CADILLAC MOTOR CAR CO.

Miscellaneous

1907
~~n.d.~~ Cadillac, model G.

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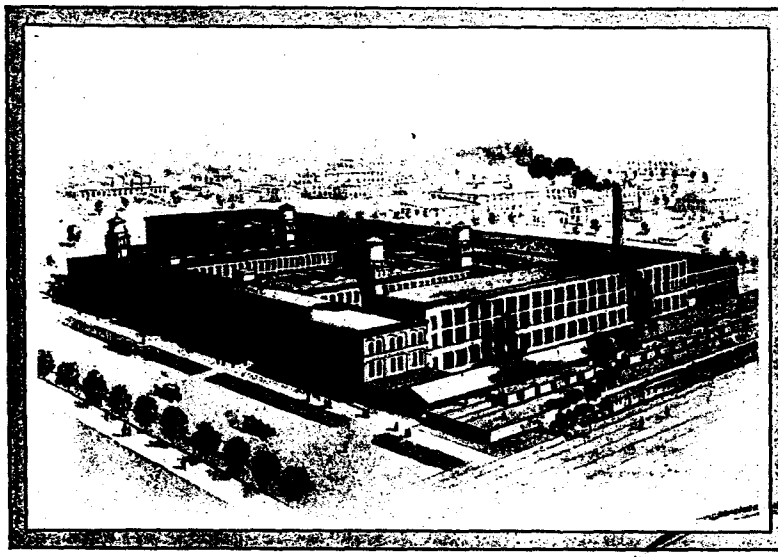
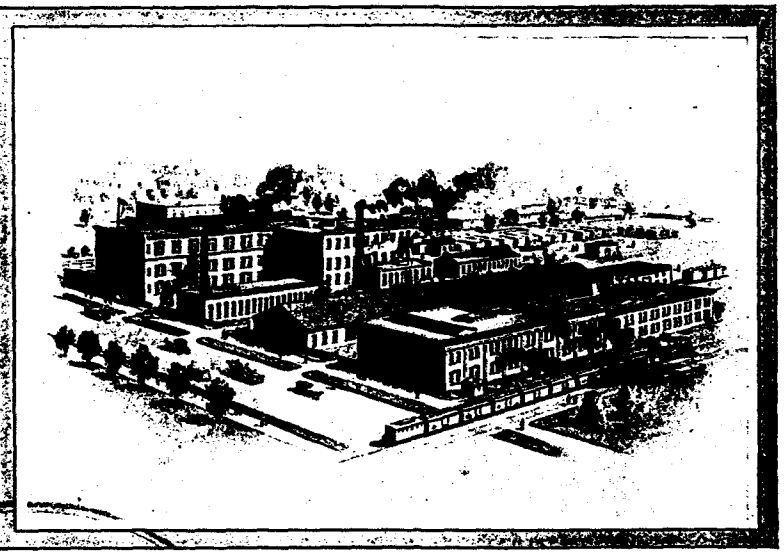
CADILLAC MOTOR CAR CO.

MEMBER ASSOCIATION LICENSED AUTOMOBILE MANUFACTURERS

FACTORIES AND GENERAL OFFICES

DETROIT, MICHIGAN, U. S. A.





THE PLANT WHICH PRODUCES MORE HIGH GRADE AUTOMOBILES THAN ANY OTHER FACTORY IN THE WORLD

CABLE ADDRESS
"CADAUTO, DETROIT"

CADILLAC

CODES: A B C, 5th EDITION, LIEBER'S
WESTERN UNION, DIRECTORY

CADILLAC

DICKINSON BROS
ENGRAVERS
PRINTERS
GRAND RAPIDS MICH

CADILLAC "MODEL G"

There was a time, and that not long ago, when to obtain cars capable of fifty or more miles per hour, with power sufficient to climb steep grades and to meet unfavorable road conditions at a pace fast enough to suit their tastes, motorists thought they were obliged to invest from four to six thousand dollars in heavy, ponderous machines which required motors of high power to drive them. Such cars necessitated not only heavy outlays in the initial purchase price, but required constant heavy expenditures for both operation and maintenance. The mileage obtained per gallon of gasoline was comparatively small. The necessity for large tires to carry the heavy weight, and the rapid wear of the tires in consequence of that weight combined with the cost of general repairs and miscellaneous other items of upkeep, entailed outlays which none but those of wealth could afford.

The opinion has also prevailed that in order to obtain running qualities which would be practically without vibration, a car must have more than four cylinders. These opinions have been encouraged by a few manufacturers, some no doubt with the best of intentions, but particularly those who watch closely the trend of public ideas and stand ready to grasp the opportunity to cater to the demands created by these ideas, whether the principles advocated be right or wrong. Hence it is that we see those makers who seldom or never have been known to make one model or type of car two years in succession. They have found it easier to proceed along the lines of least resistance, regardless of results. They have probably found it more profitable, temporarily at least, to make what some motorists were most easily led into believing was desirable, rather than building right and building well and permitting time to prove the correctness and wisdom of such policy.

But the day when these fallacies can prevail is rapidly passing. Nothing has done more to hasten that passing than have Cadillac policies, Cadillac methods and Cadillac cars.

The single cylinder Cadillac upset all pre-existing theories, methods and practices in small car making. The "Model G" Cadillac has proven the absurdity of many existing designs, methods and practices in the building of large, high-powered cars.

The term "high-powered" as applied to most motor cars to-day is a misnomer and is misleading. Many makers evidently started their calculations from one or the other of the two wrong sides of the three sided problem. Either they wanted large cars and

were obliged to use heavy, high powered motors to drive them, or they wanted motors of high power rating, hence necessarily heavy, and were obliged to build cumbersome cars to carry them and to withstand the enormous strains to which they would consequently be subjected.

The "Model G" Cadillac on the other hand was designed from an entirely different standpoint, and upon an entirely different basis. We cared not to claim for it a great horse power rating, nor to find some other excuse for asking a high price for it. What was sought in its design was a car that would satisfactorily meet the demands of the most exacting motorists, at the same time overcoming the objectionable features of the so-called "big" cars.

Our success is best evidenced by the "Model G" itself and the marked enthusiasm of its users.

The Cadillac company during its entire existence has never built a special car for any purpose, yet the "Model G" has repeatedly wrested the honors on the track, on the road and on the hill, from cars rated at from 40 to 60 H. P. and selling at from three to five thousand dollars. What does this indicate? It indicates that principles correctly applied will fully double efficiency over the same principles applied haphazard, by guesswork or as the result of immature experience.

In designing the "Model G," the first consideration was the results which it was desired the car should accomplish: second, how best to obtain these results.

To begin with, the management of the Cadillac organization and its mechanical heads had not been recruited from the ranks of that class of factories where measurements are usually based on inches, halves and quarters, and in some cases 64ths; but most of them are men who had served from twenty to forty years in establishments making some of the finest machinery and machine tools in the world, where generally the one-thousandth part of an inch was considered an outside limit and where one-ten-thousandth was not unusual. They not only knew what accuracy in its finest sense could accomplish but they knew how to produce it.

The "Model G" Cadillac is the result of the possession of these advantages. The great efficiency of the car is due to its scientific design, the correct distribution of material and the accuracy with which every individual part is made. There is not a single piece in its entire construction which is not the result

of careful consideration and which has not been tested thoroughly. The design and size of each individual piece was approved by a committee of mechanical experts. We do not believe there is a pound of needless material in it, yet two seasons' experience has demonstrated that it has every pound necessary, with an ample factor of safety, to successfully meet any legitimate demands which may be made upon it.

The "Model G" Cadillac is generally recognized by those who know, as the lightest correctly constructed car of its power and the most powerful correctly constructed car of its weight. This weight is approximately 2200 pounds, its actual horse-power is 25, or less than 90 pounds weight per horse-power.

This desirable combination is further made possible by positively accurate workmanship. A joint or bearing where two surfaces work loosely one upon the other affords far greater opportunities for wear, vibration, crystallization and breakage, and consequently decreased length of service, than a joint or bearing where accuracy is preserved. This does not mean nearly or almost accurate, but it means accuracy in its highest sense.

The correct proportions of the "Model G," its perfect balance and the consummate care exercised in the skillful working out and finish of every minute detail, give it a smoothness, quietness and "sweetness" in action which has never been excelled in any other motor car, no matter who its maker, what its price nor the number of its cylinders.

The Cadillac plant is the largest, the most complete, the best equipped and the best organized establishment in the world devoted exclusively to the production of high grade motor cars. By reason of our facilities for producing almost every part that enters into the construction of Cadillac cars, including the motors themselves, directly under our own supervision, we are enabled not only to dictate how and what materials shall be used, but are saved the necessity of paying a profit to a score or more makers of the different components entering into their construction.

We own and operate our own foundries, sheet metal department and enormous machine shops in which there are more than half a thousand of the most expensive, most accurate and greatest labor saving machines in the world devoted to this class of work. Many of these machines were devised by and are used by ourselves exclusively. A number of them have the capacity for producing from two to ten times the amount of work that is produced by the ordinary methods used in most factories.

To these many advantages may be attributed the reason why in the "Model G" as well as in all other Cadillac cars, purchasers obtain from fifty to one-hundred per cent. greater actual value for every dollar invested than in any other automobile.

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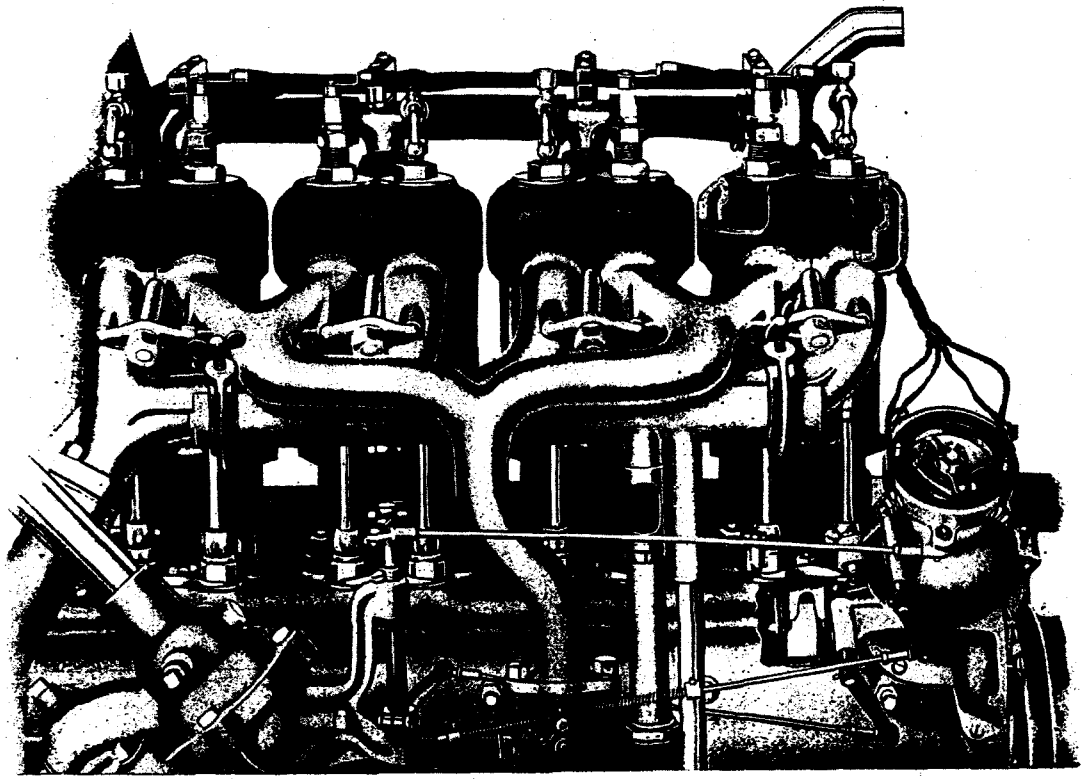

"MODEL G" MOTOR—RIGHT SIDE
Note the accessibility of all parts

CADILLAC

"MODEL G" MOTOR

The "Model G" motor, which is rated at 25 horse-power, is of the four-cycle four-cylinder type, 4-inch bore by 4½-inch piston stroke. It is the product of that department of our plant whose experience in manufacturing automobile motors has been more extensive than that of any other factory in the world.

As will be seen by reference to the illustrations, the cylinders are cast individually and not in pairs. The cylinder heads containing the valve chambers are also cast separately and each is connected with the cylinder by a right and left threaded nipple. The cylinder heads or valve chambers are provided with compression relief cocks which may also be used for priming.

The Cadillac system of copper water jacketing the cylinders, a system which was originated by us, is a feature of the "Model G," and the fact that it has been extensively copied by other makers is evidence of the acknowledged appreciation and superiority of this characteristic.

The Cadillac construction of individual cylinders and cylinder heads, together with separate water jackets, possesses several distinct advantages. The cheap method, commonly employed, is to cast the cylinder and water jacket in one piece, coring to make the space between them. This seldom produces a combination with a uniform space between the two for water circulation, which fault the maker is unable to detect, because he cannot see it.

It will be readily understood that with the thickness of the cylinder wall not uniform, it is impossible for the circulating water to cool it evenly, the result being that the expansion and contraction of the cylinder will cause it to bind the piston at some points of its travel and be so loose at others as to lose compression.

Another feature of great importance in making cylinders, water jackets and cylinder heads separately, is, that in the event of injury to one part it is possible to replace only that particular part. On the other hand, when two or more cylinders, or cylinders and water jackets, are cast together, even a slight injury to one part necessitates a replacement of the entire combination, usually at heavy expense.

The cylinders and pistons are cast in our own foundry from a special grade of metal made after a formula of our own and possessing remarkable strength. This formula is the result of years of experience, experimenting and testing in our own laboratories. Its superior qualities are so widely recognized that our foundry is making cylinder, piston and piston

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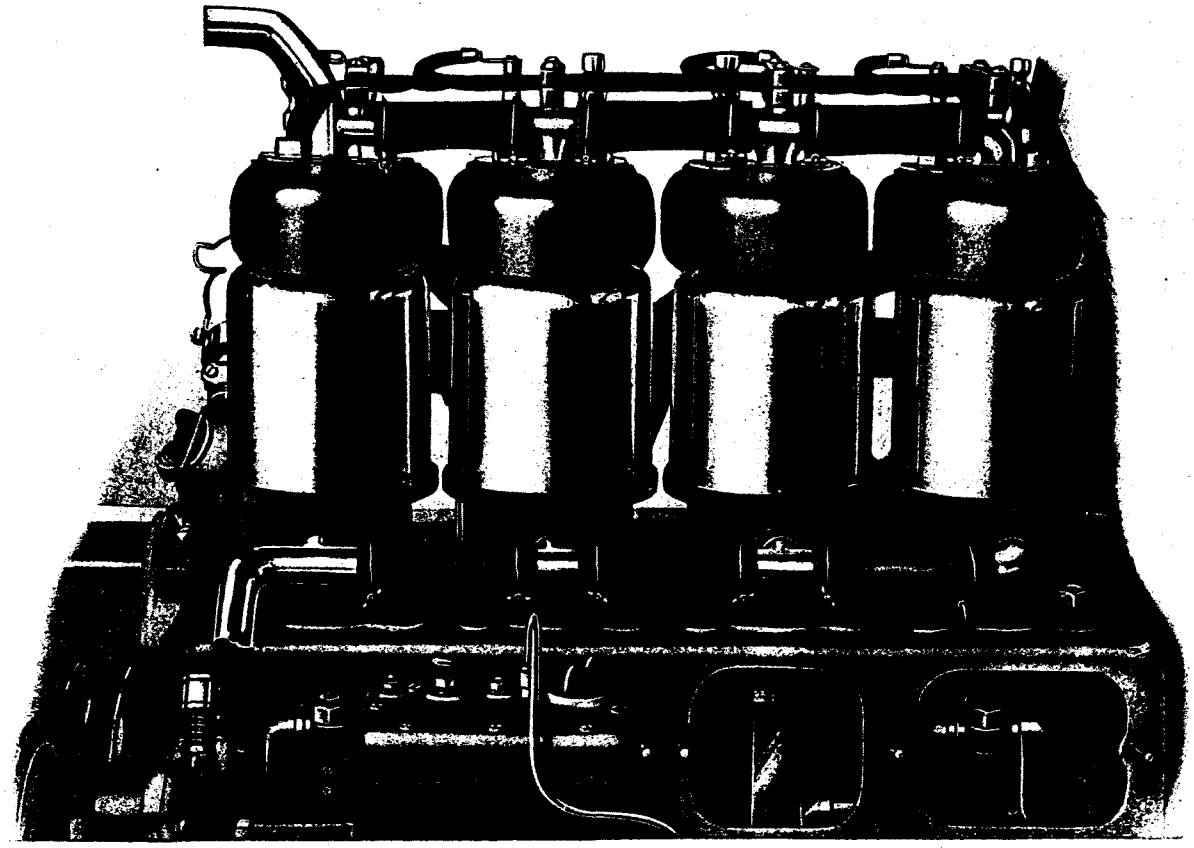

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"MODEL G" MOTOR—LEFT SIDE

ring castings for several makers of the highest priced motor cars in America.

After machining, the cylinder and piston are accurately ground until smooth as glass, and neither is permitted to pass inspection if it is not in accordance with the prescribed measurements which are specified to the one-thousandth part of an inch. The piston rings are made with the same precision. Imagine parts made so exact that they will not vary in size the thickness of the finest tissue paper, and you then have but a mere idea of the precision necessary to produce such results as are obtained in a Cadillac.

The piston connecting rods are steel drop forgings of "H" section. The crank shaft, which is a special carbon steel drop forging, undergoes a special tempering process which gives it strength and toughness. The bearing surfaces are carefully and accurately ground.

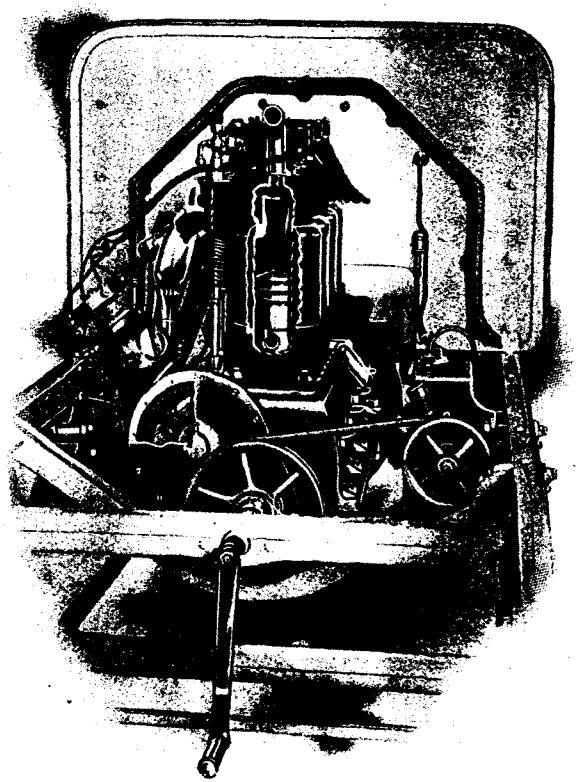
The crank shaft bearings are of large surface, made of babbitt with bronze backing. The bearings being made in halves, they may be removed and replaced if necessary without disturbing the crank shaft.

The crank shaft is offset, that is, instead of being placed directly in line with the middle of the cylinder it is set slightly to one side. The result of this is that when the piston is at its highest point, which is also the time at which the charge in the cylinder is at its highest compression and the time when the ignition takes place, the crank shaft has passed its dead center. Therefore, the force of the explosion is expended to greater advantage than is possible in motors where the crank shaft is on its dead center when the explosion takes place.

Incidentally we may remark that this is a feature that some other makers have been making much ado about in the last year or so, but, like many other ideas, the Cadillac company has been embodying this principle in its motors for years; in fact the offset crank shaft has been used in the single cylinder Cadillac since its beginning, in 1902.

The inlet and exhaust valves are interchangeable, and, as they are all located on one side of the motor, they are operated by a single cam shaft. The cams are hardened steel, ground to positive accuracy, and the lower end of each being provided with a hardened steel roller and pin, there is practically no opportunity for wear.

The motor base or crank case is made of aluminum, cast in two parts having four compartments, the dividing walls of which support the crank shaft bear-



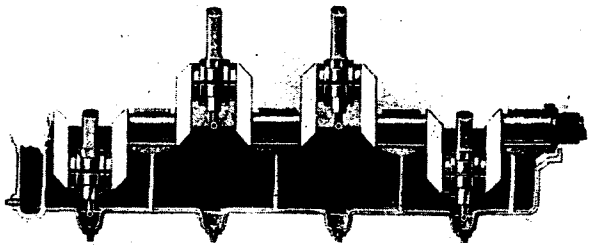
"MODEL G" MOTOR—Front View

ings. The hand holes in the crank case provide ready access to all parts within, and the entire motor is constructed with a view to accessibility of all parts which may require attention.

We cut all gears by special tools and machinery, and they are amply protected by dust-proof housings.

The "Model G" is provided with an especially efficient cooling system. The radiator is of the tubular and plate type, special, of large radiating surface, and the air draft augmented by a ball-bearing revolving fan. An active water circulation is promoted by means of the belt-driven helical pump, the construction of which is such that its action is not easily obstructed by any foreign substance in the water, and should it for any reason cease to act, it does not interfere with the thermal circulation of the water.

The lubrication of the motor is accomplished by our automatic splash system. The force feed lubricator, situated alongside the motor and operated by the latter, supplies oil in the quantities required according to the motor's speed. From the lubricator, the oil is forced through the sight feed located on the dash of the car and from there to the crank case where it enters the rear compartment. From there the revolving of the crank shaft splashes it into the sloping troughs on the side wall, carrying it forward from one compartment to another.



CADILLAC CRANK BASE
Showing Crank Bearings and Oil Distributing Troughs

This system has a number of distinct advantages. There is but one sight feed to watch instead of the usual six to a dozen. The construction is such that the oil is evenly distributed regardless of whether traveling up hill, down hill or on the level, and all working parts of the motor are adequately lubricated.

Several seasons' use of this system has amply demonstrated its thorough efficiency.

The carburetor is a standard float feed type adopted by us for this car only after months of careful testing, both in our experimental department and on the road, and has proven itself most efficient and economical.

The material and construction of the motor is as nearly perfect as scientific design, latest improved machinery and skilled workmen can make it.

All parts are made accurately to gauge with special dies, tools and jigs, and are thoroughly interchangeable.

The motor entire is mounted in the chassis by the three-point suspension plan, the principal advantage of which is that the alignment of its working parts is not affected by strains on the chassis frame caused by uneven road conditions.

The clutch is of the leather faced cone type. The ring with which it engages, is split and part of the inner surface is sprung inward. This effects a remarkably smooth and easy action in engaging the clutch which may be accomplished without shock or jar.

The ignition is by the jump spark system with quadruple coil located on the dash of the car, the current for which is supplied by two sets of storage batteries. The spark lever is located at the steering wheel.

The commutator is a hardened steel roller which travels within a fibre ring which insulates the four contact points, and the arm carrying the roller is attached to and is actuated by a revolving shaft, the latter being driven by miter gears from the cam shaft. Its location is in the most accessible position possible, directly above the governor.

GOVERNOR

The "Model G" is equipped with our automatic ring type governor, which has met with marked favor and success.

This governor may be set by the governor controlling lever at the steering wheel for any desired

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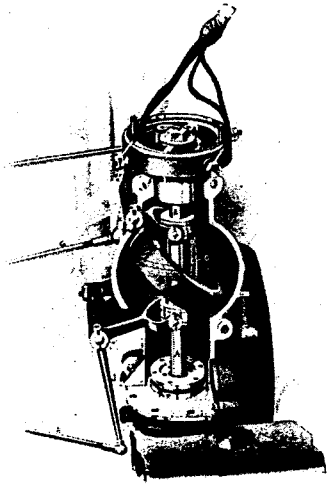


AUTOMATIC GOVERNOR
With Commutator above

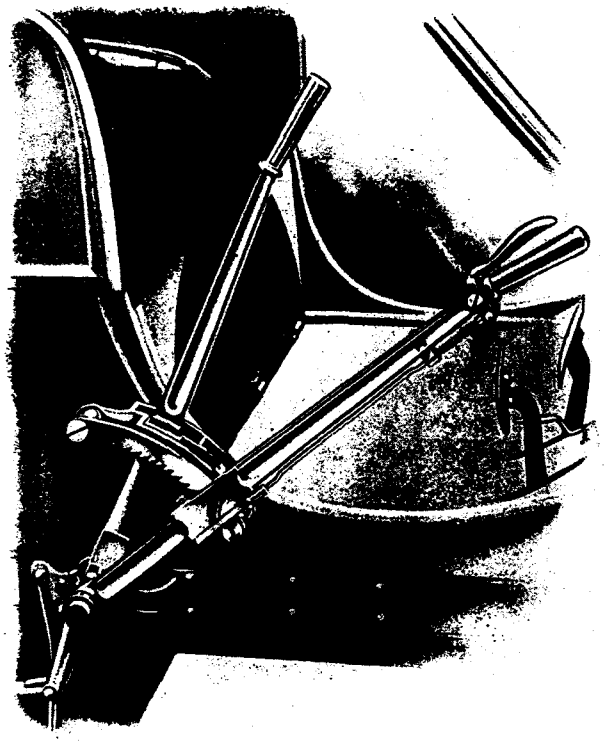
speed up to about 25 to 30 miles per hour and that speed will be practically maintained with but little variation, the action and efficiency of the govenor being automatic and uniform under all road conditions.

When greater speed is desired it is obtained by directly opening the throttle by means of the accelerator pedal.

The action of the governor also prevents the motor from "racing" when the main clutch is disengaged.

CONTROL

The control system consists of the two hand levers at the driver's right. One applies the external or contracting hub brakes, at the same time releasing the main clutch; the other is the speed change lever. Of the two foot levers, one releases the main clutch, and the other applies the internal or expanding hub brakes. The accelerator, the action of which is explained under governor description, is operated by a small foot lever. The governor controlling (throttle) lever and spark lever are located conveniently at steering wheel.

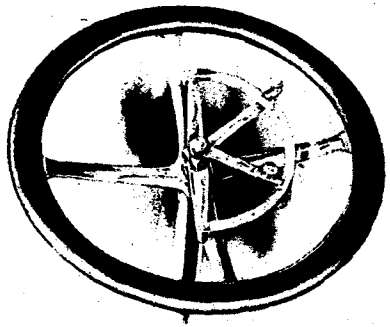


"MODEL G" CONTROL LEVERS

CADILLAC

STEERING MECHANISM

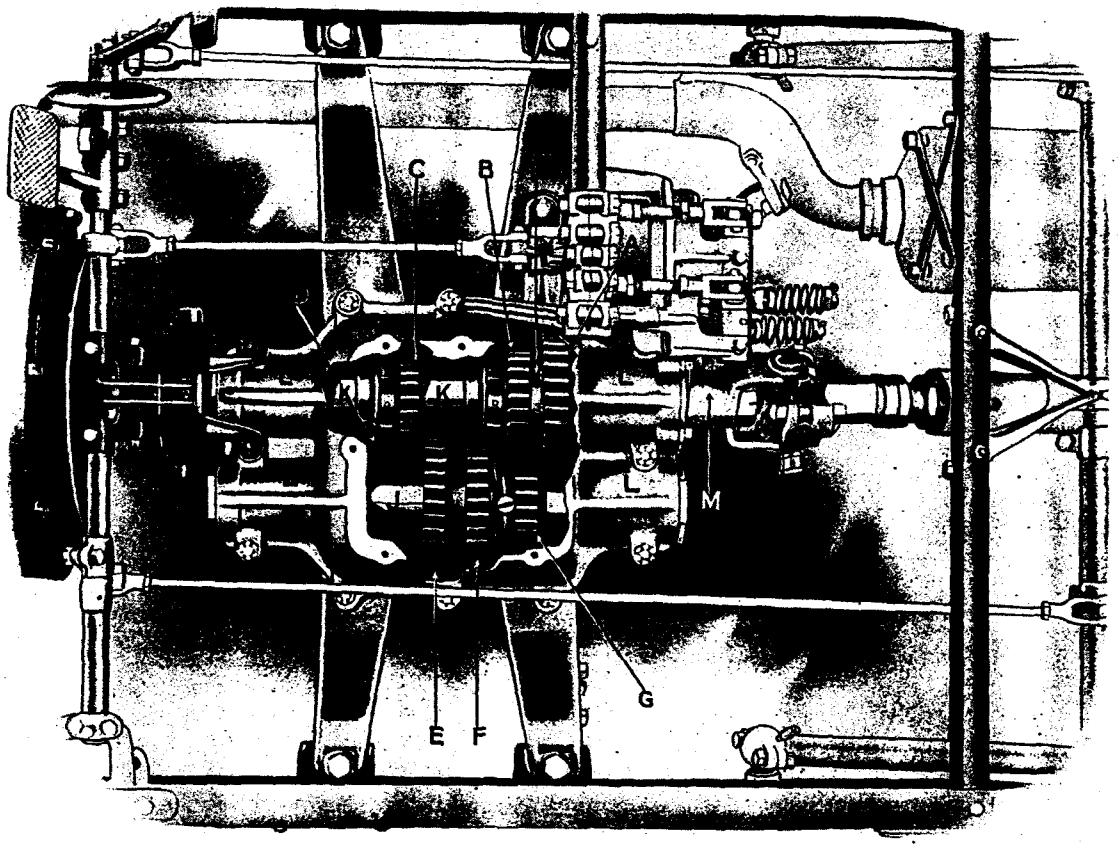
The steering mechanism is our own new design of the worm and sector type. These working parts are accurately cut and hardened. Unlike those in most cars, in which the steering gear soon becomes so worn that it rattles and loses its positiveness, we cut the sector



"MODEL G" STEERING WHEEL

teeth on an entirely new plan which provides for adjustment to take up wear to an extent far in excess of what will probably ever be required. The correct adjusting of most steering gears is a factory's or an expert's job, while the adjustment of this gear is but a simple operation.

"MODEL G" STEERING MECHANISM



"MODEL G" SELECTIVE TYPE SLIDING GEAR TRANSMISSION
(No gears in mesh in high speed)

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CADILLAC SLIDING GEAR TRANSMISSION

The transmission used on the Cadillac "Model G" is our selective type of sliding gear, possessing several features of merit distinctly its own, which will readily commend themselves. The gears, shafts and high speed clutch parts are made of chrome nickel steel and extreme care is exercised in cutting them according to the Cadillac system of limit gauges which insures positive accuracy. We then harden them by a special process which gives them extreme strength, toughness and wearing qualities. The main transmission driving shaft "K," is fitted with annular ball bearings at its rear end and roller bearings at the forward end. The jack shaft "J" is also fitted with roller bearings.

This illustration shows the transmission in the high speed position. The gear "A" is attached rigidly to the main transmission driven shaft "M," and gears "B" and "C" are movable on the main transmission driving shaft "K." Gears "E" and "F" are attached rigidly to the jack shaft, and gear "G" is movable on the jack shaft. Gear "D," also another gear (not shown) are attached rigidly to the reverse gear shaft.

There are three speeds forward and reverse. The speed changes are accomplished by means of a hand lever at the side of the car, the range of action being within an "H" shaped quadrant. The construction is such that a shift may be made from any gear to any other gear without "going through" a third.

The control or speed change lever is automatically locked in position when the main clutch is engaged and the latter must be disengaged by the clutch pedal before gears can be shifted.

High speed is obtained by shifting gear "B" toward gear "A" where the two engage one with the other by a series of interlocking lugs, (which form the high speed clutch "H,") thereby connecting the main transmission driving shaft "K" with main transmission driven shaft "M." This gives a direct drive on high gear *with no gears whatever in mesh, the jack shaft remaining stationary.*

Shifting gear "B" from the position shown, disengages the high speed clutch "H," leaving the transmission in the neutral position and automatically shifting gear "G" into mesh with gear "A." By shifting gear "B" still further and into mesh with gear "F," the intermediate speed position is obtained. Gear "G" is always in mesh with gear "A" excepting in high speed position.

In low speed, gear "C" meshes with and drives gear "E" on the jack shaft, which through gear "G," also on the jack shaft, drives gear "A" on the main transmission driven shaft.

In reversing, gear "C" is brought into mesh with gear "D" the latter being on the reverse gear shaft on which there is also another gear (not shown.) This meshes with and drives gear "E," reversing the motion of the jack shaft, which by means of gear "G" drives gear "A" on the main transmission driven shaft.

The gears are of a new design, which facilitates meshing without the usual crashing and grinding characteristic of most sliding gear transmissions.

The entire transmission is encased in an aluminum housing which is bolted to the frame of the car.

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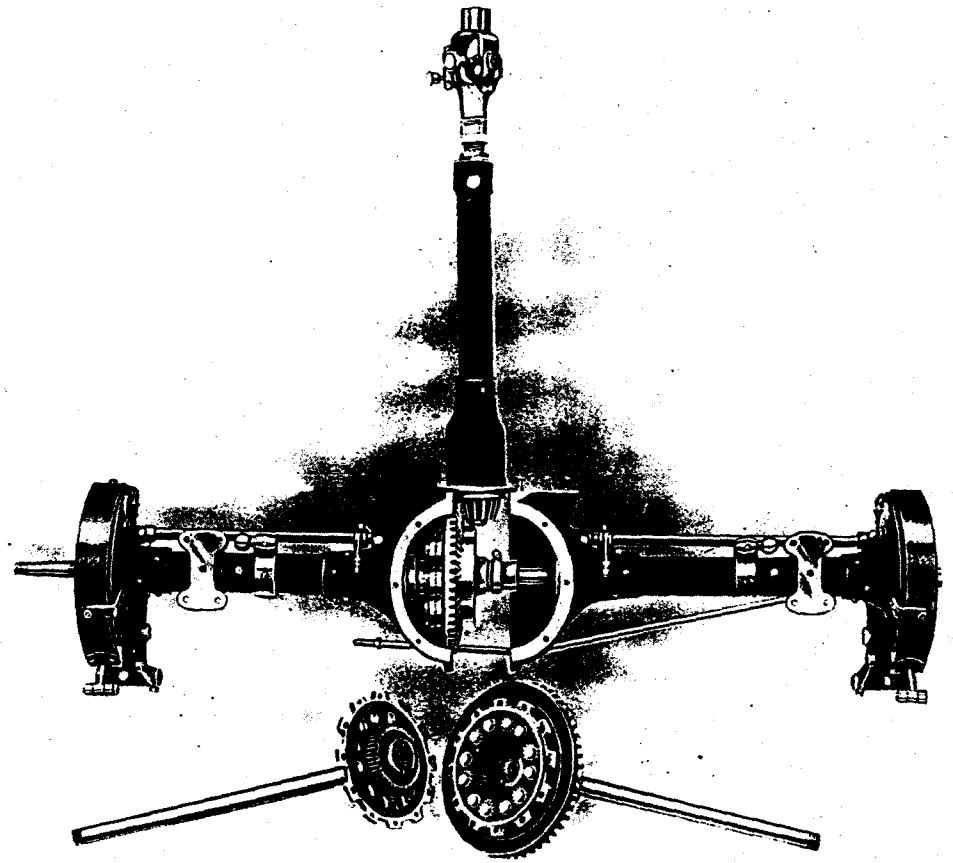


"MODEL G" REAR AXLE AND BEVEL PINION DRIVE SHAFT
(Also showing differential)

CADILLAC

AXLES

The accompanying illustrations afford a comprehensive idea of the axle construction, both front and rear, as well as that of the bevel pinion driving shaft on the "Model G."

The rear axle housing is made of seamless steel tubing, and the live axle shafts, which are made of high carbon nickel steel, revolve on special, accurately ground roller bearings, the linings of which are also accurately ground, both inside and out, and provided with adequate ball bearing end thrusts.

We cut the large bevel gear as well as the gears of the differential by our special machinery and harden them.

Between the transmission shaft and the drive shaft there is but one universal joint. This both simplifies construction and reduces weight. The shaft revolves on special roller bearings within the housing.

The one universal joint is a double knuckle, the friction surfaces of which have their bearings in bronze bushing caps. The construction is such that lubricant is evenly distributed and the tendency is to expel rather than to admit dust to the bearing surfaces.

