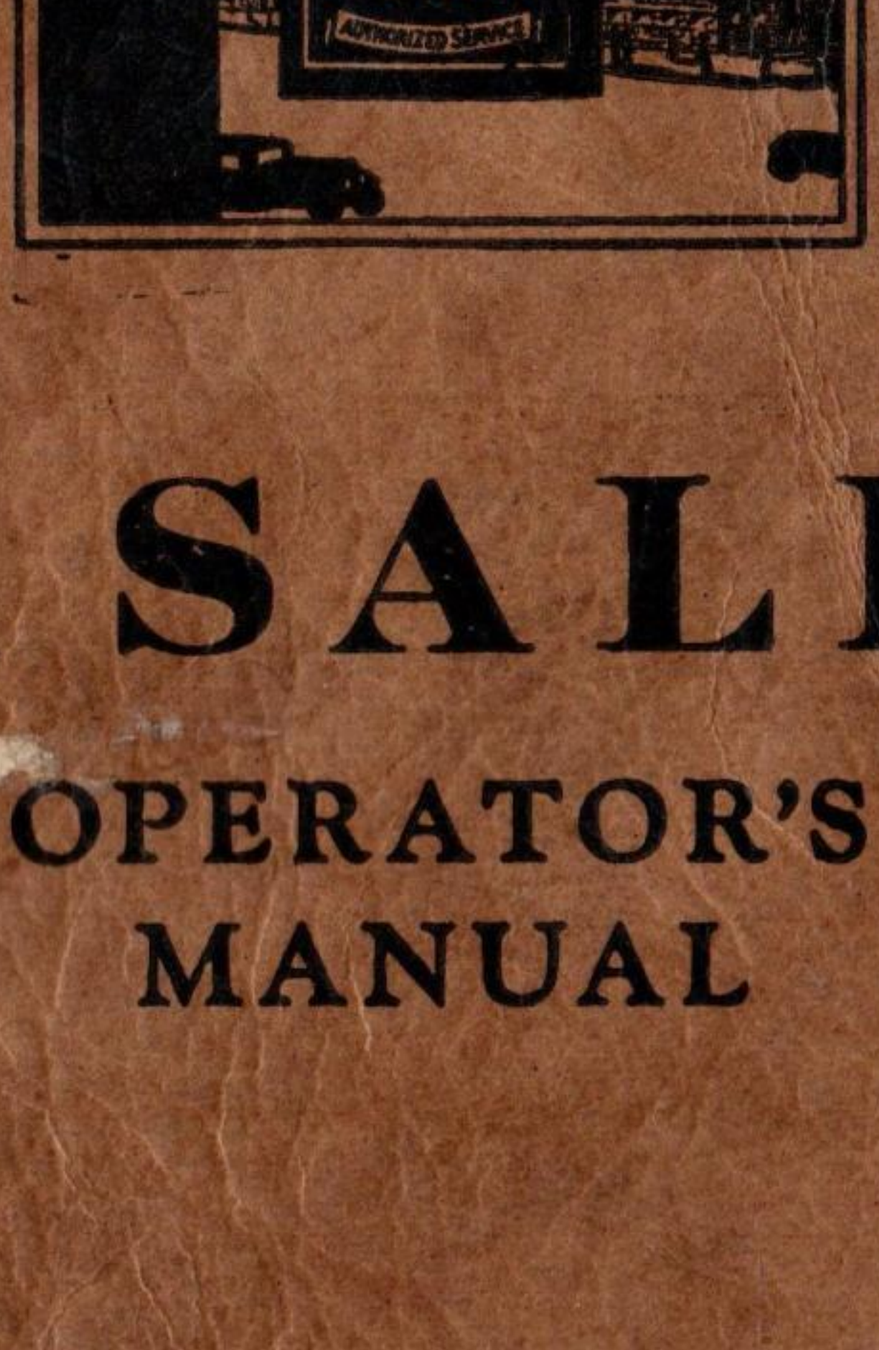

LA SALLE

OPERATOR'S MANUAL

Authorized Cadillac Service Stations
display the sign illustrated on
the cover of this Manual.

LA SALLE

Operator's Manual

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CADILLAC MOTOR CAR COMPANY

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CHAPTER I

Cadillac Service

THE owner of a La Salle car has purchased not simply a fine piece of machinery, ingeniously designed and carefully built—he has purchased a pleasant and dependable mode of transportation. The car itself is only one factor in securing this transportation—the other factor is Cadillac Service, which is built upon *a standard policy, clearly defined to the car owner and guaranteeing him efficient service everywhere at standard prices under factory regulation.*

Cadillac-La Salle Service Stations

Cadillac Service extends wherever Cadillac and La Salle cars are sold. Service stations conducted by Cadillac distributors and dealers are designated as "Authorized Cadillac-La Salle Service Stations," and are identified by the exclusive sign illustrated on the cover of this manual. Wherever this sign is displayed, the owner will find an organization prepared to service La Salle cars. This means proper equipment, factory-trained personnel, a stock of genuine replacement parts and standardized policies and methods.

The car owner's first and most frequent contact with Cadillac Service will naturally be in the service station of the distributor or dealer who sold him the car, and who therefore has the greatest interest at stake in assuring his satisfaction. Nevertheless, he may feel perfectly free to use his car for extended travel without depriving himself of the service benefits to which he is entitled at his local service station. He will find other Authorized Cadillac-La Salle Service Stations able and willing to render the same service.

Service Card

As a means of introduction at other Authorized Cadillac-La Salle Service Stations, every purchaser of a La Salle car is given credentials in the form of a Service Card. This card is mailed to him by the Cadillac factory, immediately after the delivery of the car is reported by the distributor or dealer. It is supplied in a celluloid

case, and is intended to be carried in a holder provided on the rear face of the dash.

Upon presentation of this Service Card to any Authorized Cadillac-La Salle Service Station, the car owner is entitled to the following uniform standard service:

1. All adjustments free of all charges that may be required within 90 days after the original delivery date (as shown on the card), provided the mileage of the car does not exceed 3000, and the adjustments are not made necessary by accident, abuse or neglect. This includes everything except lubrication, washing and storing.

2. Free replacement of any part which has proved to the Cadillac Motor Car Company's satisfaction to be defective in material or workmanship within one year after the delivery date, provided the mileage of the car does not exceed 12,000 and that the replacement was not made necessary by accident, abuse or neglect. This includes material and labor.

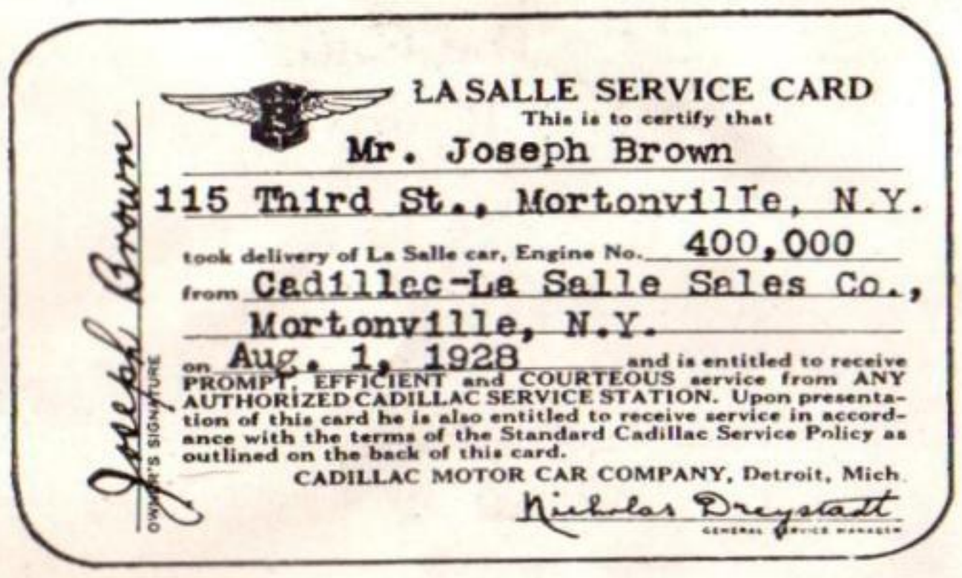

LA SALLE SERVICE CARD
This is to certify that
Mr. Joseph Brown
115 Third St., Mortonville, N.Y.
took delivery of La Salle car, Engine No. 400,000
from Cadillac-La Salle Sales Co.,
Mortonville, N.Y.
on Aug. 1, 1928 and is entitled to receive PROMPT, EFFICIENT and COURTEOUS service from ANY AUTHORIZED CADILLAC SERVICE STATION. Upon presentation of this card he is also entitled to receive service in accordance with the terms of the Standard Cadillac Service Policy as outlined on the back of this card.
CADILLAC MOTOR CAR COMPANY, Detroit, Mich.
Nicholas Dreystadt
GENERAL SERVICE MANAGER
Joseph Brown
OWNER'S SIGNATURE

Figure 1. The Service Card, when properly signed, identifies a La Salle owner at any Authorized Cadillac-La Salle service station.

The Service Card is not transferable and the no-charge service set forth above is effective only while the car is in the hands of its original owner.

Service Charges

Service work other than that described above is performed by Authorized Cadillac-La Salle Service Stations on a flat-rate basis. When a car enters the service station, it is immediately inspected by a tester, who then quotes the owner an exact price for the work he finds necessary. The owner authorizes this work at this price and, when he receives his bill, this is the price he pays.

Charges prevailing at Authorized Cadillac-La Salle Service Stations are based on standard schedules furnished by the Cadillac Motor Car Company. These schedules call for methods and tools approved by the same engineers who designed and built the car, assuring the highest quality of work at the lowest possible price consistent with this quality.

Repair Parts

Genuine La Salle parts, manufactured to the same rigid specifications as the parts entering into the original assembly of the car, are carried in stock by Authorized Cadillac-La Salle Service Stations. They are sold at uniform prices throughout the United States, and are not subject to the addition of handling, excise or other supplementary charges. Printed price lists published by the Cadillac Motor Car Company are open to inspection by owners at any authorized Cadillac distributor's or dealer's establishment.

The Owner's Obligation

All of these service facilities are placed at the disposal of the La Salle owner, in order that his car may be a continuous source of satisfaction and utility. This result cannot be guaranteed, however, unless the owner fulfils certain definite obligations himself, as follows:

1. To drive the car at moderate speeds for the first 500 miles.

2. To operate the car in accordance with the instructions contained in this manual.

3. To check the engine oil level every 100 to 150 miles, and add oil as often as necessary to keep the indicator at "Full."

4. To check the tire pressure at least every week and keep it up to the recommended pressure—45 pounds in front, and 40 pounds in rear—on cars driven at high speeds, 50 pounds in front.

5. To add distilled water to the storage battery every 1000 miles, and in warm weather every 500 miles, or at least every two weeks.

6. To lubricate the car every 1000 miles in accordance with the lubrication schedule on page 38.

7. To take the car to an Authorized Service station for inspection every 1000 miles, or at least once a month.

Lubrication

The first five items above are details which do not necessarily warrant a visit to the service station. For lubrication, however, the owner is urged to patronize Authorized Cadillac-La Salle Service Stations, because they are prepared to furnish this service in a manner that cannot be duplicated elsewhere. Only approved lubricants are used, the specifications of which have been worked out by Cadillac engineers to give the best possible results. Workmen who

specialize on Cadillac cars know exactly where lubrication points are located and how much lubricant to apply. The charge for this lubrication service over a period of 4000 miles is barely over half a cent a mile, which includes the cost of the lubricant.

Inspection

Preventive service is a fundamental principle of Cadillac service. "Preventive service" is the practice of inspecting the car at regular intervals and making those adjustments that need attention before the need becomes an emergency. Inspections should be made every 1000 miles, in order to insure transportation satisfaction. Authorized service stations will make such inspections without charge, provided no dismantling of units is necessary.

The La Salle owner is urged to take full advantage of this, not only while the car is new, but throughout its entire life.

Preventive service, rendered every 1,000 miles by an Authorized Cadillac-La Salle Service Station is the surest guarantee of long life and complete motoring satisfaction at the least possible expense.

CHAPTER II

Operation

ONE of the first things the driver of a new car should do is to familiarize himself with the various controls described in the following chapter.

Locks

Each car is equipped with two each of two different keys, one for the combination ignition switch and transmission lock and the door lock; the other for the tire carrier and the package compartments. The ignition key can be identified by its hexagonal end, while the package compartment key is oval.

The lock number is stamped on each key, but not upon the face of the lock. The owner should make a record of the key numbers as soon as he takes delivery of his car, so that in the event both keys are lost, a duplicate key can easily be obtained from a Cadillac distributor or dealer.

Ignition Switch Lock

The lock at the lower right-hand side of the instrument panel controls both the ignition switch and the transmission lock. To unlock the car, insert the key and turn to the right. The cylinder of the lock will then slide out about half an inch, turning on the ignition and unlocking the transmission by means of a cable connection to the shifter shafts. To shut off the ignition and lock the transmission, simply push the lock cylinder all the way in. The car can be locked when the transmission is in neutral or in reverse. *Do not attempt to shut off the ignition when the transmission is in any forward gear. Be sure to remove the key before leaving the car.*

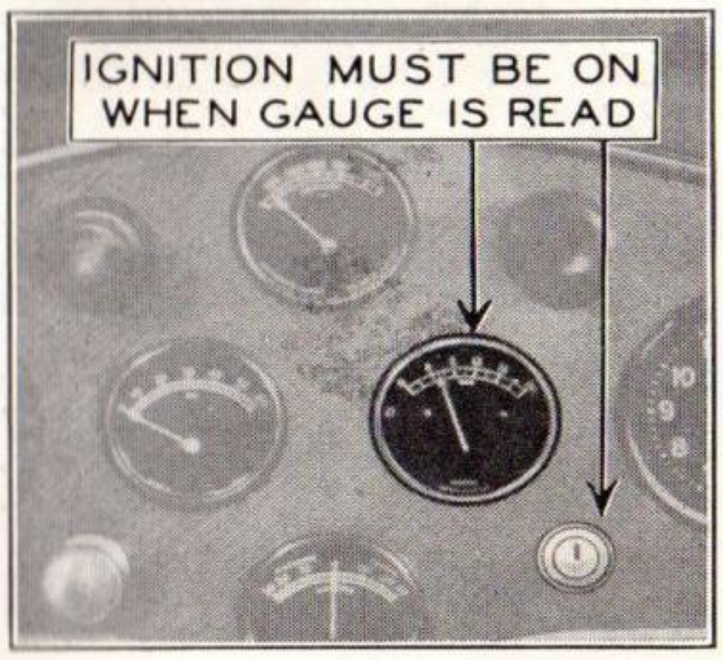


Figure 2. The gasoline gauge is operated electrically by current from the ignition circuit.

Gasoline Gauge

The gasoline gauge, marked "Fuel," is the small dial at the right on the instrument panel (Fig. 2). This gauge indicates in gallons the quantity of fuel in the tank at the rear of the car, and is operated electrically. To read from the gauge the quantity of fuel in the tank, the ignition must be switched on.

When the ignition is switched off, the gauge hand may come to rest anywhere

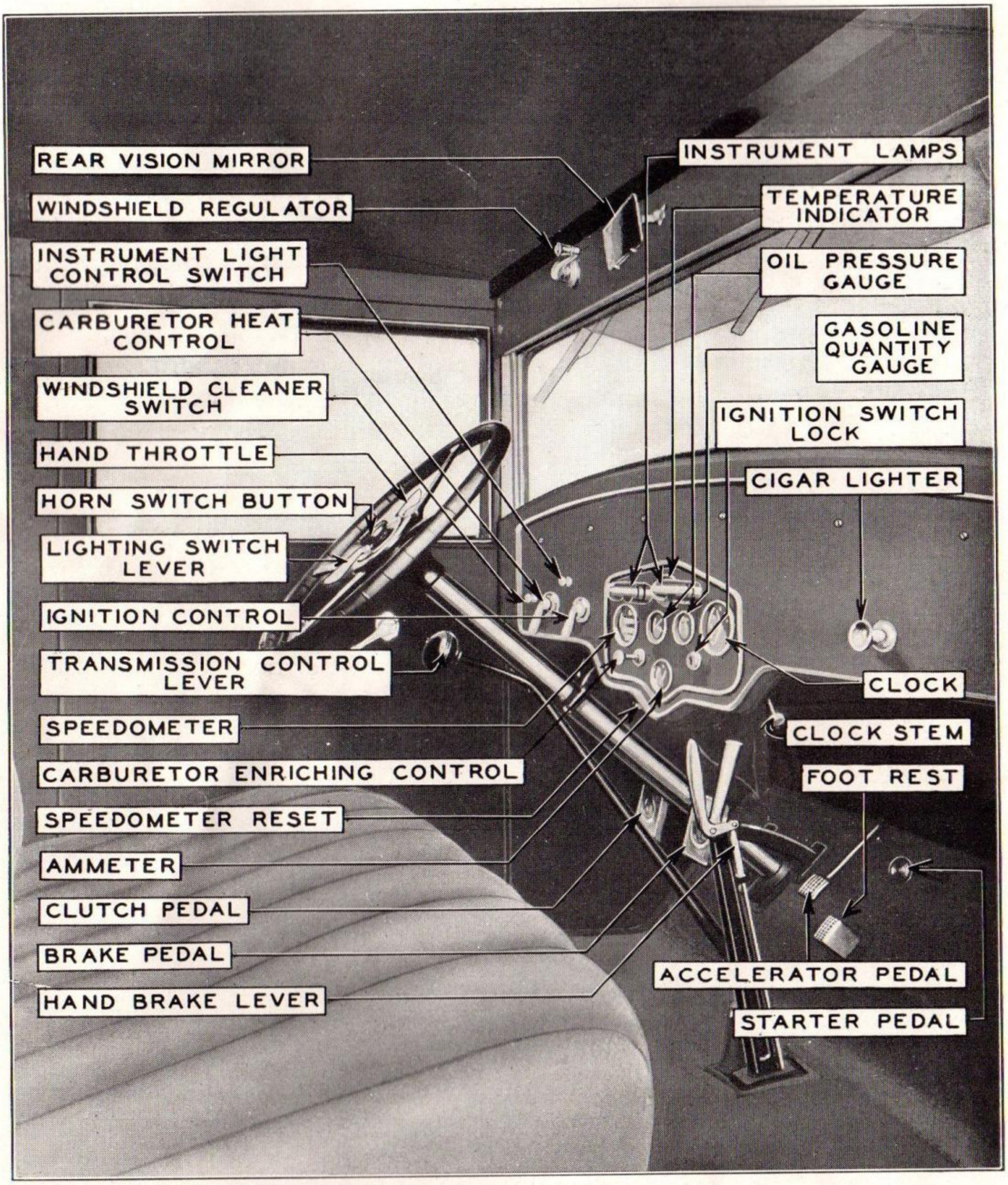


Figure 3. The new driver should familiarize himself with the instruments and controls before attempting to drive.

on the gauge. It does not usually return to zero, nor does it ordinarily stay in the position it had before the ignition was switched off. At such times, therefore, the reading of the gauge is not a true reading. A true reading is given only when the ignition is switched on.

As filling station rules forbid running the engine while the gasoline tank is being filled, on such occasions the ignition should be switched off until the engine stops and then switched on again, and left on while the tank is being filled.

