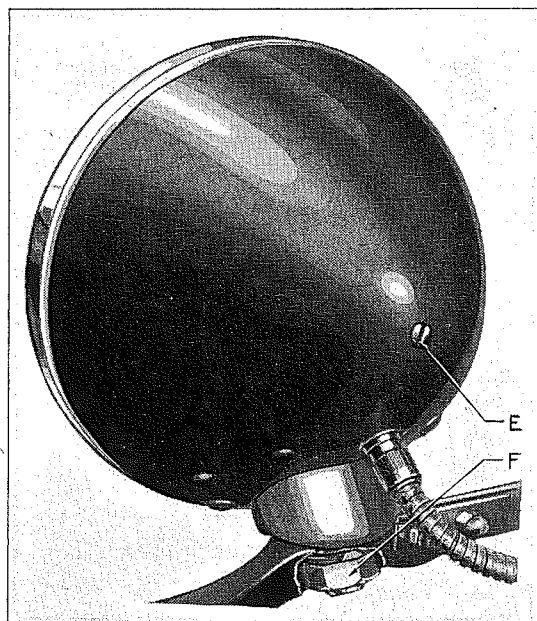
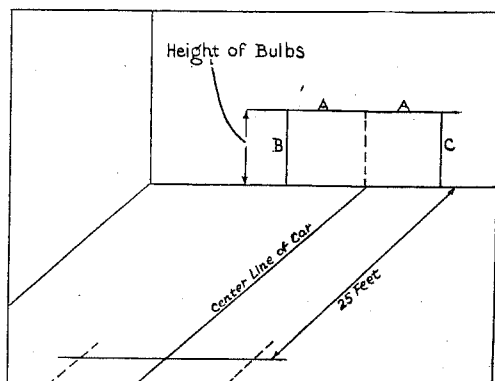
should be the same as "D" or not over $\frac{1}{8}$ " longer—never shorter.

A special tool should be used for this purpose and the measurement taken between the rims at a height about even with the hubs. Loosen clamp bolts "B" and turn tie rod "C" and check results.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

Headlamps



Place the vehicle under normal load on a level floor squarely facing a smooth wall 25 feet from the headlamps.

Measure the height of the lamp bulbs from the ground and draw a horizontal line "A" on the wall at the same height as the bulbs.

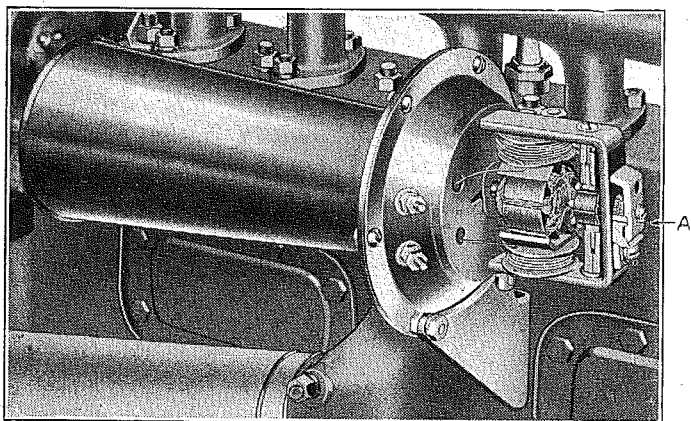
Sight through windshield along hood rod and radiator cap to determine the center line of the vehicle. Locate center lines "B" and "C" of lamps on the wall from this line.

Place the light lever in the position throwing the light beam farthest from the vehicle. Cover left lamp to obscure the light beam. Turn the adjusting screw "E" on the right lamp until the light beam has a high intensity at the top and is as narrow as possible measured from top to bottom.

Loosen the adjusting nut "F" and aim the lamp so that the top of the beam is just even with the line "A" and equal portions on each side of line "C."

Repeat operations with the left lamp and the headlamps will be properly adjusted.

Horn

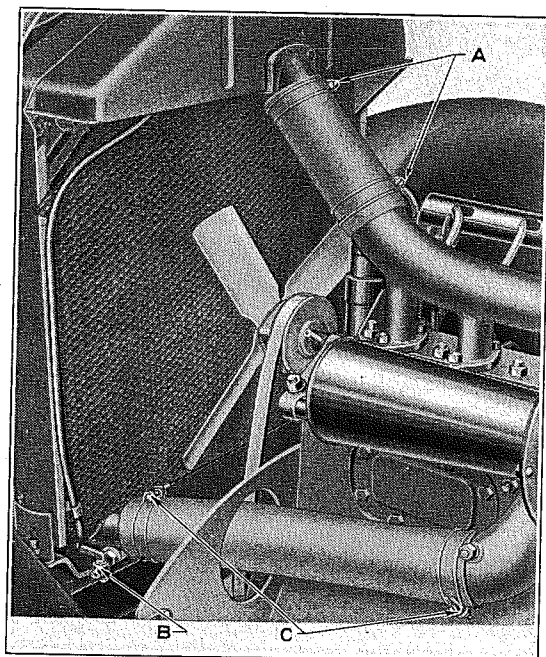


A weak or spasmodic tone or a complete failure of the horn to respond is usually indicative that it is in need of adjustment. Turn adjusting screw "A" as required and test for results by pressing horn button. Check wiring for loose or broken connections.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

Radiator



Drain, flush out and refill frequently.