The front axle is also made of steel tubing with steel drop forged yokes and steering spindles. The latter are supplied with ball bearings and provision is made for taking up wear.

"MODEL G" FRONT AXLE

The front wheels are provided with two sets of two-point ball bearings of large size, having curved ball races, reducing wear to the lowest minimum.

FRAME

The frame is pressed steel, channel pattern, hot riveted.

FENDERS

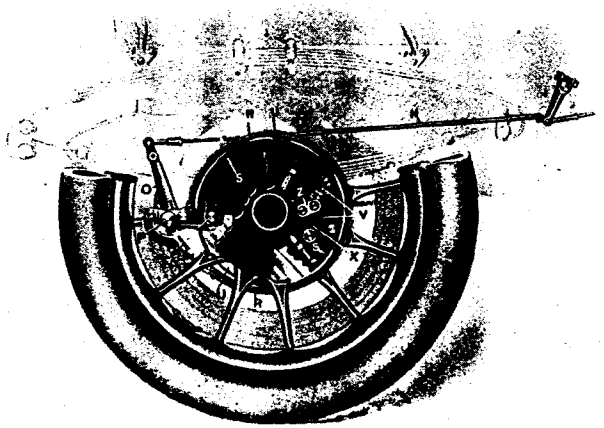
Our fenders are special Cadillac pattern, formed from sheet metal and so designed that they will be found quite effectual in protecting the car and its occupants.

MUFFLER

Our new muffler is a most effectual silencer, and while back pressure has been reduced to a minimum, it is provided with a cut-out located in the exhaust pipe, operated by a plunger pedal in the car floor.

BRAKES

One of the most important features of an automobile is an effectual and dependable brake system. On the "Model G" two pairs are provided. The external brakes, which contract on the hub drums, are applied by a hand lever. By operating this lever, it pulls on the rod "N" and in turn on the arm "O," which by means of the rocker "P," causes the brake band "R" to contract upon the drum "U."



"MODEL G" INTERNAL AND EXTERNAL BRAKE

The internal or expanding brakes are applied by a foot lever. These brakes consist of two semi-circular shoes, "S" and "S," which are supported on the pin "T." When not in action these shoes are held out of contact with the drum by means of the coiled springs. The lever arm "X" which operates the brake, is connected to the toggles "V" by the link "Z" so that when the shaft which operates the lever arm "X" is brought into action, it forces the two shoes "S" outward and into contact with the inside surface of the drums.

The brake bands and shoes with their large contacting surfaces are sufficiently powerful to lock the wheels almost instantly.

The mechanism is protected from dust by metal shields.

SPRINGS

The spring suspension of the "Model G" consists of two semi-elliptical springs in front and two full elliptical in the rear. Special attention is directed to the scroll head design of the upper half. This construction affords that wide range of action necessary to the luxurious and easy riding qualities of a car.

The wheels are the artillery type made from the best selected second growth hickory, with steel hubs, constructed after the most approved designs.

INTERCHANGEABILITY

Interchangeability of parts is a feature which most makers claim for their cars, yet few of them really possess it in its true sense. Interchangeability means that every part of a car is exactly like every other part of its kind. It does not mean almost or nearly like it, but exactly so. It means that when any part must be replaced, a new one may be ordered from the factory and that it will fit without alteration in the slightest degree. True interchangeability is possible only in factories possessing the most complete equipment of machinery and tools capable of producing accurate work and where these are kept in the most perfect condition at all times.

In the Cadillac factory the expenditure for tool maintenance alone exceeds $60,000 annually. So accurately is every part finished that thousands of pieces of a kind with thousands of pieces of other kinds are sent to the various assembling departments and there they are all "put together" without so much as the use of the finest file or emery cloth. No special fitting of any kind is permitted. In fact no special fitting is necessary.

The limits of measurements in many parts of the Cadillac motors, transmissions, etc., are specified to the one-thousandth part of an inch. A large corps of inspectors is scattered throughout the many departments and there is not a single piece used, down to the smallest nut or screw which has not passed their scrutiny.

The advantages of this system will be best appreciated by the motorist who on being obliged to replace parts of his car has usually or always found it necessary to call upon an expert to fit them.

The Cadillac company is prepared to furnish an exact duplicate of any part of any car it ever built. No Cadillac user was ever obliged to discard his car because of inability to procure some needed part nor to pay an enormous price to have such part made to special order because the maker had gone out of business or had discontinued making duplicate parts for old models.

GENERAL CONSTRUCTION

The general construction of the "Model G" is the highest grade in every particular. In not one single instance have efficiency or stability been sacrificed for the sake of saving expense.

Every individual piece of material that enters into the construction of a Cadillac car must pass a number of trained inspectors. Every car is thoroughly tested out and carefully adjusted before we permit it to leave our factory.

CADILLAC

FINISH

Cadillac cars are noted the world over for the excellence and wearing qualities of their finish.

The standard finish of the "Model G" touring car is: body and side bars of frame, dark blue with primrose striping; wheels, axles, etc., primrose (cream yellow) with dark blue striping.

As an option we will furnish the "Model G" touring car with Brewster green body and side bars; wheels, axles, etc., red with dark green striping.

The standard finish of the "Model G" roadster with single rumble seat is French gray with hair line red stripe. When furnished with this finish the seats are upholstered with red leather.

As an option we will furnish this car with dark blue body and side bars, striped in primrose; wheels, axles, etc., primrose with dark blue stripe.

We strongly recommend the blue and primrose combination in preference to the French gray.

The standard finish of the "Model G" roadster with double rumble seat is dark blue body and side bars striped in primrose; wheels, axles, etc., primrose (cream yellow) with dark blue striping.

The seats are luxuriously upholstered in hand buffed black leather over deep coil springs and fine quality genuine curled hair. The exception to the color of leather, however, is that when the roadsters are finished in French gray they are upholstered in red leather.

The standard finish of the "Model G" Limousine is: body panels dark blue, remainder black. Running gear dark blue with light stripe.

The inside seat is upholstered in goat skin and the ceiling trimmed with satin. It is equipped with speaking tube and electric dome light.

The front seat is upholstered in black leather.

In order to prevent errors, the desired finish should always be specified when ordering.

An extra charge will be made for special colors differing from the foregoing specifications.

EQUIPMENT

The standard equipment furnished with each "Model G" Cadillac consists of a set of tools for adjustments, also a repair kit and a pump for tires.

Prices also include a pair of dash oil lamps, a tail lamp and a horn with flexible tube and bulb, all of standard make and quality.

A pair of drop forged brackets for gas lamps is attached to the front of the chassis frame.

When chassis alone is ordered, lamps and horn are not included.

TIRES

The standard equipment for Cadillac cars will be Hartford, Morgan & Wright or G. & J. tires of the Dunlop type.

We will also furnish as an option, when so ordered, without extra charge, either Hartford, Morgan & Wright or G. & J. tires of either the regular clincher or quick detachable clincher type.

We have adopted as standard equipment, the Midgley universal rims with which any of the above makes and either of the above types (Dunlop or Clincher) may be used.

NOTE—When make and type of tire desired (as above designated) are not specifically stated in ordering, we will equip cars with the Dunlop type of tire made by either the Hartford Rubber Works Co., Morgan & Wright or G. & J. Tire Co. at our option.

TIRE GUARANTY—All tires and rims used on Cadillac automobiles are guaranteed by their respective makers and in case of claims should be sent to the factory or any of the branches of said makers (not to us), transportation charges prepaid.

BOOK OF INSTRUCTIONS—We publish a complete book of instructions plainly illustrated and explaining in detail the workings of the motor and the car.

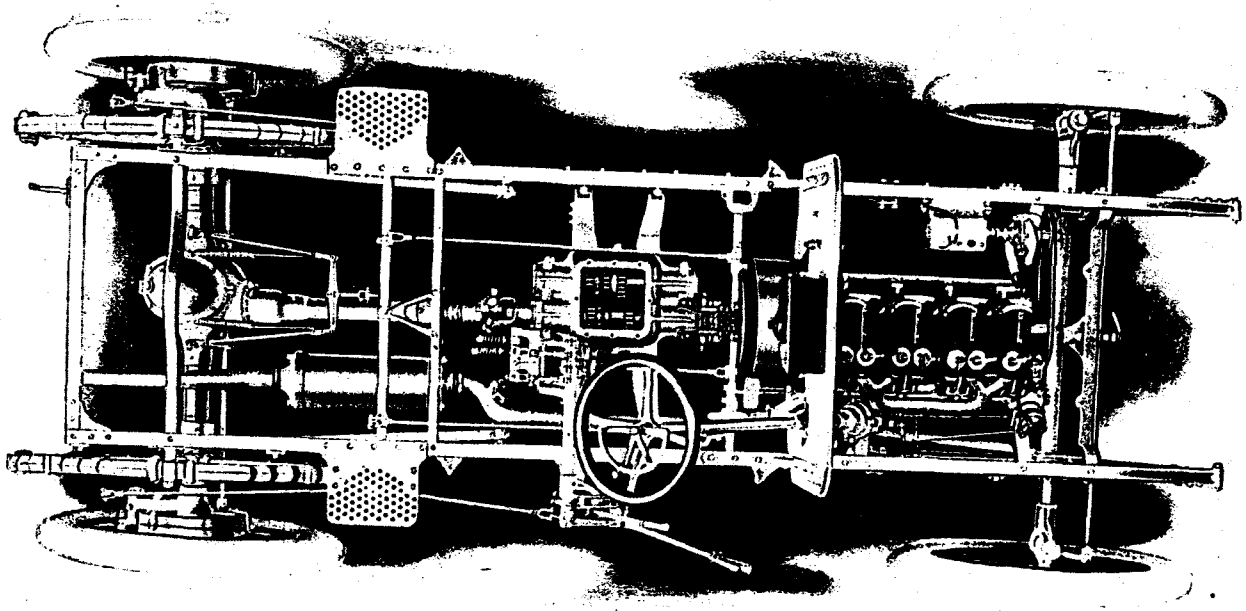
This book is included free of charge with each new Cadillac shipped from the factory.

It is a splendid guide for those desiring to learn the general principles of an automobile, and to those who wish to obtain same for that purpose a copy will be mailed on receipt of 25 cents.

When writing for this be sure to specify "Model G Instruction Book."

SPECIFICATIONS "MODEL G"

MOTOR—Four-cylinder, 4-inch bore by 4½-inch stroke.
HORSE-POWER—25 (A. L. A. M. rating.)
CARBURETOR—Float feed.
GOVERNOR—Automatic ring type.
TRANSMISSION—Selective type sliding gear, three speeds forward and reverse.
COOLING—Water—Copper jacketed cylinders.
IGNITION—Jump spark—Storage batteries.
FRAME—Pressed steel.
BRAKES—Internal and external on hub drums.
WHEEL BASE—100 inches.
WHEEL TREAD—56 inches.
WHEELS—32 inches.
TIRES—On touring cars and roadsters 32 x 3½ inches.
TIRES—On Limousine 34 x 4 inches.
FINISH—Standard. See page 20.



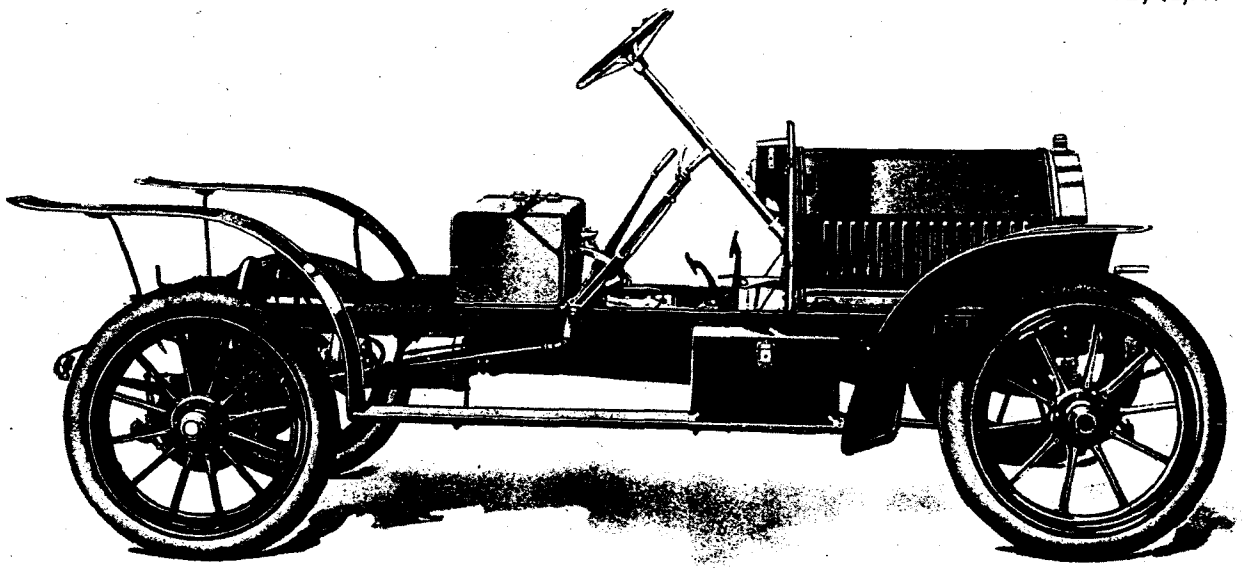
"MODEL G" CHASSIS—Plan View

"MODEL G" CHASSIS

(INCLUDING DASH AND HOOD
AND STANDARD TIRES)

PRICE, $1,900

CADILLAC



CADILLAC

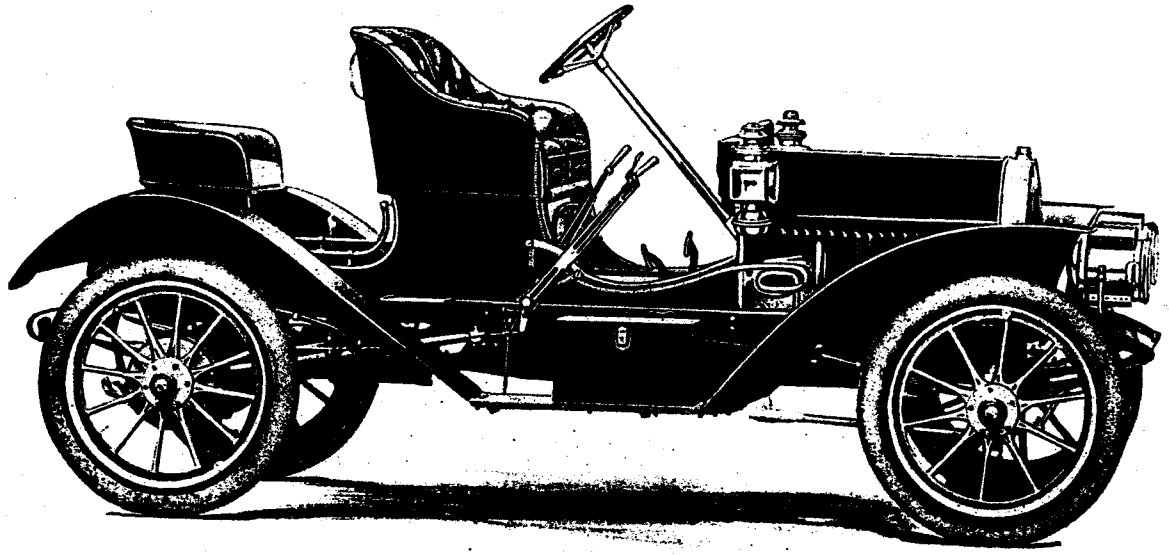
CADILLAC "MODEL G" ROADSTER

WITH SINGLE RUMBLE SEAT

PRICE, F. O. B. DETROIT, $2,000

(INCLUDING THREE OIL LAMPS AND HORN)

CADILLAC



CADILL

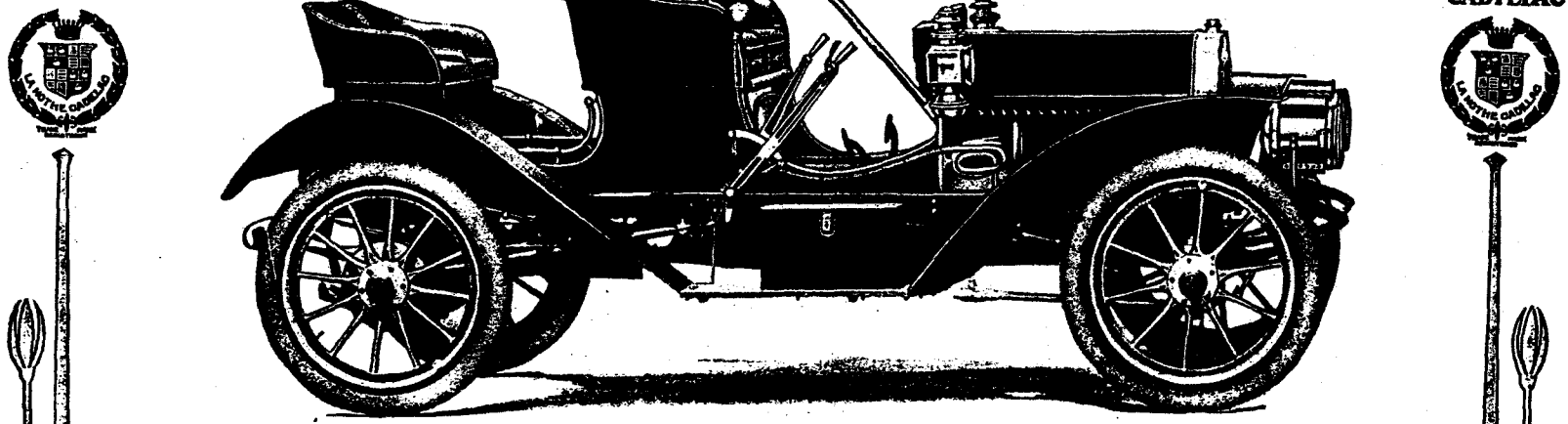
CADILLAC "MODEL G" ROADSTER

WITH DOUBLE RUMBLE SEAT

PRICE, F. O. B. DETROIT, $2,025

(INCLUDING THREE OIL LAMPS AND HORN)

CADILLAC

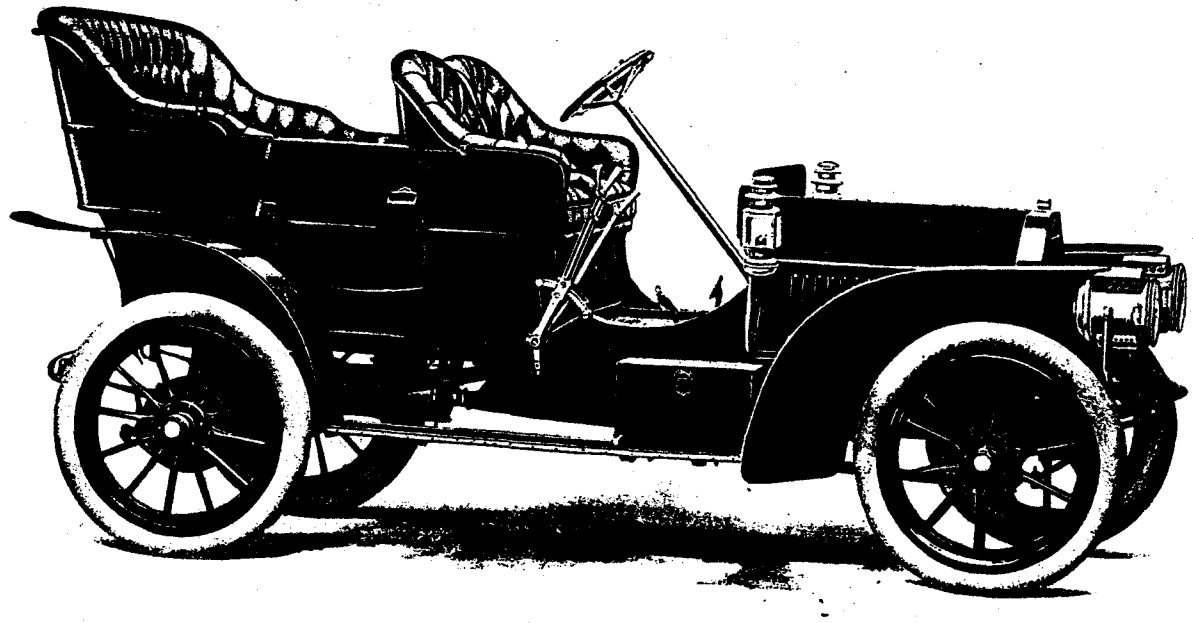


CADILLAC

CADILLAC "MODEL G" TOURING CAR

PRICE, F. O. B. DETROIT, $2000
(INCLUDING THREE OIL LAMPS AND HORN)

CADILLAC



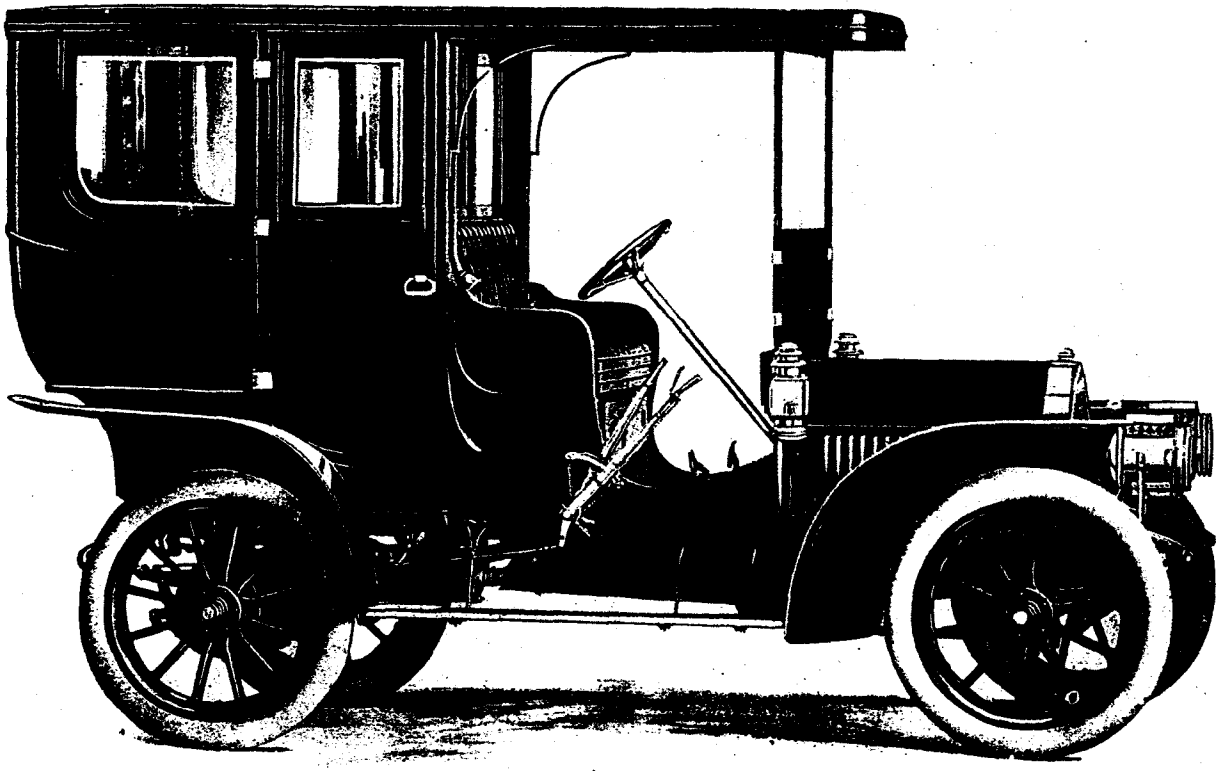
CADILL

CADILLAC "MODEL G" LIMOUSINE

PRICE, F. O. B. DETROIT, $3,000

(INCLUDING THREE OIL LAMPS AND HORN)

CADILLAC



CADILLAC

CADILLAC TOPS

We have our own special department for the manufacture of tops. Our object in establishing this department was for the sole purpose of enabling us to equip Cadillac cars with tops which would be in keeping with the cars themselves, both as to appearance and durability.

Our tops are designed and made by ourselves for Cadillac cars only. They are so designed that they will give a well balanced and well proportioned outline and the lines are in harmony with, and give a rich finishing touch to the car.

The workmanship and material are of the highest grade. No expense is spared to make them what they should be. The cheap, shabby appearance of most commercial tops is conspicuously absent in Cadillac tops.

The bows are of the best selected ash with double steel bow sockets covered with bow leather. The front and rear bows which sustain the greatest strain are substantially re-enforced. Leather straps, both front and rear, hold the top securely in position. These straps enable any slack to be taken up.

The covering used on the "rubber" top for the "Model G" Roadster and the Cape Cart top for the "Model G" Touring Car is a high grade of plaid back rubber. Experience has proven this to be one of the best and most durable coverings known. The tops are well padded with cotton wadding which aids materially in holding their shape.

The black mohair mackintosh is the material "de luxe" for automobile tops. It is the finest cloth we can buy for this purpose, durability, beauty and serviceability considered. It has a silky lustre that gives a richness of appearance which no other material has.

Victoria tops are made of hand buffed leather, lined with broadcloth They are very substantially built and the materials and workmanship are the highest grade in every particular. This top makes a strikingly rich and handsome appearance.

Victoria tops are not shipped separately as they must be built on the bodies in our own factory.

With Cape Cart tops on the "Model G" Touring Car, the standard equipment includes side curtains and a storm front. This storm front forms a sort of vestibule and permits more freedom of action than is possible with a storm apron. There is a full set of side curtains completely enclosing the occupants of the car.

Storm fronts and side curtains are lighted with transparent material.

With tops for the "Model G" Roadster, the standard equipment is side curtains and a storm apron. The apron comes up in front of the occupants of the car and may be fastened to the bows about on a level with the driver's chin.

The Cadillac trade mark is sewed in the lining of all genuine Cadillac tops.

TOPS FOR "MODEL G" TOURING CAR

RUBBER CAPE CART TOP

Covered with plaid back black rubber including storm front and side curtains of same material with transparent lights $130.00

BLACK MOHAIR CAPE CART TOP

Covered with extra quality black mohair including storm front and side curtains of same material with transparent lights $150.00

TOPS FOR "MODEL G" ROADSTER

RUBBER BUGGY TOP

Covered with plaid back black rubber including storm apron of same material ..... $ 90.00

Extra, if ordered with storm front of same material with transparent lights instead of storm apron ..... $ 15.00

FULL LEATHER BUGGY TOP

Covered with genuine hand buffed leather including rubber side curtains and rubber storm apron $110.00

Extra, if ordered with rubber storm front with transparent lights instead of apron ..... $ 15.00

SPECIAL BLACK MOHAIR BUGGY TOP

Covered with extra quality black mohair with broadcloth lining including mohair side curtains and black rubber storm apron $140.00

Price unlined $125.00

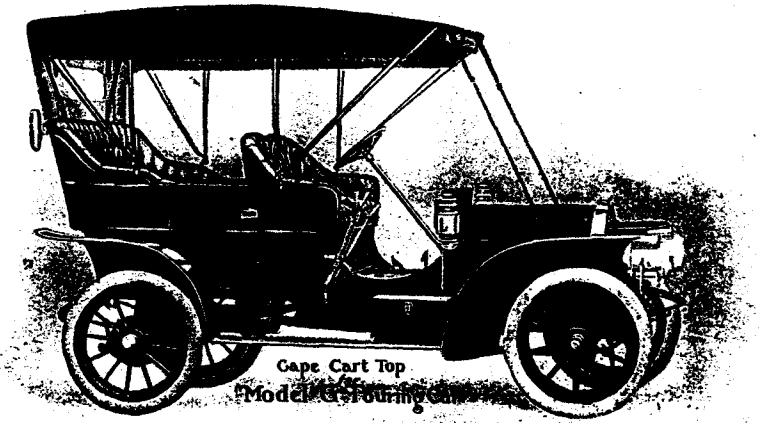
Extra, if ordered with special mohair storm front with transparent lights instead of rubber apron ..... $ 25.00

FULL LEATHER VICTORIA TOP

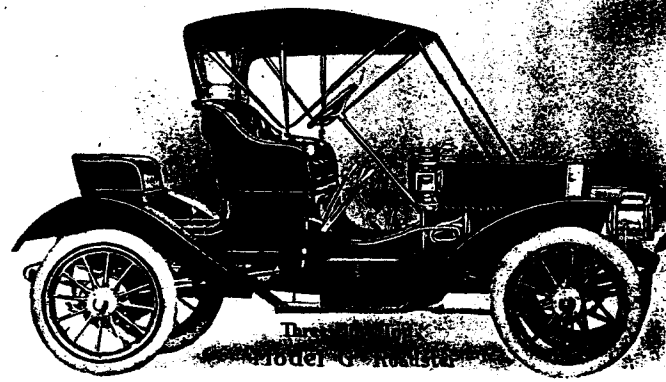
Covered with genuine long English grain hand buffed leather including rubber storm apron $185.00

Extra, if ordered with rubber storm front with transparent lights instead of apron ..... $ 15.00

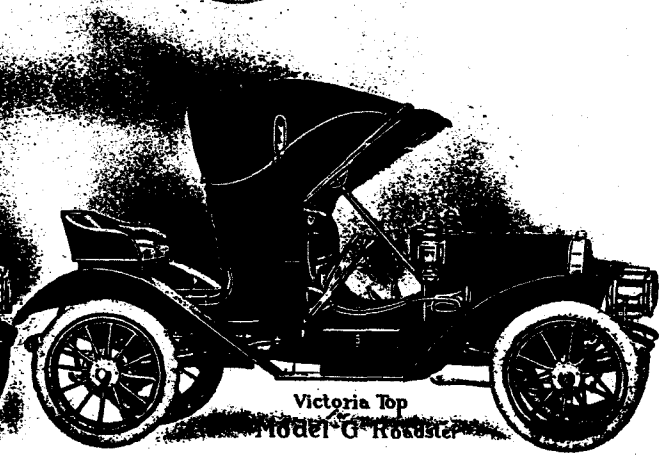
CADILLAC



Cape Cart Top
Model "G" Touring Car



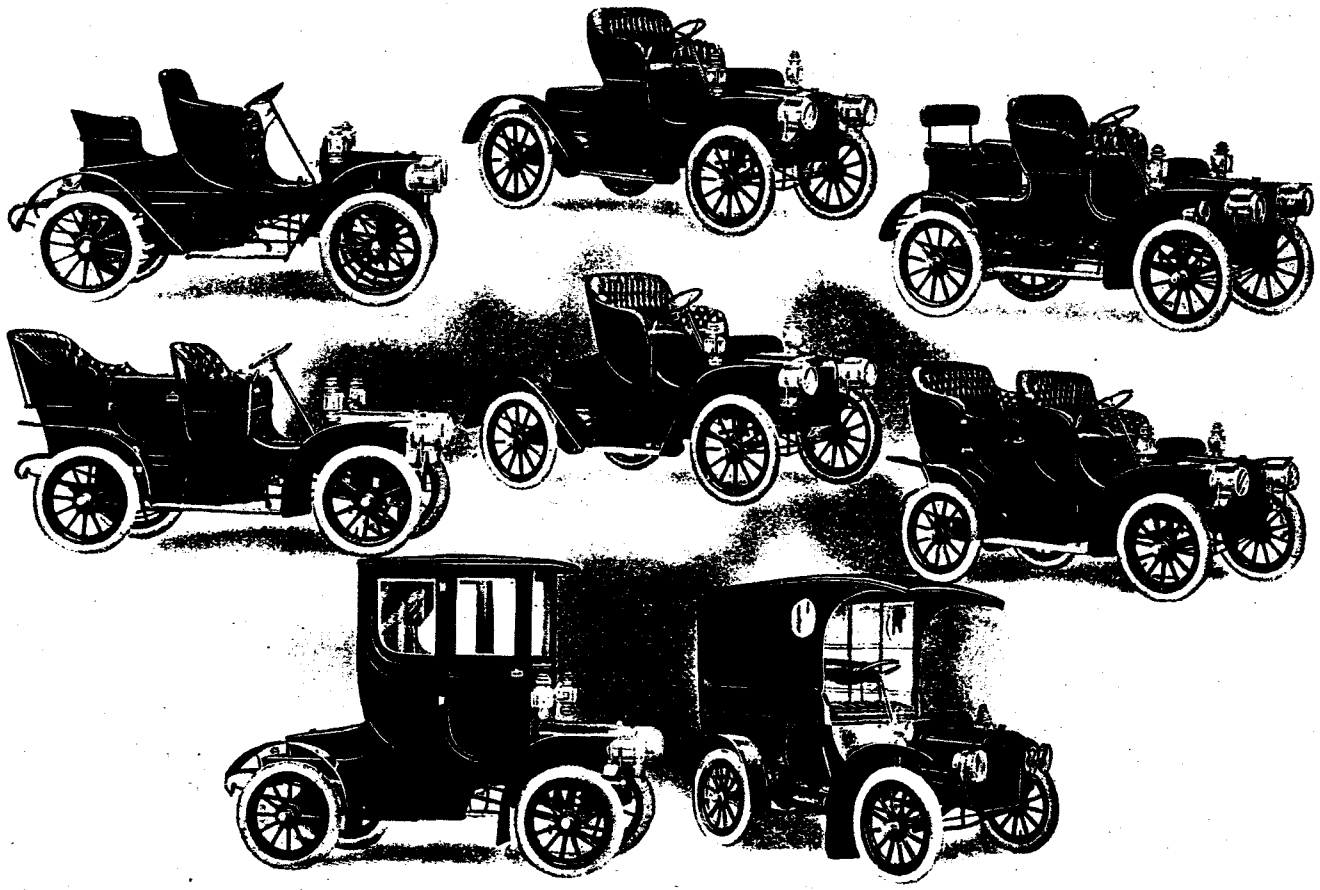
Three Quarter Top
Model "G" Roadster



Victoria Top
Model "G" Roadster

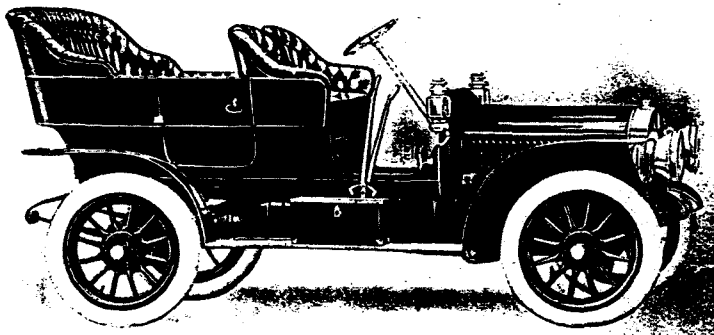
CADILLAC

CADILLAC



CADILLAC

The above group illustrates our line of ten horse-power Cadillac small cars ranging in price from $850 to $1,350
If interested, send for "Special Catalog of S. & T."

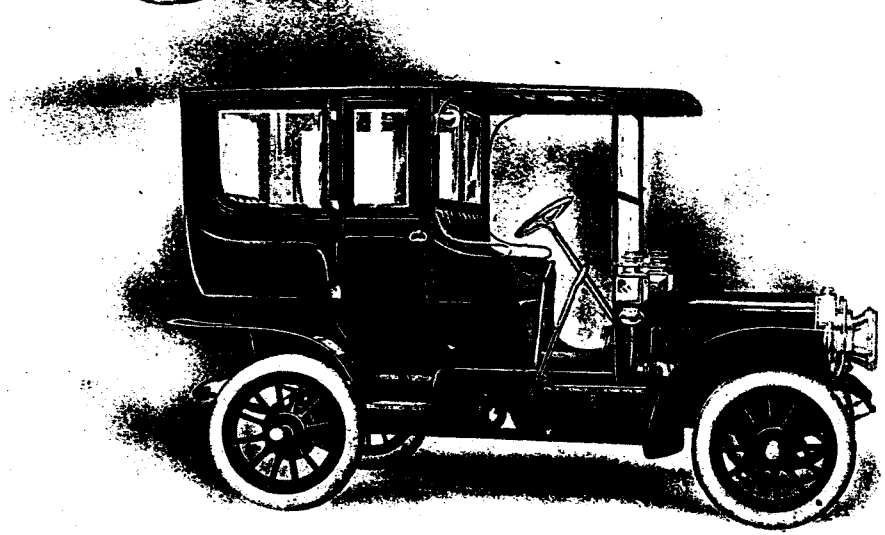


CADILLAC
"MODEL H" TOURING CAR

FOUR CYLINDER 30 H. P.

