# 1927 - 1928 LaSalle Production

Total Production: 26,804 automobiles and chassis (three serial numbers not used.)

Serial Numbers: 1927 - 200001 thru 216850.
1928 - 216851 thru 226807.
The Vehicle (engine) serial number is stamped "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."

Chassis Numbers: Start with prefix "2 -" and increase from the first unit, which has chassis number "2-27." The numbers are not sequential. Location of chassis unit number is "on the upper surface of the right-hand side bar just in front of the oil filter."

Body Plates: Fisher job/style number (e.g., 1168) or Fleetwood job number (e.g., 3751) and body serial number are on the body plate attached "to the front face of the left side of the dash" (in the engine compartment.)

| Body Type and Style Numbers: | 1927 | List Price | 1928 | List Price | W.B. | Production |
|---|---|---|---|---|---|---|
| Series 303 (LaSalle) Fisher Bodies | | (various dates) | | (Jan. 4, 1928) | | |
| 4-Pass. Phaeton | 1168 | $2495.00 | 1168 | $2485.00 | 125" | 1575 |
| 4-Pass. Sport Phaeton (dual cowl) | 1168-B | $2995.00 | 1168-B | $2975.00 | 125" | 270 |
| 2-Pass. Roadster | 1169 | $2525.00 | 1169 | $2485.00 | 125" | 1184 |
| 5-Pass. Sedan (metal back) | | | 8110 | $2495.00 | 125" | 763 |
| 5-Pass. Family Sedan (metal back) | | | 8110-A | $2350.00 | 125" | 2720 |
| 5-Pass. Sedan (leather back) | 7380 | $2685.00 | | | 125" | 5001 |
| 5-Pass. Sedan (leather back) | 8120 | | 8120 | $2495.00 | 125" | 1823 |
| 4-Pass. Victoria (Coupe, leather back) | 7390 | $2635.00 | | | 125" | 1250 |
| 4-Pass. Victoria (Coupe, leather back) | 8130 | | 8130 | $2550.00 | 125" | 405 |
| 2-Pass. Convertible Coupe | 7400 | $2635.00 | 7400 | $2550.00 | 125" | 3001 |
| 2-Pass. Coupe (leather or fabric back) | 7410 | $2585.00 | | | 125" | 1100 |
| 2-Pass. Coupe (leather back) | 8140 | | 8140 | $2450.00 | 125" | 527 |
| 2-Pass. Business Coupe (leather back) | | | 8140-A | $2350.00 | 125" | 446 |
| 5-Pass. Town Sedan (metal back) | 7420 | $2650.00 | 7420 | $2495.00 | 125" | 1600 |
| 5-Pass. Coupe (metal back) | | | 8050 | $2625.00 | 134" | 1001 |
| 7-Pass. Sedan (metal back) | 8060 | $2795.00 | 8060 | $2775.00 | 134" | 1666 |
| 7-Pass. Family Sedan (metal back) | | | 8060-A | $2575.00 | 134" | 1064 |
| 7-Pass. Imperial Sedan (div., metal back) | 8070 | $2895.00 | 8070 | $2875.00 | 134" | 485 |
| 5-Pass. Cabriolet Sedan (leather back, blind qtrs.) | | | 8080 | $2675.00 | 134" | 500 |
| 5-Pass. Imperial Sedan (division, leather back, blind qtrs.) | 8090 | $2795.00 | 8090 | $2775.00 | 134" | 210 |
| Touring (non-production body) | | | | Not listed | 134" | 1 |
| Chassis | | | | Not listed | 125" | 55 |
| Chassis | | | | Not listed | 134" | 34 |
| Unidentified units | | | | | | 65 |
| Series 303 (LaSalle) Fleetwood Bodies | | | | | | |
| 5-Pass. Transformable Town Cabriolet (front door crank-up windows) | 3051 | $4700.00 | 3051 | $4700.00 | 125" | 9 |
| 2-Pass. Coupe | 3110 | $3600.00 | 3110 | $4275.00 | 125" | 12 |
| 5-Pass. Sedan | 3120 | $3800.00 | | | 125" | 13 |
| 5-Pass. Town Cabriolet (front compartment wing windows) | 3130 | $5000.00 | 3130 | $4500.00 | 125" | 22 |
| 5-Pass. Transformable Town Cabriolet (front door crank-up windows) | | | 3751 | $4800.00 | 134" | 2 |
| | | | | Total | | 26,804 |

Canadian (Oshawa, Ontario) built units. (Identified units are included in the production totals above):

| | | | | | |
|---|---|---|---|---|---|
| 5-Pass. Sedan (leather back) | 7380 | | | 125" | 41 |
| 2-Pass. Convertible Coupe | 7400 | 7400 | | 125" | 16 |
| 7-Pass. Sedan (metal back) | 8060 | 8060 | | 134" | 18 |
| 5-Pass. Sedan (metal back) | 8110 | 8110 | | 125" | 24 |
| 5-Pass. Sedan (leather back) | | 8120 | | 125" | 4 |
| Unidentified | | | | | 57 |
| | | | Subtotal | | 160 |

Cars were assembled at Oshawa on complete chassis shipped from Detroit. Shipments of as few as three and as many as twenty-five chassis in a group are listed in the serial ledgers. Some cars were subsequently recorded in the Detroit records by body style, body number and other details. It is likely that many of the unidentified units were style 8110 5-passenger Sedans or style 8060 7-passenger Sedans, and account for most of the unidentified 65 cars in the overall production total.

| Upper Panels | Paint # | Lower Panels | Paint # |
|---|---|---|---|
| Ardsley Green | 2443038 | Canoe Brook Green | 2441638 |
| Black | | Black | |
| Black | | Derby Red, Medium | 2443336 |
| Black | | Vineyard Lake | 2443089 |
| Ching Blue | 2441282 | Norse Blue | 2441467 |
| La Force Gray | 2441765 | La Force Gray | 2441765 |
| Senator Green | 2441306 | Desert Sand | 2441313 |

Fender set in black enamel is standard with all body colors, special color fenders at additional list charge of $85.00
Chassis is finished in black, but special color may be had at additional list charge of $15.00

**Trim Options**

*LaSalle Fisher Bodies*

Open/Convertible bodies - job/style: 1168, 1168-B, 1169, 7400

18 T 1327 Green Leather
19 T 1327 Blue Leather
20 T 1327 Tan Leather (finish not indicated)
21 T 1327 Gray Leather
22 T 1327 Black Leather
23 T 1327 Red Leather
26 T 1327 Tan Leather (finish not indicated)

Top:
16 T 1527 Drab-duck (khaki)
6 T 1527 Black (optional)

Rumble Seat:
35 T 1227 Black Imitation Leather

Closed bodies - job/style: 7380, 7390, 7410, 7420, 8050, 8060, 8070, 8080, 8090, 8110, 8120, 8130, 8140

68 T 127 Cloth (color and type not listed)
70 T 127 Green-Gray Mohair
71 T 127 Plush (Mohair, color not listed)
80 T 127 Blue-Gray Mohair
81 T 127 Taupe Mohair
84 T 127 Brown & Tan Mohair
85 T 127 Tan Mohair
32 T 128 Blue Mohair
36 T 128 Bedford Cord Cloth (color not listed)

1928 Family Sedan and Business Coupe closed bodies - job/style: 8060-A, 8110-A, 8140-A

112 T 128 Broadcloth (color and type not listed)

Note: The above trim numbers are from Trim Charts #1 and #2 of the Fifth Edition, *Cadillac Master Body Parts List*, March 1936, which does not contain material type and color descriptions. Descriptions are included where positive correlations from other records can be established. Factory documents describe available 1927-1928 Fisher body trims in general terms as Mohair, Wool Velour, Broadcloth or Worsted; two-tone Bedford Cords for owner driven cars; hair-line broadcloths, figured cloths, doeskin broadcloths in light drab shades for Cabriolets; Mohair Worsted Velvet and Cotton Velvet.

*LaSalle Fleetwood Bodies*

"Trim options include four broadcloth materials of special weave offered exclusively on Cadillac/LaSalle Fleetwood bodies:

2423-24 Mouse-gray broadcloth
2425-26 Tan broadcloth
2427-28 Fawn-gray broadcloth
2429-30 Gunmetal-gray broadcloth

In addition, two new mohair materials have been especially developed, one in fawn and the other in green." Source: *Distributors Convention*, August 30 - September 1, 1927

**Standard and Optional Equipment**

Standard Equipment: Five wood wheels (except Sport Phaeton), size 32 X 600/32 X 620; rear spare tire carrier.

Optional Equipment:

| | |
|---|---|
| Wood wheels - natural (instead of painted) | $ 10.00 |
| Five disc wheels, 32 X 600/32 X 620 | No charge |
| Five wire wheels, 32 X 620 | $ 95.00 |
| Six disc wheels, fenderwells and 2 spare tires | $150.00 |
| Six wire wheels, fenderwells and 2 spare tires (standard equipment on Sport Phaeton only) | $250.00 |
| Fenderwells for wood wheels, 2 spare tires | $140.00 |
| Folding Trunk Rack (standard equipment on Sport Phaeton only) | $ 35.00 |
| Running Board Searchlight (standard equipment on Sport Phaeton only) | $125.00 |
| Special Trunk | $ 75.00 |

"Cadillac Motor Car Co. announces it is offering high compression heads and a low gear ratio for LaSalle roadsters and phaetons. The new high compression heads will have a ratio of 5.1 to 1. The new gear ratios are 4.0 to 1. Extra cost for this equipment is $125.00. When such equipment is used, the factory recommends the purchase of wire wheels, due to the higher speeds and acceleration. These wheels are offered at $95.00 additional, bringing the total cost of this high speed equipment to $220.00." *Automobile Trade Journal*, September 1927.

Research Methodology: Microfilm copies of the ledger records of the as-built configuration of each serial number were individually viewed. All record sheets were accounted for. Three serial numbers were not used in production. All Fleetwood body styles were recorded by serial and body number to determine the quantity of each body style built. All chassis were recorded by serial number. Because of shared body number sequences and unusual body numbers, Fisher body styles 1168-B, 8060, 8060-A, 8110, 8110-A, 8120, 8130, 8140 and 8140-A were individually recorded to determine actual production totals. No attempt was made to construct cross reference lists of the other Fisher body numbers with corresponding engine numbers to account for the 65 unidentified vehicles. The Canadian assembled cars that are not identified by body style undoubtedly result in somewhat understated production totals by body style.

Notes on research findings:

1. 1927-1928 model distinctions. There is a long running discussion among enthusiasts and automotive historians as to which cars are 1927 LaSalles and which are 1928's. Automotive historians have published differing views. All known factory records have been carefully studied in an attempt to resolve the discussion. We are all accustomed to thinking of cars as specific **model years**, irrespective of when they were built or shipped to the dealers. Cadillac Motor Car Company does not appear to have distinguished between 1927 and 1928 LaSalles by model year. Therein lies the problem. A cursory review of Cadillac serial numbers from 1902 through 1927 will demonstrate that model year designation was not the norm; automobile production was recorded by **calendar year**. Introduction of the LaSalle on March 5, 1927, with subsequent introduction of the new Cadillac series 341 on September 1, 1927, resulted in the model year confusion that was not clarified until the introduction of the 1929 models of both marques.

Production was continuous from the first 1927 LaSalle built through the last 1928, with no break in the engine serial numbers and many body style changes. In all subsequent years of LaSalle production, there is a distinct break between model years, with a change in the prefix of the engine serial number group (e.g., 4----- in 1929; 6----- in 1930; 220---- in 1935; 221---- in 1936.)

Undated factory distribution summaries, labeled *10 Day Pre-War*, list 1927 production of 10,767 LaSalles and 1928 production of 16,038 LaSalles, for a total of 26,805, which is within one car of matching the actual record count. Using the 10,767 number for the end of the 1927 LaSalle, (some historians have) would put the start of 1928 production in late July 1927, less than five months after the March 5, 1927, introduction. There is no apparent basis for selecting serial #210767 as a break between 1927 and 1928 cars. Serial numbers for all of the early body styles continue well beyond the 10,767 point; none of the additional or new-for-1928 body styles were ready for shipment and dealers had not seen or been able to order the new styles.

The Distributors Convention was held in Detroit from August 30-September 1, 1927. The new Cadillac series 341 models were on display, along with thirty-two LaSalle display models. The convention handouts indicate in part: "The number assigned to each specification corresponds with the number on the tag of each car and may be used for convenience in ordering duplicates on any job shown." "Three welcome additions to the LaSalle line are announced. The 5-passenger Imperial Sedan (style 8090), 7-passenger Sedan (style 8060) and 7-passenger Imperial Sedan (style 8070) are all mounted on the 134" wheelbase." Although no delivery dates are indicated, the implication is that LaSalle Distributors could immediately order the new body styles. The convention handouts show side views of body styles with features common to 1928 but do not say that the new LaSalle styles offered are 1928 models. Initial shipment of six added or changed body styles (8120, 8130, 8140, 8060, 8070 and 8090) commenced in late August/early September 1927. Early serial number cars in those styles can be considered to be 1927 models that continue into the new calendar year as 1928 LaSalles. A 1927 model year from March through December 1927 (out of 19 months of shipments) seems reasonable.

Record analysis reveals a series of running changes to various components (not unlike current manufacturing), with an overlap in the building of new body styles that are distinctly 1928 models and the phaseout of distinctly 1927 body styles. The running changes are reflected in the multiple editions of the LaSalle Operators Manual for the Series 303, which indicate applicability by engine serial number. Sales of the LaSalle were far greater than expected and all existing stocks of bodies and components were apparently utilized in a seamless transition to the 1928 LaSalle. "Due, the company says, to unexpected sales volume which the LaSalle has enjoyed since its introduction last March - 15,000 having been sold in nine months instead of a year as anticipated - it has been possible to materially lower the prices of the other LaSalle models." Source: *Automobile Topics*, January 7, 1928. Factory list prices for 1928 were reduced from the 1927 introductory level.

Although there is no perfect fit in terms of the introduction of additional body styles, discontinuation of early body styles, mechanical component changes, etc., accepting a break point recorded by Cadillac Motor Car Company is the only reasonable differentiation between 1927 and 1928 LaSalles. The records do not show the date that vehicles were built, only the date they were shipped. Cars were shipped as late as December 31, 1927, with serial #216954 being the highest number shipped in 1927. Shipments resumed on January 3, 1928. *Cadillac-LaSalle Facts*, a vest pocket booklet produced by Cadillac Motor Car Company in early 1928, lists both the Cadillac 341 and LaSalle 303 cars shipped through the end of the year as 1927 cars and lists 1927 LaSalle engine numbers as serial #200001 to #216955 (which was shipped on 2/14/28). The *Cadillac Master Parts List* shows engine serial #216851 as the first 1928 LaSalle. Serial #216851 is the **third** serial number shipped on January 3, 1928, which makes that change point appear to be totally arbitrary. Eighty-five cars with serial numbers higher than #216851 were shipped in December 1927 and thus obviously built sometime in 1927.

Initial shipments of six new body styles (8110, 8110-A, 8140-A, 8050, 8060-A and 8080) began between December 22, 1927, and January 17, 1928. Switching from a **calendar year** to a **model year** designation, beginning with the resumption of production in calendar 1928 and the sale of six new body styles, aligns the LaSalle with Cadillac designations for all future models. It is a logical choice. Lacking further documentation, the Cadillac-LaSalle Club, Inc., has chosen to accept the January 3, 1928, change point as the beginning of the 1928 LaSalle model year. Any date accepted necessarily results in some number of cars being improperly categorized when considered only on the basis of serial number, shipping date or body style.

2. Body Styles. The array of Fisher body styles is confusing at the very least, due to mid and late calendar year body style changes and additions, the appearance that Cadillac selected an arbitrary serial number to designate 1928 cars and the addition of distinctly 1928 body styles. A simplified breakdown follows:

| 1927 early Fisher body styles | Style # | W.B. | |
|---|---|---|---|
| 4-Pass. Phaeton | 1168 | 125" | Retained through 1928 |
| 4-Pass. Sport Phaeton (dual cowl) | 1168-B | 125" | Introduced in July 1927, retained through 1928 |
| 2-Pass. Roadster | 1169 | 125" | Retained through 1928 |
| 5-Pass. Sedan (leather back) | 7380 | 125" | Replaced by style 8120, Sept. 1927 |
| 4-Pass. Victoria (Coupe, leather back) | 7390 | 125" | Replaced by style 8130, Sept. 1927 |
| 2-Pass. Convertible Coupe | 7400 | 125" | Retained through 1928 |
| 2-Pass. Coupe (leather or fabric back) | 7410 | 125" | Replaced by style 8140, Sept. 1927 |
| 5-Pass. Town Sedan (metal back) | 7420 | 125" | Introduced in July 1927, retained through 1928 |

| | | | |
|---|---|---|---|
| 5-Pass. Sedan (leather back) | 8120 | 125" | Slight changes from style 7380, see note below |
| 4-Pass. Victoria (Coupe, leather back) | 8130 | 125" | Slight changes from style 7390, see note below |
| 2-Pass. Coupe (leather back) | 8140 | 125" | Slight changes from style 7410, see note below |
| 7-Pass. Sedan (metal back) | 8060 | 134" | Announced at Distributors Convention, Aug. 1927 |
| 7-Pass. Imperial Sedan (metal back) | 8070 | 134" | Announced at Distributors Convention, Aug. 1927 |
| 5-Pass. Imperial Sedan (leather back, blind qtrs.) | 8090 | 134" | Announced at Distributors Convention, Aug. 1927 |
| 1928 new Fisher body styles | | | |
| 5-Pass. Sedan (metal back) | 8110 | 125" | First car shipped December 31, 1927 |
| 5-Pass. Family Sedan (metal back) | 8110-A | 125" | Announced January 1928 |
| 2-Pass. Business Coupe (leather back) | 8140-A | 125" | Announced January 1928 |
| 5-Pass. Coupe (metal back) | 8050 | 134" | Announced January 1928 |
| 7-Pass. Family Sedan (metal back) | 8060-A | 134" | Announced January 1928 |
| 5-Pass. Cabriolet Sedan (leather back, blind qtrs.) | 8080 | 134" | Announced January 1928 |

Note: "Slight changes have been made in the 2-passenger Coupe, 4-passenger Victoria and 5-passenger Sedan. The radius of the curve at the rear of the roof has been slightly lessened, giving a lower appearance to the body; dark glass sun visors have been substituted; and cowl ventilators opening to the rear have been located on each side. These changes in design are made to correspond with the design of the three new models. Wide auxiliary seats are supplied in the 7-passenger Sedan and 7-passenger Imperial." Source: *Distributors Convention*, August 30 - September 1, 1927.

"Five new LaSalle models have been perfected and put on the 1928 market by Cadillac Motor Car Co." Source: *Automobile Topics*, January 7, 1928. (No mention of the style 8110 5-Pass. Sedan as a new model.)

Visually, the most recognizable distinction between early 1927 and late 1927/1928 models is the change from an engine hood with 12 louvers on each side for 1927, to a hood with 28 louvers on each side and the addition of cowl ventilators opening to the rear on closed body styles. There are surviving cars with serial numbers in the 1927 block that have the later hood, Electrolock ignition, carburetor heat control, new type chassis and brakes, etc. On the mechanical level, the 1928 units principally have the twin disc clutch instead of the eleven disc clutch, Lovejoy hydraulic shock absorbers instead of Watson stabilators and 16-inch front brake drums instead of 14-inch.

3. Vehicle Records. The 1927 and 1928 LaSalles are recorded as hand-written, single-line, two-page entries in large leather bound ledgers. The data elements listed are: Engine Number / Date Shipped / Shipped to Distributor at / Delivered to / City and State / Date Delivered / Type (style #) / Number (body #) / Upholstery / Top / Center & Lower Panels (color name) / Stripe / Moulding / Lock No. / Wheels - Type & Size, Color, Stripe, Hubs / Radiator & Lamps (nickel plated) / Gear Ratio / Frame Number / Engine Unit Number / Front Axle Number / Rear Axle Number / Transmission Number / Carburetor Number / Steering Number / Generator Number / Extra Equipment / Car Cover / Decking Charge.

In practice, the last three blocks of the ledger were used for notes including hood and cowl color, fenderwells and trunk rack, high compression cylinder heads if so equipped, etc.

Very few of the records were filled in to indicate the Delivered to / City and State / Date Delivered information. After serial #212000, those three data elements were eliminated in a new ledger. Less than one hundred vehicles are annotated with the name of the original purchaser; most of whom were factory or other General Motors employees. Harley Earl received a style 8090 5-Passenger Imperial Sedan. Nine vehicles were charged to the factory accounts of the Fisher brothers.

Some highly unusual record changes were entered in the vehicle ledgers, changing the body style notations as a result of modifications made by dealers. Two particularly odd entries are changes from a 7-Pass. Sedan (8060) and 7-Pass. Family Sedan (8060-A) to five-passenger styles 8110 and 8110-A with the notation "Auxiliary seats removed by Don Lee" (the Los Angeles based distributor). The seven-passenger body is physically longer than the five-passenger body and thus the style number change is inappropriate. Three 5-Pass. Imperial Sedans, style 8090, were annotated "Body style changed by dealer from Imp 5 Sedan to Cabrio." and the body style changed to 8080. Removal of the Imperial Partition would make that physical change and be an appropriate style number distinction. It is unlikely that any of the body tags were changed.

4. Color. No listing of standard color combinations for the complete 1927 and 1928 LaSalle model years could be located. To determine the probable standard colors and entire range of color combinations, body color listings (upper panel/lower panel) were recorded. Black is standard for all years. Six combinations are rubber stamped in the ledgers and are obviously standard. All other entries are hand written. Thirteen other combinations were found on more than 500 cars each, one on 463 cars, and one on 372 cars. All of those colors are probable standard colors and so listed below. New apparently standard colors were introduced throughout the production run. A total of 482 color combinations were found to have been applied to the 1927-1928 cars. Many of the combinations were special orders found on a single car. Other colors were found on as many as 174 cars, which is less than one percent of total production and thought to not represent a standard color.

Cadillac Motor Car Company maintained a policy of discouraging the use of what they considered to be non-durable paint colors, to the point of declining orders to paint cars in such finishes. Fifty-three cars (eleven body styles) were shipped to dealers with the body in primer "Rubbed out of rough stuff" for local finishing as arranged by the dealer or purchaser.

(probable) **Standard Color Combinations**

| Upper Panels | Paint # | Lower Panels | Paint # |
|---|---|---|---|
| Algerian Blue | 1254 | Algerian Blue | 1254 |
| Black | | Bolling Green | 1331 |
| Black | | Calumet Blue | 20235 |

| Upper Panels | Paint # | Lower Panels | Paint # | |
|---|---|---|---|---|
| Black | | Phantom Gray | 2443356 | |
| Black | | Powder Blue | 3116 | |
| Black | | Wissahickon Green | 20366 | |
| Bruce Green | 2441723 | Cape Smoke | 2441482 | |
| Czarina Beige | 2443009 | Cossack Brown | 2441322 | |
| Czarina Beige | 2443009 | Czarina Beige | 2443009 | |
| Dustproof Gray | 2441274 | Dustproof Gray | 2441274 | |
| English Gray | 2441774 | English Gray | 2441774 | |
| Gettysburg Blue | 2441205 | Gettysburg Blue | 2441205 | |
| Larchmont Blue | 2441273 | Pelham Blue | 2441297 | (Phaetons & Roadsters) |
| Lush Green | 2441478 | Canoe Brook Green | 2441638 | (Phaetons & Roadsters) |
| Royal Purple Lake | 20528 | Royal Purple Lake | 20528 | |

5. Special Features: Customer requests for non-standard upholstery material, deviations from the standard trimming methods (e.g., Cadillac style pleated and tufted), application of non-standard colors, etc., were handled by the assignment of a Fisher Order number with detailed written instructions to the body plant. None of those individual order records are known to exist for 1927-1928 LaSalles. Only a small fraction of the F.O. numbers are indicated in the ledgers, although there were many such orders as evidenced by the large volume of non-standard paint cars, which required a sixty-day delivery time. None of the individual orders for the Fleetwood bodied cars are known to exist.

Numerous cars were annotated "Natural cane work in belt panel." Four cars were fitted with a single fenderwell; three on the left side, one on the right side. A Phaeton charged to F. J. Fisher had all of the nickel parts (body and chassis) chromium plated, a precursor of the 1929 models. A style 7380 5-Pass. Sedan charged to the factory was equipped with nickel plated disc wheels and "Special walnut panels." It was probably a show car. An unorthodox combination was an 8060-A 7-Pass. Family Sedan (austere interior trim), painted Black with "Chromium plating on fenders."

Few truly custom Fisher Orders were done. A "Partition 5-Pass. Sedan 1153 LX," using a style 7380 body shell, was charged to the factory account of A. J. Fisher. The car featured: Weise cloth, Special Maroon top and body, special steering column, walnut door panels, fenderwells and trunk cover. A "Special 5-Pass. Sedan 1157LX," also using a style 7380 body shell, was built for an unknown buyer. No indication of the body modifications was listed, but the car was trimmed in "special cloth" and the body painted Willeys Pale Auto Yellow. Two special body cars were done with modified style 1168 Phaeton bodies and listed as "Double Cowl Phaeton." These likely were prototypes for the Sport Phaeton that went into production some 4600 cars later. One was charged to the factory account of John J. Raskob (GM Executive Committee). Cadillac cars were available in a 7-Pass. Touring body style that was not offered on LaSalle. A single "134" Chassis Touring, Non-Production LX1290" car, presumably a 7-passenger, was built and charged to the factory. A "134" Chassis 5 Coupe, Sample Body 1295 LX" is shown charged to the factory. An "8120 Special 5 Sedan" is listed with "Special body built for Eng. Dept." An "8080 Special 5 Cabrio. Sedan" was charged to the factory account of L. P. Fisher, but no details are listed.

6. Factory installed accessories: Very few cars had factory installed accessories other than the wire wheels, sidemounts and folding trunk rack option. Installed items were:

| | |
|---|---|
| Heavy duty rear springs | Lovejoy Shock Absorbers (pre 1928) |
| High Compression cylinder heads | Special Camshaft |
| High Speed Equipment | Spotlight |
| Houdaille Shock Absorbers | Standard Trunk |
| Kelch Heater | Trunk Cover to match top (Drab Duck) |

7. Chassis: Complete drivable chassis, in both the 125" and 134" wheelbases, were produced and sold to both domestic and foreign coachbuilders. Typically the units included the bumpers, radiator, hood and cowl, lights, dashboard, running boards, fenders (with or without fenderwells and trunk rack), etc. The finished vehicle would thus have a distinctly recognizable LaSalle origin. Chassis distribution was:

| | | | |
|---|---|---|---|
| Alexandria, Egypt | 3 | London, England | 11 (Right hand drive) |
| Antwerp, Belgium | 8 | Newark, New Jersey | 1 |
| Berlin, Germany | 15 | New York City, New York | 1 |
| Boston, Massachusetts | 1 | Oshawa, Canada | 1 |
| Buenos Aires, Argentina | 3 (Right hand drive) | Paris, France | 20 |
| Buffalo, New York | 2 | Stockholm, Sweden | 1 |
| Chicago, Illinois | 1 | Utica, New York | 2 |
| Copenhagen, Denmark | 3 | Washington, D.C. | 4 |
| Factory, Detroit | 12 | | |

The first eleven LaSalle serial numbers are chassis indicated as "Factory - Experimental." At least one of those was eventually fitted with an unspecified body with center and lower panels in Cadillac Blue, Lt. Two "Cut Open Chassis" for show displays were done, one sent to Newark and one charged to the factory. The records give only a brief hint of the custom coachwork done on the LaSalle chassis. Serial #216545, a 134" wheelbase chassis, was shipped to Paris on 12/9/27. It was returned to the factory for credit and shipped to New York City on 6/11/28 with the record annotated "Hibbard & Darrin 5 Sedan." Serial #216741, a 134" wheelbase chassis, was shipped to Utica, New York, on 12/21/27. It was returned to the factory for credit on 6/11/28 with the record annotated "Willoughby body on chassis - 4 Sport Sedan." It is reasonable to guess that Willoughby, based in Utica, also built a body for the other chassis shipped to Utica.

8. Export Cars: Export sales rapidly became an important element of LaSalle production - the first export being a 5-passenger Sedan, serial #202641, to Copenhagen on April 6, 1927. Car and chassis exports totalled 1975 units; 1334 in 1927 and 641 in 1928. All LaSalle body styles were available in either left or right hand drive, a feature that was essential to international sales. Sales to Canada (in addition to the cars assembled in Oshawa) were not treated as exports, whereas, sales to Mexico were through the General Motors Export Division. Vehicles destined for the U.S. Territory of Hawaii were treated as exports. Right hand drive was a common feature for export cars destined for island nations plus Argentina, India and South Africa. Export totals by body style were:

| Body Style | Style # | Qty. | Body Style | Style # | Qty. |
|---|---|---|---|---|---|
| 4-Pass. Phaeton | 1168 | 460 | 5-Pass. Cabriolet Sedan | 8080 | 6 |
| 4-Pass. Sport Phaeton | 1168-B | 13 | 5-Pass. Imperial Sedan | 8090 | 34 |
| 2-Pass. Roadster | 1169 | 121 | 5-Pass. Sedan | 8110 | 19 |
| 5-Pass. Sedan | 7380 | 206 | 5-Pass. Family Sedan | 8110-A | 10 |
| 4-Pass. Victoria | 7390 | 39 | 5-Pass. Sedan | 8120 | 242 |
| 2-Pass. Convertible | 7400 | 253 | 4-Pass. Victoria | 8130 | 11 |
| 2-Pass. Coupe | 4110 | 7 | 2-Pass. Coupe | 8140 | 8 |
| 5-Pass. Town Sedan | 7420 | 67 | 2-Pass. Business Coupe | 8140-A | 2 |
| 5-Pass. Coupe | 8050 | 5 | Chassis, 125" wheelbase | | 34 |
| 7-Pass. Sedan | 8060 | 111 | Chassis, 134" wheelbase | | 31 |
| 7-Pass Family Sedan | 8060-A | 8 | 5-Pass. Town Cabriolet, Fleetwood | 3130 | 1 |
| 7-Pass. Imperial Sedan | 8070 | 287 | | | |

Where did the exports go? Destinations are listed below (destination not indicated in the records for 10 units):

| City | Qty. | City | Qty. | City | Qty. |
|---|---|---|---|---|---|
| Berlin, Germany | 252 | Osaka, Japan | 41 | Kingston, Jamaica | 5 |
| Antwerp, Belgium | 205 | Barranquilla, Columbia | 39 | Nairobi, Kenya | 4 |
| Paris, France | 128 | Havana, Cuba | 39 | Guatemala | 3 |
| Buenos Aires, Argentina | 122 | Melbourne, Australia | 38 | Lima, Peru | 3 |
| Alexandria, Egypt | 118 | Caracas, Venezuela | 25 | Perth, Australia | 3 |
| Madrid, Spain | 109 | Adelaide, Australia | 22 | Delhi, India | 2 |
| Copenhagen, Denmark | 96 | Brisbane, Australia | 15 | Leon, Mexico | 2 |
| London, England | 91 | Santo Domingo, Dom. Rep. | 12 | Madras, India | 2 |
| Stockholm, Sweden | 69 | Wellington, New Zealand | 12 | Rangoon, Burma | 2 |
| Honolulu, Territory of Hawaii | 67 | Montevideo, Uruguay | 11 | Recife, Brazil | 2 |
| Port Elizabeth, South Africa | 67 | Bombay, India | 8 | San Jose, Costa Rica | 2 |
| São Paulo, Brazil | 58 | Panama City, Panama | 7 | Torreon, Mexico | 2 |
| Sydney, Australia | 55 | Calcutta, India | 6 | Valparaiso, Chile | 2 |
| San Juan, Puerto Rico | 51 | Cali, Columbia | 6 | Barcelona, Spain | 1 |
| Mexico City, Mexico | 49 | Oruro, Bolivia | 6 | Port Au Prince, Haiti | 1 |
| Batavia, Java | 48 | San Salvador, El Salvador | 6 | Santiago, Chile | 1 |
| Manila, Philippine Islands | 44 | Colombo, Ceylon | 5 | Tampico, Mexico | 1 |

9. Indianapolis: "Before a crowd estimated at 135,000, the LaSalle Roadster driven by "Big Boy" Rader paced the Indianapolis Memorial Day race and made a very splendid showing. The Roadster which Rader drove had a beautiful black finish and with its nickel work made a most impressive sight as it tore around the curve and flashed into the straight-away with the pack of 33 racing cars roaring at its heels." Source: *Clearing House*, June 2, 1927. Selection of the new LaSalle as the pace car provided a significant stamp of approval and publicity boost. LaSalle was destined to pace the Indianapolis race three times, an impressive record for a car that was built for only fourteen years. The identity of the 1927 pace car is not clear from factory records. Roadster serial #204256, body #340, is listed in the ledger as "For Indpls Speedway, Steve Hannagan" and was shipped on 4/23/27. That car, however, had Black upper panels and Derby Red Medium lower panels. There are no other indications of cars for the Speedway. Is the race account incorrect? Was serial #204256 repainted for the race, or was there a second Roadster that was the actual pace car?

10. Serial numbers. None of the body styles were assembled in body number sequence. For body styles that shared the same body number sequence, blocks of serial numbers were apparently assigned to a particular style and, when all were used, another block was assigned.

Fisher body styles.

| First car built in each body series | | Last car built | Highest body number | |
|---|---|---|---|---|
| 1168 | serial 200018, body 273 | serial 226806, body 1489 | 1999 | |
| 1168-B | serial 208955, body 28 | serial 226778, body 267 | 371 | |
| 1169 | serial 200019, body 5 | serial 226695, body 1173 | 1184 | |
| 7380 | serial 200016, body 1074 | serial 216160, body 2455 | 5001 | |
| 7390 | serial 200028, body 77 | serial 223991, body 1244 | 1250 | |
| 7400 | serial 200015, body 239 | serial 226741, body 2993 | 3001 | |
| 7410 | serial 299924, body 11 | serial 216772, body 1063 | 1100 | |
| 7420 | serial 209192, body 30 | serial 226807, body 1224 | 1600 | |
| 8050 | serial 216947, body 3 | serial 226732, body 992 | 1839 | |
| 8060 | serial 212036, body 1264LX | serial 226805, body 2542 | 2826 | Note 1 |
| 8060-A | serial 216911, body 1115 | serial 226794, body 2463 | 3469 | Note 1 |
| 8070 | serial 212046, body 1266 | serial 226529, body 480 | 1468 | |
| 8080 | serial 217095, body 2 | serial 226804, body 500 | 500 | |
| 8090 | serial 212061, body 70 | serial 226637, body 119 | 210 | |
| 8110 | serial 208251, body 310 | serial 226791, body 3067 | 3169 | Note 2 |
| 8110-A | serial 217045, body 18 | serial 226802, body 3513 | 7429 | Note 2 |
| 8120 | serial 205614, body 1452 | serial 224558, body 1578 | 2110 | |
| 8130 | serial 207102, body 154 | serial 226749, body 275 | 1215 | |
| 8140 | serial 211834, body 254 | serial 226625, body 934 | 962 | Note 3 |
| 8140-A | serial 216812, body 146 | serial 226793, body 967 | 975 | Note 3 |
| Chassis 125" | serial 200001 | serial 226636 | | |
| Chassis 134" | serial 214892 | serial 222897 | | |

Note 1: Body styles 8060 and 8060-A share the same body number sequence.
Note 2: Body styles 8110 and 8110-A share the same body number sequence.
Note 3: Body styles 8140 and 8140-A share the same body number sequence.

Fleetwood body styles. All of the Fleetwood bodies had body numbers assigned by the body works in Pennsylvania. The chassis were shipped to Fleetwood and returned to Cadillac Motor Car Company in Detroit with the body installed.

| | First car built | Last car built |
|---|---|---|
| 3051 | serial 204384, body 10322 | serial 217223, body 10608 |
| 3110 | serial 200012, body 10050 | serial 217098, body 10061 |
| 3120 | serial 200022, body 10189 | serial 207761, body 10199 |
| 3130 | serial 200013, body 10177 | serial 217312, body 10611 |
| 3751 | serial 219256, body 10941 | serial 226002, body 10943 |

# CONDENSED SPECIFICATIONS

## POWER PLANT

*Engine*—Compensated eight-cylinder, V-type; 90-degree angle between cylinder blocks. Engine and transmission in unit; 3-point suspension. Piston displacement 303 cubic inches. Bore 3 1/8"; stroke 4 15/16". Horsepower S.A.E. rating 31.25; actually more than 75.

*Cylinders*—Cast in blocks of 4, with detachable heads.

*Pistons*—Nickel-iron, close grained and long wearing; 3 rings; lower ring special oil regulating type.

*Connecting Rods*—Drop-forged alloy steel, I-beam section; side by side, two on each pin. Bearings 2 3/8"x1 3/8". Babbitt in rods.

*Valves*—Inlet 1 1/2", tungsten steel; exhaust 1 1/2", silico-chrome steel. Single spring. Automatically lubricated.

*Crankcase*—Special copper alloy aluminum; non-resonant.

*Crankshaft*—Diameter 2 3/8", length to outer ends of front and rear bearings 23 15/32". Supported on 3 main bearings, bronze-backed—Chadwick interchangeable. Crank throws 90 degrees apart, provided with compensators.

*Camshaft*—Single hollow shaft, with 16 cams; shaft supported on 4 bearings. Driven from crankshaft by silent chain.

*Clutch*—New dry-plate type with two discs, 9 1/2" in diameter. Positive release.

*Transmission*—Selective type with 3 speeds forward and 1 reverse. Alloy steel, oil-hardened gears and shafts. Faces of gear teeth accurately ground and ends of teeth chamfered to obtain easy and quiet gear shifting.

## GASOLINE SYSTEM

*Supply*—20-gallon fuel tank located at rear of chassis. Feed is by vacuum to smaller tank on dash.

*Vacuum Pump*—Special design, located at rear of crankcase and driven by eccentric on the camshaft, provides vacuum necessary to lift gasoline to vacuum tank under all conditions.

*Fuel Strainer*—Straining device located between tank and the carburetor, cleans engine fuel before it enters the mixing chamber of the carburetor.

*Carburetor*—LaSalle design and manufacture; maximum efficiency and economy. Air valve, single jet type. Automatic Thermostatic mixture control. Intake header exhaust-heated. Valve in left exhaust manifold operated from instrument board, when closed deflects back exhaust gases from left cylinders through intake header jacket thus giving maximum heat for carburetor almost immediately. Manifold high turbulence type.

## COOLING SYSTEM

*Radiator*—Copper with cellular core; nickeled casing.

*Water Cooling*—Capacity 5 1/4 gallons. Centrifugal pump mounted on right side of engine and driven by silent chain from crankshaft. Cylinder blocks interconnected. One drain plug for entire system; necessary to disconnect only 3 hose couplings to remove radiator.

*Temperature Control*—Thermostatically controlled by vertical balanced radiator shutter blades.

*Fan*—6 blades; driven at engine speed by a V-belt from camshaft. Hub carries gear oil pump and oil reservoir for its own lubrication.

## LUBRICATING SYSTEM

*Engine lubrication*—Pressure circulation system employing gear pump carried in oil pan and driven by extension of the distributor shaft. Supply in 8-quart capacity steel reservoir with screen for cleaning oil. Oil manifold runs length of crankcase, with leads connecting main bearings, the rear camshaft bearing, the pressure gauge and filter. Hollow camshaft carries oil from rear to other camshaft bearings. Passages in crankshaft conduct oil from main bearings to connecting rod bearings. Pressure is regulated by adjustable piston valve, overflow from which lubricates chain mechanism. Valves automatically lubricated by ports in cylinder walls. Oil level gauge on top of crankcase at rear of cylinder blocks.

*Crankcase Ventilation*—An effective and unique system which prevents contamination of crankcase oil with water and unburned fuel.

*Oil Filter*—An effective filtering device for removing impurities in solid form.

## ELECTRICAL SYSTEM

*Ignition*—Delco-Remy high tension system; ignition timer with two sets of contact points, induction coil and condenser. Jump-gap type distributor.

*Generator*—Two-pole Delco-Remy, mounted on right side of crankcase. Driven by same silent chain as water pump. Current regulated by automatic, thermostatic switch.

*Starting Motor*—Four-pole Delco-Remy, mounted horizontally at the right side of transmission case. Has exceptionally high stalling torque.

*Battery*—LaSalle-Exide, 100 ampere hour, 6-volt, 3 cells. Carried on right-hand side of frame under front seat.

*Horn*—Delco-Remy high frequency type, mounted on left side of radiator.

*Lighting Equipment*—Two headlamps, two side lamps; new design, bullet type; tail lamp, controlled from single lever at center of steering wheel. Stop signal lamp in unit with tail lamp, controlled by foot brake. Instrument board lighting controlled by light switch at center of steering wheel. Dome light in Two-passenger Coupe, Four-passenger Victoria and Five-passenger Sedan.

## OPERATING CONTROLS

*Gear Shift*—Center.

*Service Brakes*—Two independent braking systems. Mechanically operated, internal expanding on front wheels and external contracting on rear wheels. Division of pedal pull automatically proportioned between front and rear systems. Both front brakes operate when straight ahead, outer brake released on turn.

*Hand Brake*—Internal expanding on rear wheels and will not require adjustment during life of brake lining.

*Steering Gear*—LaSalle design, worm and sector, completely adjustable; reduction 17½ to 1. Steering wheel 18" in diameter, rubber composition with steel reinforcement; metal cast hub and spokes.

*Engine Controls*—Accelerator at right of brake pedal. Hand throttle lever built into central portion of steering wheel.

*Automatic Spark Control*—With manual lever located on instrument board directly in front of steering column.

*Instrument Board*—Special die cast panel; ignition switch with coincidental lock; ignition advance control; fuel gauge; ammeter; speedometer; oil pressure gauge; carburetor enriching button; intake header heat control; clock; motor heat meter and cigar lighter. Instrument lamps with separate switch.

## MISCELLANEOUS

*Axles*—Rear axle, LaSalle design, three-quarter floating type with helical bevel gear and pinion. Shafts and pinion are alloy steel forgings. Front axle, reversed Elliott type; drop-forged special alloy steel with inclined king bolts. Drop-forged steering spindles with ball thrust bearing at lower end.

*Drive*—Solid steel propeller shaft 1⅝" in diameter, turns in torque tube which completely seals assembly. Rear end rigidly connected to rear axle by splined sleeve; front end, to transmission shaft through universal joint. Torque tube is bolted to differential carrier at rear, and front end pivoted in ball-and-socket joint at rear of the transmission. Transmits drive of rear wheels to chassis and absorbs torque reactions due to acceleration and brakes.

*Fenders*—One-piece metal; oval contour.

*Fender Wells*—Optional, at extra charge.

*Frame*—Side bar channel section with wide top flange, carbon steel, maximum depth of side members 6½"; 4 channel cross members and 2 tubular cross members.

*Springs*—Semi-elliptic suspension. Rear shackle tension type provided with ball-and-socket joint. Delco-Remy-Lovejoy shock absorbers are standard equipment. Front springs 39" x 2"; rear 58" x 2".

*Tires*—32" x 6.00" cord balloon.

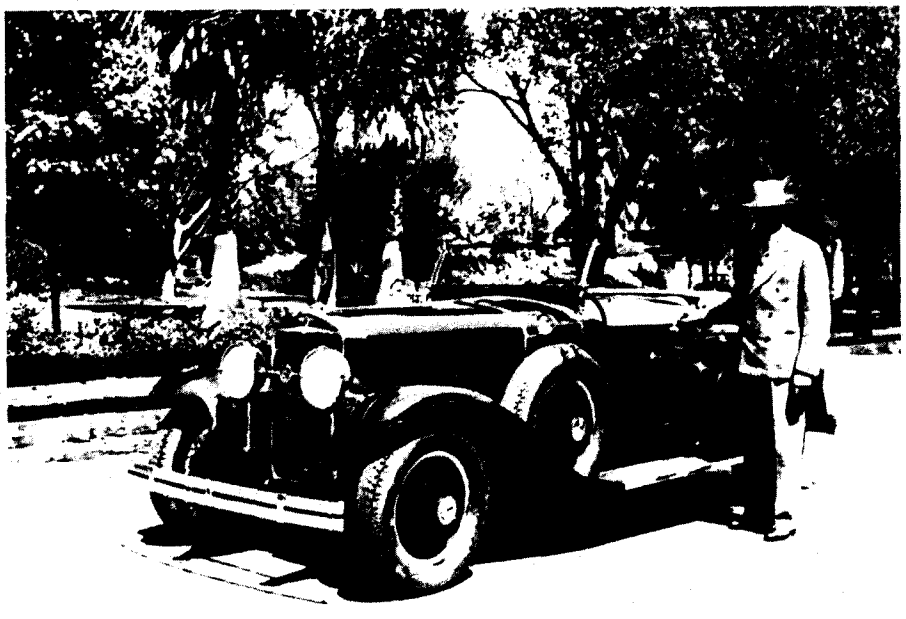
*Tire Carrier*—Rim type mounted at rear of chassis.

*Tools*—Complete set of tools in compartment under front seat.

*Wheelbase*—125" and 134".

*Wheels*—Artillery type, 20" diameter, 12 hickory spokes with steel felloe; demountable split type rim. Wire wheels, and disc wheels having rim integral, optional at extra charge.

*The Cadillac Motor Car Company reserves the right to make changes in specifications at any time without incurring any obligation to install same on cars previously sold*



*Harley Earl and a 1928 LaSalle Roadster in California.*

# LA SALLE

## *Operator's Manual*

303-300
5100-12-27

PRINTED IN THE UNITED STATES OF AMERICA

EDITION NO. 328-1X

*In ordering a duplicate of this Manual specify the above number or the engine number of the car*



# Table of Contents

# CHAPTER I

## 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.*

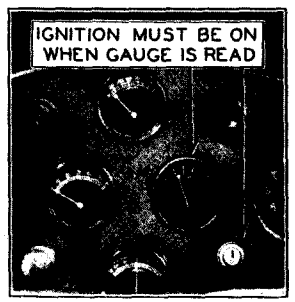



*Figure 2.* The gasoline gauge is operated electrically by current from the ignition circuit.

### Gasoline Gauge

The gasoline gauge, marked "Fuel," is the small dial at the right on the instrument panel (Fig. 2). This gauge indicates 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

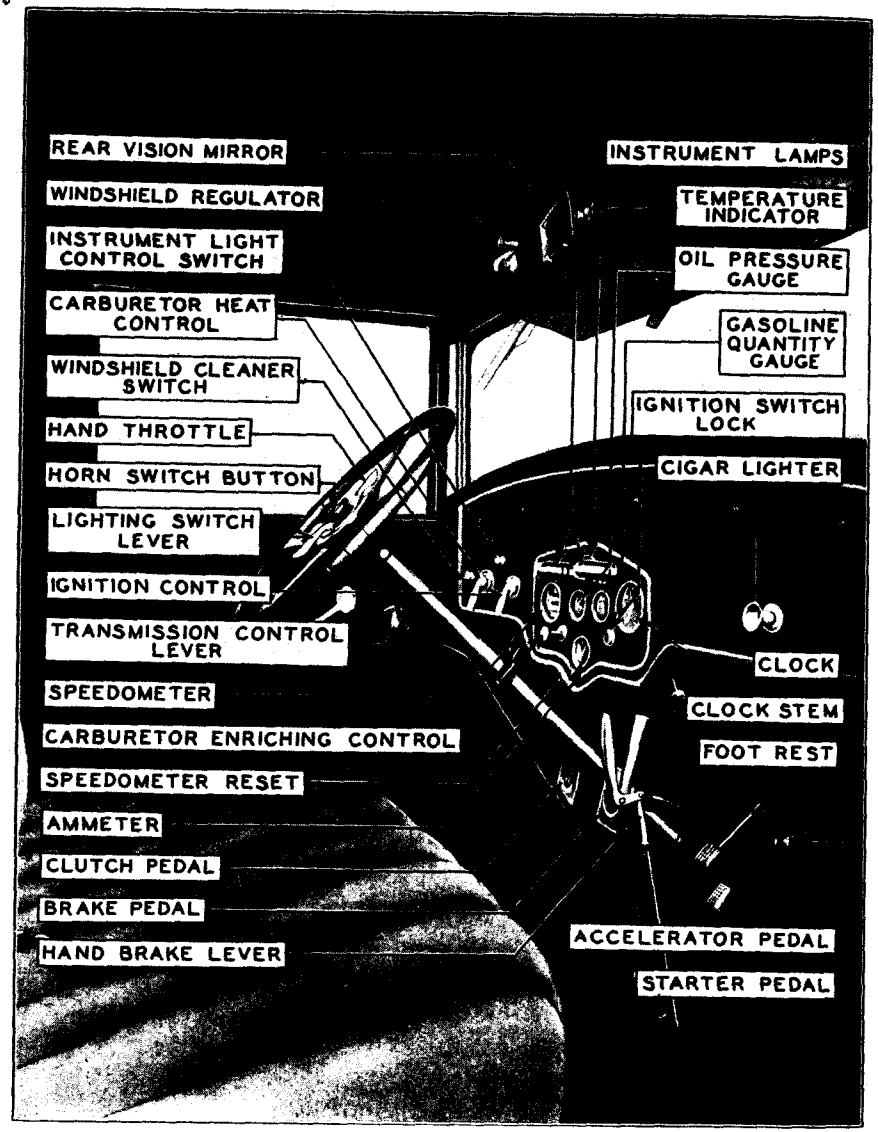



*Figure 1.* The new driver should familiarize himself with the instruments and controls before attempting to drive.



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 stations 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

The gauge at the top of the instrument panel (Fig. 3) 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.

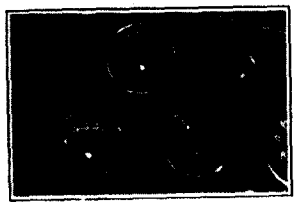


*Figure 3.* The temperature of the water in the cylinders should range from 160° to 190°.

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. 1). 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 this lever is all the way to the left the spark is fully advanced. When this lever 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. Cadillac 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. 4) 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.

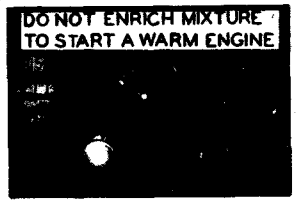



*Figure 4.* The carburetor enriching control does not prime the carburetor. To have any effect, it must be held out while the starter is cranking the engine.

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. 1). 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

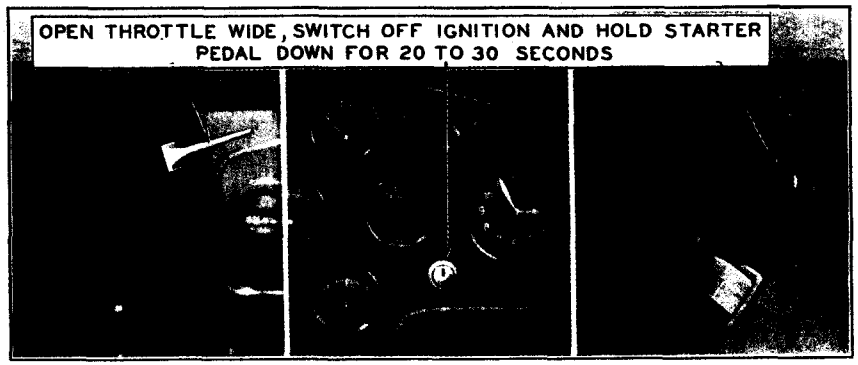



*Figure 5.* What to do when the engine refuses to start because the carburetor is flooded.

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. 6) 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.

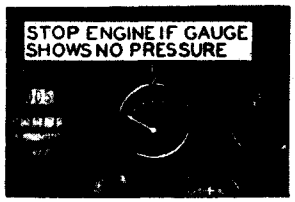



*Figure 6.* The oil pressure gauge does not show how much oil is in the engine—it shows pressure only. The pressure when the engine is idling should be 7 to 10 pounds.

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 in connection with the transmission control on page 13. 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.

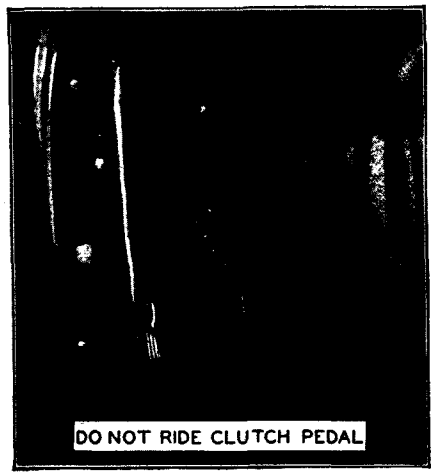



*Figure 7.* A good driver uses the clutch pedal only when shifting gears or about to stop.

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.

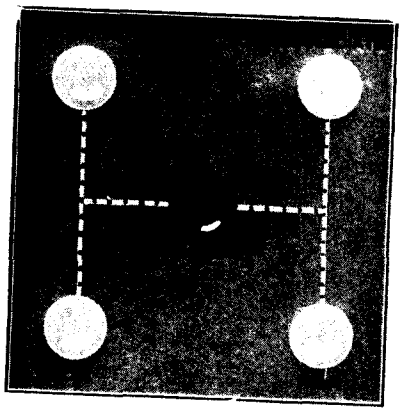


*Fig. 8.* The positions of the control lever are the same as for the conventional type of transmission.

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 await 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 these 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 48.

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 33 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. 9) 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.

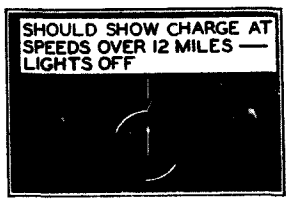



*Figure 9.* The ammeter indicates the amount of electrical current flowing to or from the battery.

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 filaments 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 is 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 instruments 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 II

## 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.

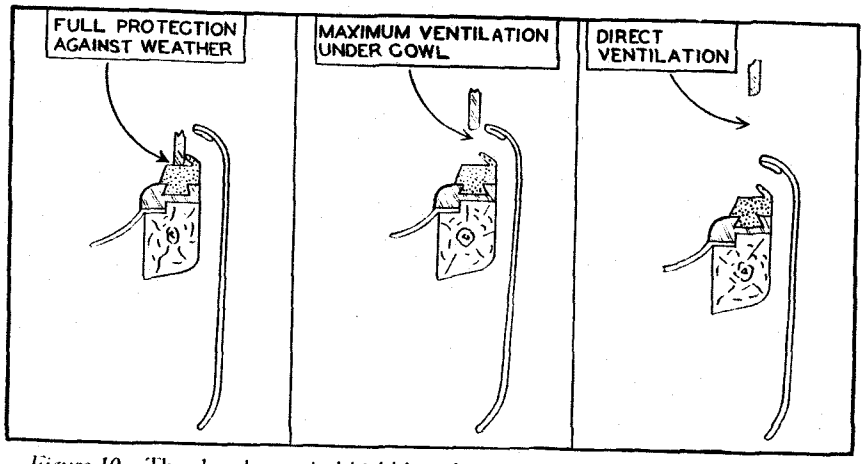



*Figure 10.* The closed car windshield has three positions; the position shown in the center is best for warm weather.

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. 10.)

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 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 cars, except those that are intended to be chauffeur-driven. On open cars, the back of the seat can be moved forward or backward as desired. This adjustment is controlled by the handle on the top of the back of the seat. To move the seat forward, turn the handle clockwise; to move it backward, turn the handle counter-clockwise.

On closed cars, 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 11a.* Remove the nickel-plated caps on the sockets for the top (hood) supports and install the supports by pushing them into the sockets and tightening the cap screws.

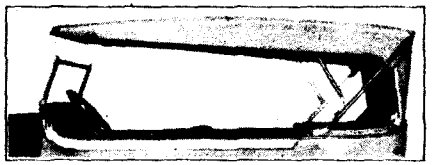


*Figure 11b.* Detach the side quarter curtains from the bow sockets and fold the curtains back against the rear curtains. Unscrew the thumb screws over the windshield supports and push the top up so that the clamps are free from the supports.

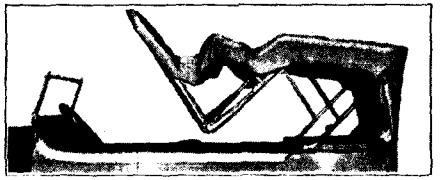


*Figure 11c.* Fold the front part of the top back toward the rear. Do not gather the top deck between the bows, but let it fall back clear of the top. Then fold the deck neatly and tuck it under the bows.

*Figure 11d.* 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 11.* Folding the top.



# Top (Hood) and Side Curtains

## Top (Hood)

Illustrated directions for folding the top (hood) on open cars are given in Fig. 11.

## 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. 12. 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.

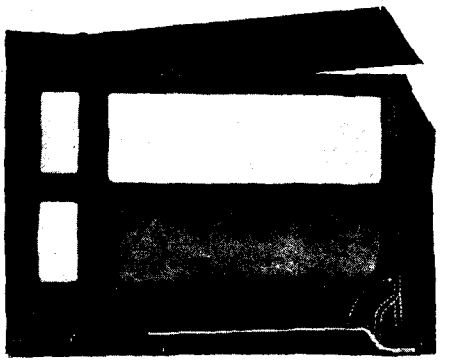


*Figure 12.* Side Curtain.

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 th 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. 13b. To release this type of fastener, press in on the small plunger or button in the center of the fastener.


*Figure 13.* 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. 13a 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. 13a. 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. 13c.)

## Tools

The compartment for tools is under the front seat. The tools comprising the standard equipment are listed below, and are illustrated in Fig. 14. Items listed opposite Nos. 23, 24, 25, 26, and 27 are not illustrated.