Each season after removing the anti-freeze, and about every four months thereafter, a solution consisting of one pound of washing soda to four gallons of water should be poured into the radiator and allowed to slowly circulate through the system by running the motor at idling speed. Leave drain cock "B" open and thoroughly flush out after cleaning.

See that hose are in good condition and hose clamps "A" and "C" are tight.

Do not allow mud, etc., to clog air passages through radiator.

Repair dents and leaks when they occur.

Add an anti-freeze solution to the radiator in cold weather.

Drain enough water from the radiator so that after the anti-freeze has been added there will still be room for a slight expansion of the liquid without its running over the overflow pipe.

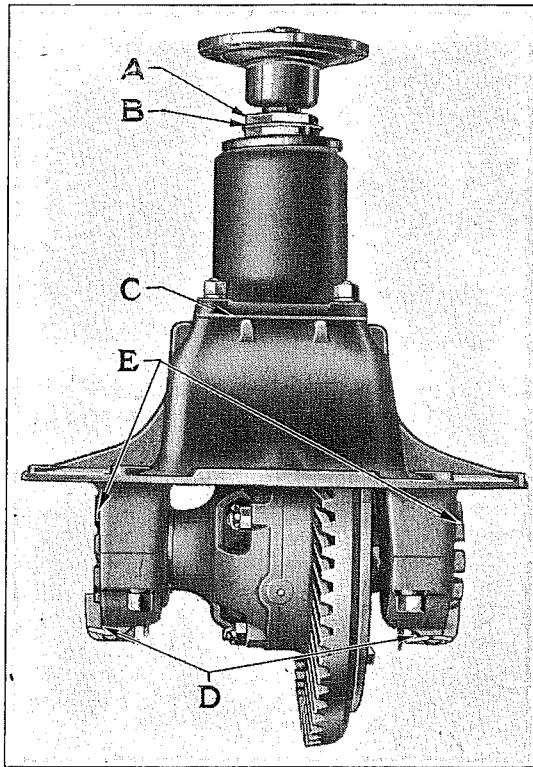
Add anti-freeze as follows:

For	Prestone	Alcohol	Radiator Glycerine
32° to 10° above 0°	4 $\frac{3}{4}$ Qts.	5 $\frac{3}{4}$ Qts.	9 $\frac{3}{4}$ Qts.
10° to 0°	6 Qts.	7 $\frac{1}{4}$ Qts.	12 $\frac{1}{4}$ Qts.
0° to 10° below 0°	7 $\frac{1}{4}$ Qts.	8 $\frac{1}{2}$ Qts.	14 $\frac{1}{3}$ Qts.
10° to 20° below 0°	8 $\frac{1}{4}$ Qts.	9 $\frac{1}{2}$ Qts.	16 $\frac{1}{4}$ Qts.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

Rear Axle



End play in the rear axle pinion can be removed by loosening the lock nut "A" and tightening the adjusting nut "B." There should be no perceptible end play but shaft should revolve freely.

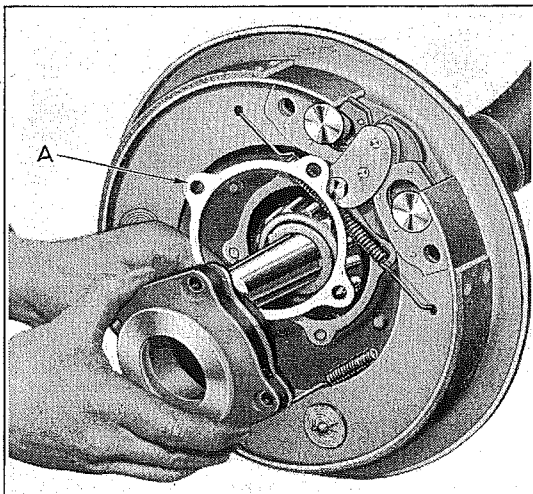
The ends of the teeth on the pinion should be flush with the teeth on the ring gear.

To adjust: Remove or replace shims at "C."

The ring gear and pinion should mesh to a depth providing as much driving surface as possible but not deep enough to bind at base of teeth. Remove locks "D" and adjust by means of adjusting nuts "E."

Serious damage to the gears is almost certain to be the result of inexperienced workmanship in pinion to ring gear adjustment.