If the fuel supply should give out on the road, so that the vacuum tank on the dash becomes empty, it will be necessary after refilling the gasoline tank to prime the vacuum tank. To do this, close the throttle and hold the starter pedal down for 20 to 30 seconds. *The throttle must be closed while this is done.*

Temperature Indicator

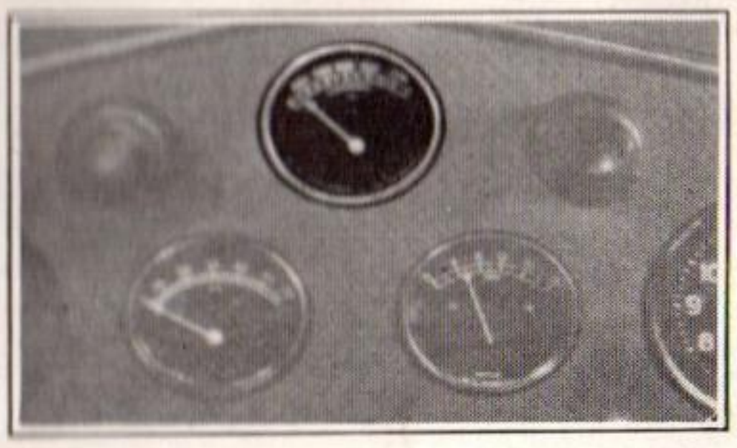


Figure 4. The temperature of the water in the cylinders should range from 160° to 190°.

The gauge at the top of the instrument panel (Fig. 4) is a thermometer for indicating the temperature of the engine, and takes the place of a temperature indicator on the radiator. The bulb end of the thermometer is inserted in the water jacket at the rear end of the left-hand cylinder head, and is connected by a small tube to the dial on the instrument board.

The normal engine temperature after the engine becomes warm is 160° to 190°.

Throttle Control

The power and speed of the engine are controlled by opening and closing a throttle valve in the carburetor. This throttle is operated both by a hand lever and a foot pedal.

The foot pedal, or accelerator, is at the right of the brake pedal (Fig. 3). The hand control is the upper lever above the steering wheel. Both controls operate the same throttle; the hand lever, however, remains in the position to which it is moved, whereas the accelerator must be held down to keep the throttle open.

The normal position of the hand lever for driving the car is all the way up (at "Close"). In this position, the throttle of the carburetor

is open just enough to permit the engine to run at idling speed after it is warm. For starting, however, the lever should be moved approximately one-fourth the way down, and should be left in this position until the engine is warm enough to permit the lever to be returned to the idling position without stalling the engine. (Also see chapter on "Cold Weather Operation.")

Ignition Control

Correct timing of the ignition in relation to the positions of the pistons is controlled automatically by the timer-distributor which provides for all ordinary advancing and retarding of the spark.

A hand control is also provided, however, for further retarding of the spark as occasion requires. The hand control is the right hand of the two levers on the instrument board directly in front of the steering column, When the pointer is all the way to the left the spark is fully advanced, When the pointer is all the way to the right, the spark is fully retarded

The correct position of the hand control lever depends on the fuel used. LaSalle cars are equipped with what are known as high compression cylinder heads. These are cylinder heads in which the space into which the fuel mixture is compressed just before it is ignited is so proportioned that a higher pressure is obtained than with low-compression cylinder heads.

High-compression cylinder heads enable the engine to develop more power when used with anti-knock fuel. The ignition is so timed at the factory that when the hand control lever is fully advanced the engine will develop the maximum power possible with anti-knock fuel.

The high-compression cylinder heads do not prevent the use of regular fuel, but when regular fuel is used the spark must be retarded slightly to secure maximum power and prevent detonation or spark knock. The spark should then be retarded just to the point where the engine "pings" slightly on rapid acceleration. This slight amount of spark knock is absolutely harmless to the engine and is an indication to the driver that the spark is set at the point that will give maximum power and economy.

When once set, the spark control does not need to be changed unless the fuel is changed or unless the accumulation of carbon makes it necessary. Carbon deposit, which accumulates with use in all engines, also causes spark knock and in time may require setting back the spark. Regardless of the kind of fuel used or the presence of carbon, the

correct setting of the spark control at any time is at the point where the engine "pings" slightly on rapid acceleration.

CAUTION—If the engine is being cranked by hand the spark should always be fully retarded.

Carburetor Enriching Control

The button at the left of the instrument panel (Fig. 5) controls a device on the carburetor for temporarily enriching the fuel mixture supplied to the engine. When starting the engine, it is necessary to have the proportion of liquid gasoline in the fuel mixture greater than at other times, because in a cold mixture only a part of the gasoline is vaporized. Pulling out the enriching button increases the proportion of liquid gasoline to air, the normal proportions being restored when the button is released and permitted to return to its original position.

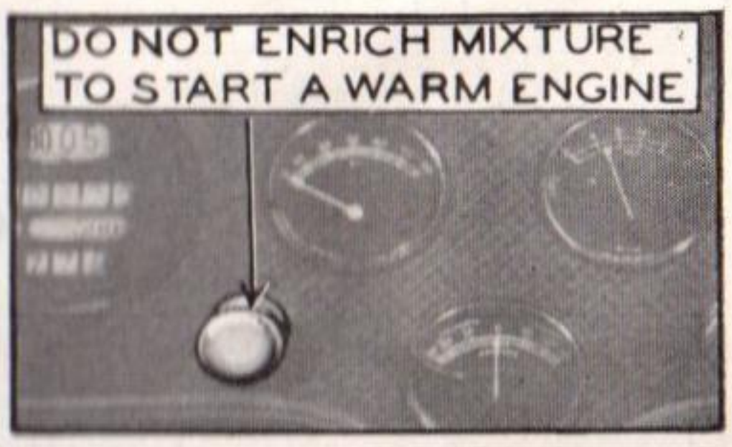


Figure 5. The carburetor enriching control does not prime the carburetor. To have any effect, it must be held out while the starter is cranking the engine.

Correct use of the enriching control not only is essential to quick starting of the engine, but also has an important effect on the life of the engine. The enriching button must be pulled out far enough in starting to provide an explosive mixture quickly so that the battery is not unnecessarily discharged by useless cranking. The button must also be held out far enough during the warming-up period so that the engine will run without missing and "popping back."

On the other hand, it should not be pulled out any further or held out any longer than is necessary to accomplish these results, because some of the excess liquid gasoline in the enriched mixture does not burn and washes off the oil on the cylinder walls, interfering with proper lubrication of the pistons.

If the engine still retains heat from previous running, the enriching control should not be used without first attempting to start the engine on the normal mixture. If the enriching button is pulled out for starting a hot engine, the mixture may be made so rich that starting will be impossible.

The enriching button is not a priming device. It has no effect whatever on the fuel or the fuel mixture unless the engine is being cranked or is running under its own power. To have any effect, the button must be pulled out and held partly out during the cranking operation.

Carburetor Heat Control

The lever marked "Carb. Heat" on the instrument board, directly in front of the steering column, controls the flow of exhaust gases through the jacket of the intake header which conducts the fuel mixture from the carburetor to the cylinders. This lever operates a valve at the front end of the left-hand exhaust manifold.

The lever should be turned to the "Heat On" position when starting the engine, and should be carried in this position for average driving. For continuous driving at high speeds, the lever should be turned to "Heat Off." This is important, for the maximum power of the engine cannot be obtained with the valve in the exhaust manifold closed.

Starter Pedal

The starter pedal is at the right of the accelerator (Fig. 3). Pushing this pedal forward brings into action the electric motor that cranks the engine for starting. Do not push the starter pedal when the engine is running.

The starter pedal is only one of the controls that must be manipulated to start the engine. Unless there is an explosive mixture in the cylinders and a spark to ignite it, it is useless to crank the engine. The starter pedal should not be operated, therefore, until the necessary preliminary steps have been taken. The following, in their proper order, are the various steps that must be performed to start the engine.

1. Make sure that the transmission control lever is in neutral.

2. Place the throttle lever about one-fourth the way down from the idling position.

3. See that the carburetor heat control lever is all the way toward "Heat On."

4. Switch on the ignition.

5. Unless the engine is still warm, pull back the carburetor enriching button and hold it back. If the engine is still warm, do not pull back the enriching button unless the engine fails to start on the normal mixture.

6. Push the starter pedal forward and hold it until the engine starts. Release it immediately as soon as the engine starts. (See below for probable causes for the engine failing to start.)

7. Let the carburetor enriching button partly in as soon as the engine starts, and all the way in as soon as the engine is warm enough to permit it.

8. Note whether pressure is indicated on the oil pressure gauge, and stop the engine at once if no pressure is indicated.

9. Move the throttle lever up to the idling position as soon as the engine is warm enough to permit it.

In cold weather, disengage the clutch before pressing down the starter pedal, and hold it down during the cranking operation. This relieves the starter of the necessity of turning the transmission gears which are immersed in lubricant. The additional load is small in warm weather when the lubricant is thin, but in cold weather, the power required to turn the gears through the thickened lubricant adds unnecessarily to the demand upon the battery.

What to Do if the Engine Fails to Start

If the engine fails to start after being cranked for a few seconds, release the starter pedal and investigate the following possible causes:

The ignition may be switched off.

There may be no gasoline in the tank in the rear of the car.

There may be no gasoline in the vacuum tank on the dash. If the vacuum tank should be empty, prime it by closing the throttle, and with the ignition switched off, holding the starter pedal down for 20

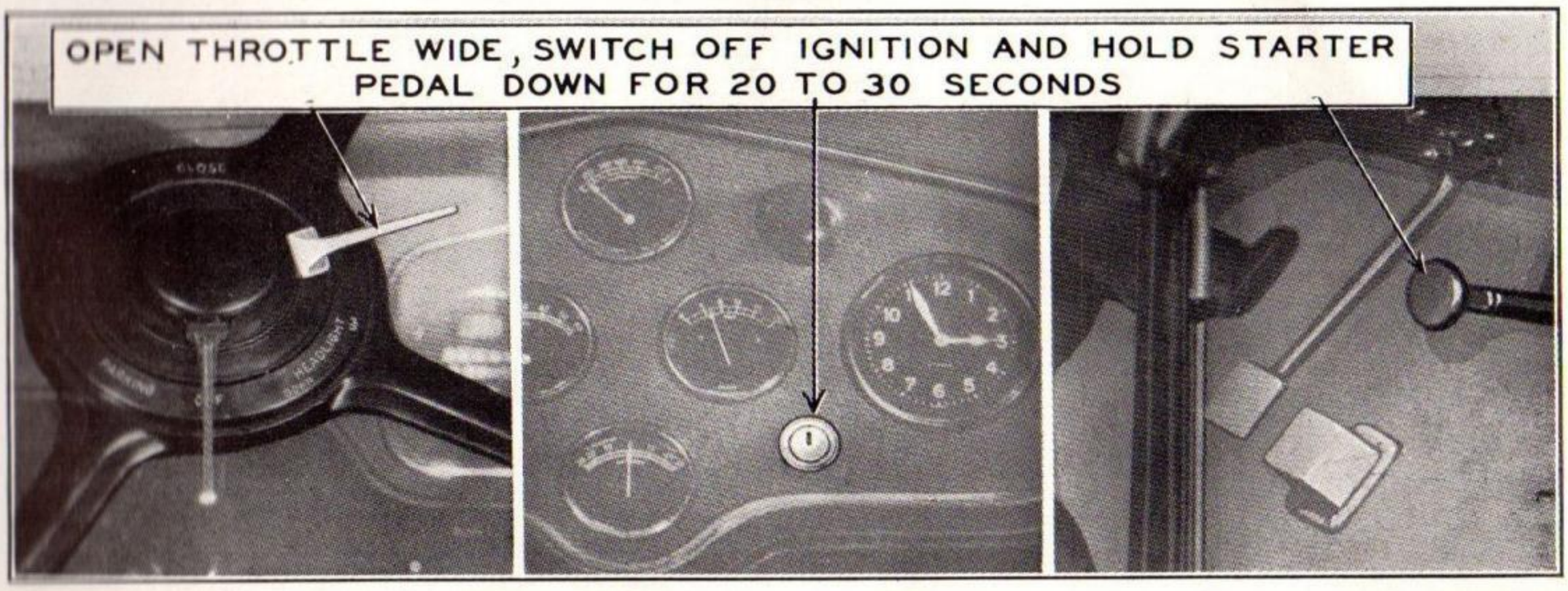


Figure 6. What to do when the engine refuses to start because the carburetor is flooded.

to 30 seconds. *The throttle must be closed while this is done.* Then open the throttle, switch on the ignition, and try again to start the engine in the usual manner.

The carburetor may be flooded by unnecessary use of the enriching device when the engine is warm. To get rid of this surplus gasoline in the carburetor, open the throttle wide, and, with the ignition switched off, hold the starter pedal down for 10 to 15 seconds. Then return the throttle lever to the usual position for starting, switch on the ignition and try again to start the engine.

Oil Pressure Gauge

The small dial at the left on the instrument panel (Fig. 7) is the oil pressure gauge. This gauge does not indicate the quantity of oil in the engine. It indicates only the pressure under which the oil is forced to the engine bearings.

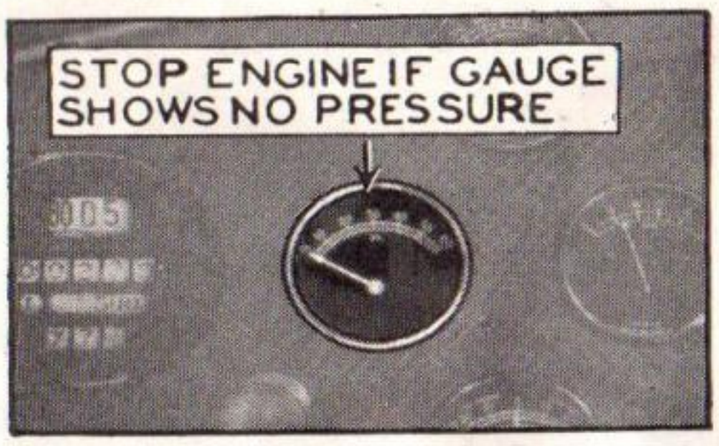


Figure 7. The oil pressure gauge does not show how much oil is in the engine—it shows pressure only. The pressure when the engine is idling should be 7 to 10 pounds.

When the engine is not running, the pointer on the oil pressure gauge should remain at zero, but as soon as the engine is started and as long as it runs, the gauge should show pressure. If the gauge does not show pressure when the engine is running, stop the engine at once and determine the cause. Serious damage may be done if the engine is run without oil pressure.

The amount of pressure indicated by the gauge depends upon the speed of the engine and the viscosity of the oil. At idling speed with fresh oil of the correct viscosity, the oil pressure after the engine is warm should be 7 to 10 lbs. Before the engine is warm, the pressure will be higher. After the oil has become thin, the pressure will be lower. These are normal variations from the standard and do not indicate need for attention.

Clutch Pedal

The clutch pedal is the left-hand pedal. When this pedal is in its normal or released position, the clutch is engaged. The flywheel of the engine is then coupled to the transmission. When the clutch pedal is pushed down, the clutch is disengaged, and the flywheel, if the engine is running, revolves independently of the transmission.

The clutch has two uses: First, to enable the car to be started gradually and without jerk or jar; second, to permit shifting of the transmission gears. The operation of the clutch pedal is discussed below in connection with the transmission control. Further comment is unnecessary at this point, except the following suggestions to the driver:

Do not drive with the foot resting on the clutch pedal. The La Salle clutch operates so easily that even the weight of the driver's foot may unintentionally cause the clutch to slip.

Do not form the practice of disengaging the clutch whenever the brakes are applied. Most occasions for use of the brakes require only slowing down without stopping or even shifting gears. A skilled driver will not touch the clutch pedal until the car is just about to stop, or until he is about to shift to a lower gear. It is a mistaken idea that applying the brakes with the clutch engaged is more severe on the brake lining. The opposite is actually the case, proof of which is in the fact that in coasting down grades, the resistance of the engine is used to assist the brakes in controlling the car speed.

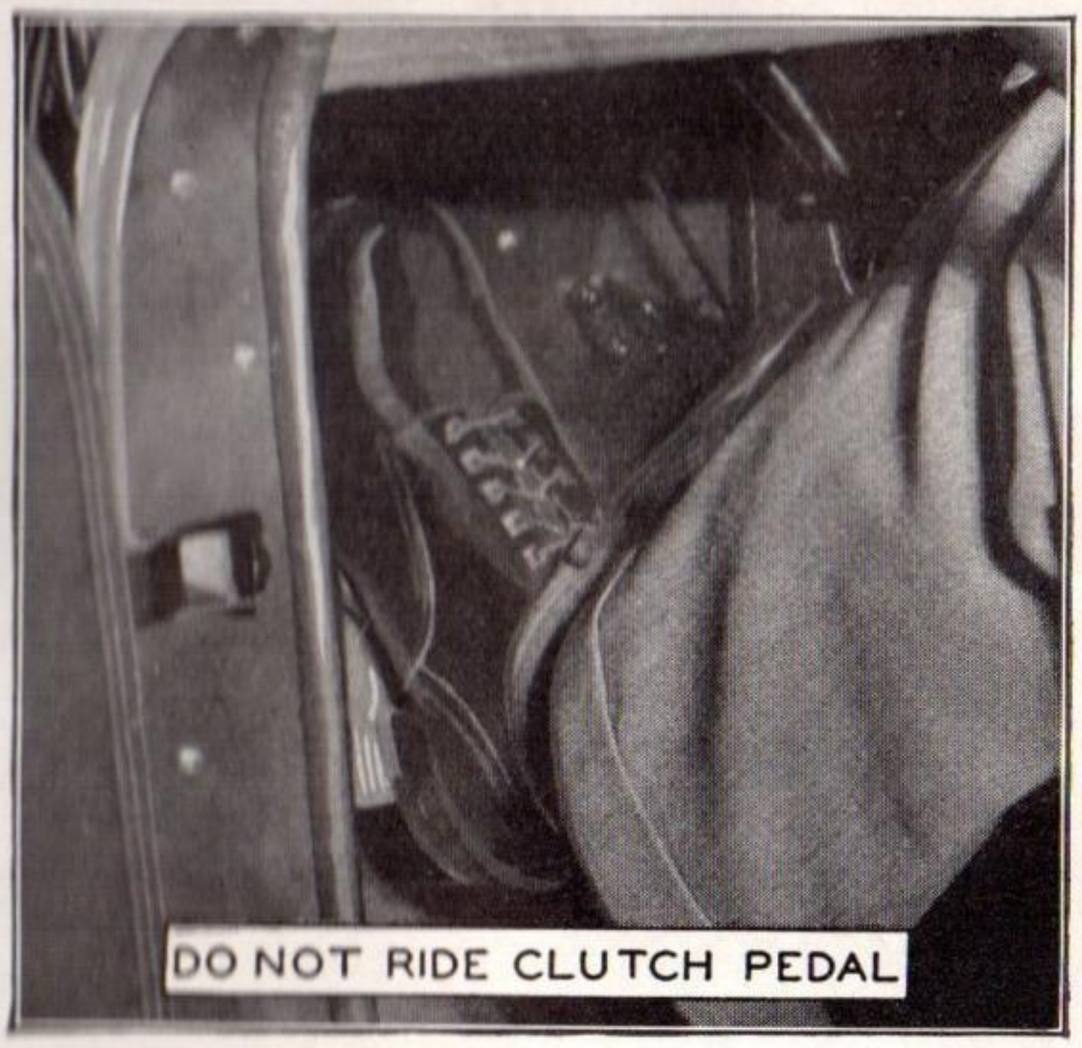


Figure 8. A good driver uses the clutch pedal only when shifting gears or about to stop.

It will be observed in operating the clutch pedal that the pedal offers almost no resistance until it has been moved about one inch. It is at this point that it actually begins to disengage the clutch. It is important that the pedal have this "lost motion." If the full pressure of the clutch springs is felt just as soon as the pedal is moved, the control rod should be readjusted. Failure to make this adjustment will result in the clutch slipping.