PRICE, $2,500
F. O. B. DETROIT
(INCLUDING THREE OIL LAMPS AND HORN)

CADILLAC



CADILLAC
"MODEL H" LIMOUSINE

FOUR CYLINDER, 30 H. P.

PRICE, $3,600
F. O. B. DETROIT
(INCLUDING THREE OIL LAMPS AND HORN)

CADILLAC

If interested in above, send for Special Catalog of "Model H"

TERMS, CONDITIONS AND INSTRUCTIONS FOR ORDERING

PRICES on Automobiles and parts are positively net, F. O. B. Detroit.

DISCOUNTS. We do not allow discounts excepting to bona fide automobile dealers with whom we make annual contracts for quantities of cars and who are properly equipped to conduct their business successfully and serve the best interests of Cadillac owners.

TERMS. Our terms on parts are strictly cash with order except to our regularly appointed representatives with whom we have accounts. We do not open accounts with others.

Orders accompanied by remittances will receive prompt attention, otherwise we will be obliged to hold them and write for the money.

When parts are desired by mail, the remittance must be sufficient to cover postage also. If remittance is more than sufficient, we will refund the amount overpaid.

REMITTANCES should be made by New York or Chicago Exchange, Post Office Money Order or Express Money Order. When checks on local banks are sent, we hold the order until we receive returns from the check.

WHEN ORDERING, state definitely what is wanted. Do not leave anything to be inferred. Write and sign your order plainly, on a separate sheet from your letter. When ordering ANY part, always give the number of motor in your car. This is imperative. Also state the model and year's make of your automobile.

WHEN RETURNING GOODS to us for any reason, charges must be prepaid or they will not be accepted from the railroad or express company. They must also be tagged with YOUR name and address (or we cannot identify them), and be accompanied by a letter of instructions.

CORRESPONDENCE. Our executive force is large, the Finance, Sales Agency, Advertising, Order, Repair and Shipping Departments being under separate heads. It is therefore important that correspondence bearing on different subjects be written on separate sheets, dated and signed so that each may be sent immediately to the department to which it belongs, making it unnecessary for one letter to go the rounds of several departments, which causes delay. Address all correspondence to the company, not to individuals.

SPARK COILS AND BATTERIES

When repairing is required which necessitates shipping these to the factory, do not send them to us, but forward prepaid to their respective makers or to any of their branches, which are established in most large cities.

CRATING. When automobiles are to be shipped long distances, singly, it is sometimes advisable to have them crated. The cost of crating four-cylinder cars is $15.00, boxing $20.00 extra, NET.

CADILLAC

INSTRUCTIONS

FOR OPERATION AND CARE OF

MODEL

"G"

SECOND EDITION

A copy of this book is packed in the tool kit with each new "Model G" Cadillac when shipped from the factory. If lost, a duplicate will be mailed on receipt of

Price, 25 Cents

When ordering, be sure to specify "Model G" Instruction Book.

CADILLAC MOTOR CAR CO.

Member Association Licensed Automobile Manufacturers

DETROIT, MICH., U. S. A.

Parts and Repairs

TO THE OWNER:

To avoid unnecessary delay and useless correspondence PARTS FOR REPAIRS should, where possible, be ordered from the dealer from whom machine was purchased or from nearest local Cadillac dealer who is generally in a position to know what is desired and how to order it. (If he is not we should like to know it.)

With over seventeen thousand Cadillac automobiles in use it is obviously impractical for us to deal direct with all Cadillac owners. We cannot open accounts with or sell at a discount to any except regular dealers with whom we make annual contracts. Where conditions are such as to, in our judgment, warrant it, we will fill orders for parts at prices listed in our parts catalogue f. o. b. factory providing Cash accompanies the Order.

In case orders are sent under above conditions we must have motor number, and model of machine with correct description, also sketch and exact dimensions of the part wanted. If these are not procurable, return the part properly tagged, charges prepaid, (or it will not be accepted), a special letter of instructions written and return instructions given. Otherwise we cannot promise prompt service or an intelligent fulfillment of the order.

Our responsibility in all cases ceases with delivery to the transportation company.

Repairs.—In the event of claims of the necessity for repairing on such parts as TIRES, SPARK COILS, BATTERIES OR RADIATORS, do not send these to us. It only incurs extra expense because we would be obliged to re-ship them to the factories. In all such cases correspondence should be opened direct with the makers of the parts and if necessary the same should be sent direct to said makers or their branches, transportation prepaid.

The names and addresses of makers will be found on these respective parts, excepting radiators. The latter are made by the McCord Lubricator Co. of Chicago.

TO CADILLAC DEALERS:

We prefer to transact all our business through our regular dealers with whom we have contracts. However, in order to give Cadillac owners more prompt service we are willing to open accounts with sub-dealers in your territory with your guarantee and consent. It is our desire to protect our dealers as well as the owner and for this reason have adopted the above policy.

Broken parts must invariably be sent to us transportation charges prepaid for examination before any claim will be allowed. The new parts will be charged for, and if any allowance is made credit will be given for old parts returned within 30 days.

Above instructions to owner relative to ordering parts must also be followed.

CADILLAC MOTOR CAR COMPANY,
Detroit, Mich.

The Care of a Motor Car

In the care and operation of an automobile, much must be left to the judgment of the operator, who should study the construction of his car and thoroughly acquaint himself with its mechanism, the functions of its various parts and the "why" of everything connected with it. Remember that the difference between a comprehensive understanding of your automobile and the superficial knowledge possessed by most owners and drivers is the difference between having troubles and not having them.

The old adage "A stitch in time saves nine" applies with special significance to the motor car. This does not necessarily mean that it should be constantly tinkered with but that intelligent care and proper attention will often correct a needed adjustment or lubricate a bearing that is becoming dry, but which if neglected, may cause serious and possibly expensive damage.

The care of an automobile may be boiled down to two important instructions—"Lubricate" and "Adjust." It will be readily understood that where one part moves or works upon another, there is always more or less friction and these parts must be oiled more or less frequently, including springs, shackle joints, connecting rod bearings, etc.

But do not stop with oiling only at the points mentioned. Look the car over carefully and you will find numerous oil holes, oil cups and grease cups. Remember that these are placed there for a purpose. THAT PURPOSE IS OIL. Oil holes frequently become stopped up. When they do, be careful not to overlook them.

Part two of this book gives detailed instructions regarding lubricating. Be sure to read and observe them carefully.

Great care is also necessary to see that all nuts, bolts and screws about the car are kept properly tightened. Most important parts subject to wear are, wherever possible, provided with adjustments for taking up such wear and these should be inspected occasionally, and receive attention whenever required.

By far the greater portion of "automobile troubles" is the result of negligence and carelessness, while the reasonable care to which any piece of machinery is entitled, will insure long life and satisfactory service.

TO PLACE MOTOR AND CAR IN RUNNING CONDITION.

When a car is shipped from the factory, the gasoline and water are drained off, therefore before placing the car in use, the supply of gasoline and water should be replenished. The car should also be thoroughly lubricated in accordance with the instructions contained in Part Two of this book.

TO FILL THE WATER CIRCULATING SYSTEM.

This is done by removing the brass knurled cap on top of the radiator and filling same with clean water in the summer and a good anti-freezing compound in winter. Twenty-five to thirty per cent solution of glycerine in water is a very reliable anti-freezing compound.

Make sure that the radiator is nearly full at all times or the water circulation will stop and cause the engine to heat and pound. This is important.

TO DRAIN OFF THE WATER.

Draining the water out of the cooling system through the bottom of the circulating pump of the Model G car is not sufficient. When the water stops coming out of the drain at the bottom of the pump, there will still be from one inch to one and one-half inches of water in the bottom of the radiator, which can be drawn off through the opening provided for same at the bottom of the radiator.

The plug that stops the hole in the bottom of the radiator usually projects down far enough below the shield so that a wrench can be gotten on to it; however if it is too close, it is but a matter of a couple of minutes work to drop the front shield.

To thoroughly drain the cooling system it is necessary to open both the drain under the pump and the drain under the radiator.

CLEAN THE WATER STRAINER.

In the bottom of the radiator at the point where the rubber hose connection is attached, there is a conical gauze strainer to stop the passage of dirt, lint, etc. When this strainer becomes clogged, it naturally retards the passage of water, and may cause overheating of the motor. When this occurs, the strainer should be removed and thoroughly cleaned and replaced.

The strainer in the top of the radiator just below the filler hole cap should always be in place when the radiator is being filled. No amount of clogging in this strainer can affect the heating.

PUMP DRIVING BELT.

The belt which drives the pump should be observed frequently to see that it is performing its duty. It may possibly be necessary to tighten it once or twice while the car is new. After it has reached the limit of its stretching, it will not require tightening so often.

GASOLINE SYSTEM.

There are two gasoline tanks, the large main tank for regular use and the auxiliary for emergency. Both are located under the front seat. To fill these tanks, take out the left seat cushion, raise the seat board and remove the plugs from the tanks. Clean gasoline, strained through a chamois skin, should be used, as water, grit or lint will prevent the proper working of the carburetor.

Each of the gasoline tanks, the main and the auxiliary, is provided with a cock which opens the flow of gasoline to the pipe which carries it to the carburetor. These cocks can be seen by removing the front seat heel board. Under ordinary conditions gasoline should be used from the main tank, holding that in the auxiliary tank for emergencies.

In case the gasoline in the main tank is quite low and a very steep hill is to be surmounted it may sometimes be necessary to turn on the supply from the reserve tank.

The gasoline tank is provided with a settling chamber on its under side to catch any particles of dirt or other foreign matter. The plug should be removed from the bottom of this chamber occasionally and the settlings drawn off.

GASOLINE FEED PIPE.

In the feed pipe which leads from the gasoline tank to the carburetor, near where it passes the fly-wheel, there is also another small settling chamber with a gauze strainer in it. This should be taken out every week or two and cleaned.

We have found several cases where the feed pipe which runs from the gasoline tank to the carburetor, had been removed, but was not replaced properly.

This feed pipe should slant downward only, its entire length. There should be no high places which would necessitate the gasoline running up hill during part of its course. This is important because with high places in the pipe and with gasoline low in the tank, air pockets may occur, which will prevent a proper flow of gasoline.

TO START THE MOTOR.

CAUTION.

Before starting the motor, always be sure that the control lever is in neutral position, that the emergency (hand) brake is set and that the main engine clutch is disengaged.

If this precaution is not observed and the motor is started with the main clutch engaged and with some transmission gears also engaged, the car is likely to start off without a driver.

Setting the hand brake disengages the engine by releasing the main clutch. Place the spark lever, which is the short one at the steering wheel, on dead center. (Dead center position is indicated by the letter "C" on the sector).

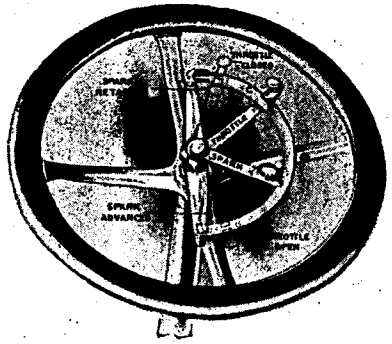


Fig. 1.

Model G. Steering Wheel with Spark Lever and Governor Controlling Lever.

Next prime the carburetor by means of the priming lever. This holds the needle valve off its seat and allows the gasoline to flow down into the carburetor. Then turn on the switch at the dash coil. The motor is now ready to start. This is done by means of the starting crank (in front, below the radiator). First push the crank in, then pull up on it, turning the crank to the right (in the direction of the movements of the hands of a clock). Do not push down on the crank as it makes it harder to turn, and should you have advanced your spark, a back kick would occur, which would endanger the operator. If you were pulling up with the spark advanced, the crank would be pulled out of your hands.

TO START THE CAR.

See Fig. 2.

After having started the motor, take your seat in the car. First place your foot against the left pedal to hold the main engine clutch out, and then disengage the emergency brake by means of the hand lever, still keeping the clutch held out with the foot.

The slot in the quadrant within which the control lever travels resembles the letter "H" in shape. The four parts of this opening are marked, "Low," "High," "Rev" (reverse) and "Int" (intermediate).

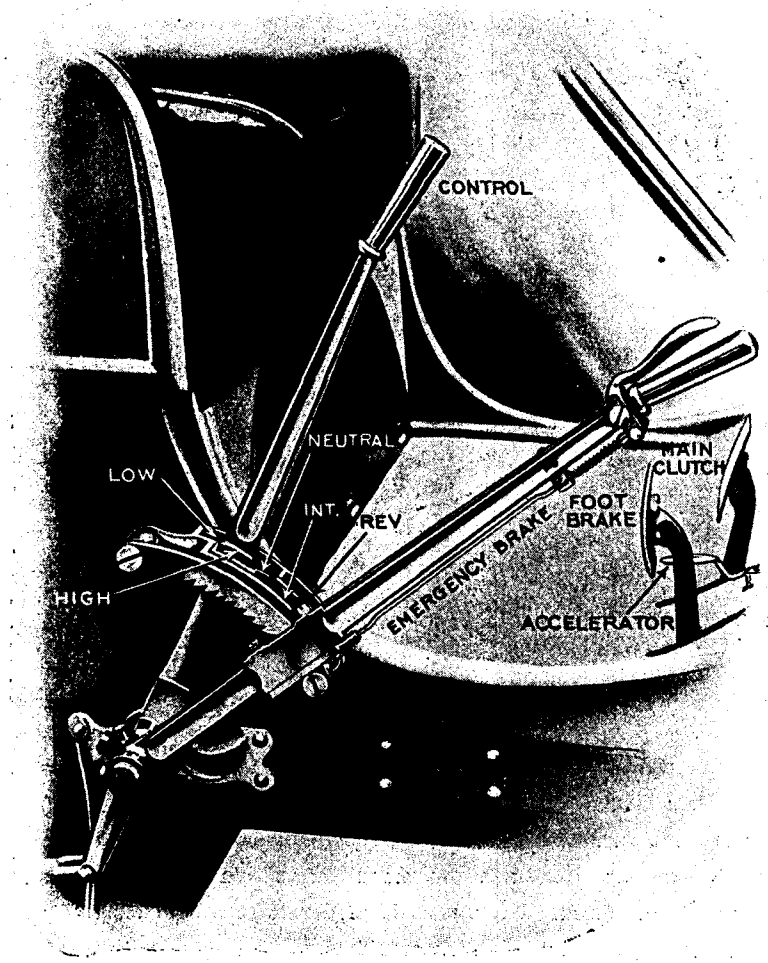


Fig. 2. Model G. Control Levers.
Be sure to oil occasionally.

Next, place the control or speed change lever in the position at which speed it is desired to start the car, viz: Reverse, Low, Intermediate or High. Then let in the main clutch by allowing the foot lever to come slowly toward you. The speed at which it is advisable to start the car depends upon conditions. If the road is rough, muddy or on a hill it is advisable to start the car on low gear. After the car has gotten under way on low gear, then shift into the intermediate, and then into the high. Or the lever may be shifted direct from low to the high or the car may be started on the intermediate then shifted into high. Where the car is started on a smooth road or street, the control lever may be placed at once in high speed position and the clutch let in slowly. However the directions first given above are deemed the most desirable as there is less strain on the car and motor and less posibility of stopping the latter unless the throttle had been opened further. After the car has gotten under way, its speed should be controlled by the throttle and spark.

It will be noticed that there is an opening through which the control lever passes in being moved from one side of the "H" slot to the other. When the lever is in this opening, it is in the "neutral" position. In other words, the main engine clutch might be engaged and some of the transmission gears be running idle but would not be in mesh with any of the gears which connect with the rear axle.

As this is the selective type of transmission, the operator may shift from any gear to any other gear without "going through" another. It must be borne in mind, however, that the control lever is automatically locked in position when the main engine clutch is engaged and that this clutch must be disengaged by the left pedal before the gears can be shifted from one to another.

In shifting from one gear to another, the action is facilitated by proceeding as follows: First, disengage main clutch by left foot pedal, pull control lever out of its position and allow it to stop in neutral just for an instant, then shift it into the position desired and again allow main clutch to engage.

If you stopped the car as hereinafter instructed, then you can start it as heretofore directed and the following instructions need not be regarded:

However, if you neglected to shift the control lever into neutral position when stopping the car; and left same with the high-speed clutch engaged and as it is difficult to start the car on the high gear, it will be advisable to disengage the high-speed clutch before starting the car. As a rule, however, you cannot shift from one gear to another with the motor and car standing still because the teeth in the gears will not mesh. In that case you will have to proceed as follows:

First: Be sure that the emergency (hand) brakes are set. Then start the motor in the usual manner, as explained on page 7. Take your seat in the car; place your foot against the left foot-pedal to hold the main clutch out, and release the hand-brake. Now shift the control lever from high to neutral position. Now let the main clutch in very slightly so that it will barely take hold, enough to start the transmission gears revolving and immediately shift

the control lever into low speed position while the gears are revolving. The car is now in position to be started by letting in the main clutch.

See explanation of transmission mechanism a few pages further on.

TO STOP THE CAR.

To stop the car—First disengage the main engine clutch by pushing forward on the left foot lever. Then apply the brake by the right foot lever. Next shift the control lever to the neutral position. Be sure to do this. Then apply the emergency brake by means of the hand lever. Now place the throttle lever (at the steering wheel) on the center "C" and the spark lever about half way between center "C" and the extreme position from you. Turn off the switch on the coil box. By following these directions, the car is in the correct position to be started again. If you do not observe this precaution, it may sometimes make it troublesome to start.

TO START BY THE SPARK.

The motor may also often be started by the spark, that is without the necessity of cranking, frequently for some time after it has been stopped. To do this, place the spark lever about half way between centre ("C" on the sector) and the extreme position from you, and place the governor controlling (throttle) lever on centre "C" on the sector. Then close the switch on the dash coil. If the vibrator works but the motor does not start, it will be necessary to crank it in the usual manner, for with the spark lever in the above position, the contacting roller should be in contact with one of the contacting plates in the commutator.

HOW TO DRIVE A "MODEL G" CADILLAC

Driving an automobile does not mean simply starting, steering, applying the brakes and stopping any more than playing a violin means simply drawing the bow across the strings. Pushing a wheel-barrow is one thing. Driving a more or less intricate piece of mechanism like an automobile and doing it right is quite another. To properly drive an automobile requires an understanding of the principles involved and the exercise of some intelligence and judgment.

We believe we are safe in saying that with properly designed and correctly built automobiles, 95 per cent. of so-called troubles are directly traceable to abuse, carelessness, a lack of understanding of the principles involved and improper handling generally.

Our object now is to endeavor to make clear a few points which some owners and drivers do not appear to fully comprehend or which, if they do, they seem to totally ignore.

Taking it for granted that you have properly started the car as previously directed in this book, we will here deal more particularly with the handling of the throttle and spark.

Some drivers seem to think that so long as the car "goes" that that is all there is to it. It is not.

To begin with, the driver should thoroughly understand what is going on inside the motor, and how, and why. If he understands these he is better able to realize why certain things must be done and why certain other things must not be done if he is to obtain the most satisfactory results, the greatest efficiency and the greatest economy, together with durability and long life of the motor and of the car. Not only these, but if proper care in operating is not exercised, serious damage is almost sure to occur, for which the car itself is in no way to blame.

A few words of explanation here will prove of advantage to those who may not be familiar with the principles of a gasoline engine and what makes it "go."

The Cadillac motors are of the four cycle type, that is, there are four movements or strokes of the pistons and two revolutions of the fly-wheel to complete each power producing cycle.

The gasoline flows from the tank down to the carburetor. The carburetor is the instrument, by the action of which the gasoline is mixed with air and transformed into a vapor or gas. This gas is then drawn through the intake pipes and through the inlet valves into the cylinders of the motor, where it is ignited by the electric spark and is exploded.

The quantity of gas supplied to the motor is regulated by the throttle lever at the steering wheel (the throttle lever is the longer of the two). This lever does not act on the throttle of the carburetor direct, but it acts upon the governor and the latter in turn acts upon the carburetor. The details of this action are more fully explained in the regular instruction book.

Drawing the throttle lever toward you increases the supply of gas supplied to the motor and consequently increases the power and speed of the car. Pushing this lever from you, toward the front of the car, decreases the supply and consequently reduces the power and speed of the car.

The action of the motor is as follows:

Starting, we will say, with the piston up, that is at its highest point in the cylinder, it first goes down. As it does so, the inlet valve opens and through this valve a charge consisting of a volume of gas is drawn into the cylinder. This movement of the piston is called the suction stroke. Then the inlet valve closes and the piston goes up and compresses the charge. This is called the compression stroke. At the completion of this compression stroke, the electric spark is made at the spark plug. This spark ignites the compressed charge of gas and explodes it, driving the piston downward. This is what produces the force or power and is called the working stroke. Just before the piston gets to its lowest point the exhaust valve opens, then when the piston goes up again it forces the burned gas out through the exhaust valve. By the time the piston has reached its highest point it has forced out practically all of the burned gas and having completed the four operations, it is now ready to commence all over again by going downward and drawing in a new charge.

All four of the cylinders work in the same way but they do not all do the same thing at the same time. Counting from the front of the motor, while the first cylinder is on the working stroke, the second is compressing a charge, the third is exhausting and the fourth is drawing in a charge. The order in which the cylinders fire is 1, 2, 4, 3, etc.

It will be seen that at the steering wheel there is a notched sector on which the outer ends of the throttle lever and spark lever rest. Just above midway on this sector the letter "C" is stamped. This letter "C" indicates "center." When the spark lever is set at this point and the motor is running slowly the igniting of the charges of gas in the cylinders takes place just as the pistons reach their highest points. This, of course, is the time when the charge is at its greatest compression, or in other words, when the gas is "jammed in the tightest." The spark occurring exactly at this instant produces a much more forceful explosion than if it occurred at a time when the charge was not so tightly compressed. It is just the same as a gun. If the powder is rammed in tightly, the explosive force will be greater than if it is loaded loosely.

But now there is another consideration.

If the electric spark were produced the very instant the contact in the commutator is made, so that the charge of gas in the cylinder always exploded exactly at the moment the piston was at its highest point, regardless of the speed of the motor, then the spark could be set permanently in the one position and would not require changing. But such is not the case.

The current of electricity which produces the spark is generated by the batteries. From the batteries there is one wire which is grounded on the frame of the motor and the other wire leads to the induction coil on the dash.

The induction coil acts as a condenser of the current, that is, it condenses or transforms the comparatively low voltage of the batteries into a heavy voltage so that a very hot or "fat" spark will be produced. There are, therefore, two electric currents, the primary and the secondary. The primary is the current as it is generated by the batteries, the secondary is the current which is induced in the induction coil by the primary current and is transmitted direct from the coil to the spark plugs in the cylinder heads where the charge of gas is ignited.

The completion of the circuit which carries the primary current is accomplished by the rotary commutator roller coming in contact with the contacting plates. This circuit being completed in this way then charges the soft iron wires in the induction coil unit, making a magnet. This magnet in turn attracts the vibrator above it; then when the vibrator is drawn down sufficiently by the magnetism, the circuit of the primary current is broken and as the soft iron core loses its magnetism the vibrator returns to its normal position. In so doing, it immediately makes a contact, again closing the primary circuit, which in turn again makes a magnet of the soft iron core. These operations continue in succession very rapidly as is indicated by the "buzzing" of the coil. Each time the operation takes place, the soft iron core losing its magnetism, its lines of electrical force are condensed or induced and taken up by the fine secondary windings until the tension is sufficient to overcome the resistance or air gap between the spark plug points. This building up process of the electrical current is greatly aided by a condenser whose action is similar to that of a Leyden Jar.

When the tension above indicated is sufficient, the current jumps across the small space between the spark plug points and causes the spark which ignites the charge of gas in the cylinders.

It will be realized now that a certain amount of time is consumed in consummating the foregoing action. While this space of time is but the merest fraction of a second, in fact almost infinitesimal, yet it is time just the same and must be taken into account when dealing with such a rapidly acting mechanism as an automobile motor.

The lapse of time required to produce the ignition is always the same no matter whether the motor is running ten revolutions or a thousand revolutions per minute. The rate at which the piston travels, varies from the speed it travels when cranking the car, which is at the rate of about 20 feet per second, up to as high as a rate of 1000 feet per second, or fifty times as fast.

You will now realize that when the motor is running at say 1000 revolutions per minute, the piston is naturally traveling many times as fast as it does when it is running at only 50 or 100 revolutions per minute. Therefore this must be compensated for by arranging to start the igniting process long enough ahead of time so that the climax will be reached just at the instant when the charge of gas in the cylinder is most tightly compressed, which is when the piston is at its highest point. This is accomplished by what is called "advancing the spark" by means of the spark levers at the steering wheel. (The spark lever is the shorter one.) Drawing this lever toward you advances the spark and pushing it from you, toward the front of the car, retards the spark. The way this is accomplished is as follows: If you will examine the connections from the spark lever down through the steering post, you will find that they lead to the commutator. Drawing the spark lever toward you turns the commutator slightly so that the metal contact plates in the commutator, meet the rotating roller within sooner, causing the primary circuit to connect enough earlier so that the coil mechanism will have time to act and produce the secondary current and spark so that the igniting process will reach the climax exactly at the instant the piston reaches its highest position or economi-

cal firing point. The explosion occurring at this particular instant gives the maximum amount of force or power for reasons which have been previously explained and consequently is desirable from a standpoint of economy in gasoline.

Just how much the spark should be advanced, or rather how much spark advance the motor will stand, depends largely on how fast it is running. The faster the motor is running, the more the spark should be advanced. Bear in mind constantly, however, that there is such a thing as overdoing it and advancing the spark too far. When this is done, the ignition takes place before the charge has been fully compressed and consequently the piston is obliged to overcome the expanded gases of the exploded charge before it can commence on its power delivering stroke. In such a case, if it were not for the momentum already gained by the car, the car would be driven backward.

Furthermore, when the spark is advanced too far, a slight pounding noise in the motor is the result. This pounding is sometimes not noticed by the beginner, as it is usually but slight, owing to the substantial construction of the crank shaft and its five bearings, and by the uninitiated it is often accepted as permissible.

Advancing the spark too far is very injurious because by it the bearings, crank shaft and connecting rods are required to withstand strains which are greatly in excess of those produced when the ignition occurs at the proper moment. It also causes an overheating of the motor. This latter point will be taken up in detail further on.

Always retard the spark a few notches when suddenly opening the throttle, otherwise the motor will pound. As the speed of the car increases the spark may be gradually advanced to its correct position.

We have now covered the subject of advancing the spark and the results of advancing it too far. Next comes the subject of not advancing it far enough and the results.

When the spark is not advanced as far as it should be, it is called a "retarded spark." With a retarded spark the charge is not exploded until after the piston has reached it highest point and compressed the charge and has started again on its downward movement. Therefore, the gas will, to some extent, have expanded again, consequently, when ignited in this condition, the force of the explosion is materially reduced and therefore a great deal more fuel is required to produce a given amount of power than when the charge is exploded just at the right instant.

IMPORTANT—When starting the motor always be very careful to see that the spark lever is at "C" or preferably slightly retarded, that is, a little farther up on the sector. If this precaution is not observed and the spark should be advanced, that is, below the letter "C" on the sector, it would cause the charge in the cylinder to be ignited too early. This would result in the motor's starting in the reverse direction, carrying the starting crank with it. This is usually a painful experience to the operator. To avoid it, be sure to observe the foregoing directions.

A retarded spark and an open throttle will usually produce a slight rumbling of the gears on the crank shaft and cam shaft. This rumbling is caused by the uneven velocity of the gears and the uneven velocity is due to the fact

that a late ignition or explosion is so weak that the motor has a tendency to hesitate slightly before fully compressing the charge.

Again, with a retarded spark and a late explosion the combustion or burning of the charge of gas is not complete. This causes a great amount of carbon to be deposited on the walls of the cylinders, combustion chambers, piston heads, spark plugs, etc. It also causes the motor to heat to a much higher temperature which causes a very severe action on the valves and valve seats. When the charge is ignited at just the right instant the combustion is practically complete so that when the valves open a thoroughly burned charge passes out. On the other hand, when the charge is ignited late, the charge is still burning when it passes through the valve opening and tends to heat, burn, scale and cause pits on the valves and valve seats. In time, this creates a condition which prevents the valves from seating properly or fitting tightly and therefore a loss of compression and a corresponding loss of power is the result.

There is still another most undesirable and detrimental condition which arises from the lack of proper spark regulation. For example:—

We have received two or three complaints to the effect that the radiators on the "Model G" car boiled the water away and that it therefore becomes necessary to replenish the water supply every twenty or thirty miles.

In the three cases which we had occasion to particularly investigate the following was observed.

One was caused on account of the operator driving with his spark lever advanced altogether too far, consequently igniting the charge too early. This caused a slight knock in the motor, resulting in its heating much more than if the charge had been ignited at the proper time.

The second and more common cause of overheating is driving with a late spark, that is, not igniting the charge until after it had gone over the compression and started to expand again.

The third complaint was made because, as the complainant expressed it, "soon after the car was started the water run out of the over-flow pipe and some water and vapor came out around the filler cap." This caused the user to conclude that the radiator was not adequate, because when he removed the filler cap and "looked into the top of the radiator the water was down quite a ways."

The facts are these, when the radiator is filled to the limit, usually from city water pipes or a well, the temperature of the water is much lower than that of the atmosphere and perhaps from 125° to 150° lower than it afterwards becomes when the motor is running normally. It is one of nature's laws that if a receptacle is filled to the limit of its capacity with liquid at a low temperature, and the temperature of the liquid be then raised up to or nearly the boiling point, some of the liquid is bound to overflow and that when the liquid is allowed to cool again to the same low temperature that it was at first, the receptacle will not be full. In other words, when the temperature of liquid is changed, its volume or bulk also changes. When heated it expands, and when cooled it contracts.

In the top of the "Model G" radiator there is a baffle-plate or distributing plate, which has many small holes in it. The function of this plate is to prevent the liquid from passing through only a few of the center tubes which would

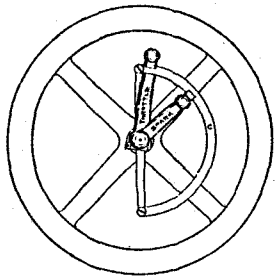
allow that in the side tubes of the radiator to become stagnant and consequently would not carry off their portion of the heat. The baffle-plate distributes the liquid evenly through all of the tubes of the radiator so that the latter will be utilized to the limit of its efficiency. The baffle-plate is exposed when the radiator lacks from a pint to a quart of being full. When the baffle-plate can be seen from the filler hole, some operators get frightened and think that the radiator is nearly empty. The fact is, however, that the amount of liquid that is thrown out because of the expansion and slopping has about ceased and that the only liquid which is lost afterward is that which evaporates. If the motor is properly controlled, the car can still be run quite a distance on the supply of water in the circulating system. The length of time that this water will serve will vary according to the conditions of the road and weather. When using only water for cooling, the radiator is usually completely filled and when the expansion, owing to the heat, takes place, about a pint or a little more is thrown out. However, when using a more expensive cooling medium, such as some anti-freeze compound, in cold weather, it is desirable to fill the radiator only to within a pint or a pint and a half from the limit of its capacity.

Now, the question which no doubt presents itself to you is:

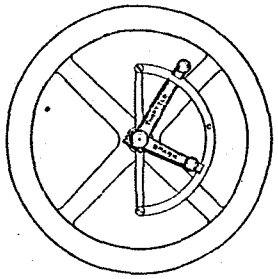
In what positions should the spark and throttle levers be carried to obtain the best results? No set rules can be laid down because there are so many different conditions which must be taken into account. The correct relative positions of the spark and throttle levers depend, first, upon the condition of the car itself in general and whether or not it is in good running order. They depend also upon whether the carburetor is correctly adjusted and upon the tension of the spring in the governor and they depend on whether or not the commutator itself is timed correctly. The condition of the road, whether smooth. rough, muddy or sandy; whether up hill, down hill or on a level; the weight of the load; whether going with or against the wind, especially if the car is equipped with a top, all have more or less influence. On the opposite page we show the approximate positions of the spark and throttle levers as recorded on a "Model G" Cadillac in good condition, with the carburetor properly adjusted and the commutator correctly timed, running on a smooth boulevard, carrying four persons, at the several speeds indicated, namely five, eight, nine, ten, twelve, fifteen, twenty and twenty-five miles per hour.

You will notice that in the table below, the spark is always referred as ahead or back of center and that the letter "C" has no reference to the throttle lever. The throttle is closed when the lever is farthest from you (at the top of the sector) and open when it is nearest you (at the bottom of the sector).

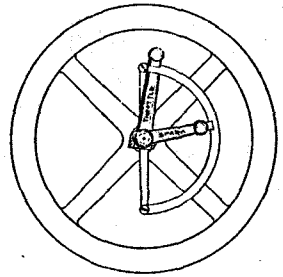
Miles per hour	Throttle	Spark
5	closed	2 inches back of center
8	closed	on center "C"
9	closed	2 inches ahead of center
10	1 inch open	2¼ inches ahead of center
12	1½ inch open	2½ inches ahead of center
15	2 inch open	2¾ inches ahead of center
20	4½ inch open	3 inches ahead of center
25	6 inch open	3¼ inches ahead of center



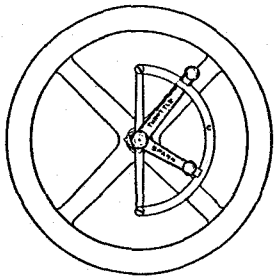
5 miles per hour



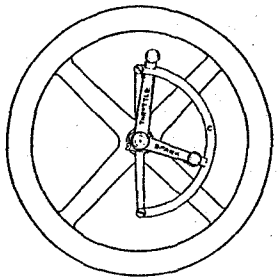
12 miles per hour



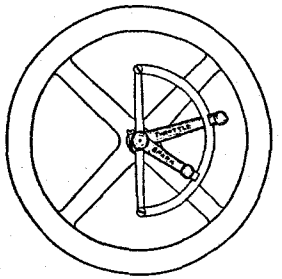
8 miles per hour



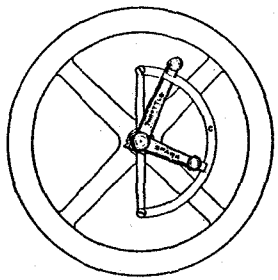
15 miles per hour



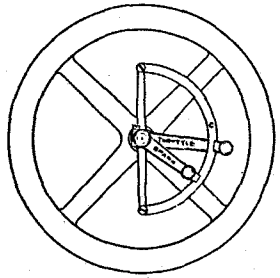
9 miles per hour



20 miles per hour



10 miles per hour



25 miles per hour

The above diagrams represent the approximate positions of the spark and throttle levers as recorded on a "Model G" Cadillac in *good running condition* with the carburetor properly adjusted and the commutator correctly timed, running on a smooth boulevard, carrying four passengers. Bear in mind, however, that there are numerous conditions which may make it necessary to alter these positions somewhat, as explained in this pamphlet.

It will also be noticed that at the first three speeds mentioned, namely five, eight and nine miles per hour, the throttle is shown as being closed, that is with the throttle lever at its extreme forward position. However, the throttle itself is not entirely closed for the reasons explained in this book under the explanation of the carburetor. By reference to the illustration of the carburetor it will be seen that the stop screw 19, when correctly adjusted, prevents the throttle from closing entirely. Therefore, with these adjustments made as just mentioned, the throttle cannot be completely closed. The throttle lever, however, in the positions shown on the illustrations herewith, at five, eight or nine miles per hour, indicates the throttle closed as far as it can be closed by the lever.

It will also be noticed that at five miles per hour the spark lever is back of center. While this is not the most economical way to drive the car, yet it is necessary to do this to hold it back, that is, to actually prevent it from developing the amount of power it would develop with the same quantity of gas with the spark further advanced, in order to hold down the speed to the miles per hour indicated.