Rear Wheel Bearings



An allowance of from .005" to .010" clearance is necessary between the ends of the axle shafts.

Jack up axle and check end play by moving the wheel in and out. A slightly perceptible movement should be felt.

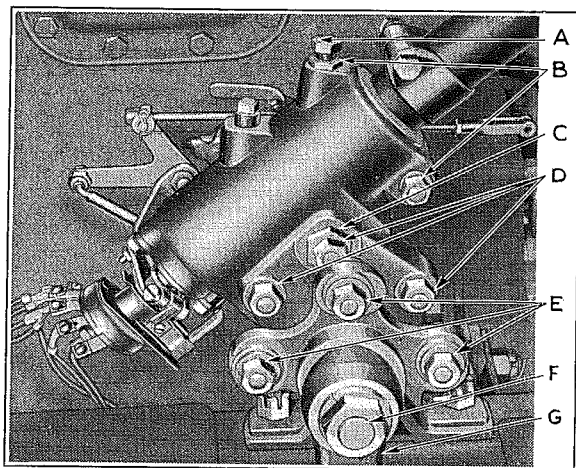
Adjust by removing or replacing shims "A" shown in the illustration.

Keep wheels tight on axle shaft taper.

Comprehensive—TUNING AND INSPECTION—Frequently

Chassis

Steering Gear



Excessive end play in the steering column should be removed by loosening the lock nuts "B" and turning the adjusting screw "A" down until the operation of the steering wheel is stiffened, then back off $\frac{1}{6}$ turn and tighten lock nut.

Check backlash in steering gear by placing wheels in a straight ahead position and removing drag link. Shake steering arm "G" to determine amount of play present. Adjust by loosening lock nuts "D" $\frac{1}{4}$ turn and turning eccentric sleeve "C." Care must be

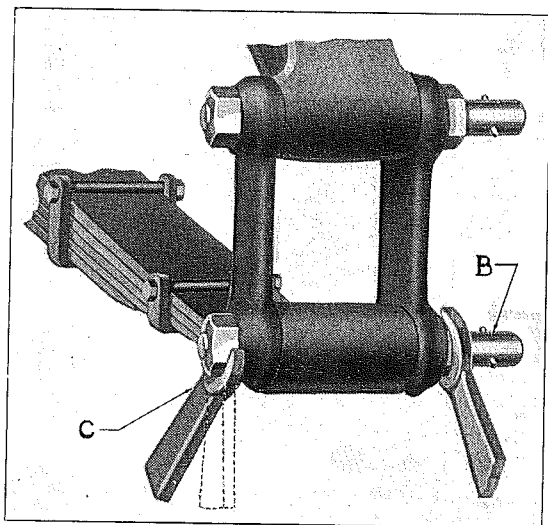
taken to avoid getting too tight as this adjustment is very sensitive.

The adjustment for end play in the roller tooth shaft "F" is on the opposite end to that shown in the illustration. Loosen the lock nut and with a screwdriver turn the adjusting screw down tight, then back off slightly. Tighten lock nut.

Keep steering arm tight on roller tooth shaft "F."

Loosen lock nuts "E" when adjusting driving position of steering wheel.

Shackle Bolt Adjustment



An adjustment is provided for eliminating side play in the springs and rattle at the shackle bolts.

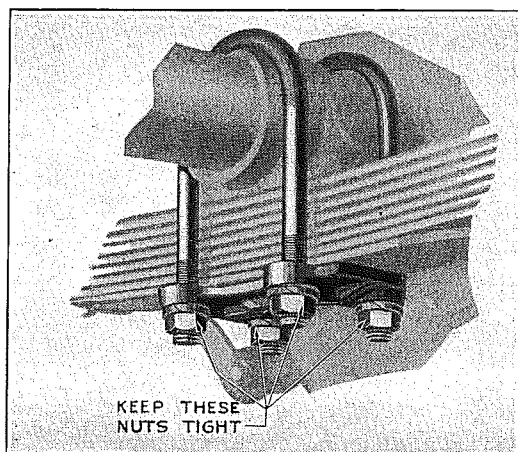
To adjust: Loosen lock nut shown at "B," tighten nut "C," then tighten lock nut at "B."

Do not adjust shackle bolts tight enough to impede spring action.

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Chassis

Spring Clips



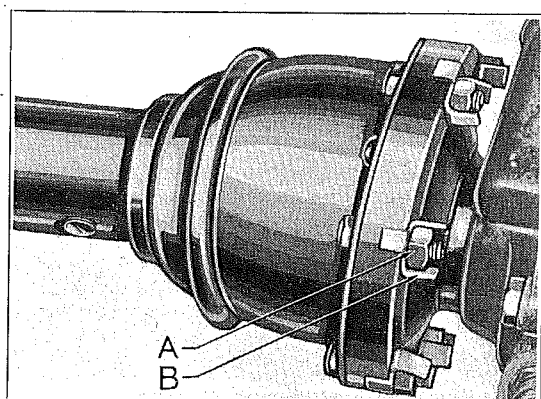
Spring breakage can usually be attributed to looseness in the spring clips which secure the spring to the axle.