Transmission Control

The operation of the La Salle Syncro-mesh transmission is, in general, the same as the operation of the conventional selective sliding-

gear type of transmission. The positions of the control lever for the various speed combinations are the same and the directions in which the control lever is moved are the same. It is also necessary to disengage the clutch before moving the control lever, the same as with the conventional transmission.

The only difference is in the manner of moving the control lever. With the conventional transmission, it is customary when shifting to a higher gear, to hesitate momentarily in neutral and then move the lever quickly to its new position.

With the La Salle Syncro-mesh transmission, there is no necessity either for the hesitation in neutral or for the rapid movement of the lever during the last part of the shift. Instead, the movement of the control lever should be one smooth, continuous movement.

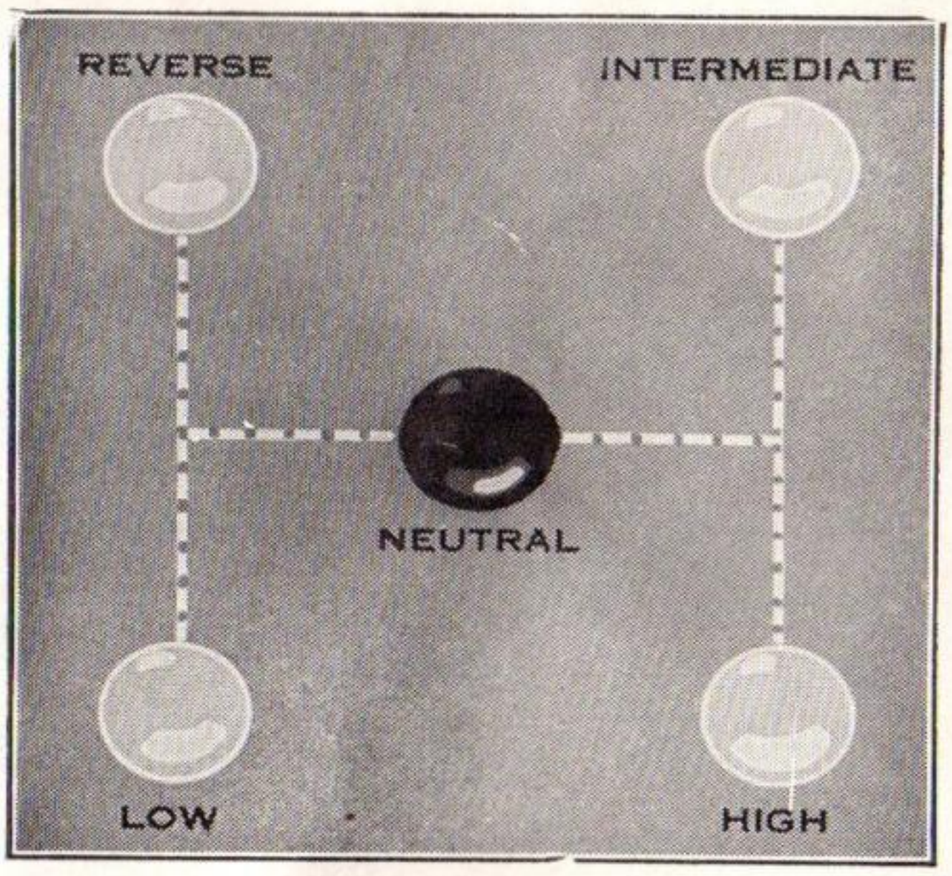


Figure 9. The positions of the control lever are the same as for the conventional type of transmission.

Without giving a detailed explanation of the synchronizing mechanism, it may be said that its purpose is to secure noiseless shifting of the control mechanism by automatically synchronizing (or equalizing) the speeds of the two members which are to be coupled together, before the shift is made.

This synchronizing effect is brought about by a pair of friction clutches of simple cone-type, which are actuated by the control lever through a cam mechanism. As the control lever leaves the neutral position, it engages one or the other of these clutches just long enough to synchronize the two members, so that when the final movement of the control lever is made, the teeth which interlock to take the drive are traveling at exactly the same rate of speed.

The synchronizing principle applies to all shifts into intermediate or high; in other words, to the following shifts:

Low to intermediate
Intermediate to high
High to intermediate

There is no synchronizing mechanism for low or reverse gears, because shifts into these gears are usually made when the car is standing still. When shifting from neutral to low or reverse, therefore, it may be necessary to wait an instant after disengaging the clutch, to give the gears a chance to stop "spinning." Do not attempt to shift from intermediate to low unless the car is standing still or moving very slowly.

If, when descending a grade at high-speed, it becomes desirable to shift from high to intermediate in order to use the engine as a brake, re-engage the clutch slowly after making the shift. This will bring the engine up to speed gradually and avoid the sudden load that would otherwise be imposed upon the clutch.

The ease and certainty with which a noiseless shift can be made with the new transmission may tempt some drivers to perform "stunts" for which it is not intended. The synchronizing principle makes it possible for the driver to make use of intermediate speed at any time that it is an advantage to do so, without having to worry whether he will get "into gear" successfully. There is no advantage to be gained, however, in using intermediate at speeds above 30 miles per hour, and any attempt to shift at higher speeds should be regarded as abuse.

Coasting

To coast on the level, simply release the accelerator pedal and disengage the clutch. If coasting to a stop, the transmission control may also be shifted to neutral and the clutch re-engaged.

In coasting down grades, however, it is recommended that the transmission be left in gear and the clutch engaged. With the throttle in the idling position, the car is thus made to drive the engine, the resistance of which assists the brakes and saves wear on the brake lining. It must be remembered that the brakes are subjected to much more severe use on grades than on the level because gravity acts continuously, whereas on the level, the brakes need absorb only the momentum of the car. Even on slight grades, coasting with the transmission in neutral or the clutch disengaged is not advisable. On any grade steep enough to warrant coasting, it is worth while to save the brakes as much as possible by utilizing the braking effect of the engine.

Ordinarily, the resistance offered by the engine when the transmission is in high is sufficient to control the speed of the car, supplemented

by moderate use of the brakes. On steep grades, however, the transmission control should be shifted to intermediate.

Do not switch off the ignition when coasting with the car driving the engine. Contrary to a common impression, this does not appreciably increase the resistance and is likely to cause damage to the engine. Even with the throttle closed, some fuel is admitted to the cylinders, and if this is not burned, it condenses on the cylinder walls and washes off the oil by which the pistons are lubricated.

Brakes

The foot brakes, operated by the right-hand pedal, are internal brakes of the shoe type, applied on all four wheels through a mechanical linkage.

The front wheel brakes are designed so that, if applied while the steering wheel is turned to the right or left, only the brake on the inside wheel is effective and the brake on the outer wheel is released, leaving it free to rotate. It is thus impossible to lock both front wheels, even on slippery pavement unless the car is moving straight ahead.

Gradual application of the brakes will provide sufficient stopping power, and will result in less strain on the mechanism, so the brakes should not be applied suddenly except in an emergency. This is particularly true in crowded traffic, for a vehicle following may not have such efficient brakes.

When applying the brakes on wet asphalt streets or slippery roads, do not disengage the clutch until the car is almost stopped. Do not attempt sudden stops. La Salle four-wheel brakes minimize the possibility of skidding under these conditions, but their effectiveness should not induce anyone to drive less carefully.

As the brake lining wears, the pedal must be pushed farther down to apply the brakes. Do not wait until the pedal goes all the way to the floor board before having the brakes readjusted. Readjustment is recommended as soon as the pedal must be pushed down to within one inch of the floor board. A temporary adjustment of the foot brakes is explained on page 52.

The hand brakes, which consist of separate internal brake shoes on the rear wheels, are operated by the hand lever at the right of the transmission control lever.

Speedometer

The lower dial of the speedometer, which is for recording "trip" mileage, can be reset to zero by pushing up and turning the knurled stem back of the instrument board.

Across the speedometer cover glass and below the total mileage dial is a strip of black celluloid on which are two white spaces. These spaces are for the lubrication notice described on page 37 in connection with the lubrication schedule. Use this notice in accordance with the schedule.

An automobile repairman should never be permitted to attempt to adjust or repair the speedometer head or to replace the glass. This work can be done only by men experienced in speedometer work, and only with special machinery and tools. If the speedometer head is removed, handle it as carefully as a fine watch. The speedometer head may easily be damaged by rough handling.

Ammeter

The lower dial on the instrument panel (Fig. 10) is the ammeter, which measures the electric current flowing to or from the battery at all times, except when the starter is cranking the engine. When current is flowing from the battery, the ammeter shows a reading on the side marked "Discharge;" when current is flowing to the battery, the ammeter reading is on the "Charge" side.

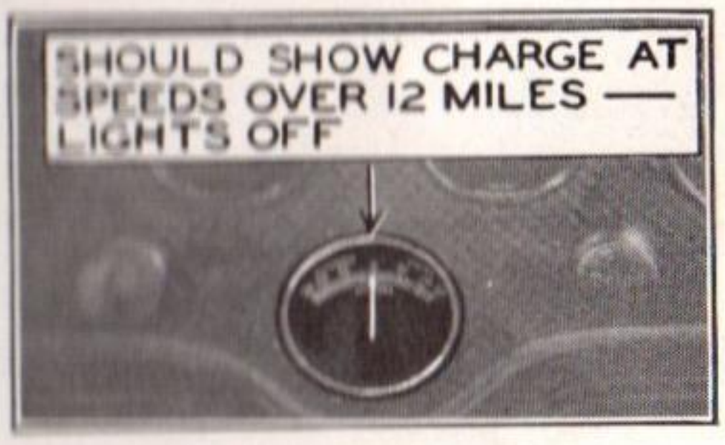


Figure 10. The ammeter indicates the amount of electrical current flowing to or from the battery.

The ammeter should indicate on the "Charge" side most of the time. Otherwise, more current will be taken out of the battery than is put into it, and the battery will eventually become fully discharged. When the engine is not running, the ammeter will indicate a current on the discharge side, depending in amount upon the number of lights in use. The rate of charge or discharge when the engine is running depends upon the speed of the engine and the number of lights in use, and is equal in amount to the difference between the current generated and the current used by the lights, horn, ignition and other electrical devices.

Ordinarily, when no lights are in use, the ammeter should show "Charge" as soon as the car is running ten or twelve miles per hour in high gear. If the ammeter should show "Discharge" with all lights off, either when the engine is not running or when the car is running more than twelve miles per hour, the cause should be investigated.

Lighting Switch

The lighting switch control is at the upper end of the steering column in the center of the steering wheel. The lever has three positions besides "Off." These positions are marked respectively: "Parking," "Down," and "Up." The corresponding combinations of lights are as follows:

Parking—Parking lights (dim), and rear lamp.

Down—Headlamp lower beams (bright), and rear lamp.

Up—Headlamp upper beams (bright), and rear lamp.

The headlamp bulbs have two filaments, one above the other, instead of the customary single filament. Both filaments are of the same candle-power (21), but because they are located in different positions with respect to the reflector, the beam of light from one filament is projected at a different angle from the other. When the switch lever is at "Up," one set of filaments is lighted and the beams are projected straight ahead, illuminating the road at a distance. When the lever is at "Down," the other filments are lighted and the beams are projected down at an angle, illuminating more brightly the road directly in front of the car.

The practice to be followed by the driver in using this double-beam feature of the headlamps will depend upon local regulations. In general it is expected that the upper beams will be used except on the following occasions: When passing a vehicle approaching from the opposite direction, when rounding a sharp curve and when topping the crest of a hill. On these occasions, and at other times when illumination is desired directly in front of the car, the lower beams should be used.

The instrument lamps are controlled by a separate switch at the left-hand end of the instrument board.

Danger of Running Engine in Closed Garage

Every person having to do with the operation or care of a motor car should be warned of the danger that attends running the engine while the car is in a small closed garage.

Carbon monoxide, a deadly poisonous gas, is present in the exhaust of all internal combustion engines. Most people are already familiar with carbon monoxide in the form of illuminating gas, or in the gas produced by furnaces and stoves when insufficient air is supplied to give complete combustion. But illuminating gas and coal gas have an unpleasant odor, which serves as a warning, whereas carbon monoxide, as produced in the internal combustion engine, is colorless, tasteless, and almost odorless, so that the victim may be overcome before he is aware of the danger. When the engine exhausts into the open air, the carbon monoxide is so diluted that it has no effect. It is when the engine is run for a time in a closed room that the proportion of carbon monoxide in the air may increase to the point at which continued breathing of it would be fatal. The United States Public Health Service advises that the average automobile engine warming up in a single-car garage will give off enough carbon monoxide in three minutes to endanger life.

Proper precaution must be taken in cold weather when the natural tendency is to keep the garage doors and windows closed. The practice of letting the engine warm up in a closed garage before opening the doors is unsafe. The risk is made greater by the fact that the enriching of the mixture by manipulation of the carburetor enriching device increases the amount of carbon monoxide formed.

CHAPTER III

Equipment

THE controls and instruments used in driving have already been described. In addition to these, the car is equipped with various devices which are for the convenience and comfort of the occupants, and are used only as occasion demands. It is suggested that the driver anticipate his use of such equipment by becoming familiar at once with the directions contained in this chapter.

Windshield and Ventilation

CLOSED CARS—La Salle closed cars are equipped with a one-piece windshield, which can be moved up and down. Movement of the glass is controlled by a handle above the windshield. To raise the glass, the handle should be turned clockwise, and to lower the glass, the handle should be turned counter-clockwise.

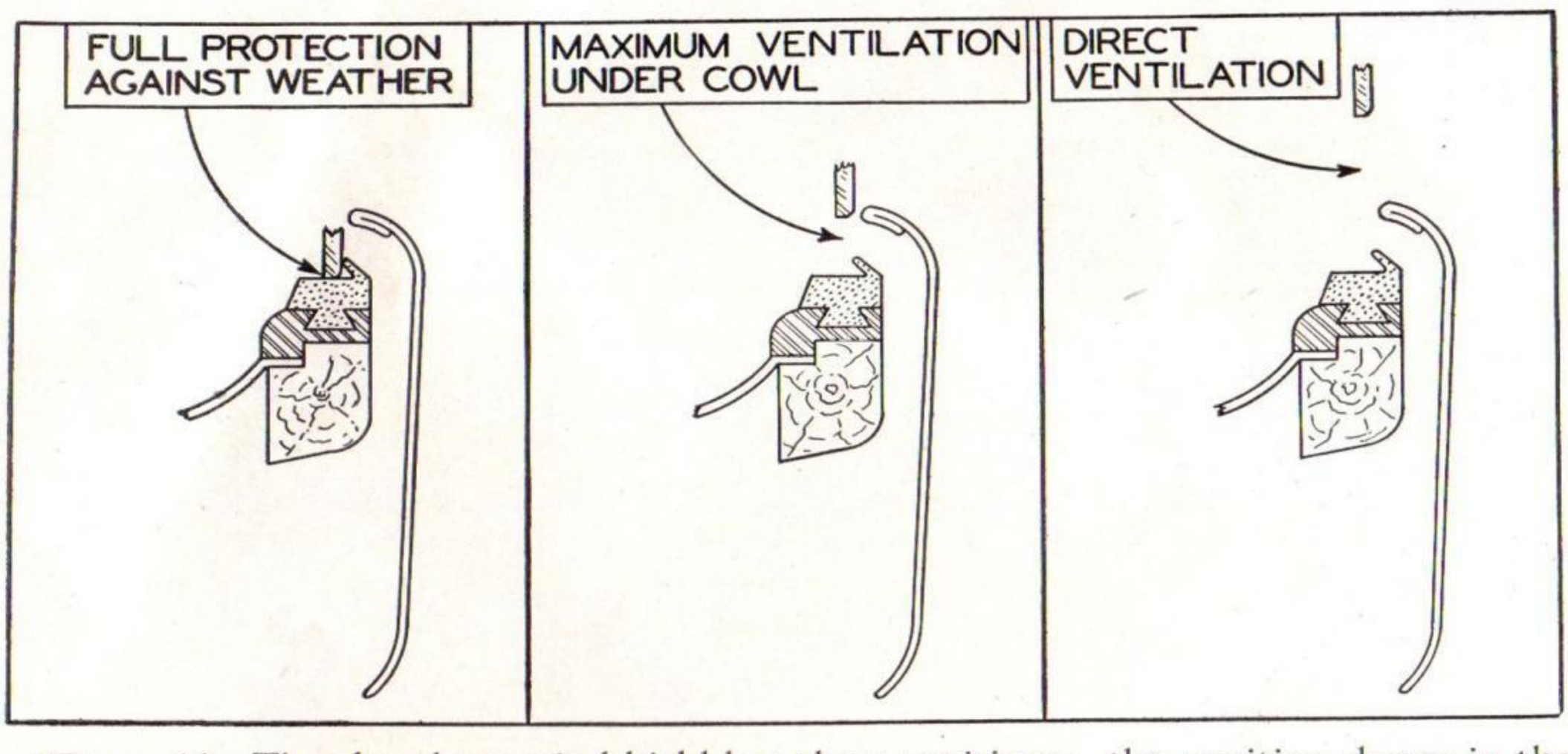


Figure 11. The closed car windshield has three positions: the position shown in the center is best for warm weather.

For ventilation under the cowl, the windshield should be raised not more than one inch, so that the lower edge of the glass is still below the ledge over the instrument board. With the windshield in this position, air is deflected into the driving compartment through an

opening in the cowl, just forward of the instrument board. If desired, the windshield can be raised above the level of the ledge over the instrument board, and air will then enter directly into the car. In this position, however, less air will be forced down under the cowl. (Fig. 11.)

Cowl ventilators are also provided on the closed cars to supplement the ventilation provided by the windshield. These ventilators are at the sides of the cowl compartment and open toward the rear, serving as outlets for the air entering under the windshield.

OPEN CARS—La Salle open cars are equipped with two cowl ventilators, which are operated by levers, just in front of the instrument board.

The open car windshield is in one section, which is pivoted at both the upper and the lower corners. To fold the windshield outward, loosen the wing nuts and tighten them again after the windshield is in the desired position.

Windshield Cleaner

The windshield cleaner consists of two wiper blades, driven by an electric motor. The cleaner is controlled by the switch button at the extreme left-hand end of the instrument board. To start the cleaner, pull out the switch button.

Adjustable Seat

The driver's seat is adjustable on all La Salle closed cars, except those that are intended to be chauffeur-driven. The entire front seat can be moved forward or backward. This adjustment is controlled by a handle on the center of the seat, about three inches above the floorboards. To move the seat forward, turn the handle clockwise; to move it backward, counter-clockwise. The handle must be turned one-half turn at a time.

As the front seat on the five-passenger coupe is divided, only the driver's half of the seat is adjustable. The handle for making the adjustment is on the side of the seat, otherwise the adjustment is the same.

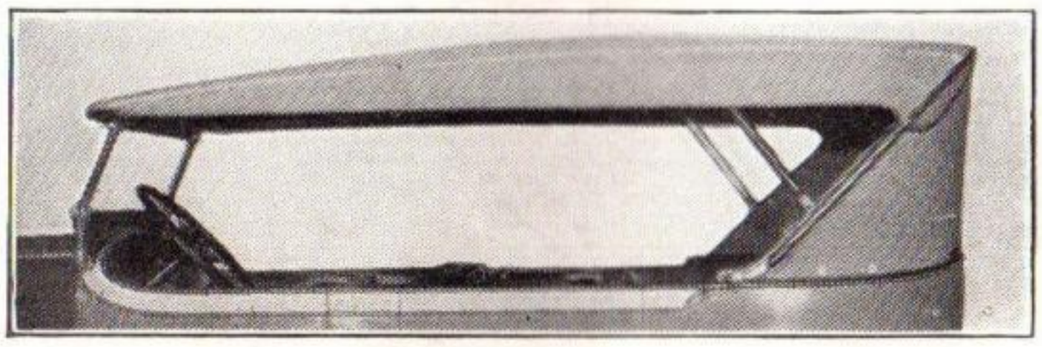


Figure 12a. Remove the nickel-plated caps on the sockets for the top supports and install the supports by pushing them into the sockets and tightening the cap screws.