1. Open end wrench, $1\frac{1}{8}$-$\frac{7}{8}$ inch.
2. Open end wrench, $\frac{3}{4}$-$\frac{11}{16}$ inch.
3. Open end wrench, $\frac{5}{8}$-$\frac{9}{16}$ inch.
4. Open end wrench, $\frac{1}{2}$-$\frac{7}{16}$ inch.
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. 14 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



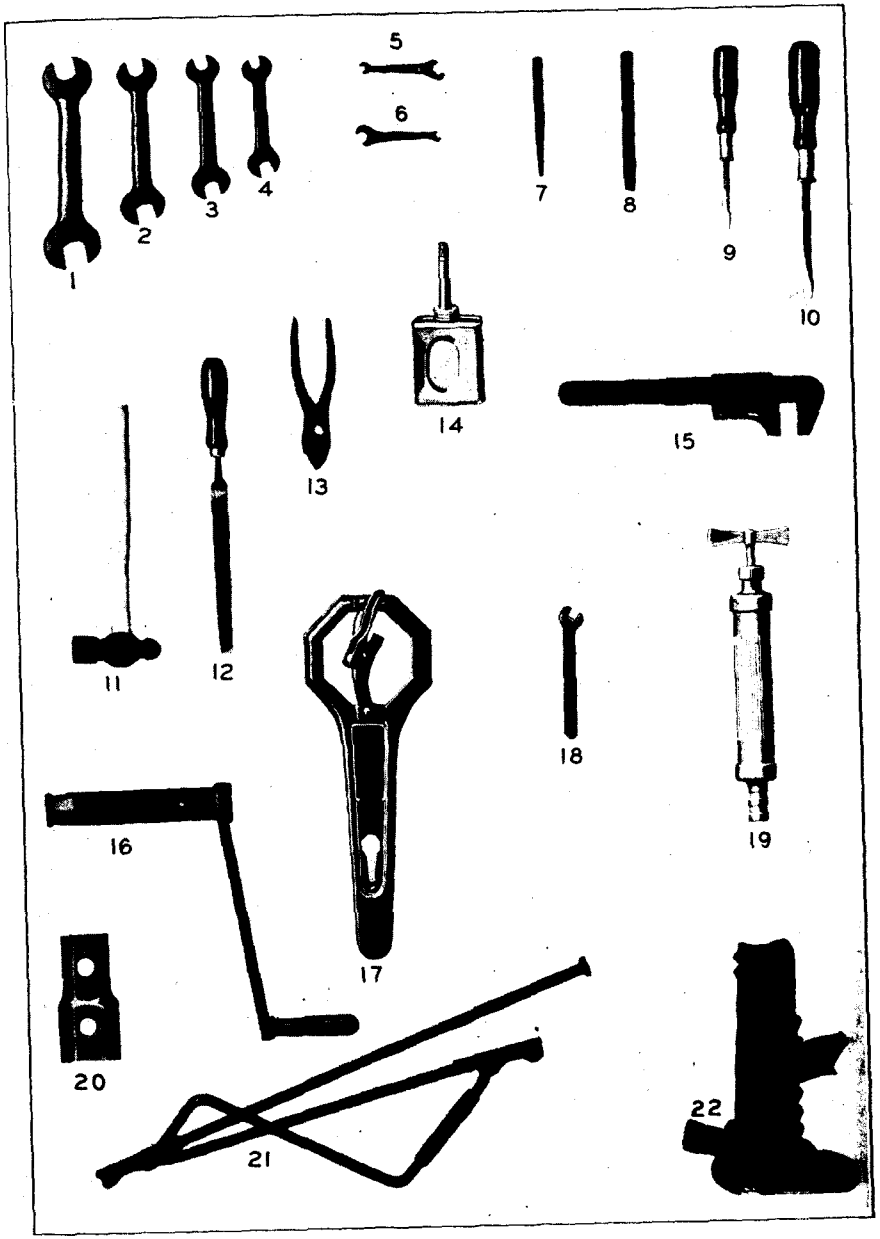



*Figure 14.* The tools are carried in the compartment under the front seat. See page 24 for the name and use of each tool.

# 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.

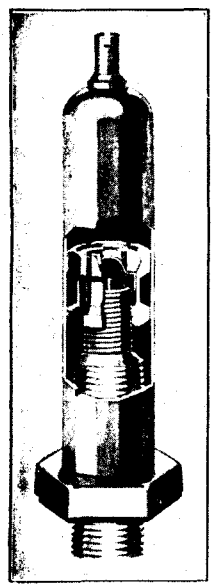


*Figure 15.* Tire valve cap.

To remove one of these valve caps, turn it two or three turns counter-clockwise. This loosens the sliding nut inside the cap. (Fig. 15.) 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 tires should be inflated to a pressure of 40 lbs. per square inch. 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 nut with the wrench furnished in the tool equipment.



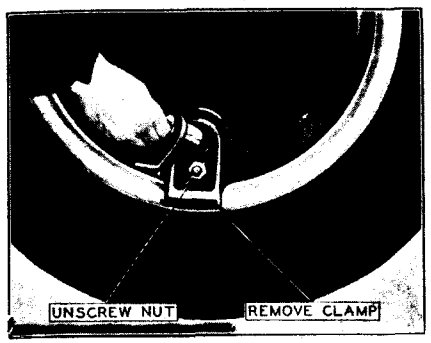



*Figure 16.* To remove the spare tire, unlock the lock, remove the screw and take off the clamp.

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

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 nut, 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 17.* After unlocking the lock, the large nut holding the wire wheel can be unscrewed with the hub cap wrench.

*Figure 18.* 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 19.* 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

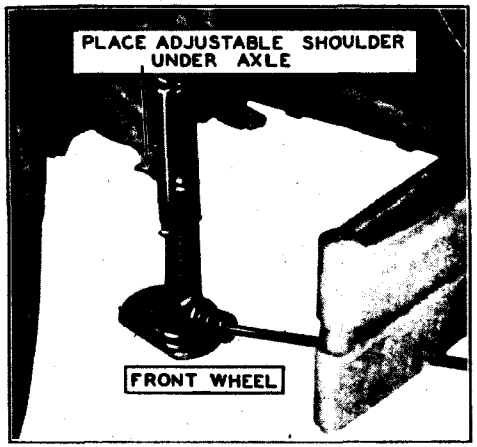
If a rim on a wood wheel does not run true, it may be trued up in the following manner: Rotate the wheel slowly and mark the part that runs farthest out from the face of the wheel. Loosen slightly the nuts diametrically opposite the mark and then tighten the nuts on the marked side. Test the wheel again, 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 20 show how the adjustable shoulder should be placed under the axle.





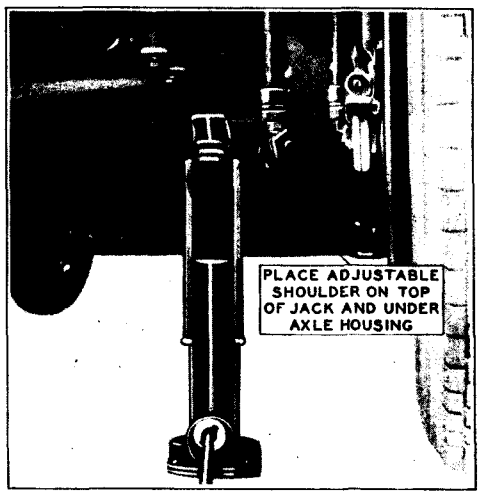




*Figure 20.* To jack up the car, it is necessary to have the jack in the proper position under the axle. The correct position for the front axle is shown above and for the rear axle, below.

## 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 30, 31 and 32.

## 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.

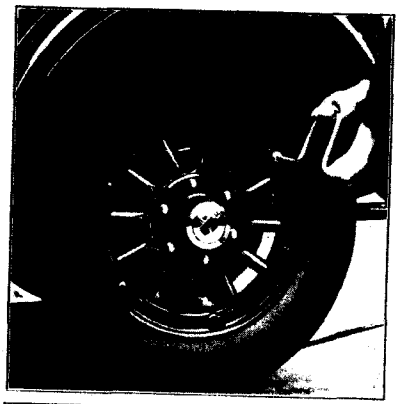


*Figure 21a.* Jack up the wheel until the tire clears the ground. Remove the dust cap and clamping nut from the valve stem. Remove the six rim clamps, unscrewing them with the brace wrench supplied in the tool kit.

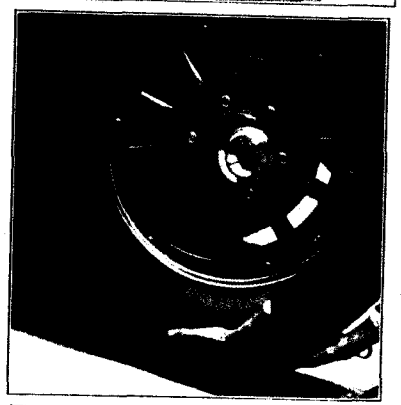


*Figure 21b.* Rotate the wheel until the valve stem is at the top, and pull the bottom of the rim away from the wheel.

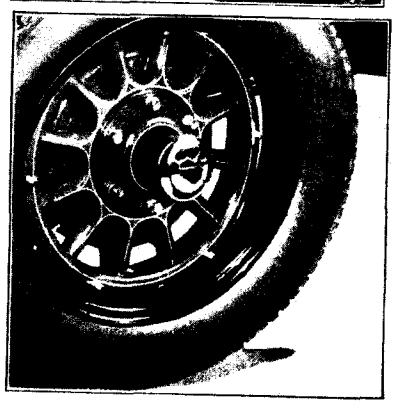


*Figure 21c* Then rotate the wheel until the valve stem approaches the bottom, when the rim and tire will roll free from the wheel and can be removed without lifting.

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 21.* Changing Rims (Wood wheels).



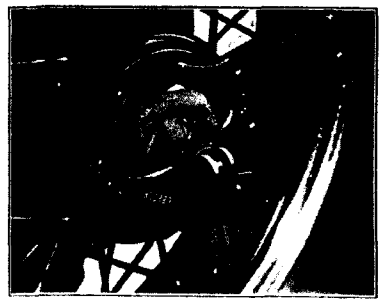


*Figure 22a.* Jack up the wheel until the weight of the car is off it, but with the tire still dragging. Place the hub cap wrench on the cap with the cam lever lowered, engage the sliding barrel puller in the slots and turn the puller one-quarter turn either way.

*Figure 22b.* 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.

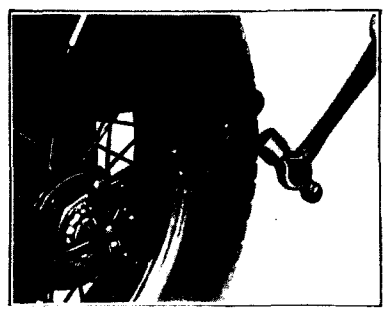


*Figure 22c.* Loosen the hub cap by striking the wrench a few times with a hammer. (The hub caps are marked with arrows showing the direction in which they screw on and off.) Then jack up the wheel, unscrew the hub cap and pull the wheel off the inner hub. Never attempt to remove the hub cap with the 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 22.* 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.

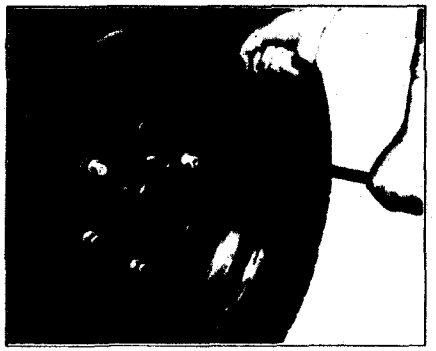


*Figure 23a.* To remove a front wheel, jack it up until the weight of the car is off it, but with the tire still touching. Then loosen the cap nuts around the wheel hub with the brace wrench in the tool kit. Jack the wheel up further, unscrew the nuts and remove the wheel. In removing a rear wheel, set the hand brake and jack the wheel all the way up.

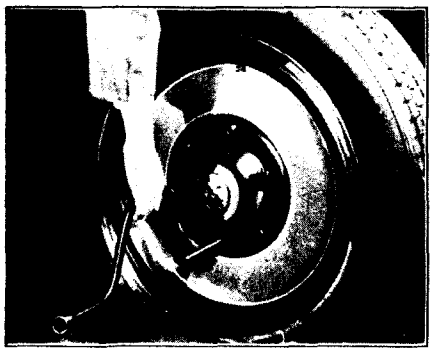


*Figure 23b.* In mounting disc wheels, use the rear end of the brace wrench as a pilot bar.

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 23c.* To mount a rear, 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 pilor 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 23.* Changing Disc Wheels

# CHAPTER III

## Lubrication

### Lubrication Schedule

SYSTEMATIC lubrication, at regular mileage intervals, is the only kind that is effective. On page 34 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 LUBRICANT | 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 |
| LUBRICATION NO. 4 — LUBRICATION NO. 2 — 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 | CHASSIS LUBRICANT | | O | | O | | O | | O | | O | | O |
| REAR AXLE—ADD LUBRICANT | CHASSIS LUBRICANT | | O | | O | | O | | O | | O | | O |
| STEERING GEAR—ADD LUBRICANT | CHASSIS LUBRICANT | | O | | O | | O | | O | | O | | O |
| LUBRICATION NO. 4 — WHEEL BEARINGS | WHEEL BEARING GREASE | | | | O | | | | O | | | | O |
| SPEEDOMETER DRIVE SHAFT | WHEEL BEARING GREASE | | | | O | | | | O | | | | O |
| FLUSH COOLING SYSTEM | | | | | | | | | | | | | O |
| REFILL SHOCK ABSORBERS | SPECIAL OIL | | | | O | | | | O | | | | 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 24.* 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 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. 24. 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

It is particularly important that only approved engine oils be used for high-speed, continuous driving. Other oils cannot be depended upon to give satisfactory lubrication and economical mileage under such conditions. If, in an emergency, an unapproved oil must be used, special care must be taken to watch the oil level and add oil as soon as the level drops to "Fill."

During winter, it may be necessary to thin the engine oil with kerosene, in order to make the engine crank easily. See page 41 for instructions on lubrication in cold weather.

### Chassis Lubricant

Lubricant conforming to the specifications for Chassis Lubricant is recommended for the transmission, rear axle, steering gear and all

chassis points fitted with grease gun connections.

Lubricants conforming to these specifications may be used without thinning during all weather except winter weather below temperatures of 20° F. 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.

### 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 Lubricant is much more effective.

### Fiber Grease

Fiber grease approved under the specifications for this type of lubricant is recommended for the clutch thrust 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 wrist 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 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



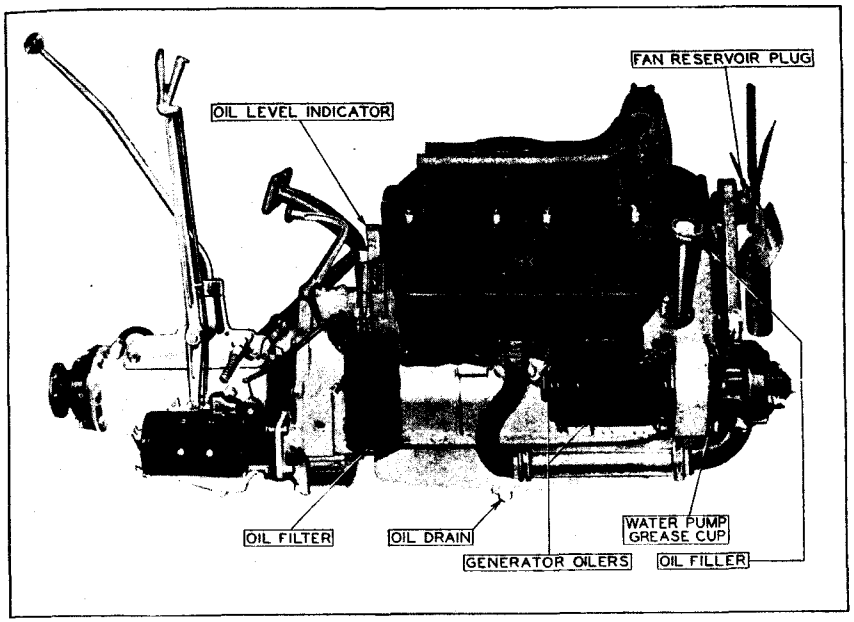



*Figure 26.* Showing the location of the oil filter, oil level indicator, oil pan drain plug and other lubrication features.

amount, the oil level indicator on the right-hand side of the engine (Fig. 26) 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.

## 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.

To drain the oil, simply remove the drain plug (Fig. 27). Be sure to reinstall the drain plug before adding fresh oil. Two gallons of fresh oil should be added, or enough to bring the oil level indicator ball to "Full."

At the end of the first 1000 miles, it is recommended that the car be taken to a Cadillac service station to have the oil pan and screen

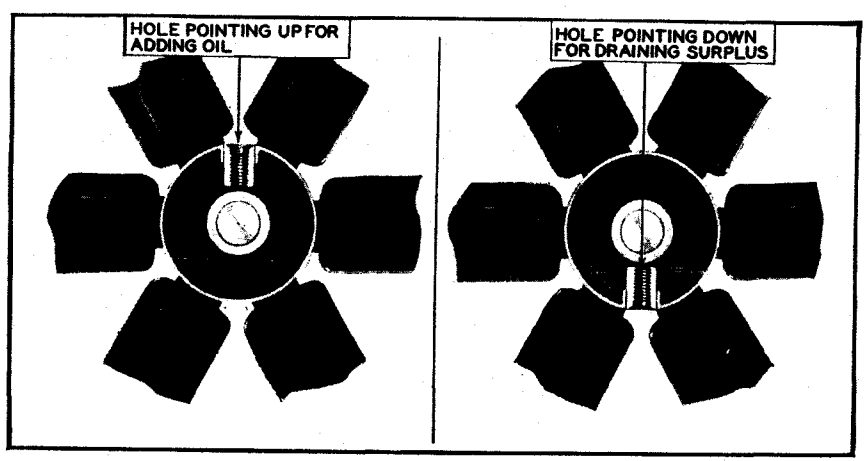



*Figure 27.* Oil for lubricating the fan is carried in the fan hub. The supply must be replenished every 1000 miles. Grease or heavy oil must never be used in the fan.



removed and cleaned with gasoline or kerosene. This should be repeated each time the filter unit is replaced.

## Fan

The fan is lubricated by oil contained in a reservoir in the fan hub. The screw plug in the outside of the reservoir should be removed every 1000 miles and engine oil should be added to bring the oil to the proper level. In adding oil, it is necessary to add somewhat more than enough and then drain off the surplus by turning the fan so that the hole points down. A short stand-pipe inside the reservoir insures that the proper amount of oil is retained.

If no oil runs from the hole when it is first turned down, do not assume that the oil level is correct. Sometimes the reservoir is "air-bound," and the hole should be left pointing down for at least half a minute to give the air a chance to work in. A cloth or piece of waste may be held under the hole to catch the oil.

# CHAPTER IV

## 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

In freezing weather, the water in the cooling system must be replaced with some solution that has a lower freezing temperature than that of water. A solution of denatured alcohol and water is recommended.

Before putting anti-freeze in the radiator, the cooling system should be thoroughly cleaned by flushing (see page 47). It is also important to inspect the hose connections and see that they are all in good condition, so that loss of anti-freeze by leakage will be avoided.

The strength of an alcohol solution must be periodically tested with a hydrometer. Alcohol vaporizes more rapidly than water and the loss by evaporation must be replaced at frequent intervals or the weakened solution will afford little protection against freezing. Care must also be taken not to let an alcohol solution get on the finish of the hood or radiator.

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 |





Patented substitutes should not be used unless tested and approved. Cadillac distributors and dealers should be consulted as to the suitability of an anti-freeze. Solutions containing calcium chloride or other ingredients injurious to the metal parts of the cooling system must never be used.

### 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.

### Effect of Alcohol on Finish

Strong solutions of alcohol have a harmful effect on the finish. In adding pure alcohol or strong solutions of alcohol, extreme care must be used not to let the liquid spatter or spill. A funnel and a pouring vessel with a suitable spout are necessary. Especially avoid pouring cold alcohol into a very hot radiator. The effect of this is to make the mixture foam up and possibly bubble over on the finish.

### 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.

Contrary to popular impression, this does not mean the use of special winter lubricants. The lubricants approved by Cadillac engineers and sold by Cadillac distributors, are year-round lubricants. It is not necessary, therefore, to change the engine oil or the lubricant in the transmission or rear axle when cold weather approaches. It is merely necessary to thin these lubricants with kerosene. Authorized Cadillac-La Salle Service Stations are prepared with full information

as to the amount to be added and the conditions under which it is to be added.

The temperature at which thinning of the engine oil is necessary depends upon the oil used, but with most of the approved oils, some kerosene should be added as soon as the temperature drops to freezing. From one to three quarts of kerosene are necessary, one quart being plenty for temperatures around freezing, while three quarts will be required at 10° below zero.

After the oil is once thinned, additional kerosene does not ordinarily need to be added until the engine oil is changed at the usual 2000-mile interval. The fresh oil must then be thinned. However, on a long, hard drive, some of the kerosene will be driven out by evaporation. After such a drive, kerosene should be added to replace that which has evaporated.

When thinning the oil in the engine, a small amount of kerosene should also be added to the oil in the fan reservoir.

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 10° F. 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 V

## 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 40, 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 water pump 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. 28) 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.

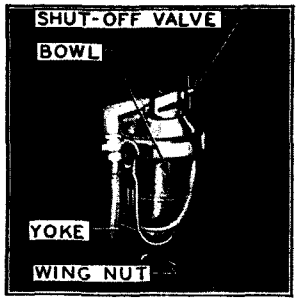



*Figure 28.* To remove the filter bowl for cleaning the screen, close the shut-off valve, loosen the wing nut at the bottom and disengage the supporting yoke.

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.

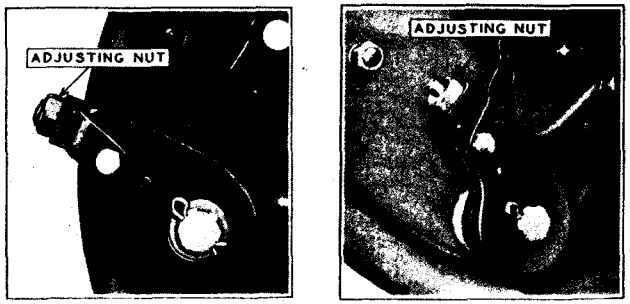



*Figure 29.* A temporary brake adjustment can be secured by turning the adjusting nut on each brake clockwise ½ turn.



Each brake is fitted with an adjusting nut, located as shown in Fig. 29. 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 Top (Hood)

Ordinarily dust can be removed from the top (hood) 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 VI

## Storing Car

IF THE car is not to be used for a period of several months, it should be protected from deterioration 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 18.)

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 46). 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. If 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 (Hood)

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

## 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. or R. A. 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 left-hand side bar opposite the steering gear, or on the upper surface of the right-hand side bar opposite the crankcase support arm.

(NO) 6, 18, 34, 40, 46, 62, 88, 106 PAGES MISSING

# CADILLAC-LaSALLE SHOP MANUAL

## Adjustments, Repairs and Lubrication

Cadillac 341-A, 341-B
LaSalle 303, 328



Book Number_____

Please refer to the above number when writing us in regard to this Manual

Service Department
CADILLAC MOTOR CAR COMPANY
DETROIT

# *Foreword*

THIS Shop Manual is a book of reference on the adjustment and repair of Cadillac and La Salle motor cars. It is intended for the use of service men who are already familiar with automobile construction and repairing in general. It is not a text book for those who have had no previous shop experience and does not aim to present instructions in elementary form.

The style in which the information is presented is a distinct departure from the usual book of this sort. Straight reading matter has been eliminated as far as possible and the facts and figures needed by service men are presented briefly in two ways—by illustrations and by tabulated specifications.

At the beginning of each group is a specification table giving clearances, dimensions and other facts important to service men. Explanations, where necessary, follow the specifications in the form of notes. The rest of the information is in picture form on the pages following the specification table.

Our service department invites correspondence with service managers and shop foremen on all matters discussed in the Shop Manual.

CADILLAC MOTOR CAR COMPANY
Detroit, Michigan



August, 1928

Printed in U.S.A.

# Contents

NOTE: The information contained in this book is grouped under the headings shown below. The table of specifications at the beginning of each group acts as an index for the information pertaining to that group.

# Introduction

## Arrangements of Tables

THE subjects covered in the specification tables are listed in alphabetical order in the first column, and the corresponding facts or figures in the column under "Specifications." Under "Remarks" will be found important comments, cautions and references to illustrations and notes.

In cases where a change in construction has been made and the same information does not apply to all cars of the same model, small figures "1" and "2" are used following the model number or letter to designate first and second type construction. Thus, La Salle cars with the first type or cam-operated brakes, are designated as "303[1]" and cars used with second type or toggle brakes as "303[2]". The unit number at which the change was made is given under "Remarks."

One class of information in the specifications consists of limits for the clearance between parts subject to wear. The limits given are of two kinds. "New limits" are those to be observed in replacing worn parts with new parts. "Worn limits" are those beyond which it is inadvisable to continue to use the worn parts if quietness of operation and maximum performance are expected. Some service, although not the most satisfactory, can of course be obtained from parts worn beyond these limits.

## Arrangement of Illustrations

The illustrated pages are laid out to show as far as possible in picture form the repair operations, together with the differences and similarities of the various car units.

Unless otherwise specified all illustrations apply to both the Cadillac and the La Salle.

## Identification Numbers

EACH Cadillac and La Salle car when shipped carries an engine number which is also a car serial number. This is the number to be used in filling out license and insurance applications and in general reference to 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 engine, transmission, steering gear, etc., also carry unit assembly numbers. These are located as described in the specification tables. 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.

# Front Axle

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Camber of front wheel (angle with vertical) | A | B | 303 | 328 | 2½° | *Plate 3, Fig. 7* |
| Angle between steering knuckle bolt and vertical | A | B | .... | .... | 5° | |
| | ... | ... | 303 | 328 | 7½° | |
| Angle between steering knuckle bolt and wheel spindle | A | B | .... | .... | 97½° | |
| | ... | ... | 303 | 328 | 100° | |
| Caster angle | A | B[1] | 303 | 328[1] | 2½°—3° | Before front axle unit 3-27619 on 341-B cars and 4-8137 on 328 cars. |
| | ... | B[2] | .... | 328[2] | 1°—2° | Beginning with front axle unit 3-27619 on 341-B cars and 4-8137 on 328 cars. See Note 1. *Plate 3, Fig. 6.* |
| Angle between spring seat and vertical plane of I-beam | A[1] | ... | .... | .... | 2½°—3° | Before front axle unit 3-2858. |
| | ... | ... | 303[1] | .... | 0° | Before front axle unit 2-16018. |
| | A[2] | B[1] | .... | .... | 1°—1½° | Beginning with front axle unit 3-2858 on 341-A cars and before front axle unit 3-27619 on 341-B cars. *Plate 4, Fig. 5.* |
| | ... | B[2] | .... | .... | 2½°—3° | Beginning with front axle unit 2-27619. |
| | ... | ... | 303[2] | 328[1] | 1¼°—1¾° | Beginning with front axle unit 2-16018 on 303 cars and before front axle unit 4-8137 on 328 cars. *Plate 4, Fig. 6.* |
| | ... | ... | .... | 328[2] | 0° | Beginning with front axle unit 4-8137. |
| Correct installation of I-beam (identification mark) | ... | ... | 303 | 328[1] | "F" on right spring pad | |
| | A | B | .... | 328[2] | "F" on front face of I-beam | |
| I-beam twist (misalignment between steering knuckle bolts) | A | B | 303 | 328 | ½° allowable variation between ends | See note 2. |
| Clearance between steering knuckle bolt and bushing | A | B | .... | .... | New limits, .0015-.0025 in. Worn limit, not over .005 in. | |
| | ... | ... | 303 | 328 | New limits, .0005-.0025 in. Worn limit, not over .005 in. | |
| Pivot balls, out of round | A | B | 303 | 328 | Worn limit, not over .010 in. | |
| Road clearance under front axle | A | B | .... | .... | 8 7/16 inch | |
| | ... | ... | 303 | 328 | 9 3/16 inch | |
| Steering cross rod adjustment | ... | ... | 303[1] | .... | Tighten and back off one cotter pin hole | Before front axle unit 2-16001. *Plate 3, Fig. 4* |
| | A | B | 303[2] | 328 | Automatic adjustment | Beginning with front axle unit 2-16001 on 303 cars. *Plate 3, Figs. 3-5.* |
| Steering cross rod springs—Free length | A | B[1] | .... | .... | 1 1/16 in. approximately | Install second-type pivot seat springs in steering cross rod ends before front axle unit 3-21101. |
| | ... | B[2] | .... | .... | 1⅛ in. approximately | |

# FRONT AXLE

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| | ... | ... | 303 | 328[1] | $\frac{11}{13}$ in. approximately | Install second-type pivot seat springs in steering cross rod ends before front axle unit 4-3801. |
| | ... | ... | .... | 328[2] | $\frac{21}{32}$ in. approximately | |
| Compression | A | B[1] | .... | .... | 180-220 lbs. compressed to $\frac{5}{8}$ in. | Install second-type pivot seat springs in steering cross rod ends before front axle unit 3-21101. |
| | ... | B[2] | | | 90-110 lbs. compressed to $\frac{5}{8}$ in. | |
| | ... | ... | 303 | 328[1] | 180-220 lbs. compressed to $\frac{9}{16}$ in. | Install second-type pivot seat springs in steering cross rod ends before front axle unit 4-3801. |
| | ... | ... | .... | 328[2] | 90-110 lbs. compressed to $\frac{9}{16}$ in. | |
| Steering knuckle thrust bearing adjustment | A | B | .... | .... | Tighten and back off just enough to free adjustment | Tapered roller bearing. Tighten dust-cap securely against roller bearing. *Plate 1.* |
| | ... | ... | 303 | 328 | Not over .004 in. end play | Ball bearing. Adjust with shims .003 and .005 in. thick. *Plate 2.* |
| Stop screw adjustment | A | B | 303 | 328 | $\frac{1}{2}$-$\frac{3}{4}$ in. clearance between tire and nearest point of possible interference. | Interference with steering connecting rod on left side and spring on right side. Also shock absorber brackets. |
| Toe-in of front wheels | ... | ... | 303[1] | .... | $\frac{1}{8}$ in. preferable, $\frac{1}{4}$ in. maximum. | Adjust by spacers $\frac{1}{8}$ in. and $\frac{1}{32}$ in. thick. Before front axle unit 2-16001. *Plate 3, Figs. 1-2-4.* |
| | A | B | 303[2] | 328 | $\frac{1}{8}$ in. preferable, $\frac{1}{4}$ in. maximum. | Adjust by turning steering cross rod. Beginning with front axle unit 2-16001 on 303 cars. *Plate 3, Figs. 1-2-3-5.* |
| Tread | A | B | 303 | 328 | 56 in. | |
| Unit number, location of | A | B | 303 | 328 | Top right on I-beam | |

### 1. Caster Angle

To measure the caster angle, use a Bear or Duby Gauge as shown in Plate 3, Figs. 8, 11. Be sure to have all four wheels the same distance off the floor. Floor must be level.

On early 341-A and 303 cars, the spring seats are not machined at the same angle as on later cars. To give these cars the standard caster angle specified in the table, use tapered shims (Fig. 9) between the springs and the axle. Place the thick edges of the shims toward the rear.

### 2. Straightening Bent Parts

Because of their location the parts of the front axle are more subject to damage by accident than any other part of the chassis. Front axle service, therefore, involves the inspection of parts for alignment and possible straightening.

Heat-treated parts should not be straightened if they are sprung out of alignment more than 5°. To straighten such parts while cold is likely to result in strains and sometimes in cracks not visible to the naked eye. Straightening with heat destroys the effect of previous heat treatment and may result either in overheating, making the steel soft and weak, or in underheating, which will make it brittle and easily broken.

Parts which are not heat-treated may be straightened cold if not sprung out of alignment more than 10°.

Welding of parts subjected to severe strain should never be permitted. A welded part is never as strong as the original, unbroken metal and the heat required for the welding process changes the structure of the metal around the weld, making it coarse and weak.

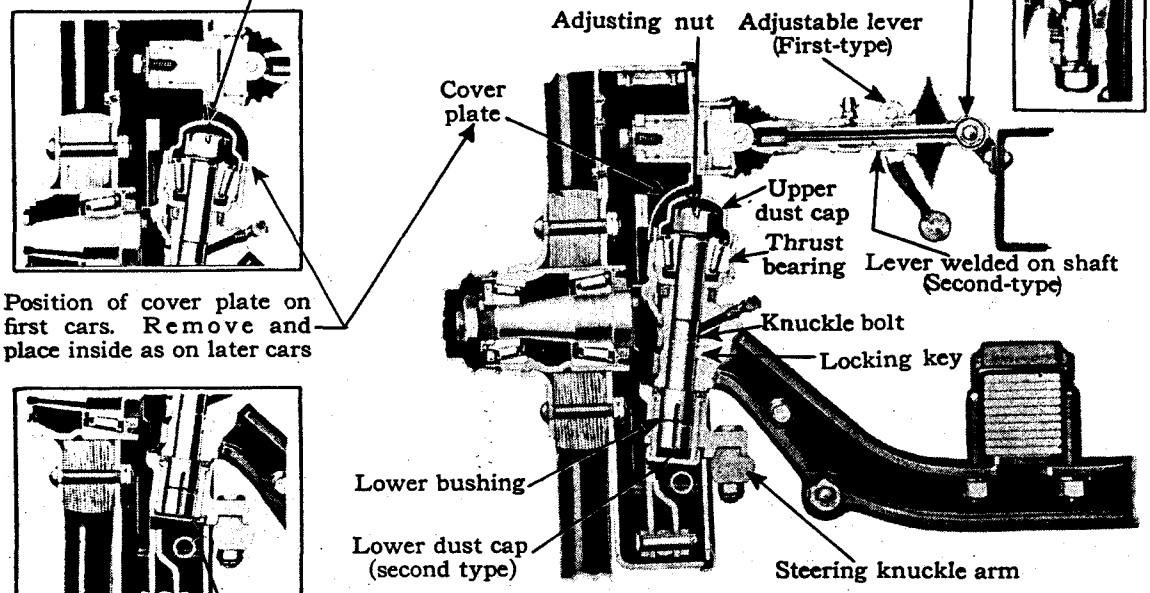



Fig. 1
Cadillac 341-A



First type dust cap attached by cap screws. Avoid forcing grease in under heavy pressure

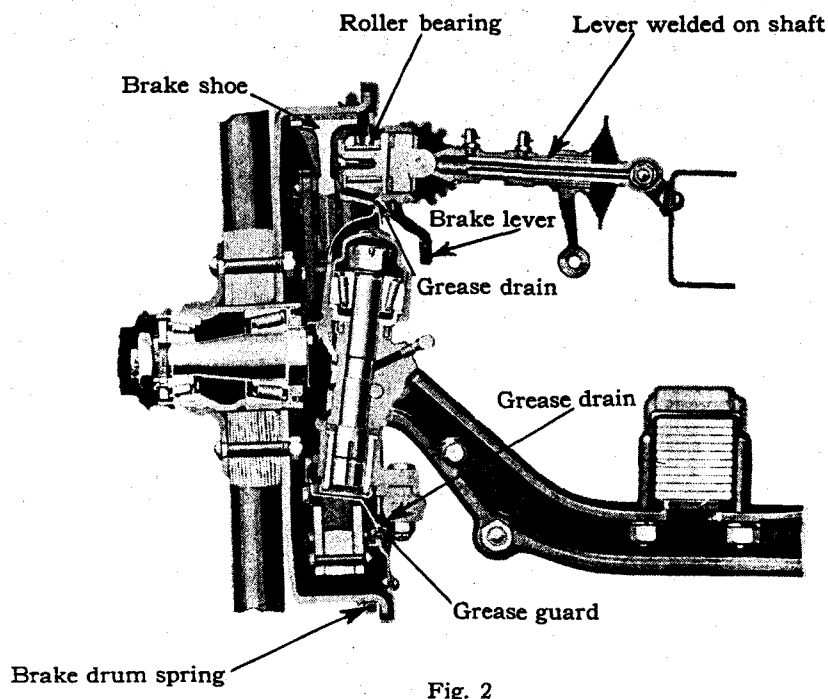



Fig. 2
Cadillac 341-B

**Plate 1. Sectional view of Cadillac front wheel hub and steering knuckle.**

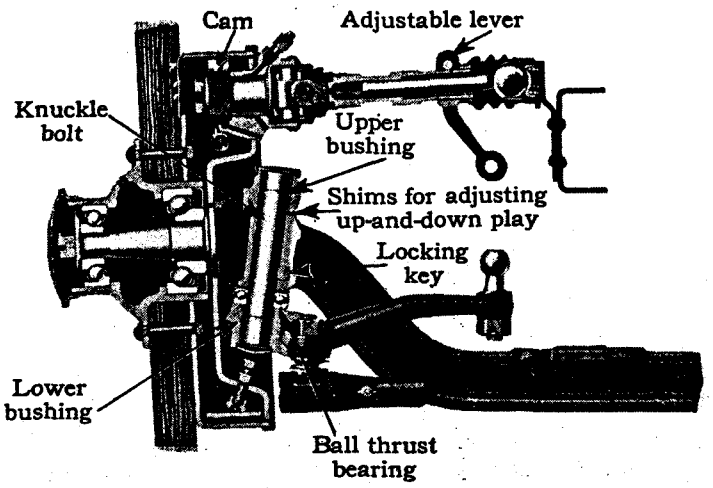



Fig. 1
LaSalle 303
(first type with cam-operated brakes)

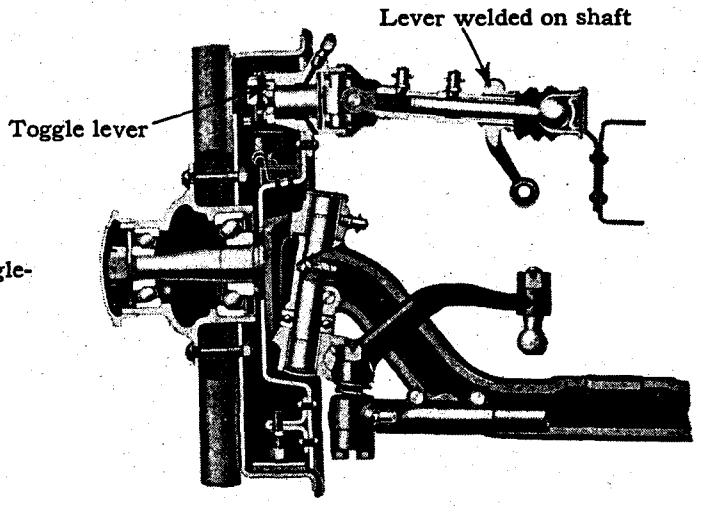



Fig. 2
LaSalle 303
(second type with toggle-operated brakes)

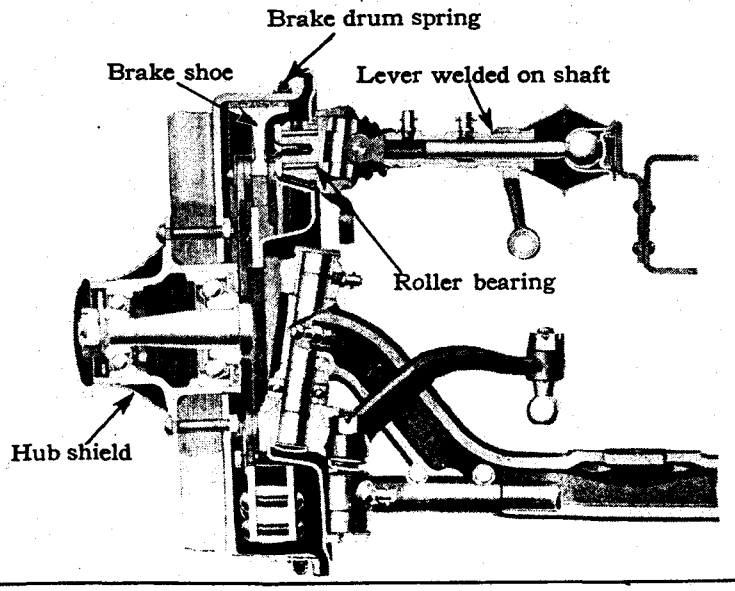



Fig. 3
LaSalle 328

**Plate 2. Sectional view of La Salle front wheel hub and steering knuckle.**

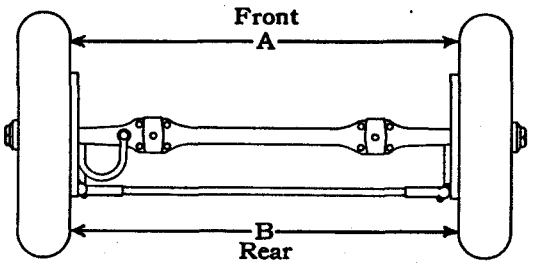



Fig. 1
Front wheel alignment.
A should be 1/8 to 1/4 inch less than B

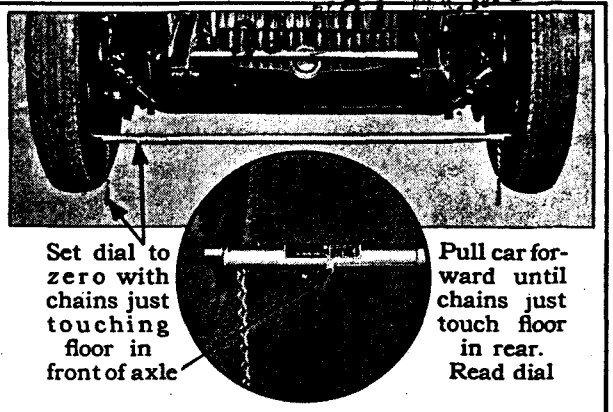



Fig. 2
Front wheel alignment gauge

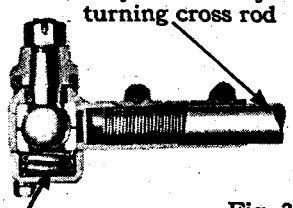



Fig. 3
Steering cross rod joint
Cadillac 341-A and B

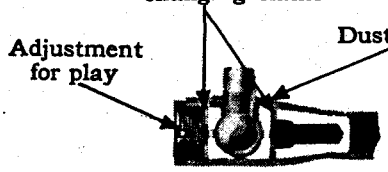



Fig. 4
Steering cross rod joint
LaSalle 303 (first type)

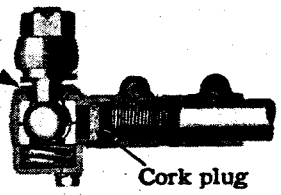
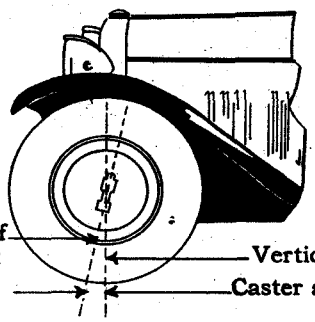



Fig. 5
Steering cross rod joint
LaSalle 303 (second type) and 328

Fig. 6



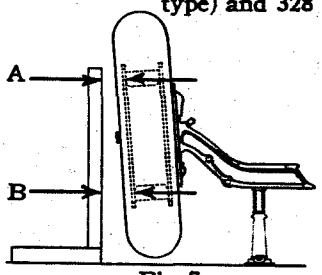




Fig. 7
Front wheel camber.
A should be 3/4 inch less than B

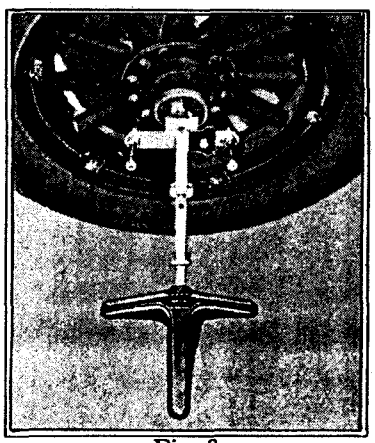


Fig. 8
Bear gauge for measuring caster angle

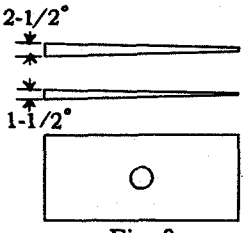



Fig. 9
Wedges for changing caster angle

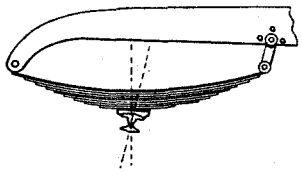


Fig. 10
To increase caster, insert wedges with thick edge toward rear

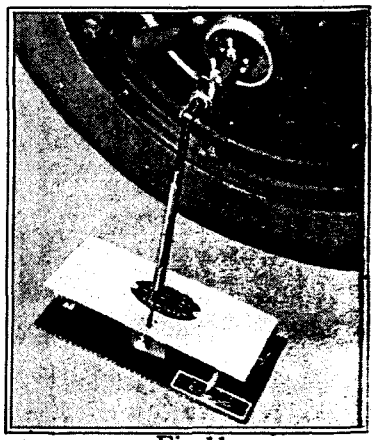


Fig. 11
Duby gauge for measuring caster and camber

Plate 3. Front Wheel Alignment, Camber and Caster.

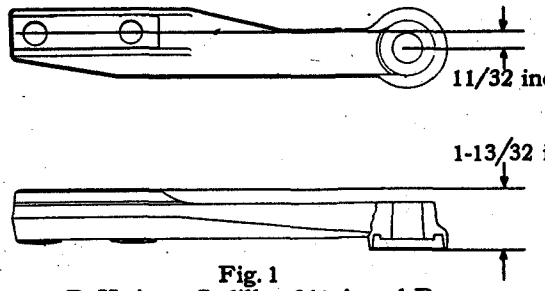



Fig. 1
R. H. Arm, Cadillac 341-A and B

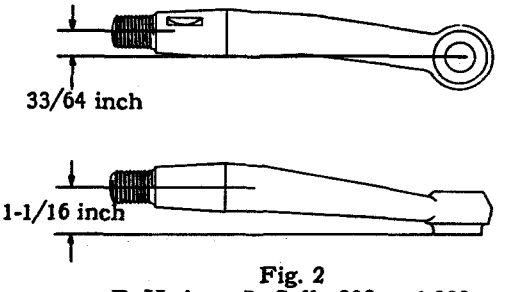



Fig. 2
R. H. Arm, LaSalle 303 and 328

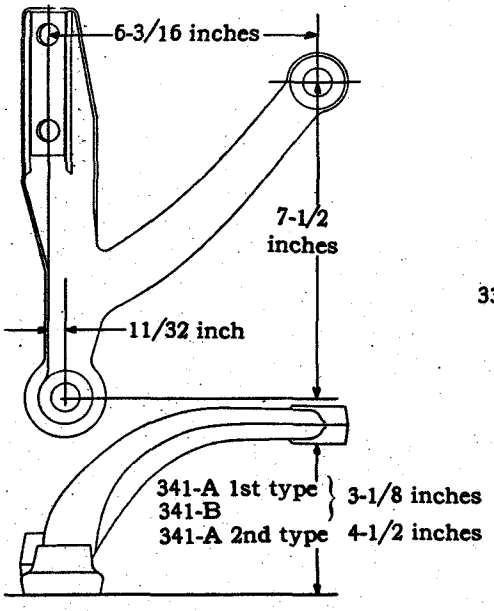



Fig. 3
L. H. Arm, Cadillac 341-A and B

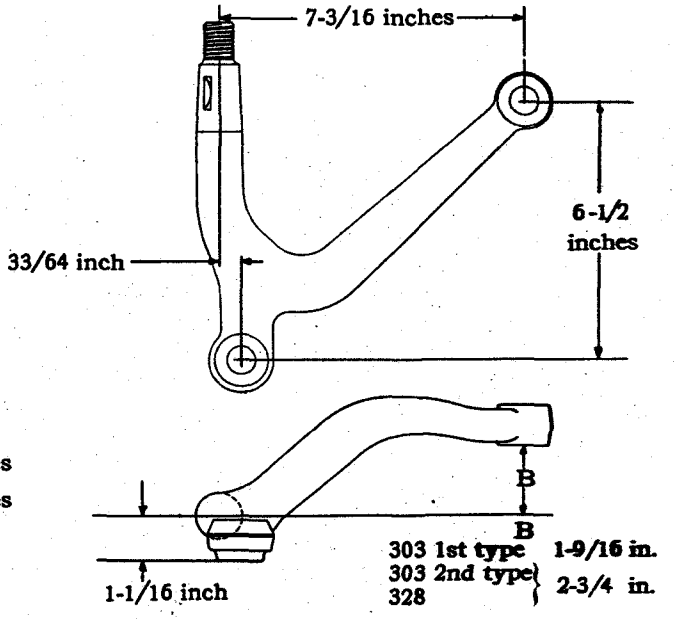



Fig. 4
L. H. Arm, LaSalle 303 and 328

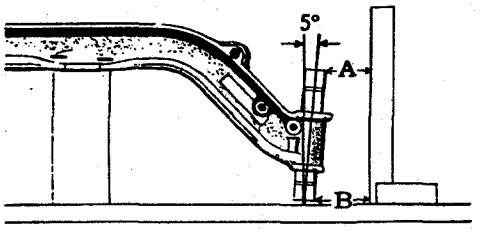
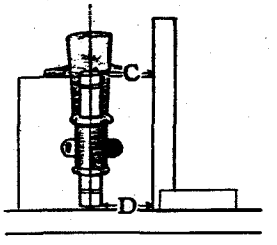



Fig. 5
Axle I-beam, Cadillac
A should be 1 inch
less than B
C should be 1/2 inch
less than D



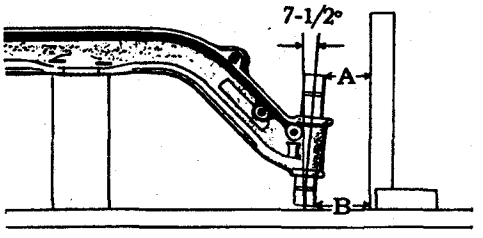




Fig. 6
Axle I-beam, LaSalle
A should be 55/64 inch
less than B
The dimensions C and
D should be equal

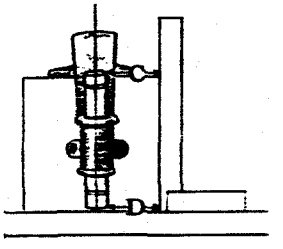



Plate 4. Alignment of axle I-beam and steering knuckle arms.

# Rear Axle and Torsion Tube

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Axle shaft, clearance between driver and recesses in wheel hub | A | B | .... | .... | New limits, .0005-.0025 in.<br>Worn limit, not over .005 in. | |
| Axle shaft length, left side | A | B | .... | .... | 30 1/16 in. overall | |
| | ... | ... | 303 | .... | 31 1/16 in. overall | |
| | ... | ... | .... | 328 | 32 5/8 in. overall | |
| Axle shaft length, right side | A | B | .... | .... | 33 7/16 in. overall | |
| | ... | ... | 303 | .... | 34 5/16 in. overall | |
| | ... | ... | .... | 328 | 35 1/4 in. overall | |
| Axle shaft, out of true | A | B | 303 | 328 | Not over 1/32 inch | |
| Axle housing, out of true | A | B | 303 | 328 | Not over 3/32 inch | Ideal gauge, Tool 102789, can be used to check alignment of rear wheels as well as front wheels. *Plate 7, Fig. 4.* |
| Differential carrier, installation of | A | B | 303 | 328 | ..... | See Note 1 |
| Drive shaft, clearance between sleeve and splines on pinion shaft | A | B | 303 | 328 | New limits, .000-.003 in.<br>Worn limit, not over .006 in. | |
| Driveshaft, clearance between splines and hub of universal joint | A | B | 303 | 328 | New limits, .001-.005 in.<br>Worn limit, not over .006 in. | |
| Driveshaft, length | A | ... | .... | .... | 140 in. wheelbase—61 1/4 in. | |
| | | | | | 152 in. wheelbase—73 1/4 in. | |
| | ... | ... | 303 | .... | 125 in. wheelbase—50 7/8 in. | |
| | | | | | 134 in. wheelbase—59 7/8 in. | |
| | ... | B | .... | .... | 140 in. wheelbase—62 11/64 in. | |
| | | | | | 152 in. wheelbase—74 11/64 in. | |
| | ... | ... | .... | 328 | 125 in. wheelbase—49 1/8 in. | |
| | | | | | 134 in. wheelbase—58 1/8 in. | |
| Driveshaft, out of true | A | B | 303 | 328 | Not over .010 in. | |
| Gear ratio, high | A | B | .... | .... | 4.39:1 | |
| | ... | ... | 303 | 328 | 4.07:1 | |
| Gear ratio, medium | A | B | .... | .... | 4.75:1 | Stamped on top of differential carrier. |
| | ... | ... | 303 | 328 | 4.54:1 | |
| Gear ratio, low | A | B | .... | .... | 5.08:1 | |
| | ... | ... | 303 | 328 | 4.91:1 | |
| Gear adjustment or replacement | A | B | 303 | 328 | ..... | See Note 2. |
| Lubrication | A | B | 303 | 328 | ..... | See Lubrication Table, page 83. |
| Removal of rear axle and torsion tube assembly | A | B | 303 | 328 | ..... | See Note 3. |
| Road clearance under rear axle | A | B | .... | .... | 8 7/16 inch | At center under differential. |
| | ... | ... | 303 | 328 | 7 13/16 inch | |
| Tread | ... | ... | 303 | .... | 56 inches | |
| | A | B | .... | 328 | 58 inches | |
| Type of axle | A | B | .... | .... | Full floating | |
| | ... | ... | 303 | 328 | Three-quarter floating | |
| Unit number, location of | A | B | 303 | 328 | Rear surface of housing, right side | |

### 1. Lubrication of Pinion Bearings

Differential carrier assemblies shipped by the Parts Division have no lubricant in the bearings, as all the lubricant is washed out before the assemblies are shipped.

Before an assembly is installed in a car, it is important that care be taken to see that the lubricant reaches the front pinion bearing. It is not enough simply to install the assembly and add lubricant to the proper level. Before the lubricant has a chance to work up into the pinion bearing the bearing may be damaged.

The best plan is to stand the assembly up on the front end and pour in enough lubricant to make sure that the ball bearings are thoroughly lubricated. The assembly can then be installed and the necessary additional lubricant added to bring up the level. In this way lubrication of the ball bearings is provided for until the oil in the housing works up through the bearings.

### 2. Gear Adjustment

The rear axle gears are correctly adjusted when the axle is assembled, and their positions must not be changed. If the gear and pinion require replacement, the entire differential carrier assembly should be replaced. Differential carrier assemblies for replacement can be obtained from the Factory Parts Department on an exchange basis.

It is very important that every assembly returned to the factory be accompanied by the original shims.

### 3. Removal of Rear Axle and Torsion Tube

It is customary for work on the rear axle to remove the axle and torsion tube as an assembly by disconnecting the torsion tube from the ball-and-socket joint and removing the spring clips. On 341 Cadillac cars the rear ends of the rear springs must also be disconnected because the springs are underslung.

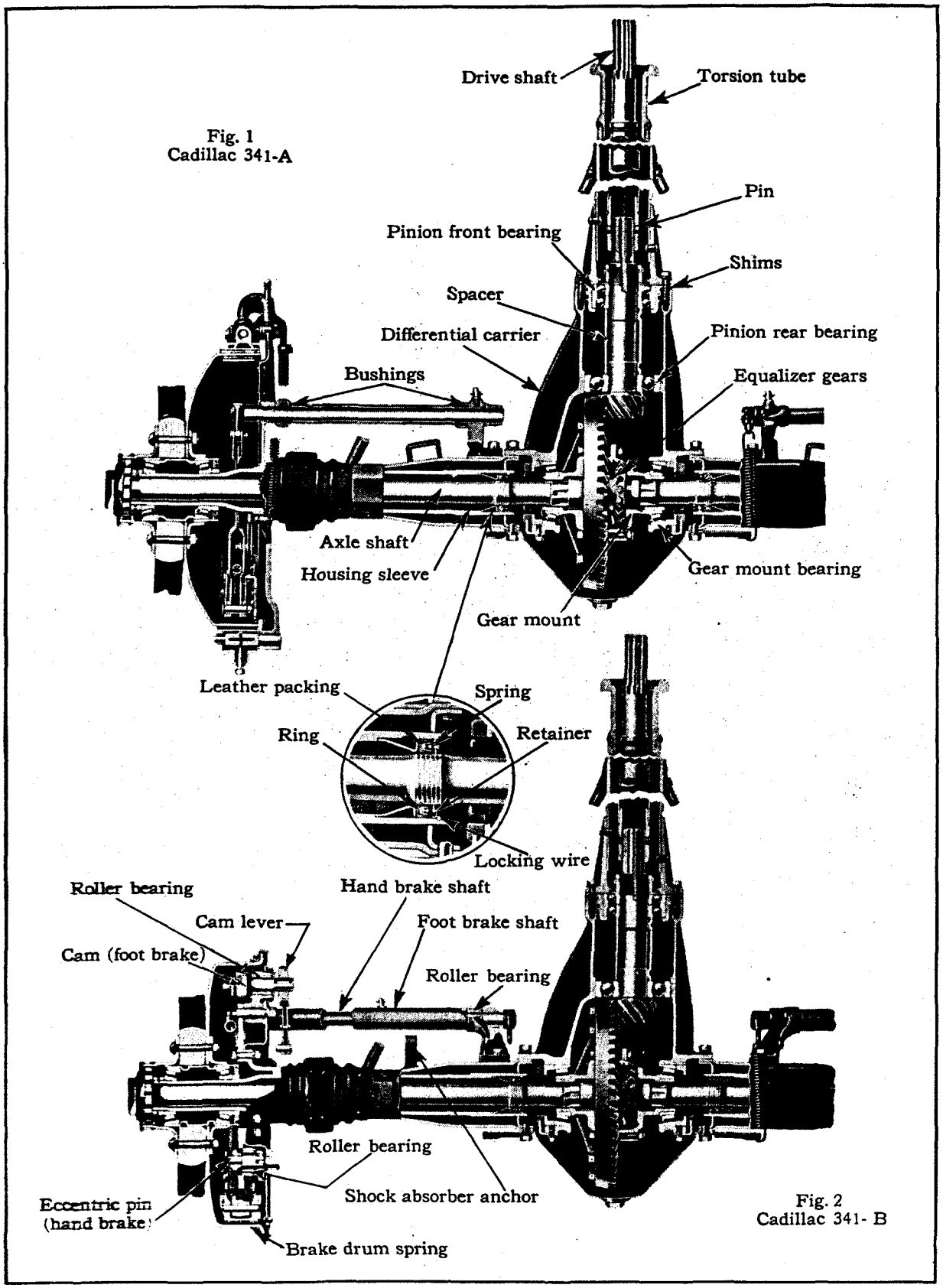



Plate 5. Sectional View of Cadillac Rear Axle.