Where the roads are rough or heavy, or when climbing a hill or with a greater load, or against the wind (if the car has a top), it would be found necessary, in order to obtain the same speed as indicated under the accompanying illustrations, to increase the charge of gas by opening the throttle somewhat more, the exact amount depending on the increased labor the motor is obliged to perform.

To sum it all up, in order to obtain the greatest efficiency and at the same time the greatest economy of fuel, the car should be driven with no more throttle opening than is necessary, but with the greatest spark advance which the speed of the motor will permit, always being careful, however, to avoid advancing the spark too far.

TO COAST.

To coast on the level, simply disengage the main engine clutch by means of the left foot pedal.

When descending a grade, a good method is to close the throttle and retard the spark and allow the engine to do the "holding back" as much as possible. This saves much wear on the brake band linings.

When descending grades up to four or five per cent, the resistance offered by allowing the car to drive the engine when "high speed" or "direct drive" is engaged is usually sufficient to control the speed. When the engine does not offer sufficient resistance the speed may be further checked by applying the foot brake.

When it is necessary to descend a very steep grade it is best to engage the intermediate or possibly the low speed gears **before commencing the descent,** and if the resistance of the motor thus obtained is not sufficient, supplement it by the foot brake.

When the engine is used for resistance as above indicated, only the foot brake can be used to supplement it. Applying the hand brake would disengage the main clutch. Bear in mind that the more resistance of the motor is

used in coasting the longer the brake band linings will wear and the brakes retain their adjustment.

The principle of this method will be understood when you realize that the same combination of gearing which changes the ratio between the engine shaft and the rear axle, which makes it easier for the engine to drive the car, will, when the car is compelled to drive the engine, have exactly the opposite effect, which is the case when the above method is used in descending a hill.

ADJUSTMENT OF CARBURETOR.

See Fig. 3.

Carburetors are adjusted on cars before leaving our factory and ordinarily should not require re-adjusting very soon, unless, perhaps to meet different atmospheric conditions, such as change of altitude or temperature. These may usually be accomplished by slightly changing the amount of opening of the needle valve (22). When further adjustments are necessary, proceed as follows:

Start the motor as usual, then place the governor controlling (throttle) lever (the long one at the steering wheel) in its extreme forward position and the spark lever on the centre (indicated on sector by "C"). When the levers are placed as just stated the motor should run slowly, but the speed may be increased or decreased by the adjustment of the stop screw (19) which limits the closing of the butterfly valve (B) through which the gasoline vapor passes from the carburetor to the combustion chambers. To increase the possible valve opening, turn the screw (19) to the right; to decrease it, turn screw (19) to the left. The object of the stop screw (19) is to limit the closing of the butterfly valve (B) which admits the gasoline vapor into the combustion chambers, so that it will not close entirely; the limit of its closing being determined by the adjustment of stop screw (19) as above explained. After setting the stop screw (19), lock it with the nut (20). Now regulate the gasoline supply to the carburetor by means of the needle valve handle (22) until the correct mixture is obtained, that is until the motor runs uniformly and best with the throttle lever, spark lever and stop screw (19) placed as above indicated.

When the correct adjustments for low speed work have been determined, then adjust for high speed. To do this **leave the spark lever on centre, "C,"** as before and the governor controlling (throttle) lever in its extreme forward position. Then hold the butterfly valve (B) wide open either by holding down the accelerator pedal or by the rod which extends from said pedal to the butterfly valve. Now loosen the hex nut (13) and adjust the high speed stop screw (12) until the action of the auxiliary air valve (7) produces the most uniform and highest speed. Then set hex nut (13) up against (10) to secure the adjustment.

In making above adjustments be sure to have spark lever on centre "C" or perhaps about one inch back of "C." This is important, because with the spark lever in above position, the speed of the motor when the car is standing, will be approximately what it would be when the car is running at a high speed with the spark advanced.

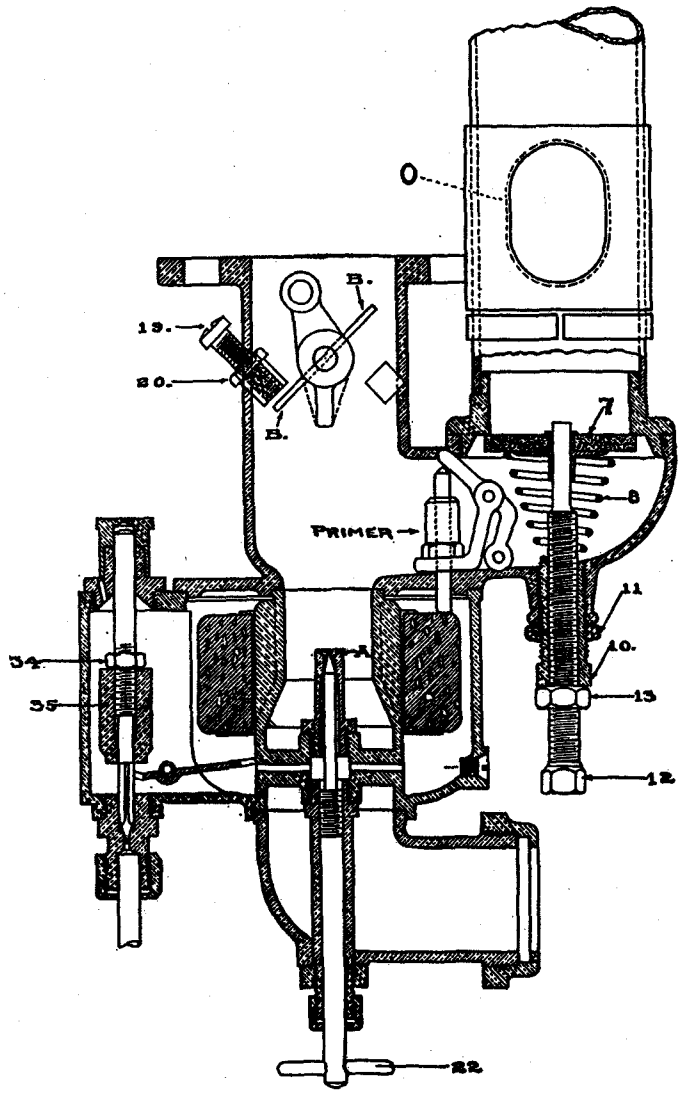


Fig. 3.

Model G. Carburetor.

With adjustments made for low and high speeds, next consider intermediate speeds. Between low and high speeds, the action of the auxiliary air valve spring (8) (when properly adjusted) governs the quantity of air supplied. For example, set the governor controlling (throttle) lever at the further backward point on the sector, that is, in the position closest toward the driver's seat, or it may be necessary to directly open the throttle by means of butterfly valve (B) to give sufficient mixture to cause air valve (7) to leave its seat. When the motor is running at this intermediate speed, observe as follows: If the tension of air valve spring (8) is too weak, it admits too much air giving a weak mixture causing the motor to "miss fire," or possibly "back fire" through the intake pipe. To correct this, loosen hex nut (13) and jamb nut (11), being careful to hold (12) from turning, and turn the spring adjusting screw (10) to the right or upward until resistance is sufficient to prevent too much air entering and until the best results are obtained. Then be sure to set jamb nut (11) up tight and hex nut (13) up against (10) thus locking adjustment.

If the tension of the air valve spring (8) is too strong, the motor will not take enough air, this will cause too rich a mixture of gasoline vapor, making the motor drag or become sluggish and the exhaust will emit black smoke. This condition may be readily ascertained by pressing down on the leather air valve (7). If by doing this the motor speed increases, it indicates that tension of spring (8) is too strong. To correct this, loosen the hex nut (13) and jamb nut (11), being careful to hold (12) from turning and turn spring adjusting screw (10) to the left or downward, backing it out until tension is relieved sufficiently to admit the correct amount of air to give uniform and highest speed with the throttle and spark levers in position mentioned. Then be sure to set jamb nut (11) up tight and the hex nut (13) up against (10), which locks the adjustment.

If by pressing down on the air valve (7) causes the speed of the motor to decrease, it indicates that the tension of the spring (8) is too weak or it may possibly be about correct. If it is ascertained that it is too weak, the tension may be increased as explained in the preceding paragraph.

It is important to bear in mind that when turning spring adjusting screw (10) that high speed stop adjusting screw (12) be held from turning, otherwise the adjustment for high speed originally made, will be lost.

It is necessary in cold winter weather to increase the tension of the auxiliary air valve spring (8) so there will be a little greater suction on the gasoline spraying nozzle to get the best carburetor action.

If, for any reason, it has been necessary to remove the carburetor from the motor or take it apart, in replacing it, carefully examine all connections, then turn on the gasoline from the main storage tank, close the needle valve entirely by means of the valve handle (22) then open it about three-fourths of a turn, and proceed to adjust to above instructions.

An adjustment has been provided for the needle valve, which admits the gasoline into the float chamber. The weight (35) on this valve should be so adjusted that the gasoline level will be maintained in the float chamber at a point so that the gasoline will not run out of the spraying nozzle. The best

action will be obtained when the chamfered portion in the top of the spraying nozzle is about half filled with gasoline as shown by dotted lines at (A). This adjustment will not have to be altered excepting when the needle point or needle seat becomes badly worn.

CARBURETOR INTAKE PIPES.

An auxiliary air inlet pipe is provided running from the exhaust pipe of the motor down to the air inlet of the carburetor. This is for the purpose of supplying warm air to the carburetor in cold weather. The opening (0) in this pipe should be closed entirely when the temperature is down to freezing weather or colder and when above freezing the size of the opening should be regulated according to the temperature.

Both the large and small intake pipes should be removed in hot weather. It is quite necessary, however, that the small intake pipe (the one that enters at the bottom of the carburetor) be kept on the motor in cold weather. While the large warm air pipe is slightly beneficial in very cold weather, it is detrimental in very hot weather.

We therefore suggest that both the large and small warm air intake pipes be removed during the hot weather, and that both be replaced when cold weather commences. When the weather moderates, as it does at times during the winter, the opening (0) in the large pipe may be regulated as required, to obtain the best results.

COMMUTATOR AND SPARK COILS.

In case of trouble with spark coils, which you are unable to correct, or when repairing is required, do not send them to us, but correspond with the coil manufacturer, whose name and address will be found on the coil.

When batteries require re-charging, do not send them to us, but send them to some station near you which is equipped for that work.

Each spark coil is adjusted by means of the knurled adjusting screw. The contact points on these screws, as well as the one on the spring, are made of platinum. Should these become pitted and uneven it will be necessary to smooth them off to an even surface by means of a fine flat file. After redressing the points, see that the platinum point on copper ribbon is directly under and in line with the adjusting screw.

The vibrator should be adjusted so that it will give an even vibration and secure the proper working of the motor. This can be determined by turning the screw to the right or left and secure the most rapid movement of the motor.

WIRING.

The following plan of wiring was used on "Model G" Cadillacs shipped from the factory up to about June 15, 1908. After that, a slightly different arrangement of the wires was adopted as hereinafter explained.

If it should be necessary to disconnect the primary wiring which connects the spark coils with the commutator, it will save time, especially for a person

not familiar with re-wiring, to tag or mark in some way, each end of the four wires so that they may readily be re-connected.

When putting in new wires, or when the above suggested method of identifying each wire has not been observed, it will be advisable to disconnect the primary wires from the coils and commutator and proceed as follows:

Place the spark lever at the steering wheel about midway on the sector and remove the spark plugs, allowing them to rest on the tops of the cylinders, but leaving them connected with the secondary wires which connect them with the coil, and then turn on the switch.

Remove the forward cover from the side of the crank case so as to be able to see the position of the crank. Next crank the motor, bringing the piston in the forward cylinder (hereinafter designated "No. 1") to the completion of the compression stroke. This position is in dead center—nearly one-half of a revolution of the fly-wheel after the inlet valve has closed.

Now having the wires disconnected from both commutator and coils, first connect the primary wires with each coil. Next observe the position of the rotating arm in the commutator, noting the contact plate with which the roll on said rotating arm comes in contact and attach the primary wire from the first coil (the coil at the left as you sit in the car) to the terminal which connects with the contact plate with which the commutator roll is contacting. To determine which one of the four primary wires is attached to the first coil, it will be necessary to test them in the following manner: Hold the metal terminal at the end of one wire in contact with any part of the motor and the wire which causes the vibrator of the first coil to act and which causes a spark at the plug at the first cylinder, is of course, the wire which is connected with the first coil. The second, third and fourth wires are identified in the same manner. As the rotating arm in the commutator turns to the right, (in the direction of the movements of the hands of a clock) the primary wire from the second coil should now be attached to the terminal following the one just connected. The wire from the fourth coil should be attached to the third terminal, and the wire from the third coil should be attached to the fourth terminal.

The order in which the cylinders are fired is 1, 2, 4, 3, etc., (the forward cylinder being No. 1) but the order in which the commutator roll contacts with the contact plates is 1, 2, 3, 4; therefore contact plate No. 1 connects with coil No. 1, contact plate No. 2 connects with coil No. 2, contact plate No. 3 connects with coil No. 4, and contact plate No. 4 connects with coil No. 3.

The secondary wire on coil No. 1, which is at the left, should connect with spark plug in cylinder No. 1, No. 2 coil with cylinder No. 2, No. 3 coil with cylinder No. 3 and No. 4 coil with cylinder No. 4. Spark plugs should be kept clean. Washing in gasoline is a good practice as the film of oil which adheres to the plug will be removed.

An excessive amount of oil in the engine will cause short-circuiting of the plugs.

The commutator is placed in correct position when leaving our factory and should not require readjusting unless some of the connections have become altered.

ANOTHER SYSTEM OF WIRING.

The foregoing plan of wiring was used on "Model G" Cadillacs which were shipped from the factory prior to about June 15, 1908.

Commencing about that date a slightly different system was adopted as shown by the diagram on opposite page. This we found gives better results in some respects.

It should be understood that the drawing is necessarily distorted to some extent in order to enable the reader to clearly trace the various wires from one connection to another.

To facilitate the explanation, the cylinders are numbered 1, 2, 3, 4, commencing at the front of the motor. The plates in the commutator with which the roller contacts to close the circuit are numbered 1, 2, 3, 4, commencing with the one at your lower left. The units of the coil are numbered 1, 2, 3, 4, commencing at your left AS YOU SIT IN THE CAR. The primary wires which connect the contact plates of the commutator with the coil units are lettered A, B, C, D. The secondary wires which connect the coil units with the spark plugs in the cylinders are lettered V, X, Y, Z.

To facilitate identification the four primary wires are different colors. viz:

A Red	C Black
B Brown	D Green

As will be seen by the diagram, these primary wire connections are as follows:

Wire A runs from commutator contact plate No. 1 to coil unit No. 1.
Wire B runs from contact plate No. 2 to coil unit No. 4.
Wire C runs from contact plate No. 3 to coil unit No. 2.
Wire D runs from contact plate No. 4 to coil unit No. 3.
The secondary wires in the diagram are lettered V. X. Y. Z.
Wire V runs from coil unit No. 1 to cylinder No. 1.
Wire X runs from coil unit No. 4 to cylinder No. 2.
Wire Y runs from coil unit No. 3 to cylinder No. 3.
Wire Z runs from coil unit No. 2 to cylinder No. 4.

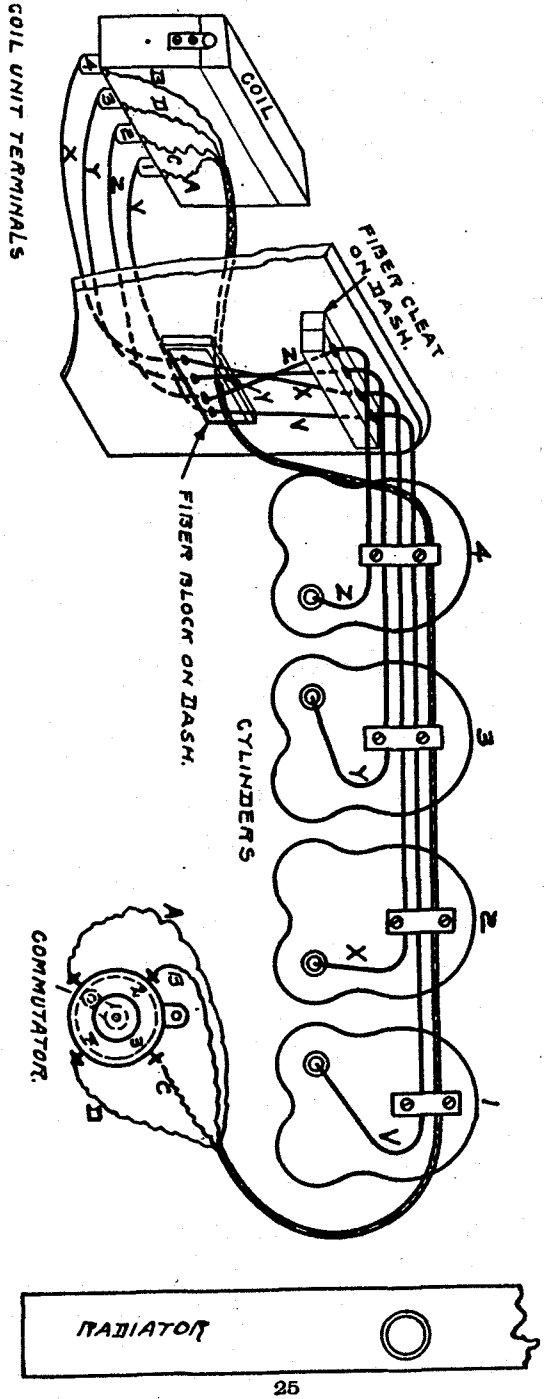
The order in which the roller in the commutator contacts with the contact plates is 1, 2, 3, 4, but the wiring is such that the order in which these fire the cylinders is 1, 2, 4, 3, etc.

Current through commutator contact plate No. 1 passes through primary wire A, to coil unit No. 1, inducing a current through secondary wire V and fires cylinder No. 1.

Current through commutator contact plate No. 2 passes through primary wire B to coil unit No. 4 inducing a current through secondary wire X and fires cylinder No. 2.

Current through commutator contact plate No. 3 passes through primary wire C to coil unit No. 2, inducing a current through secondary wire Z and fires cylinder No. 4.

Current through commutator contact plate No. 4 passes through primary wire D to coil unit No. 3, inducing a current through wire Y and fires cylinder No. 3.



DIAGRAM, SHOWING WIRING OF "MODEL G" CADILLAC

HOW TO DETERMINE WHETHER THE COMMUTATOR AND COMMUTATOR ROLL ARE SET CORRECTLY IN RELATION TO THE "C" ON THE SECTOR.

1st.—Open the cylinder relief or priming cocks.

2nd.—Turn the motor one-half turn after the inlet valve on number one cylinder has closed. (This is the second valve, counting from the front of the motor.) The letter "C" on the face of the fly-wheel should then stand at the top and in line with the centers of the cylinders. The piston will have reached its highest point of travel, the proper time for ignition to take place.

3rd.—Remove the cover from the commutator.

4th.—Advance the spark as far as possible.

5th.—Turn on the switch.

6th.—Retard the spark lever slowly. The unit No. 1 in the coil box should cease vibrating just as the spark lever is opposite "C" on the sector and the roller should have now ceased to contact on the plate in the lower left hand part of the commutator, (as you are looking into it.)

In case the actions should not be found to take place as mentioned, the commutator can be adjusted by disconnecting the clevis at the end of the rod where it attaches to the body of the commutator and screwing up this clevis or letting it out on the rod as the case may require.

SPARK PLUGS.

Spark plugs should be kept clean. When carbon or soot is permitted to collect on them, it causes a short circuiting of the current and prevents the proper ignition of the charge in the cylinder. A good method of keeping plugs clean is to wash them occasionally in gasoline.

In order to get the best results, the gap between the points across which the spark jumps should be about 1/32 to 3/64 of an inch.

TIMING THE VALVES.

The fly-wheel is marked as follows:

C meaning Center

I O meaning Inlet Opens

I C meaning Inlet Closed

E O meaning Exhaust Opens

E C meaning Exhaust Closed

Each of the above appears twice on the face of the fly-wheel. When a "C" is exactly at the top of the fly-wheel, it indicates that the crank shaft and piston

are on "centre," that is, that two of the pistons are at their highest points and the other two at their lowest points.

The positions of the above mentioned letters on the fly-wheel, are clearly indicative of the correct timing of the valves. There being four cylinders, the inlet and exhaust valves must be timed on each separately. As valves are all timed before the car leaves the factory, these instructions will be found adequate for such slight adjustments as may possibly from time to time be advisable.

For example: Take the forward cylinder. Turn the fly-wheel until the inlet valve **begins** to open. If it is correctly timed, the letters "I O" stamped on the fly-wheel will be exactly at the top. If not, the valve should be timed so that it **will begin** to open when the letters are at the point mentioned. Now turn the fly-wheel in the direction that motor regularly runs, a little more than half a revolution, when the letters "I C" will appear at or close to the top. The inlet valve should be so timed that it will have **entirely closed** when the letters "I C" are at the top. Now take the Exhaust Valve. This should be so timed that it will **begin** to open just as an "E O" has reached the top of the fly-wheel and should be entirely closed just as "E C" on the opposite side has reached the top.

The adjustments of the inlet and exhaust valves are made by lengthening or shortening the valve lifting rods by means of the adjusting collars on the lower ends of same.

When the cam shaft gear and crank shaft gear have been disengaged for any purpose, it will be necessary, when reassembling them, to see that the tooth which is stamped "O" on one gear, enters the space (between the teeth) which is stamped "O" on the other gear.

THE GOVERNOR.

The purpose of the governor is to automatically regulate and maintain practically a steady speed of the motor and of the car without its being necessary for the driver to be constantly altering the position of the throttle lever to meet varying road conditions.

To illustrate: Suppose a car is running at say twenty miles per hour, upon encountering a grade, the tendency of the motor would be to slow down somewhat owing to the increased power necessary to ascend the grade. But as soon as the speed of the motor commences to decrease, the governor ring will not revolve so rapidly, consequently there is less centrifugal force to hold it up, and it begins to assume an oblique or slanting position. But in so doing it automatically opens the throttle further, thereby giving the motor a heavier charge and more power with which to accomplish the extra labor required. This same principle applies when striking a bad piece of road, sand or mud.

Again—Suppose the car starts descending a grade; the burden on the motor being removed, the tendency would naturally be for the speed to increase, but as soon as this commences, it causes the ring to move toward the horizontal position and consequently partly closes the throttle, decreasing the charge, which, of course, decreases the speed of the motor. The same illustration will

apply in cases where the main clutch is suddenly disconnected. Ordinarily this would allow a motor to "race," but the governor automatically throttles it down at once.

The governor controlling (throttle) lever (the long one at the steering wheel) does not act directly on the throttle of the carburetor, but acts on the governor by increasing or decreasing the tension of the spiral spring which offers the resistance to the tendency of the revolving governor ring to assume a horizontal position, and this in turn acts on the throttle of the carburetor.

Pulling the governor controlling lever toward you, increases the tension on the spiral spring in the governor, causing the latter to open the throttle. Pushing the lever from you, decreases the tension on the spring and this causes the governor to close the throttle.

The governor controlling lever may be set at any desired point on its sector and the speed of the car thereby produced will be practically maintained.

In case of emergency when it is desired to obtain an instant increase in speed, it can be accomplished by pressing with the foot on the accelerator pedal in the floor of the car. This opens the throttle instantly, without touching the governor controlling lever, but immediately upon releasing the accelerator pedal, the car settles back to the speed at which the lever is set

Governors are set at the factory, so that by drawing the governor controlling lever as far back (toward the driver) as possible that the car will, presuming that everything else is working properly, attain a rate of speed of about 30 miles per hour. If greater speed is desired, it is accomplished by use of the accelerator pedal.

"MODEL G" SLIDING GEAR TRANSMISSION.

See Fig. 4.

The transmission gear case or housing should always contain sufficient oil so that the under teeth of the gear "E" will enter into it their full depth.

A heavy liquid oil should be used in warm weather and a lighter grade in cold weather.

The transmission on the Cadillac "Model G" is our selective type of sliding gear. The main transmission driving shaft "K," also the jack shaft "J," revolve on the roller bearings inside the steel bushings at "L."

This illustration shows the transmission in the high speed position. The gear "A" is attached rigidly to the main transmission driven shaft "M" and gears "B" and "C" are movable on the main transmission driving shaft "K." Gears "E" and "F" are attached rigidly to the jack shaft, and gear "G" is movable on the jack shaft. Gear "D" also another gear (not shown) are attached rigidly to the reverse gear shaft.

There are three speeds forward and reverse. The speed changes are accomplished by means of a hand lever at the side of the car, the range of action being within an "H" shaped quadrant. The construction is such that a shift may be made from any gear to any other gear without "going through" a third.

The control or speed change lever is automatically locked in position when the main clutch is engaged and the latter must be disengaged by the clutch pedal before gears can be shifted.

High speed is obtained by shifting gear "B" toward gear "A" where the two engage one with the other by a series of interlocking lugs, (which form the high speed clutch "H"), thereby connecting the main transmission driving shaft "K" with main transmission driven shaft "M." This gives a direct drive on high gear with no gears whatever in mesh, the jack shaft remaining stationary.

Shifting gear "B" from the position shown, disengages the high speed clutch "H," leaving the transmission in the neutral position and automatically shifting gear "G" into mesh with gear "A." By shifting gear "B" still further and into mesh with gear "F," the intermediate speed position is obtained. Gear "G" is always in mesh with gear "A" excepting in high speed position.

In low speed, gear "C" meshes with and drives gear "E" on the jack shaft, which through gear "G," also on the jack shaft, drives gear "A" on the main transmission driven shaft.

In reversing, gear "C" is brought into mesh with gear "D," the latter being on the reverse gear shaft on which there is also another gear (not shown). This meshes with and drives gear "E," reversing the motion of the jack shaft, which by means of gear "G" drives gear "A" on the main transmission-driven shaft.

When stopping the car as directed on a preceding page, be sure to shift the control lever to the neutral position.

ADJUSTMENT OF TRANSMISSION GEARS.

See Fig. 4.

It is possible that after long service there may be a slight amount of wear in the arm or lever "T" which shifts the gear "G." If such wear should occur, it would be indicated by the fact that when the gear "G" is shifted out of mesh with gear "A" that it will not come out sufficiently far to allow the two gears ("G" and "A") to revolve independently of each other.

An adjustment is provided for this. In the bottom of the transmission gear case or housing there is an eccentric stud in which the shifting arm "T" is pivoted. The scope of travel of the gear "G" may be regulated by this eccentric stud which may be adjusted from the under side of the transmission gear case by first loosening the large lock-nut, then turning the other nut until it brings the eccentric around to the desired position and then locking it again with the lock-nut. The position of gear "G" should be so that when it is in the high speed position it will clear gear "A" by one-eighth of an inch or more and yet can be brought into full mesh with gear "A."

As indicated above, however, this adjustment will probably not require attention for some time unless perhaps the transmission is for some reason taken apart.

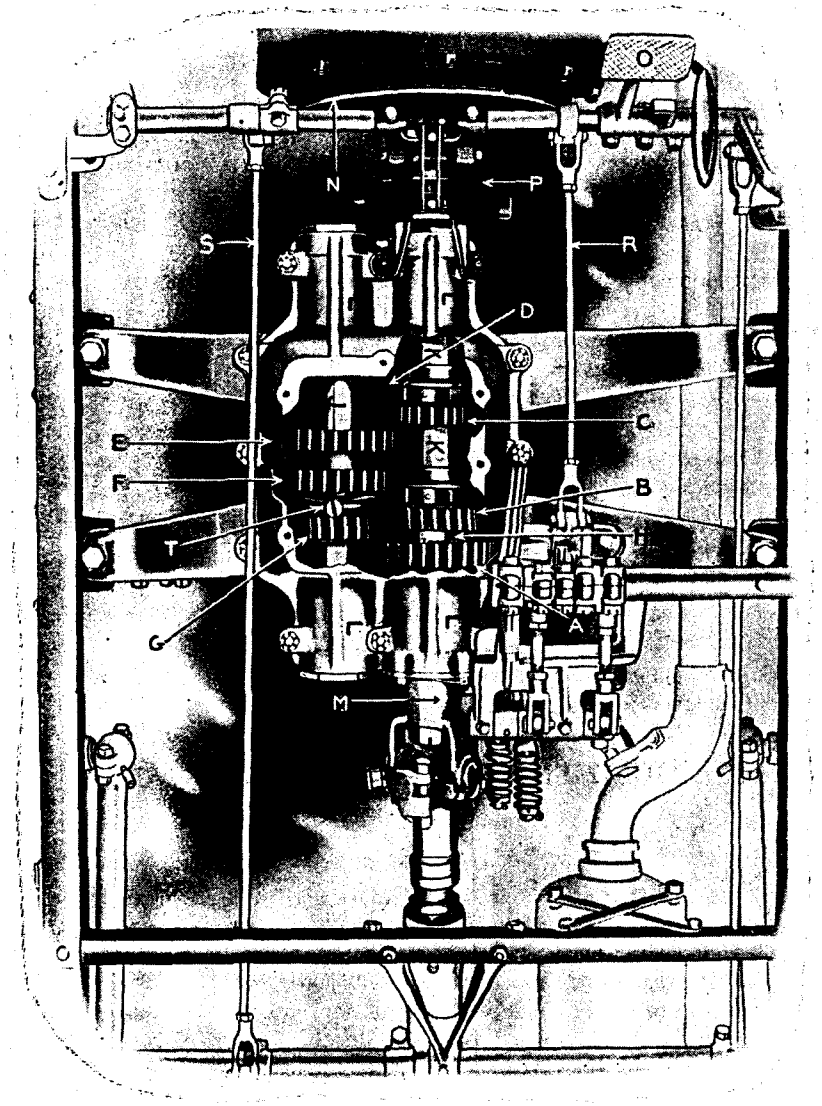


Fig. 4. Model G. Sliding Gear Transmission.

Keep sufficient liquid oil in transmission gear case so that the under teeth of gear "C" will enter into it their full depth. Oil ball bearings through oil holes at "P" occasionally. Oil universal joint between transmission and main clutch frequently. Look carefully to oiling all radius rod and connecting rod joints as well as every possible friction point where one part moves upon, with or against another.

Read Part Two of this book for detailed lubricating instructions.

ADJUSTMENT OF MAIN ENGINE CLUTCH.

See Fig. 4.

The main engine clutch "N," which is of the leather faced cone type, is normally engaged, that is, the engine is connected or coupled up with the transmission by said clutch and is held in that position by a coil spring within the clutch and can be disengaged only by using the left foot lever or the emergency (hand) brake lever.

The clutch should be inspected occasionally to see that it seats or "takes hold" properly, because if it does not, it will slip, and this not only causes it to wear but prevents the engine from delivering its maximum power to the driving mechanism.

To determine whether the clutch seats properly, take hold of the main clutch foot lever "O" and see if it has a little play or back lash. If you can move this lever a little without any great effort and without starting the clutch to disengage and if you can see when moving the foot lever that at the point "P" the two members become separated slightly, the probabilities are that the adjustment is about right. This separation, however, at the point "P," when the left foot lever is moved as explained, should not exceed about 1-32 of an inch.

If, however, upon pressing upon the left foot lever you find that there is no play whatever and that the two members hold tightly together at "P," and if you find that the only movement you can make of the foot lever starts to disengage the clutch, the probabilities are that the connecting rod "R" to the interlocking device, or the connecting rod "S" to the emergency brakes, or possibly both of these connecting rods are too tight.

The connecting rods "R" and "S" should be so adjusted that they will permit of about 1-32 inch play or back lash between the two members at "P," but in adjusting the rod "R" care should be exercised to see that it is long enough to allow the dog on the rocker at its backward end to enter sufficiently into the space between the teeth in the segments in the interlocking device when the main clutch is engaged but at the same time it must be short enough to pull the dog clear out from between these teeth when disengaging the main clutch, otherwise it will be impossible to change gears.

The length of the connecting rod may be changed by first loosening the jamb nut which is next to the yoke, then taking out the cotter pin and pin. Next screw up the yoke to shorten the reach of the rod or back it off to lengthen it. Then again attach the yoke to the rocker arm from which it was detached, replacing the pin and cotter pin and tighten the jamb nut.

The connecting rod "S" should be so adjusted that it will not prevent the clutch from seating properly yet at the same time work in proper harmony with the other connections to the contracting or external hub brakes.

Do not overlook oiling the leather face of clutch cone occasionally. To do this, disengage the clutch and revolve the cone with the hand, at the same time applying some neatsfoot oil through the slots in the clutch ring. An-

other method is to disengage the clutch and jack up one rear wheel of the car. Then with some of the transmission gears engaged and by turning the rear wheel, the cone will revolve. While it is revolving, apply the neatsfoot oil through the slots in the clutch rings. This should be done about once a week and will be found to make the clutch operate and take hold smoothly.

FORWARD UNIVERSAL JOINT.

Between the transmission and the clutch there is a universal joint or coupling. In the later "Model G" cars, the spindle which is riveted to the clutch cone, also the two halves of the coupling and the driver on the end of the transmission shaft, are each marked with an X. In case it has been necessary to take the coupling apart, be sure, in re-assembling, that the four X's are in line with one another so that the several parts will fit in the same relative positions that they were originally.

In the earlier "Model G's" these parts were not marked so if you have occasion to take the coupling apart be sure, before doing so, to mark them so you can replace them correctly.

ADJUSTMENT OF ENGINE BEARINGS.

Do not neglect the crank shaft and piston connecting rod bearings. Frequently a slight knock or pound in the engine may be attributed to a looseness in these bearings and they should always be kept properly adjusted. They are accessible by removing the hand hole covers from the crank case.

To tighten the connecting rod bearings, first loosen the Columbia lock nuts on both sides of the bearing, then turn down the adjusting nuts and retighten with the lock nuts.

There are five main crank bearings, one at each end and three intermediate bearings between. It will be observed that the five main bearings are provided with liners. These are small pieces of brass which are placed between the two halves of the bearings. To tighten the main bearings, new liners of less thickness should be substituted. Each liner is stamped, showing its thickness in thousandths of an inch, thus .180. We make these liners in a number of sizes with a difference of .001 of an inch between each size, therefore when new liners are necessary, they should be replaced with those which are sufficiently smaller than those taken out to make the correct adjustment, yet should be thick enough so that the bearings may be brought up against the liners without pinching the crankshaft. Liners in the bearings are not all the same size, so when you have occasion to take them out, be sure not to mix them and be sure to keep track of where each one was taken from.

The thickness of a liner may be reduced with a fine file, but this should never be attempted excepting by someone who thoroughly understands how to do it as any inaccuracy in the work may prove disastrous to the bearings.

BRAKES.

See Fig. 5.

There are two sets of brakes. One set contracts upon the drums on rear wheels and is applied by a hand lever at the side of the car. The other set expands within the rear wheel drums and is applied by the right foot lever. The application of hand brakes automatically releases the main clutch, disconnecting the motor from the transmission.

When brake band linings become worn and therefore require tightening, do not attempt to accomplish it by shortening or lengthening the connecting rods, but proceed as follws:

To adjust outside or contracting brake bands, take out the pin "A" and loosen the jamb nut "C," then turn the connection "B" to the right (screwing it down) to tighten the band or to the left to loosen it. Replace the connection putting in the pin "A" and lock it with the jamb nut "C."

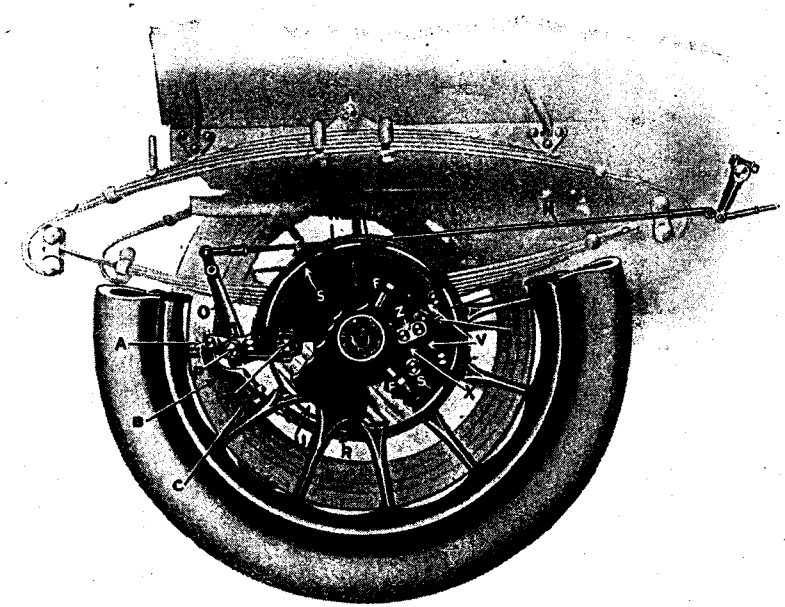


Fig. 5.