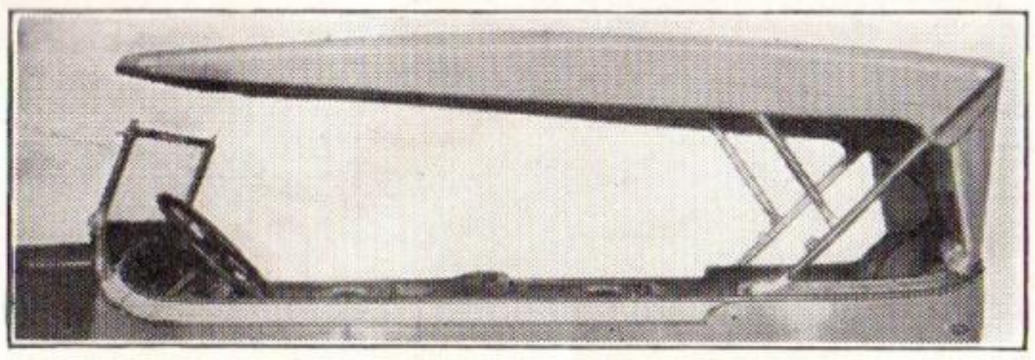


Figure 12b. Detach the side quarter curtains from the bow sockets and fold the curtains back against the rear curtains. Unscrew the thumb screws over the windshield supports and push the top up so that the clamps are free from the supports.

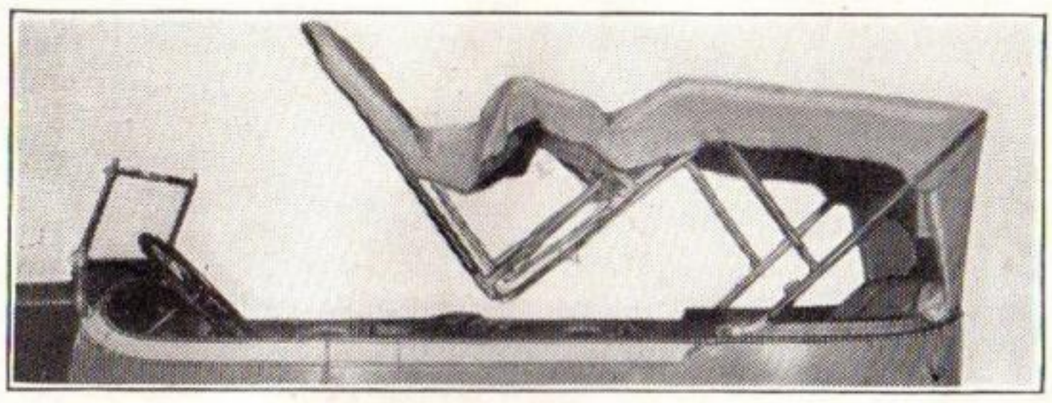


Figure 12c. Fold the front part of the top back toward the rear. Do not gather the top deck between the bows, but let it fall back clear of the top. Then fold the deck neatly and tuck it under the bows.

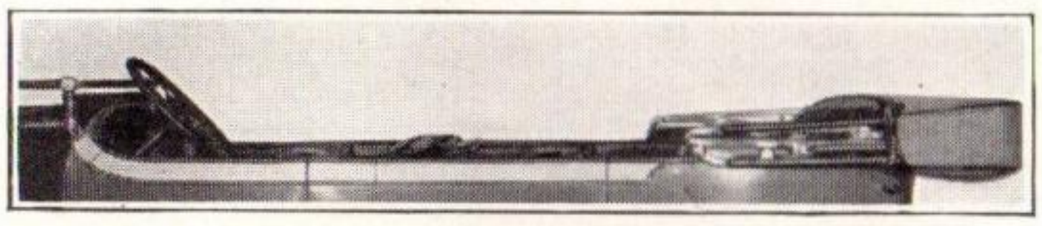


Figure 12d. Draw the dust boot over the folded top. It is secured by four straps at the open corners. These straps should be fastened around the bows and pulled tight to keep the boot smooth. The boot should look like this when properly strapped in place.

Figure 12. Folding the top.

Top and Side Curtains

Top

Illustrated directions for folding the top on open cars are given in Fig. 12.

Side Curtains on Open Cars

The side curtains, with which the open cars are equipped, are carried in an envelope provided with cloth partitions to prevent rubbing and chafing. The side curtains are stowed in a special compartment back of the front seat.

The phaeton curtains are in six sections, each of which is marked to indicate its position, as "Left Front," "Right Center." The front and center sections on both sides are each provided with a rod, the lower end of which fits in a socket in the top of the door. When a curtain is folded for stowing, this rod is parallel with the bottom of the curtain, as shown in Fig. 13. Before the curtain can be attached to the door, the rod must be moved to the position shown by the dotted lines. The upper end of the rod is slotted to engage with the stiffener that runs along the upper edge of the curtain.

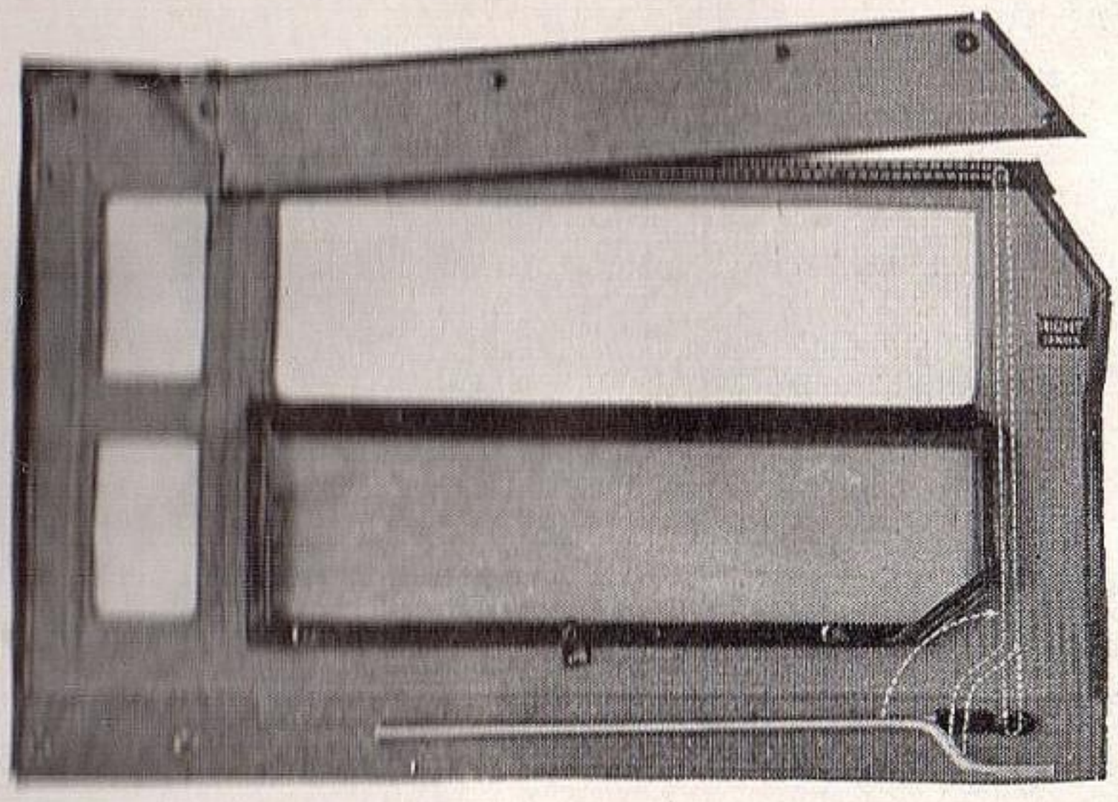


Figure 13. Side Curtain.

The folding flap on the door curtains has the upper rear corner cut off diagonally. This is to permit its being tucked through on the outside when the flap is closed. By tucking the flap this way, the wind is prevented from blowing in at the rear of the flap.

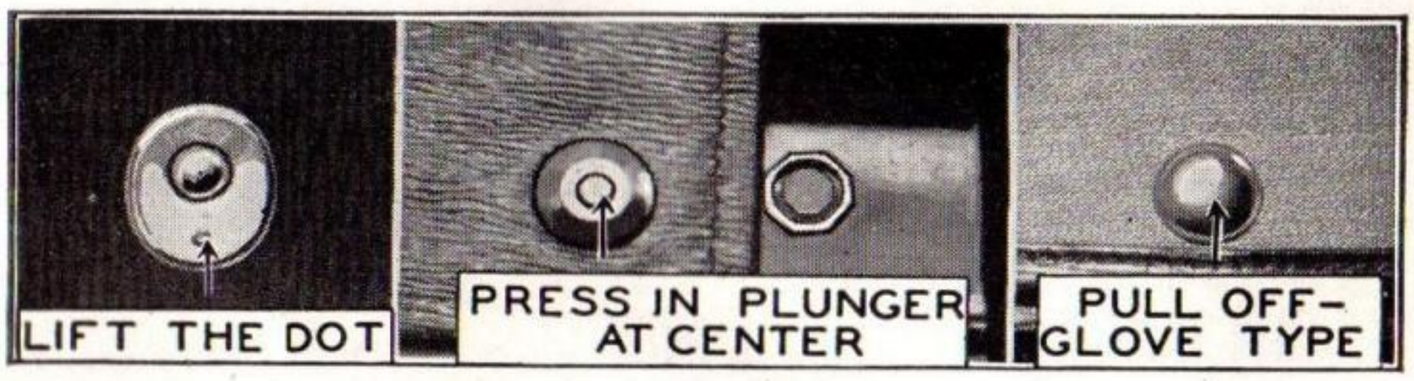
The rear sections should be applied first, followed by the center and front sections. The rear sections should be fastened to the rear bows under the side flaps of the permanent rear curtains.

Before stowing the curtains, they should be dry and clean.

Curtain Fasteners

The curtain fasteners used on the top and side curtains are of three different types. The type used on the side curtains at the points

where they fasten to the body is illustrated in Fig. 14b. To release this type of fastener, press in on the small plunger or button in the center of the fastener.



(a) (b) (c)

Figure 14. Three types of fasteners are used on the top and side curtains. The way to unfasten each is shown above.

At other points, the fastener as illustrated in Fig. 14a is used. When this type of fastener is snapped on its stud, it becomes locked on three sides. To release this type of fastener, it must be lifted on the side that is not locked. This side is indicated by the small projection to which the arrow points in Fig. 14a. This type of fastener cannot be released by lifting it at any other side.

The remainder of the fasteners used on the top and side curtains are of the usual glove type. (Fig. 14c.)

Tools

The compartment for tools is under the front seat. When placing tools in the compartment be sure they are placed so that they do not interfere with the operation of the seat adjustment.

The tools comprising the standard equipment are listed below, and are illustrated in Fig. 15. Items listed opposite Nos. 23, 24, 25, 26, and 27 are not illustrated.

1. Open end wrench $1\frac{1}{8}$-$\frac{7}{8}$
2. Open end wrench $\frac{3}{4}$-$\frac{11}{16}$
3. Open end wrench $\frac{5}{8}$-$\frac{9}{16}$
4. Open end wrench $\frac{1}{2}$-$\frac{7}{16}$
5. Distributor wrench (with gauge for adjusting timer contact points and spark plugs)
6. Distributor wrench (plain)
7. Center punch
8. Cold chisel
9. Small screw driver
10. Large screw driver
11. Hammer
12. File
13. Pliers
14. Oil can
15. Monkey wrench
16. Hand starting crank
17. Hub cap wrench (Fig. 15 shows wrench for wire wheels)
18. Spoke wrench (Wire wheels only)
19. Grease gun
20. Wheel bearing wrench (Wire wheels only)
21. Jack handle
22. Jack
23. Rim wrench (Wood wheels only)
24. Brace wrench (Disc wheels only)
25. Tool bag
26. Lubrication chart
27. Operator's Manual

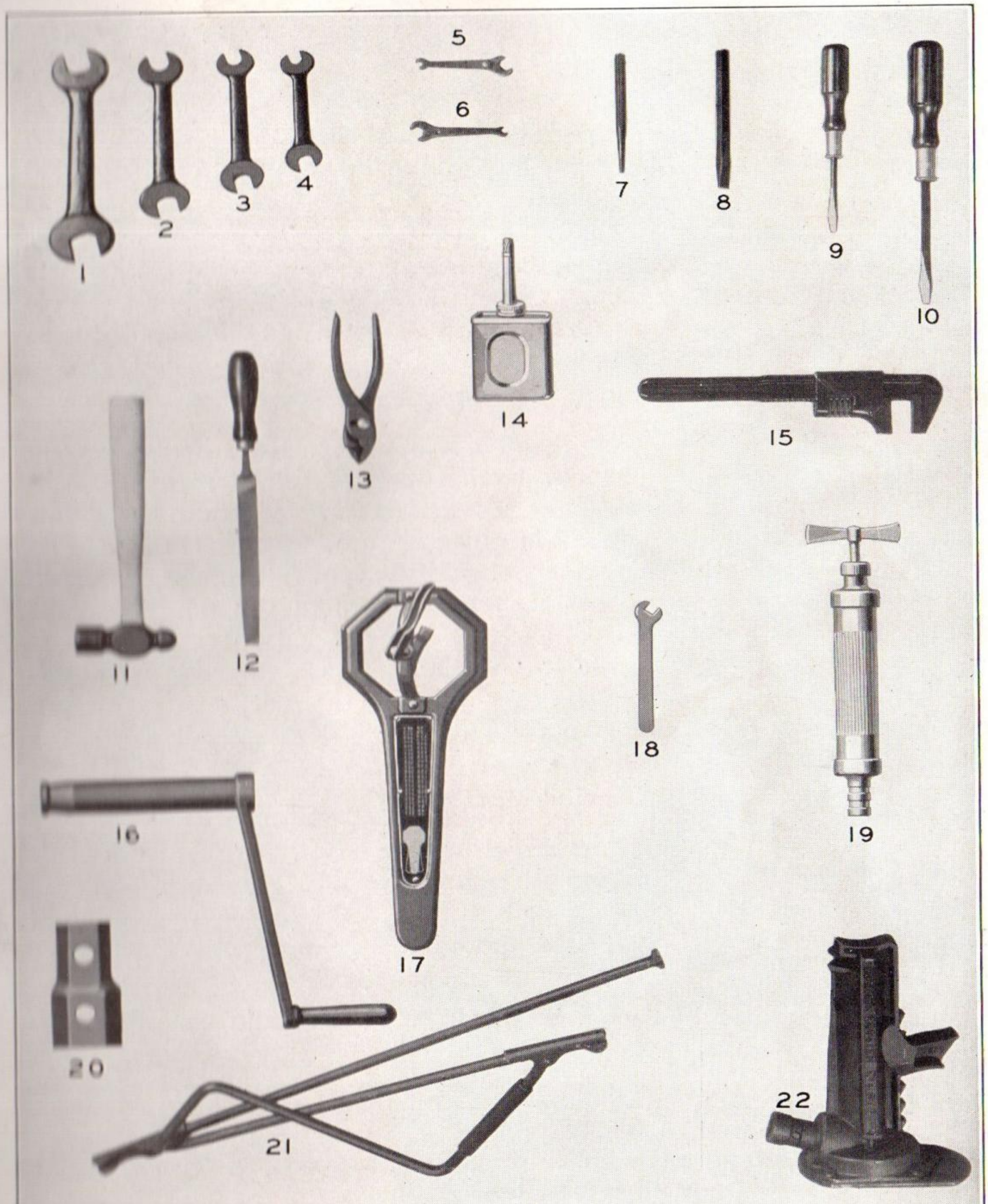


Figure 15. The tools are carried in the compartment under the front seat. See page 28 for the name and use of each tool.

Tires

Tire Valve Caps

The valve caps used with some makes of tires are a combination dust and valve cap. This type of cap can be removed and installed without screwing the cap the entire length of the threads on the valve stem.

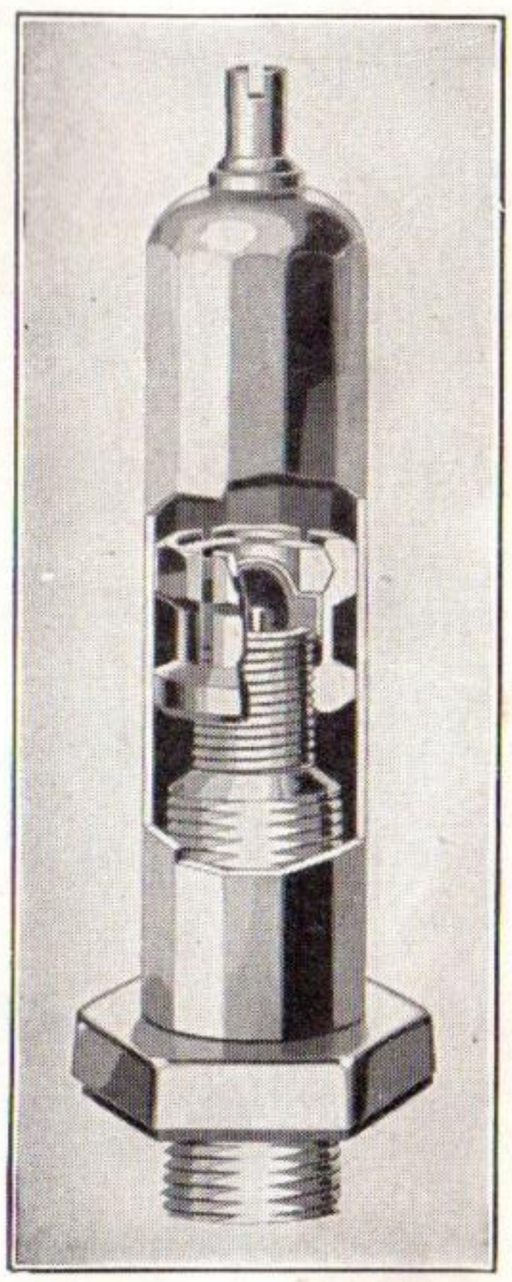


Figure 16. Tire valve cap.

To remove one of these valve caps, turn it two or three turns counter-clockwise. This loosens the sliding nut inside the cap. Next, pull the cap up as far as it will go. Then remove the cap by unscrewing it the rest of the way.

To install a valve cap, place the cap over the valve stem and turn it a few turns clockwise to engage the threads in the sliding nut. If the sliding nut is too far inside the cap to be reached by the valve stem, shake the nut down by tapping the bottom of the cap on some solid object. When the valve stem has been started in the sliding nut, push the cap down over the stem as far as it will go. Then turn the cap until it locks tightly.

Inflation Pressure

For normal driving, the front tires should be inflated to a pressure of 45 lbs. and the rear tires to 40 lbs. The inflation pressure should be checked at least weekly, and should never be permitted to drop more than 5 lbs.

On cars driven at high speeds, the front tires should be inflated to 50 lbs. This is important.

Tire Carrier (Wood Wheel Equipment)

To remove the spare tire from the carrier, proceed as follows: Insert the key in the lock and turn it to the right.

Remove the lock, using the key as a handle.

Unscrew the clamping screw with the wrench furnished in the tool equipment.