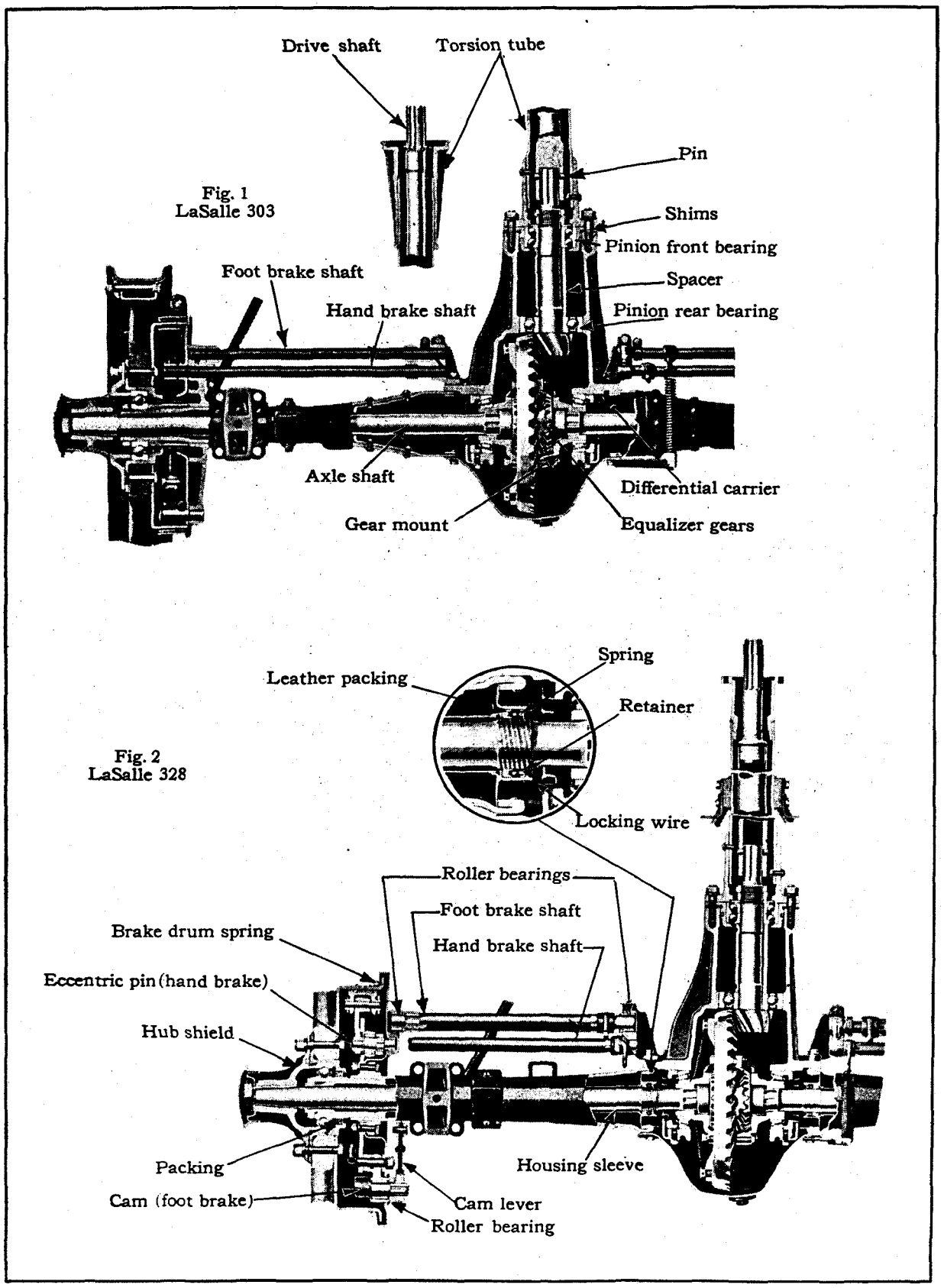



Plate 6. Sectional View of La Salle Rear Axle.

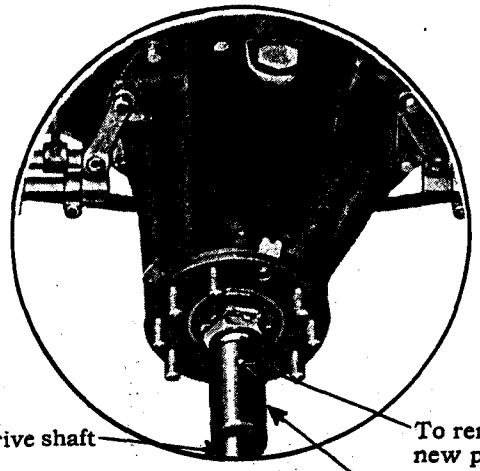



Fig. 1
Rear end of drive shaft

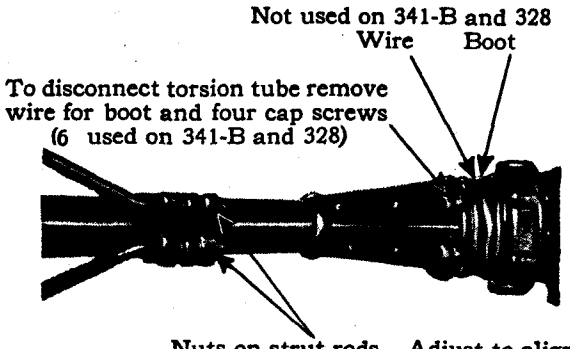



Fig. 2
Front end of torsion tube

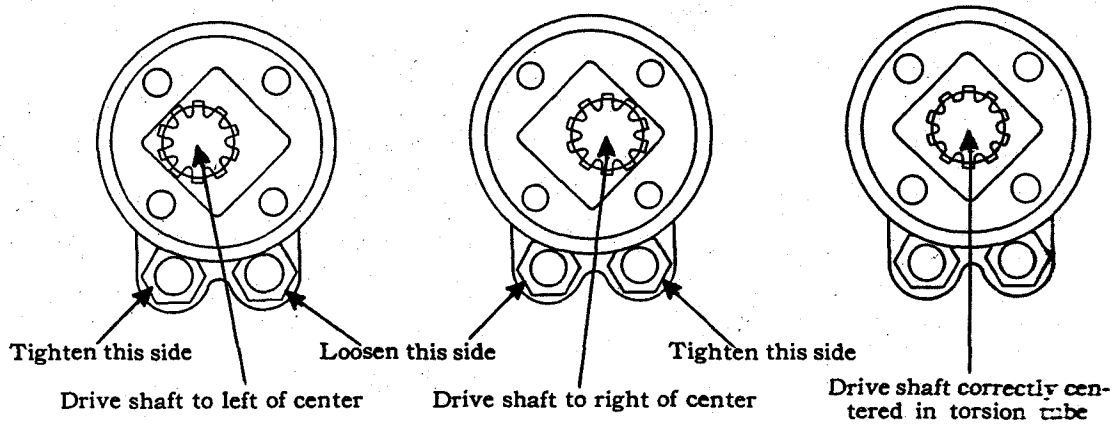
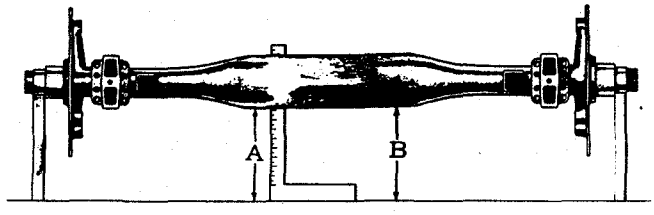
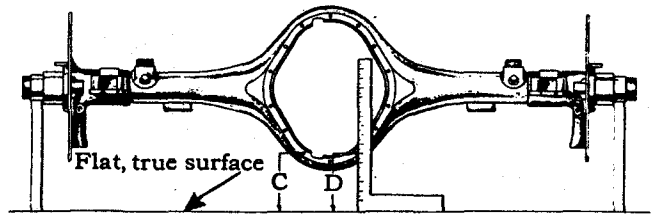



Fig. 3
Alignment of drive shaft.
Rear axle and torsion tube removed, torsion tube pointing straight up




A and B when rear face of housing is down must equal A and B when front face is down

Fig. 4
Rear axle housing on V-blocks for testing




C and D when housing is right side up must equal C and D when housing is upside down

**Plate 7. Torsion tube, drive shaft and axle housing.**

# Brakes

| Subject | Cadillac 341 | LaSalle 303-328 | Specifications | Remarks |
|---|---|---|---|---|
| FOOT BRAKES | | | | |
| Front and Rear (Shoe type) | | | | |
| Clearance between lining and drum | B | 328 | | Clearance determined by number of turns of adjusting nut. *Plates 10, 11. Figs. 2, 4.* |
| Drum, nominal inside diameter | B | | 16½ in., front and rear | |
| | | 328 | 15 in., front and rear | |
| Drum, out of round | B | 328 | Not over .007 in. | |
| Drum, thickness | B | 328 | ¼ in. | Drums not to be ground in service over .040 in. less than minimum original thickness. |
| Lining (Front and Rear) | | | Short Shoe / Long Shoe | |
| Length without lead tip | B | | 7⅛ in. / 16¾ in. | Beginning with front axle unit 3-31441 and rear axle unit 3-31525 on 341-B cars and front axle unit 4-13424 and rear axle unit 4-13409 on 328 cars lead tips are installed at the trailing end of the long shoes. Replace lead tips when installing new linings, using lining rivets. |
| | | 328 | 6 11/32 in. / 15⅜ in. | |
| Length with lead tip | B | | / 15 3/16 in. | |
| | | 328 | / 13 13/16 in. | |
| Lining, thickness | B | 328 | 3/16 in. | |
| Lining, width | B | | 2¼ in. | |
| | | 328 | 2 in. | |
| Pull back spring for rear brake, free length | B | | 4¾ in., approximately | |
| | | 328 | 4¼ in., approximately | |
| Pull back spring for rear brake, tension | B | | 32-37 lbs stretched to 7¾ in. | Measured between loops |
| | | 328 | 19-24 lbs stretched to 6½ in. | Measured between loops |
| FRONT (Band type) | | | | |
| Clearance between lining and drum | A | 303 | .015 in. | |
| Drum, nominal outside diameter | A[1] | | 16 in. | Before front axle unit 3-6001. |
| | A[2] | | 17 in. | Beginning with front axle unit 3-6001. |
| | | 303[1] | 14 in. | Before front axle unit 2-16608. |
| | | 303[2] | 16 in. | Beginning with front axle unit 2-16608. |
| Drum, out of round | A | 303 | Not over .015 in. | |
| Drum, thickness | A | | 13/64 in. | Drums not to be ground in service over .040 in. less than minimum original thickness. |
| | | 303 | 3/16 in. | |
| Lining, length | A[1] | | 41¾ in., approximately | Before front axle unit 3-6001. See note 1. |
| | A[2] | | 45¾ in., approximately | Beginning with front axle unit 3-6001. See note 1. |
| | | 303[1] | 36⅞ in., approximately | Before front axle unit 2-16608. See note 1. |
| | | 303[2] | 41½ in., approximately | Beginning with front axle unit 2-16608. See note 1 |
| Lining, thickness | A | 303 | 3/16 in. | |
| Lining, width | A | | 2¼ in. | |
| | | 303 | 2 in. | |
| REAR (Band type) | | | | |
| Clearance between lining and drum | A | 303 | .030 in. | |

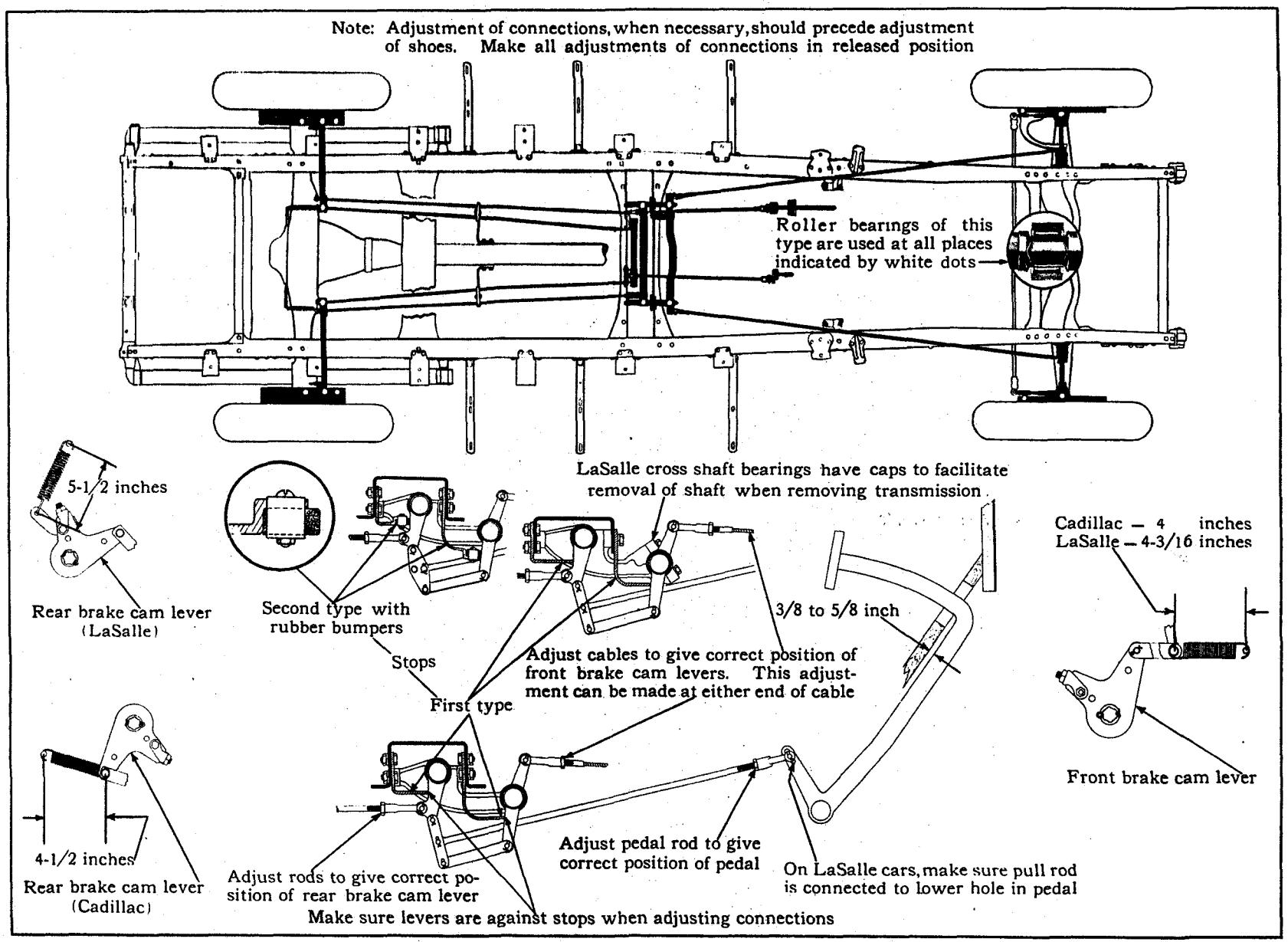



Plate 8. Adjustment of Cadillac 341-B and La Salle 328 brake connections—first type

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Drum, nominal outside diameter | A | ... | .... | .... | 16 in. | |
| | ... | ... | 303 | .... | 14 in. | |
| Drum, out of round | A | ... | 303 | .... | Not over .015 in. | |
| Drum, thickness | A | ... | .... | .... | $\frac{13}{64}$ in. | |
| | ... | ... | 303 | .... | $\frac{3}{16}$ in. | |
| Lining, length | A | ... | .... | .... | 49½ in., approximately | See note 1. |
| | ... | ... | 303 | .... | 39 in., approximately | |
| Lining, thickness | A | ... | 303 | .... | $\frac{3}{16}$ in. | |
| Lining, width | A[1] | ... | .... | .... | 2½ in. | Before rear axle unit 3-12529. |
| | A[2] | ... | .... | .... | 2¼ in. | Beginning with rear axle unit 3-12529. |
| | ... | ... | 303 | .... | 2 in. | |
| Pull back spring for rear brake rod, free length | A | ... | 303 | .... | 4¼ in., approximately | |
| Pull back spring for rear brake rod, tension | A | ... | 303 | .... | 19-24 lbs. stretched to 6½ in. between loops | |
| HAND BRAKES | | | | | | |
| Clearance between rocker shaft and bushings | A | B | 303 | 328 | New limits .004 to .008 in. Worn limit, not over .012 in. | |
| Lining, length | A | ... | .... | .... | 40⅜ in., approximately | See note 1. |
| | ... | ... | 303 | .... | 40$\frac{11}{16}$ in., approximately | |
| | ... | B | .... | .... | 10$\frac{5}{16}$ in. | |
| | ... | ... | .... | 328 | 9⅛ in. | |
| Lining, thickness | A | B | .... | 328 | $\frac{3}{16}$ in. | |
| | ... | ... | 303 | .... | $\frac{5}{32}$ in. | |
| Lining, width | A | ... | .... | 328 | 2 in. | |
| | ... | ... | 303 | .... | 1⅝ in. | |
| | ... | B | .... | .... | 2¼ in. | |

**1. Length of Lining**

The lengths given for the lining on 341-A and 303 cars allow for cutting to length to suit each individual band. The most economical method is to purchase lining in rolls and cut to length when installing. Lining for external bands should be cut $\frac{3}{16}$ in. longer than the band. Lining for internal bands should be cut $\frac{3}{16}$ in. shorter than the band.

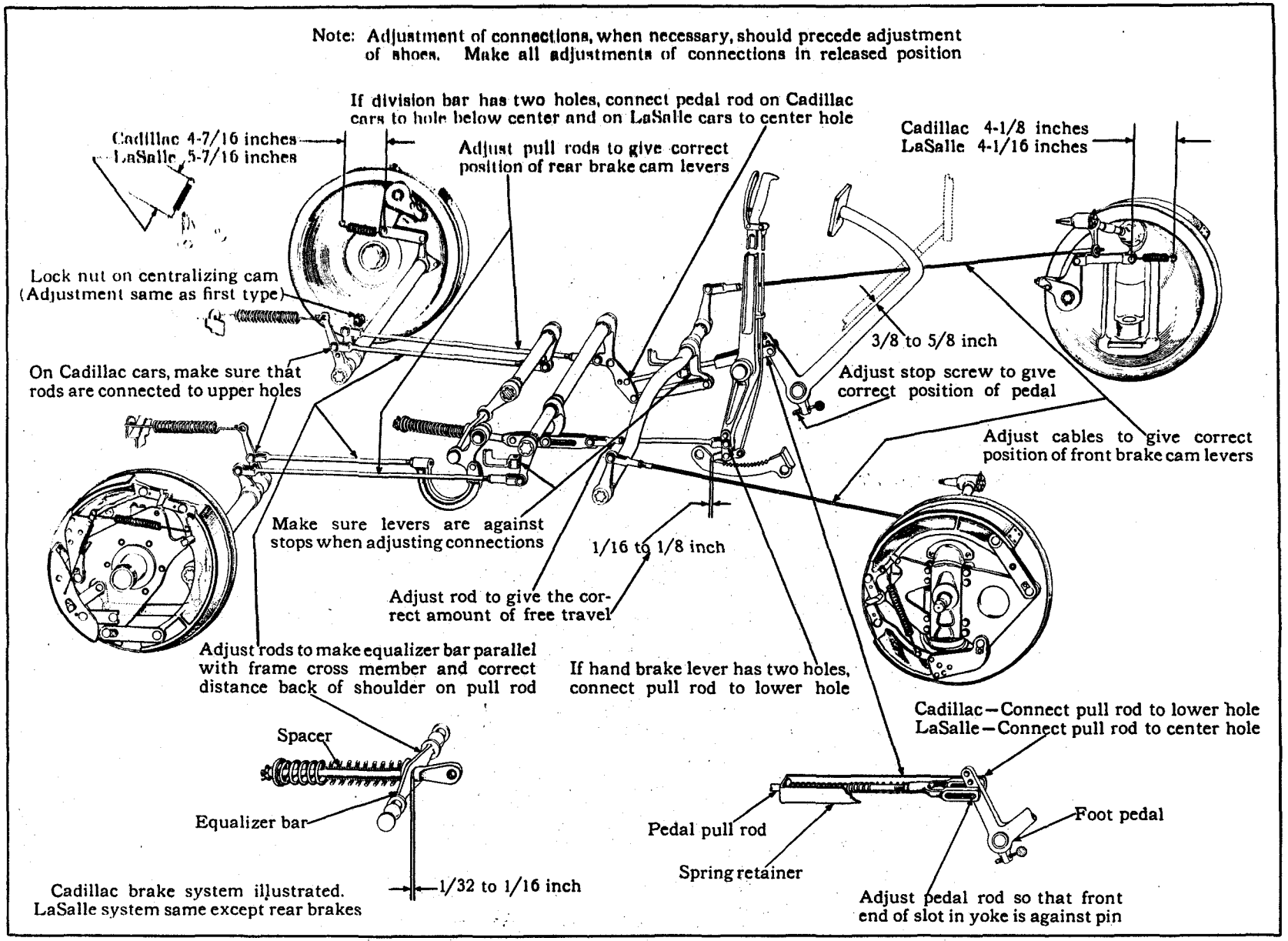



**Plate 9. Adjustment of Cadillac 341-B and La Salle 328 brake connections—second type.**

Note: Unless brake connections are known to be O. K., check them as shown in Plate 8 before proceeding with shoe adjustments

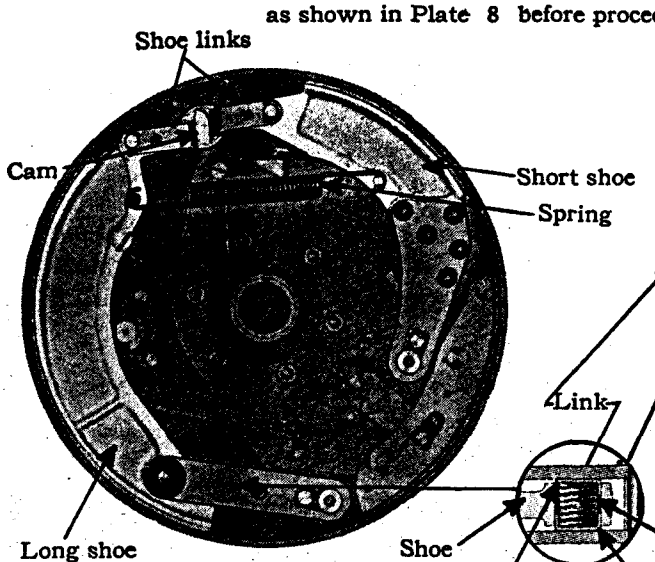



Fig. 1
Rear foot brake

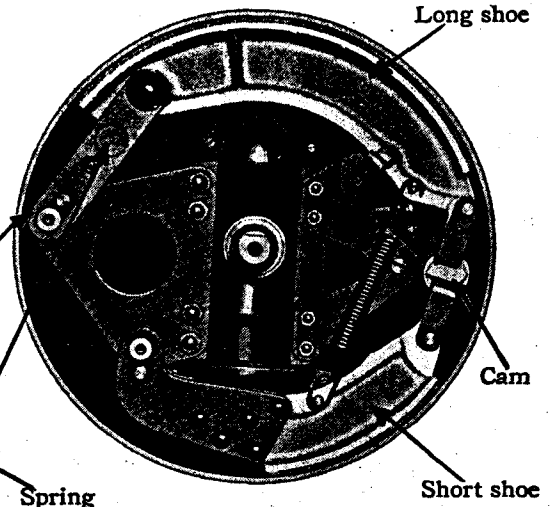



Fig. 3
Front brake

Loosen nut and apply brakes firmly to centralize cam bracket. Tighten nut before releasing brakes. (See Fig. 7 for cam bracket)

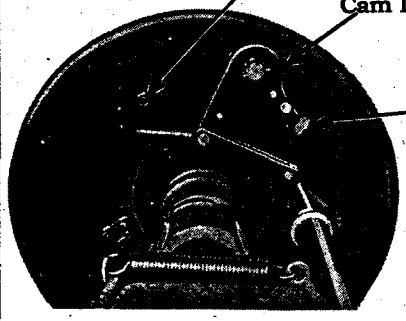



Fig. 2
Rear brake adjustment

Check for equalization between right and left. If O. K., turn down all four adjusting nuts same number of turns until pedal travel is approximately 2-1/4 inches. (1-1/6 turns equals 1 inch pedal travel)

If equalization is not O. K., first turn down nuts until all four wheels just drag; then back off nuts same number of turns to give proper pedal travel. Recheck for equalization and make further adjustment if necessary

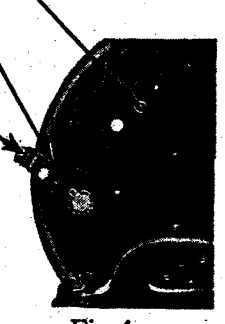



Fig. 4
Front brake adjustment

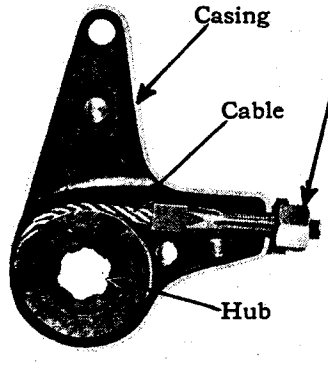



Fig. 5
Cam lever with half of casing removed

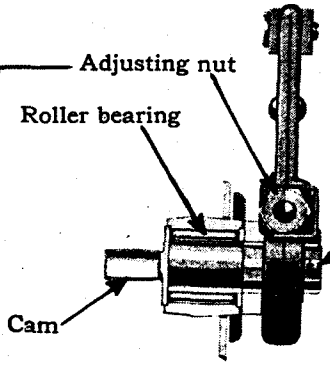



Fig. 6
Sectional view of cam shaft bearing

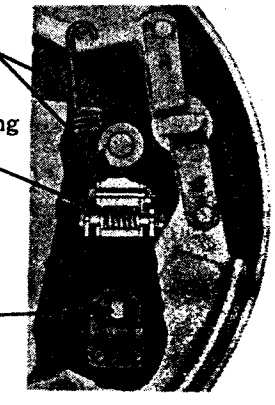



Fig. 7
Sectional view of cam centralizing bracket

Plate 10. Adjustment of Cadillac 341-B front and rear foot brakes.

Note: Unless brake connections are known to be O. K., check them as shown in Plate 9 before proceeding with shoe adjustments

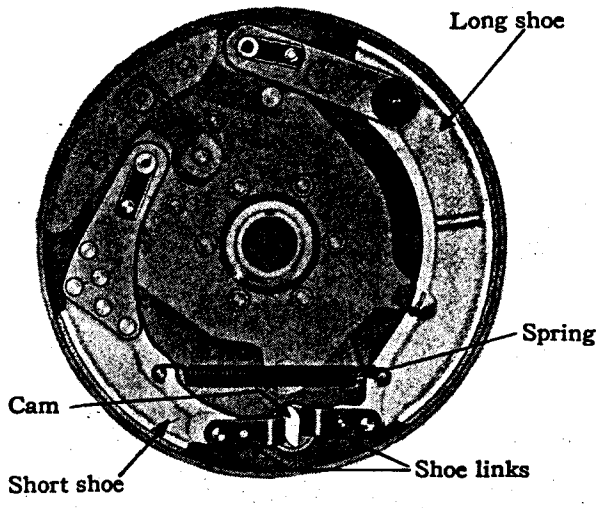



Fig. 1
Rear foot brake

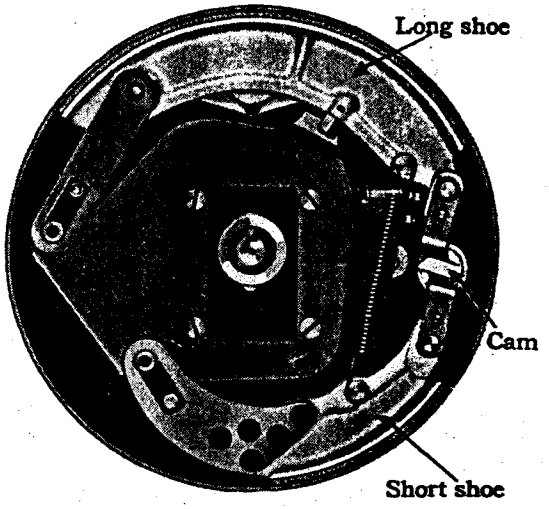



Fig. 3
Front brake

Loosen nut and apply brakes firmly to centralize cam bracket. Tighten nut before releasing brakes. (See Fig. 7 for cam bracket)

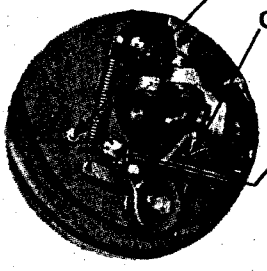



Fig. 2
Rear brake adjustment

Check for equalization between right and left. If O. K., turn down all four adjusting nuts same number of turns until pedal travel is approximately 2-1/4 inches. (1-1/6 turns equals 1 inch pedal travel)

If equalization is not O. K., first turn down nuts until all four wheels just drag; then back off nuts same number of turns to give proper pedal travel. Recheck for equalization and make further adjustment if necessary

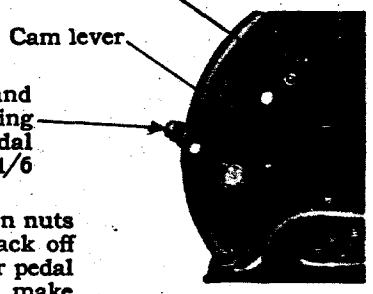



Fig. 4
Front brake adjustment

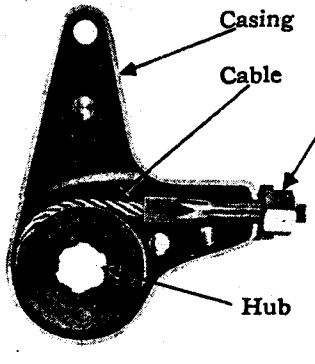



Fig. 5
Cam lever with half of casing removed

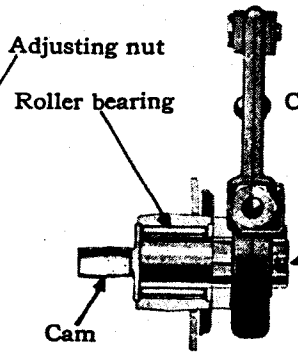



Fig. 6
Sectional view of cam shaft bearing

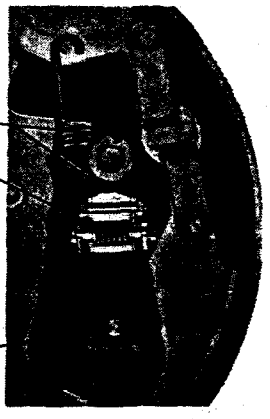
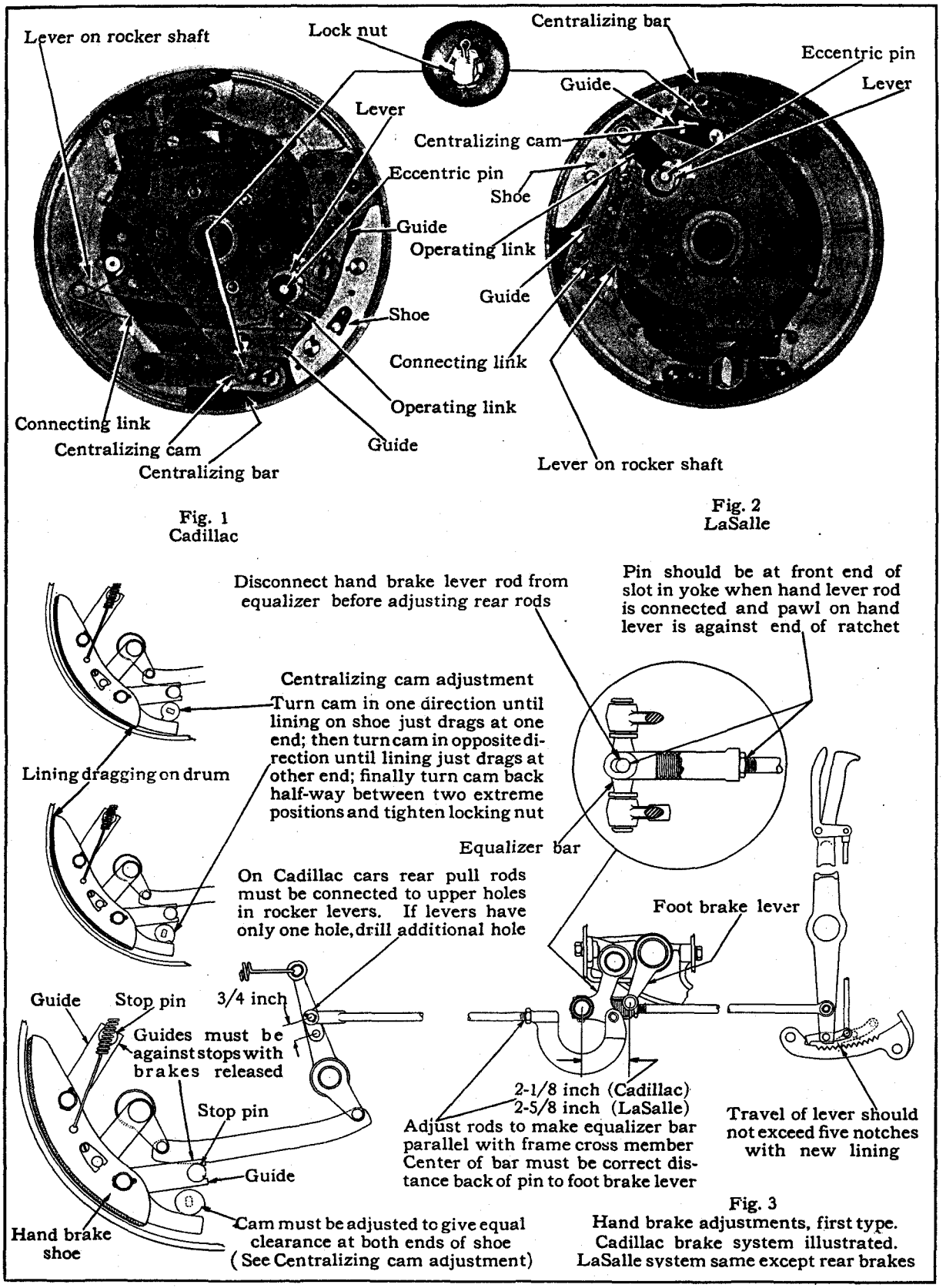



Fig. 7
Sectional view of cam centralizing bracket

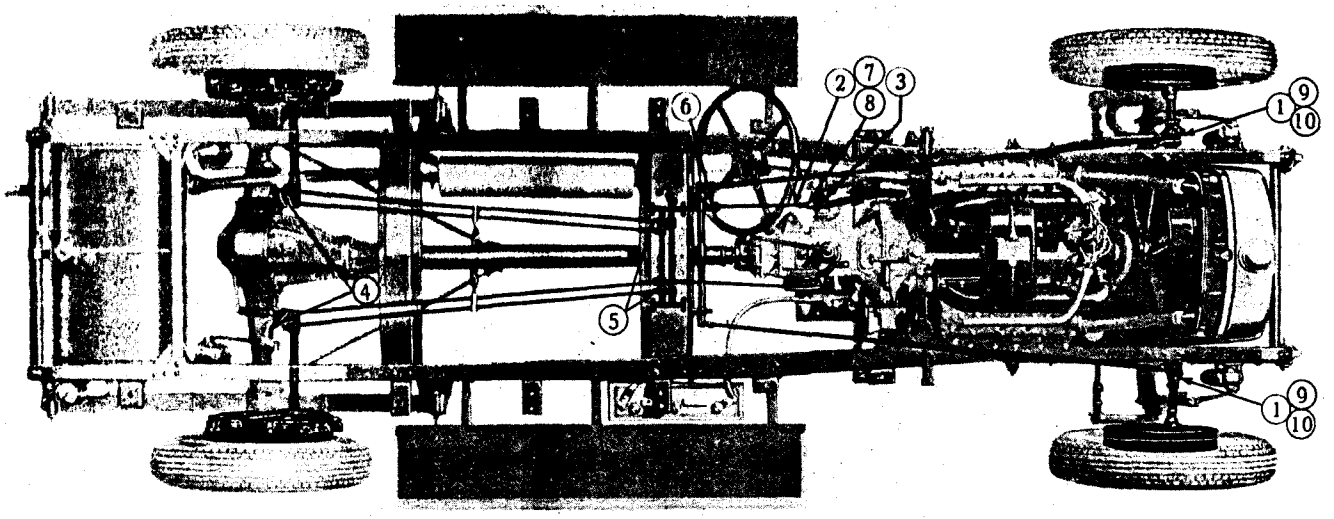
Plate 11. Adjustment of La Salle 328 front and rear foot brakes.



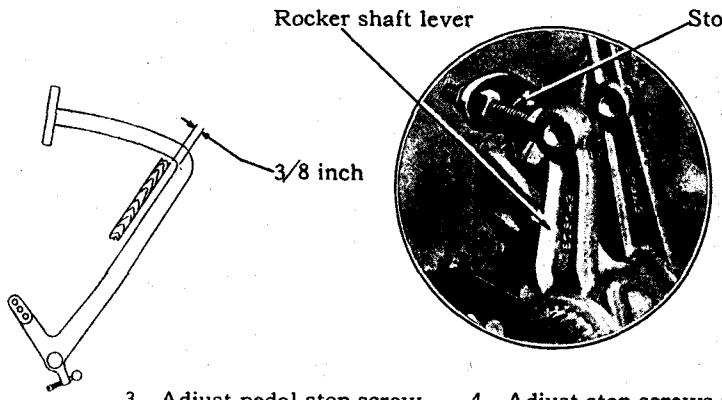

## Plate 12. Cadillac 341-B and La Salle 328 hand brakes—first type.

February, 1929

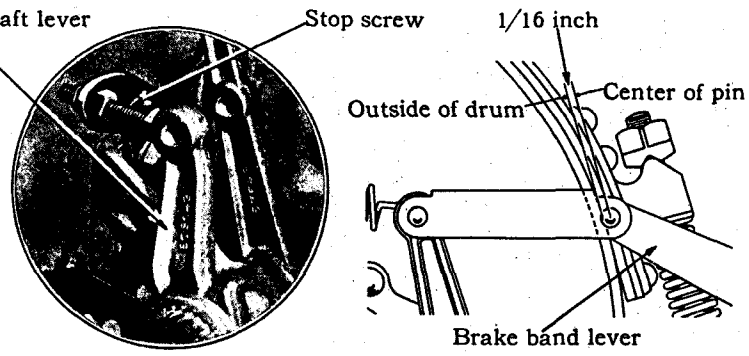
Note: Adjustment of connections must precede adjustment of bands. Connections must also be freed up before adjustment. Make all adjustments of connections in released position



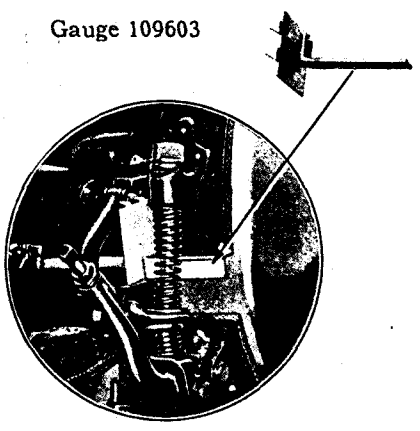

Preliminary
1 Back off nuts on front ends of cables
2 Remove pedal rod and yoke assembly



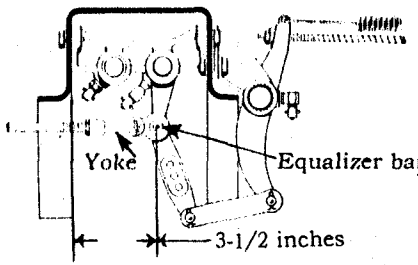

3 Adjust pedal stop screw



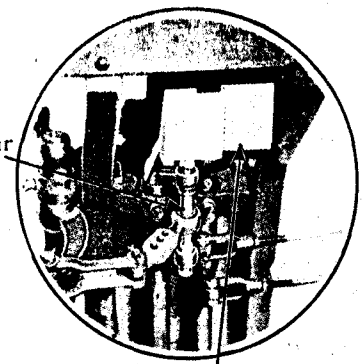

Gauge 109603

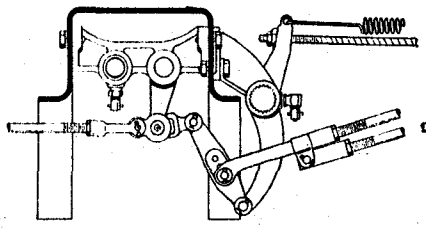


4 Adjust stop screws in rocker shaft levers to give correct position of brake band levers. Preferably use gauge

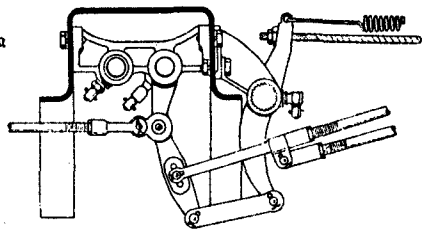



5 Adjust yokes on rods to give correct position of equalizer bar. Preferably use gauge



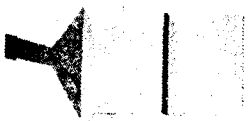


First type hook-up.
Use bottom hole in division bar

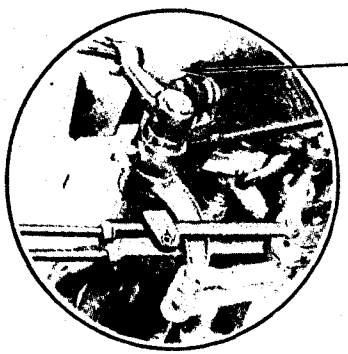


Second type hook-up.
Use middle hole in division bar

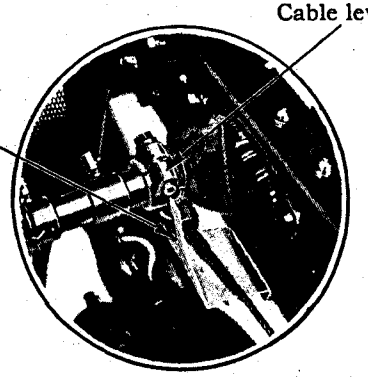
6 Connect rear end of pedal rod assembly to division bar

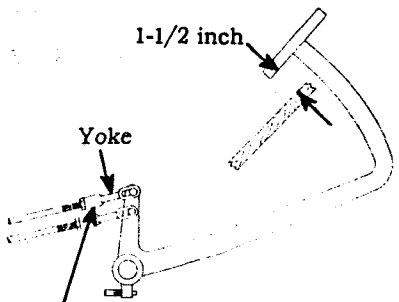


Gauge 109602

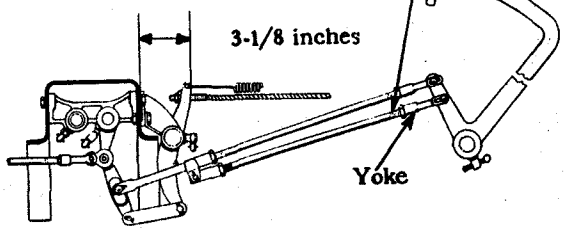


7 Adjust yoke on lower pedal rod to give correct position of levers on front brake cross shaft. Preferably use gauge

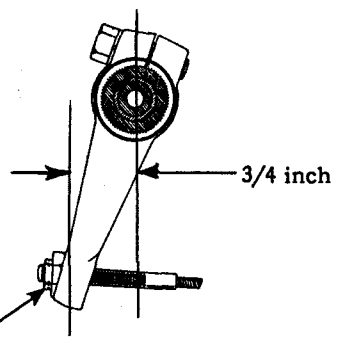



8 Adjust yoke on upper rod so second stage takes effect when pedal is 1-1/2 inches from toe board

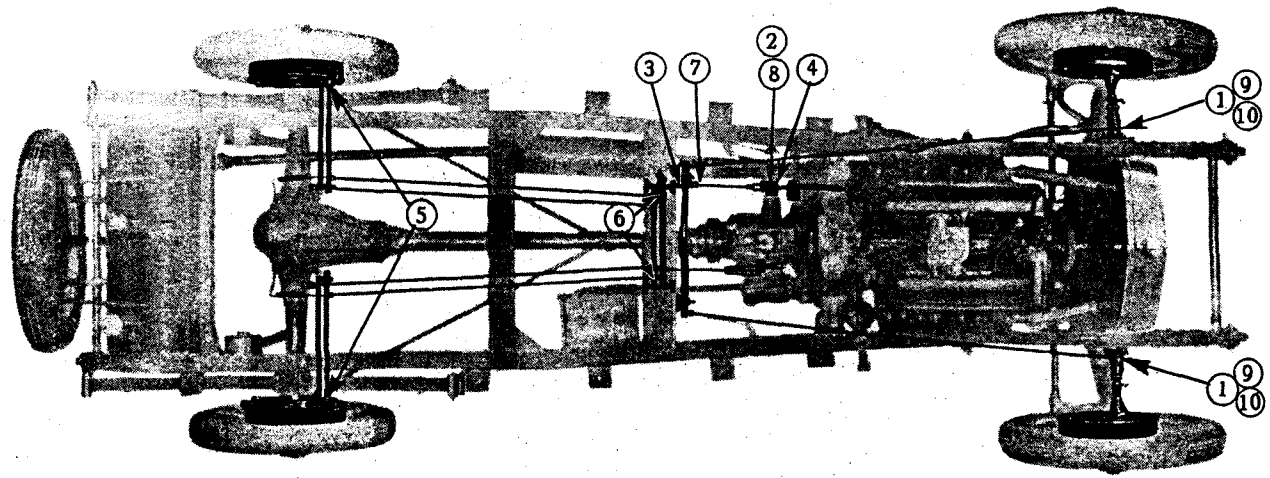



9 Check position of cable levers. Preferably use gauge

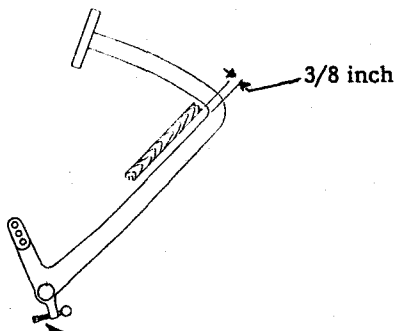



10 Adjust cable nuts to take up slack in cables

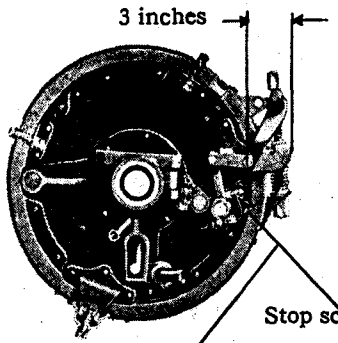
Note: Adjustment of connections must precede adjustment of bands. Connections must also be freed up before adjustment. Make all adjustments of connections in released position




Preliminary
1 Back off nuts on front ends of cables
2 Disconnect pedal rod from pedal
3 Disconnect division bar link

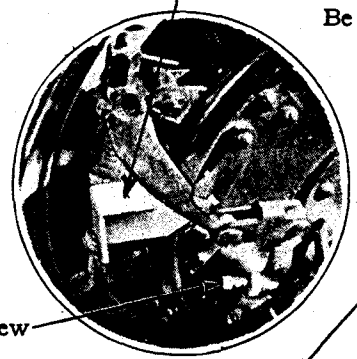


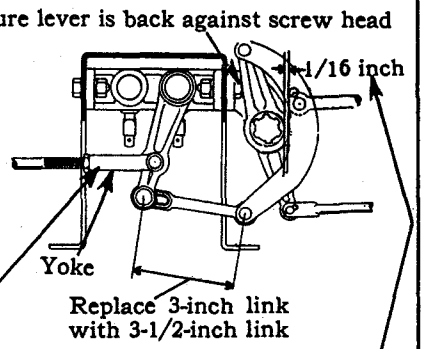

4 Adjust pedal stop screw



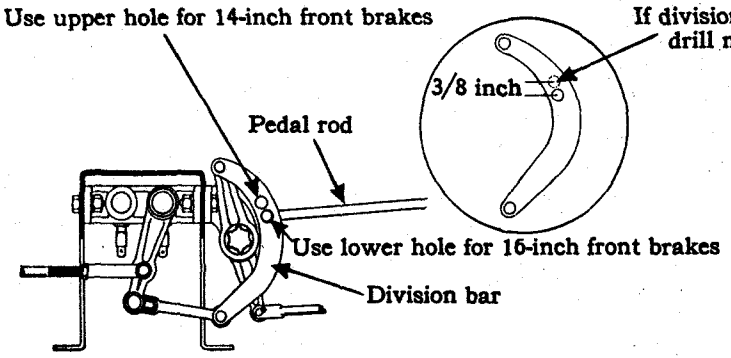

5 Adjust stop screw to give correct position of lever. Preferably use gauge

Gauge 109419

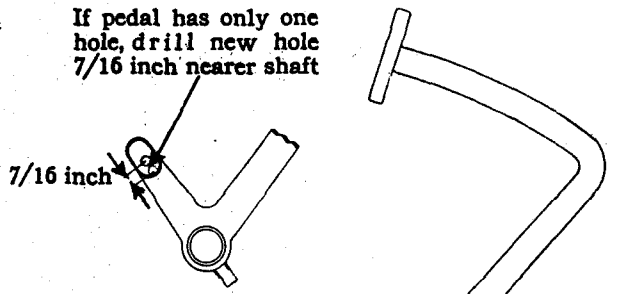


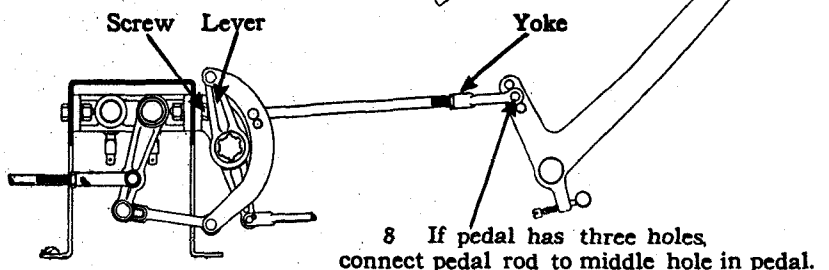



6 Adjust yokes on rods so that division bar will clear lever on cross shaft when link is connected

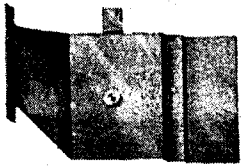



7 Make sure pedal rod is connected to proper hole in division bar



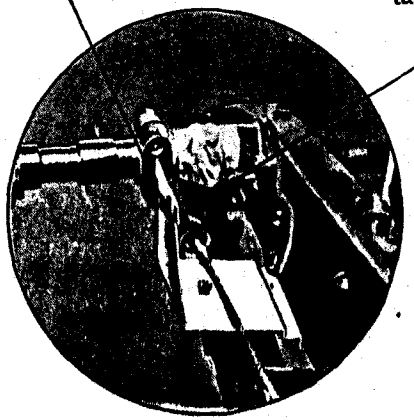




8 If pedal has three holes, connect pedal rod to middle hole in pedal. Adjust yoke so lever clears screw in bracket

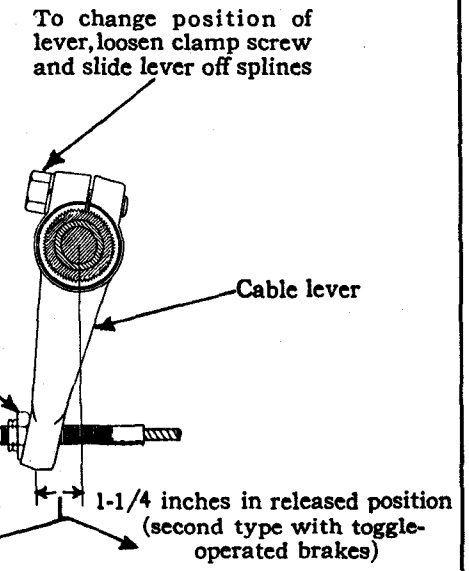


Gauge 109420

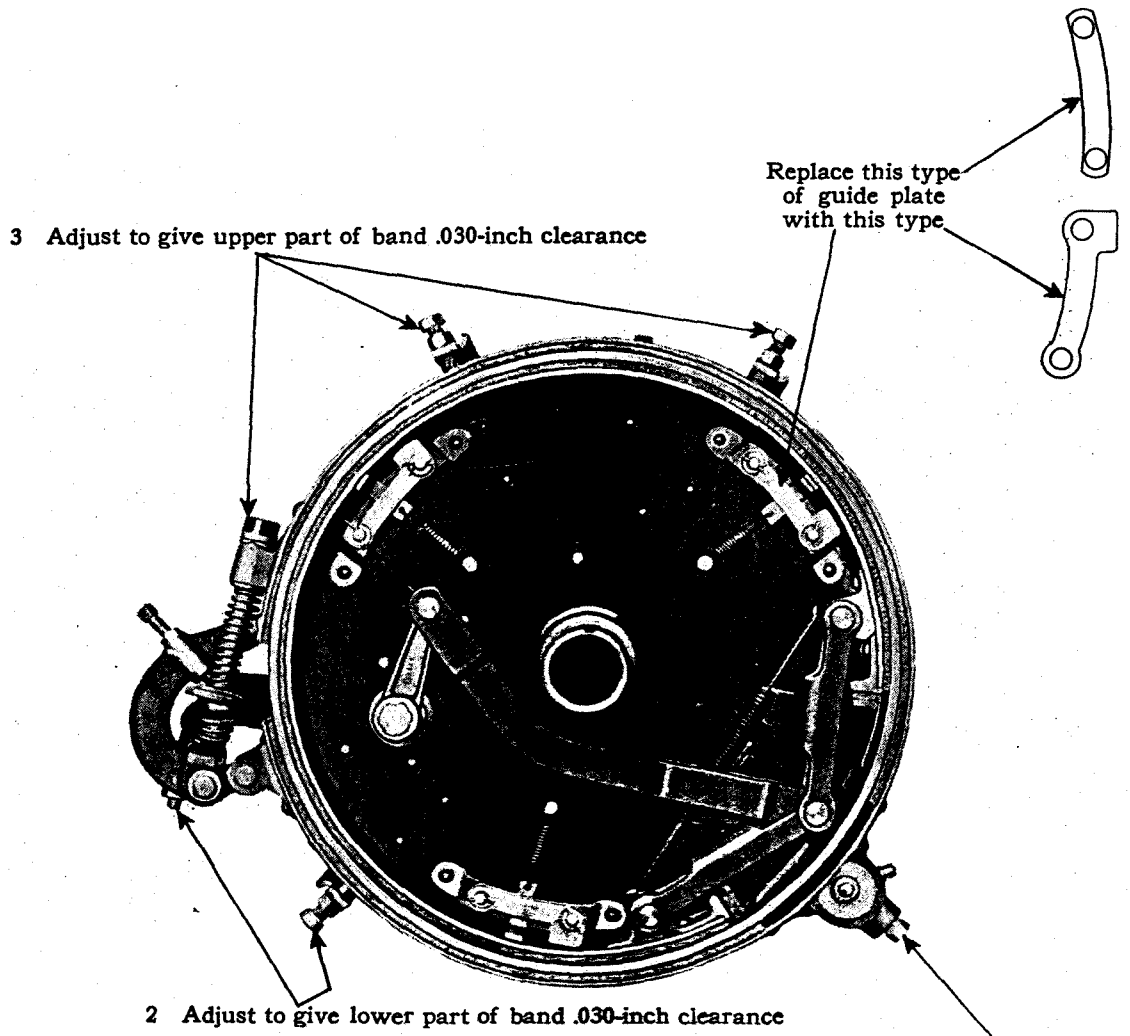
9 Check position of cable levers. Preferably use gauge. (Omit this step on all cars with 14-inch front brake drums and on cars with 16-inch drums which have levers welded on shaft)

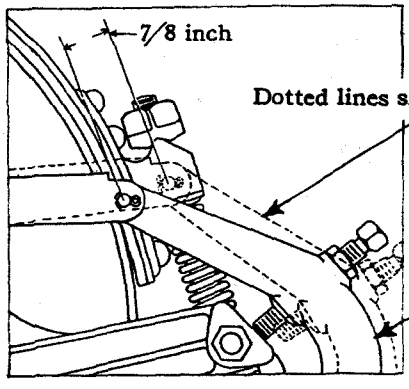


10 Adjust cable nuts to take up slack in cables



Note: Unless brake connections are known to be O. K., check them as shown in Plate 13 before proceeding with band adjustments




5 Check travel of lever from released to applied position. Take up or back off adjustments to give approximately 7/8-inch travel

Plate 15. Adjustment of Cadillac 341-A rear foot brakes.

Note: Unless brake connections are known to be O. K., check them as shown in Plate 14 before proceeding with band adjustments

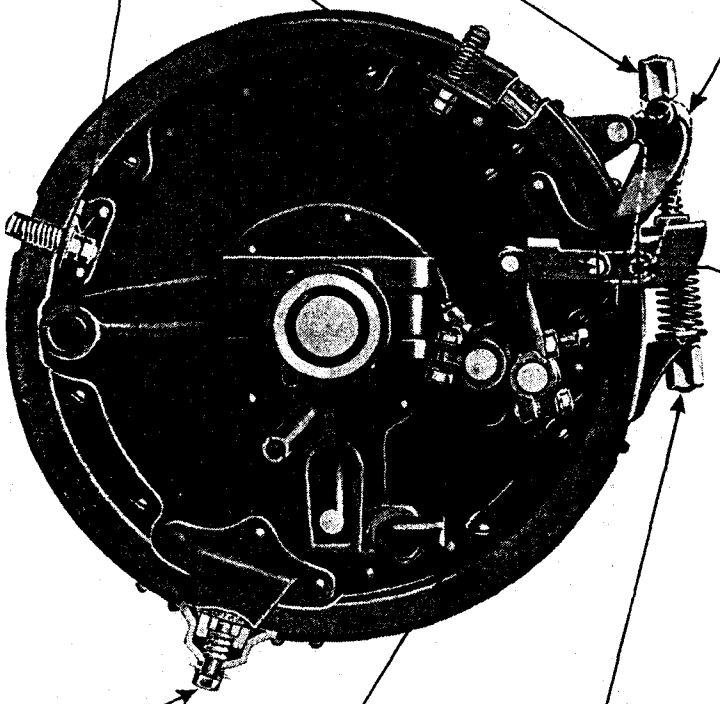
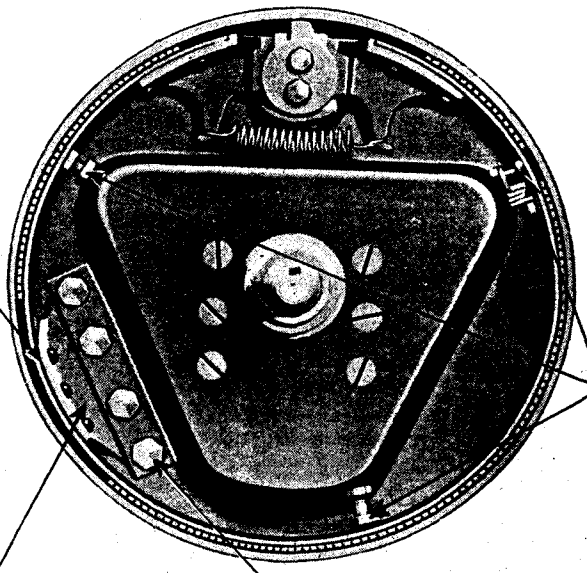



Plate 16. Adjustment of La Salle 303 rear foot brakes.