Model G. Rear Wheel Brakes.

See that all moving parts are kept well lubricated.

To adjust the internal or expanding brakes, first remove the cover "D" from the hand hole. Loosen the set screw which you will find just inside and turn the slotted disc "E." To tighten these brake shoes, turn the slotted disc "E" so that it forces apart the two points where the threads enter. To loosen the brake shoes, turn disc in opposite direction. Be sure to lock with the set screw.

The supports "FF" are for the purpose of preventing the internal brake shoes from dragging when not in use and should be adjusted, when necessary, to hold the shoes at about equal distance from the inside of the drums when the right foot pedal is entirely released.

STEERING GEAR.

See Fig. 6.

The illustration shows the steering gear with the upper part of the case raised in order to show the working parts. The steering gear case should be kept well lubricated with heavy oil and may be filled by removing the plug "A."

Two adjustments are provided. The first is to take up end play in the steering staff. When this occurs, loosen the jamb nut and the set screw "B" and remove the plug "C." Then with a screw driver or something suitable turn up the adjusting collar, which can be seen through the hole from which plug "C" was removed. Then lock the collar with the set screw and jamb nut "B" and replace plug.

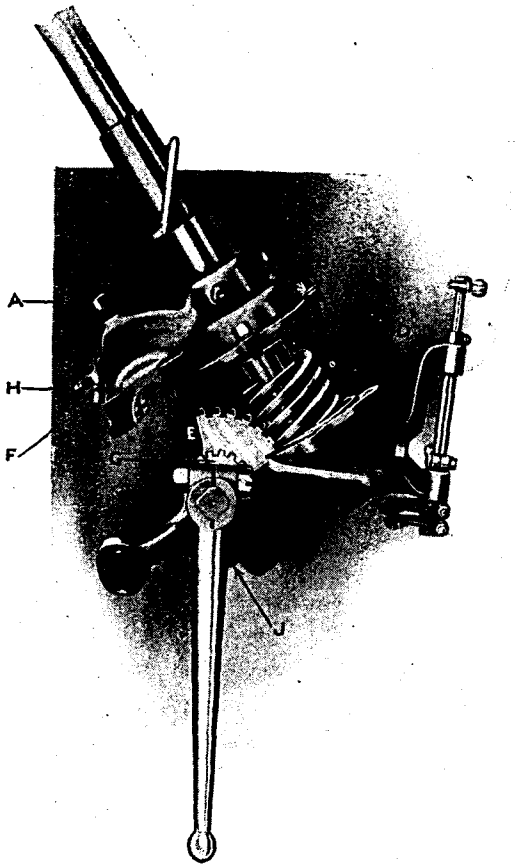


Fig. 6.

Model G. Steering Gear.

See that all moving parts are kept well lubricated.

The other adjustment provides for taking up wear on the worm "D" and sector "E." The sector has its bearings in a pair of eccentric steel bushings and should wear occur it is taken up by turning these bushings so that they throw the sector closely toward the worm. To do this proceed as follows: First remove the two set screws "F," which are side by side, (but only one shows in the illustration). Through the holes from which the set screws were taken, the two notched adjusting eccentric bushings "G" may be seen. Next, with a wrench, turn the hex heads on the bearing bushing forward, moving the sector toward the worm, just one notch of the bushings, or more if necessary, but one will usually be sufficient. In any event be very sure to **turn up both sides exactly alike,** otherwise the gear will be thrown out of alignment. Then replace the set screws.

"H" and "J" are stop screws against which the sector strikes and prevents turning the wheels of the car at too acute an angle.

AXLES AND DRIVE SHAFT.

See Fig. 7.

The rear axle housing should always contain enough oil so that the large bevel gear will dip into it. To place the oil therein, remove the plug from the spherical part of the housing. The first filling will require about one pint of oil. It is also advisable not to use too much. To prevent this another plug is provided on the underside of the sphere. When placing the oil in the housing, remove the plug from the underside of the sphere so that any excess will run out. The quantity of oil should be maintained on a level with the under plug. The roller bearings in the rear axle should be kept properly lubricated through the oil cups.

To take up lost motion in the drive shaft, first loosen the jamb nut "A," then tighten the adjusting nut "B," then re-set the jamb nut. Do not set up the adjusting nut too tightly, only sufficient to not allow any play.

To adjust the large bevel gear to the bevel driving pinion. First remove the hand hole cover from the top of the large part of the axle housing. This exposes the driving gears as shown in Figure 7. Loosen the set screw "C" in both of the clamping collars. Then screw the right collar, moving it toward the large bevel gear "H," and screw left collar away from said gear. These bevel gears should be so adjusted one with the other, that they will mesh properly with practically no lost motion. When the correct adjustment has been secured, then again tighten the set screws.

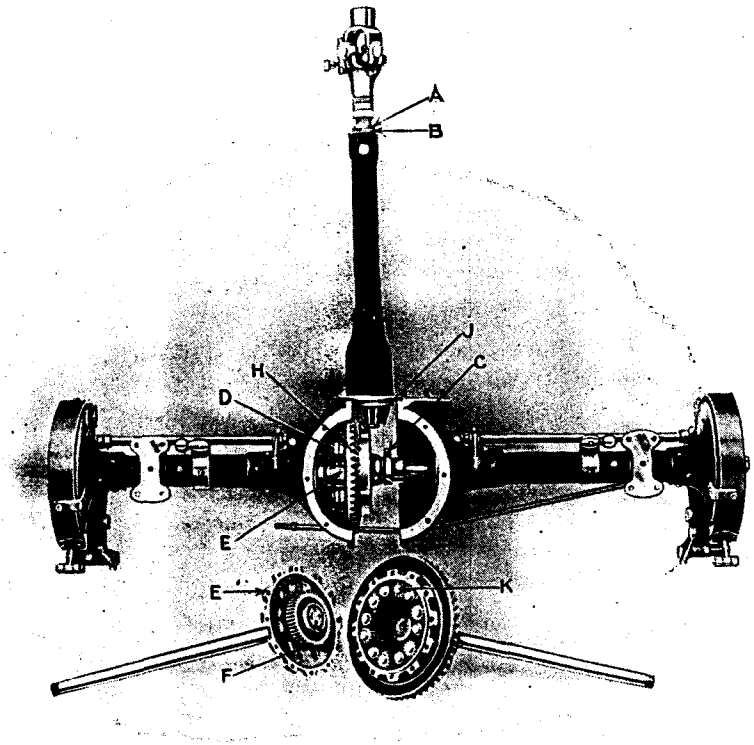


Fig 7.

Model G. Rear Axle.

To remove the bevel pinion "J" from the drive shaft it will first be necessary to remove the axle from the car, and detach the drive shaft, with its housing, from the axle, as hereinafter explained. Then remove the nut from the end of the drive shaft, and drive the shaft out of the pinions, being careful not to injure them.

IMPORTANT NOTICE. Bear in mind that if for any reason either of the bevel gears are replaced by another with a different number of teeth, it will be necessary to replace the other gear also with one having teeth of the proper angle to correctly mesh with the new gear.

REMOVING AND REPLACING REAR AXLE.

1. Remove automobile body.
2. Jack up frame slightly so as to remove load from rear springs, but do not lift wheels clear of the ground.
3. Put blocking under frame near transmission.
4. Loosen spring clips from lower half of rear springs.
5. Disconnect all brake pull rods at rear axle.
6. Disconnect both radius rods at front end of rods.
7. Roll rear axle from under car.
8. Remove wheels, brake bands, levers, etc.

To install new axle, reverse the order of the above operations.

Care must be taken in installing the axle, also to get the brakes correctly adjusted.

(See Special Instructions for Adjusting Brakes).

TO TAKE DOWN THE REAR AXLE.

Remove rear wheels, remove the hand hole cover from the differential housing in the middle of the axle. Remove the nuts from the studs which hold the drive shaft housing to the axle housing. The drive shaft, with its housing, may then be taken off. Next remove the bolts which hold the two halves of the axle housing together and disconnect the strut rods under the axle. The housings may then be removed.

TO TAKE THE TWO HALVES OF THE LIVE AXLE APART.

Remove the wire from the cap screws "D," which hold the two gear case covers together, and take out the cap screws. Then pry apart the two gear case covers "E," which will separate the two halves of the live axle, as shown at the bottom of illustration, Figure 7. If necessary to remove equalizing gear "F" from the end of the axle shaft, first take out the set screws in the end of the shaft, remove the nut, and then drive the shaft out, being careful not to injure the gear.

To remove the large bevel gear, take out the live axle, as above instructed, remove the cap screws "D" and the gear may be taken off.

One bolt lug on each of the two gear case covers "E" is marked. When re-assembling these, be sure to see that the two marked lugs are assembled side by side.

CAUTION. If for any reason the small equalizing pinions in the differential gear case are taken out, they must be replaced as they were found, i. e., in pairs, one with the pinion end inward, and the other with the pinion end outward.

INSTRUCTIONS FOR ASSEMBLING COMPENSATING GEARS ON INNER ENDS OF LIVE AXLE SHAFTS.

See Fig. 7.

The utmost precaution must be exercised in every detail in assembling these gears and shafts to insure perfect fits. It is merely necessary to realize that the shearing strain on the key amounts to several tons to appreciate the absolute necessity for extreme precaution.

The key-way in both shafts and gears are made parallel and to close limits.

The tool steel keys must be a tight fit sideways in both the shaft and gear and should be sufficiently free on the top side under the gear to prevent any tendency toward the bursting of the gear.

The gear "F" must be forced positively tight on to the tapered shaft and held in place by means of the special nut. This nut must be screwed up tight with a special wrench and locked in place with a set screw which screws into the thread of the shaft and nut parallel to the axis of the shaft. It is therefore necessary to have the nut stop in a certain angular position in order that the locking screw can be screwed into place. It may become necessary to remove the nut and file a small amount away from the back or use a thin washer a few thousandths thick in order to have the nut stop when tight in a position that will permit of the lock screw entering. This lock screw should be secured in place by slightly burring over the end of the shaft.

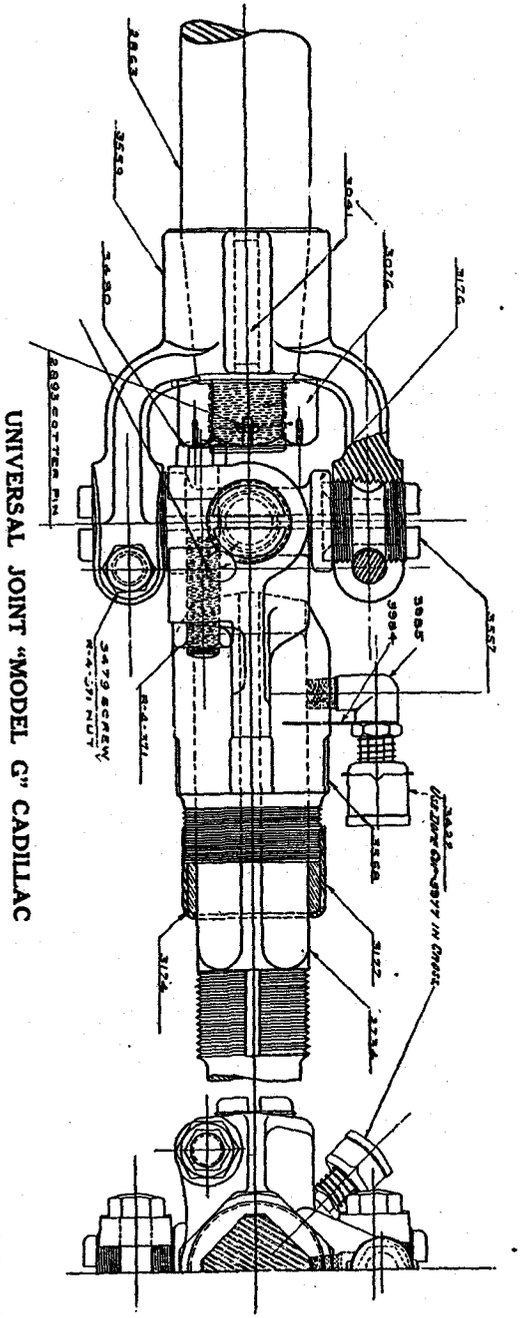
We have stated above that we use tool steel keys. Experience has shown us that the shearing strain is such that it will shear off the ordinary carbon steel keys, so it is imperative that tool steel be used for keys.

TO REASSEMBLE UNIVERSAL JOINT.

When it has been necessary to dis-assemble the universal joint, care must be exercised to re-assemble it correctly. There are eight different ways this can be assembled, seven wrong and one right.

Refer to the illustration showing the correct way to assemble it.

Assume that you are standing at the rear of the chassis looking toward the transmission. Position the front yoke of the joint so that the key-way of this yoke comes directly on top of the drive shaft, as shown in the illustration. Then assemble the cross in the yoke so that the grease cup hole is to your right and, at the same time, on the same side as the head end of the front yoke cap screw as shown. In this position, the grease cup on the cross will slant toward the transmission end of the joint as also shown in the illustration.



UNIVERSAL JOINT "MODEL G" CADILLAC

With the front yoke in the above position, the jaws of the rear yoke when assembled should be to your left and the grease cup on this yoke should also be to your left.

Be very careful in re-assembling this universal joint to do it as outlined above and as illustrated, to avoid trouble in losing grease cups.

TO REMOVE THE REAR WHEEL.

First remove the hub cap, then remove the cotter pin from the slotted hex nut and take off the hex nut. A wheel puller should always be used to remove rear wheels from axle.

In replacing the rear wheel, first oil the end of axle shaft to prevent rusting, then start the key and wheel on the shaft. Put on the slotted hex nut, forcing the key and wheel on, and turn the nut up tight and be sure to lock it with a cotter pin as provided. Then put on the hub cap with spanner wrench.

TO REMOVE FRONT WHEEL.

First remove hub cap, then take out cotter pin from slotted hex nut, and remove the nut. Next remove the adjusting cone, and the wheel will come off easily.

TO ADJUST FRONT WHEEL BEARINGS.

Remove hub cap and cotter pin, and loosen the hex nut. Then screw up the adjusting cone against the balls, and lock it with the hex nut and cotter pin. If slots in hex nut do not match just right with the holes in spindle when cone is set up against the balls, the nut should be unscrewed a trifle rather than set up too tight. Front wheel bearings should be so adjusted that there will be very little, if any, side play but yet be loose enough to allow the wheel to revolve easily.

See that front wheels are always kept properly lubricated.

IMPORTANT.

In replacing wheels, always be sure to secure the slotted nuts with cotter pins.

FRONT AXLE.

The steering spindle on front axle should be kept correctly adjusted. On the under side of the spindle there is an adjustable notched collar which is held from turning by a small plunger. Press on this plunger to release the collar and then adjust the bearing.

REMOVE PLUG FROM DRIP PAN.

In the under side of the drip pan or engine shield, there is a plug, the removal of which is for the purpose of drawing out the oil, etc., which may have accumulated. This plug should be removed frequently, and the oil drawn off. We suggest, however, that in localities where there are no regulations against it, that the plug be left out entirely, thereby preventing the accumulations.

REPAIRS.

In the event of claims or the necessity for repairing on such parts as TIRES, SPARK COILS, BATTERIES OR RADIATORS, do not send these to us. It only incurs extra expense because we would be obliged to re-ship them to the factories. In all such cases correspondence should be opened direct with the makers of the parts and if necessary the same should be sent direct to said makers or their branches, transportation prepaid.

The names and addresses of makers will be found on these respective parts, excepting radiators. The latter are made by the McCord Lubricator Co., of Chicago, Ill.

COMMON SOURCES OF TROUBLE.

Inadequate lubrication.

Imperfect vibrator action.

Dirty spark plugs.

Exhausted batteries.

Loose or broken wires.

Tight bands or any imperfect adjustment.

Dirty gasoline.

Water in the gasoline.

Frozen circulating water.

Lack of circulation of water.

Charred or sticky valve stems.

Common sources of troubles do not include accidents, and such things as may be occasional or accidental troubles.

Of these, the first, inadequate lubrication, is by far the most detrimental, as it may ruin all of the most important wearing surfaces of the motor, as well as cause serious damage to other parts of the car.

"A FEW DON'TS."

Don't try to start without the switch turned on.

Don't try to start without seeing that the spark lever is in correct position.

Don't try to run without oil, water or gasoline.

Don't crank a motor, that is, don't turn it over the compression more than three or four times after priming. If it does not start at once there is something wrong.

Don't drive fast nor attempt to stop quickly on a wet, slippery road or pavement.

Don't drive fast around corners; it is dangerous and destructive especially to tires.

Don't allow an automobile to stand in cold weather with pure water in the circulating system. It will freeze and burst something. In cold weather use some good anti-freezing solution.

Don't run a motor fast when the automobile is standing still; there is no worse abuse.

Don't advance spark lever too fast or too far (crank shafts can be sprung by injudicious use of spark advance.)

Importance of Lubrication

There is no one thing which is the primary cause of more trouble and the source of more expense in maintenance to the mechanism of an automobile than insufficient lubrication.

The special object of the following instructions is to point out the numerous places in the "Model G" Cadillac which require oiling. While it is manifestly impossible to give exact instructions in every instance as to just how frequently each individual point should be oiled, we have given this approximately in many cases based on average use. It should be constantly borne in mind that where one part moves in contact with another, friction is created which causes a wearing away of the parts unless there is sufficient lubrication.

Remember, oil is much cheaper than metal. Too much is better than too little, but "just enough" is still better.

To simplify these instructions, the car is divided into six parts, namely: Motor—Transmission—Steering-gear—Front Axle—Rear Axle—and Miscellaneous.

The five crank bearings, the connecting rod and camshaft bearings, as well as the pistons and cylinders, are all oiled from one pump and pipe line.

The crank case should contain enough oil in each of the compartments, so that the oil will fill each of the four wells or pockets and overflow to a depth of about one-sixteenth inch on the bottom of the crank case, and so that the splashers which are attached to the connecting rods will dip into this supply, thus throwing the oil over the parts to be lubricated. Oil may be placed directly into the crank case by removing the forward hand-hole cover plate.

See that the lubricating tank to the left of the motor is filled with good gas engine oil of high fire test, using a heavy grade in summer and a lighter grade in winter.

The adjustment for the supply of oil should be so regulated that the quantity held in the bottom of the crank case, will be maintained as above indicated. and a daily inspection of the crank case should be made to see that the quantity is maintained. Be sure to use clean oil as dirt will clog the lubricator and may damage the working parts of the engine. It is best to strain all lubricating oil through cheese cloth or fine muslin or fine mesh wire cloth before using. The lubricator takes care of all the internal working parts of the engine. Too much oil forms carbon deposits in the combustion chambers and on the spark plugs and will, if excessive, cause premature explosion. Too much oil may cause serious annoyance; too little means the destruction of wearing surfaces. Oil with discretion. Blue smoke is an indication that too much oil is being used; when this is noticeable, cut down the supply.

The distribution of the oil is so nearly perfect that if one keeps the lubricator filled with **good clean** oil, and makes sure that the proper amount of oil

is being passed through the sight-feed glass on the dash and that the pipe line is connected between the sight-feed and the motor base, there will never be damage done to the internal mechanism of the motor from lack of lubrication.

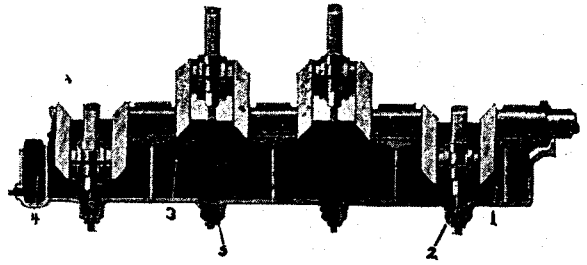


Figure 8.

Crank Base Showing Crank Bearings And Oil Distributing Troughs.

The oil enters the motor on the left side and into the compartment of the fourth cylinder crank base at about 1. See Figure 8. The splashers 2, which are attached to each connecting rod, throw the oil up and before it has time to fall, the cranks and connecting rods catch it and throw it so completely over the crank base as to perfectly lubricate all internal parts. The oil in running down from the various parts is caught by the troughs 3 and as they are lower at one end, the oil travels to this point where it passes through to the next compartment through a hole provided for its passage. As before stated, the oil enters at the crank base to the fourth cylinder. The splasher system delivers the oil to the third compartment, from the third to the second, from the second to the first compartment and from the first compartment it is delivered to the well 4. From there it is passed back to the compartment from which it started. By this method the oil is equally distributed and the supply maintained by the lubricator pump.

Figures 9 and 10.

The lubricator pump is adjustable and the amount of oil to be furnished to the crank case by it depends on the amount of oil used by the motor. The time to determine whether the motor is using oil faster or slower than the pump is supplying it, is: After the motor has been standing for an hour or more, the oil will then have had time to drain to the lowest point in the crank case, namely, the oil pockets, or wells, as shown at 5, Figure 8. These pockets should be filled. If they are more than full the motor is liable to

collect carbon on the combustion chambers and pistons, which if gathered to a sufficient thickness will cause premature ignition and "knocking" of the motor. If the quantity of oil is so little that the splashers on the connecting rod caps do not touch it, then damage will occur as a result of insufficient lubrication.

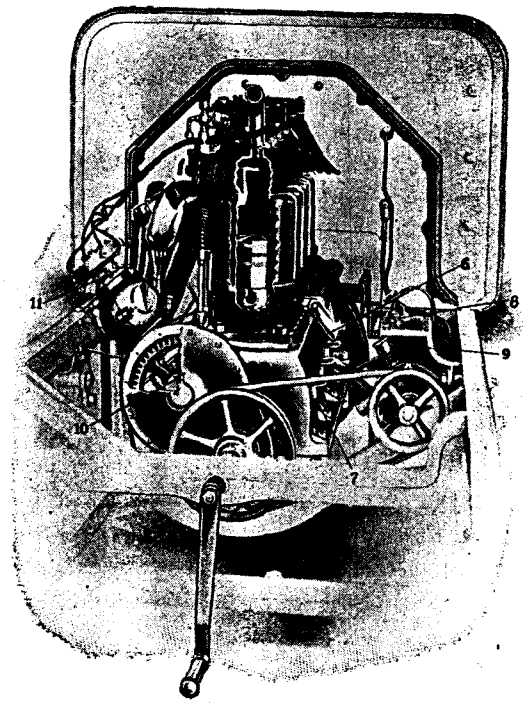


Figure 9.

Front View of Motor.

CAUTION.—The hand hole cover plates 6, Figure 9, are fastened to the crank case by means of nuts shown at 7, Figure 9. The mistake is ofttimes made of clamping the nuts 7 on to the cover plate when it is not properly seated. In this case the cover plate is cracked or bent so as to let the oil out of the crank case. Be sure you have properly seated the hand hole cover plate before tightening it.

ADJUSTING LUBRICATOR.—This is accomplished by regulating the stroke of the oil pump by means of the knurled thumb screw at 8 on top of the lubricator—Figure 9. If the amount of oil increases in the crank case so as to more than fill the pockets, then the lock nut on the pump plunger should be loosened and the thumb screw turned out or up a little. The surplus of oil should be taken out with the squirt gun. If it is found that the amount of oil in pockets is less than it should be, the supply should be increased. To do this loosen the lock nut and turn the thumb screw to the right or down and then lock it with the lock nut. Enough oil should be added to the oil pockets so as to make sure of enough lubricant. The pump when properly adjusted, makes an average of six strokes before a globule travels up through the sight-feed glass when thick oil is used: and when the pump plunger is driven by the motor and not by hand.

The lubricator adjustment simply serves to increase or decrease the size of the drops passing through the sight feed, and does not recessarily change the number of drops per minute.

The adjustment just directed is intended to take care of the motor with ordinary road driving. However, when the car is to be driven in a race of, say, 50 miles or more it is advisable to adjust the lubricator plunger so that it will have its full stroke and supply the crank case plentifully. In a still longer race, such as 200 miles or more, it is advisable to examine the supply in the crank case at least once in every 200 miles to be sure that the quantity of oil is ample.

The dope cup 9, Figure 9, lubricates the pump shaft and should be filled and frequently turned down as the hot water soon destroys the lubricant. Hard grease should be used in this cup. This also applies where dope cup is used on end of pump shaft.

The front camshaft bearing 10, Figure 9, should be lubricated with thin oil when a small oiler is used. Where an extension and dope cup is used in this place, then hard oil or grease is necessary.

The commutator roll should be kept lubricated but vaseline or grease should never be used. Oil such as used in your lubricator may be used where you cannot procure a thin oil with less carbon. The cover of the commutator should be removed and the commutator wiped out with a clean rag saturated with kerosene. A tablespoonful of oil should then be put in at 12, Figure 10.

Oil applied at the oil hole 11, Figure 9, will lubricate the bearings 13, 14 and 15, Figure 10. The lever shafts should be lubricated at 16 and 17, Figure 10. The joints 18 and 19 should also have a drop of oil now and then.

The fan revolves on ball bearings which should be oiled frequently through the oil holes in the hub of the fan.

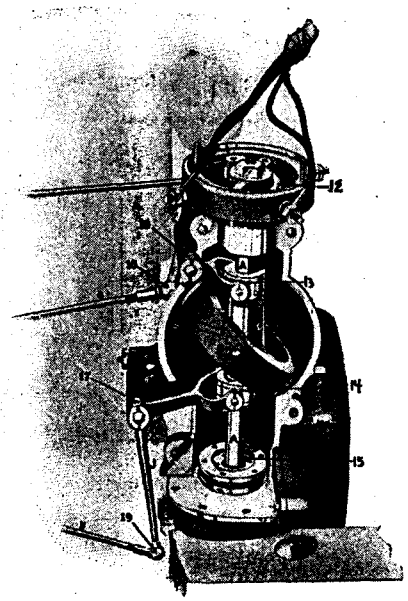


Figure 10. Governor.

TO CLEAN THE SIGHT FEED GLASS.

First, remove the hexagon filler cap. Take a piece of wire and attach a piece of clean cotton cloth to it, making a swab. Dip this down into the glass and draw out the liquid, then squeeze out the swab, and by repeating the operation several times all the liquid may be removed.

Next, put some gasoline into the glass to dissolve the oil that may have adhered to the sides, then clean it out thoroughly by the method above described.

When the glass is perfectly clean, fill it with pure water for use in summer. In freezing climates and for use in winter, put in a solution of 30 per cent glycerine and 70 per cent water (by measure) to prevent freezing.

If the sight feed glass is to remain clean, the main point to bear in mind is that it must be kept free from oil. To do this see that the glass is filled with water or solution before any oil has a chance to come in contact with the glass. If oil gets on the inside of the glass before the water or solution is put into it, it attracts more oil.

Whether you have a dirty or a clean sight feed glass, depends upon how thoroughly the glass is cleaned in the first place and filling it with water or solution before oil gets into it.

CARBON DEPOSIT.

This is one of the greatest enemies to the motor and electrical apparatus. Too much oil is the cause of carbon deposits. The high temperature will evaporate this oil, which will be partially condensed on the walls of the combustion chamber, piston heads and spark plugs and form a sticky film. This film is ready to adhere to any lamp black or carbon which might be in the explosion should the mixture be set too rich. This film will cake up and also form carbon. In time the carbon will start to scale and a thin flake will adhere to the combustion chamber and piston heads. The intense heat of the explosions of the motor will cause this carbon to become red hot, which will ignite the charge instead of allowing the spark to do so. This produces a pound in the engine and decreases its power. Ofttimes these scales become lodged in the exhaust valve seat and the compression is lost.

Carbon which is formed on the spark plugs forms a circuit for a high tension current to travel over, it meeting with less resistance than jumping between the points. Sometimes part of the current will travel over the carbon and the rest of it jump between the spark plug points. The operator looks at his spark plug and considers it is in perfect condition. The spark that will jump in the neighborhood of ½ inch in the open air will not jump more than 1/16 inch under sixty pounds pressure. Therefore a spark plug that is sending part of its current through the carbon deposit and the other part between the spark plug points will send all of the current over the carbon deposit when the compression is on. Great care must be taken to make sure that the combustion chamber and spark plugs are free from carbon.

Spark plugs should be kept clean. A good method of keeping plugs clean is to wash them occasionally in gasoline.

Figure 11.

TRANSMISSION.—The internal mechanism should have the oil replenished about once a week with ordinary driving. The lower part of the gear A, Figure 11, should dip into the oil in the case the full depth of the teeth This gear and the gear D will, when revolving, completely oil all the internal mechanism of the transmission. To determine the proper amount of oil, it is necessary to remove the transmission cover after the eight screws have been removed. Be very careful not to drop anything in the gear case, as it would probably prove disastrous to the mechanism. After you have determined the consumption of oil in the transmission, it will not be necessary to remove the large cover each time. You can remove the plug in the center of the large cover plate and put in what oil your experience has taught you is required. Too much oil in the transmission does no damage other than it overflows at the bearings.

The brake and clutch shaft, 20, Figure 11, should be oiled occasionally at 21, 22, 23 and 24. The brake pedal 25 is loose on the shaft and should be oiled at its bearings through the oil hole 26. The shaft has a bearing at the end next to the brake pedal which should be oiled through the oil hole 27. The aluminum clutch cone 28 has a universal joint socket flange riveted to it at 28. In the periphery of this small flange is a small oil hole which should be kept open and oiled occasionally. This oil hole leads to two ball bearings which are never in use except when the motor is running and the clutch disengaged. When oiling, it is best to run the motor, at the same time having the controlling lever in neutral and the emergency brake on for the purpose of holding the clutch out. The clutch cone 28 can be turned with the oil hole convenient for filling and the revolving of the bearings will work the oil into place. The universal joint is oiled through an oiler in the periphery of its conical portion which is found at 29. The thrust bearing 30 should be oiled. This is done by letting the clutch in and applying the oil at 30. The ball races will separate enough to permit of the oiling when the clutch is in. Pull rod yokes, 31, 32 and 33, should have a drop of oil occasionally.

The universal joint dope cup, 34, Figure 11, should be screwed up every two or three days of ordinary use. This joint is dust proof and all four bearings are lubricated by the dope cup. There are two yoke joints on opposite ends of pull rods 35 and 36 which should be oiled. The shaft shown at 37 is oiled in three places indicated by 38, 39 and 40. The yokes at both ends of the pull rods 41 should be oiled occasionally. The interlocker shaft is oiled through an oil hole in the interlocker 42 which is accessible when the controlling lever is on neutral. The yoke 43 should be oiled. The controlling shaft is oiled at 44 and 45.

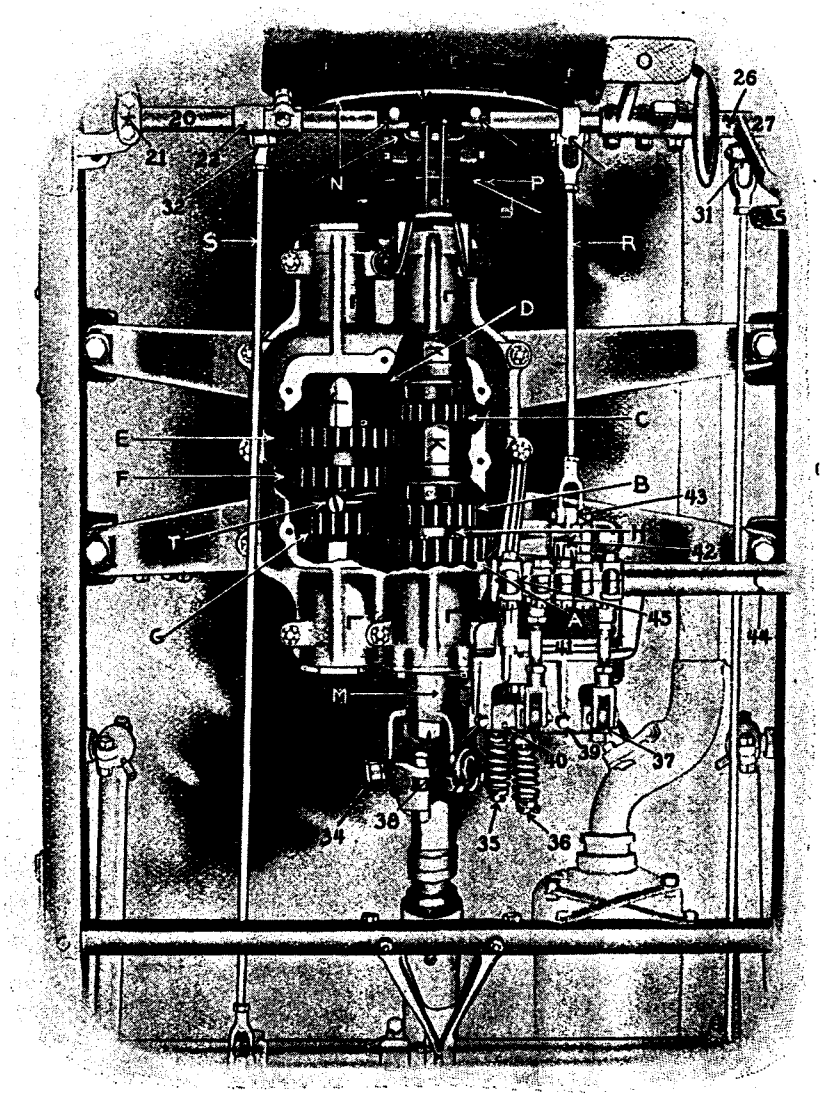


Figure 11. Transmission.

Do not overlook oiling the leather face of clutch cone occasionally. To do this, disengage the clutch and revolve the cone with the hand, at the same time applying some neatsfoot oil through the slots in the clutch ring. Another method is to disengage the clutch and jack up one rear wheel of the car. Then with some of the transmission gears engaged and by turning the rear wheel, the cone will revolve. While it is revolving, apply the neatsfoot oil through the slots in the clutch rings. This should be done about once a week and will be found to make the clutch operate and take hold smoothly.

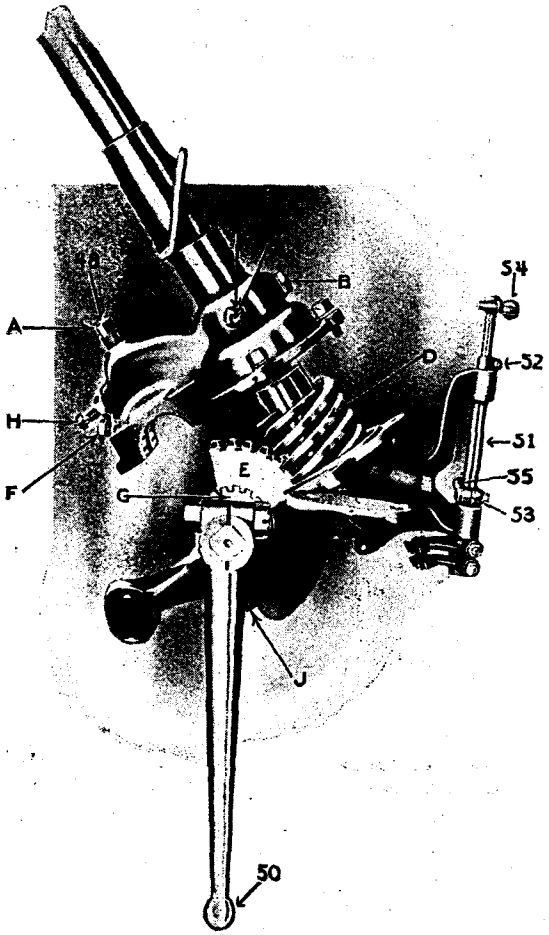


Figure 13.

Steering Gear.