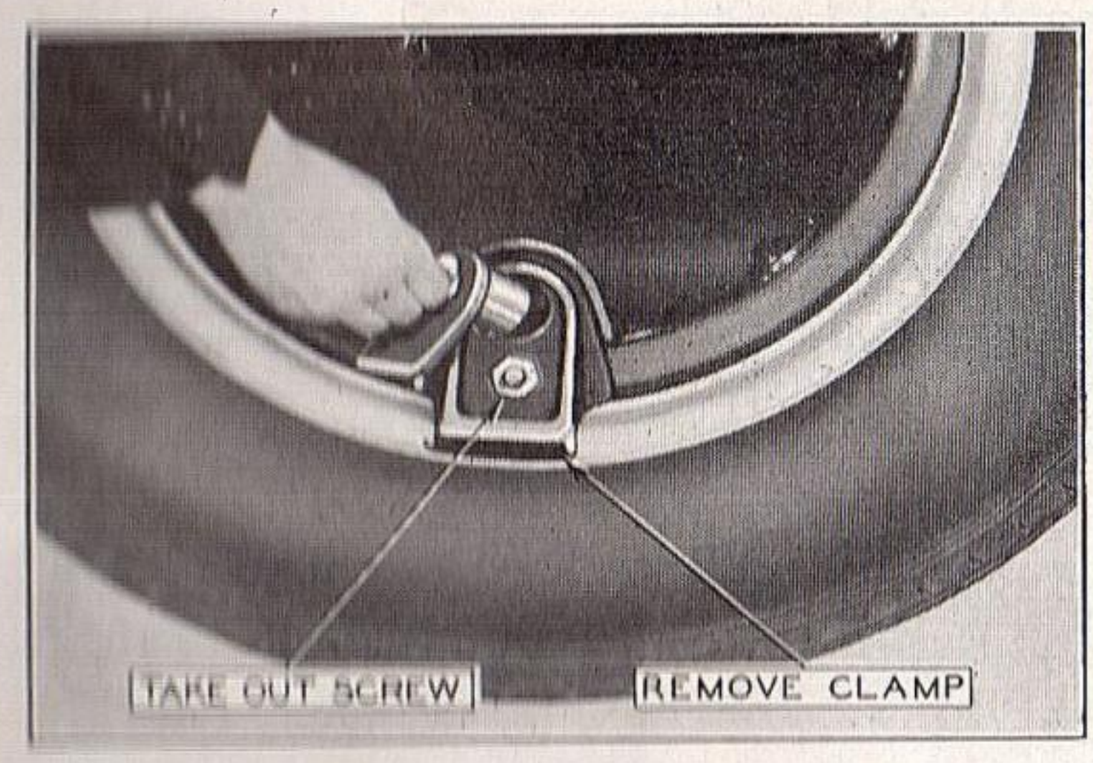


Figure 17. To remove the spare tire, unlock the lock, remove the screw and take off the clamp.

Remove the rim clamp, taking care not to lose the clamping screw.

Remove the tire with rim, by pulling it out at the bottom and then lifting it off the carrier.

To place a tire and rim on the carrier, reverse the above order. After tightening the clamping screw, unlock the lock and put it into place.

Wire Wheel Carrier

To remove the spare wire wheel from the carrier, first unscrew the dust cap which protects the lock. Insert the key in the lock and turn it to the right. Then unscrew the large nut, using the hub cap wrench. The wheel can then be taken off the carrier.

When installing the wheel on the carrier, tighten the nut as far as it will go. Then insert the key and turn it to the left.



Figure 18. After unlocking the lock, the large nut holding the wire wheel can be unscrewed with the hub cap wrench.

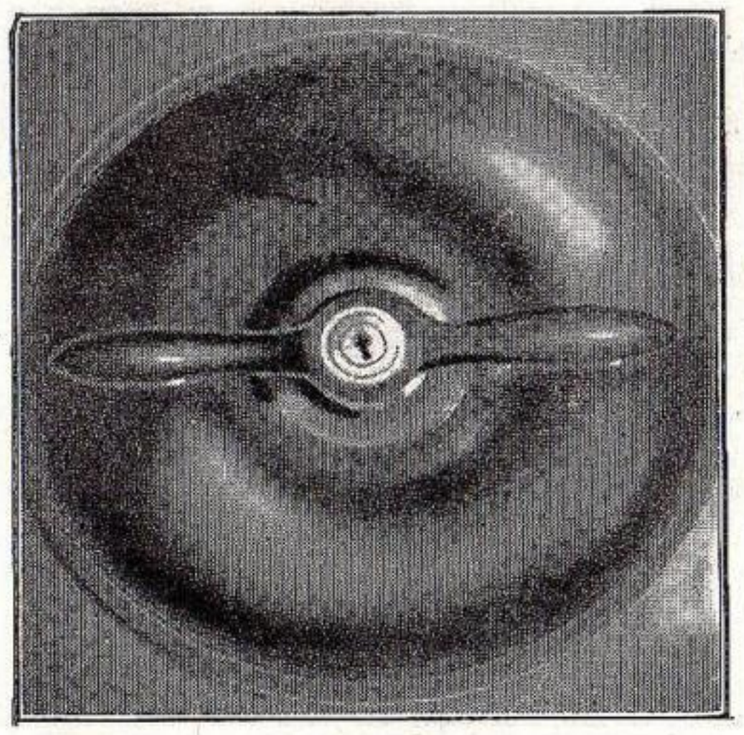


Figure 19. The clamp over the disc wheel can be unscrewed by hand after it is unlocked.

Disc Wheel Carrier

To remove the spare disc wheel, unscrew the small dust cap and unlock the carrier by turning the key to the right. Then unscrew the

large clamp, removing the large dust shield. The wheel can then be taken off the carrier, after unscrewing the cap nuts by which it is fastened.

When installing a wheel on the carrier, tighten the clamp and lock it in place by turning the key to the left.

Lock for Spare Tires on Fenders

When the spare tires or wheels are carried on the fenders, a lock is provided for each wheel or tire. This lock is fastened to the fender and must be removed before the tire or wheel can be removed. To remove the lock, insert the key and turn it to the right. The lock can then be lifted out.



Figure 20. When spare tires are carried on the fenders, the lock must be removed from the fender before the spare tire can be removed.

When mounting spare tires in fenders, they should be deflated slightly before being put in the fender well, and should be fully inflated after they are in position. By following this method, a snug fit is secured, and the tires or tire covers are prevented from chafing.

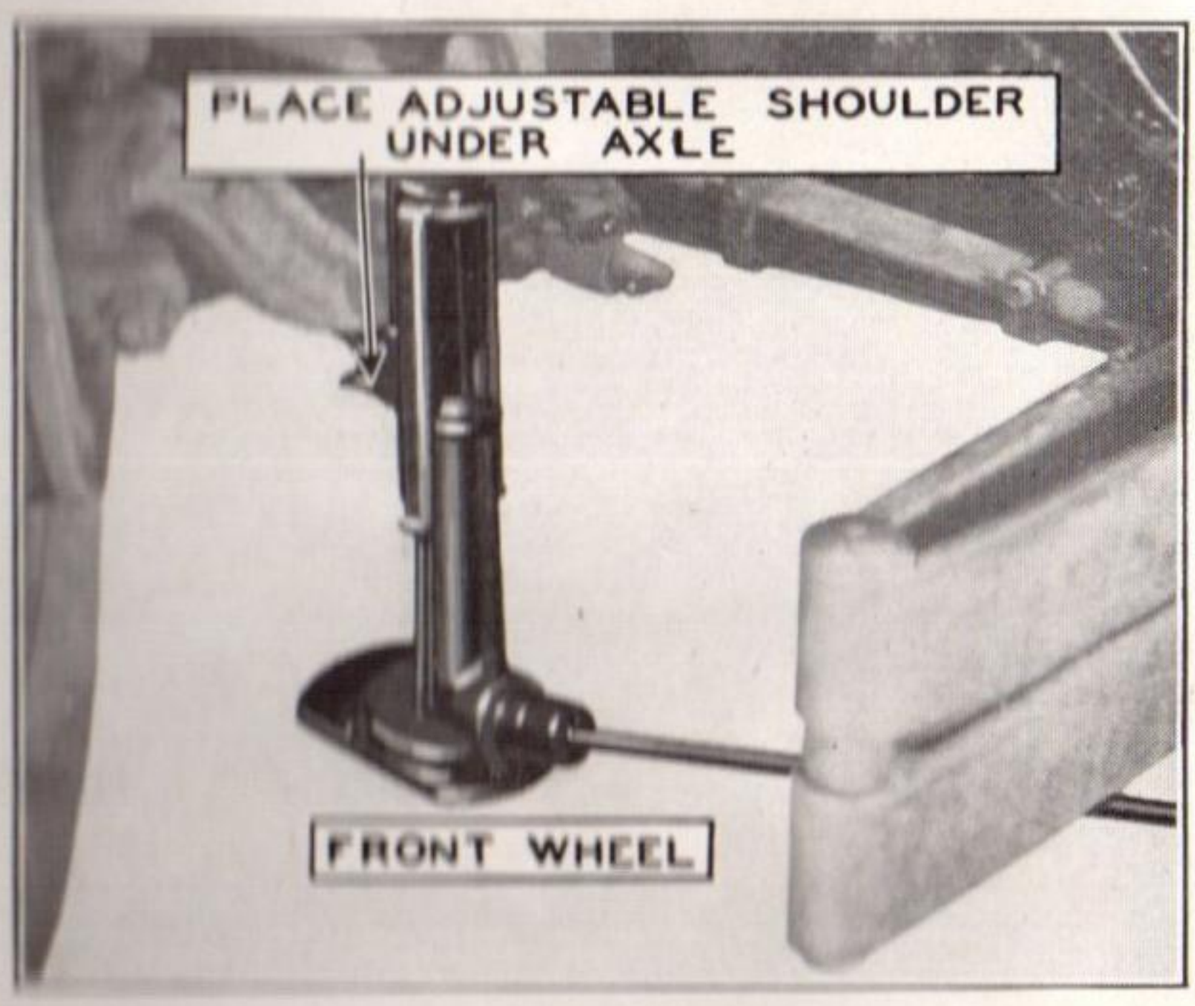
Truing up Rim

If a rim on a wood wheel does not run true, it may be trued up in the following manner: Rotate the wheel slowly and mark the part that runs farthest out from the face of the wheel. Loosen slightly the nuts diametrically opposite the mark and then tighten the nuts on the marked side. Test the wheel again, and if it still does not run true, repeat the operation.

Use of Jack in Changing Tires

When a tire is "flat," the axle is not always far enough above the ground to permit placing the jack directly under the axle. It is then necessary to make use of the adjustable shoulder which engages with teeth on the side of the jack.

The illustrations in Figure 21 show how the adjustable shoulder should be placed under the axle.



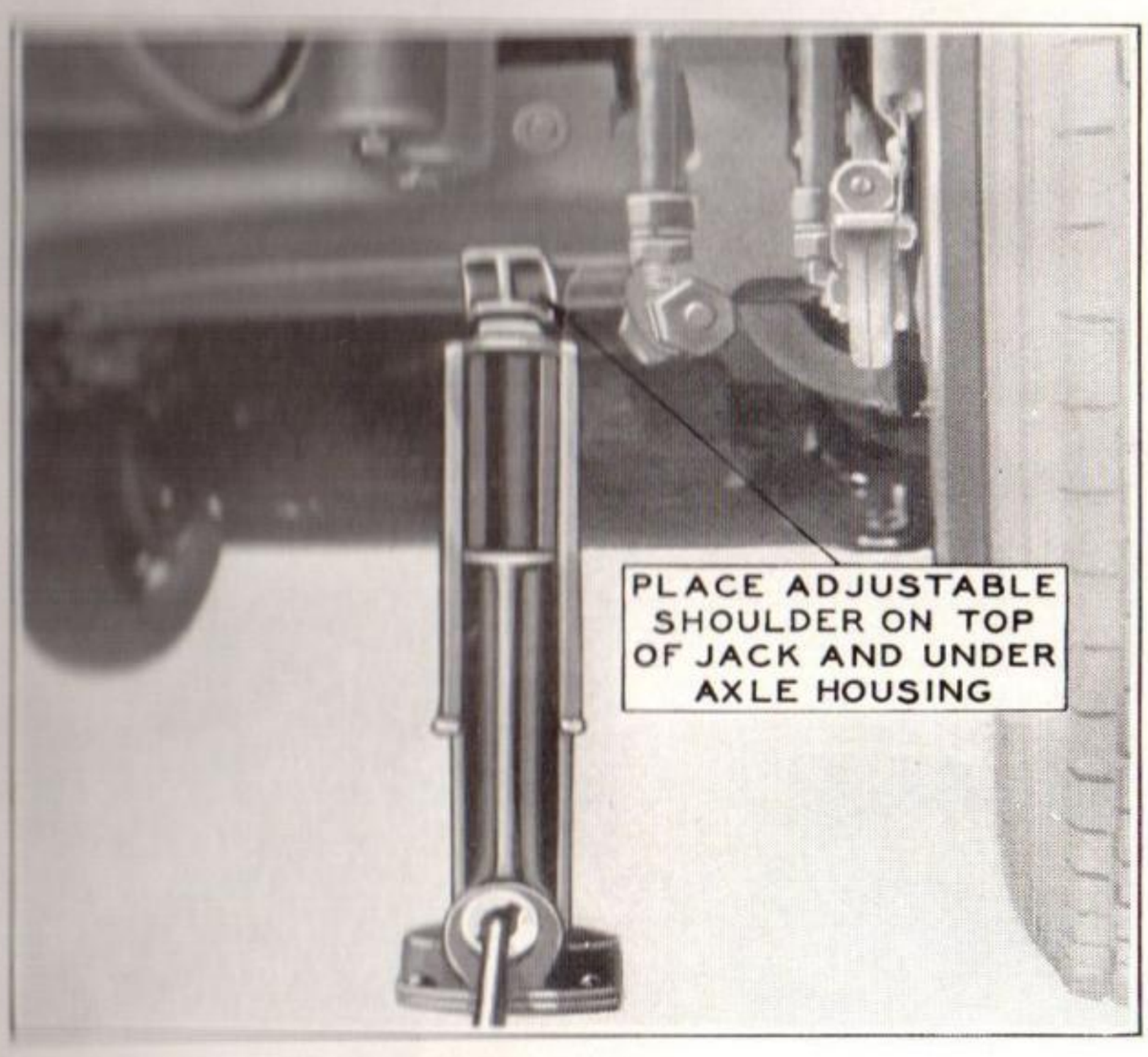


Figure 21. To jack up the car, it is necessary to have the jack in the proper position under the axle. The correct position for the front axle is shown above and for the rear axle, below.

Changing Tires

If an inflated spare tire is always carried on the spare rim or wheel, the driver will seldom or never have to disassemble a tire from the rim. In case of tire trouble, it is then merely necessary to remove the rim or wheel with the flat tire and then install the spare in its place. Illustrated directions for performing this work on wood, wire and disc wheels are given on pages 34, 35 and 36.

Tire Balancing Marks

The tires are balanced to offset the weight of the valve stem. If a tire is removed, it must be reinstalled in its original position with respect to the rim; otherwise the tire and wheel will be unbalanced.

A small red square is accordingly branded in the rubber on the side of each tire. This mark must always be in line with the valve stem.



Figure 22a. Jack up the wheel until the tire clears the ground. Remove the dust cap and clamping nut from the valve stem. Remove the six rim clamps, unscrewing them with the brace wrench supplied in the tool kit.

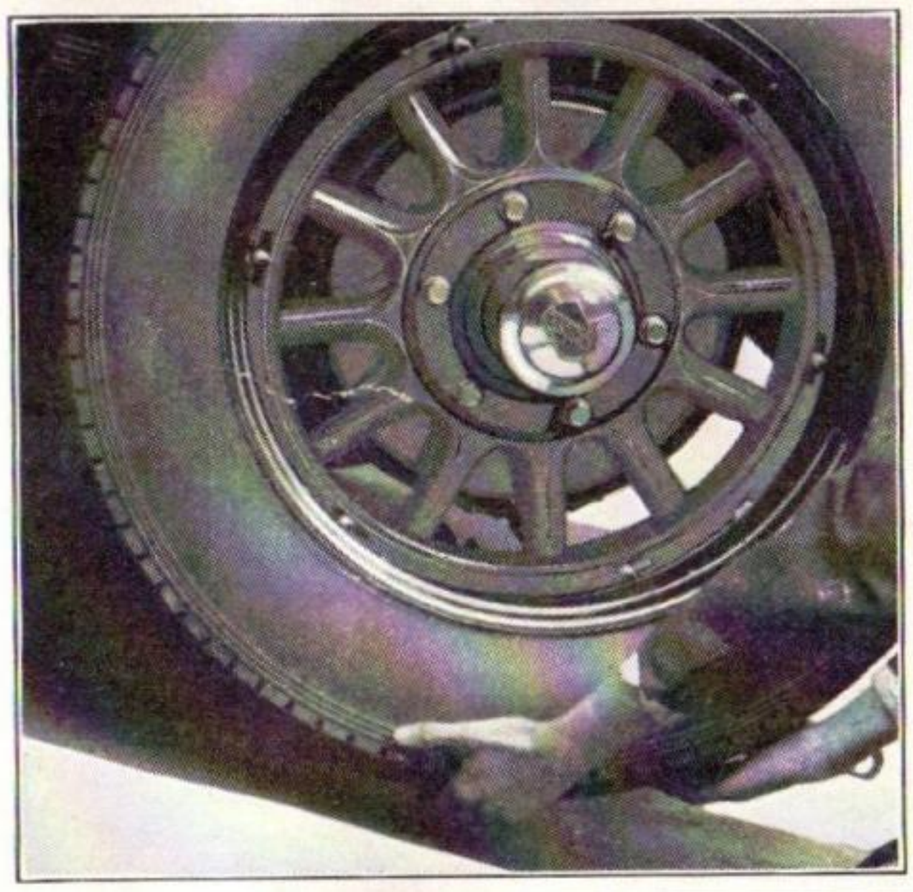


Figure 22b. Rotate the wheel until the valve stem is at the top, and pull the bottom of the rim away from the wheel.

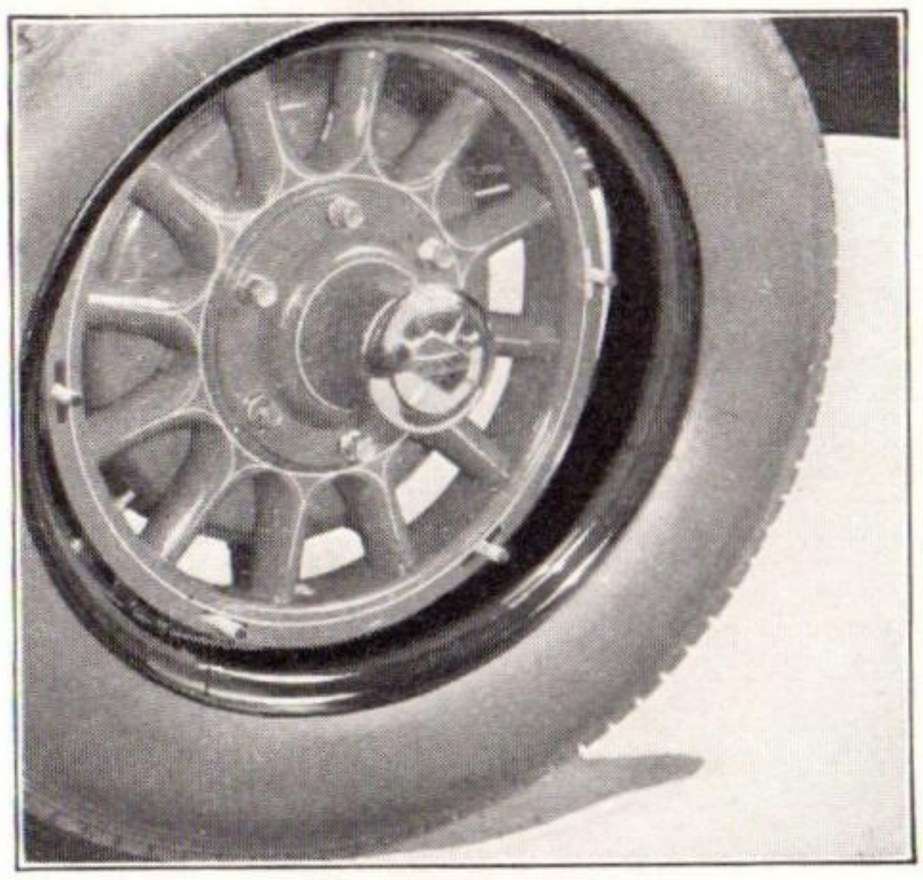


Figure 22c. Then rotate the wheel until the valve stem approaches the bottom, when the rim and tire will roll free from the wheel and can be removed without lifting.