Note: Unless brake connections are known to be O. K., check them as shown in Plate 14 before proceeding with band adjustments



If anti-squeak is used between anchor plate and dust shield, remove and replace with thin canvas

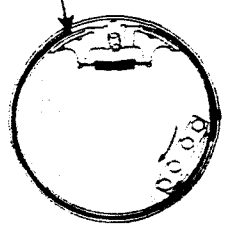
2 Adjust stop screws to give .015-inch clearance

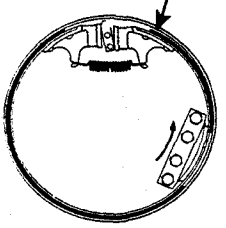
Anchor screws must be drawn tight

1 Adjust anchor in and out to give .015-inch clearance and up and down to centralize band

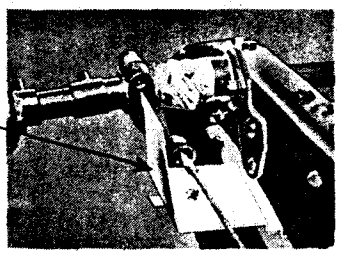
If lining stands away here, move anchor down

If lining stands away here, move anchor up



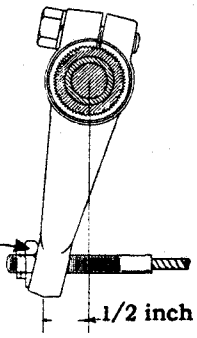


Gauge 109420



4 Check position of cable levers with brakes applied. Preferably use gauge. Change position of lever on splined shaft as necessary

3 Adjust nuts on cables to complete band adjustment and give .015-inch clearance all around



1/2 inch in applied position

Plate 17. Adjustment of La Salle 303 front brakes—first type.

Note: Unless brake connections are known to be O. K., check them as shown in Plates 13,14 before proceeding with band adjustments

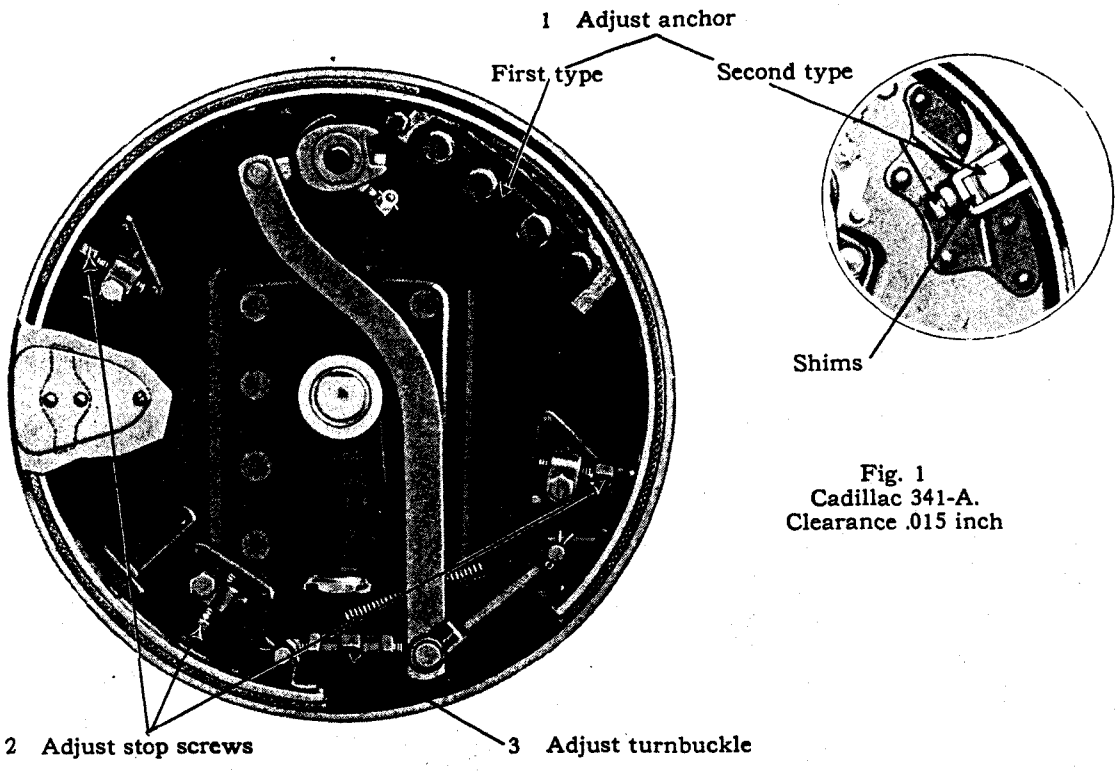



Fig. 1
Cadillac 341-A.
Clearance .015 inch

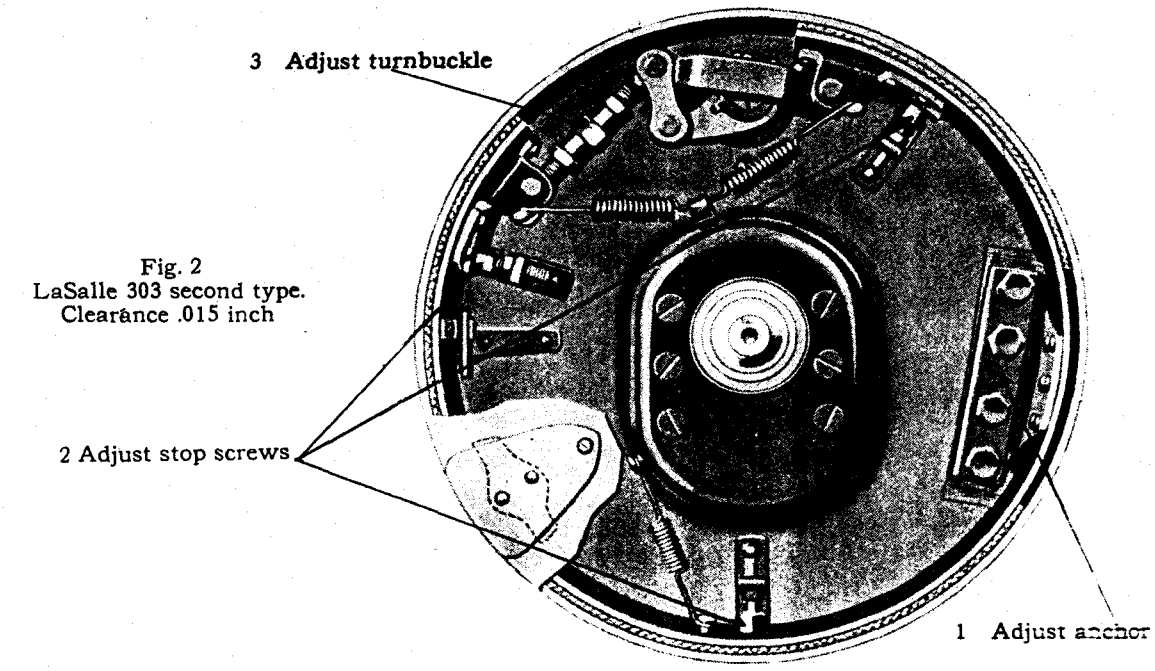



Fig. 2
LaSalle 303 second type.
Clearance .015 inch

Plate 18. Adjustment of front brakes, Cadillac 341-A and La Salle 303—second type.

# Clutch

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| PLATE TYPE | | | | | | After engine unit 2-12001 on 303 cars. |
| Clearance between driving plates and driving pins | A | B | 303[2] | 328 | New limits, .005—.008 in. Worn limit, not over .010 in. | |
| Clearance between hub and splines on clutch connection shaft | A | B | 303[2] | 328 | New limits, .0005—.002 in. Worn limit, not over.005 in. | |
| Clearance between release bearing sleeve and transmission bearing cap | A | B | 303[2] | 328 | New limits, .001—.004 in. Worn limit, not over .006 in. | |
| Clearance between release shaft and bearings in transmission case | A | ... | .... | .... | New limits, .003—.006 in. Worn limit, not over .010 in. | |
| Clutch pedal, free movement | A | B | 303[2] | 328 | 7/8—1 1/8 in. | |
| Clutch spring compression | A | B | 303[2] | 328 | 67—73 lbs. at 1 3/8 in. | |
| Clutch spring, number | A | B | 303[2] | 328 | 12 | |
| Disc facing diameter, inside | A | B | 303[2] | 328 | 6 1/2 in. | |
| Disc facing diameter, outside | A | B | 303[2] | 328 | 9 1/2 in. | |
| Disc facing, number | A | B | 303[2] | 328 | 4 | |
| Disc facing, thickness | A | B | 303[2] | 328 | .125—.130 in. | |
| Disc with facings, thickness | A | B | 303[2] | 328 | New limits, .305—.315 in. Worn limit, not less than .250 in. | See note 1. |
| Release bearing | A[1] | ... | .... | .... | ..... | See note 2. |
| Release bearing pull-back spring, free length | A | ... | 303[2] | .... | 2 1/4 in., approxmately | |
| Release bearing pull-back spring, tension | A | B | 303[2] | 328 | 6—8 lbs. when stretched to 3 3/8 in. between loops | |
| Removal of clutch | A | B | 303[2] | 328 | ..... | See note 3. Before engine unit 2-12001 on 303 cars. |
| MULTIPLE DISC TYPE | | | | | | |
| Clearance between driven discs and teeth on hub. (Except rear disc) | ... | ... | 303[1] | .... | Worn limit, not over .008 in. | Fit rear disc tight on hub; next to rear disc, snug sliding fit. |
| Clearance between teeth on driving discs and teeth on flywheel. (Except rear disc) | .... | ... | 303[1] | .... | Worn limit, not over .010 in. | Rear disc, snug sliding fit in flywheel. |
| Clearance between release bearing sleeve and transmission bearing cap | ... | ... | 303[1] | .... | New limits, .001—.004 in. Worn limit, not over .006 in. | |
| Clutch pedal, free movement | ... | ... | 303[1] | .... | 7/8—1 1/8 in. | |
| Clutch spring, compression | ... | ... | 303[1] | .... | Not under 420 lbs. at 2 11/32 in. | |
| Disc facing diameter, inside | ... | ... | 303[1] | .... | 6 11/16 in. | |
| Disc facing diameter, outside | ... | ... | 303[1] | .... | 7 5/8 in. | |
| Disc facing, number | ... | ... | 303[1] | .... | 10 | |
| Disc facing, thickness | ... | ... | 303[1] | .... | .130—.140 in. | |

| Subject | Cadillac 341 | LaSalle 303-328 | Specifications | Remarks |
|---|---|---|---|---|
| Disc, installation of | | 303[1] | | See note 4. |
| Release bearing pull-back spring, free length | | 303[1] | 1½ in., approximately | |
| Release bearingpull- back spring, tension | | 303[1] | 6—8 lbs. at 1⅞ in. between loops. | |
| Thickness of driving disc with facing | | 303[1] | Not under $\frac{5}{16}$ in. | |

**1. Refacing Plate-Type Clutch**

Replacement of the clutch driven discs with facings is recommended rather than refacing the original discs. The reason for this is because the surface of the facing must be ground after it is riveted to the disc, to insure the correct thickness. If the facing is too thick the disc will drag on the center plate. As it is impractical to grind the discs in service, the practice of replacing the discs and facing must be followed.

**2. Clutch Release Bearing**

On a few of the first 341-A cars, the clutch release bearing cannot be removed from the sleeve. If the bearing on these cars requires replacement, replace the sleeve and bearing as a unit. On later cars the sleeve has two holes through which the bearing can be reached to force it off the sleeve.

**3. Removal of Plate-Type Clutch**

Extreme care must be taken when removing the transmission to support the rear end so as to hold the transmission in perfect alignment with the clutch until the clutch connection shaft has been pulled *all the way out* of the clutch hub.

If the rear end of the transmission is allowed to drop down or is raised too high while the clutch connection shaft is still in the clutch hub, the clutch driven discs will be sprung out of shape. *This must be avoided.*

On cars which do not have the long piloting studs on the sides of the crankcase use special studs (Tool number 109222) provided for these cars. *Plate 60 Fig 1.*

**4. Assembling Multiple Disc Clutch**

The rear disc in the clutch is thicker than the other discs. This plate is fitted in the clutch driver at the factory and is marked to indicate its position in relation to the driver. When re-installing the clutch, make sure the marked tooth on the driver goes between the two marked teeth on the rear disc.

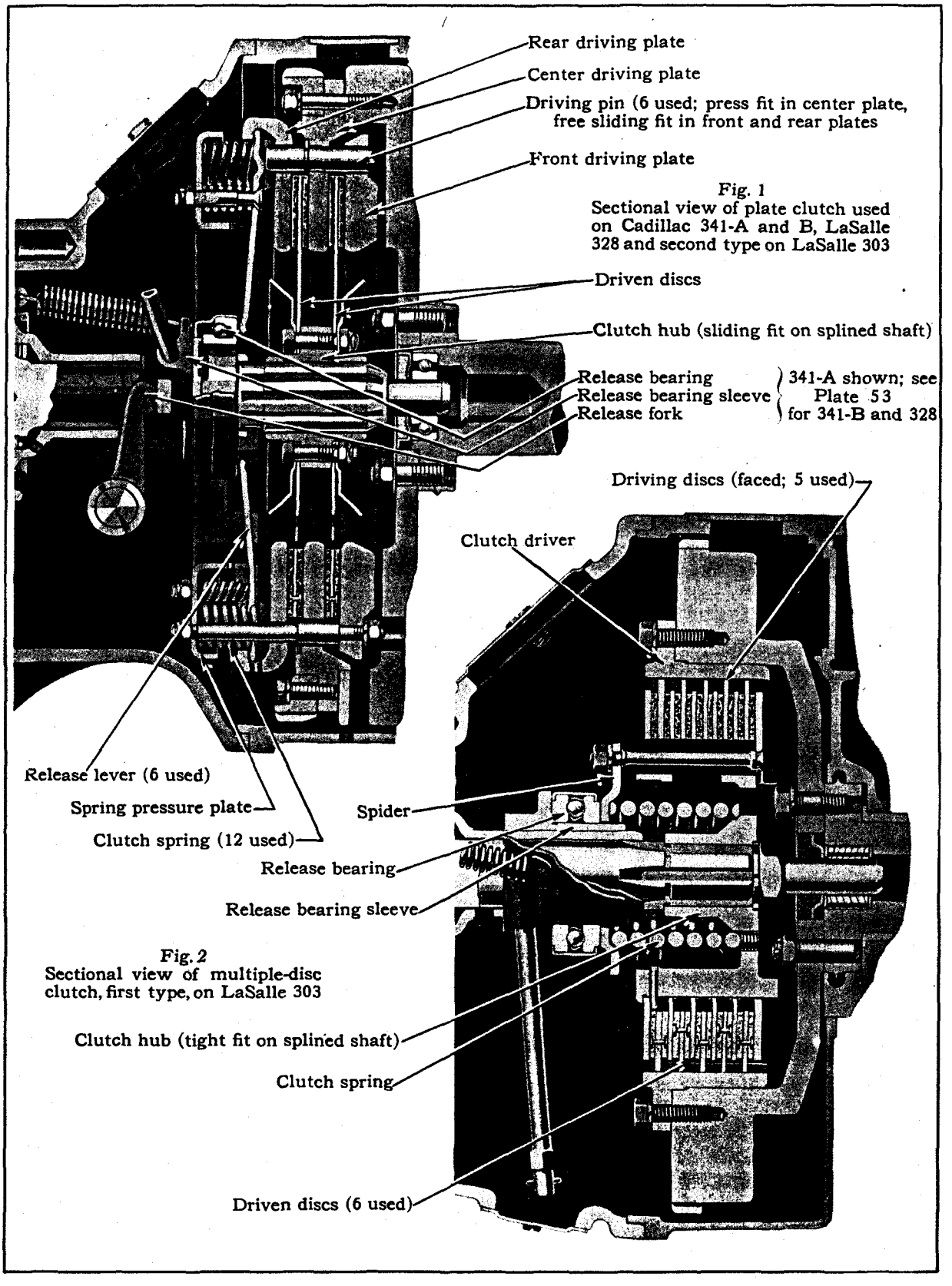



*Fig. 1*
Sectional view of plate clutch used on Cadillac 341-A and B, LaSalle 328 and second type on LaSalle 303

*Fig. 2*
Sectional view of multiple-disc clutch, first type, on LaSalle 303

Plate 19. Sectional view of clutch.

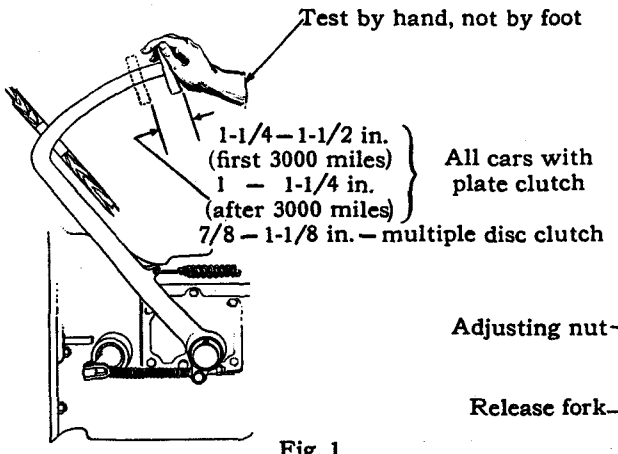



Fig. 1
Measuring free travel or lost motion of clutch pedal before starting to disengage the clutch

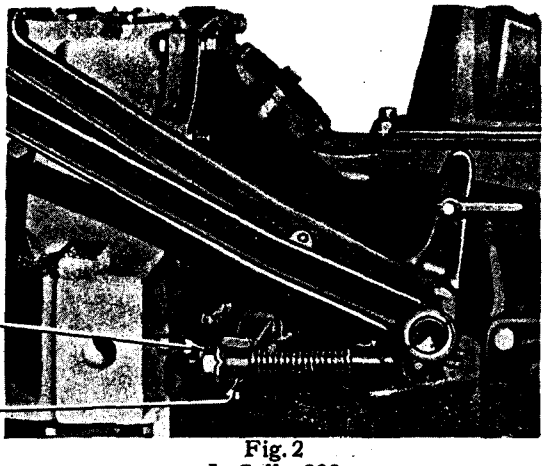
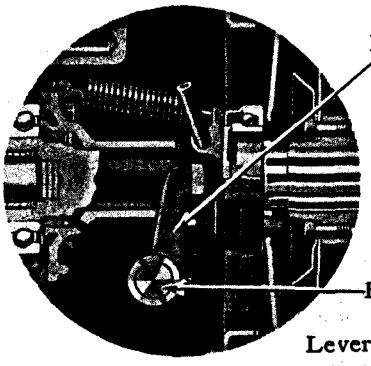



Fig. 2
LaSalle 303



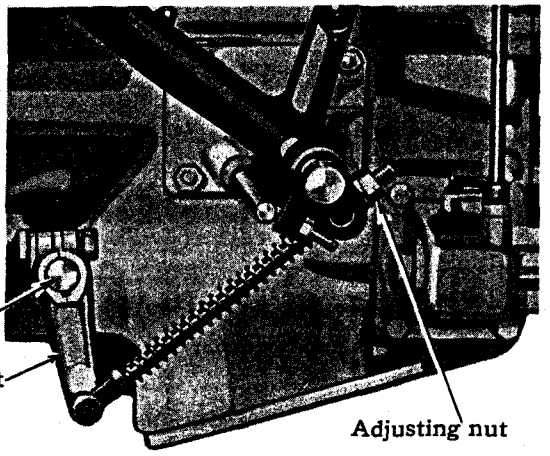
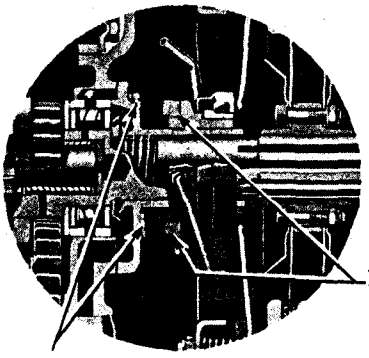
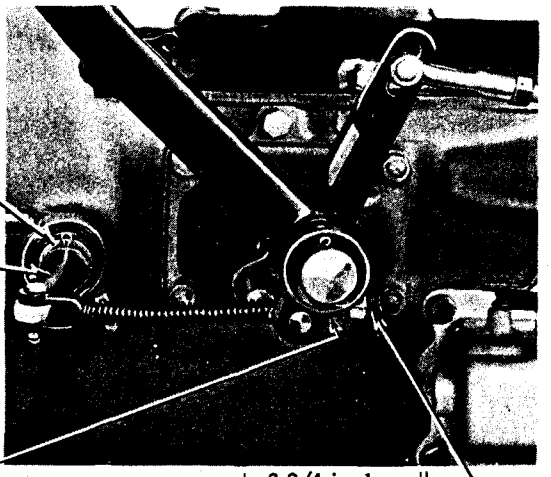
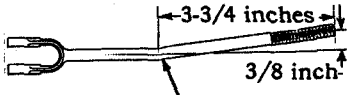




Fig. 3
Cadillac 341-A




Install thin head cap screws (part number 871838) with special thin lock washers (part number 110730) in place of studs on 341-B cars before transmission unit 3-31617 and on 328 cars before transmission unit 4-12532. Watch for interference between studs and fork by making sure adjusting nut is tight against trunnion






On 341-B and 328 cars the clutch release rod should be bent as shown and installed so that the bent part points up

Fig. 4
Cadillac 341-B and LaSalle 328

Plate 20. Adjustment of clutch pedal rod.

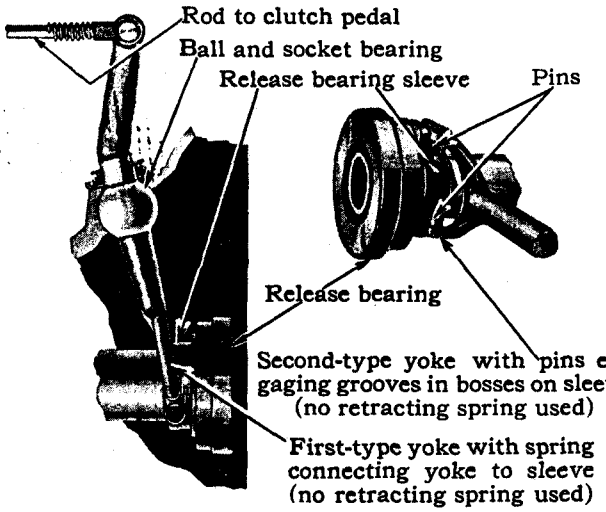



Fig. 1
Clutch release yoke on Cadillac 341-B and LaSalle 328

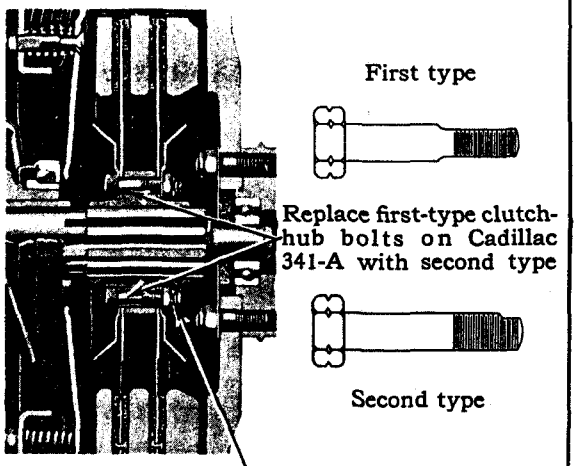



Fig. 2

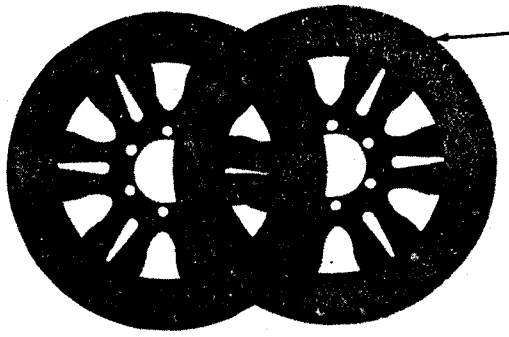



Fig. 3
Clutch driven discs with facing

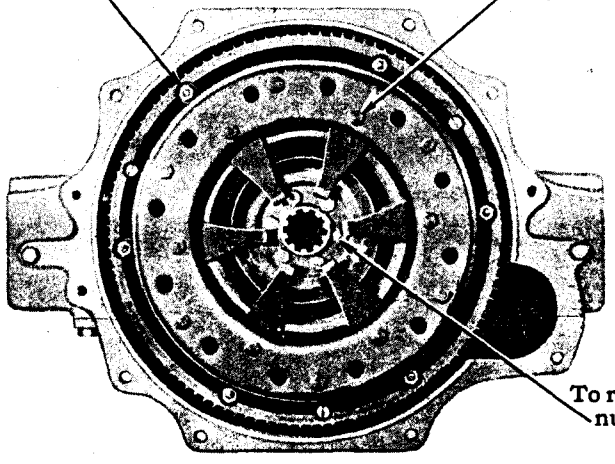



Fig. 4
Rear view of engine showing removal of clutch

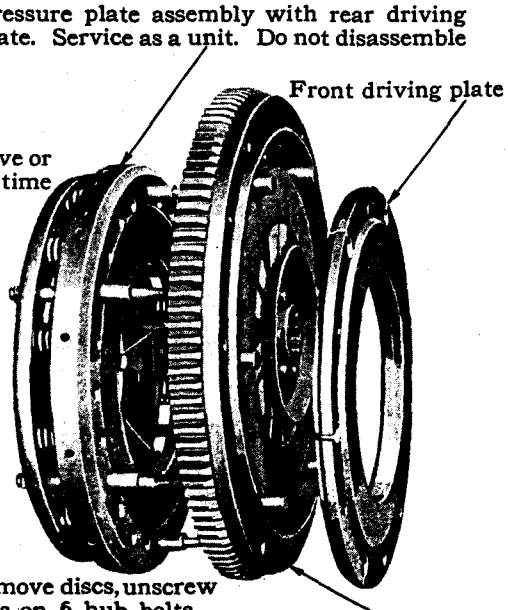



Fig. 5
Clutch disassembled

Plate 21. Removal and disassembly of plate-type clutch.

# Cooling System

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | | Remarks |
|---|---|---|---|---|---|---|---|---|
| **FAN** | | | | | | | | |
| Assembly, method of | A | B | 303 | 328 | | | | See note 1. |
| Bearing diameter | A | B | 303 | 328 | ¾ in. | | | |
| Belt, length | A | B | 303 | 328 | 35 in. | | | |
| Belt, tension | A | B | 303 | 328 | ⅝ in. slack with 15 lbs. pull. | | | *Plate 22, Fig. 3.* |
| Belt, width | A | B | 303 | 328 | 1 in. | | | |
| Clearance between fanshaft and bushing | A | B | 303 | 328 | New limits, .004—.006 in. | | | |
| | | | | | Worn limit, not over .010 in | | | |
| Diameter | A | B | 303 | .... | 20¼ in. | | | When replacing fan on 303 use 21-in. fan. |
| | ... | ... | .... | 328 | 21 in. | | | |
| Identification marks | A | B | .... | 328 | "C" | | | Stamped on front face of hub cover. Fan for 328 is 21 in. in diameter. *Plate 22, Fig. 5.* |
| | ... | ... | 303 | .... | "L" | | | |
| Lubrication | A | B | 303 | 328 | At every 1000 miles. | | | See note 2. |
| Oil capacity of fan reservoir | A | B | 303 | 328 | | | | See Lubrication Table, page 83 |
| Pitch of blades | A | B | .... | 328 | 33° | | | Cadillac 341-A Stamped "C" |
| | ... | ... | 303 | .... | 25° | | | Stamped "L" |
| **HOSE CONNECTIONS** | | | | | | | | |
| Cylinder to radiator hose, diameter | A | B | 303 | 328 | 1¼ in. | | | |
| Cylinder to radiator hose, length | A | B | .... | .... | 16¾ in. | | | Before engine unit 3-11595 this hose was 16¼ in. long. When replacing, use 16¾ in. hose. |
| | ... | ... | 303 | .... | 10¾ in. R. H., 12 1/16 in. L. H. | | | |
| | ... | ... | .... | 328 | 14½ in. | | | |
| Cylinder block nipple to elbow hose, diameter | A | B | 303 | 328 | 1¼ in. (either side) | | | |
| Cylinder block nipple to elbow hose, length | A | B | 303 | 328 | 2¼ in. (either side) | | | |
| Pump to elbow hose, diameter | A | B | 303 | 328 | 1⅝ in. | | | |
| Pump to elbow hose, length | A | ... | 303 | .... | 13¾ in. | | | |
| | ... | B | .... | 328 | 16⅝ in. | | | |
| Radiator to pump hose, diameter | A | B | 303 | 328 | 1⅞ in. | | | |
| Radiator to pump hose, length | A | B | 303 | 328 | 12⅛ in. | | | See note 3. |
| **RADIATOR** | | | | | | | | |
| Anti-freeze solution | | | | | Qts. | Sp. gr. at 60°F. | % by Vol. | Sp. gr. at 60°F.—Specific gravity at 60° Fahrenheit |
| Alcohol required for 10°F. | A | B | .... | .... | 7¼ | .9668 | 30 | % by Vol.—Per cent by Volume. |
| | ... | ... | 303 | 328 | 6¼ | .9668 | 30 | |
| Alcohol required for 0°F. | A | B | .... | .... | 9 | .9567 | 38 | |
| | ... | ... | 303 | 328 | 8 | .9567 | 38 | |
| Alcohol required for – 10°F. | A | B | .... | .... | 10¾ | .9485 | 45 | The calculations are based on 180-proof alcohol (10% water). If 188-proof alcohol (6% water) is used, the amount of alcohol required can be reduced by 4% (volume). |
| | ... | ... | 303 | 328 | 9½ | .9485 | 45 | |
| Alcohol required for – 20°F. | A | B | .... | .... | 12¼ | .9350 | 51 | |
| | ... | ... | 303 | 328 | 10¾ | .9350 | 51 | |
| Alcohol required for – 30°F. | A | B | .... | .... | 13¾ | .9260 | 57 | |
| | ... | ... | 303 | 328 | 12 | .9260 | 57 | |

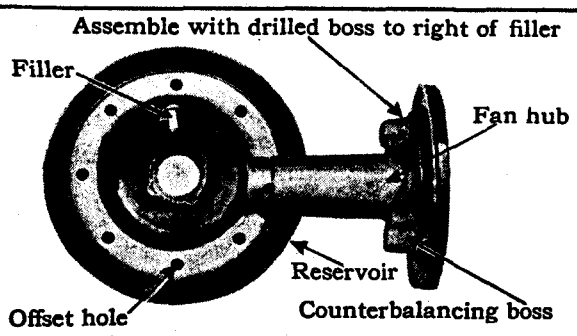



Fig. 1
To preserve balance fan hub and reservoir must be properly assembled

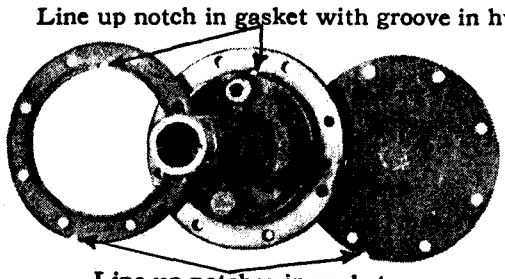



Fig. 2
Correct assembly of fan gaskets

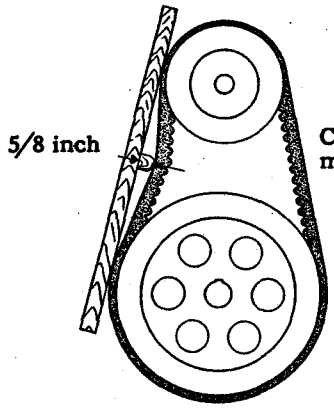



Fig. 3
Correct adjustment of fan belt

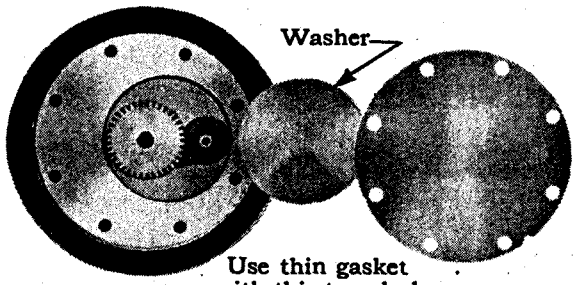



Fig. 4
Fan hub and thrust washer used on Cadillac 341-B and LaSalle 328. Use also for replacement on 341-A and 303

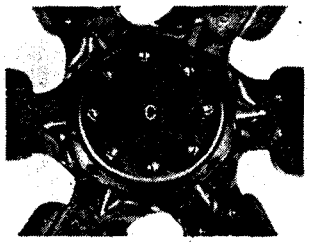


Fig. 5
Fan identification
C—Cadillac
L—LaSalle(303)

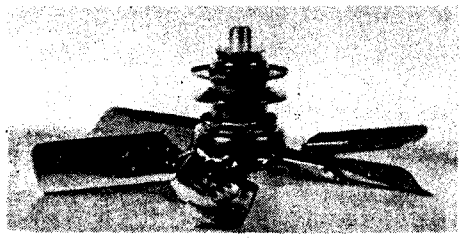


Fig. 6
Always place fan on bench with front down to prevent oil running out. Carry in same position

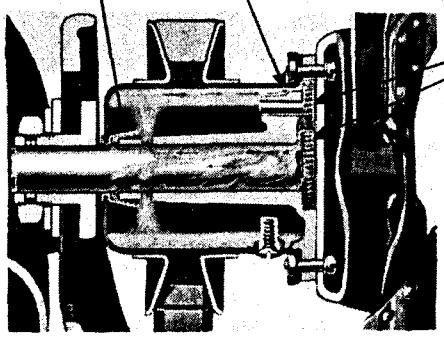



Fig. 7 Circulation of oil in fan.
Centrifugal force holds oil against outer wall of reservoir. Pump gears draw it through small hole and force it to bearing surface

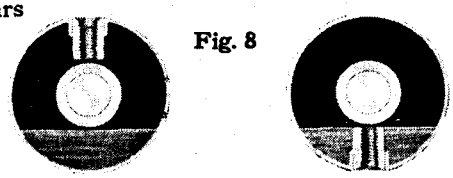


Fig. 8

Filler up for adding oil

Filler down for draining off surplus

Note: If reservoir is air-bound and surplus does not drain off at once, wait a few seconds to let air work in. Fan will throw oil if there is too much in reservoir

Plate 22. Fan Details.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Capacity of cooling system... | A | B | .... | .... | 6 gals. | Total capacity of cylinder water jackets, hose connections and radiator. Do not fill radiator full. This will result in overflow when the water heats and expands. Expensive when anti-freeze is used. |
| | ... | ... | 303 | 328 | 5¼ gals. | |
| Flushing radiator..... | A | B | 303 | 328 | ..... | See note 4. |
| Manufacturer's number, location of..... | A | B | 303 | 328 | Rear of upper tank—right side | |
| Spacing of studs..... | A | ... | .... | .... | ..... | See note 5. |
| Thermostat..... | A | B | 303 | 328 | ..... | See note 6. |
| Shutters open..... | A | B | 303 | 328 | Start to open 155°—165°F Full open—180°F. | |
| Shutters close..... | A | B | 303 | 328 | 165°—170°F. | |
| Shutter rod adjustment..... | A | B | 303 | 328 | Adjustable end ⅛ in past operating arms. | See note 7. *Plate 23, Fig. 4.* |
| WATER PUMP | | | | | | |
| Clearance between impeller and pump body..... | A | B | 303 | 328 | New limits, .055—.065 in. Worn limit, not over .075 in. | |
| Clearance between drive sprocket and support..... | A | B | 303 | 328 | New limits, .003—.005 in. Worn limit, not over .010 in. | |
| Clearance between pump shaft and bushings..... | A | B | 303 | 328 | New limits, .001—.003 in. Worn limit, not over .006 in. | |

**1. Fan Assembly**

The fan must be assembled correctly to prevent unbalance.

Inspection of the fan will show that the hub has two bosses (*Plate 22 Fig. 1*), one of which is drilled to receive the smaller pump gear. The drilled boss should take a position just to the right of the filler plug at which point the bolt holes will line up correctly. The other boss is on the opposite side of the hub and is of sufficient weight to counterbalance the small gear and drilled boss together with the filler plug in the oil reservoir.

In order to maintain the correct position of the balancing parts when assembling the fan, one of the eight bolt holes in the hub, the reservoir, the gaskets and the blades, is purposely off-set $\frac{1}{16}$ inch. (*Plate 22 Fig. 1*). When assembling these parts the holes should line up correctly and under no consideration should the off-set hole be filed or elongated to enable the blades to be installed in any other position.

A further precaution in assembling the fan should be observed in the placing of the gasket. The ring type gasket has a notch on its inner circumference which must coincide with the small oil intake hole in the hub. The notches on the outer circumference of the ring type gasket and the solid gasket should also be in line. (*Plate 22 Fig. 2*)

On fans for 341-B and 328 cars, the hub is counterbored deeper to permit the installation of a metal plate between the oil pump gears and the gasket.

With these fans a thinner gasket should be used as it is easier to keep oil tight. On fans that do not have this metal plate the thicker gasket must be used so that it will fill in the space in front of the gears.

**2. Lubrication of Fan**

The only way to make sure that the fan has the proper amount of oil is to add more than enough and then turn the filler hole down and allow the surplus to drain off. (*Plate 22 Fig. 8*). If the surplus oil does not drain off at once, it is because the reservoir is "air-bound," and the filler hole should be left inverted for several minutes until the oil drains out. Oil should be added to the fan every 1000 miles.

**3. Aligning Water Pump Hose with Radiator Connection**

The holes for the screws by which the pump is attached to the sprocket support are purposely made $\frac{5}{32}$ inch larger in diameter than the screws themselves. The reason for this is to permit the pump inlet connection to be lined up with the water outlet on the radiator, so that the hose will be as nearly in a straight line as possible.

In order to make use of this feature the pump screws should be loosened whenever the generator chain is adjusted. Then, as the sprocket support is moved, the pump will be free to align itself.

Because of the fact that the holes in the pump flange are so much larger than the screws, flat washers as well as lock washers are used under the heads of the screws. It is very important that these washers always be in place. If they are omitted, the screws will bottom against the chain housing, instead of clamping the pump to the face of the sprocket support. This would tend to pry the support away from the chain housing and cause an oil leak.

If a water pump is removed for any reason the flat washers must be reinstalled.

**4. Flushing Cooling System**

In order to keep the Cooling System free from an excessive accumulation of sediment and scale, it should be flushed by the reverse-flow method every 4000 miles.

To flush the system, the hose connection at the bottom of the radiator should be disconnected and the flushing hose attached to the radiator outlet. The flushing water will then be forced up through the radiator, back through the cylinder jackets and pump and out through the disconnected hose. The flushing operation should be continued until the water from the pump is reasonably clear.

The pressure of the water used in flushing the cooling system should not exceed 20 to 25 pounds as a higher pressure is liable to damage the radiator.

**5. Spacing of Radiator Studs**

On 341-A Cadillac cars previous to engine unit 300600 and after engine unit 301200 (these numbers are approximate), the radiator studs are 9 inches apart on centers. On cars between these two unit numbers and also on some later 152-inch chassis, the radiator studs are 15 inches apart.

Whenever a radiator core having the studs 15 inches apart requires replacement, it will be necessary to remove the anchorage from the old core and use it with the new core to permit installing the new radiator on the chassis. To replace the anchorage, it is simply necessary to remove the two bolts which hold the anchorage on each side.

**6. Operation of Thermostat**

The thermostat plunger should start its stroke at a temperature of not less than 150° and should have a full stroke of $\frac{11}{32}$ inch at a temperature of not over 175°. The test may be made by placing the thermostat in water of the proper temperature.

**7. Adjustment of Shutter Rod**

The yoke end of the shutter operating rod should be adjusted to bring the center of the hole in the yoke about $\frac{1}{8}$ inch beyond the center of the holes in the operating arms when the rod is detached. *Plate 23, Fig. 4.*

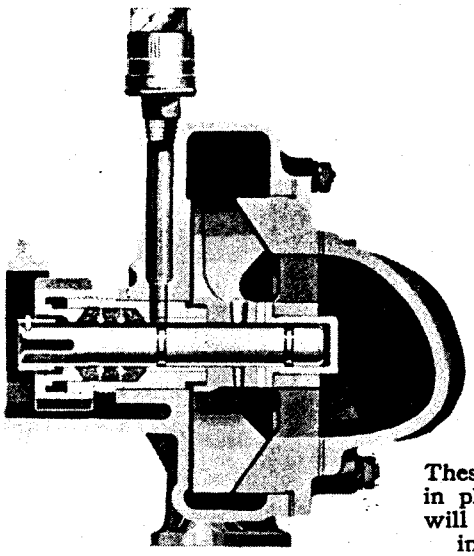


Fig. 1
Sectional view of water pump

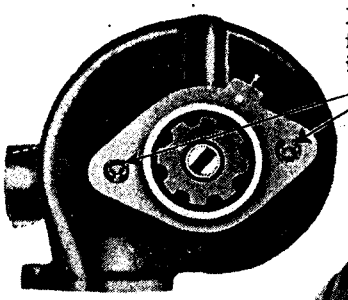
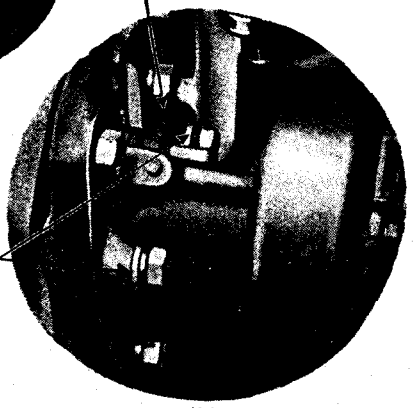


Fig. 2
Enlarged holes in water pump flange to permit lining up inlet with radiator connection



These flat washers must be in place; otherwise screws will bottom on chain housing and cause oil leak

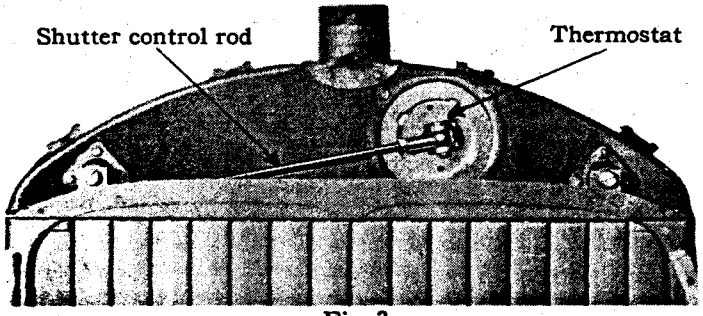



Fig. 3
Front view of radiator showing thermostat and shutter control

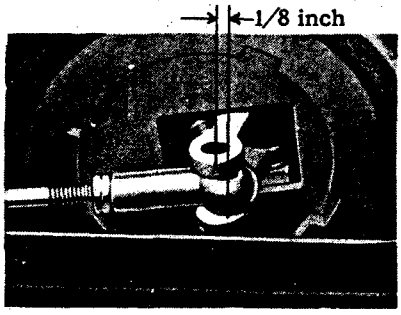



Fig. 4
Adjustment of shutter control rod

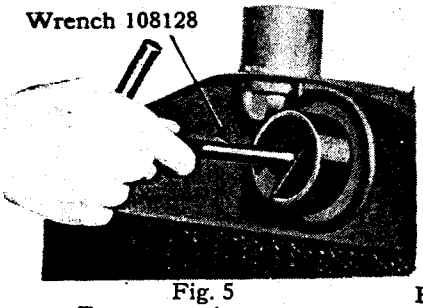



Fig. 5
To remove thermostat unscrew retaining nut

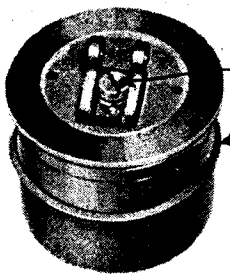



Fig. 6 Thermostat assembly. To disassemble remove trunnion screw

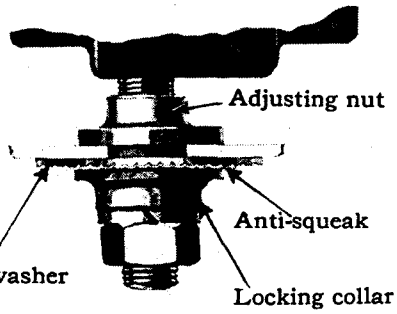



Fig. 9
Radiator support

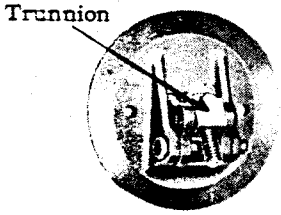



Fig. 7
Thermostat cover assembly

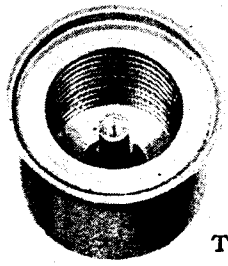


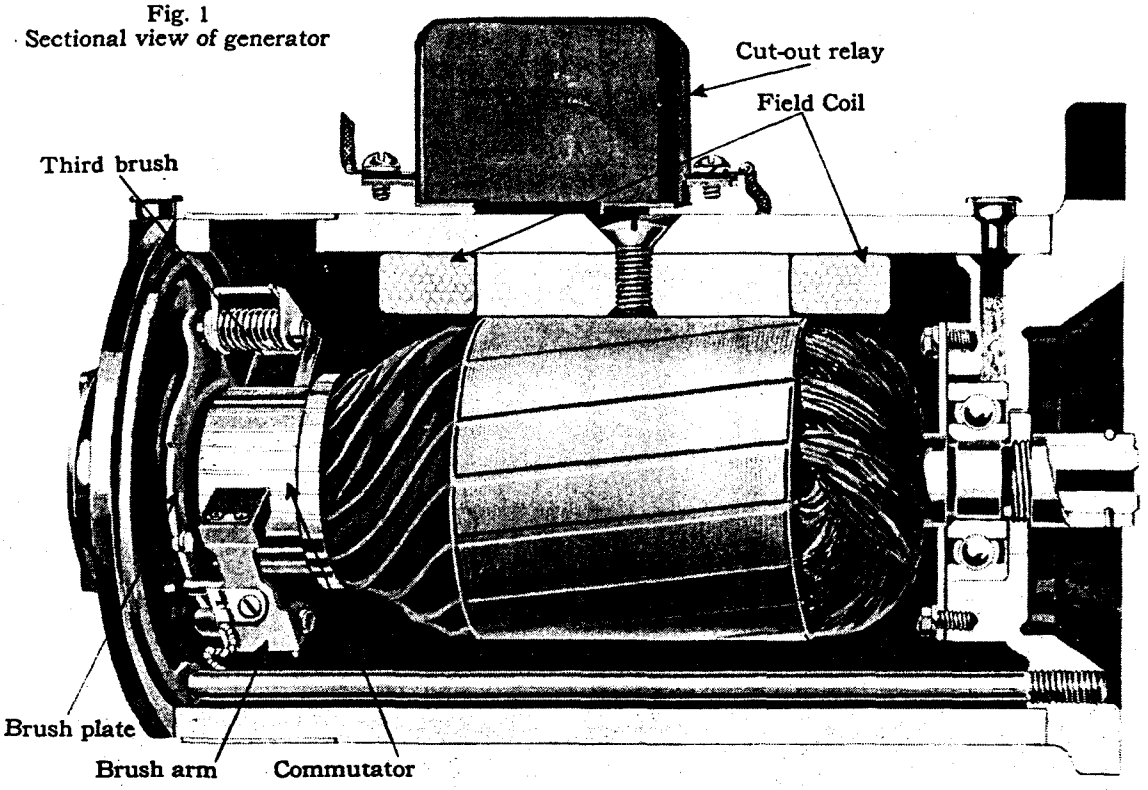
Fig. 8
Thermostat

Plate 23. Cooling System Details.

# Electrical System

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Connections on gasoline tank float unit | A | ... | .... | .... | ..... | See note 1. |
| Stentor phones | A | B | 303 | 328 | ..... | See note 2. |
| STORAGE BATTERY | | | | | | |
| Manufacturer's number | A | B | .... | .... | Exide, 3-LXRV-15-2-G | |
| | ... | ... | 303 | .... | Exide, 3-XC-15-1-G | |
| | ... | ... | .... | 328 | Exide, 3-MXV-15-1 | |
| Capacity, rated | A | B | .... | .... | 130 ampere hours | |
| | ... | ... | 303 | 328 | 100 ampere hours | |
| Capacity, lighting | A | B | .... | .... | 5 amperes for 26 hours | |
| | ... | ... | 303 | 328 | 5 amperes for 20 hours | |
| Capacity, starting | A | B | .... | .... | 137 amperes for 20 minutes | |
| | ... | ... | 303 | 328 | 114 amperes for 20 minutes | |
| Charging rate on bench, start | A | B | .... | .... | 10 amperes | |
| | ... | ... | 303 | 328 | 8 amperes | |
| Charging rate on bench, finish | A | B | 303 | 328 | 4 amperes | |
| Corrosion on terminals | A | B | 303 | 328 | ..... | See Note 3. |
| Number of plates | A | B | 303 | 328 | 15 plates | |
| Specific gravity of battery solution | A | B | 303 | 328 | ..... | See Note 4. |
| Terminal grounded | A | B | 303 | 328 | Positive | |
| Voltage, rated | A | B | 303 | 328 | 6 volts | |
| Water, add to storage battery | A | B | 303 | 328 | ..... | See Note 5. |
| CIRCUIT BREAKER | | | | | | |
| Manufacturer's number | A | B | 303 | 328 | Delco-Remy 5759 | |
| Lockout circuit breaker opens | A | B | 303 | 328 | 25-30 amperes | |
| Vibrating circuit breaker starts | A | B | 303 | 328 | 25-30 amperes | See Note 6. |
| CUT-OUT RELAY | | | | | | |
| Manufacturer's number | A | B | 303 | 328 | Delco-Remy 266N | |
| Air gap between contacts | A | B | 303 | 328 | .015-.025 in. | |
| Air gap between cut-out armature and core | A | B | 303 | 328 | .014-.021 in. | This measurement is made with contacts together. |
| Cut-out closes | A | B | 303 | 328 | At 7.5 volts, approximately | Corresponding armature speed, 420 R P. M.; car speed, 8-10 M. P. H. |
| Cut-out opens | A | B | 303 | 328 | At discharge of 0 to 2.5 amperes | |
| GENERATOR | | | | | | |
| Manufacturer's number | A | B | 303 | 328 | Delco-Remy 384 | |
| ARMATURE | | | | | | |
| Commutator, out of round | A | B | 303 | 328 | Not over .002 in. | |
| End play in ball bearing | A | B | 303 | 328 | Not over .015 in. | |
| Radial (side) play in ball bearing | A | B | 303 | 328 | Not over .004 in. | |
| BRUSHES | | | | | | |
| Tension of brush arm springs | A | B | 303 | 328 | 16-20 oz. | Test with spring scale, Tool number 100242. |
| Charging rate on bench— | | | | | | |
| 700 R. P. M. (cold) | A | B | 303 | 328 | 7 amperes at 7.2-7.4 volts | |
| 1400 R. P. M. (cold) | A | B | 303 | 328 | 18 amperes at 8.2-8.62 volts | |
| 1600 R. P. M. (hot) | A | B | 303 | 328 | 10-12 amperes at 7.3-7.7 volts | |
| Charging rate after thermostat opens | A | B | 303 | 328 | 5-6 amperes, approximately | |

Fig. 1
Sectional view of generator



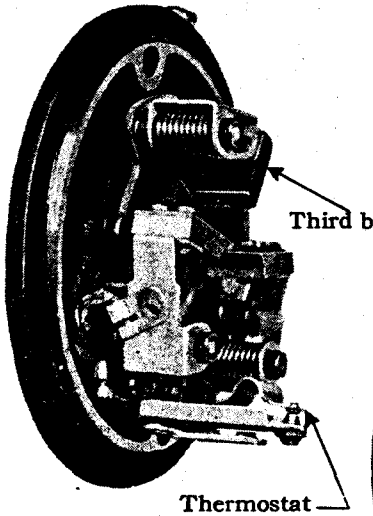




Fig. 3
End-frame of first-type generator showing split-pole type of thermostat

Fig. 2
Adjusting charging rate. Pry against brush arm, not brush. On later-type generator, pry against slot in brush plate

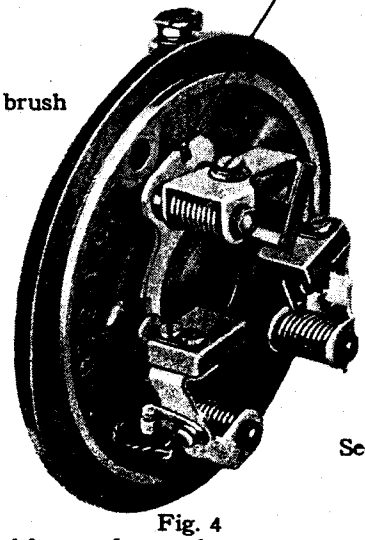
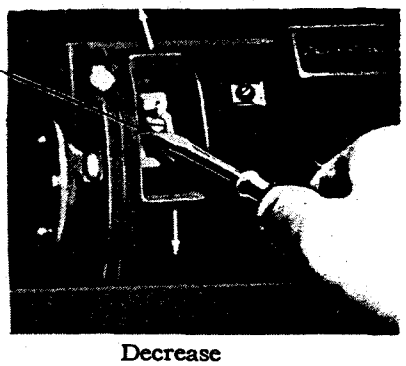


Fig. 4
End-frame of second-type generator. Thermostat on housing instead of end-frame



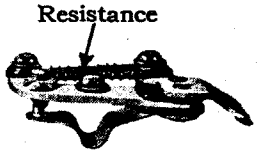




Fig. 5
Second-type thermostat with resistance

Plate 24. Generator Details.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Charging rate on car | A | B | 303 | 328 | 16-18 amperes, maximum (cold) | |
| Current regulation | A | B | 303 | 328 | Third brush (thermostat control) | *Plate 24, Figs. 3, 4, 5* |
| Running engine with storage battery disconnected | A | B | 303 | 328 | | See Note 7 |
| Thermostat control | ... | ... | 303[1] | .... | Split field | Before engine unit 2-10750. |
| | A | B | 303[2] | 328 | Resistance in series with field coils | Beginning with engine unit 2-10750 on 303 cars. See Note 8. |
| Thermostat opens | A | B | 303 | 328 | 175° Fahrenheit | |
| Voltage, rated | A | B | 303 | 328 | 6 volts | |
| HORN | | | | | | |
| Manufacturer's number | ... | ... | 303[1] | .... | Delco-Remy K25 Type C991 | |
| | A | B | 303[2] | .... | Delco-Remy K19 Type 1050 | |
| | ... | ... | .... | 328 | Delco-Remy K19 Type 1053 | |
| ADJUSTMENTS | | | | | | |
| Air gap between armature and field core | ... | ... | 303[1] | .... | .025 in. clearance | Adjust by loosening retaining nut and turning aluminum disc to give proper clearance. *Plate 25, Fig. 1* |
| | A | B | 303[2] | 328 | .025 in. clearance | Adjust by loosening three stud nuts and raising or lowering field coil to give proper clearance. *Plate 25, Fig. 2.* |
| Position of vibrating spring | ... | ... | 303[1] | .... | Horizontal | |
| | A | B | 303[2] | 328 | Slight angle below horizontal | *Plate 25, Figs. 1, 2.* |
| Contact point adjustment | A | B | 303 | 328 | Until proper tone is secured | |
| Current consumption | A | B | 303 | 328 | 7-8 amperes | |
| IGNITION | | | | | | |
| COIL | | | | | | |
| Manufacturer's number | A | B | 303 | 328 | Delco-Remy 2195 | |
| Current consumption | A | B | 303 | 328 | 2 amperes, engine stopped<br>2½ amperes, engine running | |
| DISTRIBUTOR | | | | | | |
| Manufacturer's number | A | ... | 303 | .... | Delco-Remy 4023 | |
| | ... | B | .... | 328 | Delco-Remy 4041 | |
| Angle between contact arms | A | B | 303 | 328 | 135° | See Note 9. |
| Contact point gap | A | B | 303 | 328 | .0225-.0270 in. | |
| Firing order | A | B | 303 | 328 | 1L, 4R, 4L, 2L, 3R, 3L, 2R, 1R. | |
| Side play in ball bearing | A | B | 303 | 328 | Worn limit, not over .003 in. | |
| Spark advance, automatic | A | ... | 303 | .... | 32° | |
| | ... | B | .... | 328 | 21° | |
| Spark advance, manual | A | B | 303 | 328 | 38° | |
| Tension of contact arm springs | A | B | 303 | 328 | 16-20 oz. | Measure with spring scale, Tool 100242. *Plate 27, Fig. 1.* |
| Timing, low-compression cylinder heads | A | B | 303 | 328 | ⅛ in. ahead of center, manual control advanced | See Note 10. |
| Timing, high compression heads | A | ... | 303 | .... | ½ in. ahead of center, manual control advanced | |
| | ... | B | .... | 328 | ⅛ in. ahead of center, manual control advaned | |
| SPARK PLUGS | | | | | | |
| Coated with Duco | A | B | 303 | 328 | | Clean plugs with alcohol or Duco thinner |
| Gap | A | B | 303 | 328 | .025-.028 in. | |
| Type | A | B | 303 | 328 | A. C. Type Y | |

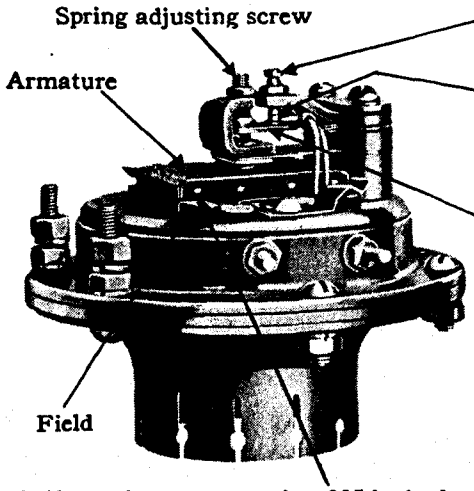
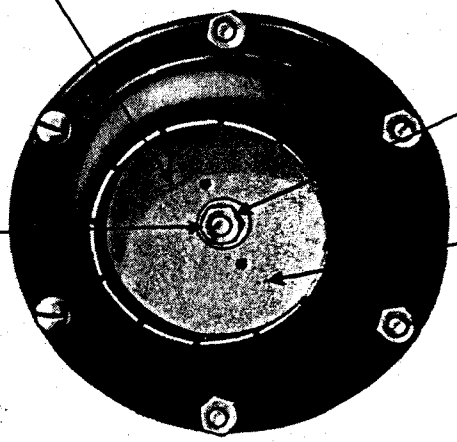



Fig. 1
Delco-Remy horn.
Type K-25-C991 used on LaSalle 303, first type



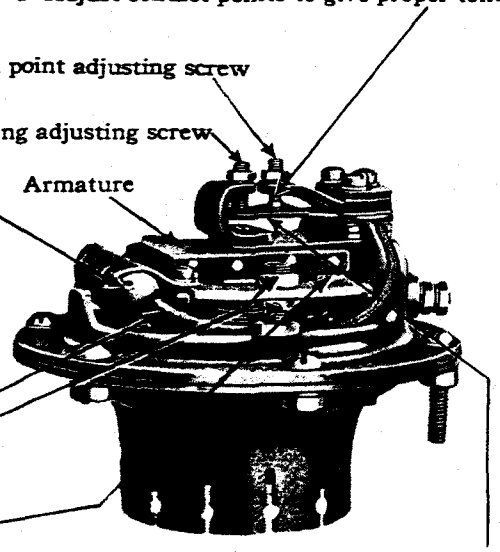




Fig. 2
Delco-Remy horn.
Type K-19-1050 used on Cadillac 341-A and B and LaSalle 303 second type.
Type K-19-1053 used on LaSalle 328.
(The same adjustments are applicable to both types)

Plate 25. Horn adjustments.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specificatons | Remarks |
|---|---|---|---|---|---|---|
| STARTING MOTOR | | | | | | |
| *Manufacturer's number* | A | B | .... | .... | Delco-Remy 382 | |
| | ... | ... | 303 | 328 | Delco-Remy 725-C. | |
| ARMATURE | | | | | | |
| Clearance between armature shaft and bearings | A | B | 303 | 328 | Worn limit, not over .010 in. | |
| Clutch spring, free length | A[1] | ... | 303[1] | .... | 2 in., approximately | Before engine number 312924 on 341-A cars and 219923 on 303 cars. |
| | A[2] | B | 303[2] | 328 | 2¼ in., approximately | Beginning with engine number 312924 on 341-A cars and 219923 on 303 cars. |
| Clutch spring, compression | A[1] | ... | 303[1] | .... | 34—38 lbs. at 1 in. | Before engine number 312924 on 341-A. cars and 219923 on 303 cars. |
| | A[2] | B | 303[2] | 328 | 46—52 lbs. at 1 in | Beginning with engine number 312924 on 341-A cars and 219923 on 303 cars. |
| Commutator, out of round | A | B | 303 | 328 | Worn limit, not over .002 in. | |
| End play | A | B | 303 | 328 | Worn limit, not over .025 in. | |
| BRUSHES | | | | | | |
| Number of brushes | A | B | .... | .... | 6 | |
| | ... | ... | 303 | 328 | 4 | |
| Tension of brush arm springs | A | B | .... | .... | 36-40 oz. | Test with spring scale, Tool 100242. |
| | ... | ... | 303 | 328 | 24-28 oz. | |
| Gear ratio | A | B | 303 | 328 | 12 to 1 | Ratio between starter gear and fly-wheel gear. |
| Number of poles | A | B | .... | .... | 6 | |
| | ... | ... | 303 | 328 | 4 | |

**1. Arrangement of Units in Circuit Diagrams.**

The positions of the units and wires in the circuit diagrams do not always correspond to their location on the car.