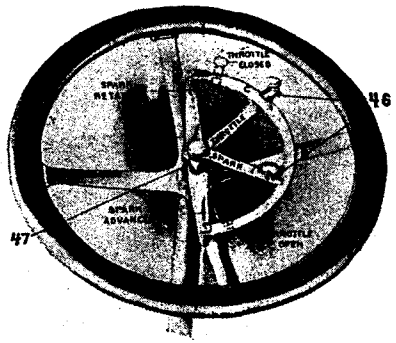


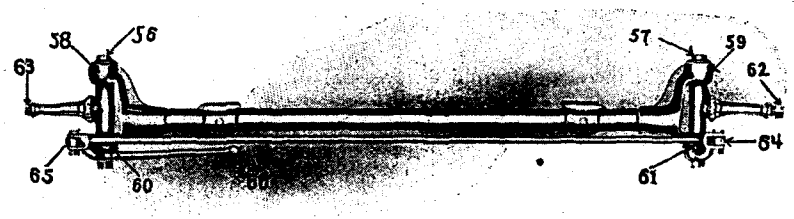
Figure 12.

Steering Wheel.

Steering Gear. Figures 12 and 13.

The spark and throttle lever plungers 46, Figure 12, should be oiled sparingly. The nut 47 has an oil hole which should be oiled occasionally.

The internal mechanism of the steering gear is oiled at 48 and 49, Figure 13, *after taking out the plugs.* Cylinder oil and flake graphite is a good lubricant for this part. The steering gear arm 50 is encased in leather and packed in grease and runs a season without refilling. The spark and throttle vertical shaft 51 should be oiled at its bearings 52 and 53. The spark and throttle lever joints 54 and 55 should be oiled.



Front Axle. Figure 14.

This axle is provided with two dope cups at 56 and 57, Figure 14, which are so arranged as to lubricate the bearings, 58, 59, 60 and 61. The steering spindles 62 and 63 are packed in grease and should be repacked every two or three months. The parallel rod should be oiled at 64 and 65. Steering arm 66 is packed in grease inside of a leather casing, which if filled once a season is plenty.

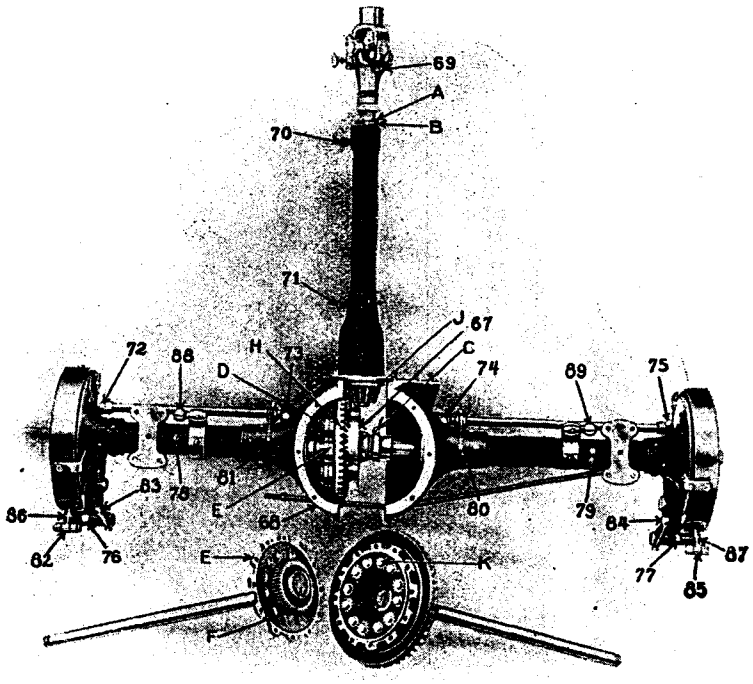


Figure 15.

Rear Axle.

Rear Axle. Figure 15.

The rear axle bevel gears and differential 67, Figure 15, are lubricated by the oil contained in the housing. To replenish the oil, first remove the overflow plug at 68. A similar plug will be found in the cover. This should be removed and oil put in till the case overflows at the plug 68, which should be then put back in. If you care to add a half-pint of oil after the overflow plug has been put back in you may do so but the level of oil should not vary a great deal from the overflow plug level.

The dope cup or oiler 69 oils the sliding joint next to the universal and should be oiled twice a week with ordinary driving. The dope cups 70 and 71 lubricate the roller bearing and should be screwed down once a week. The oilers 72, 73, 74 and 75 lubricate the internal brake shaft. Oilers 76 and 77 lubricate the external brake shaft. Oilers 78 and 79 lubricate roller bearings next to the wheels. Joints 80, 81, 82, 83, 84, 85, 86 and 87 should be oiled once or twice a week. The pivots 88 and 89 should be lubricated once a week.

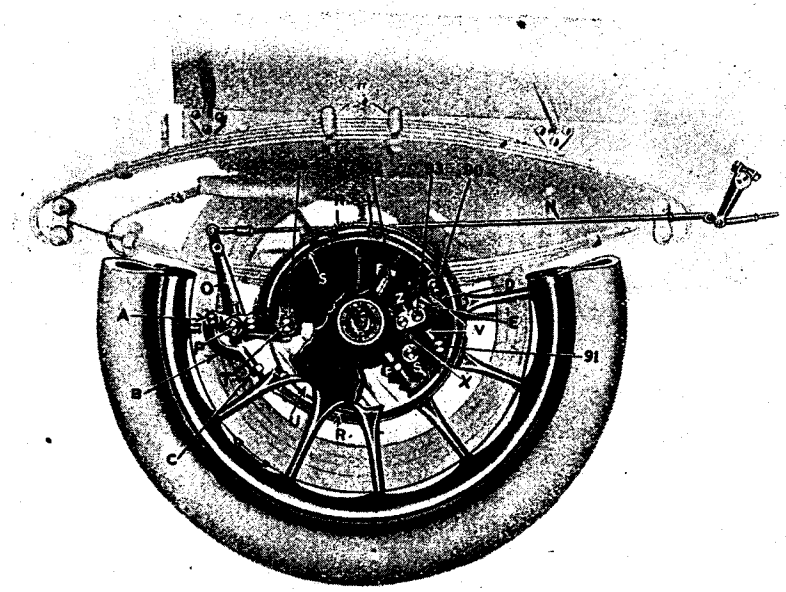


Figure 16.

Rear Wheel Brakes.

Brakes. Figure 16.

In Figure 16 the internal brake is shown. The joints 90, 91, 92, 93 and 94 should be lubricated occasionally.

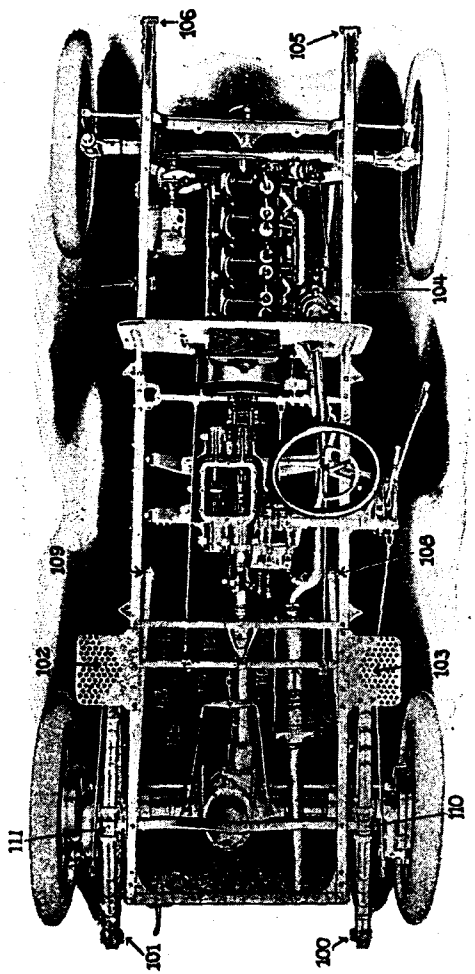


Figure 18.
Plain View of Chassis.

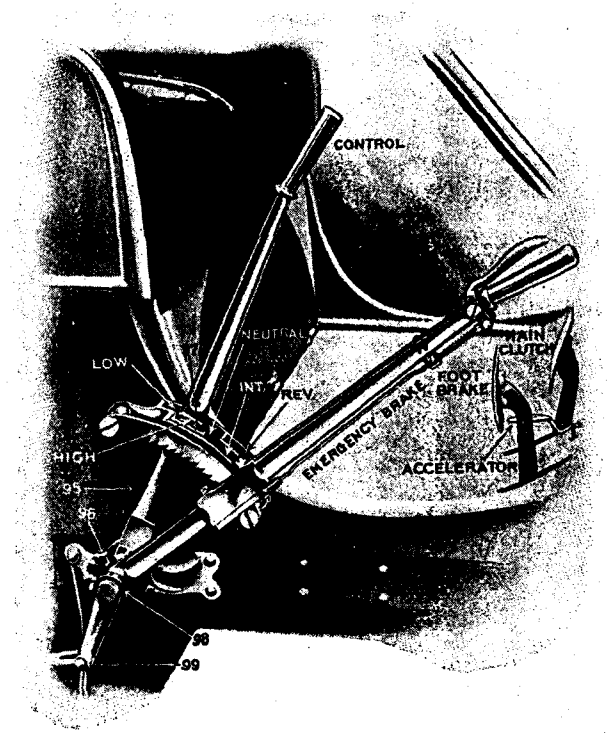


Figure 17.

Brake and Control Levers.

MISCELLANEOUS.—Behind the controlling lever bracket at about 95, Figure 17, is an oiler to be oiled once a week. Oiler 96 should be oiled with the same frequency. An oily rag applied at the surfaces 97 on which the controlling levers slide will cause the mechanism to work a great deal easier. The hinge joint 98 and pin and yoke 99 should also be lubricated.

Springshackles, etc., should be lubricated at 100, 101, 102, 103, 104, 105, 106 and 107, Figure 18. Pivots 108 and 109 should be lubricated. Spring brackets 110 and 111 are provided with oilers. Yokes 112, 113, 114, 115 and 116 should be lubricated. The brake shaft 117; its center support 118; its two end bearing under the steps, as well as the yokes that attach to ends of said shaft should be lubricated.

It is well to jack up the frame of the car occasionally and insert oil mixed with graphite between the leaves of the springs. This will prevent their squeaking and keep them from rusting.

The oil holes in the tube at 119 and 120 require oiling occasionally.

TIRES.

TIRE GUARANTY. All tires and rims used on Cadillac automobiles are guaranteed by their respective makers and in case of claims, should be sent to the factory or any of the branches of said makers (not to us), transportation charges prepaid.

Each tire maker publishes a booklet with instructions for care and repair of tires and every motorist should provide himself with one of these and thoroughly familiarize himself with its contents.

We give here a few general suggestions that will apply to pneumatic tires in general.

The various size tires are constructed for the purpose of carrying up to certain maximum loads and no more. For example: tires on a two passenger car are not calculated to carry three or four passengers and owners should realize therefore that overloading a car beyond the intended carrying capacity of the tires is sure to materially shorten their life.

Do not turn corners or run over sharp obstructions, like car tracks, at a high rate of speed. Such practice is sure to strain or possibly break the fabric, with the result that the further life of the tires will be limited. Remember that most tire troubles are the result of abuse more than use.

In case of puncture the car should be stopped at once and the tube repaired or replaced. The tire should also be examined carefully and the cause of the puncture ascertained and the nail, glass or whatever it may be, should be extracted. Before replacing the tire on the wheel, examine the inside of the casing to see that the cause of the puncture is not still protruding because it would, if allowed to remain, continue to cut the inner tube. It is also advisable to look over the outside of your tires frequently and take out any pieces of glass or other particles which may have become imbedded in the casing, as they are liable to work themselves in and finally puncture the inner tube.

A puncture, gash or cut in a casing sufficiently deep to expose the fabric should have a vulcanized repair made without delay. Otherwise, water and dirt will soon ruin the whole tire, the threads acting as a conductor for the moisture, the fabric thus becoming mildewed.

Experience has taught the careful driver to carry one or more spare tubes, as a cemented roadside repair will not always hold, especially in warm weather, as the heat generated in the tire may loosen the patch. When touring, a spare casing should always be carried.

The garage floor should be kept free from oil or gasoline. The tires on a car left standing on a grease-covered floor deteriorate quickly, the natural enemies of tires being oil and gasoline. These destroy the nature of the rubber, rendering it soft so that it cuts and wears away quickly.

Tires that show wear on one side from use on rutty roads or from other causes should be turned around, thereby lengthening the life of the tire. It is also a good plan to place the rear tires on the front wheels when they begin to show age, as the power being transmitted through the rear tires they necessarily wear out sooner than the front tires, which are simply submitted to a rolling action and sustain less weight.

A sprung axle will often cause the quick wearing of a tire for the reason that the tire is running on an angle, which sets up a grinding action. Tires run under these conditions will wear out in a very few miles. When a car is not to be used for an indefinite period all four wheels should be jacked up; this prevents the fabric from becoming set in one position.

Spare air tubes should be kept slightly inflated. This keeps them in good condition and prolongs their life. They should not be stored in a greasy toolbox under any circumstances. If a spare casing and tube be carried, the latter should be slightly inflated and placed in the cover.

If the car is not used during the winter, it is better to remove the tires from the rims, keeping casings and tubes in a fairly warm atmosphere away from the light. It will be better to slightly inflate the tubes, as that keeps them very nearly in the position in which they will be used later on. Before the tires are put back, the rim should be thoroughly cleaned, and any rust carefully removed; a coat of paint or shellac is also advised.

If the tires are not removed and the car is stored in a light place, it will be well to cover the tires to protect them from the strong light, which has a deteriorating effect on rubber.

The greatest injury that can be done to tires on a car stored for the winter is to allow the weight of the car to rest on the tires. The car should be blocked up, so that no weight is borne by the tires, and the tires should then be deflated partially. This will relieve the tires of all strain, so that in the spring they should be no worse for the winter's storage.

Occasionally a tire will apparently puncture without good reason. In such cases examine the rim and it may be found that a bolt head protrudes above the rim surface and has finally worn through the tube. The obstruction should be buffed or filed off until the bolt lies flush with the rim bed.

If the trouble is caused by a bolt being too far into the rim, leaving a depression sufficiently sharp and deep to damage the tube, this should be filled in. A compound of pumice stone and coach varnish mixed to the consistency of putty will do the work nicely. Just fill the hole and leave it to dry for an hour or so, and it will become hard.

AIR PRESSURE ON TIRES.

This is a much disputed point. Some tire makers advise the use of an air pressure gauge and specify certain pressures for various size tires. Other makers claim a gauge is not of much value on account of a large percentage of pressure being lost in the piping and opening the valve check. About the surest method seems to be to inflate the tires until they show very little or no depression under the load they are obliged to carry.

DIRECTIONS FOR USING THE

WITHERBEE STORAGE BATTERY IGNITER NO. 66.

IMPORTANT:—Keep the acid solution above the tops of the plates. (See No. 3, under acid.)

DIRECTIONS.

The + terminal denotes Positive, and the — terminal Negative. Connect the Positive wire with the + terminal, and the Negative wire with the — terminal, for either charging or discharging.

ACID.

1. Always examine the acid before charging, and see that it covers the tops of the plates.
2. To examine the acid and refill cells, remove the rubber vent-caps and use an acid syringe and hydrometer.
3. If upon examination you find the acid below the tops of the plates, and the Igniter is in a discharged condition, bring the acid up to the required height by adding distilled or pure water.
4. Never add acid except when the Igniter is fully charged.
5. The acid should be 29° Beaume, or 1250° specific gravity, after the Igniter is fully charged.
6. Use chemically pure acid.

CHARGING: Charge from a direct current circuit.

1.—Connect wires properly (see instructions above.)

2.—See that the acid is above the tops of the plates, (see "acid").

3.—Charge 1st at 5 amperes until each individual cell shows 2.5 volts, hen charge at 2 amperes until each individual cell shows 2.5 volts.

Then the Igniter will be fully charged and ready for use.

Voltage readings should always be taken while the cells are still charging.

Batteries are guaranteed by their makers, provided same are cared for ccording to said makers' instructions, which are sent with each battery and hould be carefully followed.

In case of trouble, correspond with the maker of the battery, not with the aker of the car.

POINTS TO BE REMEMBERED.

If by accident the shell should be broken, remove the plates from the attery jar and wash same thoroughly in distilled or rain water. Never allow lates that have been in acid to stand dry, since this will cause sulphation which ill destroy the usefulness of the plates.

Information regarding Storage Batteries in General

FITTING THE BATTERY IN THE CAR.

A storage battery should not be allowed to bounce around in the car, but should be placed in a box in which it fits snugly; pack it with excelsior or some spongy material.

In connecting up the battery it is advisable to connect the positive wire to the coil, and the negative to the ground.

Connections to be kept clean at all times.

CARE OF THE METAL PARTS.

Keep the metal parts of the battery covered with vaseline or ordinary cup grease. This will insure a good contact at all times.

TO CARE FOR A BATTERY WHEN NOT IN USE.

Have the battery recharged and placed where it will not be subjected to extreme cold. It will have a tendency to discharge of its own accord, then after say six weeks or two months, have the battery recharged again and allow it to discharge as before. The most important thing is to see that the plates are kept covered with acid at all times, and would suggest that the battery be examined from time to time to determine this.

WHEN THE ELECTROLYTE IS SPILLED.

When a battery is received, no matter whether same comes from the manufacturer or jobber, it is advisable to remove the vent caps and see whether or not any acid has been allowed to spill while in transit, and should the plates be exposed it is then necessary to cover same with acid. Often, the addition of a little distilled water is all that is required.

The acid to be used is known as "Electrolyte," and same is made up by using one part chemically pure sulphuric acid to four parts of distilled water. It is absolutely necessary to use a water free from any mineral substance, and if distilled water is not convenient, then use rain water collected from a shingle roof.

The acid in the battery should read 1.250 degrees specific gravity, or 29 degrees Reaume, when the battery is fully charged.

Please understand that the acid will fall in gravity as the battery becomes discharged. This is why the battery should be fully charged when acid readings are taken or new acid added.

In handling acid and water used for the batteries use either glass or earthen receptacles.

RE-CHARGING.

Never allow the voltage to fall below 1.7 volts per cell. This is easily determined since at this point the battery will fail to spark the engine satisfactorily. Readings to be taken under compression or when engine is running.

The plus terminal denotes positive and the minus terminal negative. Connect the positive wire with the plus terminal, and the negative wire with the negative terminal, for either charging or discharging.

It is absolutely necessary that you determine the polarity of the wires before attempting to recharge a battery, for should the negative wire be con-

nected with the plus terminal of the battery, it would mean that you would reverse the plates and render the battery useless for the time being.

If you have no polarity indicator convenient then determine the polarity of the wires by the following method:

Into a half pint solution of salt and water put the ends of the two wires leading from the charging circuit; around the end of one of the wires small bubbles will gather——this is the negative wire.

Before connecting the battery for recharging. it is necessary to remove the rubber vent caps, also cover the metal parts of the battery with vaseline (this is done to prevent sulphation from the acid spray) then refer to the directions as appear on the side of the battery for the charging rate.

GENERAL INFORMATION.

Batteries of 40 ampere hour capacity charge at 3 amperes.
Batteries of 50 ampere hour capacity charge at 4 amperes.
Batteries of 60 ampere hour capacity charge at 5 amperes.
Batteries of 80 ampere hour capacity charge at 6 amperes.

To reduce the charging rate, simply unscrew the required number of lamps.

In every instance, both at the high and low rate of charging, the battery is charged until each individual cell reads 2.5 volts. All volt readings to be taken while the cells are charging and still connected.

In a few minutes after the charging of a battery has been stopped, you will notice that the voltage will drop from 2.5 per cell to say 2.2. This is all right, and when each cell reads 2.2 volts or over on an open circuit, the battery is then fully charged and ready to use.

Be careful not to allow the battery to get hot; when charging it will get warm, but when the shell feels hot to the hand then reduce the rate at which the battery is being charged and you will notice that the heat will diminish, but should the extreme heat continue, then no doubt the acid is too strong. In this case lower the gravity of the acid two or three degrees by adding a sufficient amount of distilled water.

LAMPS.

In arriving at the number of lamps necessary to give the desired resistance for recharging, the following can be relied upon:

When the current is 108 to 115 volts each 16 C. P. gives ½ ampere of current, each 33 C. P. Lamp gives 1 ampere of current, and each 50 C. P. lamp gives 1½ ampere of current when connected in multiple with each other and in series with the battery.

When the current is 220 volts, then ½ of the above rate applies; that is a 16 C. P. lamp will give ¼, a 33 C. P. lamp ½, and a 50 C. P. lamp ¾ ampere of current when connected in multiple with each other and in series with the battery.

The battery can be charged direct only from the direct current, and if the current is alternating then a transformer must be used which changes the current from alternating to direct.

Battery makers will gladly give such additional information as you may desire.

The Car or the Man — which?

A LITTLE TALK BY A SHOP MAN.

There are all kinds of automobiles—good, bad and indifferent; but even the best of them require some intelligent care.

It was only yesterday that the owner brought in a four cylinder car of one of the leading makes. He had been driving it only a few months and was loud in his denunciation of it, saying that its makers ought to go into the wheelbarrow business.

I told him I was rather surprised, and that in my experience I had never seen any of such cars go wrong from any faults of their own. I immediately set about to diagnose the case. Such a mess! There were enough things wrong with his car to put a half dozen cars out of business, and the wonder is how any car could persist in going at all under such conditions. but this one did, and it speaks well for the car.

In the first place, one of the storage batteries had been removed, and the one remaining registered somewhat under the limit at which satisfactory results could reasonably be expected. Drivers should not forget that a sufficiently hot spark cannot be obtained without ample strength in the batteries to produce it.

Of the vibrators on the spark coils, two were set correctly, but the other two were badly out of adjustment, which caused two of the cylinders to fire late, if they fired at all; in either case causing a loss of power as well as causing the engine to pound. The platinum points on the vibrator screw were pitted and dirty, and would not be unreasonable if they prevented any spark at all. Vibrator points should be examined frequently. and when bunches or knobs form on the platinum points they should be dressed down with fine emery cloth or fine file.

The strainer where the water enters the radiator through the pipe from the pump was clogged with dirt and lint to such an extent that the water circulation was almost entirely obstructed. This, of course, prevented a free circulation of water, and the inadequate circulation permitted the cylinders to heat, and that in turn caused carbon deposits on the piston heads. When a heavy coat of carbon is deposited on the piston heads, it naturally becomes very hot in a short time and explodes the charge before the piston is on centre—before the gas is compressed, producing the same effect as when the spark is advanced too far. This is not only very injurious to the bearings and causes the engine to pound, but greatly lessens the power, because the motor must first overcome

the force of the explosion and the expansion of gas before it can commence on its working stroke.

Three of the inlet and two of the exhaust valves were badly out of time. What effect this had on the running of the motor and its development of power can be readily imagined.

The owner also complained that the brakes refused to release, but an investigation quickly revealed that the bearings of the several joints had evidently never received a drop of oil since the car left the factory, and some of the friction surfaces had actually rusted. No wonder the brakes wouldn't release. It was not a case of "wouldn't" but a case of "couldn't."

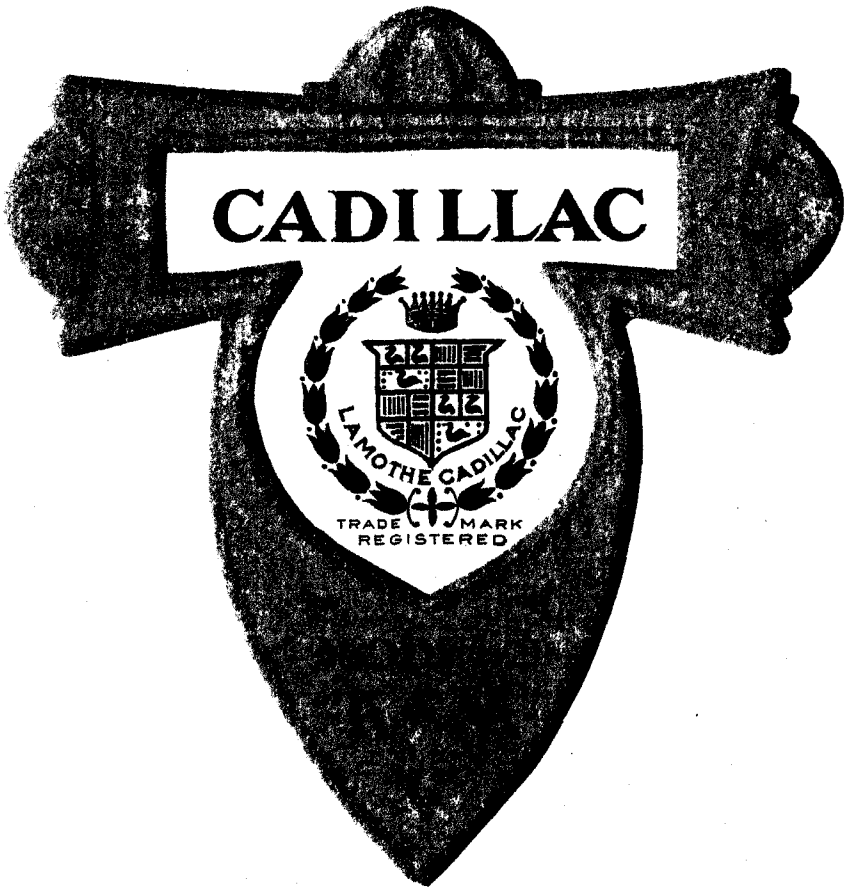
He was unable to release the main clutch for the same reason—lack of oil. He said he didn't know it ought to be oiled. It seems strange that so many motorists cannot be made to understand that judicious lubrication is the most essential thing to the proper running of an automobile, and that wherever one surface moves upon another it must have oil—oil, OIL, **OIL.**

Next came the carburetor. That didn't work right either; and its irregular action caused the engine to miss explosions frequently. But the remedy was easy; the cause was nothing more or less than a little dirt in the inlet valve. How it got there, I, of course, am not prepared to say, but probably because the gasoline was not strained when placing it in the tank. **Dirty gasoline will always cause trouble. Don't forget that.**

The foregoing is simply an outline of the main troubles with the car in question, but by no means all of them. It had simply been abused and seemed to have received no attention or care at all since it left the factory. It required only a few hours to go over the car and put it in shape, and when it was again turned over to its owner it run as smoothly and almost as silently as a sewing machine.

When you consider the average person who drives an automobile, and the care (?) he gives it, the wonder is not that the automobile gives so much trouble, but that it **causes so little.**

If your car goes wrong, don't condemn it too quickly. Maybe it isn't the **car's fault;** maybe it is **your own.** Remember there is nothing mysterious about an automobile. It is not subject to fits and spells. Cars are supposed to run right when they leave the maker, and most of them do. Some of them get "out of whack" more easily than others, but one thing you can depend upon and that is if a car ever did run right, it will do it again, and always will do it under the right conditions. When it runs badly it is up to the owner to use his head, find out what is wrong, and correct it. The car or the man—which? It is usually the man.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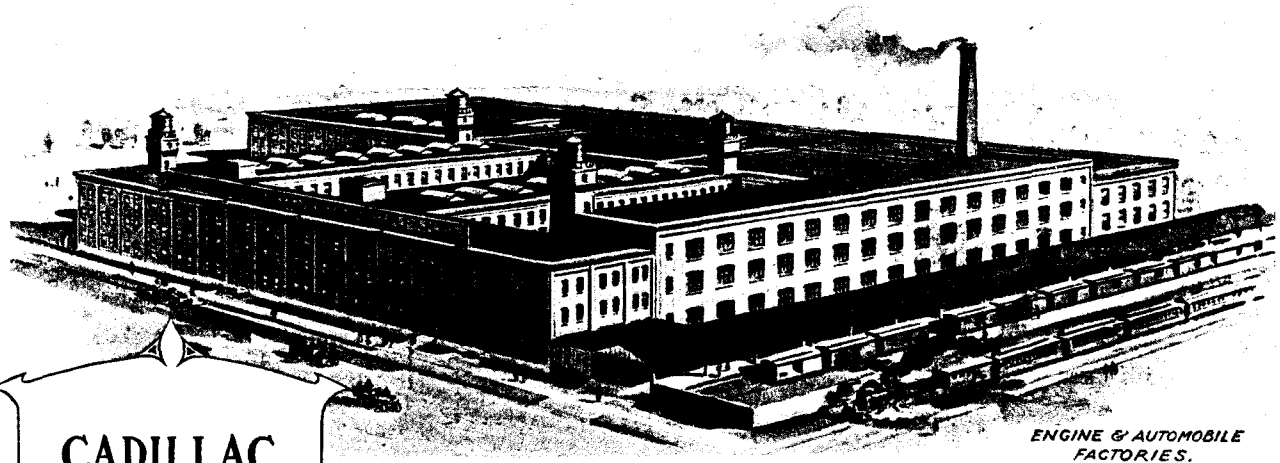


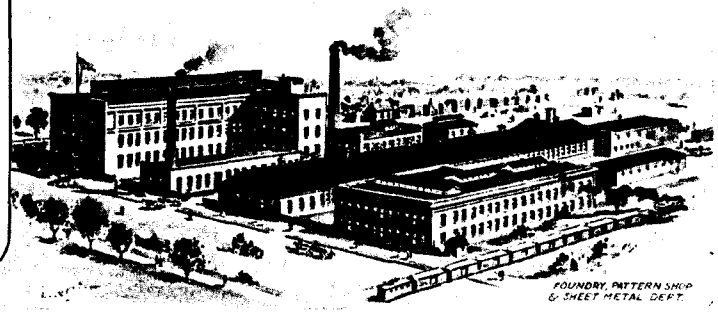
ENGINE & AUTOMOBILE FACTORIES.

CADILLAC MOTOR CAR CO.

MEMBER ASSOCIATION LICENSED AUTOMOBILE MANUFACTURERS
FACTORY AND GENERAL OFFICES
DETROIT, MICH.

CABLE ADDRESS
"CADAUTO, DETROIT"

CODES:
A B C, 5th EDITION, LIEBER'S
WESTERN UNION, DIRECTORY



FOUNDRY, PATTERN SHOP & SHEET METAL DEPT.

THE LARGEST MOST COMPLETE AND BEST EQUIPPED FACTORY IN THE WORLD DEVOTED EXCLUSIVELY TO THE PRODUCTION OF HIGH GRADE MOTOR CARS

CADILLAC

LA MOTHE CADILLAC

TRADE MARK
REGISTERED

The Story of the Cadillac

It was the SINGLE CYLINDER CADILLAC which first demonstrated that a thoroughly serviceable, dependable and economical motor car was a possibility.

Before the advent of the Cadillac, the motor car was looked upon generally as a complicated, bothersome machine possessing little practical value, but the Single Cylinder Cadillac marked the beginning of a new era in automobile construction. It proved that the truly meritorious motor car was a fact and not merely a theory. It was so far in advance of anything that had before been produced, and its efficiency and capabilities commanded such widespread recognition that in less than two years from the beginning of its manufacture the output of the Cadillac factory was the second largest, and the third year found its production the largest, in America, and during the past two years the output of Single Cylinder Cadillacs has exceeded the combined volume of any three models of other makes.

It is a most significant fact that the Single Cylinder Cadillac is the only Automobile in America, if not in the world, which can truly be accredited with having successfully withstood the test of five successive seasons, which has been made in continually increasing quantities each succeeding year, and which gives promise of continuing to be made for many years to come.

There has, during the past year, been a wonderful awakening to the fact, which is now generally conceded, that in moderate priced cars the Single Cylinder is the only type that has truly "made good" in every sense of the word, and the position of the Cadillac in that class is so preeminent that it is not even a subject for argument.

There are, on the other hand, scores of cars which have come and gone since the first Cadillac was built. Many of these are now only a memory.

The factory in which Cadillac cars are built is the largest, the most complete, the best equipped and the most thoroughly organized plant in the world devoted exclusively to the production of high grade motor cars. It is replete with the most modern and most accurate labor saving machinery which can be obtained. It is this situation which enables the Cadillac Company to produce motor cars which can be sold to the purchasers at less than it would actually cost most makers to build them.

The secret of Cadillac success is not attributable exclusively to any one individual feature but to the combination of skillful de-

The Story of the Cadillac

(Continued)

sign, careful and intelligent selection of material and painstaking execution of every minute detail.

In its entire design, special attention has been devoted to the importance of ready accessibility of all parts which may require attention, and the mechanical construction in general is so simple that a comprehensive understanding of the principles embodied may easily be acquired, enabling the possessor to take care of the car himself, if he desires to do so, and save the necessity of incurring an expense for maintaining it in satisfactory running condition.

When you buy a Cadillac, you obtain the product of an establishment that is permanent and from which you will be able to obtain parts for replacing those which may become worn by long and continued service or damaged by accident, and not be obliged to either discard your car because of inability to procure some important part, or to have such part made specially at heavy expense.

A general feature characteristic of the Cadillac, the value of which will immediately impress itself upon the careful buyer, is the provision made for adjustments of wearing surfaces, thereby obviating the necessity for frequent renewals of parts subject to wear.

The Cadillac Single-Cylinder cars enjoy the reputation, among those who by their experience are qualified to judge, of being the most economical to operate and the least expensive to maintain. The low cost of maintenance is in no small measure attributable to our comparatively low prices on parts, it being our aim only to make this department pay for the actual cost of the parts themselves and the expense incidental to handling them. It is also largely due to the fact that all parts are made accurately to gauge and are thoroughly interchangeable, which means that all parts of a kind are exactly alike and that when a new part is needed it can be ordered with the assurance that it will not require altering to fit.

We have records of many of these cars which have been run an entire season without the necessary outlay of a single dollar for repairs or for operating, beyond the cost of gasoline and oil, and many more where the expense has been merely nominal.

The reputation of the Cadillac has been acquired by the genuine merit of the cars themselves and the promotion of their sale by legitimate business methods. We have never been obliged to

CADILLAC

The Story of the Cadillac

(Continued)

engage experts to make a showing with the Cadillac. Such performances, with specially constructed cars which bear not the slightest semblance to the maker's regular product, prove nothing. They simply help to roll up an enormous expense which in the end is paid by none other than the purchasers themselves of such makes of cars.

We prefer to give the individual purchaser the utmost possible value for his investment; and we do it. We have always preferred that the Cadillac gain its reputation amongst actual users; and it has done it. That is one reason why every eighth automobile in America to-day is a Cadillac.

On the other hand, Single Cylinder Cadillacs have accomplished hundreds of remarkable performances in the hands of their owners, proving their superiority in many ways over cars rated at from two to four times their power and selling at from fifty to five hundred per cent. higher.

We do not claim for the Single Cylinder Cadillac that it will equal the speed of the highest powered cars on smooth, level roads, but it has proven times almost without number on the long, hard, tedious run, over hill and through valley, through sand and mud, and over roads as they are commonly found, that the thorough dependability of the Single Cylinder Cadillac and its bull-dog persistency enable it to frequently head the procession at the close of the day's run.

Every day adds to its prestige and every day more forcibly proves that the Single Cylinder Cadillac is THE IDEAL CAR for those who desire a motor vehicle which will afford the maximum of pleasure and service with the minimum of expense, the car which affords all there is in motoring—except the troubles.

The Single Cylinder Cadillacs are capable of meeting every reasonable requirement.

They can be relied upon for service every day in the year.

They will climb any hill that any automobile will climb.

They will travel any road that any automobile will travel.

They will travel as fast as anybody ought to ride.

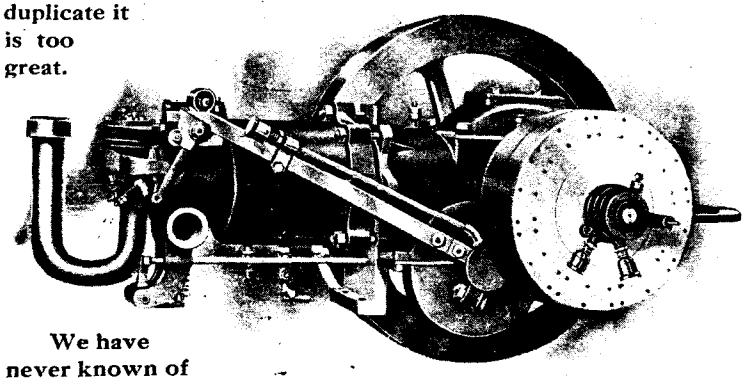
They offer more actual value for every dollar invested than any automobile ever produced.