To mount a rim, rotate the wheel until the hole for the valve stem is in the position shown in the last illustration. Insert the valve stem and rotate the wheel, which will carry the rim with it, until the valve stem is at the top. Then push the lower part of the rim into place. Install the rim clamps over the rim and turn the nuts partly down. Go over the nuts again and tighten them firmly. Install the valve stem clamping nut and the dust cap. Be sure the clamping nut is tight.

Figure 22. Changing Rims (Wood wheels).

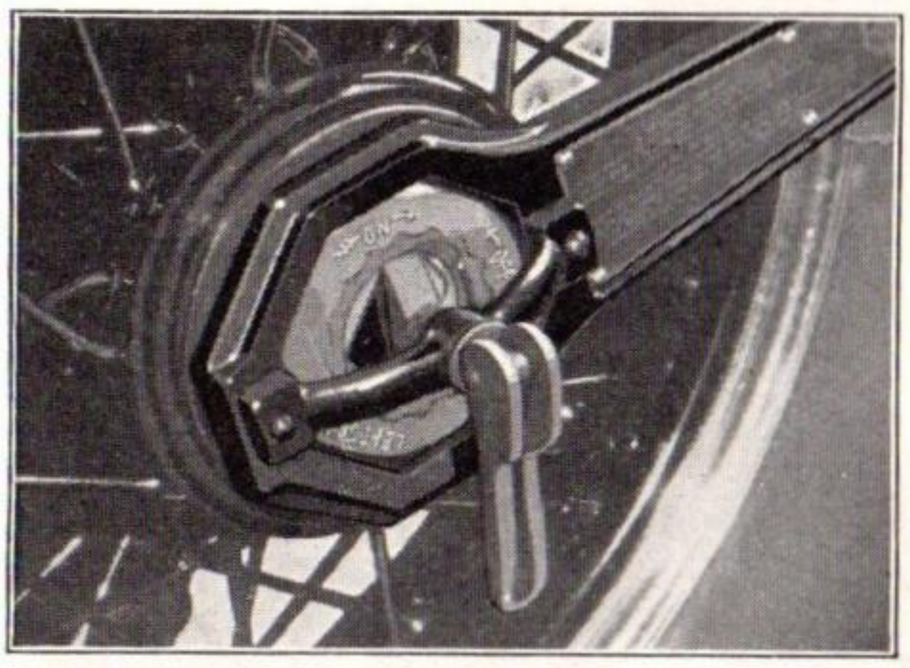


Figure 23a. Jack up the wheel until the weight of the car is off it, but with the tire still dragging. Place the hub cap wrench on the cap with the cam lever lowered, engage the sliding barrel puller in the slots and turn the puller one-quarter turn either way.

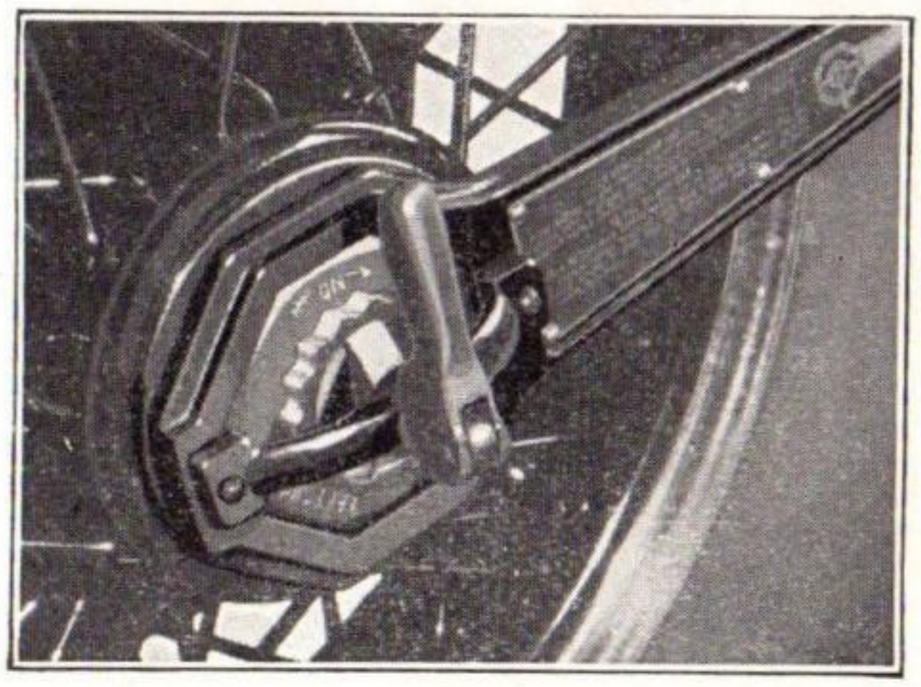


Figure 23b. Raise the lever up and over, thus drawing out the sliding barrel of the hub cap. If the barrel does not withdraw easily, tap the end of the wrench back and forth. This will release the pressure on the teeth of the sliding barrel and allow it to disengage.

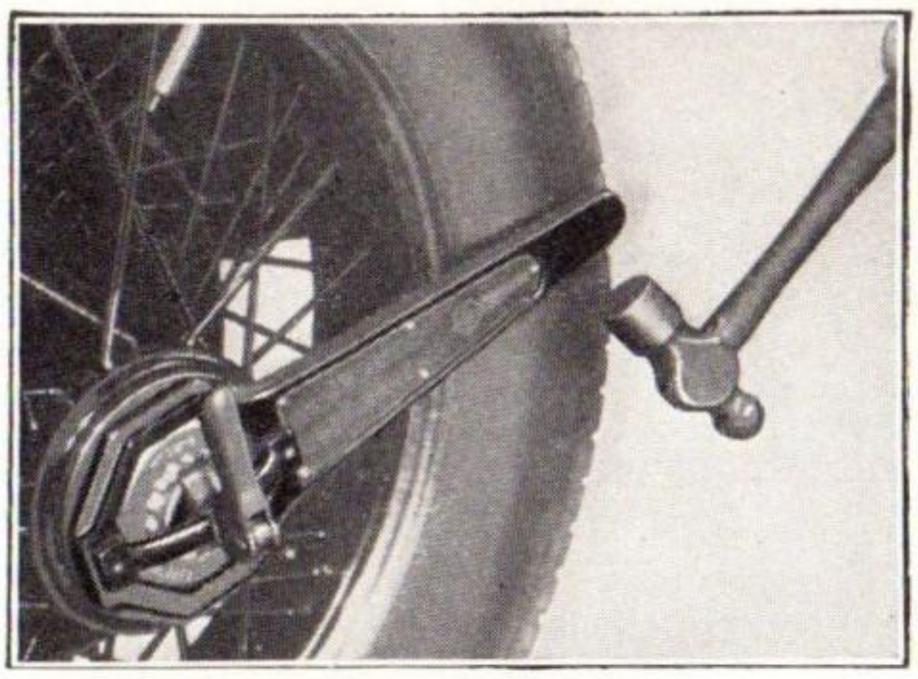


Figure 23c. Loosen the hub cap by striking the wrench a few times with a hammer. (The hub caps are marked with arrows showing the direction in which they screw on and off.) Then jack up the wheel, unscrew the hub cap and pull the wheel off the inner hub. Never attempt to remove the hub cap with the weight of the car on the wheel.

In installing the wheel, see that it is set up snugly on the corrugations on the inner hub. Hub caps are marked either "Right Side" or "Left Side" and must always be installed on the proper side. Start the cap by hand, taking care not to cross the threads. Securely tighten the cap, striking the end of the wrench with a hammer a few times. Lift up the cam lever. If the sliding barrel does not automatically engage, tighten the cap farther.

Figure 23. Changing Wire Wheels.

NOTE: The nuts on the right-hand wheels are marked R; those on the left are marked L. All nuts screw off in the direction the wheels rotate when the car is going backward, and on in the forward direction.

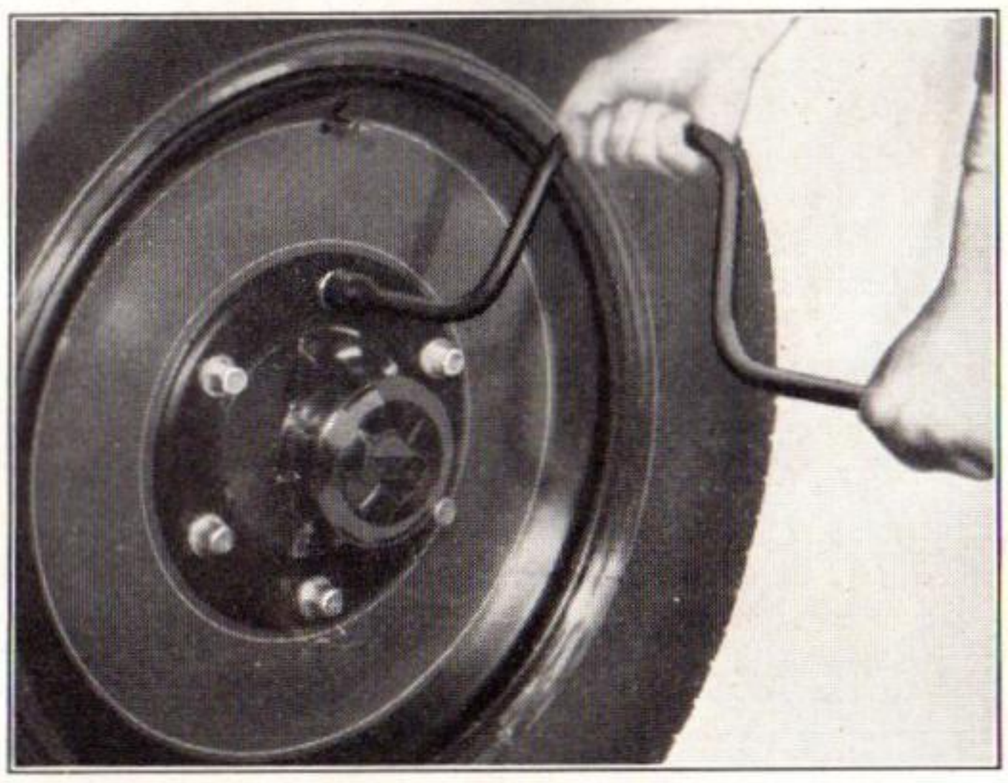


Figure 24a. To remove a front wheel, jack it up until the weight of the car is off it, but with the tire still touching. Then loosen the cap nuts around the wheel hub with the brace wrench in the tool kit. Jack the wheel up further, unscrew the nuts and remove the wheel. In removing a rear wheel, set the hand brake and jack the wheel all the way up.

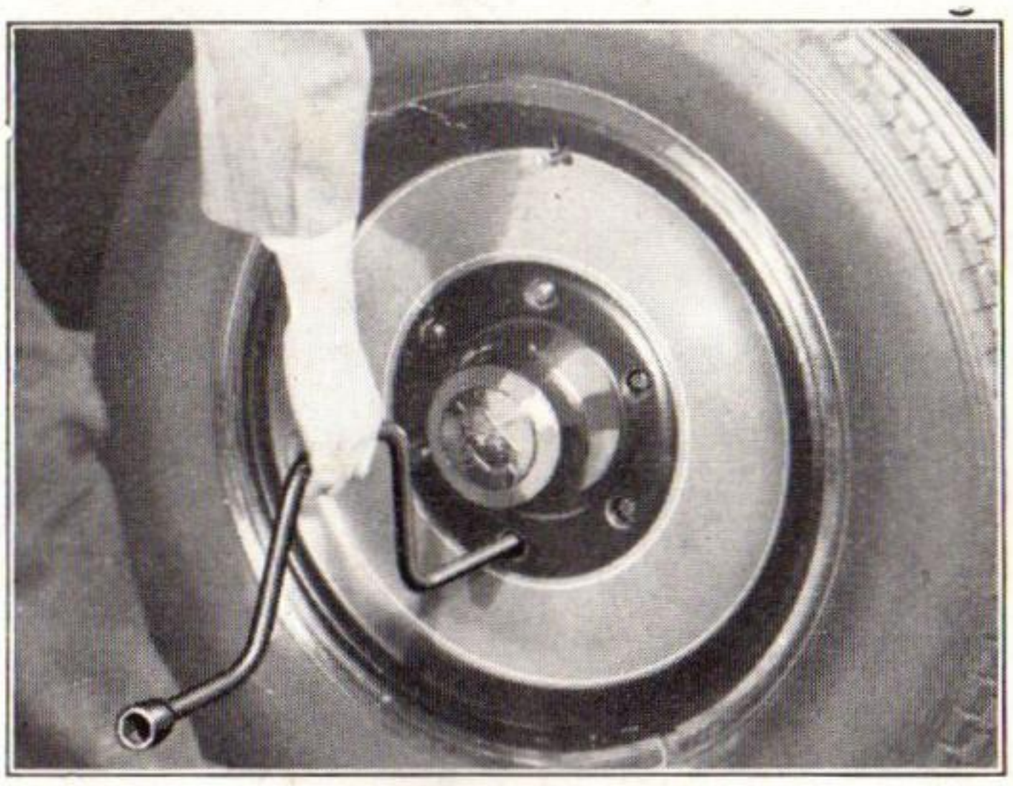


Figure 24b. In mounting disc wheels, use the rear end of the brace wrench as a pilot bar.

To mount a front wheel, bring it up close to the hub and pass the pilot bar through a lower hole and over a lower stud. Lift with the bar, and guide the wheel with the other hand. The weight of the wheel will keep the hub from turning, and the wheel will slip easily into place.

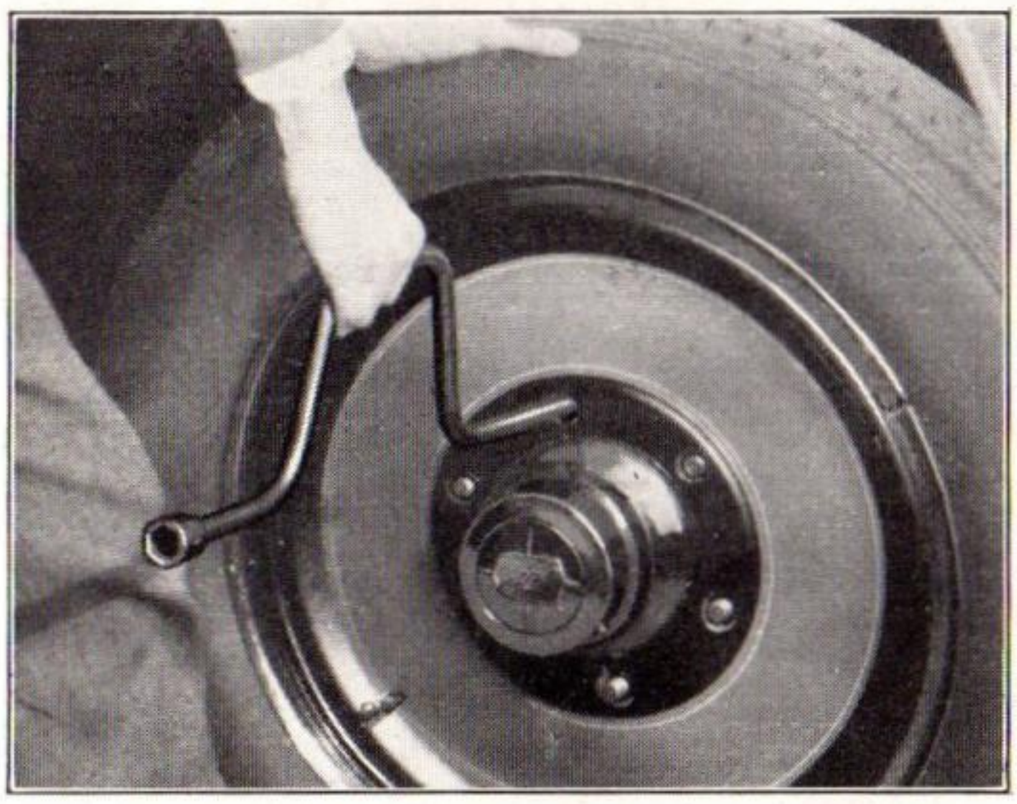


Figure 24c. To mount a rear wheel set the hand brake and put the pilot bar through an upper hole and over an upper stud.

In either case, several nuts should be started by hand before the pilot bar is removed. The nuts should not be tightened in rotation. After tightening one nut, tighten the nut directly opposite. In this way the first two nuts center the wheel and insure a good fit. The nuts need not be as tight as they can be forced. They should be only moderately tight.

Figure 24. Changing Disc Wheels.

CHAPTER IV

Lubrication

Lubrication Schedule

SYSTEMATIC lubrication, at regular mileage intervals, is the only kind that is effective. On page 38 is a complete lubrication schedule which, if faithfully followed, will insure correct lubrication for each wearing surface of the La Salle car.

The unit of the schedule is 4000 miles, which is divided into four 1000-mile intervals. Corresponding to these is a series of four consecutive groups of lubricating operations. When the car has traveled 1000 miles, the points enumerated under Lubrication No. 1 should receive attention. At 2000 miles, Lubrication No. 2 is due, and so on, until at 4000 miles, Lubrication No. 4 should be performed. At 5000 miles, the schedule begins again with Lubrication No. 1.

Lubrication Notice

In order that the driver may be continually reminded of the mileage at which the next lubrication is due, the speedometer is provided with a lubrication notice. This consists of a strip of black celluloid (Fig. 25) which is placed across the speedometer cover glass below the total mileage dial, and which has two white spaces, one for the lubrication number and one for the mileage at which it is due.



Figure 25. The lubrication notice is a continual reminder of when the next lubrication is due.

Whenever the car is lubricated on the schedule, the figures then on the celluloid should be erased and the next lubrication number, and the mileage at which it is due, should be written or stamped in their places. If this notice is used, the driver need only glance occasionally at the speedometer and compare the mileage on the dial with the figures on the notice, in order to plan for the necessary attention.