For instance, the float unit of the gasoline gauge is shown in the center of the 341-A Cadillac diagram (Plate 32). When looking at the float unit from the rear of the car the green wire is connected to the right terminal, which is terminal No. 2, and the black wire to the left terminal, which is terminal No. 1.

On the diagram, however, terminal No. 1 is on the right and terminal No. 2 on the left, which makes it appear that the unit is upside down. This was done so that the wires to the float unit would not have to be crossed in the diagram. As the terminals on the car are marked with the proper numbers no difficulty should arise in properly connecting the gasoline gauge.

**2. Stentor Phone Replacement.**

The stentor phones in the Imperial and the Fleetwood Town Cars are matched and installed in pairs. Therefore, if the original transmitter and receiver are not kept together the operation of the phone is likely to prove unsatisfactory.

If the signals are weak when it is known that the set is properly matched, the connections should be carefully checked for looseness and the wiring tested out for possible shorts caused by staples and tacks. If, however, replacement is found to be necessary both the transmitter and receiver should be replaced.

**3. Corrosion on Terminals**

See that the terminals are clean and free from corrosion. The terminals and battery posts should be wiped with a cloth saturated with household ammonia or a solution of water and bicarbonate of soda (cooking soda). These solutions will neutralize any acid that may be present on the parts to be cleaned. Therefore, do not allow any of the solution to get into the cells of the battery.

After the parts are cleaned they should be given a heavy coat of vaseline or heavy grease.

**4. Specific Gravity of Battery Solution**

Test the specific gravity of the battery solution with a hydrometer.

The specific gravity of a fully charged battery is 1.270 to 1.290 at 60° F. A fully discharged battery has a specific gravity of 1.150 to 1.170 and should be removed from the car for charging.

If the gravity of the battery solution is below 1.250 investigate, if possible, to determine whether or not there has been a recent temporary abnormal demand for current, such as excessive use of the lights or starter. If the low gravity is the result of a temporary abnormal demand, it is possible that the charging rate will be sufficient as it is to bring up the gravity. If the gravity is below 1.250 and there is no evidence of a temporary excessive demand for current, the charging rate should be observed and if low the necessary steps should be taken to increase it.

In any case if the gravity is below 1.225 the battery should be removed and charged.

If any battery solution has been spilled or leaked from the cell it should be replaced with a freshly mixed solution and the battery given an over-charge by charging it from an outside source.

CAUTION: In mixing the acid solution be sure to pour the acid slowly into the water. *Do not pour the water into the chemically pure acid.*

**5. Adding Water to Storage Battery**

In winter it is sufficient to inspect the level of the battery solution every 1000 miles when the car is lubricated. In summer, however, the battery solution should be inspected every 500 miles or at least every two weeks. Enough water should be added to keep the level of the solution above the tops of the plates and even with the bottom of the filling tubes.

Water for filling the battery must be pure. Distilled water, melted artificial ice or fresh rain water are suitable for this purpose. Do not use water that has come in contact with any metal.

**6. Adjustment of Circuit Breaker**

The circuit breaker is of the lock-out and vibrating type, the same as on previous cars. The lock-out side protects the horn, inspection lamp, dome lamp, quarter lamps, stop lamp, step lamps and cigar lighter. In case of a ground in any of these circuits, the breaker opens and remains open until the ground is removed.

The remaining lamps including the headlamps are protected by the vibrating circuit breaker. In case of a ground in any of the circuits protected by the vibrating circuit breaker, the breaker will start to vibrate and will continue until the ground is removed.

When 32 candle power bulbs are used in the headlamps the initial rush of the current when the lamps are first turned on sometimes causes the circuit breaker to vibrate a few times. This is only a temporary overload and should not necessitate any adjustments on the circuit breaker.

**7. Running Engine with Storage Battery Disconnected**

Serious damage will be done to the generator if the engine is run with the battery disconnected unless the generator terminal is grounded. This can be done by using a short wire attached at one end to the front terminal of the cut-out relay and at the other end fastened under one of the cut-out hold-down screws.

**8. Generator Thermostat Control**

Before engine unit 2-10750 on 303 cars, the generator is of the split-field type, thermostatically controlled. One of the field coils is connected between the third brush and one of the main brushes in the usual manner. The other field coil is connected between the two main brushes and the thermostat is in series with this field. The function of the thermostat is to disconnect this field from the ground as soon as the generator reaches the temperature of 175°F.

Before the thermostat operates, both fields are in use and the out-put of the generator is correspondingly higher. When, as a result of the combined heat of the generator and the engine, the temperature reaches the predetermined point, the thermostat cuts out the field to which it is connected and the generator out-put is reduced.

Beginning with engine unit 2-10750 on 303 cars, both field coils are in series with the thermostat which in turn is in parallel with a resistance. When the thermostat operates, the entire field current is shunted through this resistance with a corresponding reduction of current out-put.

**9. Contact Point Adjustment**

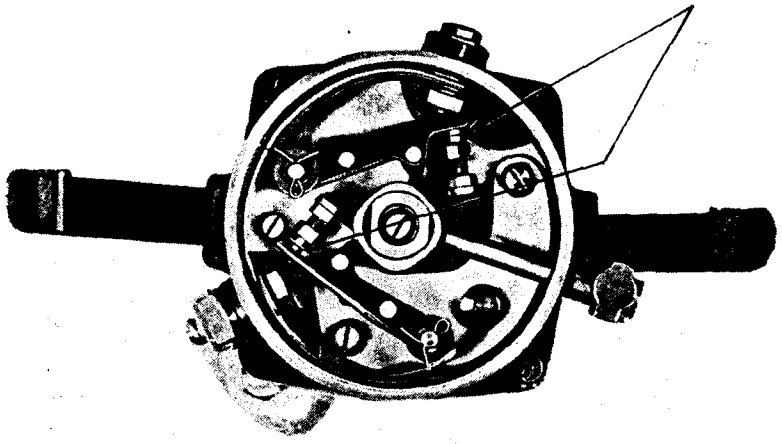
There are two sets of contact points, one for the odd-numbered cylinders (1-3-5-7), the others for the even-numbered cylinders (2-4-6-8). The contact arm for the odd-numbered cylinders is mounted on a stationary plate and the ignition for these cylinders is timed by adjusting the cam. The contact arm for the even-numbered cylinders is at an angle of 135° from the other arm and is mounted on a plate which is adjustable for timing these cylinders. The complete timing operation should include both adjustments.

**10. Timing Marks**

A few early 303 cars have the IG/A mark stamped $1\frac{1}{16}$ inch ahead of dead center instead of $\frac{7}{8}$ inch. On these cars the IG/A marks should be disregarded and the timing should be set $\frac{7}{8}$ inch ahead of the dead-center marks.

Fig. 1
Top view with head and rotor removed

Contact point gap. Adjust to .025 inch for ordinary work; not less than .020 inch for high speeds



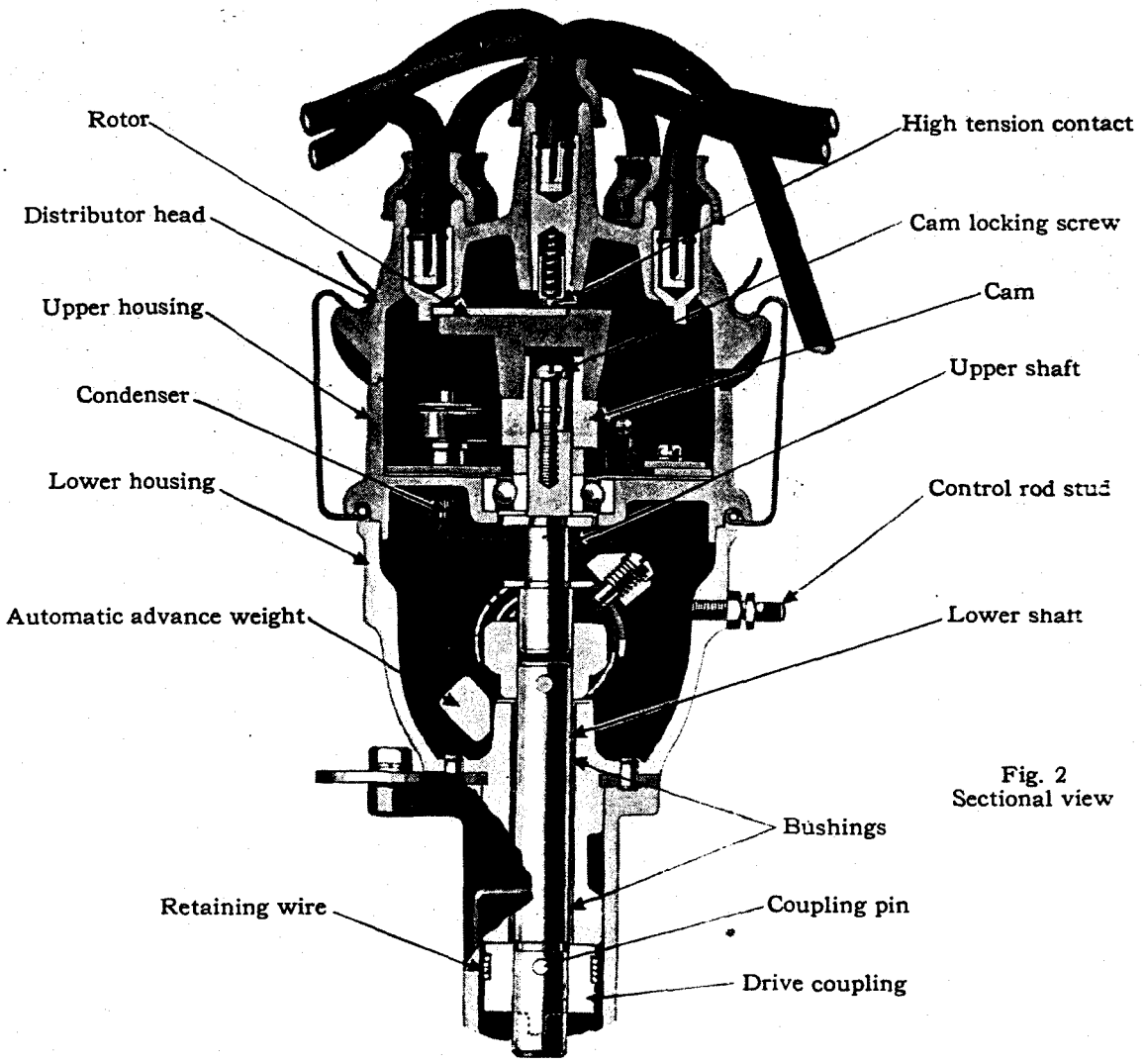



Fig. 2
Sectional view

Plate 26: Sectional and Top Views of Distributor.

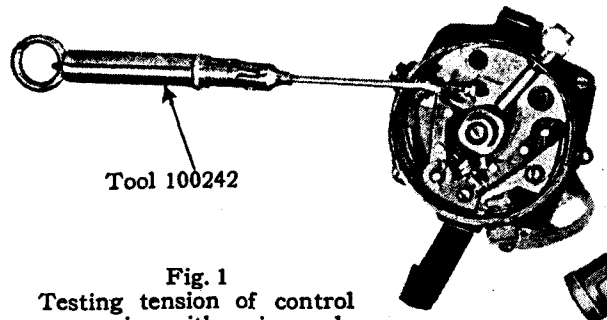



Fig. 1
Testing tension of control arm spring with spring scale

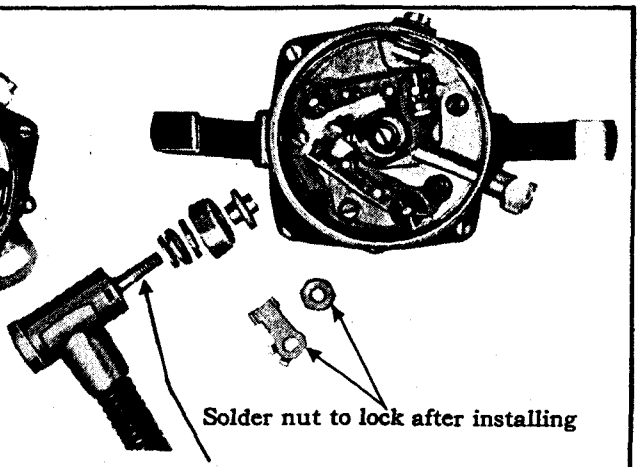
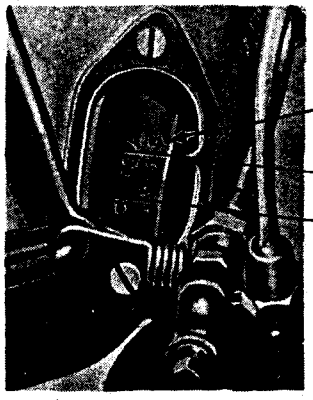



Fig. 2
Showing attachment of electrolock to distributor on Cadillac 341-A and LaSalle 303

Fig. 3




Note: With high-compression cylinder heads on Cadillac 341-A and LaSalle 303, time ignition 1/2-inch ahead of center

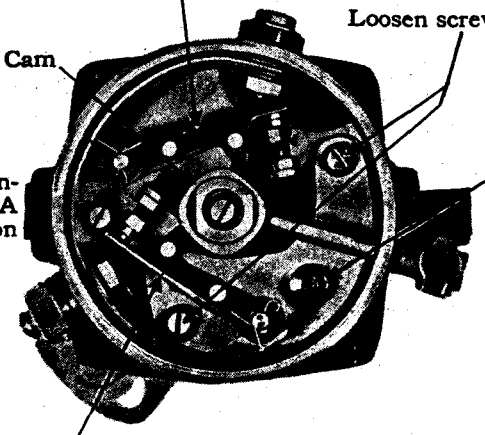



Fig. 4

Note:
Time ignition with hand control lever fully advanced

Fig. 5

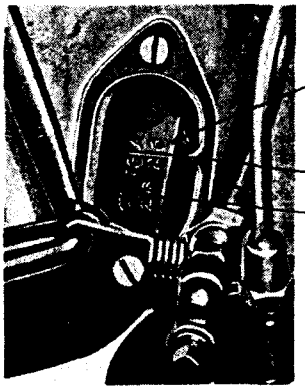



Fig. 6

Plate 27. Ignition Timing.

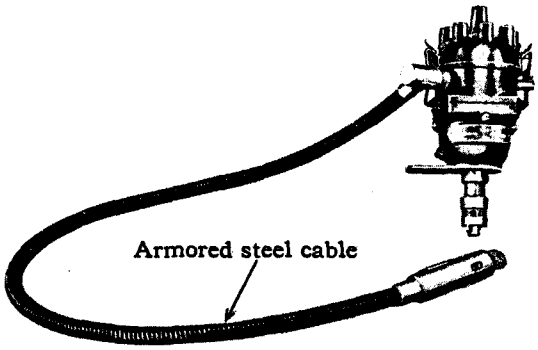



Fig. 1
Electrolock used on Cadillac 341-A and LaSalle 303
For service on distributor, remove Electrolock with distributor or use fixture shown in Plate 27, Fig. 6

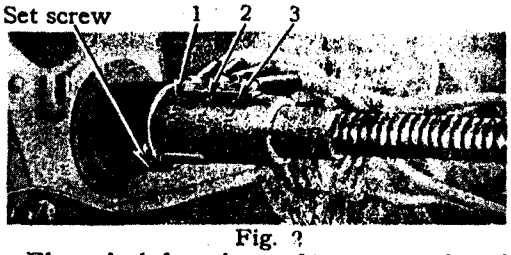



Fig. 2
Electrolock from front of instrument board.
To remove, unlock and take out set screw

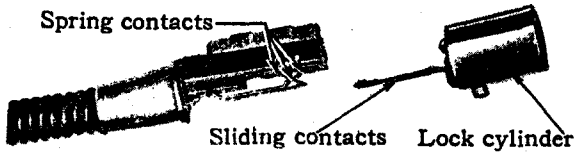



Fig. 3
Electrolock switch with casing and cylinder removed

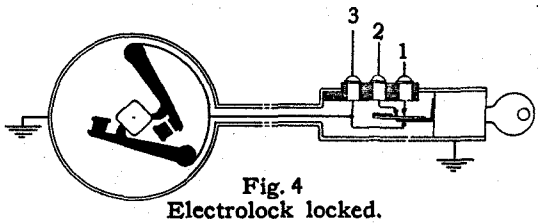



Fig. 4
Electrolock locked.
No current flowing to coil.
Coil and distributor grounded

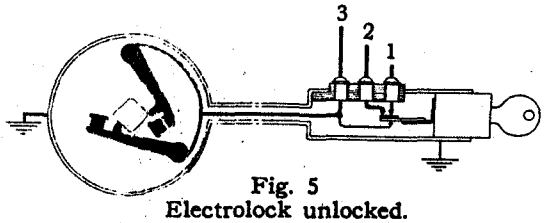



Fig. 5
Electrolock unlocked.
Terminals 1 and 2 connected by contact on slide. Heavy line indicates flow of current

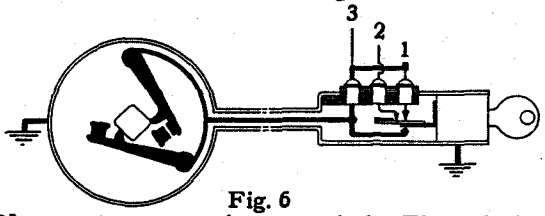



Fig. 6
Never attempt to wire around the Electrolock
A "jumper" between terminals 1 and 3 will cause a short, damaging both switch and distributor

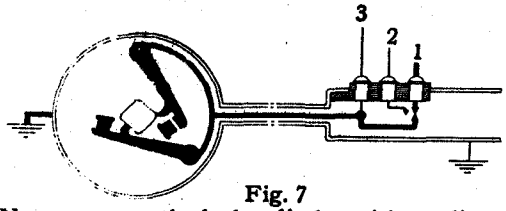



Fig. 7
Never remove the lock cylinder without disconecting the feed wire. No. 1 contact will touch the lower contact and short through the distributor

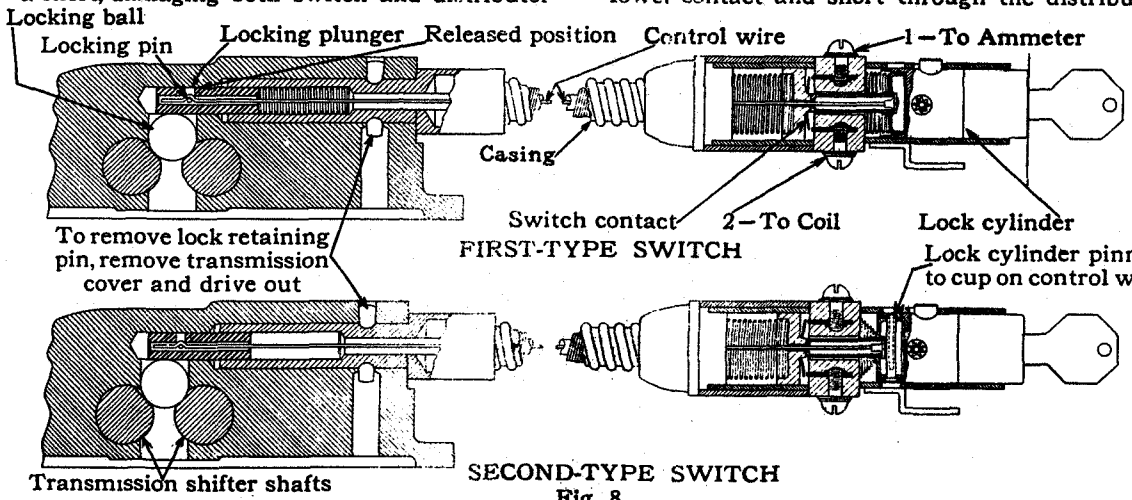



Fig. 8
Transmission lock and ignition switch on Cadillac 341-B and LaSalle 328

## Plate 28. Electrolock and dual ignition and transmission lock.

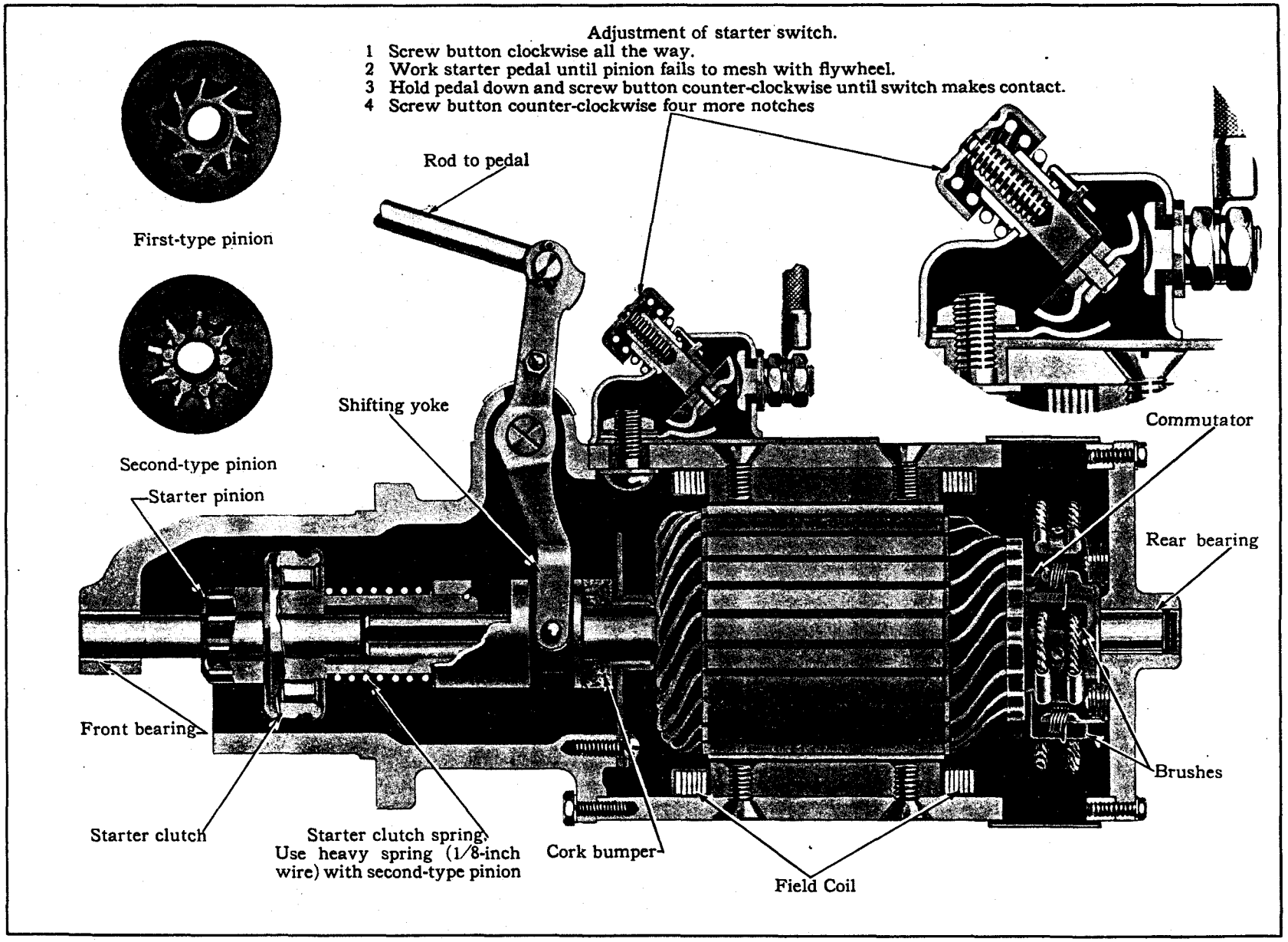



Plate 29. Starting motor details.

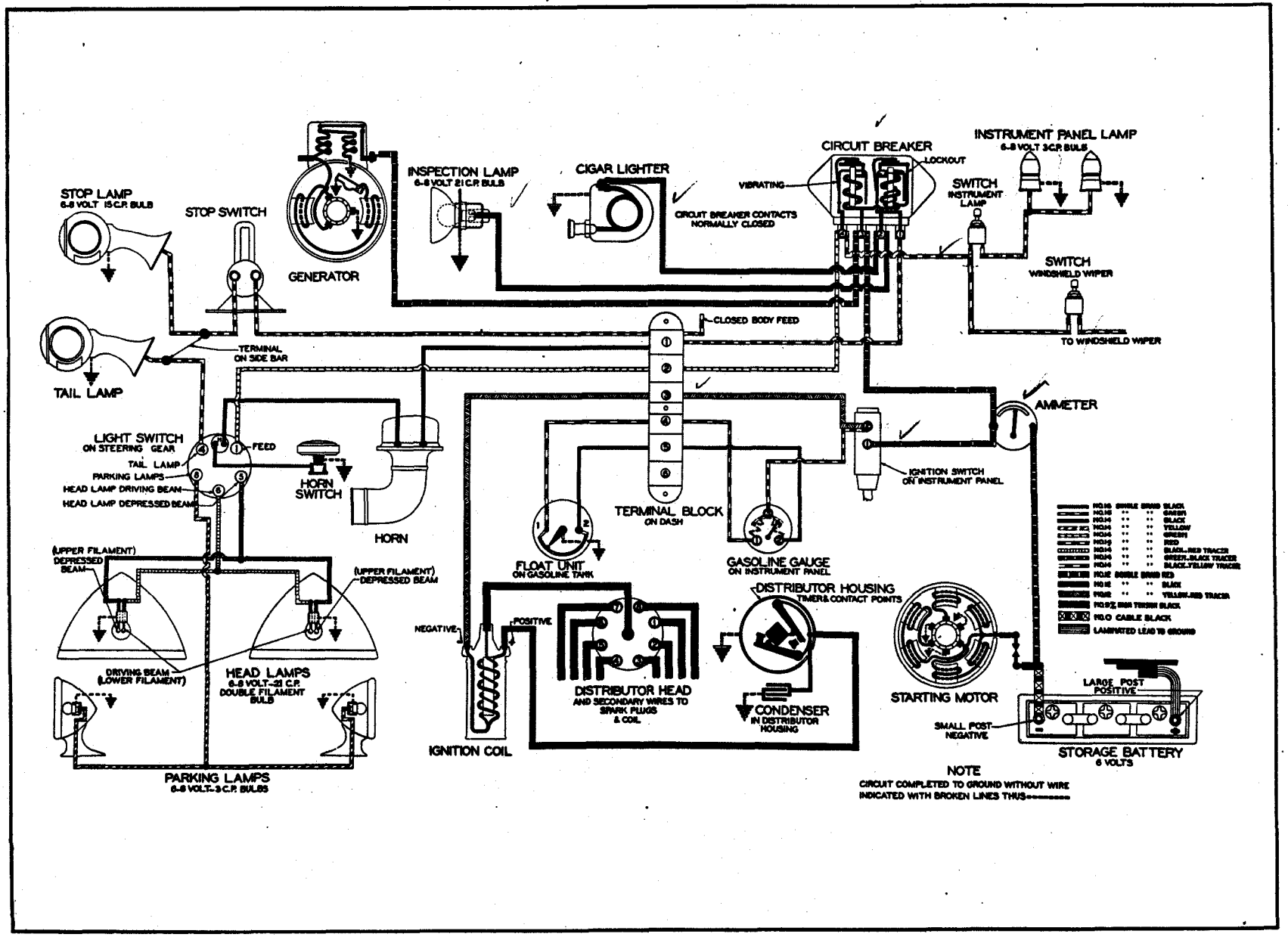



Plate 30. Circuit diagram, Cadillac 341-B.

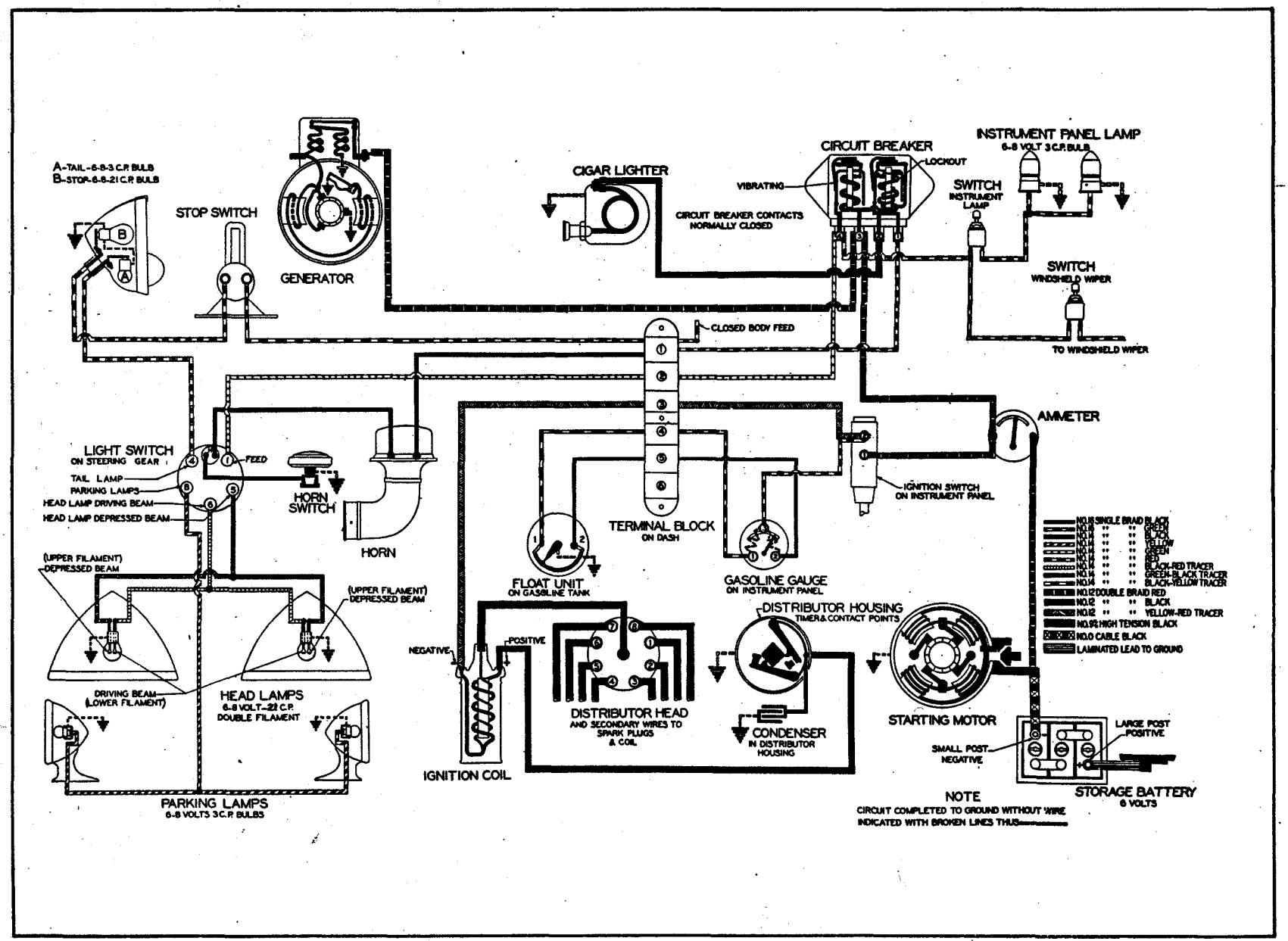



Plate 31. Circuit diagram, La Salle 328.

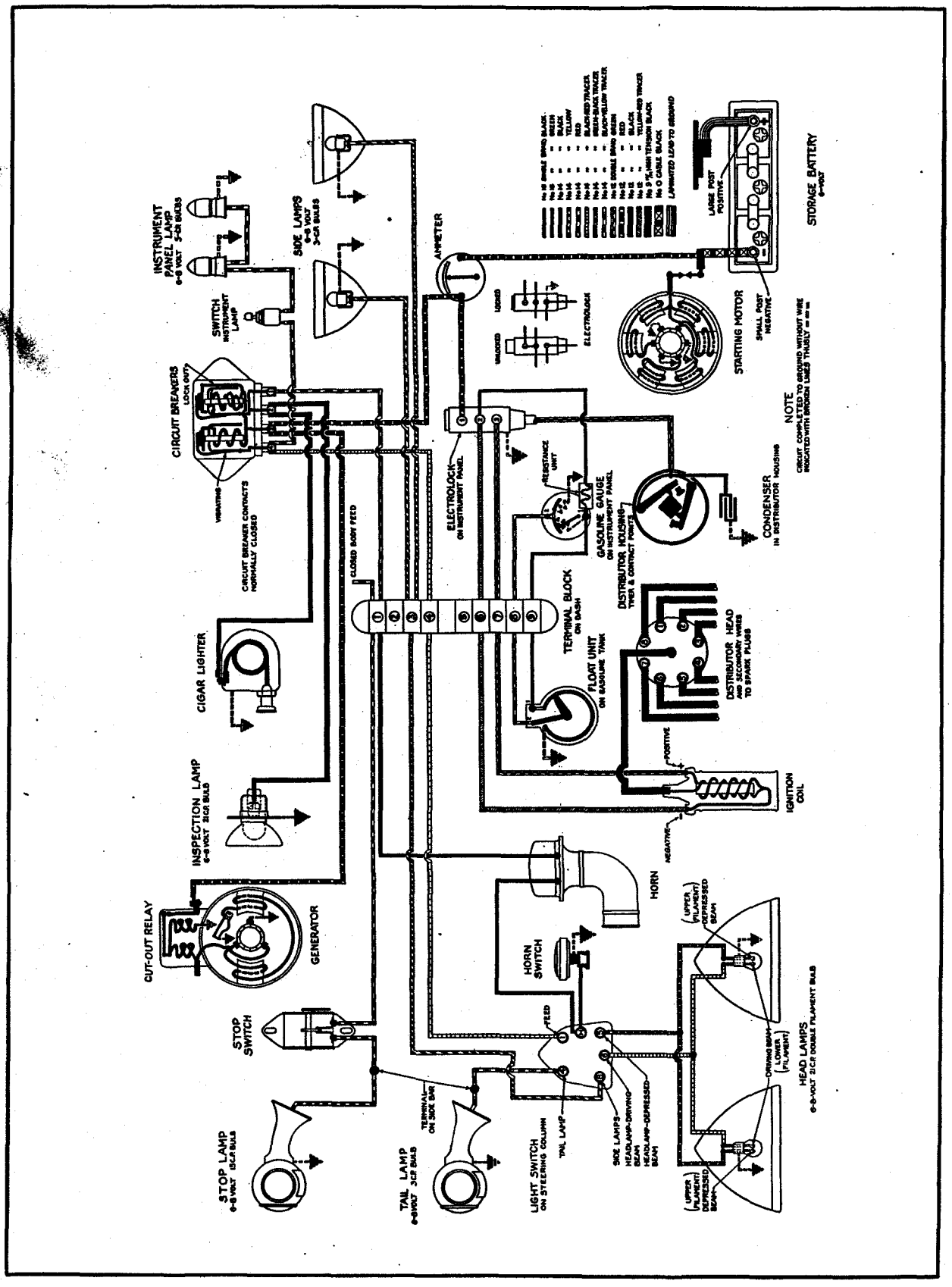



**Plate 32. Circuit diagram, Cadillac 341-A.**

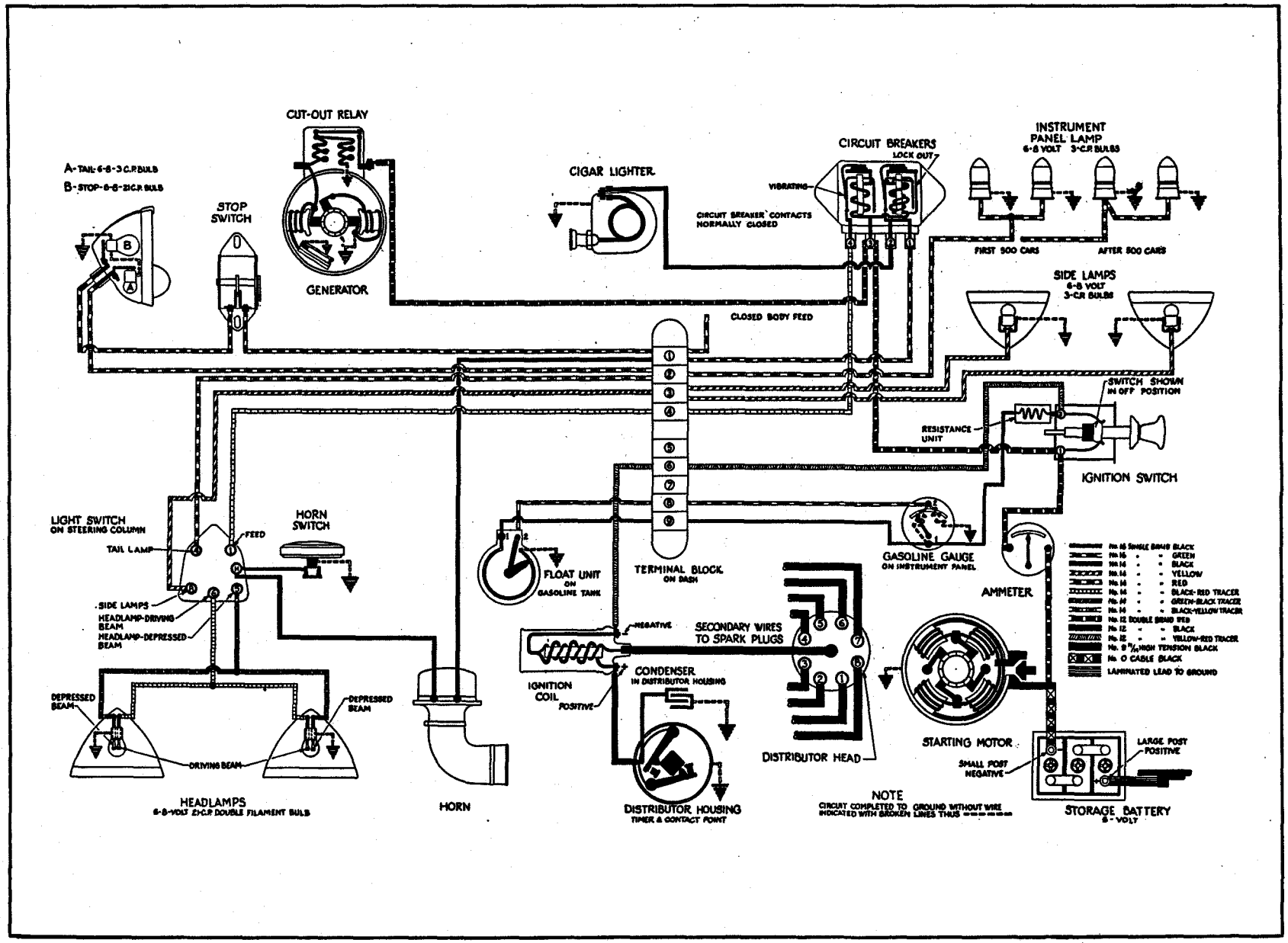



Plate 33. Circuit diagram, La Salle 303—first type.

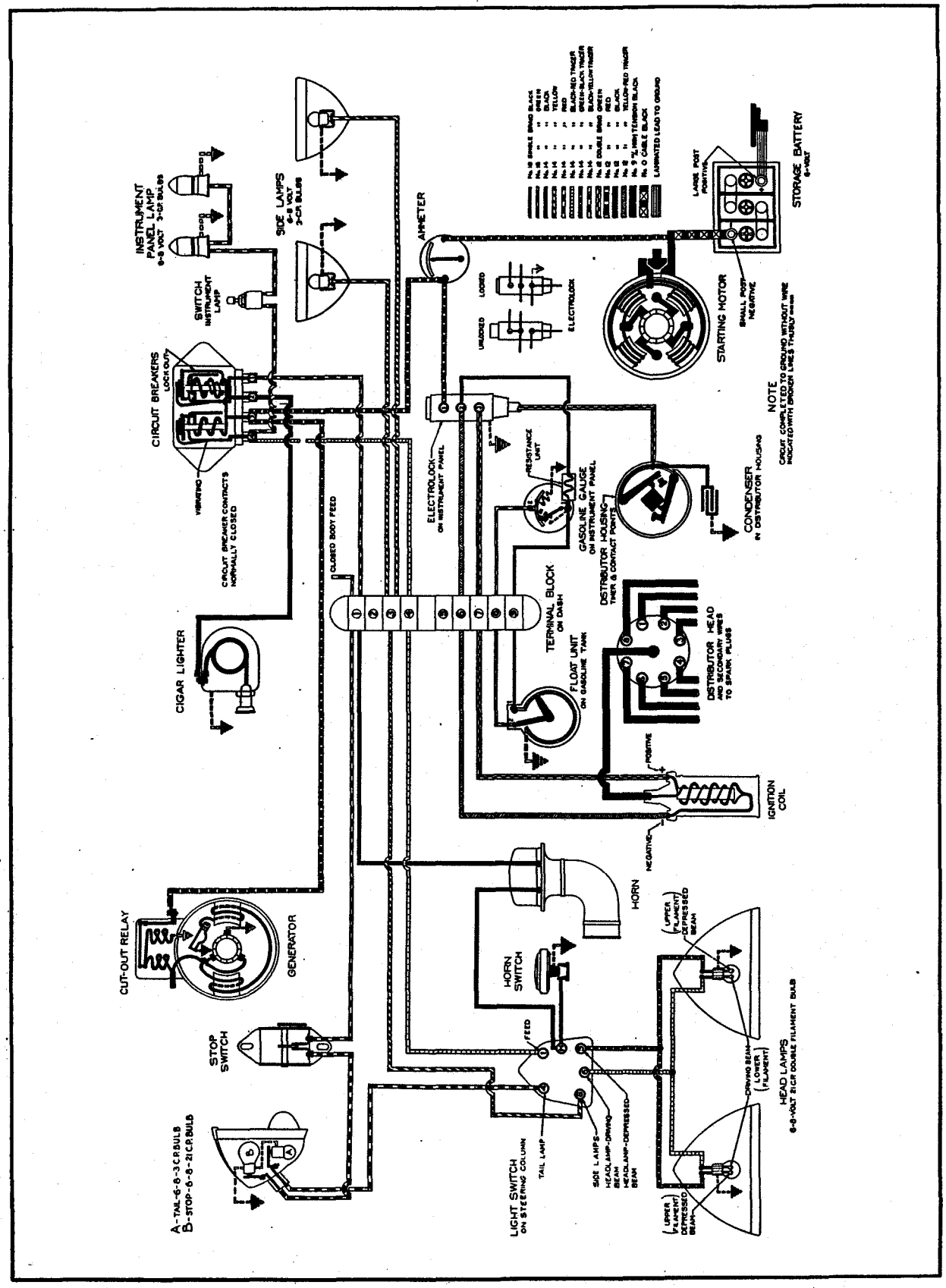



Plate 34. Circuit diagram, La Salle 303—second type.

# Engine

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Bore | A | B | .... | .... | 3 1/16 in. | |
| | ... | ... | 303 | .... | 3 1/8 in. | |
| | ... | ... | .... | 328 | 3 1/4 in. | |
| Compression— | | | | | | |
| Average compression pressure, low-compression cylinder heads | A | B | 303 | 328 | 90-92 lbs. per sq. in. at 1000 R. P. M. | At the elevation of Detroit. |
| Average compression pressure, high-compression cylinder heads | A | B | 303 | 328 | 105-107 lbs. per sq. in. at 1000 R. P. M. | |
| Ratio, low-compression cylinder heads | A | B | 303 | 328 | 4.8 to 1 | Low-compression cylinder heads are standard on 341-A and 303 cars. High-compression cylinder heads are standard on 341-B and 328 cars. |
| Ratio, high-compression cylinder heads | A | B | 303 | 328 | 5.3 to 1 | |
| Identification marks— | | | | | | |
| Low-compression cylinder heads | A | ... | 303 | .... | No characteristic marks. | |
| High-compression cylinder heads | A | B | 303 | .... | "HC-53" | |
| | ... | ... | .... | 328 | "HC-53" "328" at lower edge of head | 5.3 to 1 compression ratio. |
| Horsepower, rated | A | B | .... | .... | 35.0 | |
| | ... | ... | 303 | .... | 31.2 | |
| | ... | ... | .... | 328 | 33.8 | |
| Piston displacement | A | B | .... | .... | 341 cu. in. | |
| | ... | ... | 303 | .... | 303 cu. in | |
| | ... | ... | .... | 328 | 328 cu. in. | |
| Stroke | A | B | 303 | 328 | 4 1/16 in. | |
| CAMSHAFT | | | | | | |
| Bearing clearance | A | B | 303 | 328 | New limits, .0027 to .0037 in. Worn limit, not over .005 in. | |
| Bearings, out of round | A | B | 303 | 328 | Not over .005 in. | |
| End-play in camshaft | A | B | 303 | 328 | New limits, .005 to .015 in. Worn limit, not over .020 in. | |
| CHAINS | | | | | | |
| CAMSHAFT CHAIN | | | | | | |
| Adjustment | A | B | 303 | 328 | Not adjustable | |
| No. of links | A | B | 303 | 328 | 54 | |
| Pitch | A | B | 303 | 328 | 1/2 in. | |
| Type | A[1] | ... | 303[1] | .... | 645 | Before engine unit 3-10155 on 341-A cars and 2-17156 on 303 cars. |
| | A[2] | B | 303[2] | 328 | B-45 | Beginning with engine unit 3-10155 on 341-A cars and 2-17156 on 303 cars. |
| Width | A | B | 303 | 328 | 1 3/4 in. | |
| GENERATOR AND WATER PUMP CHAIN | | | | | | |
| Adjustment | A | B | 303 | 328 | 1/8 in. measured at top of sprocket housing | See Note 3 in Cooling System Group, Page 43. *Plate 36, Fig. 3.* |
| No. of links | A | B | 303 | 328 | 57 | |
| Pitch | A | B | 303 | 328 | 1/2 in. | |
| Type | A | B | 303 | 328 | B-45 | |

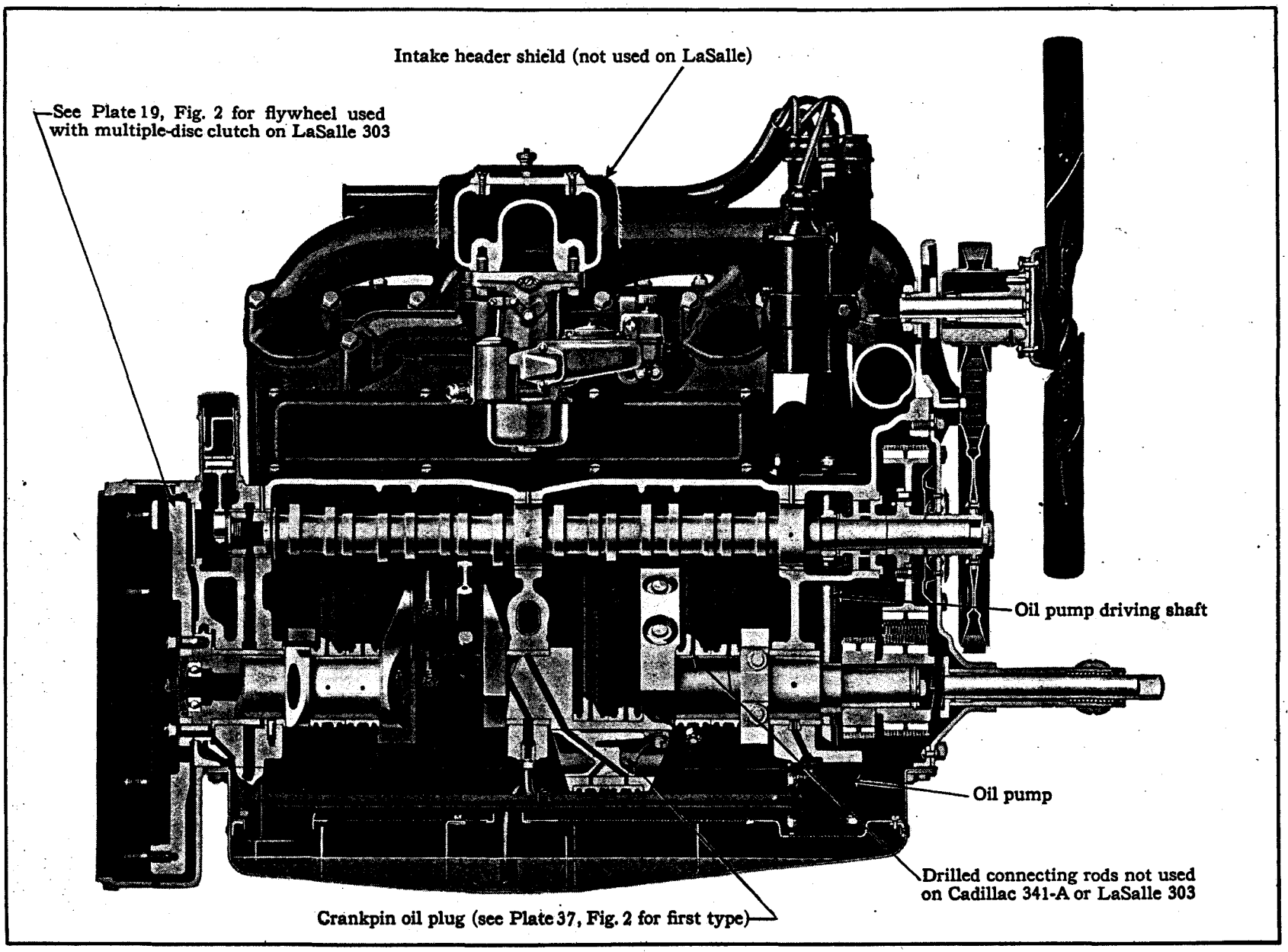



Plate 35. Sectional view of engine.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Width | A | B | 303 | 328 | 1¼ in. | |
| **CONNECTING RODS** | | | | | | |
| Alignment | A | B | 303 | 328 | | See Note 1. |
| Assembly | A | B | 303 | 328 | | See Note 2. |
| Center to center length | ... | ... | 303[1] | .... | 10 in. | Before engine unit 2-13001. |
| | A | B | 303[2] | 328 | 10½ in. | Beginning with engine unit 2-13001 on 303 cars. |
| Clearance between bushing and piston pin | A | B | 303 | 328 | | See note 6. |
| Clearance between lower bearing and crankpin | A | B | 303 | 328 | New limits, .001 to .0025 in. Worn limit, not over .006 in. | See note 3. |
| End-play of lower bearing | A | B | 303 | 328 | New limits, .008 to .012 in. Worn limit, not over .015 in. | |
| **CRANKSHAFT AND MAIN BEARINGS** | | | | | | |
| Crankpin diameter | A | B | 303 | 328 | 2⅜ in. | |
| Crankpin journals, out of round | A | B | 303 | 328 | New limit, .0002 in. Worn limit, not over .004 in. | |
| End play of crankshaft | A | B | 303 | 328 | New limits, .002 to .004 in. Worn limits not over .010 in. | |
| Length of crankshaft, over all | A | B | 303 | 328 | 28¼ in. | |
| Length of crankshaft, front to rear bearing, inclusive | A | B | 303 | 328 | 23 11/32 in. | |
| Main bearing clearance | A | B | 303 | 328 | New limits, .001 to .002 in. Worn limit, not over .004 in. | See note 4. |
| Main bearing journals, diameter | A | B | 303 | 328 | 2⅜ in. | |
| Main bearing, out of round | A | B | 303 | 328 | New limit, .0002 in. Worn limit, not over .005 in. | |
| **ENGINE LUBRICATION** | | | | | | |
| Crankcase oil capacity | A | B | 303 | 328 | | See capacities in Lubrication Table, Page 83. |
| Thinning lubricant with kerosene | A | B | 303 | 328 | | See Lubrication Table, Page 83. |
| **OIL FILTER** | | | | | | |
| Cartridge, replacement of | A | B | 303 | 328 | 12,000 miles | Oil pan and screen should also be removed and cleaned. |
| Cartridge, type | A | B | 303 | 328 | A. C. Type B-3 | |
| Valve spring, compression | A | ... | 303 | .... | 6 ozs. at 5/8 in. | If spring is weak, correct by stretching to 11/16—23/32 in. A few later cars do not have the check valve. |
| **OIL PUMP** | | | | | | |
| Backlash between spiral drive gears | A | B | 303 | 328 | Not over .018 in. | |
| Clearance between bushing and drive shaft | A | B | 303 | 328 | New limits, .001—.0025 in. Worn limit, not over .010 in. | |
| Clearance between bushing in idler gear and shaft | A | B | 303 | 328 | New limits, .001—.0025 in. Worn limit, not over .005 in. | |
| Clearance between outside diameter of gears and pump body | A | B | 303 | 328 | New limits, .003—.005 in. Worn limit, not over .008 in. | |
| End play in pump gears | A | B | 303 | 328 | New limits, .004—.009 in. Worn limit, not over .020 in. | |

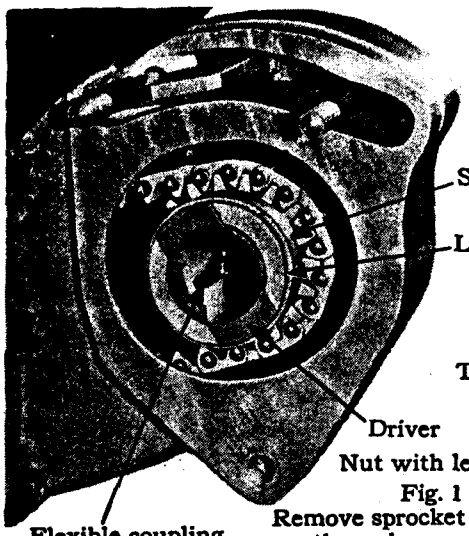



Fig. 1
Remove sprocket and driver through rear opening

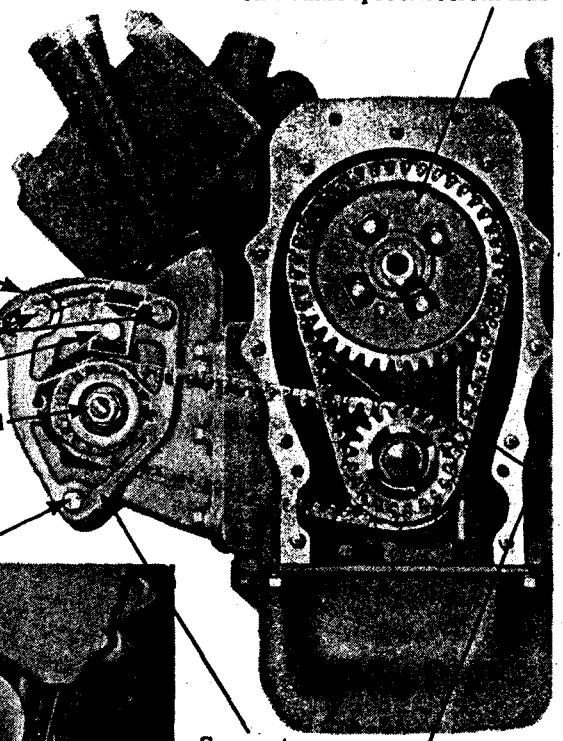



Fig. 3
Front end chains

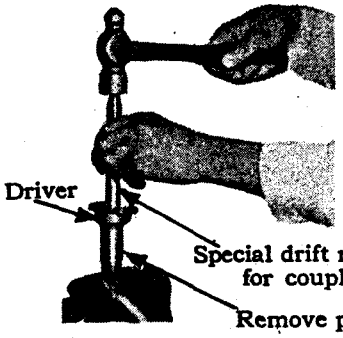
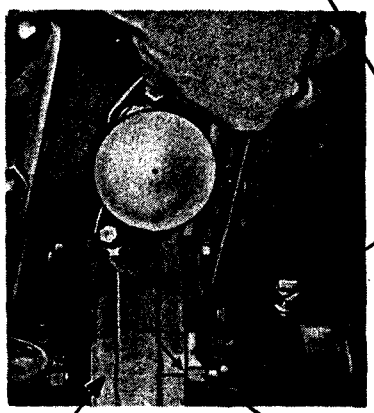