Test both front and rear springs, using a wrench with sufficient leverage to draw them up tight.

Tires

Check tires once a week and keep inflated to the recommended tire pressure, 35 pounds for the front and 40 pounds for the rear. It is very important that the tire flaps, provided with the rear tires, be replaced when changing either of the rear tires.

Universal Joints



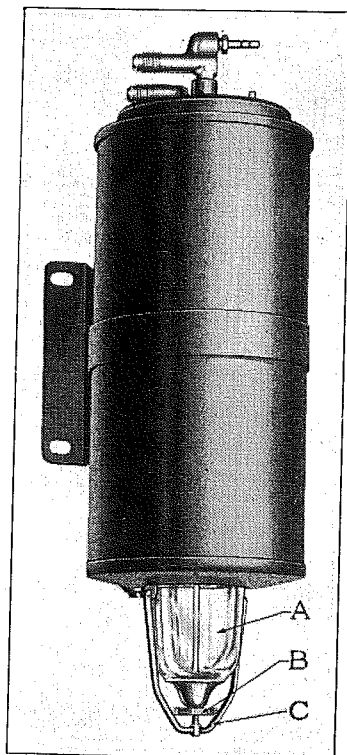
Keep flange nuts "A" tight and locks "B" in place.

Inspect frequently.

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Chassis

Vacuum Tank



The glass sediment chamber at the bottom of the vacuum tank should be removed and cleaned whenever its contents show an accumulation of water or dirt. The water, due to the fact that it is heavier than gasoline, settles to the bottom of the glass and is easily distinguished.

The flow of gasoline is automatically shut off as soon as the glass is removed, so that it is only necessary to hold the glass "A" in one hand, loosen the thumbscrew "B" and swing the bracket "C" to one side to empty the glass.

License Data and Technical Information

- BRAKES**—Drums $11\frac{1}{2}$ " I. D.; $1\frac{1}{2}$ " wide.
- CLUTCH**—Use 8 oz. of light motor oil in summer. 6 oz. of light motor oil and 2 oz. of kerosene in winter.
- COOLING SYSTEM**—Capacity $4\frac{3}{4}$ gallons.
- CAR SERIAL NUMBER**—See plate on dash under hood.
- EXHAUST PIPE**— $1\frac{3}{4}$ " diameter.
- FIRING ORDER**—1-5-3-6-2-4.
- FRONT AXLE**—Toe-in not over $\frac{1}{8}$ ". Road clearance 8".
- GASOLINE TANK**— $11\frac{1}{2}$ gallons.
- HORSEPOWER RATING**—S. A. E. 18.2.
- IGNITION CONTACT POINTS**—Opening .018"-.020".
- LAMP BULBS**—Headlamp, 6 volt, double filament, 21 c. p.; tail and instrument lamps, 6 volt, 3 c. p., single contact; stoplight, 6 volt, 15 c. p., single contact; parking bulb, 6 volt, 3 c. p., single contact.
- MOTOR**—"L" head, 6 cylinder; H. P. 18.2 S. A. E.; piston displacement 160.38; motor serial number stamped on left hand side of cylinder near water inlet elbow.
- OIL RESERVOIR CAPACITY**—6 quarts, troughs and pan. 5 quarts pan only.
- PISTON DISPLACEMENT**—160.38.
- REAR AXLE**—Gear ratio 5 6/10 to 1. Road clearance 8".
- SPARK PLUGS**—Metric gap .018"-.020".
- STORAGE BATTERY**—6 volt, 13 plate.
- TURNING RADIUS**—20 feet.
- VALVE TAPPET CLEARANCE**—Intake, .004". Exhaust, .006" (warm motor).
- WHEELBASE**— $110\frac{1}{2}$ ".
- WHEELS**—20" base.

Accessories

- BATTERY**—The Electric Storage Battery Co., Philadelphia, Pa.
- DISTRIBUTOR AND IGNITION COIL**—The Electric Auto-Lite Co., Toledo, Ohio.
- HORN**—E. A. Laboratories, Inc., Brooklyn, N. Y.
- SPEEDOMETER**—Stewart-Warner Speedometer Corporation, Chicago, Ill.
- STARTING MOTOR AND GENERATOR**—Electric Auto-Lite Co., Toledo, Ohio.
- TIRES**—Goodyear Tire and Rubber Co., Akron, Ohio.
- VACUUM TANK**—Stewart-Warner Speedometer Corporation, Chicago, Ill.
- WINDSHIELD CLEANER**—Trico Products Corp., Buffalo, N. Y.