Cadillac distributors and dealers are prepared to sell lubrication based on this schedule. A car that is being lubricated on the schedule

LA SALLE LUBRICATION SCHEDULE

OWNER'S NAME_____

ADDRESS_____

ENGINE NO._____ DATE DELIVERED_____

Do not wait for schedule lubrications before adding engine oil. The oil level should be checked every 100 to 150 miles and oil added if the indicator ball is below "Full." This is especially important on cars driven at high speed.					LUBRICANT	LUBRICATION NO. AND MILEAGE AT WHICH DUE											
						1	2	3	4	1	2	3	4	1	2	3	4
						1000	2000	3000	4000	1000	2000	3000	4000	1000	2000	3000	4000
LUBRICATION NO. 4	LUBRICATION NO. 2	LUBRICATION NOS. 1 AND 3		CHECK RADIATOR LEVEL	WATER OR ANTI-FREEZE	O	O	O		O	O	O		O	O	O	
				ADD ENGINE OIL AS NECESSARY	ENGINE OIL	O		O		O		O		O		O	
				GENERATOR AND DISTRIBUTOR OIL CUPS	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
				FAN—ADD ENGINE OIL	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
				OIL CAN LUBRICATION	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
				SPRING LEAVES	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
				DOOR HARDWARE.	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
				GREASE GUN CONNECTIONS	CHASSIS GREASE	O	O	O	O	O	O	O	O	O	O	O	O
				WATER PUMP GREASE CUP	WHEEL BEARING GREASE	O	O	O	O	O	O	O	O	O	O	O	O
				*ADD WATER TO STORAGE BATTERY	DISTILLED WATER	O	O	O	O	O	O	O	O	O	O	O	O
				CHECK TIRE INFLATION		O	O	O	O	O	O	O	O	O	O	O	O
				DRAIN AND REPLACE ENGINE OIL	ENGINE OIL		O		O		O		O		O		O
				CLUTCH THRUST BEARING	FIBER GREASE		O		O		O		O		O		O
				TRANSMISSION—ADD LUBRICANT	GEAR LUBRICANT		O		O		O		O		O		O
				REAR AXLE—ADD LUBRICANT	GEAR LUBRICANT		O		O		O		O		O		O
				STEERING GEAR—ADD LUBRICANT	GEAR LUBRICANT		O		O		O		O		O		O
				WHEEL BEARINGS	WHEEL BEARING GREASE				O				O				O
				SPEEDOMETER DRIVE SHAFT	WHEEL BEARING GREASE				O				O				O
				FLUSH COOLING SYSTEM									O				O
				CHECK SHOCK ABSORBERS	SPECIAL OIL												O
				REPLACE OIL FILTER CARTRIDGE													O

THE FOLLOWING OPERATIONS CANNOT BE PLACED ON A MILEAGE BASIS AND ARE NOT INCLUDED IN THE ABOVE SCHEDULE:

REMOVE OIL PAN AND CLEAN PAN AND SCREEN—ONCE A YEAR OR WHENEVER OIL FILTER IS CHANGED.

THIN REAR AXLE AND TRANSMISSION LUBRICANT AS REQUIRED FOR LOW TEMPERATURES.

DRAIN AND REPLACE REAR AXLE AND TRANSMISSION LUBRICANT—AT BEGINNING OF MILD WEATHER IN SPRING.

REMOVE SPRING COVERS ONCE A SEASON AND REPACK WITH PETROLEUM JELLY.

*IN SUMMER, INSPECT BATTERY EVERY 500 MILES OR AT LEAST EVERY 2 WEEKS.

RECORD ON OTHER SIDE

Figure 26. This is a facsimile of the La Salle Lubrication Schedule and Record Card. Provision is made on the back of the card for recording when and where the car is lubricated. A copy of this card can be obtained on request from Cadillac distributors and dealers.

can be taken to any authorized Cadillac-La Salle service station, and without further ordering than to specify "Schedule Lubrication," the car will receive the necessary attention.

Lubrication Chart

The lubrication chart which accompanies this manual gives complete detailed instructions for lubricating the car. All of the points which require lubrication are designated on this chart, together with the kind of lubricant to be used, the method of applying it and the frequency with which it should be applied.

The operations are grouped on the chart in the same manner as on the schedule shown in Fig. 26. If the car is lubricated at an "Authorized Station," this schedule will be followed; if not, whoever does the lubrication should follow the schedule and chart exactly.

Lubricants

The selection of proper lubricants should be one of the first concerns of the owner in his attention to the lubrication of the car. The lubricants must not only be of high quality, but their viscosity and other characteristics must be suited to the car.

The owner is urged to consult the distributor or dealer from whom he purchased his car in regard to the names of lubricants which have been tested and approved for use in the La Salle car.

Engine Oil

The chart of engine oil recommendations given on page 40 indicates the proper grades of oil to be used for average driving and for prolonged high speed driving.

Gear Lubricant

Lubricant conforming to the specifications for Gear Lubricant must be used in the transmission, rear axle and steering gear. It is particularly important that only recommended lubricants be used in the transmission. Oil or soap greases will *not* perform satisfactorily.

Lubricants conforming to these specifications may be used without thinning during all weather except winter weather below temperatures of 20° above zero. Below this temperature, thinning with kerosene is necessary in order to secure easier gear shifting, easier steering and proper lubrication of gears and bearings.

Chassis Grease

Lubricant conforming to the specifications for Chassis Grease is recommended for all chassis points fitted with grease gun connections. Do not use ordinary cup grease, as such greases are not effective enough to lubricate satisfactorily over the 1000-mile interval.

ENGINE OIL RECOMMENDATIONS

TYPE OF SERVICE	SUMMER	WINTER		
	All temperatures above 32° F.	Between 32° and 15° above	Between 15° above and 15° below zero	Below 15° below zero
AVERAGE DRIVING (No prolonged high speed driving)	*S. A. E. visc. 40 or 50	S. A. E. visc. 20	S. A. E. visc. 10 or S. A. E. visc. 20 thinned with 1 qt. kerosene to 7 qts. oil.	S. A. E. visc. 10 thinned with 1 qt. kerosene to 7 qts. oil or S. A. E. visc. 20 thinned with 2 qts. kerosene to 6 qts. oil.
	These oils are not suitable for prolonged high speed driving. Change to oil shown below before starting on long trip at speeds above 45 m. p. h.			
PROLONGED HIGH SPEED DRIVING	CADILLAC APPROVED "HEAVY DUTY" OILS—SUMMER AND WINTER These are oils having an *S. A. E.* viscosity of 50-60 which are required to meet certain specifications as to volatility in order to demonstrate their fitness for prolonged high speed driving. To make certain of using an oil approved for this service, consult your Cadillac distributor or dealer. NOTE: Approved lubricants vary in their suitability for winter use. If an oil with a high pour test is used in winter and the car is not kept in a heated garage, add from 1 to 2 quarts of kerosene after a long drive at high speed before the car is stored for the night. Also when draining the crankcase, add from 1 to 2 quarts of kerosene to the fresh oil, unless starting immediately on a long trip at high speed.			

*The system used in this table to designate body or viscosity is the one recently developed by the Society of Automotive Engineers and adopted by all oil companies. It takes the place of the old indefinite method of describing oils as "Light," "Medium," "Heavy," etc. Oil should be called for by these numbers. If a filling station attendant does not know the S. A. E. numbers of his oils, the following grades can be substituted in emergency: S. A. E. 10, Extra Light; S. A. E. 20, Light; S. A. E. 40, Heavy; S. A. E. 50-60, Extra Heavy.

Wheel Bearing and Cup Grease

Greases approved under the specifications for Wheel Bearing and Cup Grease are suitable for lubricating the wheel bearings and the

water pump. This grease is not recommended for chassis lubrication, as Chassis Grease is much more effective.

Fiber Grease

Fiber grease approved under the specifications for this type of lubricant is recommended for the clutch release bearing.

Engine Lubrication

The supply of oil is carried in the pressed steel reservoir that covers the bottom of the crankcase. The oil is circulated by a gear pump inside of the crankcase. The pump is driven by a vertical shaft which is in turn driven by a spiral gear on the camshaft. The oil circulated by the pump lubricates the main and connecting rod bearings, the camshaft bearings, the cylinder walls, pistons and piston pins, the front end chains and the valve mechanism.

There are a few points on the engine that are not taken care of in the pressure system. These are the generator and distributor oil cups, the water pump and the fan. Lubricating instructions for these points

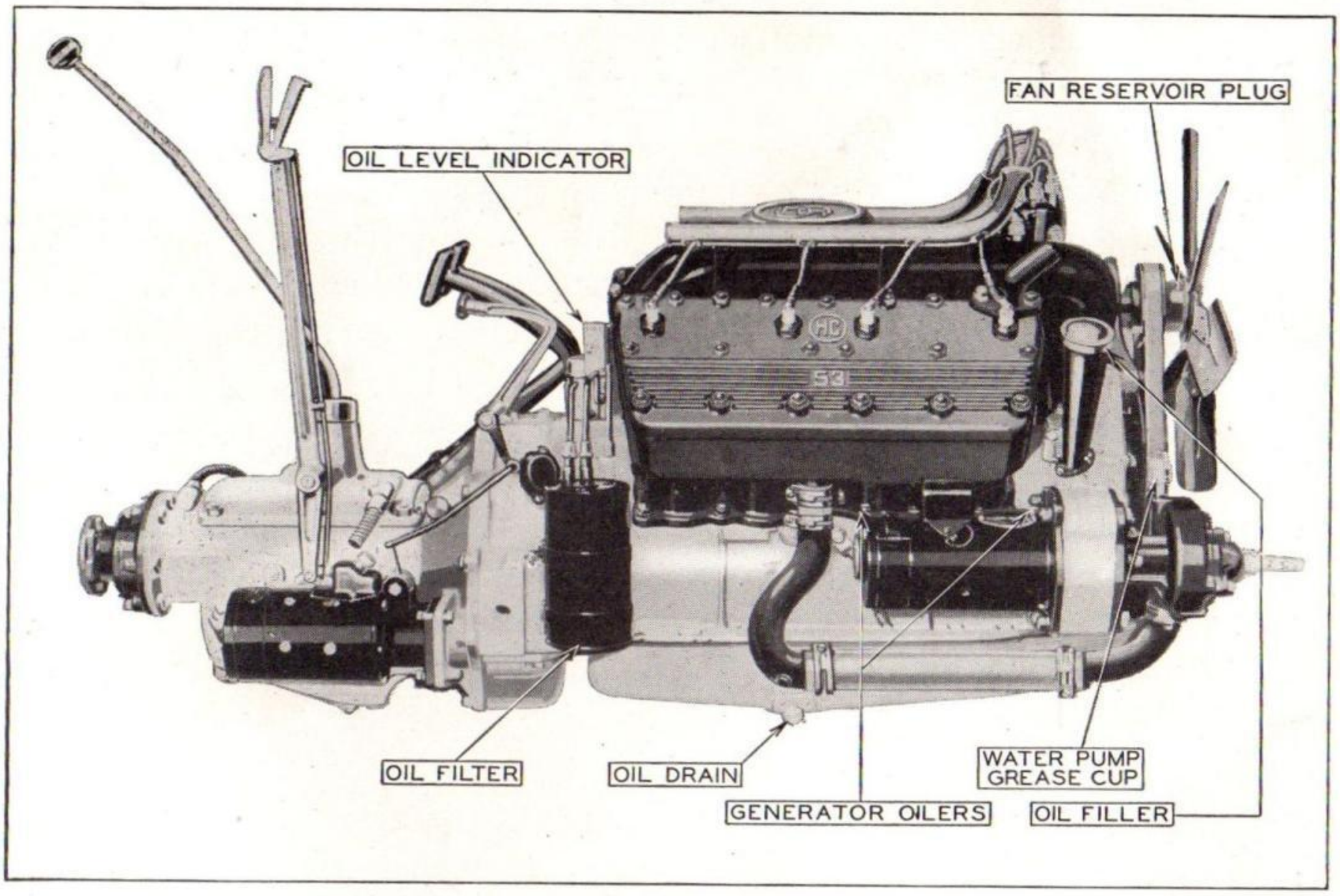


Figure 27. Showing the location of the oil filter, oil level indicator, oil pan drain plug and other lubrication features.

are given in the lubrication chart. A special explanation of the fan lubrication is given at the end of this chapter.

Oil Level

The normal capacity of the oil pan is two gallons, which fills it to the level of the screen in the pan. When the oil pan contains this amount, the oil level indicator on the right-hand side of the engine (Fig. 27) indicates "Full." As the oil level descends, the indicator indicates "Fill" and then "MT" (Empty). Oil should be added as soon as the indicator ball has dropped to "Fill." If the indicator indicates "MT," under no circumstances should the engine be run until oil has been added.

The mileage interval at which oil must be added depends upon individual circumstances. It is recommended that the oil level indicator be checked every one hundred to one hundred and fifty miles, although it is improbable that oil will be required as frequently as this.

Crankcase Ventilating System and Oil Filter

La Salle engines are equipped with a crankcase ventilating system, which prevents contamination of the lubricating oil from seepage vapors; and an oil filter, which removes any dirt or solid matter from the oil.

The crankcase ventilating system is entirely automatic, and functions throughout the life of the car without requiring any attention from the owner. The oil filter, however, gradually becomes filled with the solid matter taken from the oil, until it becomes so clogged that it ceases to function. For this reason, it is necessary to replace the filter cartridge every 12,000 miles.

It is important that the filter cartridge be replaced just as soon as the 12,000 miles are up. Otherwise the whole purpose of the oil filter is defeated, and wear of the engine parts will result from the dirty oil. Filter cartridges for replacement can be obtained from Cadillac distributors and dealers, or from United Motors Service stations.

Replacing Engine Oil

Although the crankcase ventilating system and the oil filter described in the preceding section greatly prolong the useful life of the oil, it is recommended that the oil be drained and replaced with fresh oil every 2000 miles.

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CHAPTER V

Cold Weather Operation

THE La Salle is an all-season car, and no owner need hesitate to make full use of his car in severe winter weather as well as at other times. Satisfactory operation in freezing weather, however, depends upon having the car prepared for cold weather and in giving it the special attention which is required at that time. In this chapter has been grouped all the information relating to care and operation of the car during cold weather. It should be reviewed just prior to the beginning of the winter season.

Preparing for Cold Weather

Anti-Freezing Solutions

The available commercial materials for preparing anti-freezing solutions for automobile radiators are denatured alcohol, distilled glycerine, and ethylene glycol.

Denatured alcohol solutions are, at present, the most generally used anti-freezing solutions. Denatured alcohol is widely distributed, affords protection against freezing, and is not injurious to the materials used in the cooling system.

There are two principal objections to denatured alcohol. Alcohol is lost by evaporation, especially on heavy runs, and unless the solution is tested periodically and sufficient alcohol added to replace the loss by evaporation, the engine or radiator, or both, are likely to be damaged by freezing.

The following table gives the freezing temperature and specific gravity of solutions of denatured alcohol and water:

Lowest Temperature Expected	Per cent by Volume	Specific Gravity (at 60° F.)	Qts. alcohol required to make 5¼ gals. solution
+10° F.	30	.9668	6¼
0° F.	38	.9567	8
—10° F.	45	.9485	9½
—20° F.	51	.9350	10¾
—30° F.	57	.9260	12

The car finish is damaged by contact with the alcohol solution or vapors from the solution. Any alcohol accidentally spilled on the finish should be flushed off immediately with a large quantity of water.

Distilled glycerine and ethylene glycol solutions are, in first cost, more expensive than alcohol, but as they are not lost by evaporation, only water need be added to replace evaporation losses, except that any solution lost mechanically, such as leakage, foaming, etc., must be replaced by additional new anti-freezing solution. These solutions under ordinary conditions are not injurious to the car finish.

The principal objections to glycerine and ethylene glycol are the tendency of these solutions to loosen the scale and iron rust which forms in the water passages of the cylinder block and head, and the difficulty of securing and maintaining tight, leakproof connections. It is absolutely necessary to thoroughly clean and flush the entire cooling system before glycerine or ethylene glycol is used.

It is also necessary to tighten or replace the cylinder head gaskets and pump packing. The cylinder head gaskets must be kept tight to prevent the solution from leaking into the crankcase where it might cause gumming and sticking of the moving parts. The pump packing must be kept tight to prevent air from being drawn into the cooling system in order to avoid foaming and other difficulties which may result when air is present.

Glycerine or ethylene glycol should be used in accordance with the instructions and in the proportions recommended by the anti-freeze manufacturer.

In using a hydrometer to determine the temperature at which a solution will freeze, the test must be made at the temperature at which the hydrometer is calibrated. If the solution is warmer or colder, it must be brought to this temperature or large errors may result. In some cases these errors may be as large as 30 degrees Fahrenheit.

Salt solutions, such as calcium or magnesium chloride, sodium silicate, etc., honey, glucose and sugar solutions and oils are not satisfactory for use in automobile radiators.

Capacity of Cooling System

The capacity of the cooling system is five and one-quarter gallons when filled to the proper level. It is not necessary to add liquid to the radiator whenever the level falls below the filler. There is sufficient liquid in the cooling system if the upper tank is half-full, and any liquid in excess of this is usually forced out through the overflow

pipe as soon as the engine becomes warm. When water is used, any loss from this cause is of little consequence, but in winter to conserve anti-freeze, it is important to avoid adding more liquid than is necessary.

Winter Lubrication

Lubrication of the car requires special attention in winter, not only to insure proper lubrication of the moving parts, but to secure the same ease of operation in starting, steering and shifting gears as during warmer weather.

The chart of engine oil recommendations on page 40 gives the proper grade of oil to be used for cold weather driving. It will be noted that lighter oils can be used for cold weather providing no prolonged high speed driving is done. For prolonged high speed driving, "Heavy duty" oils must be used. Authorized Cadillac-La Salle Service Stations are prepared with full information on winter lubrication.

A small amount of kerosene should be added to the oil in the fan reservoir at the beginning of cold weather.

The lubricant in the transmission, rear axle and steering gear should also be thinned as soon as the weather is so cold that the transmission gears are hard to shift. If a sufficient amount of kerosene is added to provide for the lowest winter temperature expected, it will not be necessary to add kerosene again thereafter during the winter. If ten per cent kerosene is added, this will take care of temperatures down to ten below zero.

Storage Battery

The electrical system of an automobile has much more to do in winter than in summer. The engine is harder to crank, and must usually be cranked longer before it starts. The lights are also used to a much greater extent than during the long days of summer. All this means that the battery must be ready for increased demands.

It is therefore a good plan, in preparing for the winter season, to see that the battery is well charged to begin with, that the battery connections are clean and tight, and that the charging rate of the generator is sufficient.

Gasoline System

The carburetor on the La Salle engine has automatic compensation for temperature. Nevertheless, it is a good plan to have the carburetor adjustment checked when cold weather arrives. This inspection should

give special attention to the carburetor choke control to make sure that the enriching device at the carburetor is fully effective when the choke button is operated.

In warm weather, a small amount of water in the gasoline has little or no effect on the running of the engine. In freezing weather, however, even a small amount of water may freeze and stop the entire flow of fuel to the carburetor.

One of the things to be done in preparing for winter weather, therefore, is to clean the gasoline filter and the sediment chambers in the gasoline system.

Starting the Engine

Carburetor Enriching Button

The first difference between starting the engine in cold weather and starting the engine in warm weather is in the greater use of the carburetor enriching device necessary in cold weather. Gasoline does not vaporize as readily at low temperatures, and in order to supply the cylinders with a gaseous mixture rich enough to be ignited, the proportion of liquid gasoline to air must be increased.

At the same time, it is important not to apply the enriching device more than is necessary. The unvaporized gasoline collects on the cylinder walls and works down past the pistons, washing off the lubricant as it goes. Although dilution of the oil supply with this unburned gasoline is minimized by the crankcase ventilating system, it is best to avoid an excess of liquid gasoline in the combustion chambers by careful and judicious use of the enriching device.

The following rule should govern the use of the enriching button in winter weather: Pull the enriching button back just as far as it is necessary to start the engine, but as soon as the engine starts, let the button return as far as possible without causing the engine to stop or slow down. Then release the button entirely as soon as the engine is warm enough to permit doing so.

Priming the Carburetor

In extremely cold weather, if the engine does not start after cranking for a few seconds with the enriching device fully applied, release the starter pedal. Then prime the carburetor by opening and closing the throttle once or twice rather rapidly with the accelerator. Opening and closing the throttle operates a throttle pump on the carburetor and raises the level of gasoline in the carburetor bowl. The carburetor

should never be primed in warm weather, and should not be primed unnecessarily in cold weather. Excessive priming is likely to make starting difficult rather than easy.