Fig. 2
Removing shaft and flexible couplings from driver



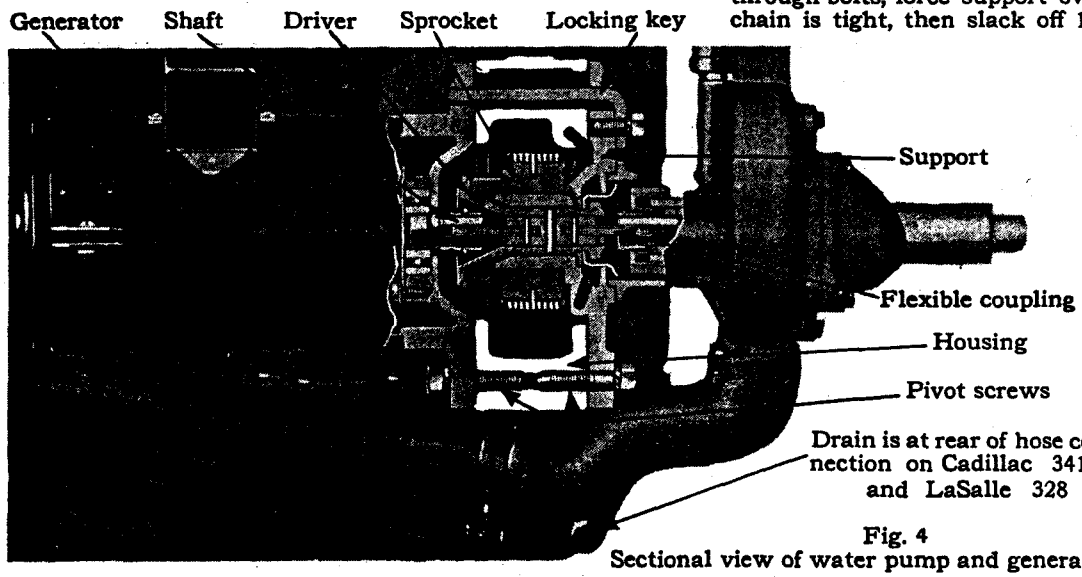




Fig. 4
Sectional view of water pump and generator drive

**Plate 36. Water pump and generator drive.**

| Subject | Cadillac 341 | | LaSalle 303 | LaSalle 328 | Specifications | Remarks |
|---|---|---|---|---|---|---|
| End play in spiral drive gear | A | B | 303 | 328 | New limits, .005—.015 in.<br>Worn limit, not over .020 in. | |
| Thickness of pump cover gasket | A | B | 303 | 328 | .009—.011 in. | |
| PRESSURE REGULATOR | | | | | | |
| Adjustment | A[1] | ... | 303[1] | .... | By-pass adjusting screw | Before engine unit 3-10979 on 341-A cars and 2-17542 on 303 cars. |
| | A[2] | B | 303 | 328 | No adjustment necessary | Beginning with engine unit 3-10979 on 341-A cars and 2-17542 on 303 cars. |
| Clearance between plunger and housing | A | B | 303 | 328 | New limits, .003—.006 in.<br>Worn limit, not over .008 in. | |
| Normal pressure | A | B | 303 | 328 | 5-10 lbs. at idling speed | |
| Plunger valve opens | A | B | 303 | 328 | 20 lbs. | |
| Spring, free length | A | B | 303 | 328 | 1¾ in. | |
| Spring, compression | A | B | 303 | 328 | 2 lb. at 1 1/16 in. | |
| PISTONS AND CYLINDERS | | | | | | |
| Cylinder bore, out of round | A | B | 303 | 328 | New limit, .0005 in.<br>Worn limit, not over .002 in. | |
| Piston, out of round | A | B | 303 | 328 | New limit, .0005 in.<br>Worn limit, not over .002in. | |
| Piston clearance at top land | A | B | 303 | 328 | .015 in. minimum | |
| Piston clearance at skirt | ... | ... | 303 | .... | New limit, .0025 in. | See note 5. |
| | A | B | .... | 328 | New limit, .003 in. | See note 5. |
| Limits on cylinder bore, standard | A | B | .... | .... | 3.3125—3.3145 in. | The four bores of the same cylinder block are held within .0005 in. of each other. |
| | ... | ... | 303 | .... | 3.125—3.127 in. | The four bores of the same cylinder block are held within .0005 in. of each other. |
| | ... | ... | .... | 328 | 3.2500—3.2520 in. | The four bores of the same cylinder block are held within .0005 in. of each other. |
| Limits on cylinder bore | A | B | 303 | 328 | ..... | Oversize Cylinders are honed to fit the pistons with which they are supplied. |
| Limits on pistons— | | | | | | |
| Standard No. 1 | A | B | .... | .... | 3.309—3.3095 in. | |
| No. 2 | A | B | .... | .... | 3.3095—3.310 in. | Marked U1, U2, U3 and U4, respectively. |
| No. 3 | A | B | .... | .... | 3.310—3.3105 in. | Marked U1, U2, U3 and U4, respectively. |
| No. 4 | A | B | .... | .... | 3.3105—3.311 in. | Marked U1, U2, U3 and U4, respectively. |
| Standard No. 1 | ... | ... | 303 | .... | 3.1222—3.1227 in. | |
| No. 2 | ... | ... | 303 | .... | 3.1227—3.1232 in. | |
| No. 3 | ... | ... | 303 | .... | 3.1232—3.1237 in. | |
| No. 4 | ... | ... | 303 | .... | 3.1237—3.1242 in. | First type with ¾ in. piston pin hole marked P1, P2, etc. Second type with ⅞ in. piston pin hole marked V1, V2, etc. |
| No. 5 | ... | ... | 303 | .... | 3.1242—3.1247 in. | First type with ¾ in. piston pin hole marked P1, P2, etc. Second type with ⅞ in. piston pin hole marked V1, V2, etc. |
| No. 6 | ... | ... | 303 | .... | 3.1247—3.1252 in. | First type with ¾ in. piston pin hole marked P1, P2, etc. Second type with ⅞ in. piston pin hole marked V1, V2, etc. |
| No. 7 | ... | ... | 303 | .... | 3.1252—3.1257 in. | First type with ¾ in. piston pin hole marked P1, P2, etc. Second type with ⅞ in. piston pin hole marked V1, V2, etc. |
| Standard No. 1 | ... | ... | .... | 328 | 3.2455—3.2460 in. | |
| No. 2 | ... | ... | .... | 328 | 3.2460—3.2465 in. | |
| No. 3 | ... | ... | .... | 328 | 3.2465—3.2470 in. | Marked AA1, AA2, etc. |
| No. 4 | ... | ... | .... | 328 | 3.2470—3.2475 in. | Marked AA1, AA2, etc. |
| Oversize— | | | | | | |
| +.005 | A | B | .... | .... | 3.314—3.315 in. | |
| | ... | ... | 303 | .... | 3.1272—3.1288 in. | Marked +.005 |
| | ... | ... | .... | 328 | 3.2505—3.2515 in. | Marked +.005 |
| +.010 | A | B | .... | .... | 3.319—3.320 in. | |
| | ... | ... | 303 | .... | 3.1322—3.1332 in. | Marked +.010 |
| | ... | ... | .... | 328 | 3.2555—3.2565 in. | Marked +.010 |
| +.015 | A | B | .... | .... | 3.324—3.325 in. | |
| | ... | ... | 303 | .... | 3.1372—3.1382 in. | Marked +.015 |
| | ... | ... | .... | 328 | 3.2605—3.2615 in. | Marked +.015 |

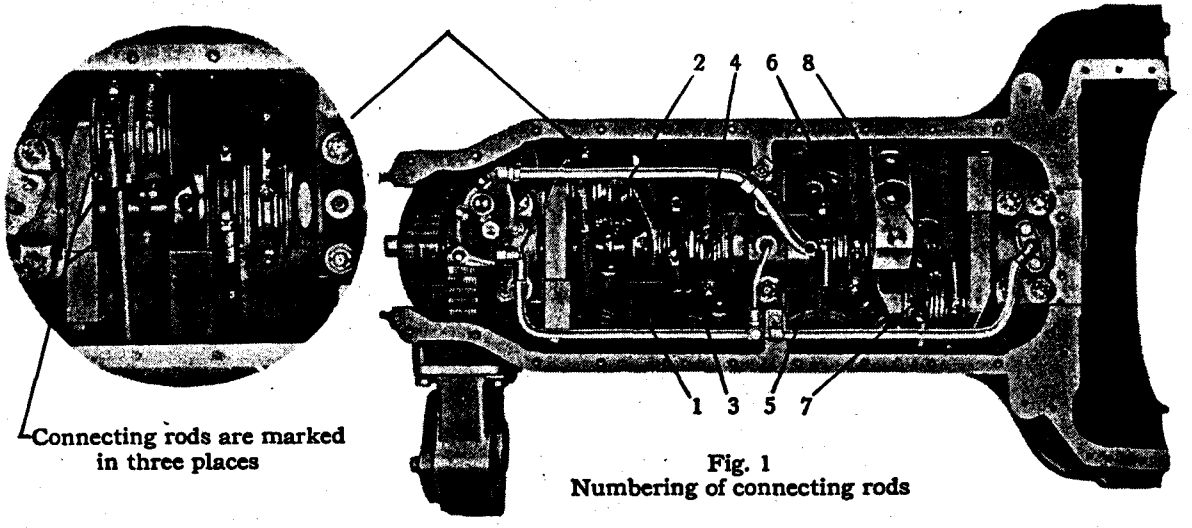



Fig. 1
Numbering of connecting rods

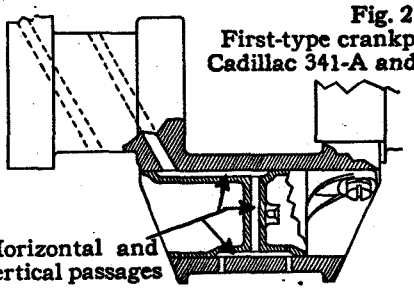



Fig. 2
First-type crankpin oil plugs.
Cadillac 341-A and LaSalle 303

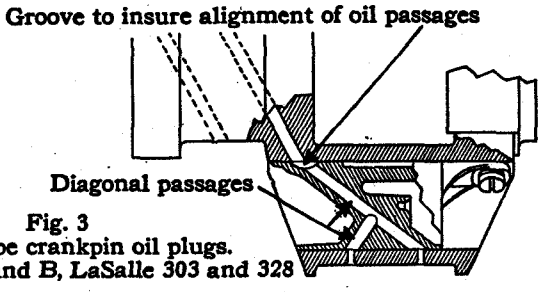



Fig. 3
Second-type crankpin oil plugs.
Cadillac 341-A and B, LaSalle 303 and 328

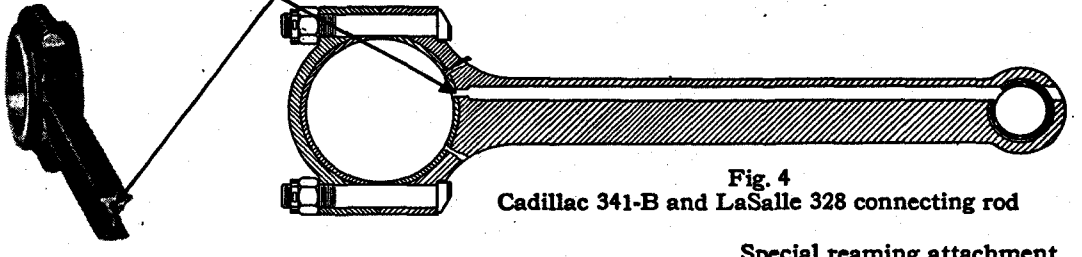



Fig. 4
Cadillac 341-B and LaSalle 328 connecting rod

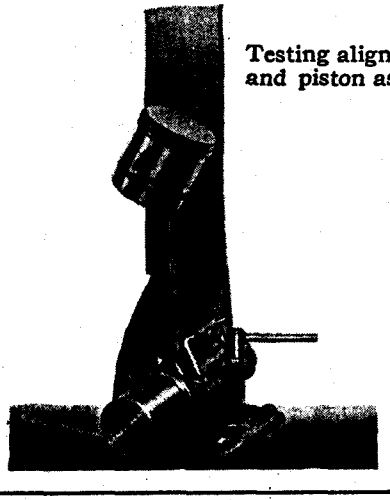


Fig. 5
Testing alignment of connecting rod and piston assembly on tool 109214

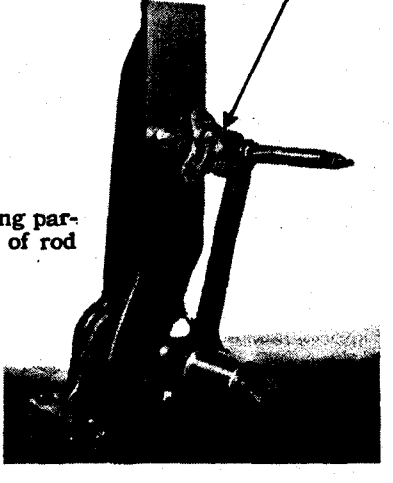



Fig. 6
Reaming piston pin bushing parallel to hole in large end of rod

Plate 37. Connecting rod details.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| +.020 | A | B | .... | .... | 3.329—3.330 in. | |
| | ... | ... | 303 | .... | 3.1422—3.1432 in. | Marked +.020 |
| | ... | ... | .... | 328 | 3.2655—3.2665 in. | |
| +.030 | A | B | .... | .... | 3.339—3.340 in. | |
| | | | | 328 | 3.2755—3.2765 in. | Marked +.030 |
| +.031 | ... | ... | 303 | .... | 3.1532—3.1542 in. | Marked +.031 |
| **PISTON PINS** | | | | | | |
| Diameter | ... | ... | 303[1] | .... | ⅞ in. | Before engine unit 2-13001 |
| | A | B | 303[2] | 328 | ⅞ in | Beginning with engine unit 2-13001 on 303 cars. |
| Clearance between pin and bushing | A | B | 303 | 328 | ..... | See note 6. |
| Clearance between pin and piston | A | ... | 303 | .... | Hand press fit | |
| | ... | B | .... | 328 | 100 to 600 lbs. press fit on lock screw end (hand push fit on opposite end) | See note 7. |
| Identification marks | A | ... | 303 | .... | No characteristic marks. | |
| | ... | B | .... | 328 | 60° notch .015 in. deep on end opposite lock screw. | Piston pins for 341-A engines must not be installed in 328 engines as they will score the cylinders. *Plate 40, Fig. 2* |
| Lubrication | A | ... | 303 | .... | Splash | |
| | ... | B | .... | 328 | Pressure feed through hole drilled in connecting rod. | |
| **PISTON RINGS** | | | | | | |
| Clearance between piston rings and grooves in piston | A | B | 303 | 328 | New limits, .0015—.0025 in. Worn limit, not over .004 in. | |
| Gap clearance | A | B | .... | 328 | New limits, .008—.018 in. Worn limit, not over .025 in. | |
| | ... | ... | 303 | .... | New limits, .005—.015 in. Worn limit, not over .025 in. | |
| Number of compression rings | A | B | 303 | 328 | 2 | |
| Number of oil rings | A | B | 303 | 328 | 1 | |
| Ring installation | ... | ... | 303[1] | .... | All rings above piston pin | Before engine unit 2-6918. |
| | A | B | 303[2] | 328 | 2 comp. rings above pin, 1 oil ring below pin | Beginning with engine unit 2-6918 on 303 cars. |
| Width of rings | A | B | 303 | 328 | 5/16 in. | |
| **VALVES** | | | | | | |
| Clearance between valve lifter and guide | A | B | 303 | 328 | New limits, .0015—.002 in. Worn limit, not over .005 in. | |
| Clearance between valve lifter roller and pin | A | B | 303 | 328 | New limits, .0015—.0025 in. Worn limit, not over .004 in. | |
| Spring compression, valve closed | A | B | 303 | 328 | 77-81 lbs. at 2.5 in. | Before engine unit 3-14057 on 341-A cars and 2-20272 on 303 cars compression pressure was 133-139 lbs. with spring compressed to 2.148 in. |
| Spring compression, valve open | A | B | 303 | 328 | 156-164 lbs. at 2.148 in. | |
| Spring type | A[1] | ... | 303[1] | .... | Straight | Before engine unit 3-14057 on 341-A cars and 2-20272 on 303 cars. |
| | A[2] | B | 303[2] | 328 | Conical | Beginning with engine unit 3-14057 on 341-A cars and 2-20272 on 303 cars. Conical Springs should be installed with large end at bottom. |

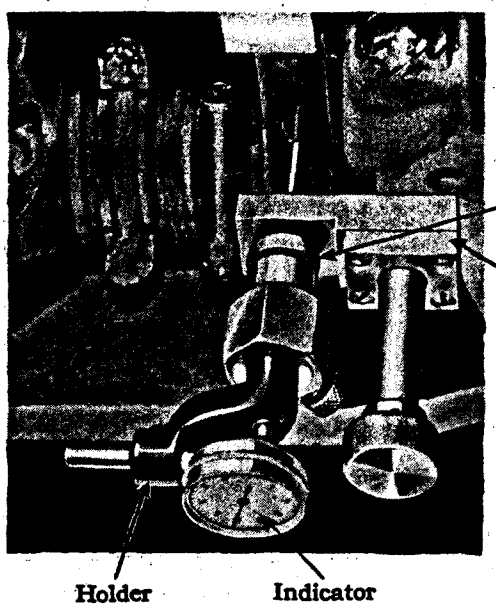



Fig. 1
Indicating clearance in front main bearing.
Use adapters A and B with holder 65530
(Use adapter A only for center main bearing)


Fig. 2
Removing rear main bearing
cap with puller 109406

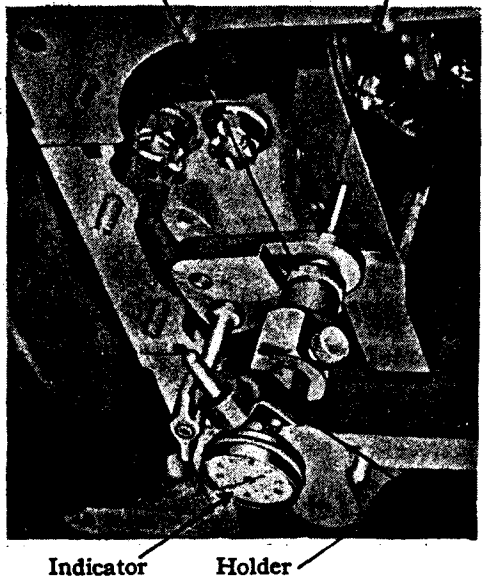



Fig. 3
Indicating clearance in rear main bearing.
Use adapters A and C with holder 65560

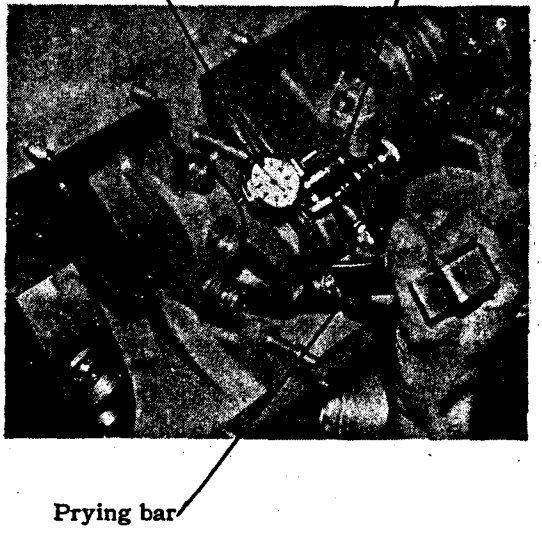



Fig. 4
Indicating clearance in connecting rod bearing.
Holder 109414, prying bar 109415

Plate 38. Indicating bearing clearance.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| INLET VALVES | | | | | | |
| Clearance between stem and guide in cylinder blocks | A | B | 303 | 328 | New limits, .001 to .0035 in. Worn limit, not over .006 in. | |
| Clearance between stem and valve lifter | A | B | 303 | 328 | .004 in. | Adjust when engine is cold. |
| Head diameter | A | B | 303 | 328 | 1.660—1.666 in. | |
| Lift | A | B | 303 | 328 | $\frac{23}{64}$ in. | |
| Seat, angle of | A | B | 303 | 328 | 30° | |
| Seat, width of | A | B | 303 | 328 | $\frac{1}{16}$ in. | |
| Stem diameter | A | B | 303 | 328 | $\frac{3}{8}$ in. | |
| Stem length | A | B | 303 | 328 | 6 $\frac{5}{32}$ in. from seat | |
| EXHAUST VALVES | | | | | | |
| Clearance between stem and guide in cylinder block | A | B | 303 | 328 | New limits, .002 to .0045 in. Worn limit, not over .006 in. | |
| Clearance between stem and valve lifter | A | B | 303 | 328 | .006 in. | Adjust when engine is cold. |
| Head diameter | A | B | 303 | 328 | 1.634—1.640 in. | |
| Lift | A | B | 303 | 328 | $\frac{23}{64}$ in. | |
| Angle of seat | A | B | 303 | 328 | 45° | |
| Seat, width of | A[1] | ... | 303[1] | .... | $\frac{1}{16}$ in. | Before engine unit 3-5809 on 341-A cars and 2-15992 on 303 cars. |
| | A[2] | B | 303 | 328 | $\frac{5}{64}$ in. | Beginning with engine unit 3-5809 on 341-A cars and 2-15992 on 303 cars. |
| Stem diameter | A | B | 303 | 328 | $\frac{3}{8}$ in. | |
| Stem length | A | B | 303 | 328 | 6$\frac{1}{8}$ in. from seat | |
| VALVE TIMING | | | | | | |
| Intake valve, opens | A | B | 303 | 328 | 9½° before top dead center | See note 8. |
| Intake valve, closes | A | B | 303 | 328 | 58½° after bottom dead center | |
| Exhaust valve, opens | A | B | 303 | 328 | 46° before bottom dead center | |
| Exhaust valve, closes | A | B | 303 | 328 | 5° after top dead center | |

**1. Straightening Connecting Rods**

La Salle and Cadillac connecting rods are of alloy steel of such toughness that it is not entirely satisfactory to align them by straightening. If attempt is made to straighten a rod it is apt to return sooner or later to its original shape.

In manufacture, the piston pin bushing is bored in a fixture which insures perfect parallelism between the hole in the large end of the rod and the hole bored in the bushing.

In service, the same thing can be accomplished by reaming on the special fixture which is provided for this purpose. (Tool Numbers 109214-5-6).

If straightening is resorted to, care must be taken to bend or twist the rod farther than necessary to align it and then spring the rod back in the original direction until it is straight. This procedure helps to "normalize" the strains in the steel and prevent further distortion from taking place.

**2. Assembly of Connecting Rods**

The following points should be checked when installing connecting rods:

1. The chamfered face of the bearings should be toward the end of the crankpin, the plain faces toward each other.

2. The numbers on the rods should be toward the bottom of the engine.

3. The oil holes in the rods should point toward the pistons.

4. The numbers on the caps should correspond to the numbers on the rods.

**3. Connecting Rod Bearings**

The connecting-rod bearing clearance should be measured with a dial indicator using the fixture designed for the purpose. (Tool Number 109414).

The connecting rod bearings are not separate parts but are cast in place in the connecting rod by a special process. The bearings are not adjustable and no attempt should be made to dress down the cap on the rod to take up the clearance. When a connecting rod bearing clearance exceeds the prescribed amount the rod should be removed and replaced with a rebabbitted rod. Rebabbitting of rods should not be attempted outside the factory. Rods should be returned to the factory and exchanged for rebabbitted rods. Rods, the caps of which have been dressed down, will not be exchanged.

**4. Main Bearings**

It is recommended that main bearing clearance be in-

dicated with a dial indicator using the special fixture supplied for the purpose. (Tool Number 65530).

No shims or liners are used under the main bearing caps and no attempt should be made to take up the bearings to compensate for wear. When worn enough to require it, the bearings should be replaced. Replacement bearings are furnished to exact size and do not require reaming or scraping.

Special attention is required when removing or installing the rear main bearing cap because the sides of this cap must be oil tight. For this purpose, wood plugs are driven into grooves in the cap when it is installed. To remove the cap a special puller is necessary. New wood plugs must then be installed after the cap is put back.

**5. Piston Clearance**

The piston clearance should be measured with feeler ribbons. A feeler ribbon .003-inch thick and ¼ to ½-inch wide should be used on Cadillac 341-A and B and La Salle 328 engines. On La Salle 303 engines, a feeler ribbon .0025-inch thick preferably ¼-inch wide, should be used. The meaurement should be taken at the skirt of the piston and at right angles to the piston pin with the piston midway between the top and bottom of the cylinder bore.

To measure accurately with feeler ribbons, consideration must be given to the pull required to withdraw the ribbon. The pull required for both the .0025-inch and the .003-inch ribbons should be between 2½ and 5 lbs. This test must be made with no oil on either the cylinder or piston. It is also very essential that the piston be not more than .0005-inch out of round at the skirt.

**6. Fitting Piston Pins in Bushings**

The recommended test for piston pin fit on engines with all three rings above the piston pin (first type on La Salle) is to hold the piston and rod assembly by the piston in a horizontal position. The connecting rod should then just drop of its own weight.

On engines with the oil ring below the piston pin, test by spinning the piston pin in the bushing perfectly dry. The pin should be free enough to spin but should have no perceptible looseness.

Piston pin bushings should preferably be reamed in the special aligning and reaming fixture furnished for the purpose.

**7. Fitting Piston Pins in Pistons**

The present practice in manufacture is to make one end of the piston pin a tight press fit in the side of the piston with the locking screw and the other end a hand press fit to allow for expansion. In service it is customary to fit both ends of the piston pin the same, which should allow a hand press fit. In other words, it should be just possible to push the pin into the piston by pressing with both thumbs on the end of the pin.

CAUTION: When removing and installing the piston pins always place the locking screw side of the piston pin down so that the pressure on the pin will not force the piston out of round.

**8. Valve Timing**

Because of the shape of the cams, the exact time of opening and closing of the valves depends upon the valve stem clearance and may vary as much as 10 degrees. The accompanying figures are actual readings taken on a cold engine.

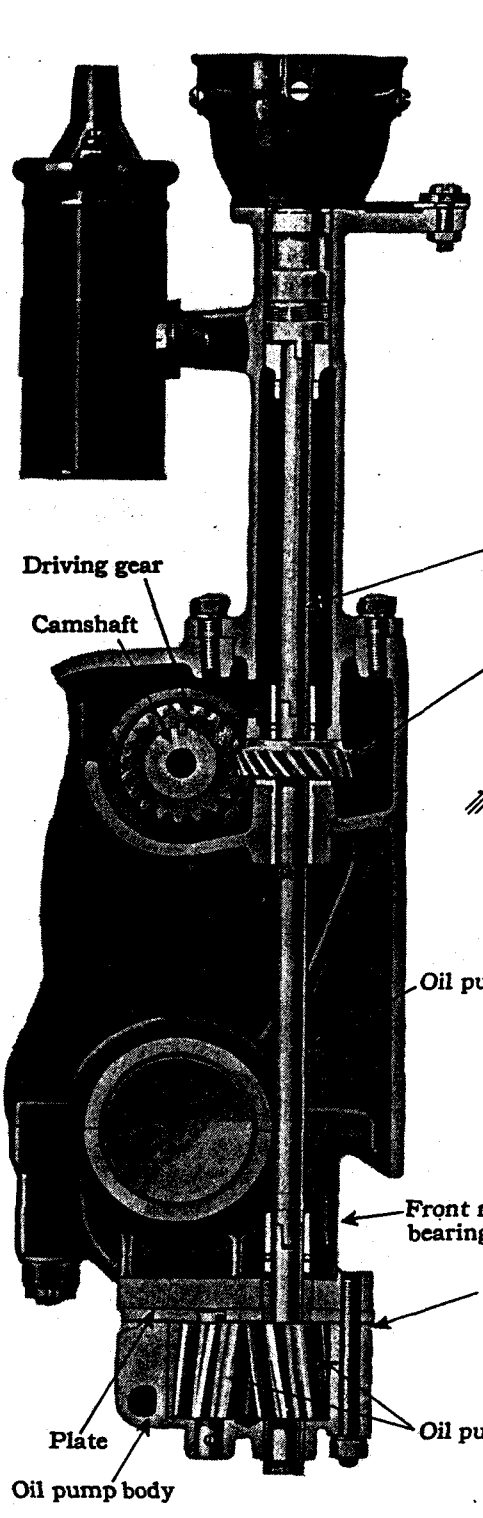



Fig. 1
Sectional view of oil pump and distributor drive

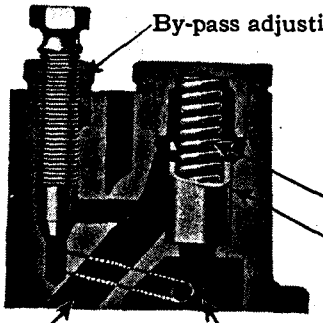
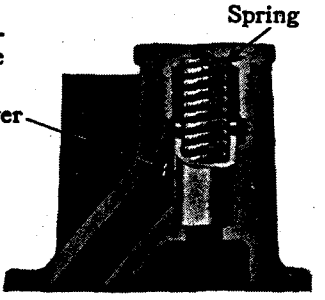



Fig. 2
Sectional view of oil pressure regulator, first type, with adjusting screw

Fig. 3
Sectional view of oil pressure regulator, second type



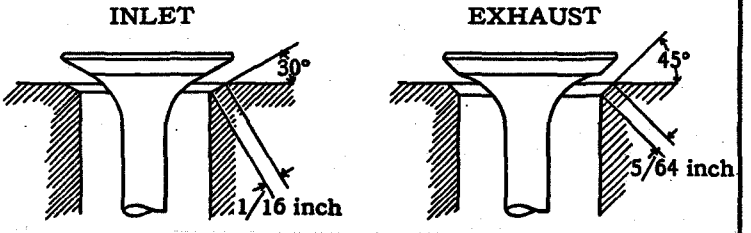




Fig. 4
Width and angle of valve seat

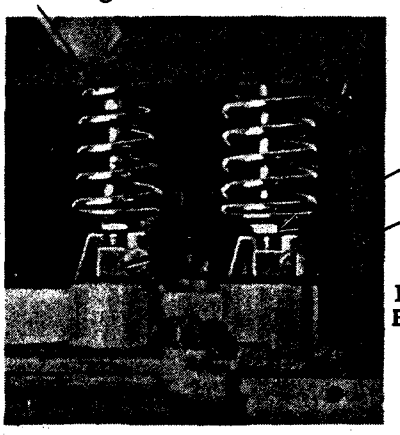



Fig. 5
Valve stem clearance adjustment

Plate 39. Oil pump, pressure regulator and valves.

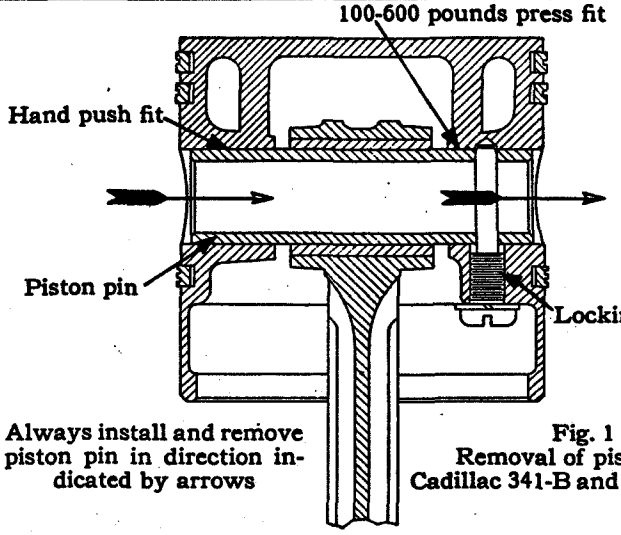



Fig. 1
Removal of piston pin.
Cadillac 341-B and LaSalle 328

Piston pins for Cadillac 341-A engines must not be installed in LaSalle 328 engines

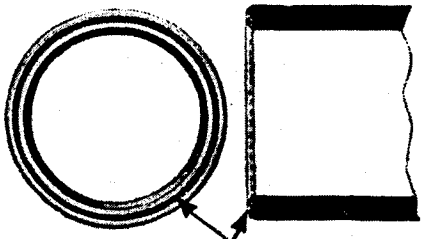



Fig. 2
Enlarged view showing identification marks on LaSalle 328 piston pins

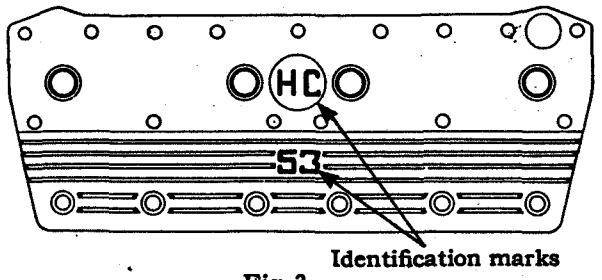



Fig. 3
High-compression cylinder head markings

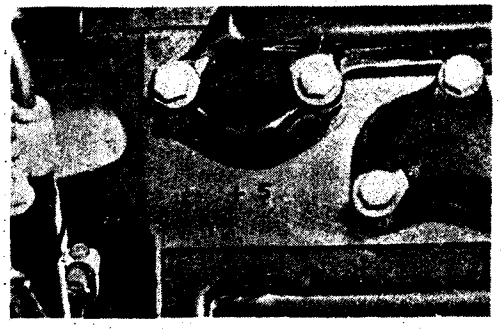


Fig. 4
Cylinder block showing location of oversize marking

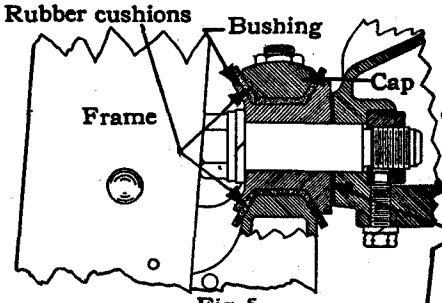



Fig. 5
Sectional view of engine support.
Cadillac 341-A

Loosen cap nuts on one end of cross-member before aligning cushions with support bracket

Shim for aligning bushing with support bracket

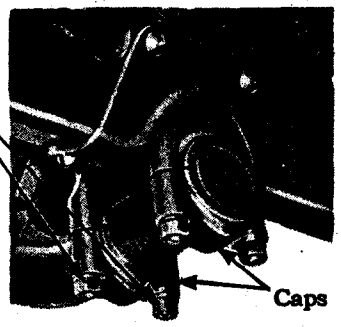



Fig. 6
Tubular cross-member under transmission.
Cadillac 341-A

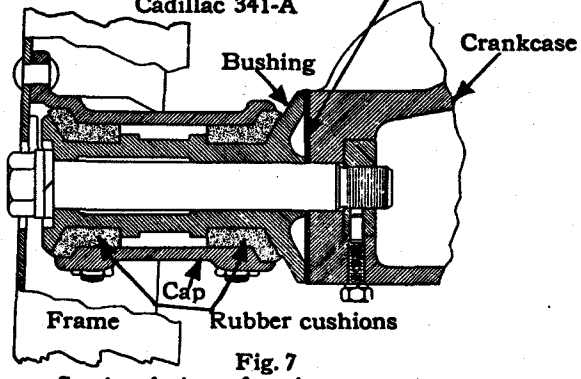



Fig. 7
Sectional view of engine support.
Cadillac 341-B and LaSalle 328

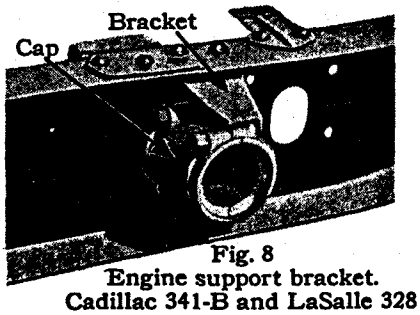



Fig. 8
Engine support bracket.
Cadillac 341-B and LaSalle 328

Plate 40. Cylinder head, piston pin and engine rear support.

# Frame

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Wheelbase | A | B | .... | .... | 140 in. and 152 in. | Chassis with 152-in. wheelbase are intended primarily for commercial type bodies such as ambulances, etc. |
| | ... | ... | 303 | 328 | 125 in. and 134 in. | |
| Overall length of car | A | B | .... | .... | 213¼ in., 140 in. wheelbase | |
| | ... | ... | 303 | 328 | 185 in., 125 in. wheelbase | |
| | | | | | 196⅝ in., 134 in. wheelbase | |
| Overall width of car | A | B | .... | .... | 73½ in., 140 in. wheelbase. | |
| | ... | ... | 303 | 328 | 71 in., 125-134 in. wheelbase. | |
| FRAME | | | | | | |
| Depth | A | ... | .... | .... | 7 5/16 in. | Measured at deepest part of frame. |
| | ... | ... | 303 | .... | 6½ in. | |
| | ... | B | .... | .... | 8 in. | |
| | ... | ... | .... | 328 | 6 9/16 in. | |
| Flange width | A | ... | .... | .... | 3¼ in. | |
| | ... | B | .... | .... | 3¼ in. top, 2 11/16 in. bottom | |
| | ... | ... | 303 | 328 | 2½ in. | |
| Kick up, front | A | B | .... | .... | 1¾ in. | |
| | ... | ... | 303 | 328 | ¾ in. | |
| Kick up, rear | A | B | .... | .... | 4 in. | |
| | ... | ... | 303 | 328 | 5 in. | |
| Width, front | A | ... | .... | .... | 30 1/16 in. | |
| | ... | ... | 303 | .... | 29 in. | |
| | ... | B | .... | .... | 30 in. | |
| | ... | ... | .... | 328 | 29 1/16 in. | |
| Width, rear | A | ... | .... | .... | 35 1/16 in. | |
| | ... | ... | 303 | .... | 37½ in. | |
| | ... | B | .... | .... | 35 in. | |
| | ... | ... | .... | 328 | 37 9/16 in. | |
| Unit (Chassis) number, location of | A | B | 303 | 328 | On upper surface of left side bar opposite steering gear | |

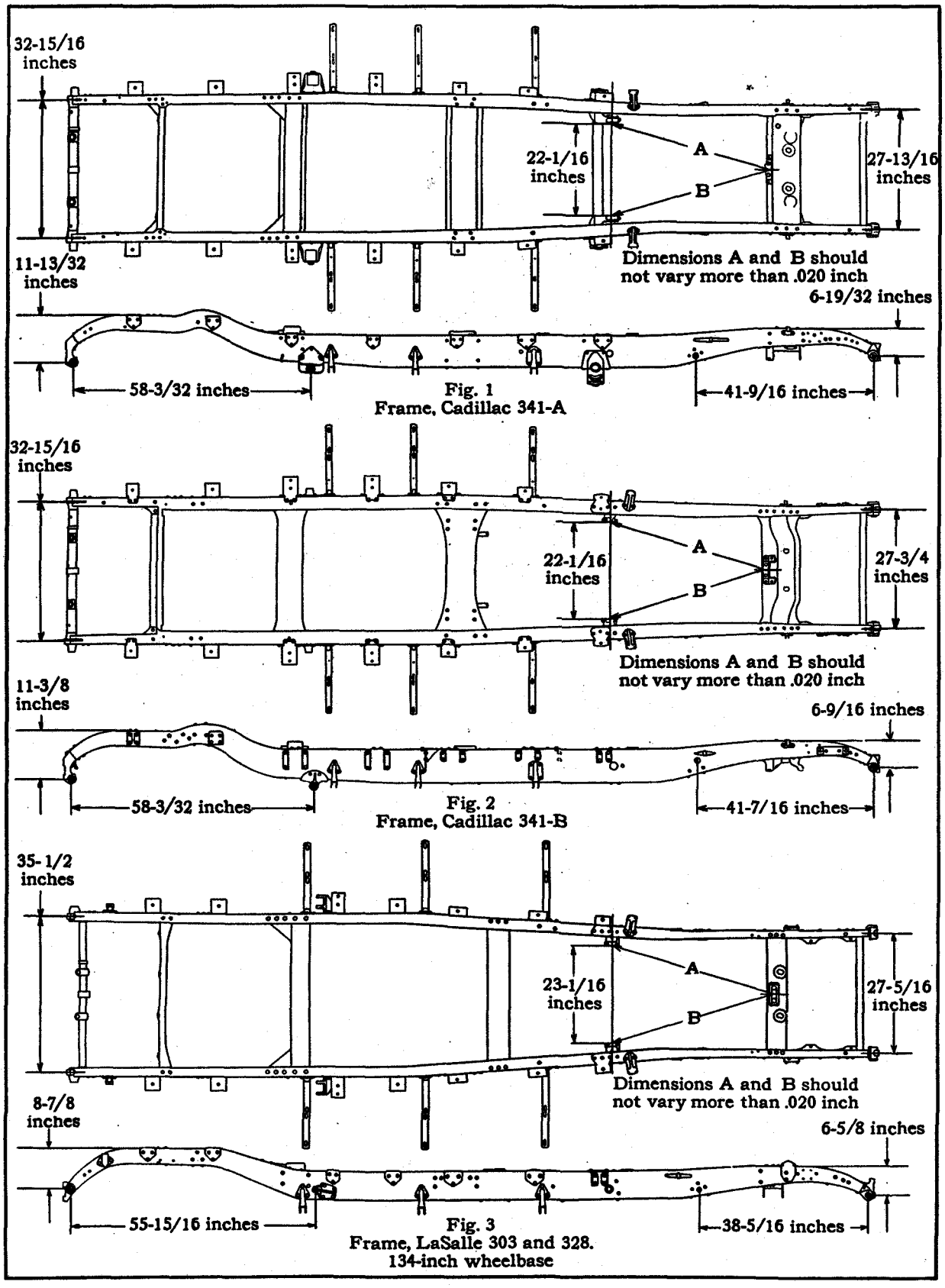



Fig. 1
Frame, Cadillac 341-A

Fig. 2
Frame, Cadillac 341-B

Fig. 3
Frame, LaSalle 303 and 328.
134-inch wheelbase

Plate 41. Diagrams of Cadillac and La Salle frames.

# Gasoline System

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Capacity of supply tank | A | B | .... | .... | 21 gal. | Maximum gauge reading 20 gal. |
| | ... | ... | 303 | 328 | 20 gal. | |
| Feed | A | B | 303 | 328 | Vacuum tank with auxiliary vacuum pump | |
| Gasoline gauge | A | B | 303 | 328 | Electric (Nagel) | |
| CARBURETOR | | | | | | |
| Clearance between throttle disc and carburetor body | A | B | 303 | 328 | New limit, .003 in.<br>Worn limit, not over .005 in. | |
| End play in throttle shaft | A | B | 303 | 328 | New limit, .0015 in.<br>Worn limit, not over .005 in. | |
| Float setting | A | B | 303 | 328 | $\frac{11}{32}$ in. | |
| Size | A | B | 303 | 328 | 2 in. (nominal) | |
| Size of nozzle | A | B | 303 | 328 | No. 16 | |
| Throttle pump adjusting screw, fully open | A | B | 303 | 328 | 7 turns | |
| Thermostat | | | | | | |
| Air valve adjustment | A | B | 303 | 328 | $\frac{1}{64}$ $\frac{1}{32}$ in. Open at 65-85°F. | |
| Throttle pump control, closes | A | B | 303 | 328 | 74°F. } Inner thermostat | |
| Throttle pump control, opens | A | B | 303 | 328 | 78°F. } | |
| Vent control, closes | A | B | 303 | 328 | 125°F. } Outer thermostat | |
| Vent control, opens | A | B | 303 | 328 | 130°F. } | |
| Unit number, location of | A | B | 303 | 328 | Right side front on top flange | |
| VACUUM PUMP | | | | | | |
| Clearance between connecting rod and crank journal on camshaft | A | B | 303 | 328 | New limits, .001—.003 in.<br>Worn limits, not over .005 in. | |
| Clearance between piston and cylinder | A | B | 303 | 328 | New limits, .001—.0015 in.<br>Worn limit, not over .003 in. | |

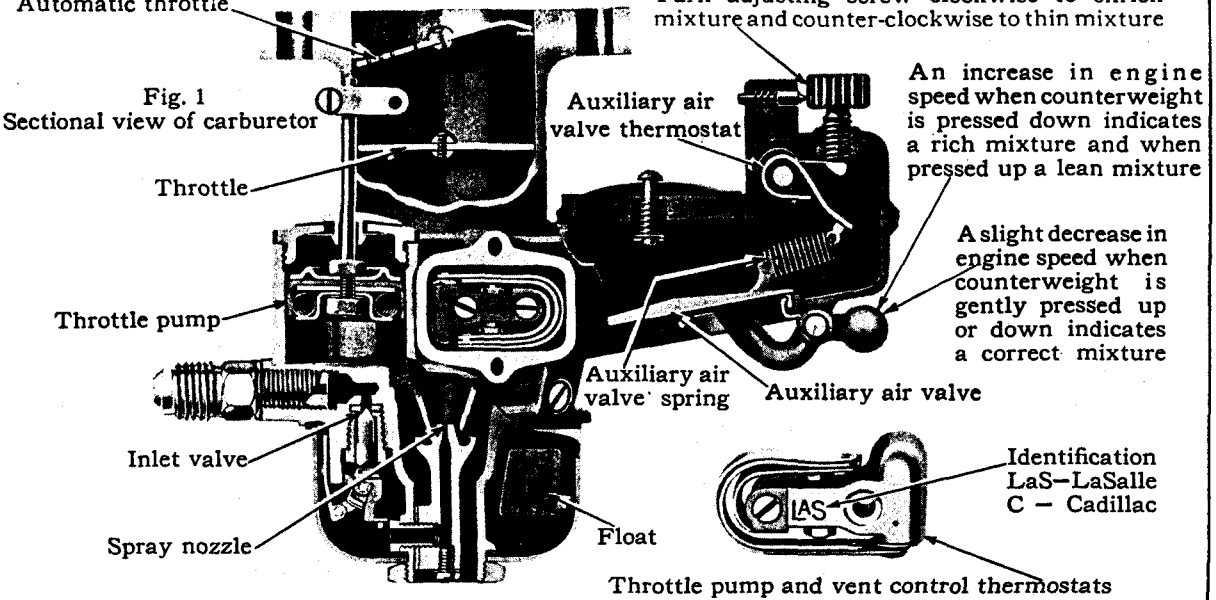
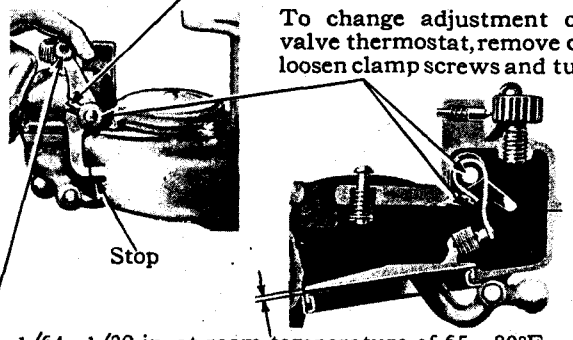



Fig. 1
Sectional view of carburetor




To test adjustment of auxiliary air valve thermostat, hold lever against stop (pull upper end of lever, do not push lower end) and press up auxiliary air valve

Fig. 2
Adjustment of choke and auxiliary air valve thermostat


Fig. 3
Throttle stop screw adjustment

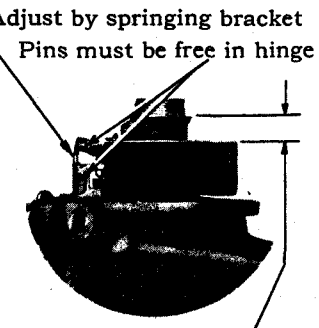



Fig. 4
Float setting

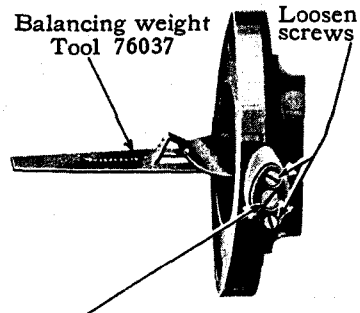



Fig. 5
Adjustment of automatic throttle

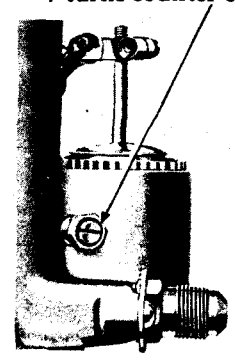



Fig 6
Throttle pump adjusting screw

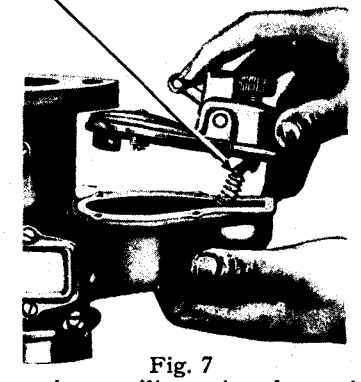



Fig. 7
Removing auxiliary air valve spring

## Plate 42. Carburetor adjustments.

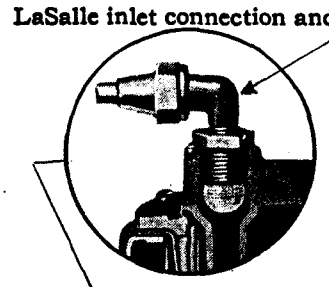



Fig. 1
Sectional view of vacuum tank

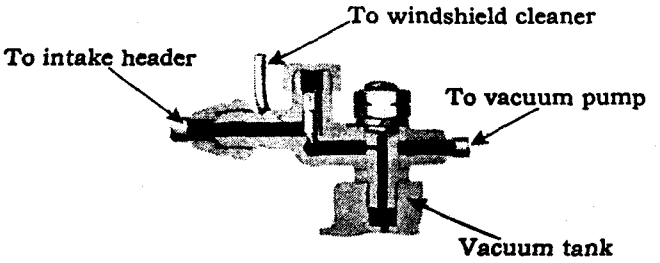
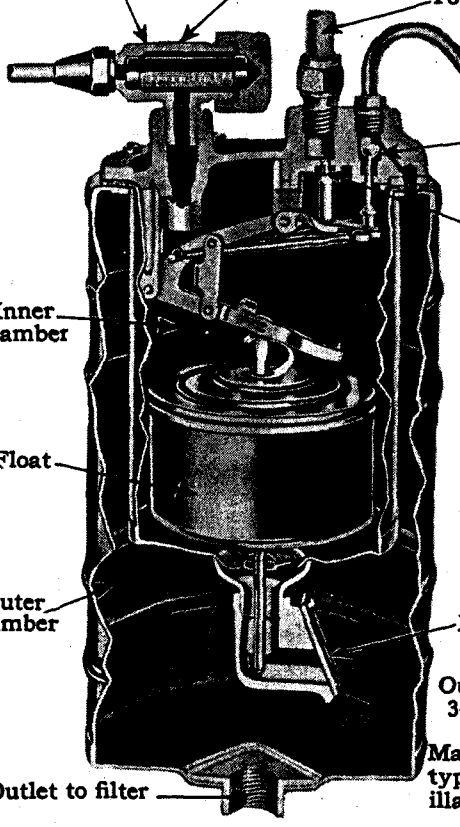



Fig. 2
First-type check valve—on vacuum tank.
LaSalle 303



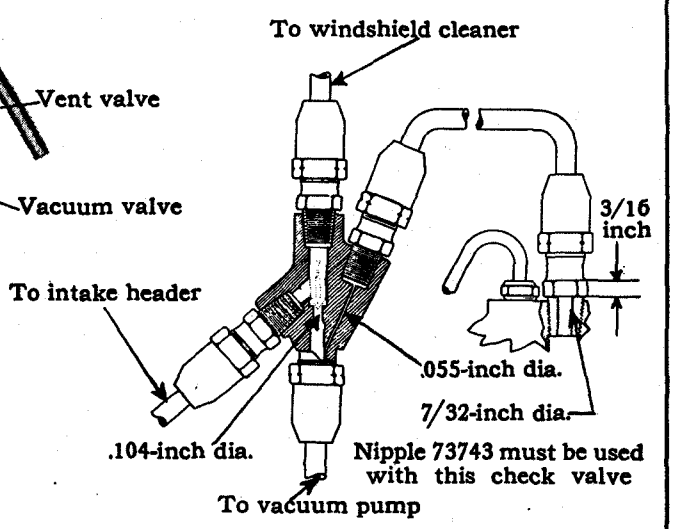




Fig. 3
Second-type check valve—on dash.
Cadillac 341-A and LaSalle 303

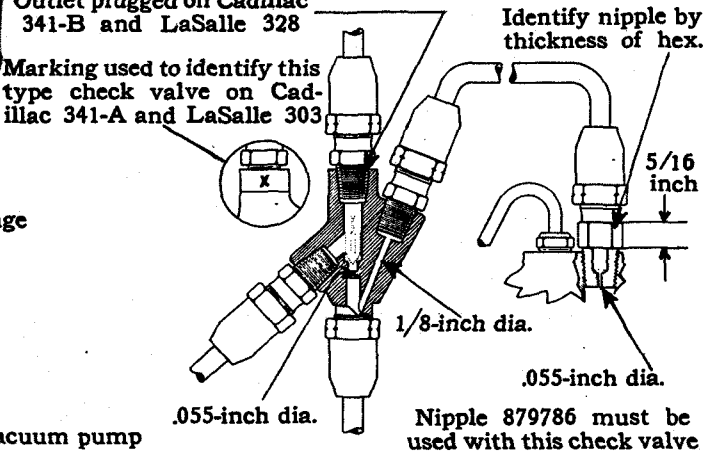



Fig. 4
Third-type check valve—on dash.
Cadillac 341-A and B, LaSalle 303 and 328

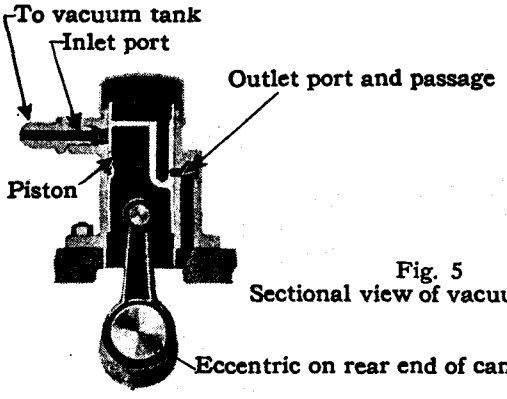



Fig. 5
Sectional view of vacuum pump

Plate 43. Vacuum tank, pump and check valve.

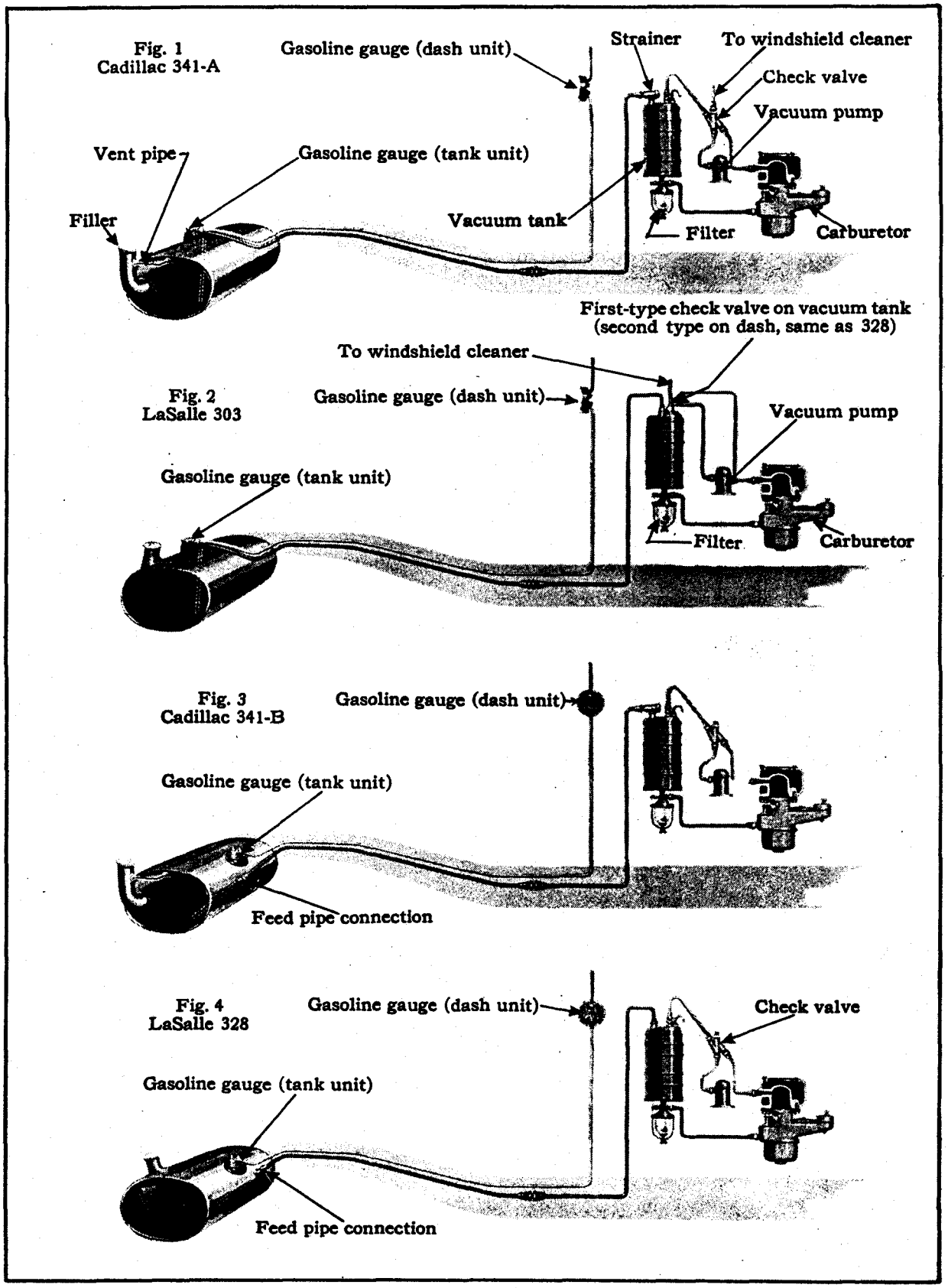



Plate 44. General arrangement of gasoline systems.