CADILLAC

The Cadillac Motor

The secret of Cadillac success and efficiency lies largely in the design and workmanship of our motors and their careful installation in the chassis.

The Cadillac Single Cylinder 10 h. p. motor to-day is practically the same as that which was installed in the first Cadillac produced. It was years in advance of anything that had ever been made, and up to the present time there has been nothing made that equals it. It set a new mark for motor builders to strive to reach. Its unparalleled success has prompted others to imitate it, but the imitations lack its power, its reliability and its efficiency; either because their makers cannot solve the secrets, cannot successfully apply the principles, or the expense of the equipment to duplicate it is too great.



We have never known of a Cadillac motor that has worn out. Examination of several of the earliest motors we built has shown them to be practically as good as new and with proper care and lubrication, there is no reason why they should not remain serviceable for many years to come. But, even granting that through neglect and abuse the replacement of some parts becomes necessary, it can be done at less expense and with less trouble than on any other motor we know of. For example, suppose that through lack of attention to lubrication the piston or cylinder becomes damaged. These are the most expensive parts liable to be affected by such negligence, but the price of a new cylinder is only $8.00, and, the piston only $8.25. The main bearings of the crank shaft are perhaps the most susceptible to wear from lack of lubrication. In the Cadillac motor, these bearings consist of the highest grade of babbit facing backed by a finished bronze bushing. If replacement should be required, it may be done in a few minutes, it being not

CADILLAC

The Cadillac Motor

(Continued)

even necessary to remove the crank shaft. The cheap method, the one usually adopted, is to cast the babbit into the frame of the motor. With such construction, when renewal is necessary, the motor must almost invariably be sent to the factory for repairs to secure proper alignment. By our special methods, our bearings are rendered much more durable than those which are simply cast into the crank case.

Interchangeability of all parts and especially those of the motor, is of utmost importance to the automobile buyer, as the cost of maintenance should always be reckoned with. All parts of the Cadillac motor as well as those of the chassis are made according to our system of limit gauges which makes it next to impossible for an imperfect part to enter into their construction. Special attention is devoted to the finishing of the piston and cylinder bore which are smooth as glass, and neither is allowed to pass inspection if it exceeds the prescribed limits of measurement which in some cases are specified to the one-thousandth part of an inch. While this method and the refinement which it secures is expensive for us, it is the only correct method, and to it much of the success of the Cadillac is attributable.

The valves are accurately ground that no gas may escape, all parts are correctly finished and fitted that no power may be lost, and proper provision is made for adjustment of all wear.

The Cadillac Carburetor has proven itself efficient, economical and satisfactory. The system of water cooling has proven itself adequate and the reliability of the Cadillac Spark Plug has been thoroughly demonstrated.

The Motor is provided with a metal dust shield or drip apron which is attached to the frame of the chassis by means of spring hooks so that it may be removed in a few minutes when desired.

Cadillac Spark Plug

Our Double Insulated Spark Plug, here illustrated, is so simple that it needs no extended explanation, and its advantages are so well known that it requires no special recommendation.

It permits the secondary current to be kept separate from the other mechanism and the expense of replacing its mica cores is almost insignificant.

While we can provide for the use of ANY plug, we have not in a single instance furnished any other type. We have known

CADILLAC

Cadillac Spark Plug

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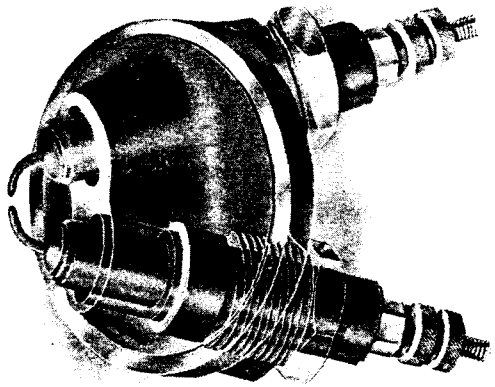
many cases where this plug has been used for months until it had been befouled by carbon deposits to an extent that would have rendered an ordinary plug utterly useless, yet notwithstanding these disadvantages it continued to give reasonably good results.



This plug is another of our special features and is one more reason for the constancy of the Cadillac motor. The ease of accessibility to this spark plug is a worthy feature. It may be removed for examination in only a few seconds.

Cadillac Force Feed Lubricator

A feature which will at once commend itself to everyone who has had any automobile experience is the Cadillac Mechanical Lubricator. To make a motor right is one thing. To make provision for keeping it right is quite another. We have accomplished both. No one thing is more essential to the life and efficiency of a motor than proper lubrication. Proper lubrication means not too little and not too much, but exactly enough. Too much means a fouled spark plug, sticky valves and carbon deposits on piston and cylinder. Too little means destruction to wearing surfaces. A worn cylinder and piston means loss of compression, loss of power and expensive replacement. Worn bearings mean annoying pounding and destructive vibration.

It does not require a genius to realize that the more rapidly a motor is running the more oil it requires. The Cadillac Mechanical Lubricator provides for this. It is equipped with four individual feeds, one for each of the four vital points, viz.: one to the piston, one to the connecting rod and crank shaft bearing and one

CADILLAC

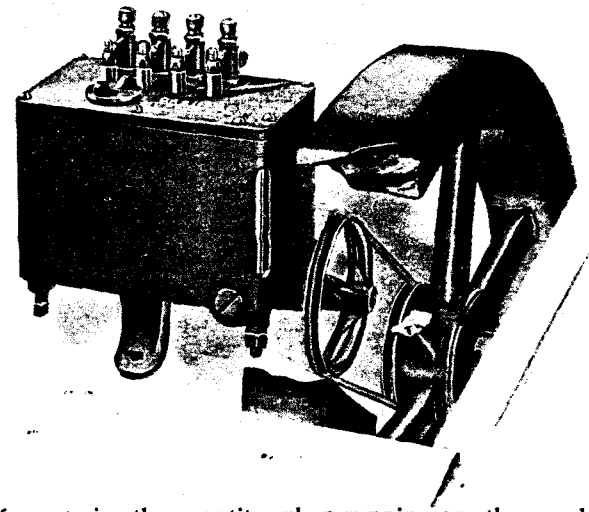
Cadillac Force Feed Lubricator

(Continued)

to each of the two main bearings. The last two mentioned requiring quantities of oil different from the first two, each of the four feeds is adjusted separately.

The simple pressing on a cut-off plunger stops the oil running to the bearings and forces it up through the sight valves so that the supplies may be regulated. When this has been done, releasing the plunger causes the oil to again be forced to the several bearings.

The Lubricator is driven by a belt running directly from a pulley on the hub of the fly-wheel. Consequently when each sight feed is adjusted for a given quantity of oil per minute when the motor is running at say, five hundred revolutions per minute,



it must force twice the quantity when running one thousand revolutions per minute, or only half the quantity when running two hundred and fifty revolutions per minute. In other words, the motor gets no more nor no less but exactly the quantity of oil required to produce the best results.

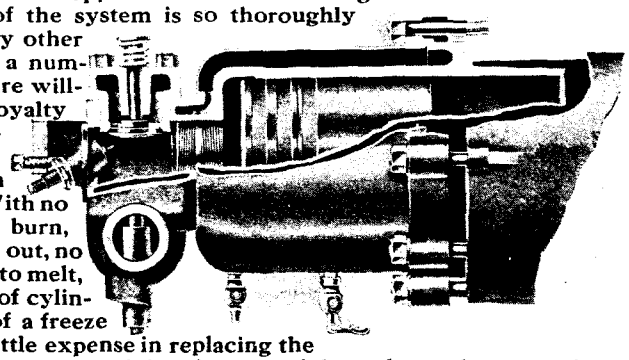
Another feature—one of vital importance. A lubricator whose feeds and passages are small is easily clogged with dirt, lint or "gummed" oil, rendering it but little, if any, better than no lubricator at all. In the Cadillac Lubricator such troubles are almost impossible as the passages are all large, hence not easily obstructed, yet it can be adjusted with unerring accuracy. It is readily accessible, being located under the front seat, directly back of the heel board.

CADILLAC

Cadillac Copper Water Jacket and Cooling System

The efficiency of the Cadillac motor cooling system is well known. You do not see Cadillacs "hung up" on the road waiting for the motor to cool off.

The Cadillac Copper Water Jacket is original with us and the superiority of the system is so thoroughly recognized by other makers that a number of them are willing to pay a royalty for the privilege of embodying it in their cars. With no gaskets to burn, soak or blow out, no leaded joints to melt, no cracking of cylinder in case of a freeze up, and but little expense in replacing the cylinder if cut or worn, it is quite natural that other makers want it.



These details mean little or nothing to the novice or driver of a Cadillac, but they do mean something to the user of some other form of construction who may have left his machine far from home and sent a mechanic to put in a new gasket. They mean something also to the chauffeur who may have tried to start his motor with a defective gasket leaking water into the combustion chamber, or to those who have been troubled with overheated horizontal cylinders. They mean much to those who have been obliged to pay almost the price of an engine for a new cylinder.

The cheap method ordinarily used, is to cast the cylinder and jacket together, coring to make the space between them. This seldom, if ever, produces a combination with a uniform space between the two for water circulation. The maker cannot detect the fault because he cannot see it, but it will not be long until the purchaser awakens to the results of its imperfection. It will be readily understood that with the thickness of the cylinder wall not uniform, it cannot be cooled evenly throughout its entire surface, the result being that the motor cannot develop the power which it otherwise might.

Our radiator has ample radiating surface and our centrifugal pump keeps the water in rapid circulation. The pump is attached to the frame of the chassis. Being operated by the motor, the rapidity of its action is governed by the speed of the latter, which is the only practical method.

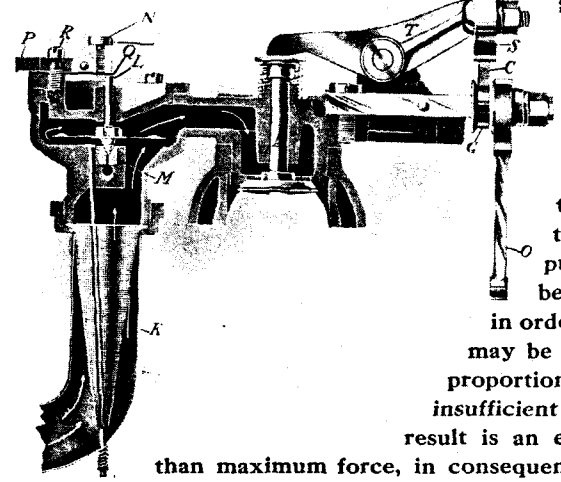
The Cadillac method is the only practical and correct system of jacketing—one reason why the Cadillac Motor develops more power than any other of equal dimensions. The water tank is accessible for filling by simply lifting the cover of the hood.

The water circulating pipes are of copper.

CADILLAC

Cadillac Carburetor or Mixer

Without an efficient Carburetor, no motor can develop its full power, although it may be perfect in every other particular. For the benefit of the novice it is well perhaps to explain that the Carburetor (or mixer) is the instrument by means of which the gasoline is transformed into a vapor or gas and mixed with air. As this gas would not ignite if drawn into the cylinder of the motor in its pure state, it must be mixed with air in order that the charge may be exploded. If the proportion of gas is either *insufficient* or too great, the result is an explosion of less than maximum force, in consequence of which the full capability of the motor is not developed.



The gasoline from the storage tank enters the mixer through the valve "M" (see illustration) and drops into the wire mesh "K." Air is drawn in through the intake tube and evaporates the liquid, and the mixture is then drawn up and through the inlet valve at "A," thence into the combustion chamber of the motor where it is ignited by the electric spark emanating from the spark plug.

In the Cadillac Carburetor, we have a device radically different from any other, so simple that is is easily understood, yet capable of adjustment so precise as to give the exact mixture required. In addition to its advantages of accessibility and durability, its operation is not affected by steep grades. It can be taken apart and cleaned when necessary without in the least affecting its adadjustment, a most desirable feature, and as there is but one moving part, it has no delicate mechanism to get out of order. Four years of continued use have proven its superiority as a mixer for a single cylinder motor.

It is one of the exclusive features which have helped to make the Cadillac famous.

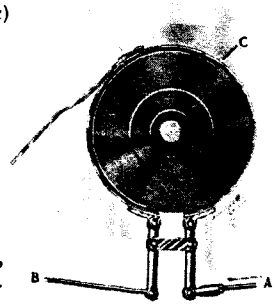
CADILLAC

Cadillac Transmission

The Cadillac planetary transmission is entitled to special commendation. With fourteen thousand of them in constant use—some of them for over four years—we have never known a single one of them to cause trouble from any faults of its own. If there is any other transmission of which a similar statement can be truthfully made, we do not know of it.

The Cadillac Transmission combines, strength, durability, quietness, and requires the least possible attention. These are virtues not possessed by any other gear. It is provided with two friction bands. One of these, operated by a foot lever, applies the slow speed; the other, operated by the control lever, reverses the movement of the car.

By pulling on the rod (a) the band (c) is closed upon the transmission gear drum; the rod (b) is fastened to the rear engine support and balances the pull on (a) so that no matter how much strain is applied through (a) there is no side pull on the transmission drum and consequently no possibility of heating the transmission drum bearings or of undue strain on the crank shaft. This, of course, reduces friction losses and adds correspondingly to the efficiency of the car.



The driving gear (D) is the only part attached to the engine shaft. When assembled, the cover "C" and case "H" form an oil reservoir enclosing all working parts, thus insuring the best possible lubrication with the least attention. It has but ONE oil hole instead of the usual ten or twelve, and will hold enough oil for several days' use.

If the case "H" be held by its brake band when the driving gear is rotating, all the gears in the case, except "B," run at the same speed as the engine shaft, but no faster. The gear "B," and with it the driving sprocket "A," runs at a slower speed but in the opposite direction, producing the reverse. If the case be allowed to revolve, and the drum "K" be held by its brake, all the gears run at much slower speed than the engine shaft, driving the internal gear "B" around slowly forward, producing slow speed. If brake drum "K" be locked to shaft by the high speed clutch, the whole gear revolves and acts as an additional fly-wheel.

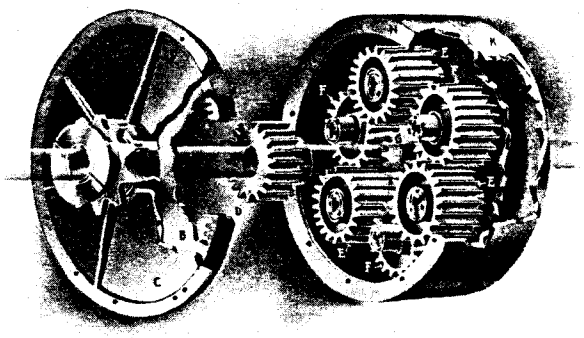
By driving through gear "B" and engaging at three points, the lowest possible tooth strains are secured. All the gears are large; none of them can run as fast as the engine except in backing.

CADILLAC

Cadillac Transmission

(Continued)

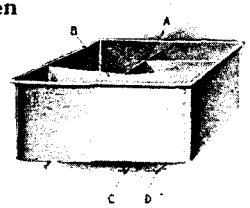
These strong points of advantage form a combination of virtues never before secured in any transmission and make the Cadillac transmission the Ideal Gear for its duty. By Cadillac construction



the entire transmission can be removed without disturbing the crank shaft. In plain words, the Cadillac gear is right. Another reason why a 5 x 5 single cylinder engine rated at 10 h. p. has been able to do the same work as some multiple cylinder engines rated at 16 h. p.

Gasoline Tank

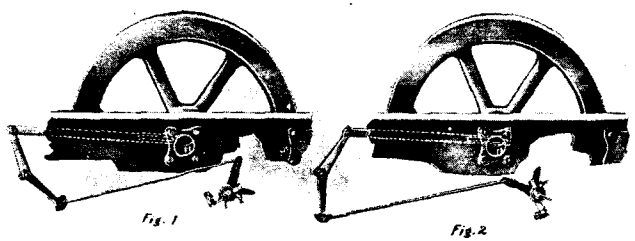
The Cadillac Gasoline Tank, shown in cut with top removed, is easy of access, being placed directly underneath the front seat, and carries about seven gallons. It is provided with partitions at "A" which prevent undue splashing. The partition "B" forms a compartment holding about one gallon. When the gasoline in the main compartment has been consumed, the motor will of course stop, which serves notice to the driver that but one gallon remains (in the compartment) and that it will be necessary soon to renew the supply. The reserve may be transferred to the main tank by simply opening the valve "C."



CADILLAC

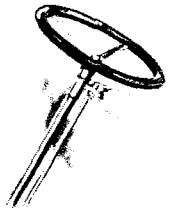
Safety Starting Device

If, when starting a motor, the spark be advanced, it effects an early ignition of the charge. This causes the motor to start backwards or "kick back" which is liable to injure the operator by the starting crank striking him.



The Safety Device on the Cadillac makes this impossible. Attached to and operating in conjunction with the spark advance mechanism, we have a safety slide. In advancing the spark lever it also moves the safety slide into a position where it obstructs the entrance of the crank, (See Fig. 2) making it impossible to start the motor until the spark lever is moved to its normal position, (See Fig. 1.)

MUFFLER. The Cadillac Muffler is an effectual "silencer," and while back pressure has been reduced to a minimum, it is equipped with a cut-out which acts as a safety valve. This can also, when desired, be used as a warning signal by simply pressing with the foot on a trigger which extends up through the floor of the car.



STEERING MECHANISM is of the rack and pinion type and is operated by means of the steering wheel.

ELECTRICAL SYSTEM. The ignition is by the jump spark system with coil and switch on the dash of the car and two sets of dry cell batteries, one for use and the other for reserve, located where they are readily accessible. The secondary wires are strung in the channel of the chassis frame where they are out of the way of dirt and dampness, hence no liability of short circuiting.

CONTROL. The slow speed is applied by a foot lever and the high speed and reverse by a hand lever at the side of the car. (See explanation of action under Transmission.)

CADILLAC

THE BRAKE mechanism consists of two friction bands which contract on the drums of the rear axle differential and are applied by a foot lever. The latter is equipped with pawl and ratchet so that the brake can be held at any tension desired. Our differential drums are extra large, being nine inches in diameter, affording large friction surface and brake efficiency.

FRAMES. Our frames are pressed from a special grade of steel and tested to withstand strains much greater than they will be called upon to bear.

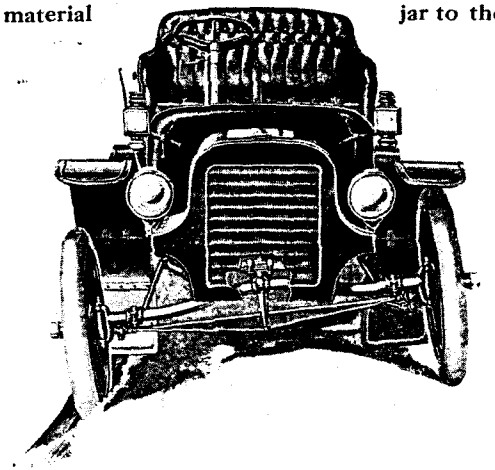
AXLES. Our rear axles are of steel tubing with high grade steel live axles, keyed to differential drums, the bearings being of the roller type. Rear wheels are keyed to the live axle sections. The differentials are of the Brown-Lipe spur gear pattern. Front axles are of steel tubing with drop forged front wheel spindles, the front wheels being fitted with ball bearings.

DRIVE. Hardened steel roller chain with detachable links, each link pin secured by a cotter pin. In case of accident, the rereplacement of a link requires but a few minutes' time.

SPRINGS. Our springs are of the highest grade possible to obtain.

We wish to direct special attention to our front spring suspension, the advantages of which will be readily understood by referring to the accompanying illustration.

On the front axle at the point of the spring suspension, a rocker joint is provided. This joint fully doubles the efficiency of the spring and permits one wheel to pass over obstacles several inches in height or into depressions of equal depth without disturbing the level of the body or transmitting any material jar to the occupants of the car.



CADILLAC

BODIES. Special attention is directed to the design of the several Cadillac bodies.

On the "K" runabout the Victoria type of body is used, while on the Model "M" we offer the choice of the straight line type or of the Victoria.

The straight line pattern will find favor among those whose ideas follow conventional types, while the Victoria appeals to those whose preferences are for something truly artistic and strikingly exclusive.

The dash is of pressed steel, hollow, and substantially reenforced.

FENDERS. Our fenders are special Cadillac pattern formed from sheet metal and so designed that they will be found very effectual in protecting both the car and its occupants.

WHEELS are of the artillery type made from specially selected second growth hickory. Rear wheels are keyed to live axle shafts and doubly secured thereto by slotted hex nuts and cotter pins. Front wheels are ball bearing with tool steel cups and cones.

FINISH. The quality of the Cadillac finish is not excelled in any automobile. Each coat of color is applied with extreme care and rubbed down thoroughly before the succeeding coat is applied. This gives it the smoothness and durability for which the Cadillac finish is noted.

The sheet metal parts, such as hood, dash and fenders are not simply painted, but are finished in a number of coats of enamel, each of which is carefully baked.

The finish of the "Model K" Runabout and the "Model M's" (excepting Victoria) is brewster green bodies with hair-line red striping. The frames, axles, wheels, etc., are finished in Red with hair-line black striping.

"Model M" (Victoria Body). The finish of the lower part of the body is black, while the seat panels and doors are finished in purple lake (a deep rich wine color) with light carmine striping. The frames, axles, wheels, etc., are finished in red with hair-line black striping.

UPHOLSTERING. The seats are luxuriously upholstered in genuine black leather tufted over steel coil springs and fine quality curled hair. The leather in the "Model M" Victoria is of a color to harmonize with seat panels.

EQUIPMENT. Each Cadillac is furnished with a set of tools for ordinary adjustments, including a pump and repair outfit for tires.

Our prices do not include lamps, horn or other accessories. If we were to furnish these, we would simply be obliged to increase the selling price of our cars to cover the extra cost. Different persons have different tastes and requirements, therefore by our policy, each purchaser is free to choose and purchase such accessories in accordance with his individual preferences.

TIRES. The standard 1907 equipment for Cadillac cars will be Hartford or Morgan & Wright Dunlop type of tires. We will also furnish without extra charge, when so ordered, either Hartford, Morgan & Wright or G. & J. Clincher tires.

We have adopted as standard equipment, the Midgley Universal Rims with which either of the above makes and either of the above types (Dunlop of Clincher) may be used.

NOTE. When make and type of tire desired (as above designated) are not specifically stated in ordering, we will equip cars with the Dunlop type of tire made by either the Hartford Rubber Works Co., or Morgan and Wright, at our option.

TIRE GUARANTY. All tires and rims used on Cadillac automobiles are guaranteed by their respective makers and in case of claims should be sent to the factory or any of the branches of said makers (not to us), transportation charges prepaid.

Models

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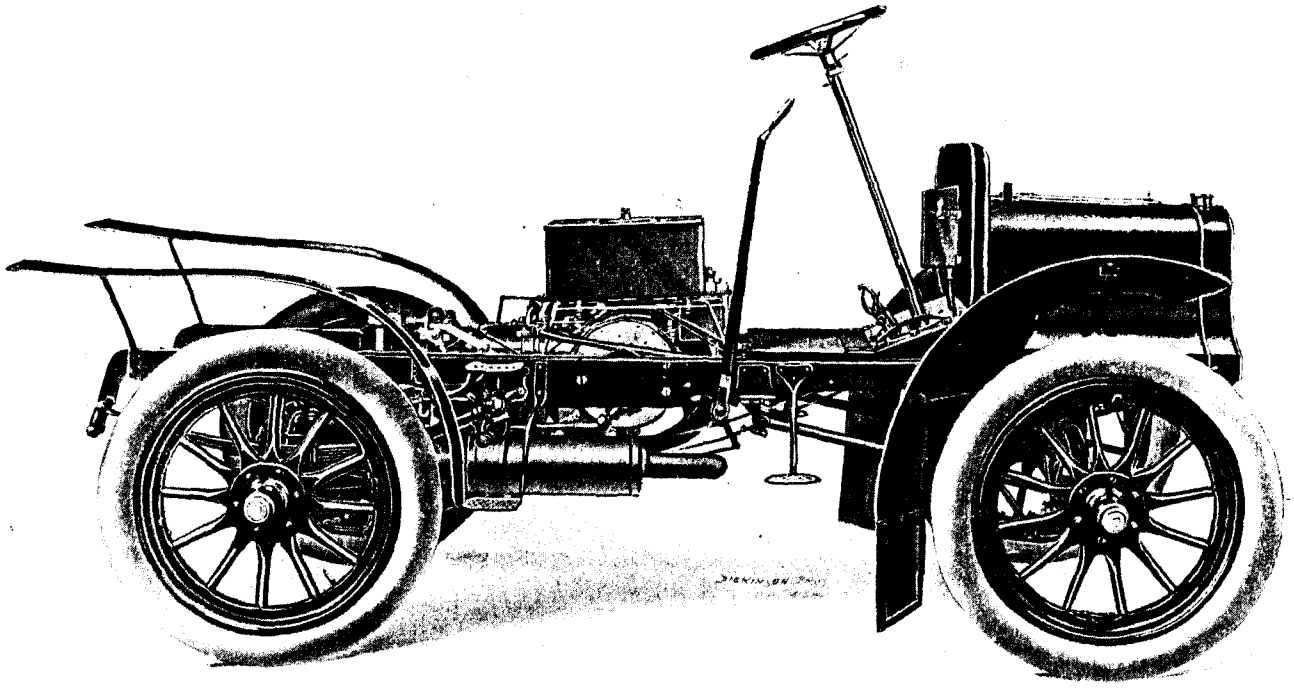


CHASSIS

CADILLAC

Features of Cadillac Single Cylinder Cars

MOTOR. Ten horse power. One cylinder, 5-inch bore by 5-inch piston stroke.

MOTOR BEARINGS. Interchangeable, adjustable.

VALVES. Vertical, mechanically operated, variable inlet control.

CARBURETOR. Special Cadillac type, automatic elastic stop diaphragm.

COOLING. Copper water jacket. Tubular fin type radiator. Water capacity three gallons.

IGNITION. Jump spark. Coil and switch on dash.

LUBRICATOR. Mechanical force feed.

TRANSMISSION. Cadillac planetary, two speeds forward and reverse. Balanced double acting clutch bands.

STARTING DEVICE. Cadillac safety type.

FRAME. Pressed steel.

AXLES. Tubular steel. Rear live axle revolves on roller bearings. Ball bearing front wheels.

DIFFERENTIAL. Brown-Lipe spur gear.

WHEELS. Artillery type, best selected second growth hickory, pressed steel hubs. Rear hubs taper fitted and keyed to live axle sections.

BRAKES. Double acting on differential drums, operated by ratchet foot lever.

STEERING. Wheel, rack and pinion.

CONTROL. Throttle and spark levers at steering wheel. High gear and reverse applied by side lever, low gear by foot lever.

SPRINGS. One semi-elliptical with rocker joint in front. Two semi-elliptical rear.

GASOLINE CAPACITY. Seven gallons.

WHEEL BASE. 76 inches.

WHEEL TREAD. 56 inches (option 61 inches).

TIRES. "Model K," 30 x 3 inches "Model M," 30 x 3½ inches. For tire equipment see page 17.

PRICES ON INCOMPLETE CARS

Subject to Same Terms and Conditions as Complete Cars

"Model M" Chassis (including dash and hood), with wheels and 30 x 3½-inch tires	$800.00
"Model K" Chassis (including dash and hood), with wheels and 30 x 3-inch tires	750.00

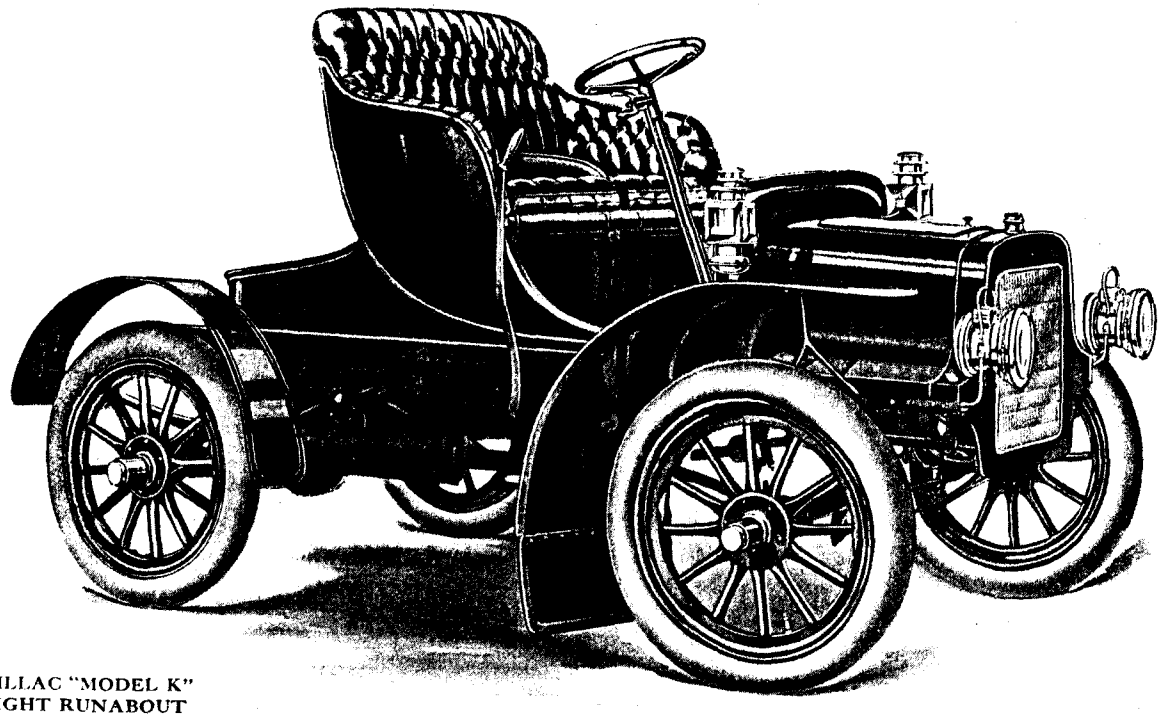
The tires included in above prices are either the Dunlop or Clincher types made by either the Hartford Rubber Works Co., of Hartford, Conn., or Morgan & Wright, of Detroit, or the G. & J. Clincher tires made by G. & J. Tire Co., of Indianapolis, Ind.

BODIES (Not including dash or hood)

"Model K" Runabout Body, divided seat, standard finish, including upholstering and spring seat cushion	95.00
"Model M" Body, either Victoria or Straight line type, double side door entrance, divided front seat, standard color, including upholstering and spring seat cushions	175.00

All quotations are F. O. B. Detroit.

CADILLAC



CADILLAC "MODEL K"
LIGHT RUNABOUT

CADILLAC

Cadillac "Model K" Light Runabout

The Cadillac Single Cylinder Runabout is the most popular car of its class in America and among professional men its numbers nearly, if not fully, equal all other motor cars combined. In this model are embodied all of the meritorious Cadillac features described in detail on preceding pages.

It has of late become especially popular among owners of large touring cars, who find it a matter of great convenience to keep a Cadillac Runabout for general all around business purposes owing to its almost unfailing dependability, its ease of control in crowded thoroughfares and particularly its low cost of maintenance.

As a pleasure car for two persons it has never been equalled. Its light weight admits of its being geared to run at the rate of 30 to 35 miles per hour, which is faster than most people care to ride over average roads.

We gear this car with 10 tooth sprocket on the motor shaft and 38 tooth on the rear axle. This gear is considered best adapted for general use on average roads and hills. For localities where steep grades predominate, a 10-41 combination is of some advantage, while a 10-34 combination affords the maximum speed in localities where the roads are smooth and level.

For tops see page 27.

STANDARD SPECIFICATIONS

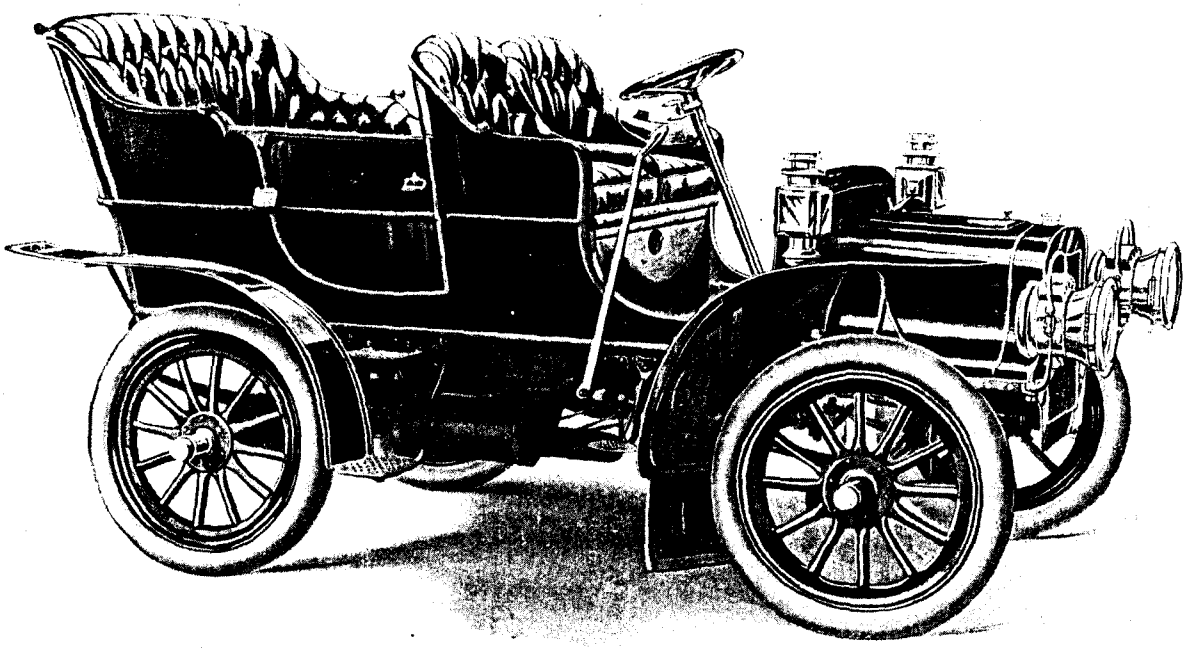
Axles	Tubular Ball Front, Hyatt Roller Rear
Tread	56 inches
Wheels	30 inches
Wheel Base	74 inches
Tires	30 x 3 inches
	For tire equipment see page 17
Body—Divided seat, trimmed in hand buffed leather	
Color	Standard, see page 16
Gear	10-38
Weight	Approximately 1100 pounds
Length over all	9 feet 2 inches
Width over all	5 feet 8 inches
Height over all	5 feet 6 inches

Price $800.00 F. O. B. Detroit
(Lamps not included)

The following options can be furnished subject of course, to possible delay:

Tread	61 inches
Gear	10-41 or 10-34

CADILLAC



CADILLAC "MODEL M"

CADILLAC

Cadillac "Model M"

In this model we offer a car which for general utility will not suffer in comparison with any automobile, regardless of cost. No effort or expense consistent with its price, has been spared to make it all that could be wished for in a light family car, easily capable of a speed of 25 to 30 miles per hour. In it are embodied all of the Cadillac special features, and we do not hesitate to assure our friends that it positively offers better value than any car selling at from 50 to 100 per cent. higher, while with the advantages of economy in fuel and oil and low cost of maintenance generally, it has no competitor at any price.

The Model "M" is geared for maximum power and reasonable speed, the 10-41 sprocket combination being considered best for average roads and hills, while for specially hilly localities a 10-45 gear may be advantageous.

It will be found a constant car, ready for service at any and all times.

For tops see page 26.