Position of Throttle Hand Lever

The correct position of the throttle hand lever for starting in cold weather is the same as for starting under other conditions, that is, about one-fourth the way down from the idling position. In warm weather, however, the lever may be returned to the idling position almost as soon as the engine is started. In cold weather, the throttle must be left slightly open until the engine becomes warm.

Position of Spark Control Lever

It is the practice of some drivers to move the spark control lever all the way to "Retard," whenever starting the engine. This is the correct position if the engine is to be cranked by hand, but if the engine is to be cranked with the starter, there is no reason for retarding the spark, and in extremely cold weather, "popping back" in the carburetor is less likely to occur if the spark is advanced.

Use of Starter

In extremely cold weather, when the car has been standing long enough to become thoroughly chilled, it is a good plan to disengage the clutch during the cranking operation. If this is not done, the starter is called upon to turn the jackshaft gears in the transmission in addition to cranking the engine. At ordinary temperatures, the additional energy required is negligible, but in extremely cold weather, the lubricant in the transmission offers sufficient resistance to rotation of the transmission gears to increase considerably the demand upon the battery and to retard the cranking speed.

Use of Accelerator Before Engine Is Warm

In cold weather, after the engine has been started and before it has run long enough to become warm, the engine cannot deliver its normal power and it should not be called upon to do so. In accelerating the engine to start the car and in accelerating the car after the transmission is in gear, do not open the throttle suddenly or too far. To do so is not only to invite "popping back" in the carburetor, but to increase the amount of excess unvaporized gasoline in the combustion chambers, both of which results are undesirable. For this reason, also, starting in intermediate should never be attempted when the engine is cold.

CHAPTER VI

General Care

No ATTEMPT has been made to include in this manual directions for making adjustments or repairs to the car. Most La Salle owners prefer to depend for such work on authorized Cadillac-La Salle service stations, as these stations invariably are able to perform the work more conveniently and economically.

Every owner should, however, know how to perform the few simple operations of general care described in this chapter. These operations are not difficult enough to necessitate a visit to the service station, although this work can also be done in the service station, if desired.

Storage Battery

The storage battery is attached to the right-hand side bar of the frame under the front seat. It is accessible after removing the seat cushion and the cover plate.

The battery is filled with an acid solution from which the water slowly evaporates, and fresh distilled water must be added to each of the three cells at regular intervals to bring the level up to the bottom of the filling tubes. Distilled water should be added at least every 1000 miles, and in warm weather every 500 miles, or at least every two weeks. If distilled water is not available, melted artificial ice, or rain water caught in an earthenware receptacle, may be used. Hydrant water, or water that has been in contact with metallic surfaces, will cause trouble if used. Acid must never be added to the battery.

After adding water to the storage battery in freezing weather, the car should immediately be run far enough to mix the water and acid solution thoroughly. If the car is parked immediately after adding water, the water is likely to stay on top of the acid solution and may freeze, causing extensive damage.

As the storage battery is charged and discharged, the solution reacts chemically with the plates of the battery, the specific gravity of the solution changing as the reaction proceeds. The state of charge of the battery is thus indicated by the specific gravity of the solution. As the battery is charged, the specific gravity of the solution increases,

reaching 1.270 to 1.285 when the battery is fully charged. The specific gravity of the solution decreases as the battery is discharged. A fully discharged battery has a specific gravity of 1.150 to 1.165.

A hydrometer is the instrument used to measure the specific gravity of a solution. A hydrometer syringe is a hydrometer especially designed for convenience in testing the specific gravity of the acid solution in the storage battery. A hydrometer syringe can be obtained at any battery service station. Be sure and get a reliable instrument, for cheap ones may be in error as much as 25 or 30 points.

The specific gravity of the acid solution should never be tested immediately after adding distilled water. If the solution is below the plates so that it cannot be reached with the syringe, add the necessary amount of water, and then drive the car for a few hours before taking the hydrometer reading.

Cooling System

The cooling system should be kept filled with 5¼ gallons of water, except in freezing weather, when a suitable anti-freezing solution, such as those described on page 44, must be used.

The cooling system should be drained and flushed every 4000 miles. If possible, this should be done at a Cadillac service station, or where there are facilities for reversing the flow of water through the radiator. If this is not possible, use the following method:

Run the engine until the opening of the radiator shutters indicates that the engine is warm. Stop the engine and immediately open the drain valve.

After the liquid has drained off, refill the cooling system with hot water and repeat the operation described above. If in draining the second time, the water is very dirty, it may be advisable to repeat the flushing operation a third time, placing one or two handfuls of sal-soda in through the radiator filler. The sal-soda must not be permitted to get on the finish of the hood or radiator. If sal-soda is used, the cooling system must be drained and flushed again before refilling for use.

Gasoline Filter

A gasoline filter (Fig. 29) is provided in the gasoline line between the vacuum tank and the carburetor. This filter has a glass bowl

through which the accumulation of water and sediment can be easily seen. The bowl should be removed and the gauze screen should be cleaned, as soon as any accumulation appears in the bowl. This can be done as follows:

First shut off the gasoline by turning clockwise the small T-handle valve at the side of the filter. Then unscrew the thumb screw under the bowl, after which the yoke supporting the bowl can be swung to one side and the bowl can be removed. If the screen does not come off with the bowl, it can be removed by pulling it straight down.

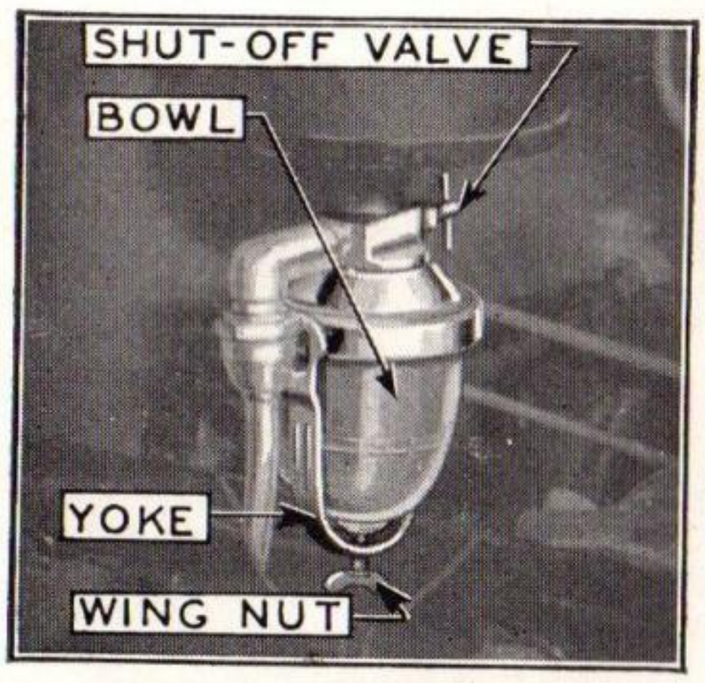

Figure 29. To remove the filter bowl for cleaning the screen, close the shut-off valve, loosen the wing nut at the bottom and disengage the supporting yoke.

In putting back the bowl, make sure that it seats properly against the cork gasket in the top of the filter before tightening the thumb screw. Do not forget to turn the gasoline on by turning the valve counter-clockwise as far as it will go.

There is also a strainer in the vacuum tank at the point where the gasoline enters the inner chamber. The strainer should be removed and cleaned occasionally. The strainer is accessible after disconnecting the feed pipe and unscrewing the inlet elbow.

Temporary Brake Adjustment

It is recommended that all adjustment of the brakes be done at an authorized Cadillac - La Salle service station. In an emergency, however the following temporary adjustment can be made by the driver:

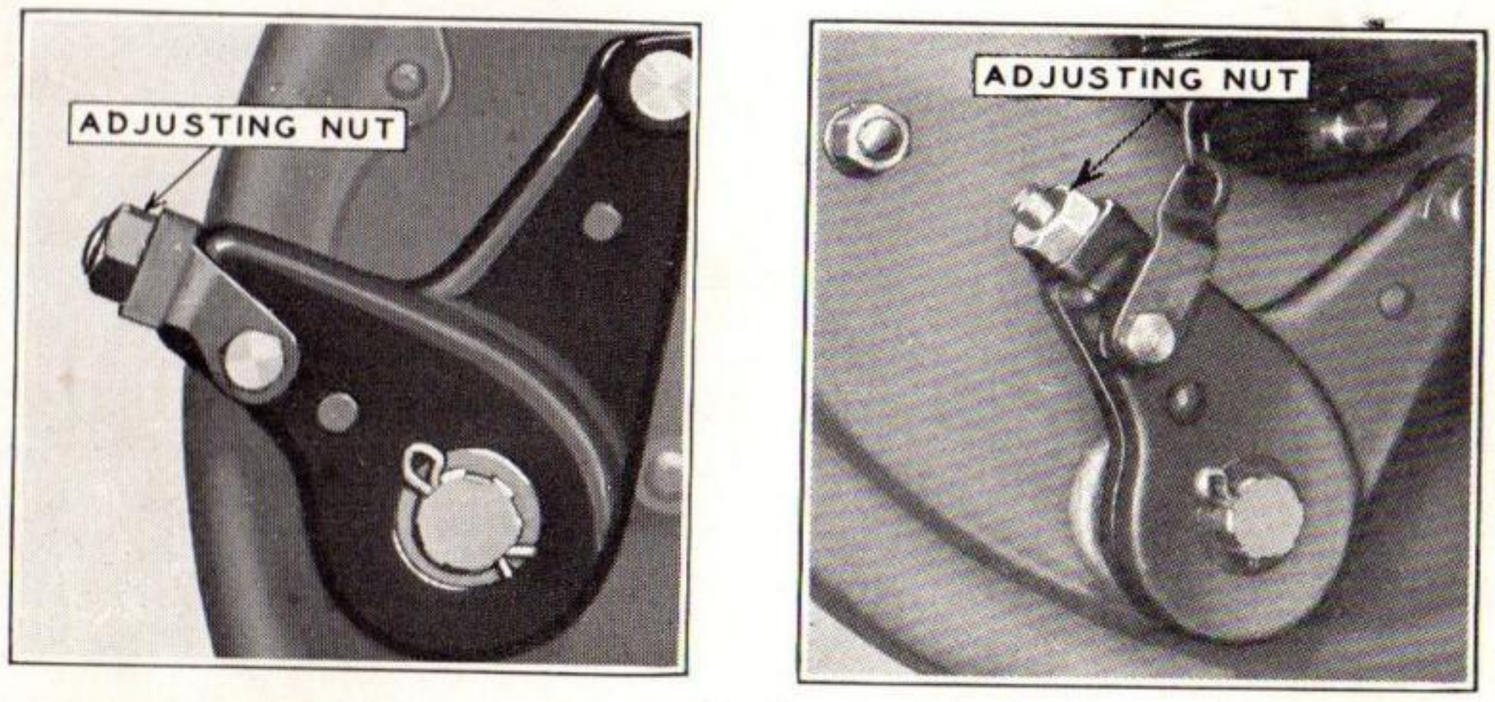

Figure 30. A temporary brake adjustment can be secured by turning the adjusting nut on each brake clockwise ½ turn. The front brake is at the left, the rear brake at the right.

Each brake is fitted with an adjusting nut, located as shown in Fig. 30. To tighten the brake adjustment, turn the nut *on each brake* half a turn clockwise. These adjusting nuts lock each sixth of a turn.

Body

Care of Finish

The Duco finish of La Salle bodies can be kept new and lustrous with the simplest care. The car should merely be wiped off every few days with a soft dry cloth. An occasional polishing with Duco No. 7 or I-sis or some other recognized Duco polish (but never with furniture polish) will prove beneficial.

If the finish is cared for by being wiped at regular intervals, it will not need to be washed, except when it has accumulated a considerable amount of mud or dust. When washing the car, use plenty of clean cold water. Do not use hot water, and do not wash the hood while it is hot, as this will in time destroy the luster. Do not use soap.

If a hose is used in washing, do not use a nozzle, but let the water flow gently from the hose and flush off the dirt gradually. A soft wool sponge can be used to advantage in removing dirt.

After the washing is completed, squeeze the sponge as dry as possible and pick up all water from crevices. Then thoroughly wet a clean soft chamois, wring it as dry as possible and dry the finish. The finish can then be rubbed with a clean soft cloth to bring out the luster.

Care of the Top

Ordinary dust can be removed from the top with a soft dry cloth. Grease spots, stains and dirt film can be removed by washing with a mild, neutral soap. Rinse thoroughly with clear water to remove all traces of the soap, then dry with a chamois or cloth. Gasoline, naphtha, kerosene and fabric cleaners should not be used for cleaning the top, as such preparations are likely to dull the luster and damage the fabric, causing leaks.

If the top becomes dull or check-marked, clean it thoroughly and apply a coat of Du Pont No. 7 Auto Top Finish. This should be applied with a flat varnish brush and allowed to dry over night. This will restore the luster, protect the top fabric, and keep it thoroughly waterproof. A coat of this finish every six months will keep the top in perfect condition.

Cleaning Upholstery

To keep the upholstery in closed cars in the best condition, it should be cleaned thoroughly at least once a month with a whisk broom and vacuum cleaner. Dirt and grit accumulating in the fabric wear it out faster than use.

Spots on the upholstery may be cleaned with any good dry cleaner. When the cleaner has thoroughly evaporated, apply a hot flatiron wrapped in a wet cloth. Steaming the fabric and rubbing lightly against the nap will raise the nap to its normal position.

Door Hardware

Many owners who give careful attention to lubrication of the chassis do not give the same attention to the lubrication of door locks and hinges. If the door. hardware is to operate properly, it must be lubricated regularly. Directions for this lubrication are included in the lubrication chart, and these directions should be followed as faithfully as the rest of the chart.

CHAPTER VII

Storing Car

If the car is not to be used for a period of several months, it should be protected from deterioriation during the period when it is not in use by carefully preparing it for storage.

Engine

To prepare the engine for storage, proceed as follows: Run the engine until opening of the radiator shutters indicates that the engine is warm. This may be done by driving on the road or by running the engine idle. In the latter case, care should be taken that there is sufficient ventilation to avoid injury from carbon monoxide poisoning. (See page 19.)

After the engine is warm, place the car where it is to be stored, and shut off the flow of gasoline to the carburetor by turning the valve above the filter. As soon as the engine starts to slow down, raise the polished aluminum cap on top of the carburetor and inject three or four tablespoonfuls of clean fresh engine oil into the carburetor. Injection of the oil will stop the engine.

Remove the spark plugs. Inject two or three tablespoonfuls of engine oil into each spark plug hole and, before replacing the plugs, crank the engine three or four revolutions with the ignition switched off. This will tend to distribute the oil over the cylinder walls. The engine should not be started again after injecting the oil. If it is started, it will be necessary to repeat the treatment.

Drain the cooling system.

Storage Battery

If the car is to be stored during the winter, the storage battery should have special treatment in order to protect it against freezing.

Shortly before the car is used for the last time, distilled water should be added to bring the level of the solution up to the bottom of the filling tubes. (See page 50.) After the water added has had an oppor-

tunity to mix thoroughly with the acid solution by running the car or engine, the specific gravity should be taken with a hydrometer. It the specific gravity of the solution is above 1.270, there will be no danger of the acid solution freezing. If, however, the specific gravity is below 1.270, the battery should be removed and charged. Unless the battery is fully charged or nearly so, it is probable that the acid solution in the battery will freeze and cause extensive damage.

The battery ground connection should in all cases be disconnected during storage, as a slight leak in the wiring will discharge the battery and lower the specific gravity to the point where the solution may freeze.

If possible, the storage battery should be removed and charged from an outside source every two months during the storage period.

Tires

During storage of the car, it is best to remove the tires from the rims and to keep the casings and tubes in a fairly warm atmosphere away from the light. The tubes should be inflated slightly after the tires have been removed.

If it is not convenient to remove the tires from the car and the car is stored in a light place, cover the tires to protect them from strong light, which has a deteriorating effect on rubber.

The weight of the car should not be allowed to rest on tires during the storage period. If tires are not removed, the car should be blocked up so that no weight is borne by the tires. The tires should also be partly deflated.

Body and Top

A cover should be placed over the entire car to protect it from dust. In storing an open car, the top should be up.

Taking Car Out of Storage

In putting into use again a car that has been stored, it is advisable, unless the storage battery has been removed and charged at periodic intervals, to remove the battery from the car and give it a fifty-hour charge at a four-ampere rate. If the battery has received periodic charges, or if the specific gravity is above 1.200, simply add distilled

water to the proper level and connect the leads. If there is a greenish deposit on the terminals of the battery, remove this with a solution of bicarbonate of soda (common cooking soda) and water. Do not allow any of this solution to get into the battery.

Before starting the engine, drain the oil from the oil pan and remove and clean the oil pan and screen. After reinstalling the oil pan, add eight quarts of fresh engine oil. Fill the cooling system, being sure to use anti-freezing solution in freezing weather. Remove the spark plugs and inject two or three tablespoonfuls of engine oil into each cylinder. Reinstall the spark plugs and, with the ignition switched off, crank the engine a few seconds with the starter to distribute the oil over the cylinder walls.

Start the engine in the usual manner. As soon as the engine starts, immediately let the carburetor enriching button go as far forward as possible without causing the engine to stop or slow down materially, and then open the throttle until the ammeter reads approximately 10 with all lights switched off. While the engine is running, lift the aluminum cap on top of the carburetor and inject two or three tablespoonfuls of engine oil into the carburetor. It is a good plan to run the car outdoors as soon as this has been done. Release the carburetor enriching button entirely as soon as the engine is warm enough to permit it.

CHAPTER VIII

Specifications and License Data

Type of engine	8 cyl. V-type
Diameter of cylinder bore	3¼ in.
Length of stroke	4 15/16 in.
Piston displacement	328
Horsepower (N. A. C. C. rating)	33.8
Engine number	See below
Capacity of gasoline tank	20 gals.
Capacity of engine lubricating system	2 gals.
Capacity of cooling system	5¼ gals.
Capacity of transmission	2½ qts.
Capacity of rear axle	3 qts.
Wheelbase, open cars	125 in.
Wheelbase, closed cars	134 in.
Tires	6.50-19
Valve setting, inlet	.004 in.
Valve setting, exhaust	.006 in.
Spark plug setting	.025-.028 in.
Contact point setting	.027 in.
Generator charging rate	18-20 amps. cold 8-10 amps. hot.
Fan belt slack	⅝ in.
Front axle toe-in	⅛ to ¼ in.

Engine and Unit Assembly Numbers

Each La Salle car when shipped carries an *engine number* which is also a serial number. This is the number to be used in filling out license and insurance applications and in general reference of the car. The engine number is stamped on the car in two places: On the name plate on the front face of the left side of the dash and on the crankcase just below the water inlet on the right-hand side.

The various units, such as the transmission, steering gear, etc., also carry unit assembly numbers. These are located as described below. It is important in ordering parts to give, not only the engine number of the car, but also the unit assembly number of the unit to which the part belongs.

Transmission number—on the upper left-hand edge of the flange by which the transmission is bolted to the crankcase.

Steering gear number—on the steering gear housing, just below the grease gun connection.

Carburetor number—on right front face of the flange by which the carburetor is attached to the intake header.

Generator number—on the side of the generator, just in front of the cut-out relay.

Starting motor number—on the right-hand side of the starter, just below the switch.

Front axle number—on the upper surface of the axle I-beam at the right-hand end, just above the steering stop screw.

Rear axle number—on the rear surface of the axle housing, just to the right of the cover plate.

Chassis (frame) number—on the upper surface of the right-hand side bar just in front of the oil filter.

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