# Lighting System

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | Remarks |
|---|---|---|---|---|---|---|---|
| Cleaning headlamp reflectors | A | B | 303 | 328 | | | See note 1. |
| Headlamp lens, diameter | A | B | .... | .... | 11 $\frac{5}{32}$ in. | | |
| | .... | .... | 303 | 328 | 10 $\frac{15}{32}$ in. | | |
| Lamp bulbs, single or double contact | A | B | 303 | 328 | All single contact except two-filament headlamp bulbs which are double contact. | | |
| Lamp bulb, sizes— | | | | | Candlepower | Mazda number | See note 2. |
| Headlamp bulb | A | B | 303 | 328 | 21—21 | 1110 | |
| Headlamp bulb | A | B | 303 | 328 | 32—21 | 1116 | Can be used as permitted by state regulations. |
| Parking lamp bulb | A | B | 303 | 328 | 3 | 63 | |
| Instrument lamp bulb | A | B | 303 | 328 | 3 | 63 | |
| Stop lamp bulb | A | B | .... | .... | 21 | 1129 | |
| | .... | .... | 303 | 328 | 15 | 87 | |
| Tail lamp bulb | A | B | .... | .... | 3 | 63 | |
| Running board step lamp bulb | A | B | .... | .... | 3 | 63 | |
| Closed car dome lamp bulb | A | B | 303 | 328 | 3 | 63 | |
| Rear quarter lamp bulb | A | B | 303 | 328 | 3 | 63 | |
| Voltage | A | B | 303 | 328 | 6—8 volts | | |
| Stop light, setting | A | B | 303 | 328 | Switch lever in "on" position at $\frac{3}{4}$—1 in. movement of brake pedal | | |

**1. Cleaning Headlamp Reflectors**

To preserve the original reflector surface as much as possible, it should be polished with a good cleaner that is free from abrasive materials. A paste made of rouge or talcum powder and alcohol makes a good cleaner for this purpose. A clean cloth should be used and all rubbing should be done in straight lines from the bulb outward. Circular rubbing leaves fine lines which break up the beam of light, whereas rubbing straight from the bulb outward leaves lines parallel to the rays of light, which do not interfere with the reflection.

**2. Headlamp Bulbs**

Headlamp bulbs for Cadillac and La Salle cars have two filaments, one above the other, instead of the customary single filament. The filaments are located in different positions with respect to the focus of the parabolic reflector, and the beam of light from one filament is projected at a different angle from the other.

When the switch lever is in one position one set of filaments is lighted and the beams are projected straight ahead, illuminating the road at a distance. When the switch lever is in the other position, the other filaments are lighted and the beams are projected down at an angle, illuminating more brightly the road directly in front of the car.

Fig. 1
Lighting switch at bottom of steering gear. Cadillac 341-A and LaSalle 303

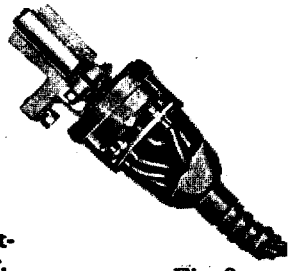


Fig. 2
Lighting switch at bottom of steering gear. Cadillac 341-B and LaSalle 328

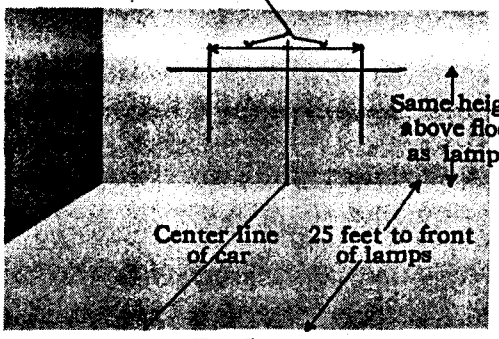



Fig. 5
Markings for adjustment of head lamps

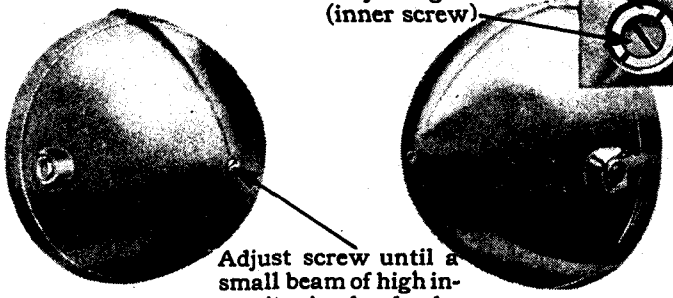
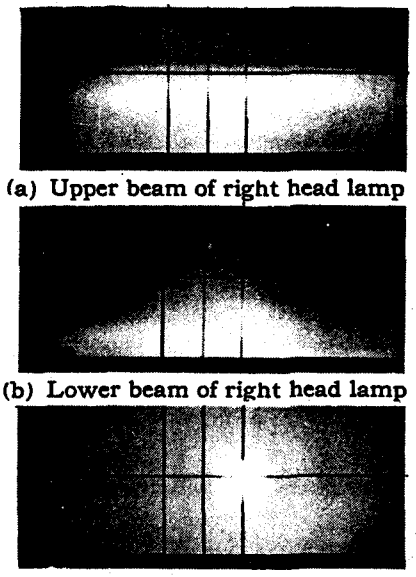



Fig. 3
Head lamp adjusting screw. Cadillac 341-A and B; LaSalle 303, second type, and 328

Fig. 4
Head lamp adjusting screws. LaSalle 303, first type



(a) Upper beam of right head lamp

(b) Lower beam of right head lamp

(c) Upper beam with lens removed

Fig. 6
Light beams with lamp properly focused and aimed. Cadillac 341-A and B; LaSalle 303, second type, and 328. After adjusting one head lamp, repeat adjustment on other lamp

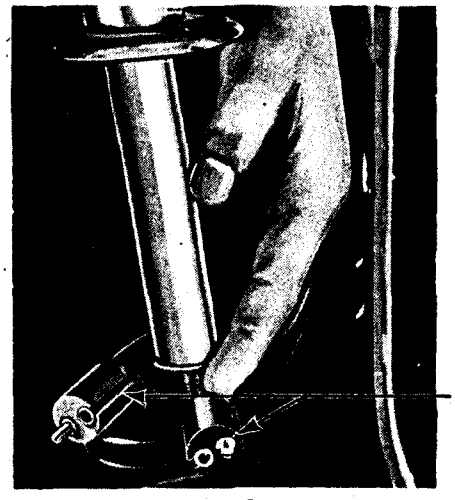
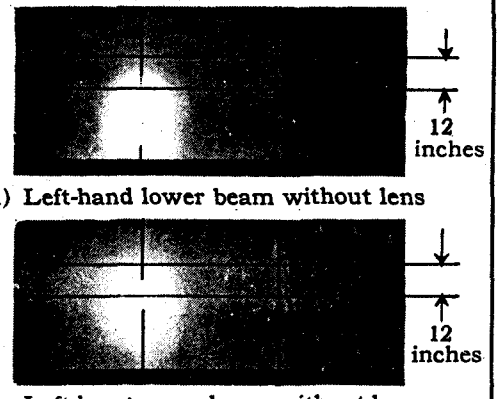



Fig. 8
Disconnecting wires on LaSalle 328 head lamp. Slotted coupling plugs used only on Cadillac 341-B and LaSalle 328. Coupling plugs are at top of conduits on Cadillac 341-A and B




(a) Left-hand lower beam without lens

(b) Left-hand upper beam without lens

Fig. 7
Light beams with lamp properly focused and aimed. LaSalle 303 with first-type head lamp. After adjusting one lamp, repeat adjustment on other lamp

**Plate 45. Lighting system details.**

# Lubrication

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Oil pressure, engine | A | B | 303 | 328 | 7-10 lbs. at idling speed | |
| Kerosene, for thinning— | | | | | Temperature / Per Cent Kerosene | |
| Gear lubricant | A | B | 303 | 328 | 20° to -10° 10; -10° to -30° 25; Below -30° 40 | See note 1. |
| CAPACITIES | | | | | | |
| Engine | A | B | 303 | 328 | 8 qts. | See chart below for recommendations. |
| Fan | A | B | 303 | 328 | ¼ pint, approximately | |
| Rear axle | A | B | .... | .... | 2½ qts. | |
| | ... | ... | 303 | 328 | 3 qts. | |
| Transmission | A | B | .... | 328 | 2½ qts. | |
| | ... | ... | 303 | .... | 1½ qts. | |
| LUBRICANTS | | | | | | See lubrication diagrams pages 84, 85, 86 and 87, for points where lubricants are to be used. See note 2. |
| Chassis grease | A | B | 303 | 328 | G11 (A-200 plus 5% calcium soap) | |
| Engine oil | A | B | 303 | 328 | | See chart below. |
| Gear lubricant | A | B | 303 | 328 | A-200 (viscosity 200 secs, at 210°) | See note 1. |
| Spring lubricant | A | B | 303 | 328 | G-9 (petroleum jelly) | |
| Water pump grease | A | B | 303 | 328 | G-5 (calcium soap grease, consistency 82-145) | |
| Wheel bearing grease | A | B | 303 | 328 | G-2½ (calcium soap grease, consistency 250-315) | |

## 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. viscosity 40 or 50 | S. A. E. viscosity 20 | S. A. E. viscosity 10 or S. A. E. viscosity 20 thinned with 1 qt. kerosene to 7 qts. oil | S. A. E. viscosity 10 thinned with 1 qt. kerosene to 7 qts. oil or S. A. E. viscosity 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<br>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.<br>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 one to two 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 one to two quarts of kerosene to the fresh oil, unless starting immediately on a long trip at high speeds. | | | |

**1. Thinning Gear Lubricant with Kerosene**

Gear lubricant for the transmission and differential need be thinned only at the beginning of cold weather if a sufficient quantity of kerosene is added to take care of the lowest expected temperature. The lubricant for the steering gear should not be thinned.

The steering gear should be lubricated the year round with A-200 lubricant, to which 5% Acheson No. 38 graphite may be added. It is very important that only Acheson No. 38 be used. This particular product is a very fine powdered graphite, and no other powdered graphite on the market is similar to it. Acheson Graphite may be procured direct from the Acheson Graphite Corporation Niagara Falls, New York.

**2. Special Items for Lubrication Diagrams**

The following items cannot be placed on the regular 1000-mile schedule, so they should be performed at the recommended intervals.

Every day—Check level of liquid in radiator.

Every week—Check tire pressure.

When cold weather starts—Thin engine oil with kerosene to permit easier cranking. Also thin lubricant in rear axle and transmission.

At beginning of warm weather—Drain thinned lubricant and replace with fresh lubricant.

Once each season—Remove spring covers (if used) and repack with petroleum jelly.

Every 12000 miles—Check level of special oil in shock absorbers.

Every 12000 miles—Replace oil filter cartridge. Remove and clean engine oil pan and screen at same time.

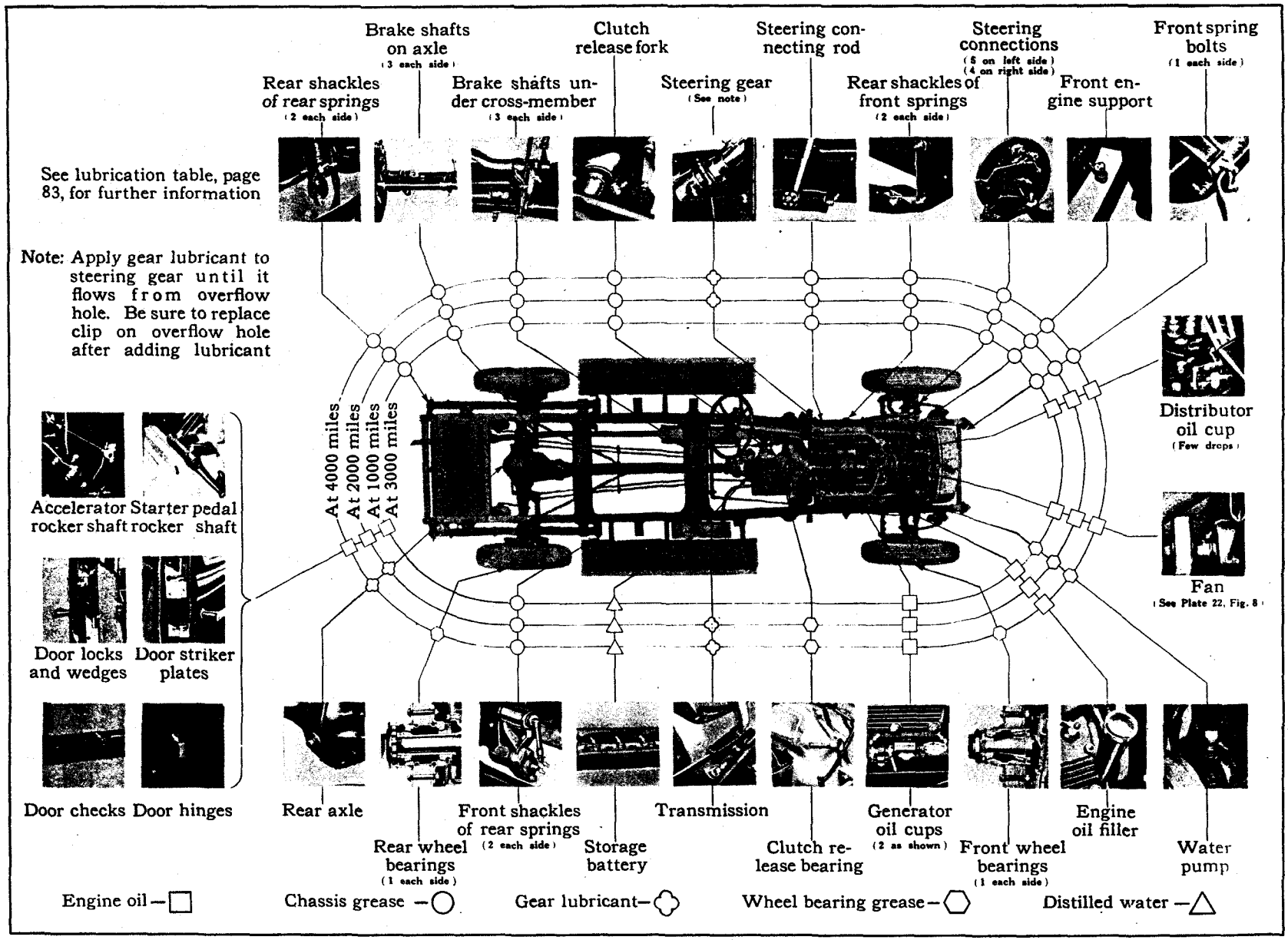



Plate 46. Lubrication diagram, Cadillac 341-B.

February, 1929

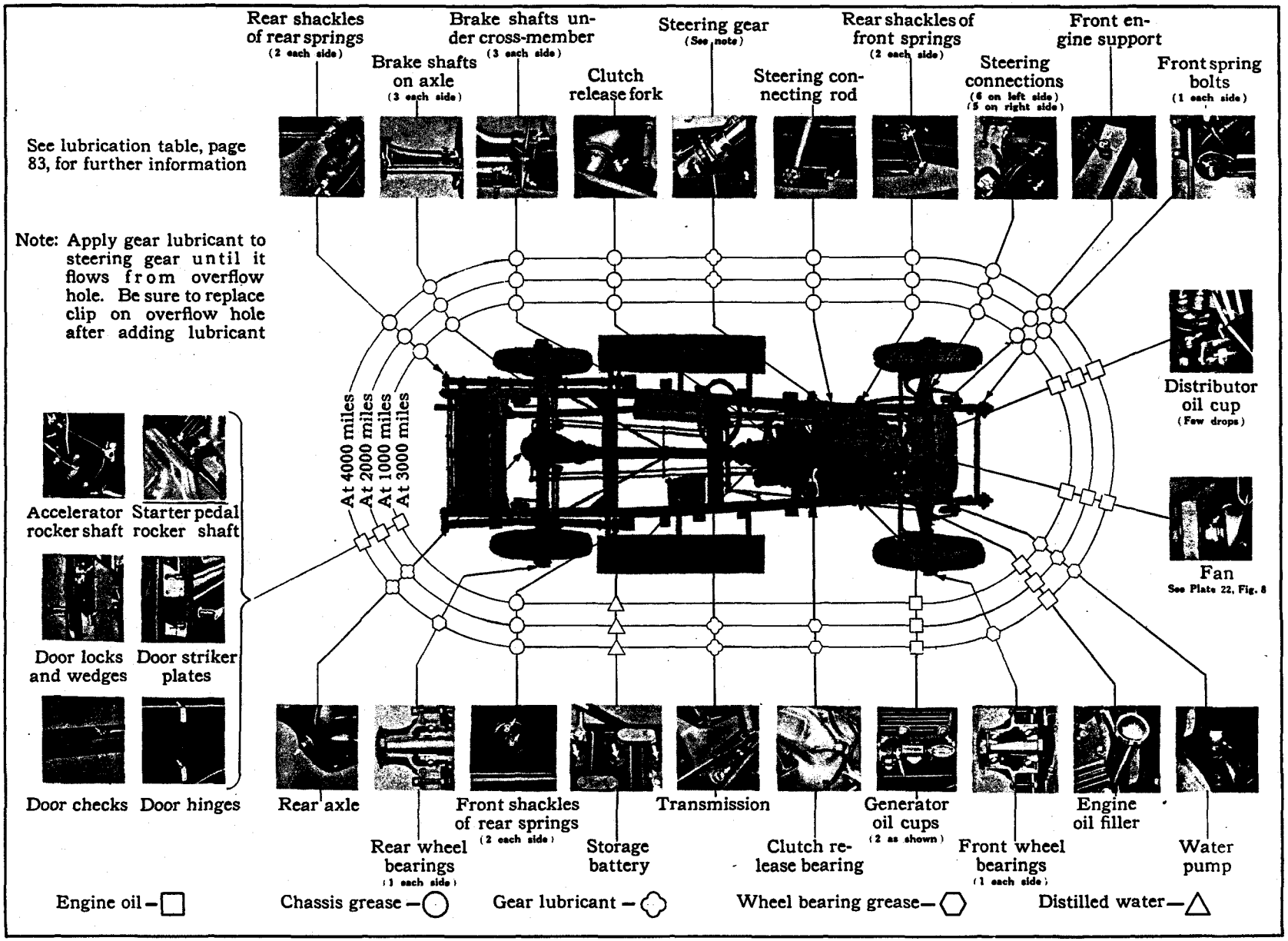



Plate 47. Lubrication diagram, La Salle 328.

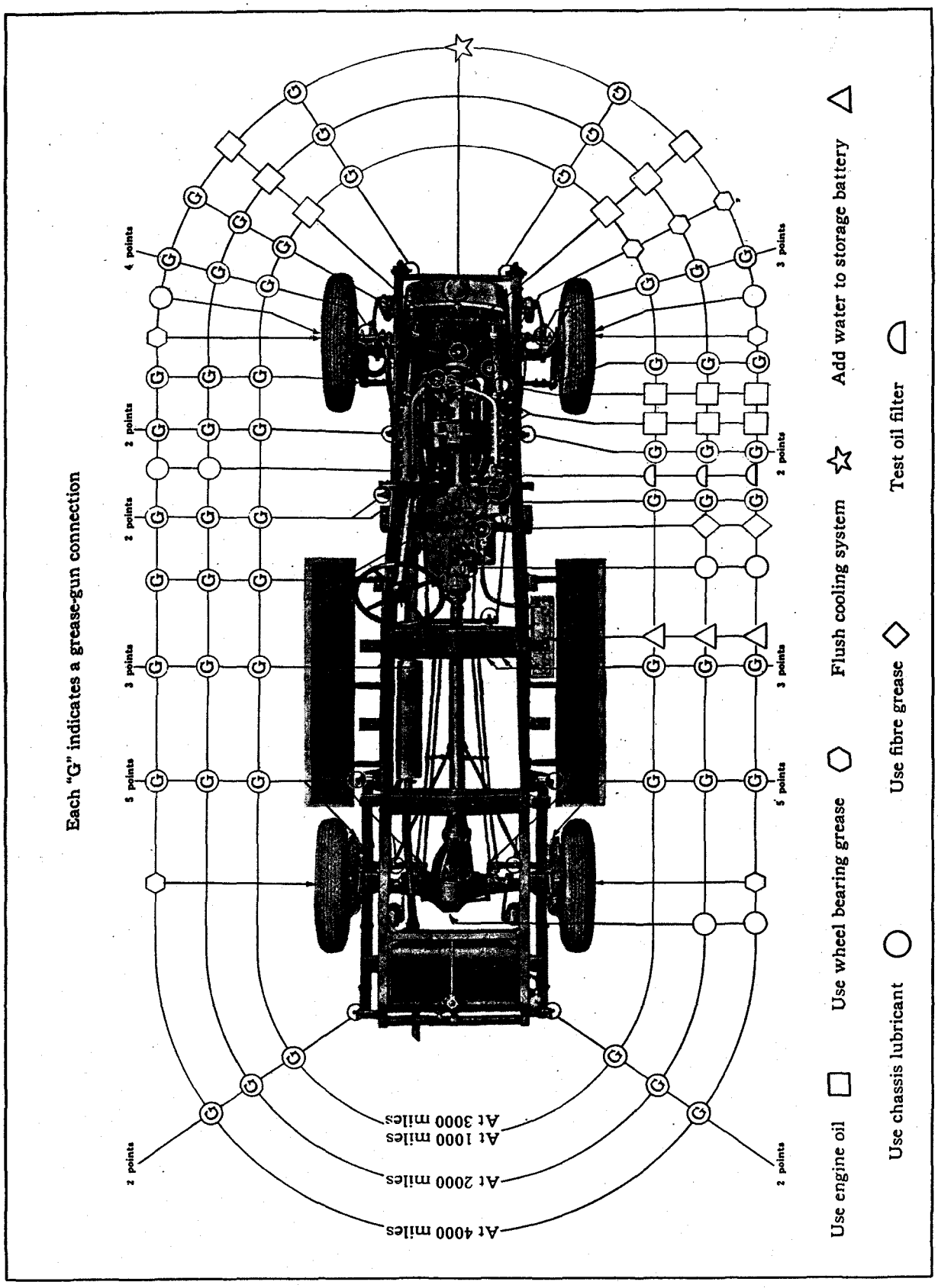



Plate 48. Chassis lubrication diagram, Cadillac 341-A.

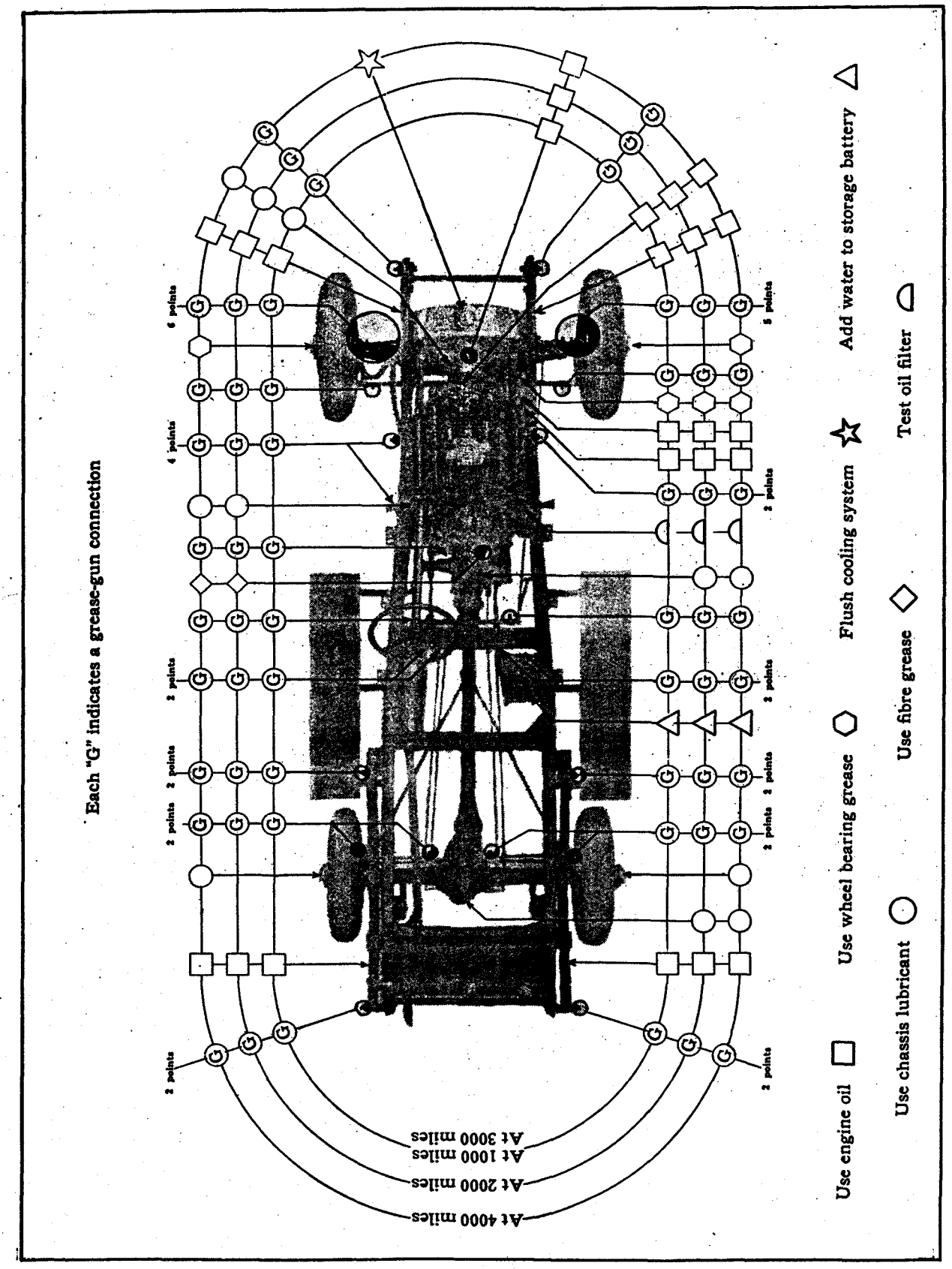



Plate 49. Chassis lubrication diagram, La Salle 303.

# Springs and Shock Absorbers

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| SPRINGS | | | | | | |
| Bolts, diameter of spring | A | B | 303 | 328 | .747-.748 in. | |
| Clearance between bolts and bushings | A | B | 303 | 328 | New limits, .001-.004 in.<br>Worn limit, not over .006 in. | |
| Leaves, Number of— | | | | | | |
| Front | A | ... | .... | .... | 10 Part No. 878718 | |
| | ... | B | .... | .... | 10 Part No. 878719 | Before chassis unit 3-22101 and beginning with chassis unit 3-25101. |
| | | | | | 11 Part No. 878721 | Beginning with chassis unit 3-22101 and before chassis unit 3-25101. |
| | ... | ... | 303[1] | .... | 8 Part No. 875915 R.H.<br>8 Part No. 875916 L.H. | Before chassis unit 2-15200 |
| | ... | ... | 303[2] | 328 | 9 Part No. 875917 R.H.<br>9 Part No. 875918 L.H. | 303: Beginning with chassis unit 2-15200.<br>328: Before chassis unit 4-00383. |
| | ... | ... | .... | 328 | 9 Part No. 871543 R.H.<br>9 Part No. 871544 L.H. | Beginning with chassis unit 4-00383. |
| Rear, standard | A | ... | .... | .... | 9 Part No. 878709 | 2-pass. cars. |
| | A | B | .... | .... | 9 Part No. 878710 | 341-A: 4-pass. cars.<br>341-B: 2-pass. and 4-pass. cars. |
| | A | B | .... | .... | 9 Part No. 878712 | 5-pass. cars. |
| | A | B | .... | .... | 10 Part No. 878713 | 7-pass. cars. |
| | ... | ... | 303[1] | .... | 8 Part No. 875872 | 2-pass. cars. |
| | ... | ... | 303[1] | .... | 9 Part No. 875871 | 4-pass. cars (Except Town Sedan) |
| | ... | ... | 303[1] | .... | 10 Part No. 875870 | 5-pass. cars and Town Sedan. |
| | ... | ... | 303[1] | .... | 10 Part No. 875874 | 7-pass. cars. |
| | ... | ... | 303[2] | .... | 8 Part No. 875871 | 2-pass. cars. |
| | ... | ... | 303[2] | 328 | 9 Part No. 875876 | 303: 4-pass. cars (Except Town Sedan)<br>328: 2-pass. Roadster. 2-pass. Coupe and Convertible Coupe before chassis unit 4-11035 and beginning with chassis unit 4-11678. 4-pass. Phaeton and Sport Phaeton before chassis unit 4-3875. |
| | ... | ... | 303[2] | 328 | 10 Part No. 875873 | 303: 5-pass. cars and Town Sedan.<br>328: 2-pass. Coupe and Convertible Coupe, beginning with chassis unit 4-11035 and before chassis unit 4-11678. 4-pass. Phaeton and Sport Phaeton, beginning with chassis unit 4-3875. 5-pass. Coupe. All other 5-pass. cars before chassis unit 4-3869. |
| | ... | ... | 303[2] | 328 | 11 Part No. 875877 | 303: 7-pass. cars.<br>328: 5-pass. cars beginning with chassis unit 4-3869 (except 5-pass. Coupe).<br>7-pass. cars before chassis unit 4-2970. |
| | ... | ... | .... | 328 | 11 Part No. 871600 | 7-pass. cars beginning with chassis unit 4-2971. |

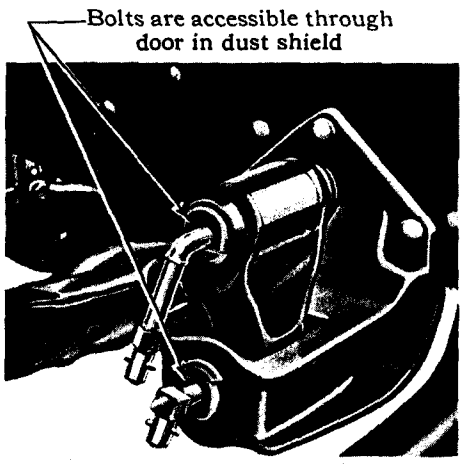



Fig. 1
Rear spring front shackle.
Cadillac 341-A

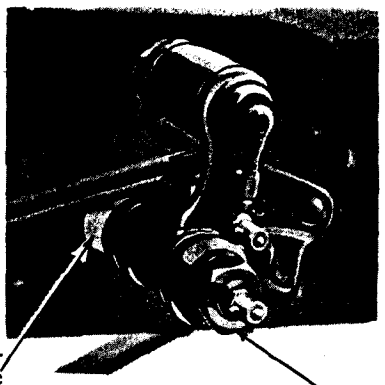



Fig. 2
Rear spring front shackle.
LaSalle 303 and 328

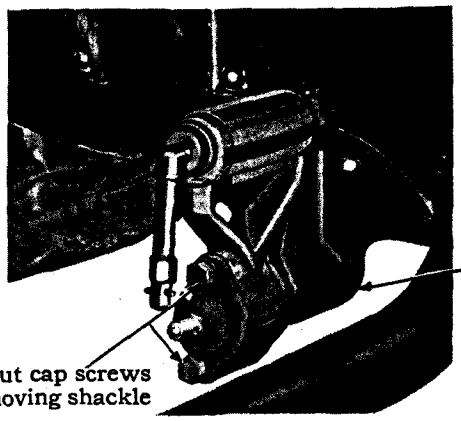



Fig. 3
Rear spring front shackle.
Cadillac 341-B

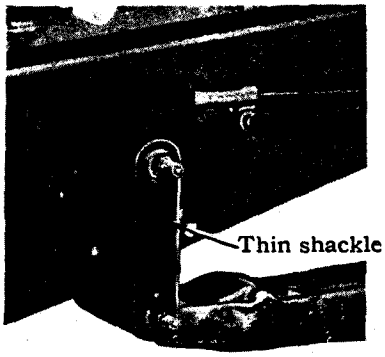



Fig. 4
Front spring rear shackle
Cadillac 341-B

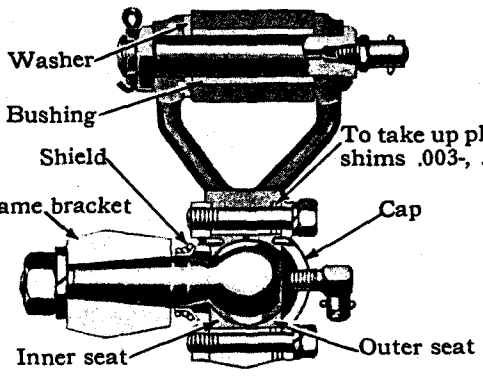



Fig. 5
Sectional view of rear spring shackle
Cadillac and LaSalle

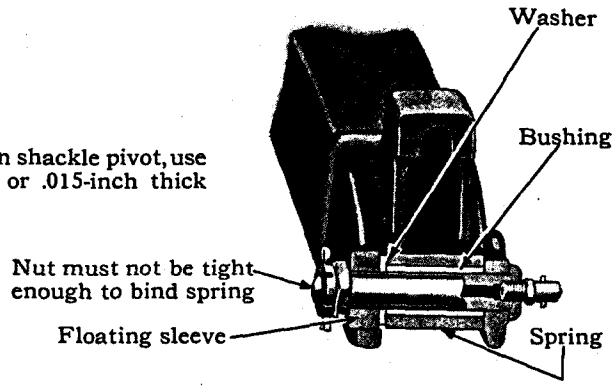



Fig. 6
Sectional view of front spring shackle.
Cadillac and LaSalle

Plate 50. Cadillac and La Salle spring shackles.

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| Rear, special heavy | A | ... | .... | .... | 9 | Part No. 878710 | | | 2-pass. cars. |
| | A | ... | .... | .... | 9 | Part No. 878712 | | | 4-pass. cars. |
| | A | B | .... | .... | 10 | Part No. 878713 | | | 341-A: 5-pass. cars.<br>341-B: 2-pass. and 4-pass. cars. |
| | A | ... | .... | .... | 10 | Part No. 878715 | | | 7-pass. cars. |
| | ... | B | .... | .... | 10 | Part No. 878714 | | | 5-pass. cars. |
| | ... | B | .... | .... | 10 | Part No. 878716 | | | 7-pass. cars. |
| | ... | ... | 303[1] | .... | 10 | Part No. 875870 | | | 2-pass. and 4-pass. cars (except Town Sedan). |
| | ... | ... | 303[1] | .... | 10 | Part No. 875874 | | | 5-pass. cars and Town Sedan. |
| | ... | ... | 303[1] | .... | 10 | Part No. 875875 | | | 7-pass. cars. |
| | ... | ... | 303[2] | 328 | 11 | Part No. 875877 | | | 303: 2-pass. and 4-pass. cars (except Town Sedan).<br>328: 2-pass. and 4-pass. cars. |
| | ... | ... | 303[2] | 328 | 12 | Part No. 875878 | | | 303: 5-pass. cars and Town Sedan.<br>328: 5-pass. cars. |
| | ... | ... | 303[2] | 328 | 12 | Part No. 875879 | | | 7-pass. cars. |
| Length, center to center— | | | | | | | | | See Note 1. |
| Front | A | B | .... | .... | 42 in. | | | | Spring in loaded position. |
| | ... | ... | 303 | 328 | 39 in. | | | | |
| Rear | A | B | .... | .... | 60 in. | | | | |
| | ... | ... | 303 | 328 | 58 in. | | | | |
| Width— | | | | | | | | | |
| Front | A | B | .... | .... | 2¼ in. | | | | |
| | ... | ... | 303 | 328 | 2 in. | | | | |
| Rear | A | B | .... | .... | 2⅛ in. | | | | |
| | ... | ... | 303 | 328 | 2 in. | | | | |
| SHOCK ABSORBERS | | | | | | | | | |
| Metering pins for two-way Lovejoys— | | | | | Style | Part No. | Location | | See Note 2. |
| Present standard equipment for average speeds on paved city streets and good country roads | | | | | | | | | |
| All body styles | ... | B | .... | 328[2] | EX | 829325 | Front | | Bumper pins. |
| | | | | | EX | 829325 | Rear | | |
| | ... | B | .... | 328[2] | 8X | 829323 | Front | | Rebound pins |
| | | | | | 9X | 829324 | Rear | | |
| High driving speeds on average roads. | | | | | | | | | |
| All body styles | ... | B | .... | 328[2] | CX | 828425 | Front | | Bumper pins |
| | | | | | CX | 828425 | Rear | | |
| | ... | B | .... | 328[2] | 6X | 828426 | Front | | Rebound pins |
| | | | | | 7X | 828427 | Rear | | |
| Speeds of 45 to 50 M. P. H. on rough roads and open ditches | | | | | | | | | |
| All body styles | ... | B | .... | 328[2] | AX | 826776 | Front | | Bumper pins |
| | | | | | AX | 826776 | Rear | | |
| | ... | B | .... | 328[2] | 3X | 827260 | Front | | Rebound pins |
| | | | | | 4X | 827261 | Rear | | |
| Speeds of 50 M. P. H. and up on rough roads and open ditches. | | | | | | | | | |
| All body styles with special heavy rear springs | ... | B | .... | 328[2] | AX | 826776 | Front | | Bumper pins |
| | | | | | BX | 828197 | Rear | | |

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | | Remarks |
|---|---|---|---|---|---|---|---|---|
| All 2-pass. cars and 4 and 7-pass. Phaeton cars with special heavy rear springs | ... | B | .... | .... | 5X<br>1X | 827262<br>828196 | Front<br>Rear | Rebound pins |
| All 4 and 5-pass. Cadillac Coupes, 5 and 7-pass. Cadillac Sedans and La Salle 328 cars, with special heavy rear springs | ... | B | .... | 328[2] | 3X<br>1X | 827260<br>828196 | Front<br>Rear | Rebound pin |

### 1. Special Heavy Rear Springs

The standard rear springs with which Cadillac and LaSalle cars are equipped are designed to give the best riding qualities under the road conditions which predominate where the greatest number of cars are used. Special heavy rear springs to prevent bottoming at high speed on rough roads are supplied by the Parts Division as listed in the table.

The special heavy springs have 1½ inches more arch than the standard springs. To compensate for this, special rear shock absorber equipment is necessary on cars equipped with special heavy springs.

In the absence of these special heavy rear springs, the standard rear springs can be stiffened by inserting extra leaves. Two extra leaves are recommended and these should be duplicates of the No. 3 leaf. When using extra leaves, it is necessary to use special length alignment clips and center bolts.

When using special heavy rear springs, it is also necessary to use longer clips to fasten the springs on the axle.

### 2. Metering Pins for Two-way Lovejoys

The metering pin equipment in two-way Lovejoy Shock Absorbers must be changed for different road conditions because it is impossible to secure ideal riding on all kinds of roads with the same metering pins. In each case, it is necessary to determine what sort of driving prevails and change the metering pins accordingly.

The present factory standard equipment for all body styles, on both Cadillac and LaSalle cars, is EX bumper pins, and 8X and 9X rebound pins on the front and rear shock absorbers, respectively. This equipment is standard because paved city streets and good country roads predominate.

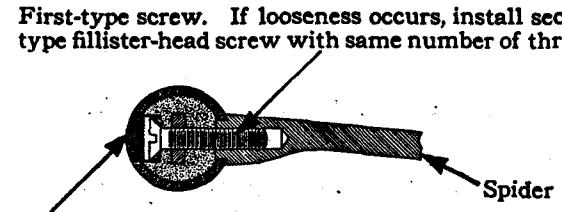
Bumper pins are used in the bumper cylinder which is on the side of the shock absorber away from the lever.

Rebound pins are used in the rebound cylinder which is on the side of the shock absorber toward the lever.

Two-way Lovejoys are supplied as special equipment for first type LaSalle 328 cars.

# Steering Gear

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| Angle of column— | | | | | | |
| Closed cars | A | ... | 303 | .... | 42° 10′ | |
| | ... | B | .... | .... | 42° 25′ | |
| | ... | ... | .... | 328 | 44° 28′ | |
| Open cars | A[1] | ... | .... | .... | 40° | |
| | A[2] | ... | .... | .... | 40° 55′ | |
| | ... | ... | 303 | .... | 42° 10′ | |
| | ... | B | .... | .... | 41° 10′ | |
| | ... | ... | .... | 328 | 42° 15′ | |
| Clearance between steering tube (worm shaft) and bushings | A | B | 303 | 328 | .002—.004 in. | |
| Clearance between sector shaft and eccentric bushing | A | B | 303 | 328 | .001—.003 in. | |
| Diameter of steering wheel | A | B | .... | .... | 19 in. | |
| | ... | ... | 303 | 328 | 18 in. | |
| Ratio | A | ... | .... | .... | 16 to 1 | Ratio of degrees movement of steering wheel to degrees movement of front wheel spindle. |
| | ... | B | .... | .... | 14.95 to 1 | |
| | ... | ... | 303 | .... | 17.5 to 1 | |
| | ... | ... | .... | 328 | 16.15 to 1 | |
| Steering connecting rod-springs | | | | | | |
| Free length | A | B | 303 | 328 | 1 in. | |
| Compression | A | B | 303 | 328 | 325—400 lbs. compressed to ⅞ in. | |
| Turning radius, left | A | B | .... | .... | 25 ft.— 1 in. | Radius of circle swept by outside wall of tire.<br>W. B.—Wheelbase. |
| | ... | ... | 303 | 328 | 20 ft.— 8 in., 125 in. W. B. | |
| | ... | ... | .... | .... | 22 ft.—10 in., 134 in. W. B. | |
| Turning radius, right | A | B | .... | .... | 23 ft.— 0 in. | |
| | ... | ... | 303 | 328 | 19 ft.— 7 in., 125 in. W. B. | |
| | ... | ... | .... | .... | 21 ft.—½ in., 134 in W. B. | |
| Unit number, location of | A | B | 303 | 328 | Top face of steering gear housing, all models | |



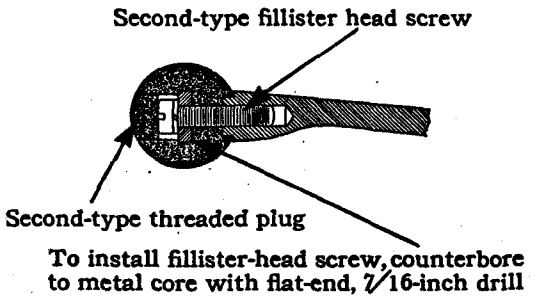
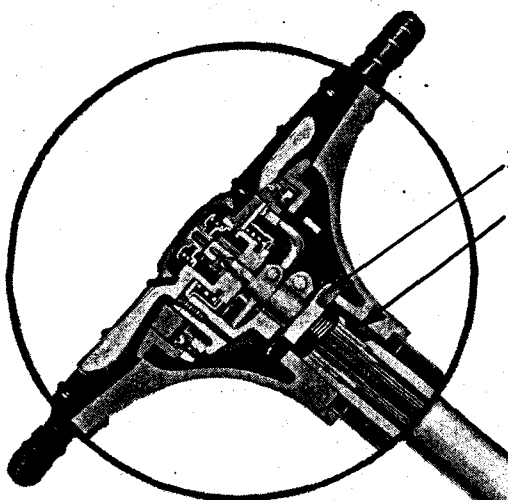




Fig. 2
Sectional view of steering wheel rim



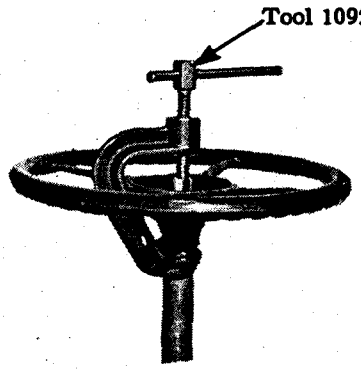




Fig. 3
Steering wheel puller

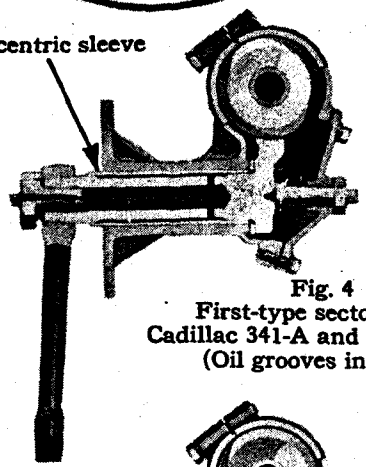



Fig. 4
First-type sector shaft.
Cadillac 341-A and LaSalle 303
(Oil grooves in shaft)

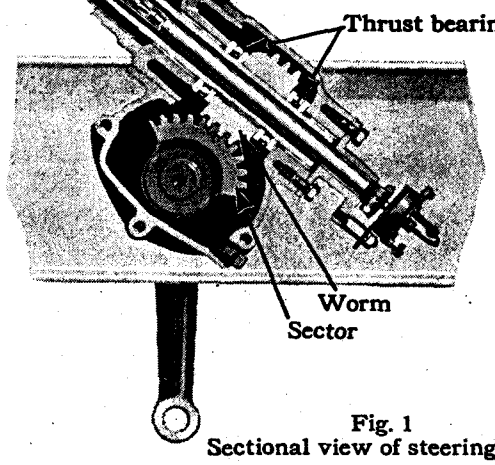



Fig. 1
Sectional view of steering gear

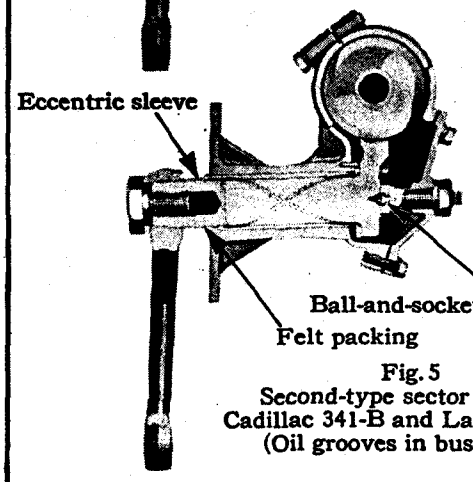



Fig. 5
Second-type sector shaft.
Cadillac 341-B and LaSalle 328
(Oil grooves in bushing)

**Plate 51. Steering gear details.**

Note: Adjustment of steering connections, knuckle bolts and wheel bearings, inspection of steering cross rod and connecting rod springs, and checking caster and alignment of front wheels should precede adjustment of steering gear. Remove steering connecting rod before adjusting steering gear

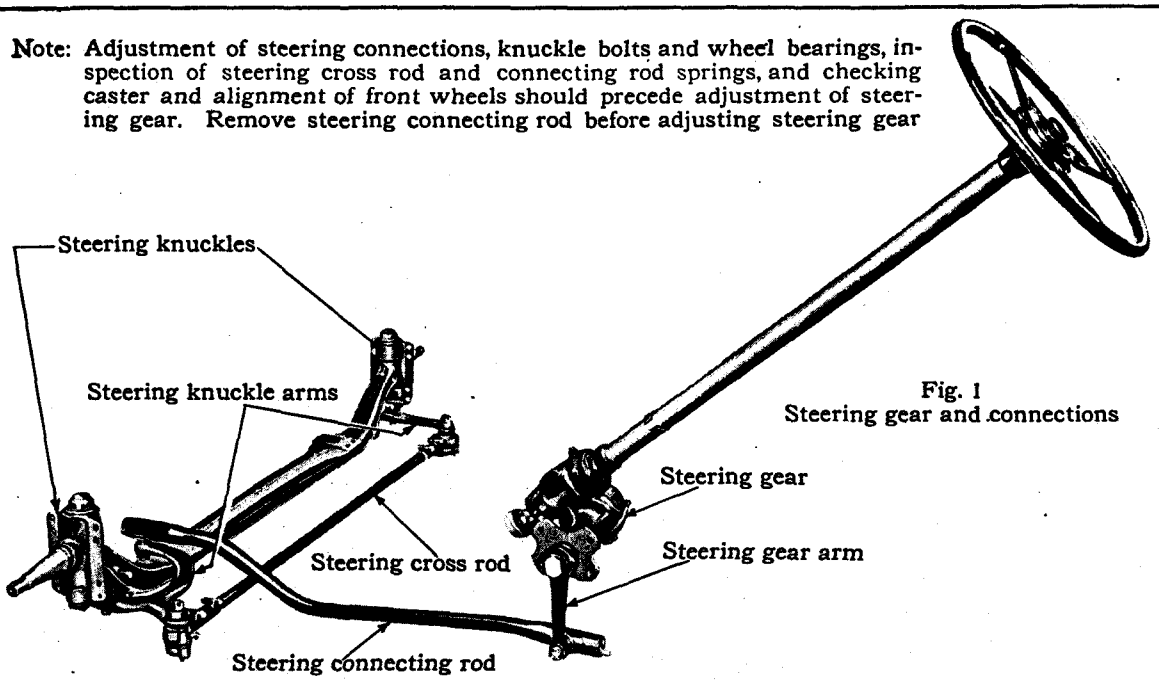



Fig. 1
Steering gear and connections

1. Back worm adjusting nut off slightly

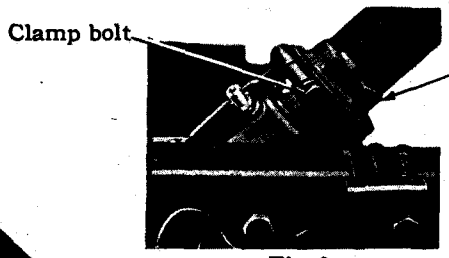



Fig. 2
Adjustment for end play in worm

2. Turn eccentric bushing with locking wrench to move sector slightly away from worm

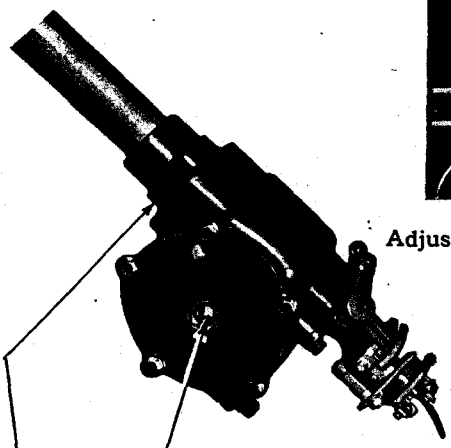


Fig. 3
Adjustment for end play in sector shaft

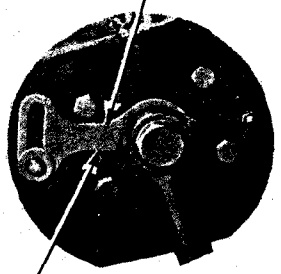


Fig. 4
Eccentric bushing adjustment

3. Turn adjusting screw in against sector until all play is taken up and slight binding is felt when turning steering wheel; then back off just enough to free adjustment. Move steering wheel back and forth while making this adjustment in order to insure alignment of swivel on sector adjusting screw

4. Turn worm adjusting nut down until all play is taken up and slight binding is felt when turning steering wheel; then back off just enough to free adjustment

5. Move locking wrench to move sector toward worm until all backlash is taken up and slight binding is felt when turning steering wheel; then back off just enough to free adjustment on high point of sector

Note: If front wheels do not point straight ahead when worm is on high point of sector, change position of steering arm on sector shaft

Plate 52. Steering gear adjustments and steering connections.

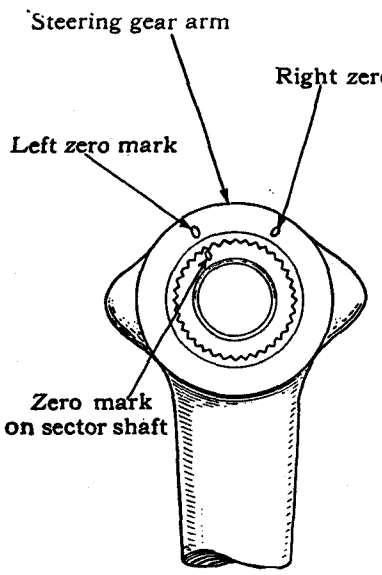



Fig. 1
Zero marks on steering gear arm and sector shaft (left-hand steering)
Zero mark on arm must line up with zero mark on shaft to insure getting worm on high point of sector. On cars with left-hand steering, use left zero mark; on cars with right-hand steering, use right zero mark

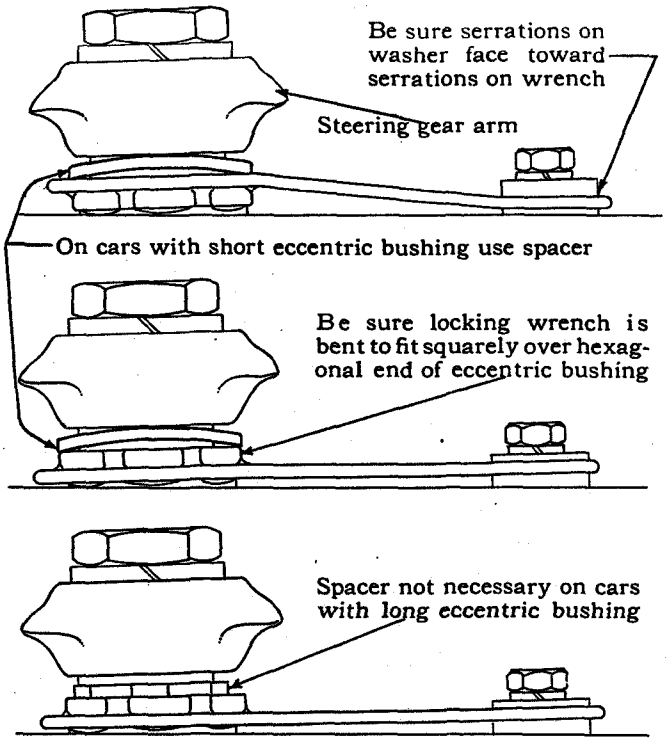



Fig. 2
Views showing installation of locking wrench on hexagonal end of eccentric bushing

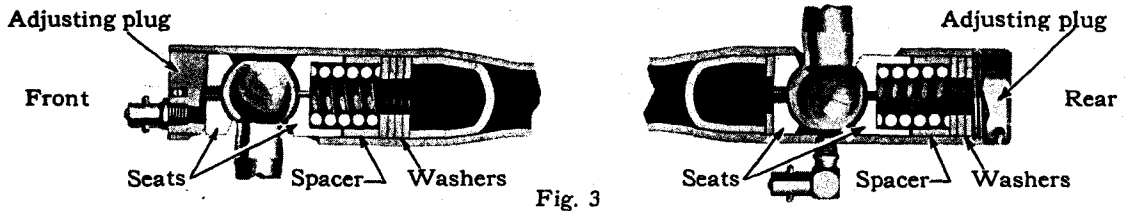



Fig. 3
Sectional view of steering connecting rod. Cadillac 341-A and B

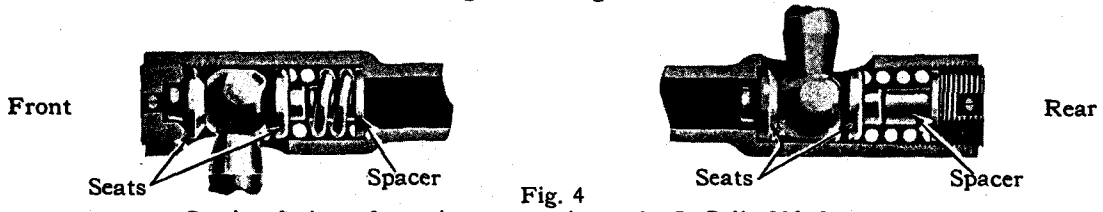



Fig. 4
Sectional view of steering connecting rod. LaSalle 303, first type

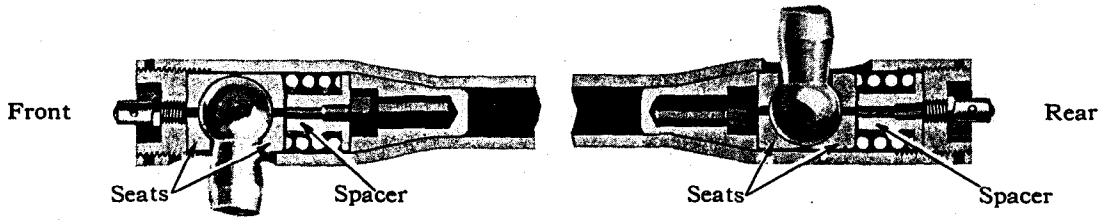



Fig. 5
Sectional view of steering connecting rod. LaSalle 303, second type, and 328

Plate 52A. Steering gear adjustments and steering connections.

# Transmission and Universal Joint

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| TRANSMISSION | | | | | | |
| Gear ratio, low gear | A | B | 303 | 328 | 3.125 to 1 | |
| Gear ratio, second gear | A | B | 303 | 328 | 1.705 to 1 | |
| Gear ratio, high gear | A | B | 303 | 328 | 1 to 1 (Direct drive) | |
| Gear ratio, reverse gear | A | B | 303 | 328 | 3.745 to 1 | |
| Lubricant | A | B | 303 | 328 | Chassis lubricant A-200 | |
| Lubricant, amount required | A | B | 303 | 328 | | See capacities under Lubrication Table, Page 83. |
| Unit number, location | A | B | 303 | 328 | On center of left flange next to flywheel housing | |
| JACKSHAFT GEAR ASSY | | | | | | |
| End play of gear unit | A | ... | ... | ... | New limits, .001-.009 in. Worn limit, not over .015 in. | |
| | ... | ... | 303 | ... | New limits, .012-.022 in. Worn limit, not over .025 in. | |
| | ... | B | ... | 328 | New limits, .001-.011 in. Worn limit, not over .025 in. | |
| Play in jackshaft bearings | A | B | 303 | 328 | Worn limit, not over .007 in. | |
| MAIN SHAFT ASSEMBLY | | | | | | |
| Clearance between second speed gear and bushing | ... | B | ... | 328 | New limits, .002-.004 in. Worn limit, not over .006 in. | |
| Clearance between splines on main shaft and splineways of bushing in second speed gear | ... | B | ... | 328 | New limits, .001-.005 in. Worn limit, not over .008 in. | |
| Clearance between splines on main shaft and splineways in shifter gears | A | B | 303 | 328 | New limits, .001-.003 in. Worn limit, not over .005 in. | In 341-B and 328 cars, these limits apply only to low-and-reverse shifter gear. |
| Clearance between splines on main shaft and splineways in sliding gear coupling | ... | B | ... | 328 | New limits, .001-.003 in. Worn limit, not over .005 in. | |
| Clutch connection shaft, out of true | A | B | 303 | 328 | Not over .0025 in. | |
| End play between clutch connection shaft and main shaft | ... | B | ... | 328 | New limits, .001-.012 in. Worn limit, not over .020 in. | |
| End play in clutch connection shaft rear bearing | A | ... | 303 | ... | Not over .015 in. | |
| End play in main shaft rear bearing | A | ... | 303 | ... | Not over .015 in. | |
| Main shaft, out of true | A | B | 303 | 328 | Not over .0025 in. | |
| Shake between clutch connection shaft and main shaft | A | B | 303 | 328 | Not over .006 in. | |
| REVERSE PINION GEAR ASSEMBLY | | | | | | |
| Clearance between reverse pinion shaft and bushing | A | B | 303 | 328 | New limits, .001-.003 in. Worn limit, not over .004 in. | |

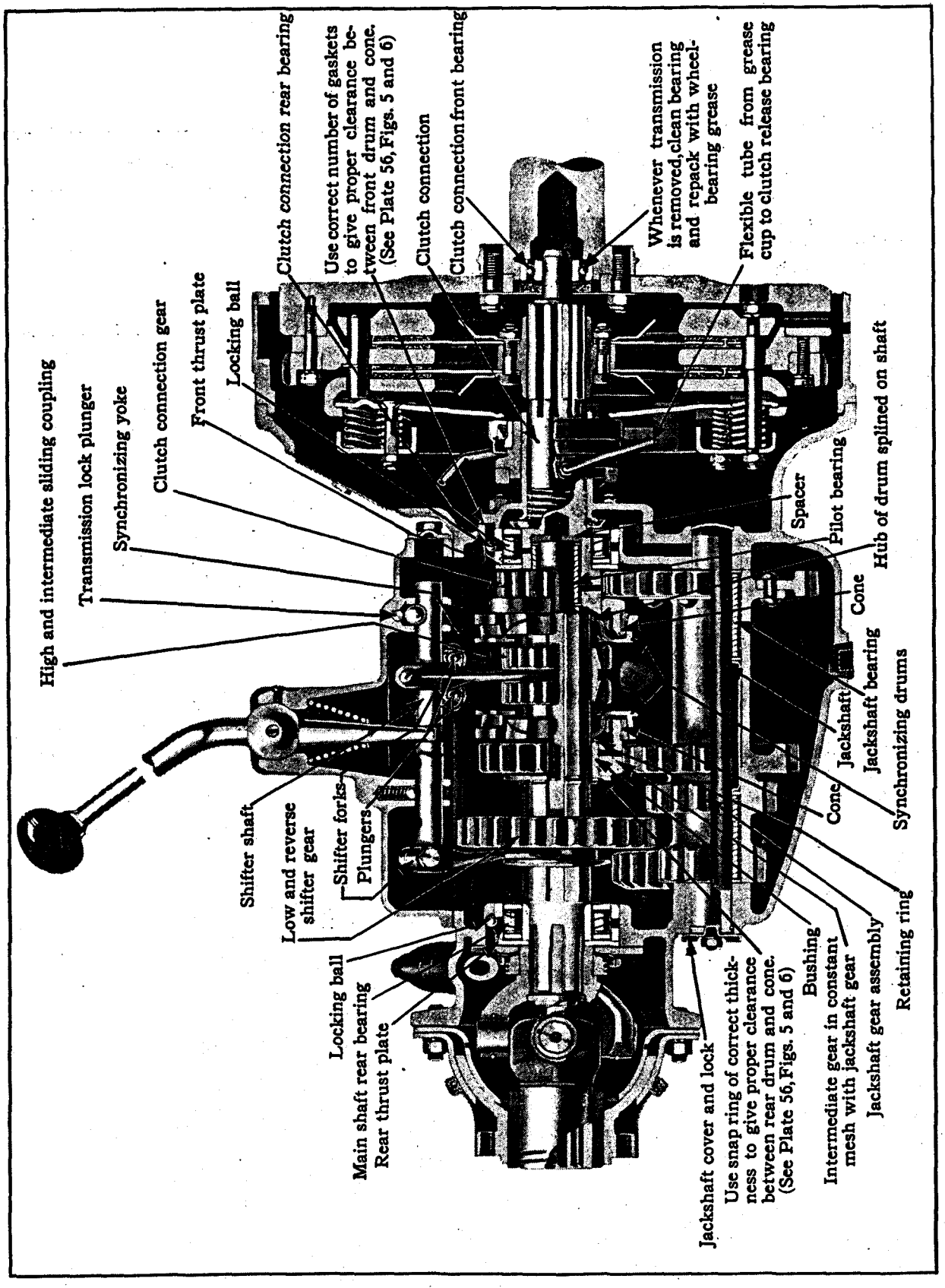



**Plate 53. Sectional view of transmission, Cadillac 341-B and La Salle 328.**

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | Remarks |
|---|---|---|---|---|---|---|
| End play in reverse pinion | A | ... | 303 | .... | New limits, .010-.022 in.<br>Worn limit, not over .025 in. | |
| | ... | B | .... | 328 | Worn limit, not over .025 in. | |
| Reaming size for reverse pinion bushing | A | B | 303 | 328 | .937-.938 in. | |
| **SHIFTING MECHANISM** | | | | | | |
| Clearance between shifter fork and shifter gear | A | ... | 303 | .... | New limits, .010-.017 in.<br>Worn limit, not over .025 in. | |
| | ... | B | .... | 328 | New limits, .020-.027 in.<br>Worn limit, not over .035 in. | |
| Shifter shaft lock spring, free length | A | ... | .... | .... | 1 11/32 in., approximately | |
| | ... | ... | 303 | .... | 1 11/32 in., approximately | |
| | ... | B | .... | 328 | 1 3/16 in., approximately | |
| Shifter shaft lock spring, compression | A | ... | .... | .... | 24-26 lbs. at 1 in. | |
| | ... | ... | 303 | .... | 24-26 lbs. at 1 1/4 in. | |
| | ... | B | .... | 328 | 20-23 lbs. at 3/4 in. | |
| **YOKE ASSEMBLY** | | | | | | |
| Clearance between guide block and drum | ... | B | .... | 328 | New limits, .002-.006 in.<br>Worn limit, not over .010 in. | |
| Clearance between plunger and yoke bore | ... | B | .... | 328 | New limits, .001-.003 in.<br>Worn limit, not over .005 in. | |
| Plunger main spring, free length | ... | B | .... | 328 | 1 1/4 in., approximately | |
| Plunger main spring, compression | ... | B | .... | 328 | 24-26 lbs. at 1 1/2 in. | |
| Plunger valve spring, free length | ... | B | .... | 328 | 5/8 in., approximately | |
| Plunger valve spring, compression | ... | B | .... | 328 | 2 3/4-3 1/4 lbs. at 7/16 in. | |
| Yoke return springs, free length | ... | B | .... | 328 | 1 1/8 in., approximately | |
| Yoke return springs, compression | ... | B | .... | 328 | 14-16 lbs. at 41/64 in. | |
| Yoke throw from neutral to applied position | ... | B | .... | 328 | New limits, 3/32-5/32 in.<br>Worn limit, not over 1/4 in. | Measured at top of transmission case, *Plate 56, Fig. 5.* |
| **SPEEDOMETER GEARS**<br>32 x 6.75 (7.00/20) TIRES | | | | | Driving Gear No. of Teeth / Driven Gear No. of Teeth | See notes 1, 2, 3 and 4<br>Part Number / Rolling radius |
| 4.39:1 gear ratio | A | ... | .... | .... | 7 / 21 | 878207 / 878208 ..... 14 1/2 to 15 3/16 in. |
| | ... | B | .... | .... | 7 / 21 | 848176 / 848123 |
| | A | ... | .... | .... | 7 / 20 | 878207 / 877088 ..... 15 3/16 to 15 11/16 in. |
| | ... | B | .... | .... | 7 / 20 | 848176 / 848122 |
| | A | ... | .... | .... | 7 / 19 | 878207 / 878209 ..... 15 11/16 to 16 3/4 in. |
| | ... | B | .... | .... | 7 / 19 | 848176 / 848178 |

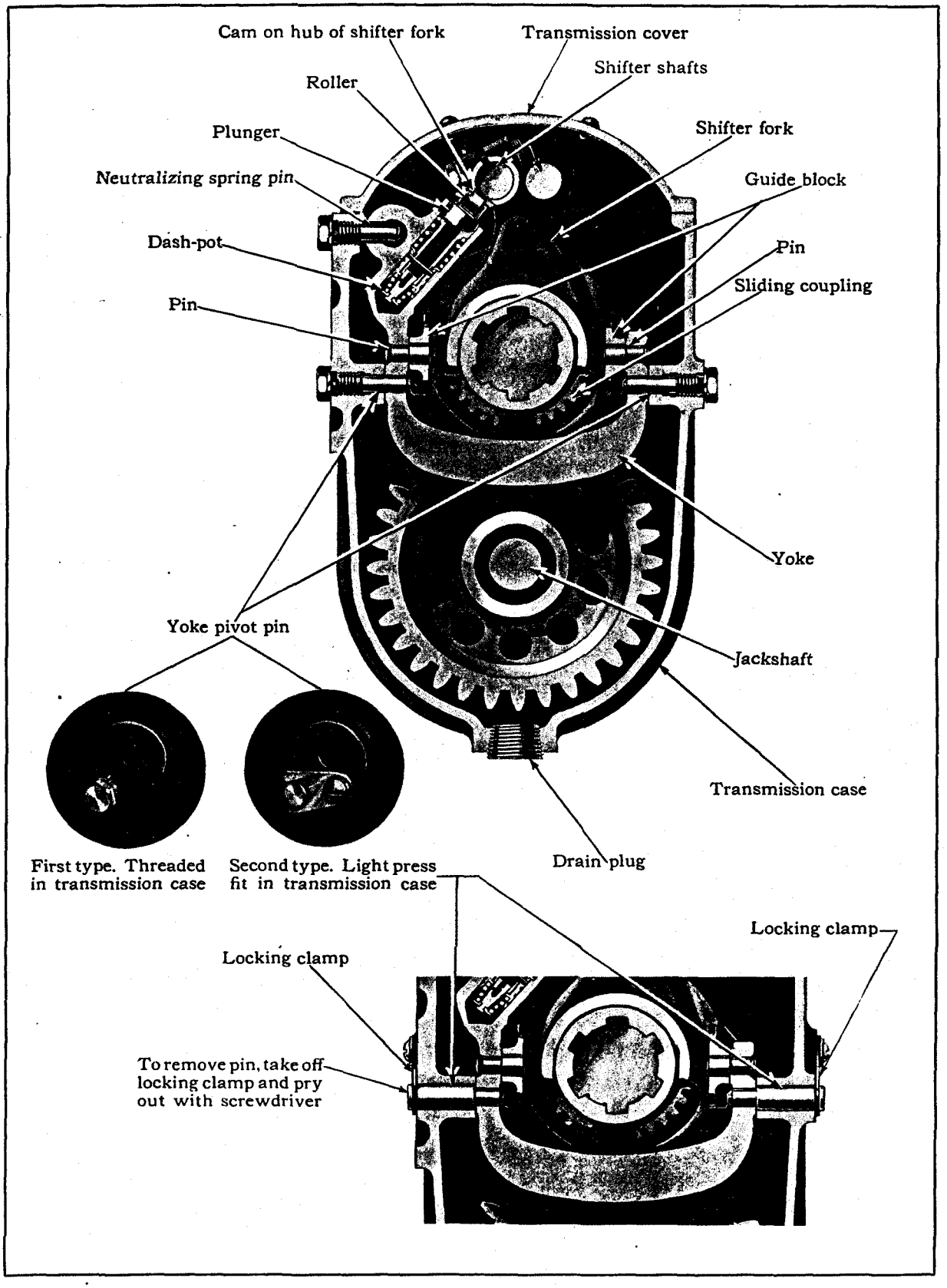



Plate 54. Cross-sectional view of transmission, Cadillac 341-B and La Salle 328.

February, 1929

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | Remarks | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Driving Gear No. of Teeth | Driven Gear No. of Teeth | See notes 1, 2, 3 and 4 Part Number | Rolling radius |
| 4.75:1 gear ratio | A | ... | ... | ... | 7 | 22 | 878207<br>876259 | 14⅝ to 15⅜ in. |
| | ... | B | ... | ... | 7 | 22 | 848176<br>848124 | |
| | A | ... | ... | ... | 7 | 21 | 878207<br>878208 | 15⅜ to 16¼ in. |
| | ... | B | ... | ... | 7 | 21 | 848176<br>848123 | |
| 5.08:1 gear ratio | ... | B | ... | ... | 7 | 23 | 848176<br>848125 | 15⅛ to 15¾ in. |
| | A | ... | ... | ... | 7 | 22 | 878207<br>876259 | 15¾ to 16 1/16 in. |
| | ... | B | ... | ... | 7 | 22 | 848176<br>848124 | |
| 32 x 6.20 (6.30/20) TIRES | | | | | | | | |
| 4.17:1 gear ratio | ... | ... | 303 | ... | 7 | 18 | 876267<br>876351 | 15⅜ to 16¼ in. |
| | ... | ... | 303[1] | ... | | 18 | 876374 | |
| | ... | ... | 303[2] | ... | | | | |
| 4.54:1 gear ratio | ... | ... | 303 | ... | 7 | 20 | 874375<br>877088 | 15 5/16 to 16 5/16 in. |
| 4.916:1 gear ratio | ... | ... | 303 | ... | 7 | 22 | 874375<br>876226 | 16 5/16 to 16 in. |
| | ... | ... | 303[1] | ... | | 22 | 876259 | See note 1. |
| | ... | ... | 303[2] | ... | | | | |
| 32 x 6.00 (6.00/20) TIRES | | | | | | | | |
| 4.07:1 gear ratio | ... | ... | 303 | ... | 7 | 18 | 874375<br>876351 | 15⅜ to 16¼ in. |
| | ... | ... | 303[1] | ... | | 18 | 876374 | |
| | ... | ... | 303[2] | ... | | | | |
| 4.54:1 gear ratio | ... | ... | 303 | ... | 7 | 21 | 874375<br>874374 | 14 13/16 to 15 5/16 in. |
| | ... | ... | 303[1] | ... | | 21 | 876258 | See note 1. |
| | ... | ... | 303[2] | ... | | | | |
| 4.916:1 gear ratio | ... | ... | 303 | ... | 7 | 22 | 874375<br>876226 | 15 5/16 to 16 in. |
| | ... | ... | 303[1] | ... | | 22 | 876259 | See note 1. |
| | ... | ... | 303[2] | ... | | | | |
| | ... | ... | 303 | ... | 7 | 21 | 874375<br>874374 | 16 to 16¾ in. |
| | ... | ... | 303[1] | ... | | 21 | 876258 | See note 1. |
| | ... | ... | 303[2] | ... | | | | |
| 31 x 6.20 (6.50/19) TIRES | | | | | | | | |
| 4.07:1 gear ratio | ... | ... | ... | 328 | 7 | 18 | 848170<br>876374 | 15 5/16 to 16 in. |
| | ... | ... | ... | 328 | 7 | 19 | 848176<br>848178 | 14⅝ to 15⅜ in. |
| | ... | ... | ... | 328 | 7 | 18 | 848176<br>876374 | 15⅜ to 16¼ in.<br>See note 3. |
| 4.54:1 gear ratio | ... | ... | ... | 328 | 7 | 21 | 848176<br>848123 | 14 13/16 to 15 5/16 in. |
| | ... | ... | ... | 328 | 7 | 20 | 848176<br>848122 | 15 5/16 to 16 5/16 in.<br>See note 3. |

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | Remarks | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Driving Gear No of Teeth | Driven Gear No of Teeth | See notes 1, 2, 3 and 4 Part Number | Rolling Radius |
| 4.916:1 gear ratio | ... | ... | .... | 328 | 7 | 23 | 848176 848125 | 14¾ to 15 1/16 in. |
| | ... | ... | .... | 328 | 7 | 22 | 848176 848124 | 15 1/16 to 16 in. See note 3. |
| UNIVERSAL JOINT | | | | | | | | |
| *Ball and socket joint, adjustment* | A | B | 303 | 328 | Remove gaskets until friction can be felt in joint, then add one gasket | | | |
| Ball member bushing, assembly | A | B | 303 | 328 | Oil grooves must cross on right side and open toward top and bottom of ball | | | |
| Clearance between crosses and bushings | A | B | 303 | 328 | New limits, .0025-.004 in. Worn limit, not over .006 in. | | | |
| Clearance between yoke and ball member bushing | A | B | 303 | 328 | New limits, .005-.007 in. Worn limit, not over .010 in. | | | |

### 1. Speedometer Drive and Driven Gears

Two types of driven gears are listed for LaSalle 303 cars. The first type gears (874374-876226) are for transmissions before unit 2-5781, and the second type gears (876258-876259) are for transmissions after this unit number.

Beginning with transmission unit 2-5781, the speedometer cable is smaller in diameter, so that a gear with a smaller hole is required.

All driving gears have seven teeth but differ in lead and pitch. Driven gears with 18 and 22 teeth give slightly fast readings with 32 x 6.00 tires and slightly slow readings with 32 x 6.20 tires.

### 2. Installation of Cable Flange

On 341-A and 303 cars the distance between the centers of the driving gear and driven gear is the same for all combinations. On 341-B and 328 cars, two different center distances are used, one for pinions with 16 to 19 teeth and one for pinions with 20 to 23 teeth. In order to make this possible, the end of the speedometer cable is eccentric. In one position, the cable gives the correct center distance for pinions with 16 to 19 teeth. When revolved 180° the cable gives the correct center distance for pinions with 20 to 23 teeth. The flange of the cable end has the figures "16-19" on one side and "20-23" on the other side. The cable should always be turned so that the figures corresponding to the number of teeth on the pinion are on top.

### 3. United States Tires with Narrow Face

Driven gears 876374, 848122 and 848124 are for use only on La Salle 328 cars when narrow tread United States Tires are used.

### 4. Determining Correct Speedometer Gear by Rolling Radius

There are occasionally owners who desire to install on their cars tires of a different make from standard, or tires of special sizes. Any change in the make or sizes of the tires affects the speedometer reading and, in many cases, a new speedometer gear will be necessary.

It is impossible to specify the correct gear merely from the nominal size of the tire. Tires of various makes differ. It is necessary to know the "rolling radius" in order to determine the correct speedometer gear.

To find the rolling radius of any tire, simply measure the distance from the center of the hub cap of a rear wheel to the pavement.

Before doing this, however, make sure that the tires are inflated to the normal pressure of 40 pounds and that the car is weighed down to its normal load.

Once the rolling radius is known, the correct gear can be determined by referring to the specification table.

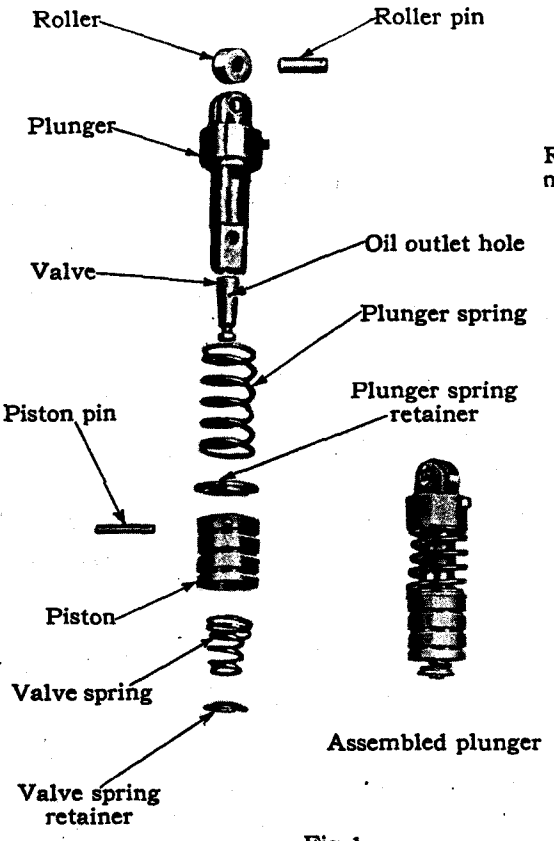



Fig. 1
Plunger unit

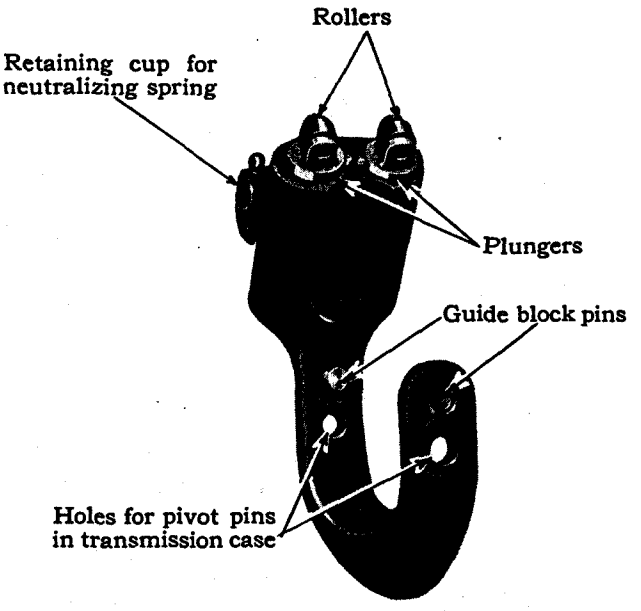



Fig. 2
Yoke assembly

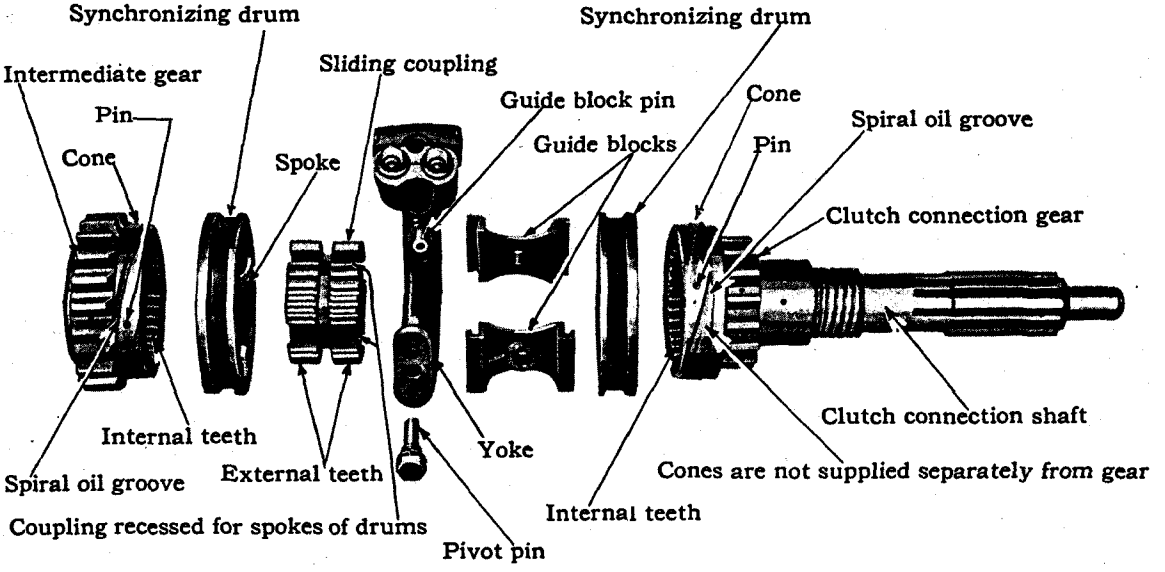



Fig. 3
Exploded view of synchronizing mechanism

## Plate 54A. Transmission synchronizing mechanism.

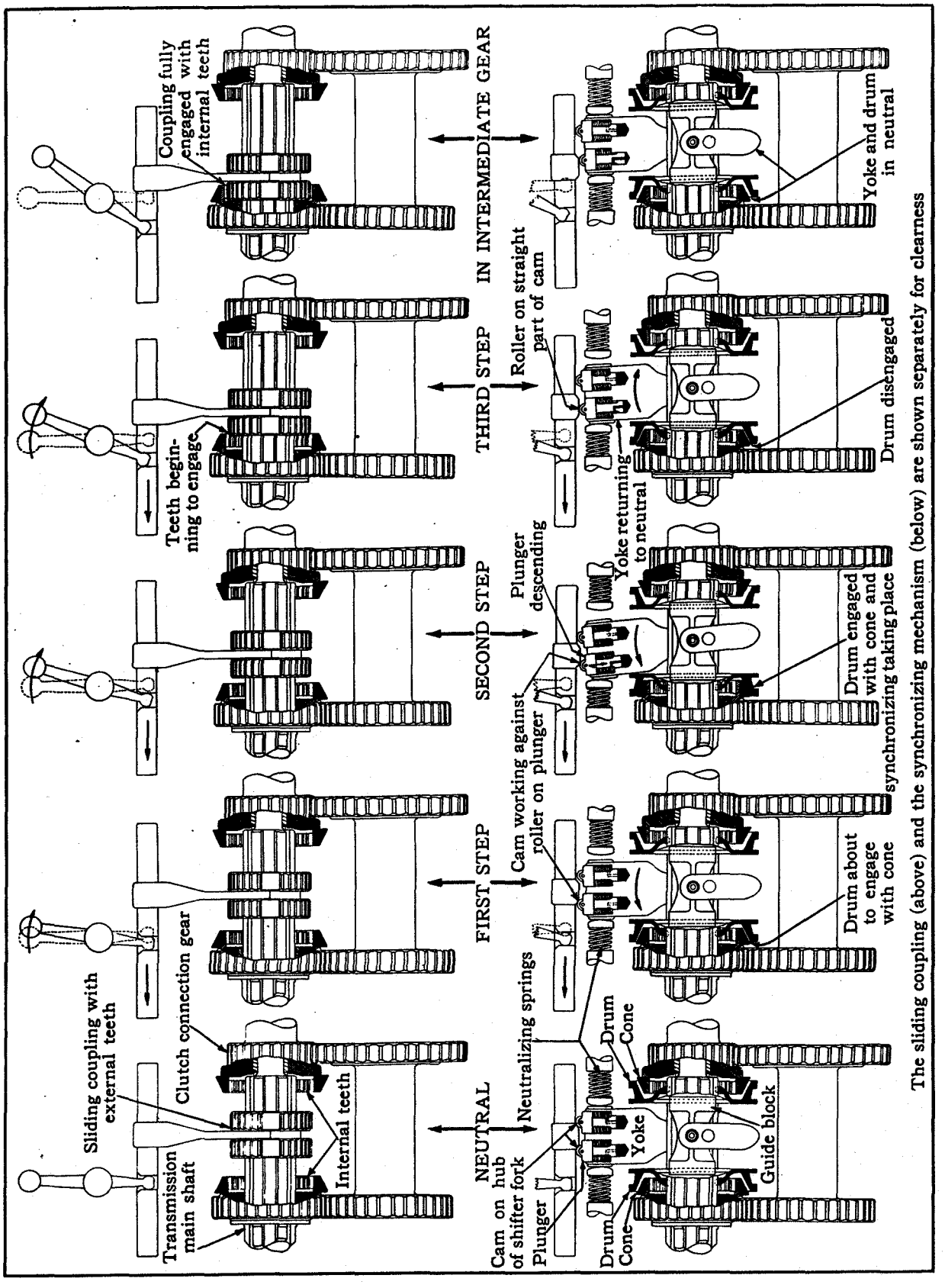



**Plate 55. Diagrams showing operation of synchronizing mechanism. (Neutral to intermediate).**

Figs. 1 to 4
Sectional views of synchronizing yoke showing action of dash-pot plungers

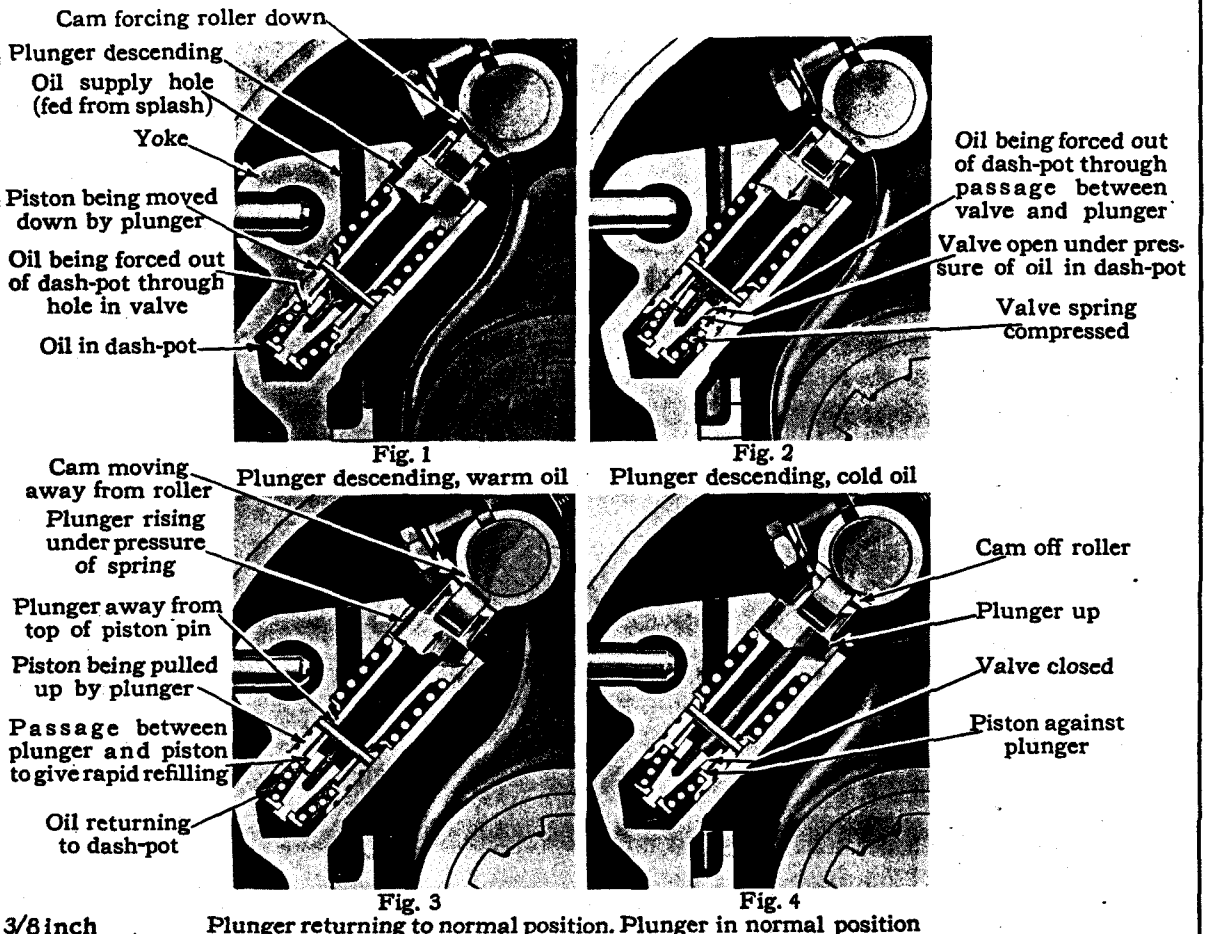
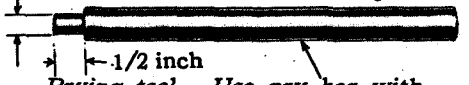



Fig. 1 Plunger descending, warm oil

Fig. 2 Plunger descending, cold oil

Fig. 3 Plunger returning to normal position. Dash-pot refilling

Fig. 4 Plunger in normal position




Prying tool. Use pry bar with shoulder to prevent burring edges of oil supply hole. Use just enough pressure to engage drum with cone

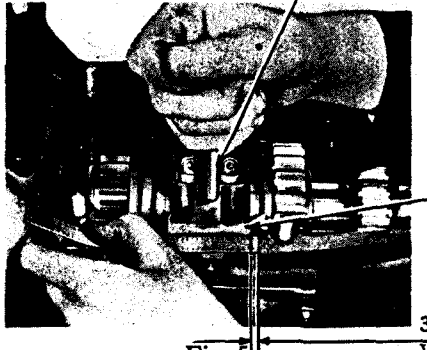


Fig. 5 Measuring travel of yoke to determine clearance between front drum and cone. Repeat in opposite direction for rear drum

Clearance determined by number of gaskets under clutch connection rear-bearing cap. Measured as shown in Fig. 5

Clearance determined by thickness of snap ring in bushing. Measured as shown in Fig. 5

Measure movement of yoke from neutral to extreme positions

3/32—5/32-inch travel either way from neutral position

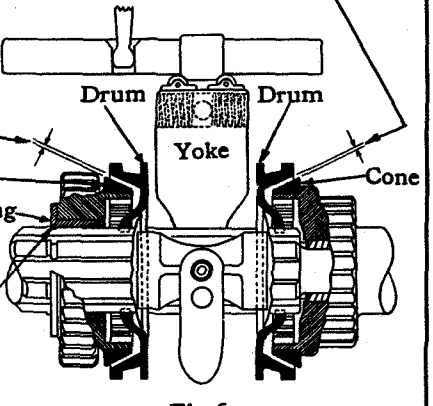



Fig. 6 Clearance between drum and cone. Adjustment necessary only when installing new parts

Plate 56. Dash pot operation and drum clearances.

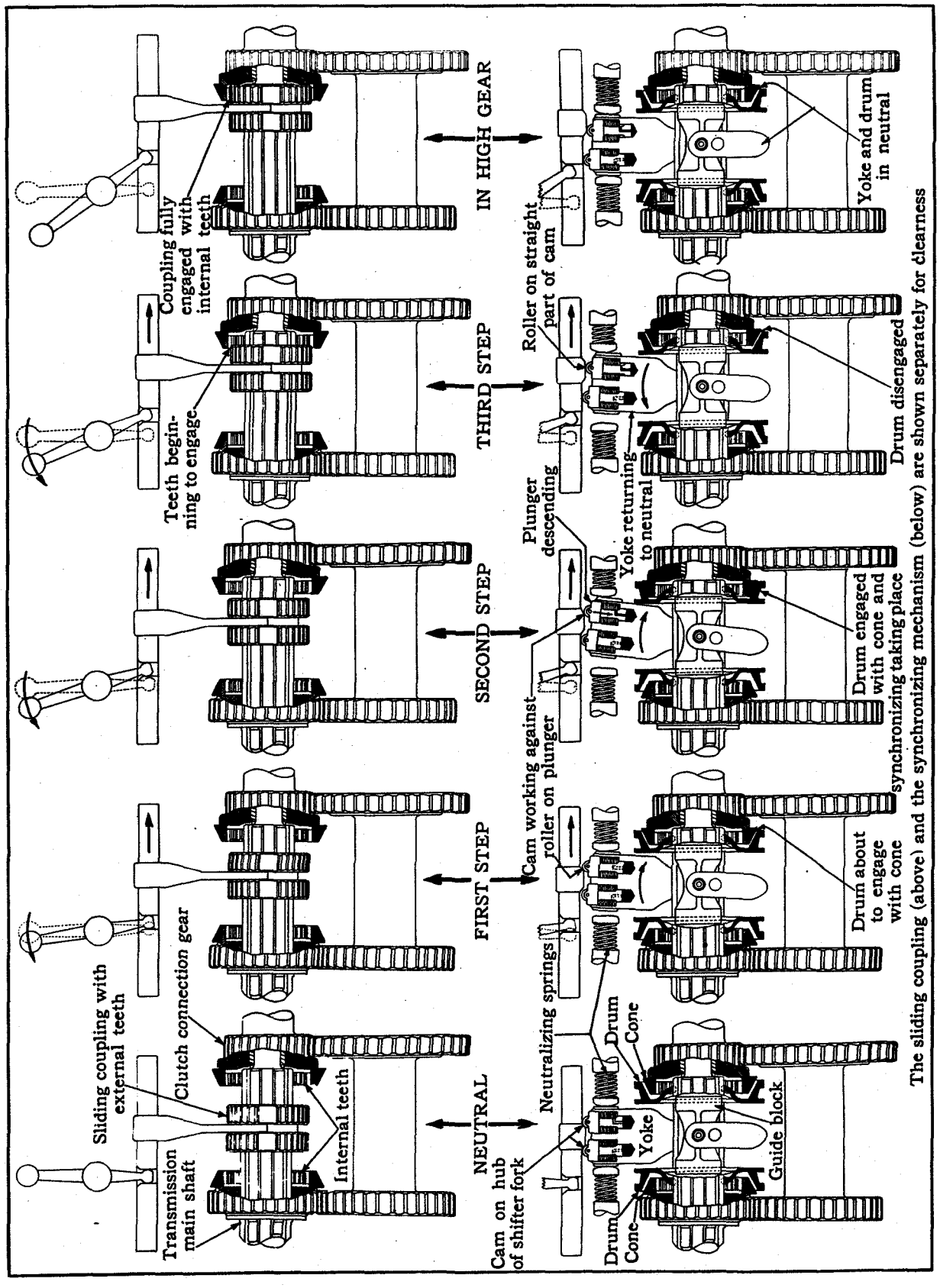



**Plate 57. Diagrams showing operation of synchronizing mechanism. (Neutral to direct drive).**

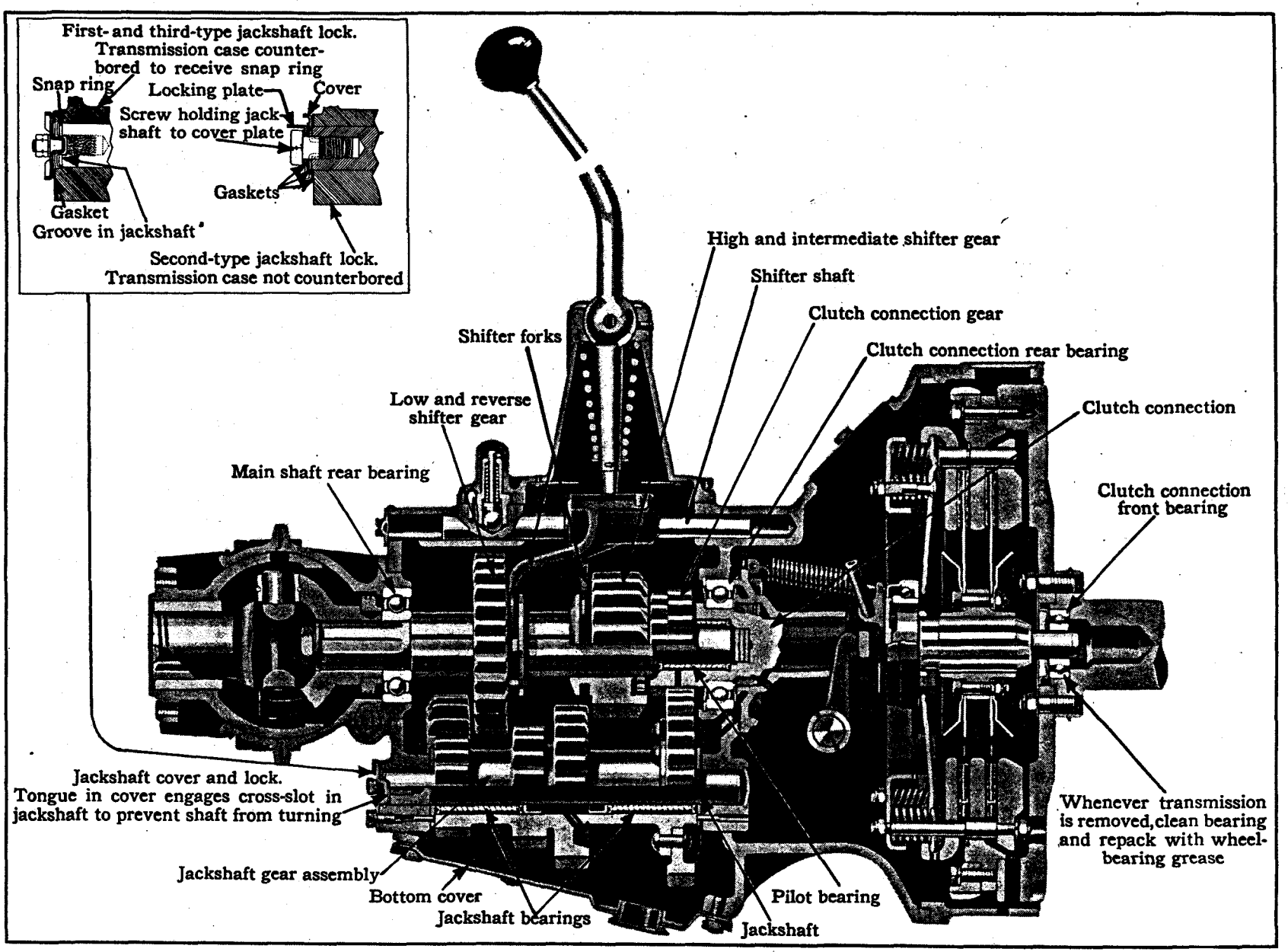



Plate 58. Sectional view of Cadillac 341-A transmission.

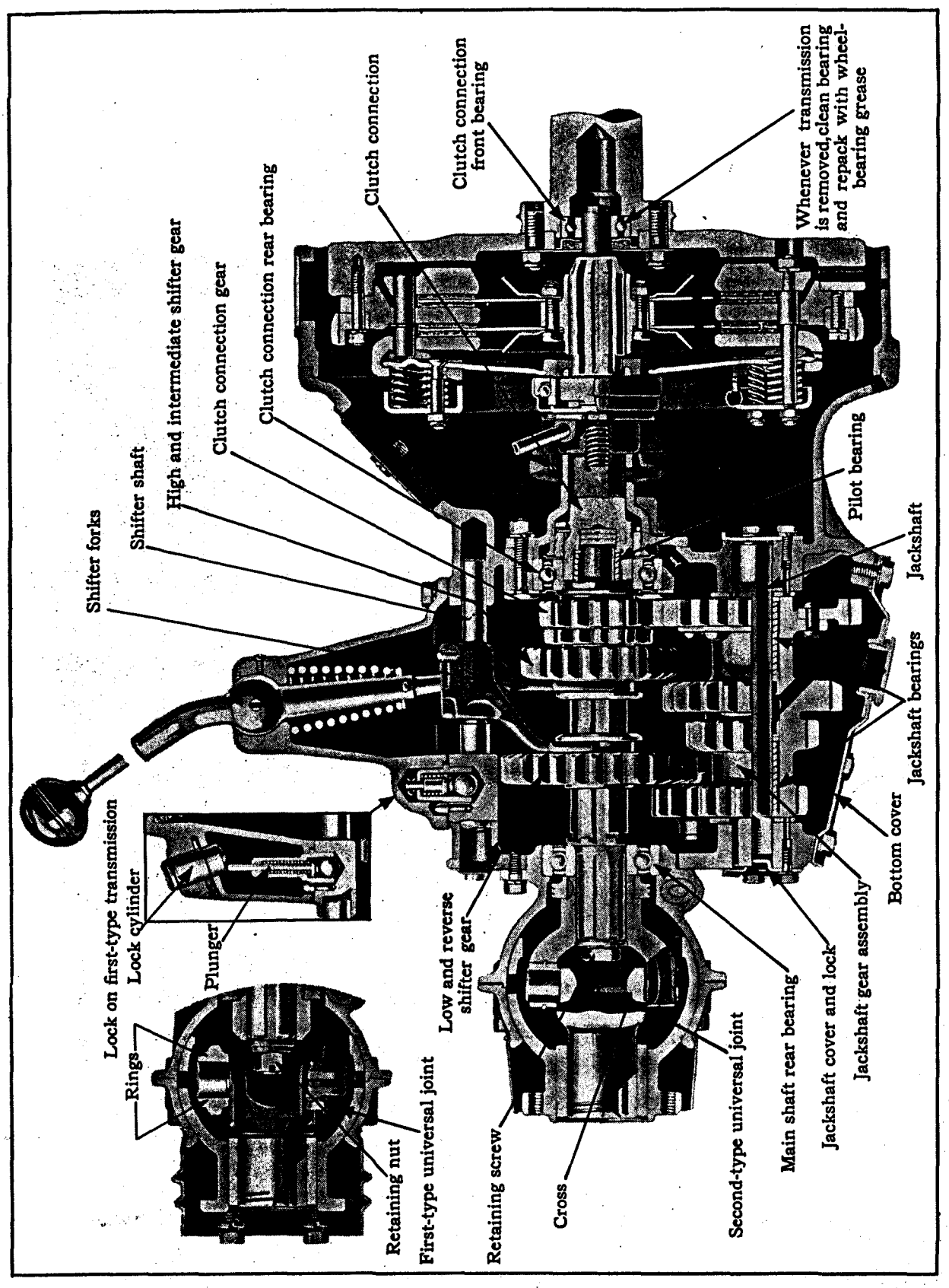



Plate 59. Sectional view of La Salle 303 transmission.

Figs. 1 and 2
Dowel pins are necessary for guiding the transmission during its removal and installation to prevent springing the clutch discs. Cadillac 341-A and LaSalle 303 with plate clutch

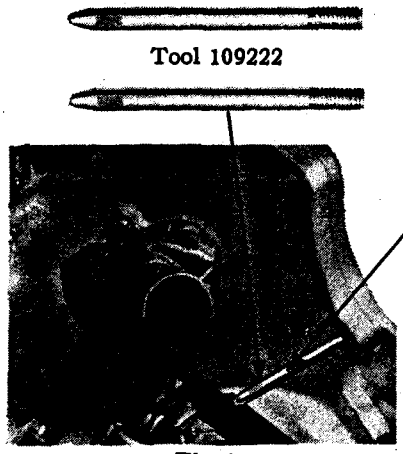



Fig. 1
First-type detachable dowel pin

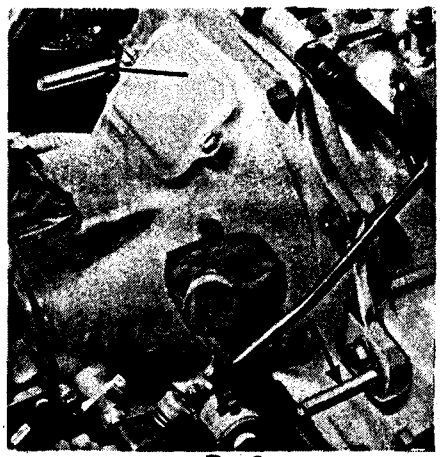


Fig. 2
Second-type permanent dowel pins

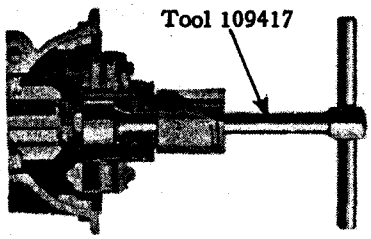



Fig. 3
Wrench for removing universal joint retaining nut. Use wrench 109217 for second-type joint with retaining screw

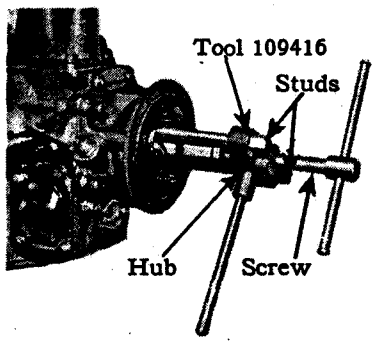



Fig. 4
Universal joint puller. Use adapters in place of studs for Cadillac 341-A and B; LaSalle 303, second type, and 328

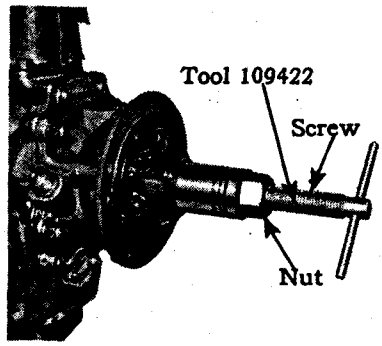



Fig. 5
Universal joint pusher. Use adapter on end of screw for Cadillac 341-A and B; La Salle 303, second type, and 328

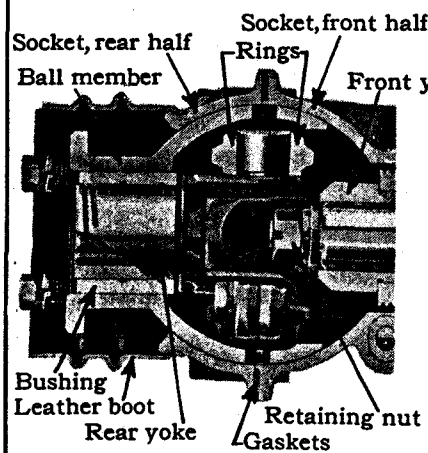



Fig. 6
Sectional view of universal joint. LaSalle 303, first type

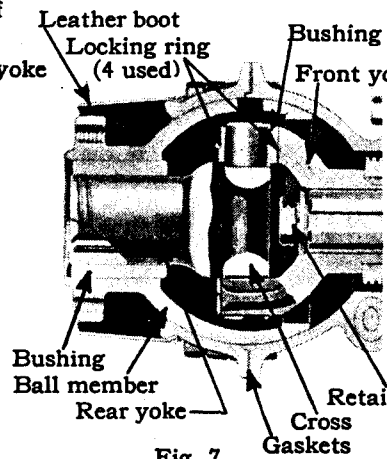



Fig. 7
Sectional view of universal joint. Cadillac 341-A and LaSalle 303, second type

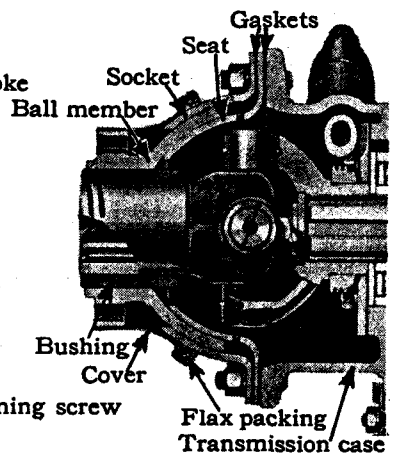



Fig. 8
Sectional view of universal joint. Cadillac 341-B and LaSalle 328

Plate 60. Removal of transmission and universal joint.

# Wheels, Rims and Tires

| Subject | Cadillac 341 | | LaSalle 303-328 | | Specifications | | Remarks |
|---|---|---|---|---|---|---|---|
| WHEELS AND RIMS | | | | | | | |
| Adjustment of bearings | A | B | 303 | 328 | | | See note 1. |
| Brake drums, out of round | A | ... | 303 | .... | Not over .015 in. (Indicator reading). | | |
| | ... | B | .... | 328 | Not over .007 in. (Indicator reading). | | |
| Wheel felloe, out of true (Radial and lateral run-out) | A | B | 303 | 328 | Not over $\frac{1}{16}$ in. (Indicator reading). | | |
| Wheel size | A | B | 303 | .... | 20 in. | | |
| | ... | ... | .... | 328 | 19 in. | | |
| Rim size | A | B | .... | .... | 20 x 6 in. | | |
| | ... | ... | 303 | .... | 20 x 4½ in. | | |
| | ... | ... | .... | 328 | 19 x 5 in. | | |
| TIRES | | | | | | | |
| Balancing mark, location of | A | B | 303 | 328 | In line with valve stem | | |
| Chain size | A | ... | .... | .... | | | With some makes of chains it is necessary to use 33x6.20 chains on 32x6.75 tires to prevent interference with brakes. |
| Recommended pressure— | | | | | | | |
| Front | A | B | 303 | 328 | 40 lbs., normal<br>50 lbs., high speed | | |
| Rear | A | B | 303 | 328 | 40 lbs. | | |
| | | | | | Old marking | New marking | |
| Size | A | B | .... | .... | 32 x 6.75 | 7.00/20 | |
| | ... | ... | 303 | .... | 32 x 6.00 | 6.00/20 | 125 in. wheelbase |
| | | | | | 32 x 6.20 | 6.50/20 | 134 in. wheelbase. |
| | ... | ... | .... | 328 | 31 x 6.20 | 6.50/19 | |

**1. Bearing Adjustments**

The roller bearings in the front and rear wheels of 341-A and 341-B cars and the ball bearings in the front wheels of 303 and 328 La Salle cars should not be adjusted too tight. They should be adjusted so that a very slight amount of play or looseness may be discerned. If, after a bearing has been adjusted to a point that is apparently correct the locking device cannot be placed in position without changing the adjustment loosen instead of tightening the adjusting nut until it can be secured with the locking device.

CAUTION: When adjusting the front wheel bearings care should be taken not to mistake play in the knuckle bolt for play in the wheel bearings. To eliminate dragging of the brakes as a factor in this adjustment it is also a good plan to turn the wheels to the right when adjusting the left-hand wheel bearings, and turn the wheels to the left when adjusting the right-hand wheel bearing. This automatically insures full release of the brakes.

The rear wheel bearings on 303 and 328 cars are not adjustable.

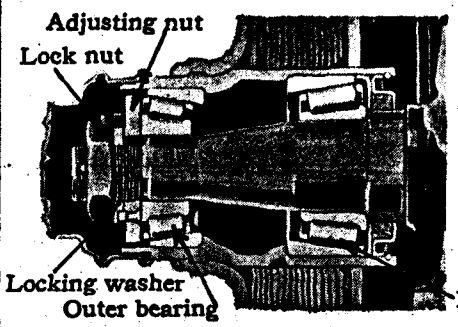



Fig. 1
Sectional view of front wheel hub.
Cadillac 341-B (wood wheel)

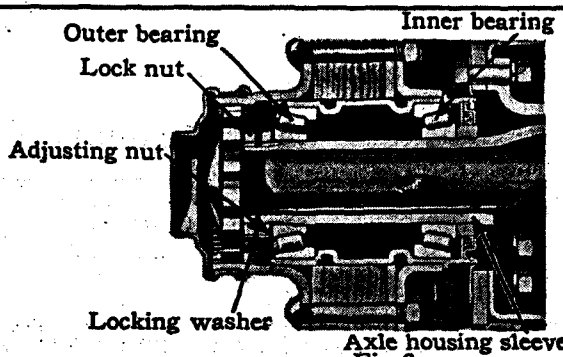



Fig. 2
Sectional view of rear wheel hub.
Cadillac 341-B (wood wheel)

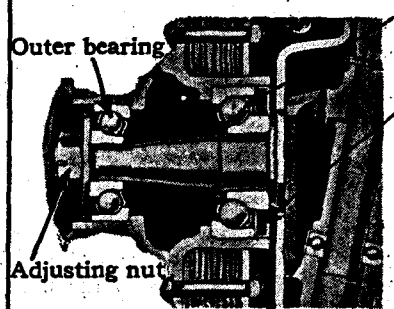



Fig. 3
Sectional view of front wheel hub.
LaSalle 303 (wood wheel)

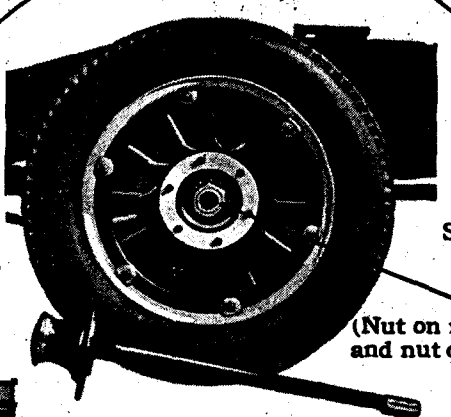



Fig. 5
Rear wheel with axle shaft
removed LaSalle 303

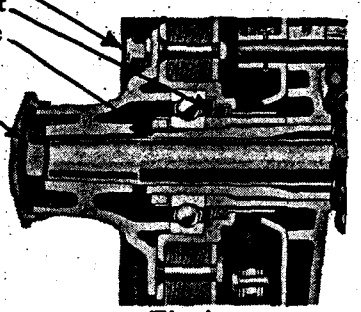


Fig. 4
Sectional view of rear wheel hub.
LaSalle 303 (wood wheel)

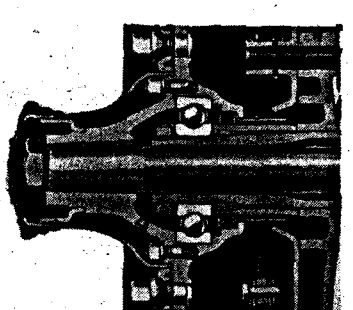


Fig. 6
Sectional view of rear wheel hub.
LaSalle 303 (disc wheel)

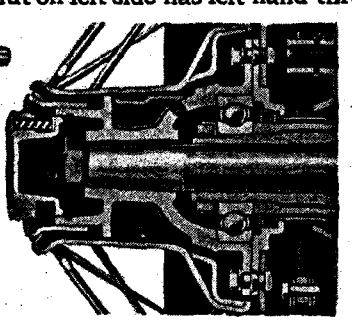


Fig. 7
Sectional view of rear wheel hub.
LaSalle 303 (wire wheel)

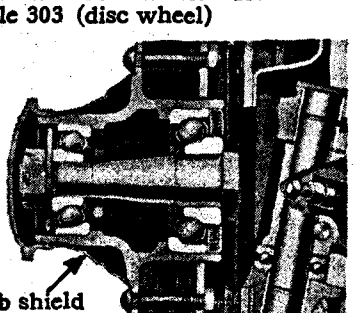



Fig. 8
Sectional view of front wheel hub.
LaSalle 328 (wood wheel)

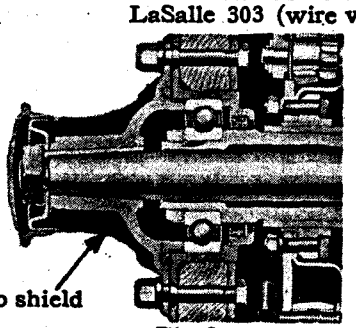



Fig. 9
Sectional view of rear wheel hub.
LaSalle 328 (wood wheel)

**Plate 61. Cadillac and La Salle wheel bearings.**