"MODEL M"

Not Convertible
Standard Specifications

Axles,	Tubular Ball Front—Hyatt Roller Rear
Tread,	56 inches
Wheels,	30 inches
Wheel Base,	76 inches
Tires,	30 x 3½ inches
See Tire Equipment, page 17	
Color,	Standard, see page 16
Gear,	10-41
Weight,	Approximately 1350 pounds
Length over all,	9 feet 7 inches
Width over all,	5 feet 8 inches
Height over all,	5 feet 2 inches

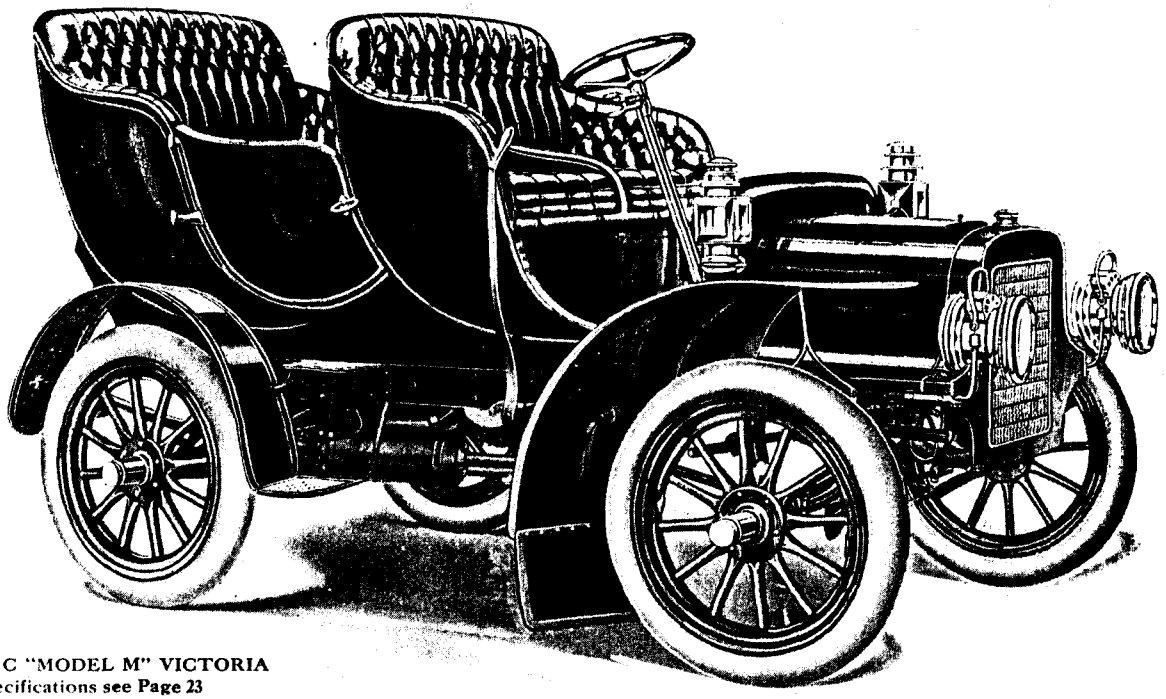
Price $950.00 F. O. B. Detroit

Lamps not included)

The following options can be furnished, subject, of course, to possible delay:

Gear	10-38 or 10-45
Tread,	61 inches

CADILLAC

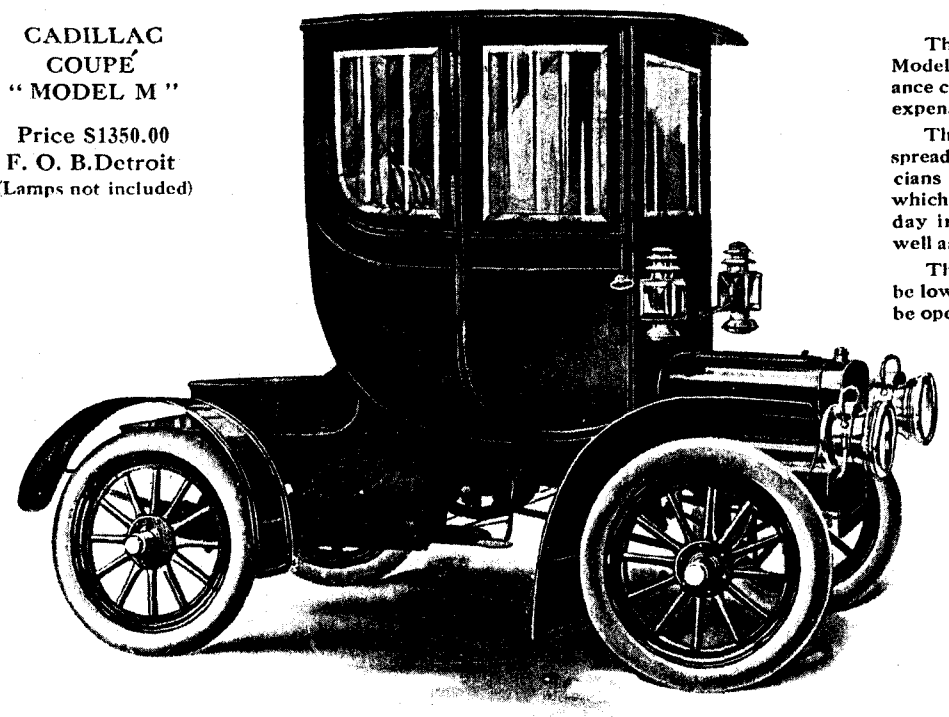


CADILLAC "MODEL M" VICTORIA
For specifications see Page 23
Price F. O. B. Detroit $950.00 (Lamps not included)

CADILLAC

CADILLAC
COUPÉ
" MODEL M "

Price $1350.00
F. O. B. Detroit
(Lamps not included)



This is a handsome, finely finished Model, which for richness in appearance compares favorably with the most expensive types of enclosed cars.

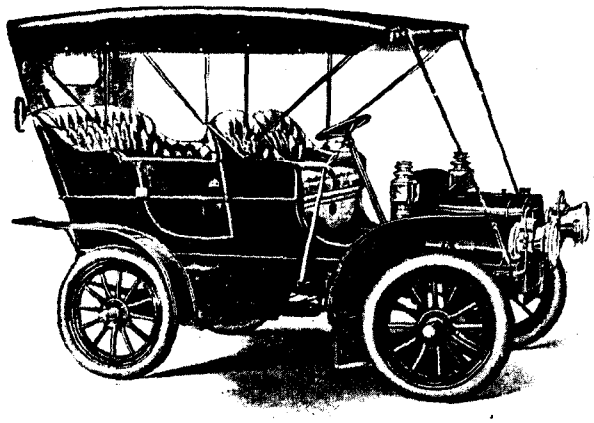
This Coupe has met with widespread favor particularly among physicians and others who require a car which is specially adapted for use every day in the year, and for inclement as well as pleasant weather.

The front and rear windows may be lowered and the side windows may be opened while those in the doors are easily removable.

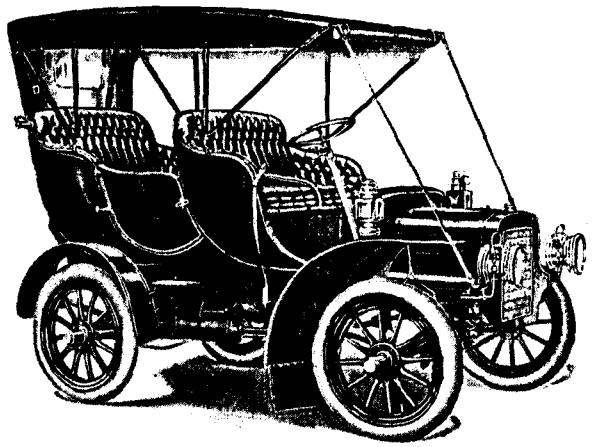
It is suitable for country as well as for city use and with the preeminent Cadillac characteristics — economy and thorough dependability—it offers advantages not possessed by any other type of motor vehicle.

The chassis, standard specifications, color, upholstering, tires, etc., are the same as those of the regular "Model M" as set forth on page 23.

CADILLAC



Cadillac "Model M"
With Cape Cart Top



Cadillac "Model M" Victoria
With Cape Cart Top

Having established a special department for the manufacture of tops, we are prepared to furnish a line that is strictly in keeping with Cadillac cars.

The material used in the covering is a special quality of reenforced rubber cloth calculated for service. The bows are ash with steel bow sockets, the rear bows being substantially reenforced. All bows are covered with hand buffed bow leather.

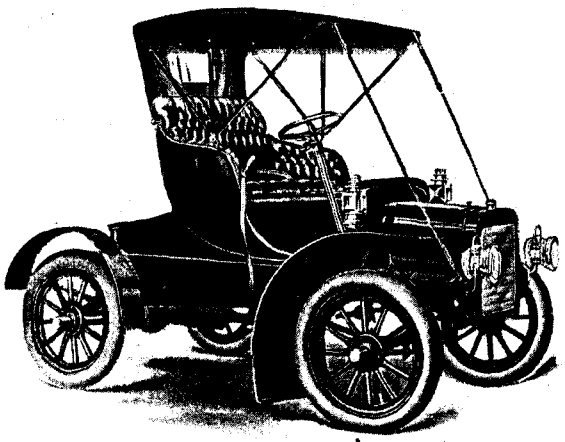
Double straps both in front and in rear hold the tops securely in position.

The material and workmanship is first-class in every particular. When shipped with cars, the tops are carefully fitted.

Tops include side curtains and storm front with celluloid windows.

"Model M" or "Model M Victoria" with Cape Cart Top, as above, Price F. O. B. Detroit, $1,050.00

CADILLAC



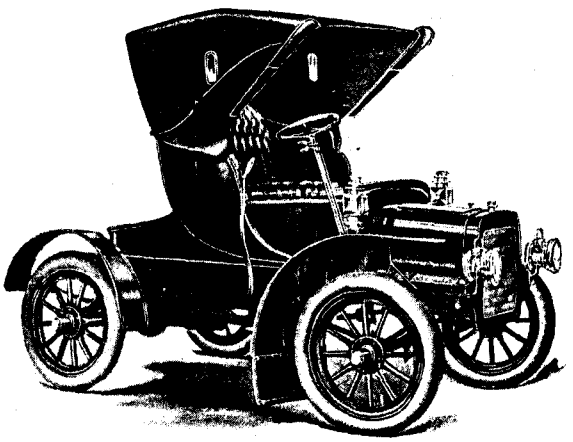
Cadillac "Model K" Runabout
With Buggy Top

Our Runabout tops are substantially made of the same material as those described on preceding page, viz.: special quality of reenforced rubber cloth over ash bows and steel bow sockets, with front and rear straps to hold top in position.

Runabout tops include side curtains and storm apron.

"Model K" with special reenforced rubber cloth top, Price F. O. B Detroit, $840.00.

We also make this type of top for the "Model K" Runabout in hand buffed leather. Price $870.00.



Cadillac "Model K" Runabout
With Victoria Top

The "Model K" Runabout equipped with full leather Victoria top offers a most desirable two passenger car for general utility.

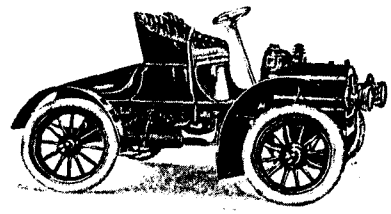
The Victoria top is high grade in every particular. It is substantially made of hand buffed leather lined with broadcloth over ash bows and steel bow sockets.

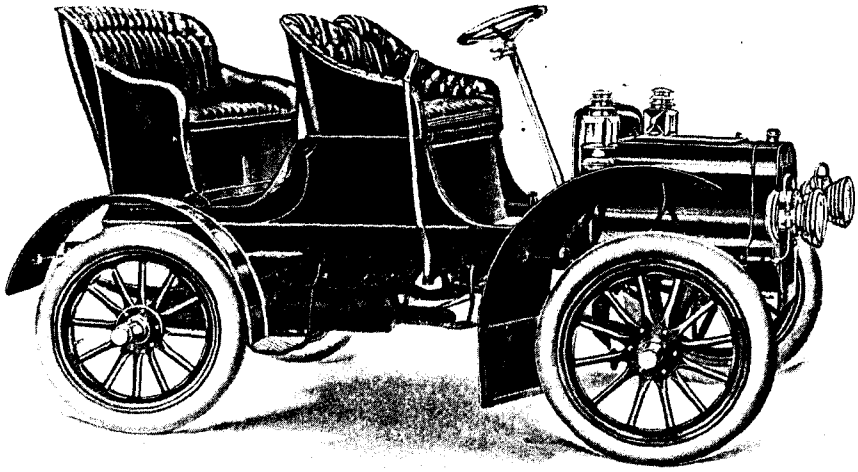
This Victoria top is built on the body by us and is not intended to be detached. It is not sold separately as it cannot be fitted to the car excepting at our factory.

Price of "Model K" with full leather Victoria top, F. O. B. Detroit, $925.00

CADILLAC

Cadillac "Model M" Folding Tonneau





This model is offered to meet the demand for a convertible car suitable for carrying two or four persons as occasion may require. As will be seen by the illustrations the tonneau may be folded down converting the car into a neat runabout.

With the exception of the style of the body, this car is the same as the regular "Model M" (see specifications page 23.) This body will not be fitted to our Runabout Chassis.

Price, F. O. B. Detroit
$1,000.00
(Lamps not included)

CADILLAC

Cadillac "Model M" Delivery

This car is offered as a thoroughly practical vehicle for light delivery service. The splendid satisfaction which these cars have afforded hundreds of merchants and others throughout the country who require a dependable vehicle for all the year round, is evidence of their efficiency.

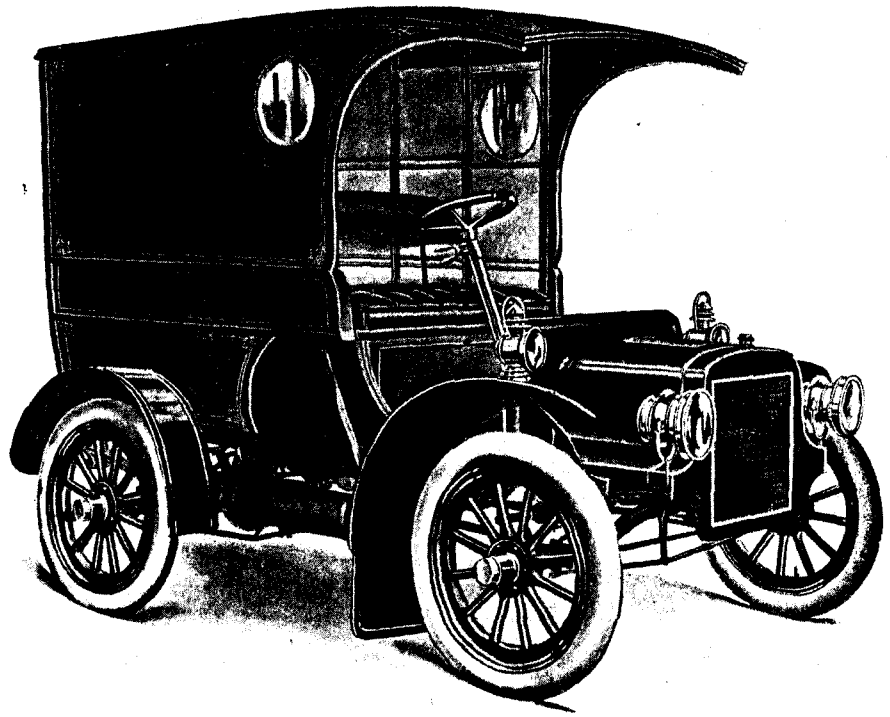
For commercial use, economy of operation and maintenance are prime requisities and the marked success which has attended this car is due principally to these characteristic Cadillac features.

The specifications are the same as those of "Model M" (see page 23) except the gear, which is a 9-45 sprocket combination.

Inside body dimensions:

Length,	42 inches
Width	40 inches
Height	50 inches
Capacity	500 to 600 pounds

Price, $950.00 F. O. B. Detroit.
(Lamps not included)



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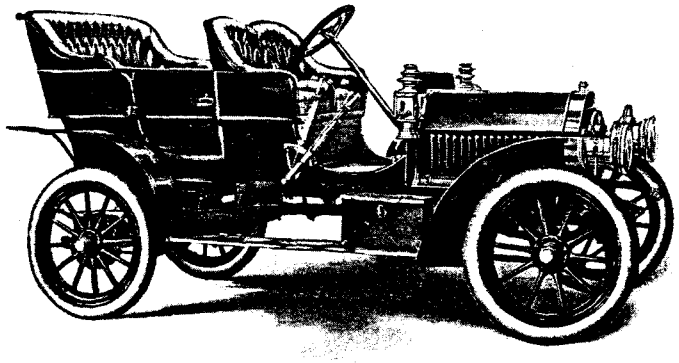
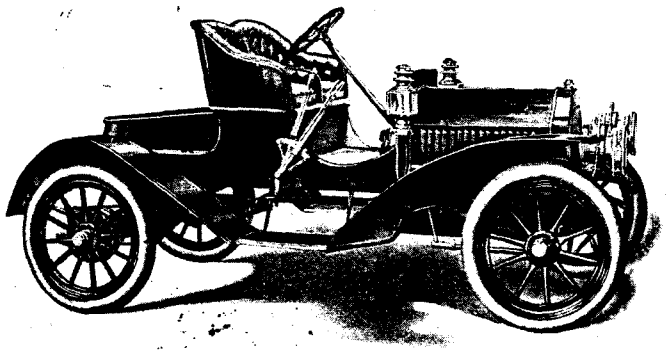


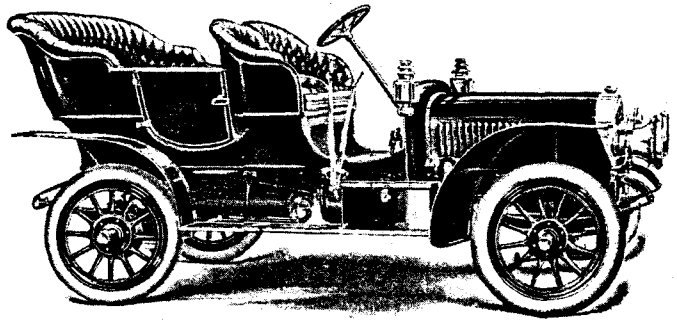
Cadillac "Model G" Touring Car
Four Cylinder, 20 H. P.
Price, $2000.00
F. O. B. Detroit. (Lamps not included.)



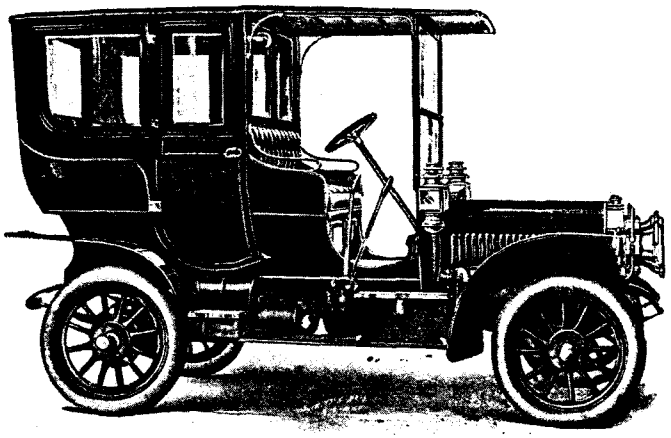
Cadillac "Model G" Runabout
Four Cylinder, 20 H. P.
Price, $2,000.00
F. O. B. Detroit. (Lamps not included.)

If interested in above, send for Special Catalog of "Model G."

CADILLAC



Cadillac "Model H" Touring Car
Four Cylinder, 30 H. P.
Price, $2,500.00
F. O. B. Detroit. (Lamps not included.)



Cadillac "Model H" Limousine
Four Cylinder, 30 H. P.
Price, $3,600.00
F. O. B. Detroit. (Lamps not included.)

If interested in above, send for Special Catalog of "Model H."

CADILLAC

Terms, Conditions and Instructions for Ordering

PRICES on Automobiles and parts are positively NET, F. O. B. Detroit.

DISCOUNTS. We do not allow discounts excepting to bona fide automobile dealers, with whom we make annual contracts for quantities of cars and who are properly equipped to conduct their business successfully and serve the best interest of Cadillac owners.

TERMS. Our terms on parts are strictly cash with order excepting to our regularly appointed dealers with whom we have accounts. We do not open accounts with others.

Orders accompanied by remittances will receive prompt attention, otherwise we will be obliged to hold them and write for the money.

When parts are desired by mail, the remittance must be sufficient to cover postage also. If remittance is more than sufficient we will refund the amount overpaid.

REMITTANCES should be made by New York or Chicago exchange, Post Office money order or Express money order. When checks on local banks are sent, we hold the order until we receive returns from the check.

WHEN ORDERING, state definitely what is wanted. Do not leave anything to be inferred. Write and sign your order plainly, on a separate sheet from your letter. When ordering ANY part, always give the number of motor in your car. This is imperative. Also state the model and the year's make of your automobile. A Price List of parts will be sent to Cadillac purchasers upon receipt of request stating the Model of Car for which same is desired.

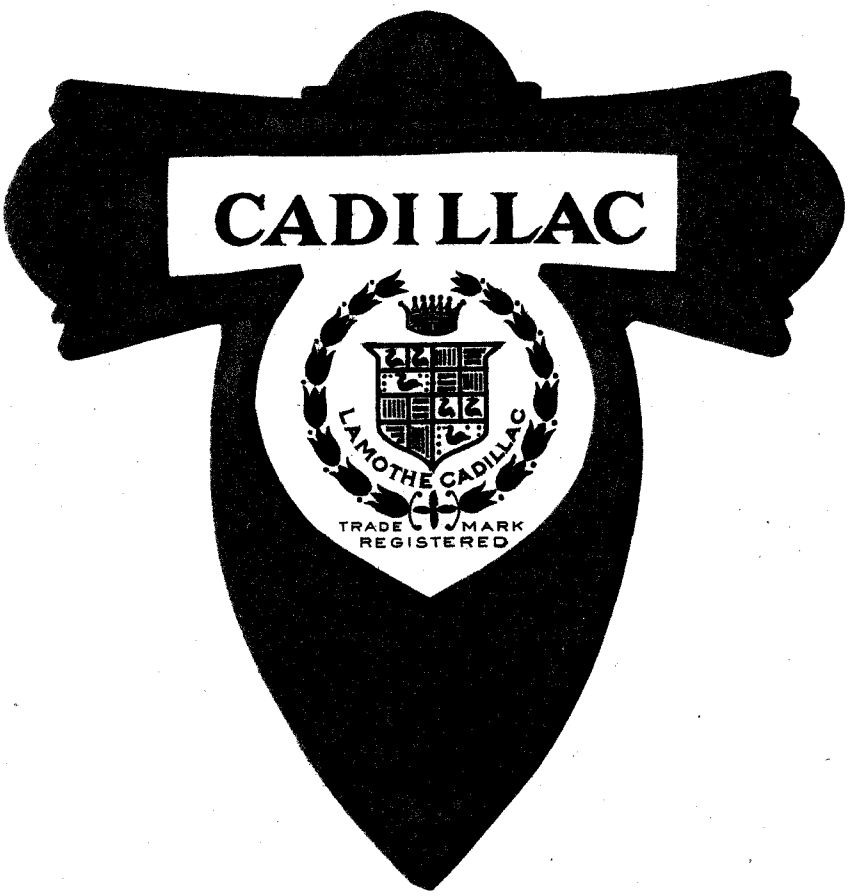
WHEN RETURNING GOODS to us for any reason, charges must be prepaid or they will not be accepted from the Railroad or Express company. They must also be tagged with YOUR name and address (or we cannot identify them) and accompanied by a letter of instructions.

CORRESPONDENCE. Our executive force is large, the Finance, Sales Agency, Order, Repair and Shipping Departments being under separate heads. It is therefore important that correspondence bearing on different subjects should be written on separate sheets, dated and signed so that each may be sent immediately to the department to which it belongs, making it unnecessary for one letter to go the rounds of several departments, which causes delay. Address all correspondence to the company, not to individuals.

EXTRAS. When automobiles are to be shipped long distances, singly, it is sometimes advisable to have them crated. The cost of crating Single Cylinder Cadillacs is $10.00 each, extra, NET.

CADILLAC

DICKINSON BROS.
ENGRAVERS AND PRINTERS
GRAND RAPIDS, MICH.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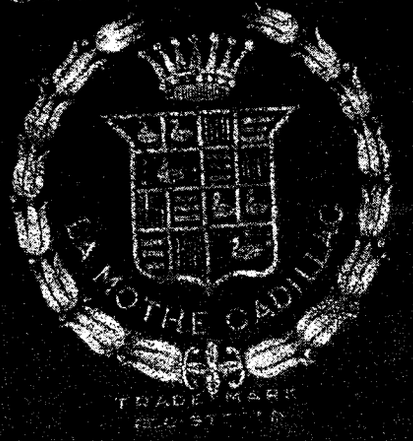


FIRST EDITION

NUMBER ONE

1

INSTRUCTIONS FOR CARE AND OPERATION OF

CADILLAC "MODEL H"

4 cyl. 1906 7 8

CADILLAC MOTOR CAR CO.
DETROIT, MICH.
U. S. A.

RAYNOR & TAYLOR, PRINTERS, DETROIT.

CADILLAC

PARTS AND REPAIRS

To the Owner:

To avoid unnecessary delay and useless correspondence PARTS FOR REPAIRS should, where possible, be ordered from the dealer from whom machine was purchased or from nearest local Cadillac dealer who is generally in a position to know what is desired and how to order it. (If he is not we should like to know it).

With nearly or quite ten thousand Cadillac automobiles in use it is obviously impractical for us to deal direct with all Cadillac owners. We cannot open accounts with or sell at a discount to any except regular dealers with whom we make annual contracts. Where conditions are such as to, in our judgment, warrant it we will fill orders for parts at prices listed in our parts catalogue f. o. b. factory ***providing Cash accompanies the Order.***

In case orders are sent under above conditions we must have motor number, and model of machine with correct description, also sketch and exact dimensions of the part wanted. If these are not procurable, return the part properly tagged, *charges prepaid*, (or it will not be accepted), a special letter of instructions written and return instructions given. Otherwise we cannot promise prompt service or an intelligent fulfillment of the order.

Our responsibility in all cases ceases with delivery to the transportation company.

Repairs.—In the event of claims or the necessity for repairing on such parts as **TIRES, SPARK COILS, BATTERIES OR RADIATORS,** do not send these to us. It only incurs extra expense because we would be obliged to re-ship them to the factories. In all such cases correspondence should be opened direct with the makers of the parts and if necessary the same should be sent direct to said makers or their branches, transportation prepaid.

The names and addresses of makers will be found on these respective parts, excepting radiators. The latter are made by the Whitlock Coil Pipe Co., of Hartford, Conn.

To Cadillac Dealers:

We prefer to transact all our business through our regular dealers with whom we have contracts. However, in order to give Cadillac owners more prompt service we are willing to open accounts with sub-dealers in your territory with your guarantee and consent. It is our desire to protect our dealers as well as the owner and for this reason have adopted the above policy.

Broken parts must invariably be sent to us transportation charges *prepaid* for examination before any claim will be allowed. The new parts will be charged for, and if any allowance is made credit will be given for old parts if returned within 30 days.

Above instructions to owner relative to ordering parts must also be followed.

CADILLAC MOTOR CAR COMPANY.

THE CARE OF A MOTOR CAR.

In the care and operation of an automobile, much must be left to the judgment of the operator, who should study the construction of his car and thoroughly acquaint himself with its mechanism, the functions of its various parts and the "why" of everything connected with it. Remember that the difference between a comprehensive understanding of your automobile and the superficial knowledge possessed by most owners and drivers is the difference between having troubles and annoyances and not having them.

The old adage "A stitch in time saves nine" applies with special significance to the motor car. This does not necessarily mean that it should be constantly tinkered with but that intelligent care and proper attention will often correct a needed adjustment or lubricate a bearing that is becoming dry, but which if neglected may cause serious and possibly expensive damage.

The care of an automobile may be boiled down to two important instructions—"Lubricate" and "Adjust." It will be readily understood that where one part moves or works upon another, there is always more or less friction and these parts must be oiled more or less frequently, including springs, shackle joints connecting rod bearings, etc.

Great care is also necessary to see that all nuts, bolts and screws about the car are kept properly tightened. Most important parts subject to wear are, wherever possible, provided with adjustments for taking up such wear and these should be inspected occasionally, and receive attention whenever required.

By far the greater portion of "automobile troubles" is the result of negligence and carelessness, while the reasonable care to which any piece of machinery is entitled, will insure long life and satisfactory service.

TO PLACE MOTOR AND CAR IN RUNNING CONDITION.

The crank case should contain enough oil in each of the compartments, so that the oil will fill each of the four wells or pockets and overflow to a depth of about one-eighth inch on the bottom of the crank case, and so that the splashers which are attached to the connecting rods will dip into this supply, thus throwing the oil over the parts to be lubricated.

See that the lubricating tank to the right of the motor is filled with good gas engine oil of high fire test, using a heavy grade in summer and a lighter grade in winter, also see that the sight feed on the dash is filled with water in summer and glycerine in winter, or a mixture composed of equal quantities of each will be found suitable for all the year round. This is filled by removing the cap from above the sight feed glass. The pump plunger is controlled by the adjustable stop screw and is locked by the nut. The quantity of oil supplied may be controlled by means of this adjustment: Turn this screw to the right to decrease the quantity and to the left to increase it, and lock it with the nut. The adjustment for the supply of oil should be so regulated that the quantity held in the bottom of the crank case, will be maintained as above indicated, and a daily inspection of the crank case should be made to see that the quantity is maintained. Be sure to use clean oil as dirt will clog the lubricator and may damage the working parts of

the engine. It is best to strain all lubricating oil through cheese cloth or fine mesh wire cloth before using. The lubricator takes care of all the internal working parts of the engine. Too much oil forms carbon deposits in the combustion chambers and on the spark plugs and will, if excessive, cause premature explosion. Too much oil may cause serious annoyance; too little means the destruction of wearing surfaces. Oil with discretion. Blue smoke is an indication that too much oil is being used; when this is noticeable, cut down the supply.

It is necessary also to see that the grease cups and oil holes about the machine are properly supplied with lubricant, one of the most important being the transmission, which should always contain a supply of oil. This is readily oiled by means of an oil gun, which may be inserted into the oil tube on the side of the transmission. This oil should be the same as used in the engine, heavy in summer and light in winter. Use a pint twice a week for ordinary driving.

The universal joint next to the transmission should also be kept packed with cup grease. This should be examined occasionally to be sure that it is amply supplied. The rear universal joint is supplied by the grease cup which should be screwed down at least a turn every day.

The rear axle housing should always contain enough oil so that the large bevel gear will dip into it, keeping the bearings and gears well lubricated. This may be filled by removing the plug from the differential gear case or spherical part of the housing. The first filling will require about one quart of oil. It is also advisable not to use too much. To prevent this another plug is provided on the underside of the sphere. When placing the oil in the housing, also remove the plug from the underside of the sphere so that any excess will run out. The quantity of oil should be maintained on a level with the under plug.

The high speed and main clutch rings are supplied with compression grease cups, which should be kept filled with heavy grease and screwed down one revolution every one hundred miles. The faces of the high speed clutch rings should be oiled at least once a day to insure them against sticking. When the high speed clutch does not release, it has the effect of stopping the motor when you try to engage any other speed.

At each end of the transmission shaft is a Hess-Bright ball bearing. While these bearings require no adjusting whatever and very little lubricating, it is well to oil them several times a year. The commutator should be oiled frequently and cleaned out occasionally with kerosene.

The fan shaft should be oiled occasionally at its ball bearings on each end of the shaft. The brake lever, transmission cam shaft and cam shaft locking plunger should be kept well lubricated by means of oil holes which are plainly visible on same. The governor should be oiled occasionally at the various friction points. The steering gear should be well lubricated with heavy oil which can be placed inside the steering gear case by removing the plug from front of same. The water pump gear shafts are supplied with grease cups which should be turned down once about every hundred miles. The parallel and steering rods should be well lubricated and are supplied with oil cups or oil holes.

The spring brackets and king bolts should have plenty of lubrication. Should the springs squeak, it will be necessary to jack up the frame of the car and insert graphite and grease between the leaves. This will keep out water and rust.

TO FILL THE WATER CIRCULATING SYSTEM.

This is done by removing the brass knurled cap on top of the radiator and filling same with clean water in the summer and a good anti-freezing compound in winter. Twenty-five to thirty per cent solution of glycerine in water is a very reliable anti-freezing compound.

Make sure that the radiator is filled at all times or the water circulation will stop and cause the engine to heat and pound. This is important.

GASOLINE SYSTEM.

There are two gasoline tanks, the large main tank for regular use and the auxiliary for emergency. Both are located under the front seat. To fill these tanks, take out the left seat cushion, raise the seat board and remove the plugs from the tanks. Clean gasoline, strained through a chamois skin, should be used, as water, grit or lint will prevent the proper working of the carburetor.

The handle of the valve which stops the flow of gasoline from one tank and turns on the other, protrudes up through the floor of the car close to the heel board. Under ordinary conditions the gasoline should be used from the main tank. To open this, turn the valve handle to the left (unscrewing it) as far as it will go. To close this and open the flow from the auxiliary tank, turn the valve handle to the right (screwing it in) as far as it will go. Bear in mind that the valve handle or key, which is marked to indicate the direction in which it must be turned, must be turned until tight in either case so that the valve will seat tightly and stop the flow from the other tank.

It is not necessary to use the supply from the small or auxiliary tank excepting when the supply in the main tank is very low and an exceptionally steep grade is encountered.

The main storage tank is supplied with a settling chamber to collect any water or dirt which may be in the gasoline. This can be drawn off by removing the plug from the bottom.

TO START THE MOTOR.

First place the control lever at the side of the car, in the neutral position, then set the rear brake by means of hand lever at side of car, which also disengages the engine by releasing the main clutch, the pedal for which is at the left of the steering shaft. Place the spark lever, which is the short one at the steering wheel, on dead center. (Dead center position is indicated by the letter "C" on the sector). To retard the spark, push the spark lever from you; to advance the spark draw the lever toward you. Place the governor or controlling (throttle) lever, which is the long one at the steering wheel, directly underneath and parallel with the spark lever when the latter is on centre. To open the throttle, move this lever towards you; to close the throttle, move it from you.

Next flush the carburetor by means of the priming lever. This holds the needle valve off its seat and allows the gasoline to flow down into the carburetor. Then turn on the switch at the dash coil. The motor is now ready to start. This is done by means of the starting crank (in front, below the radiator). First push the crank in, then pull up on it and turn the crank to the left (in the reverse direction to the movements of the hands of a clock). Do not push down on the crank as it makes it harder to turn, and should you have advanced your spark, a back kick would occur, which would endanger the operator. If you were pulling up with the spark advanced, the

crank would be pulled out of your hands, which would not cause any disastrous results.

After the motor has stood some hours, or long enough to have entirely cooled down, it is sometimes necessary to prime it before trying to start. However, if a motor has just been stopped or has stood only a short time, it will usually start without priming. If it does not, it should be primed.

In extreme cold weather, gasoline motors are sometimes hard to start and require more generous priming than in moderate temperature. It is usually unnecessary to prime a motor unless it has been standing idle for an hour or more. Too much priming will make too rich a mixture and necessitate more cranking than would otherwise be required.

In extreme cold weather, if the motor should not get sufficient gasoline to start by the usual method of priming, the gasoline may be placed directly into the combustion chambers by opening the cocks on the top of each cylinder and pouring about a half teaspoonful of gasoline into each of the small cups. Be sure then to close the cocks again.

TO START THE CAR.

When the motor has been started, the driver should get into the seat before loosening the brake and ascertain the position of the controlling lever, which controls the reverse, low, intermediate and high speeds. When this lever is as far forward as possible, the transmission is on the reverse. Pulling the lever out of the reverse brings it into the neutral position, which means that with the lever in this position, the car will go neither backward nor forward. By pulling the lever toward you, the first engagement will be the low speed, which results from the fact that it requires three revolutions of the engine crank shaft to produce one revolution of the transmission or driving shaft. By pulling the lever still nearer to you, it brings it into the intermediate gear, and consequently the intermediate speed, which results from the fact that it requires one and two-thirds revolutions of the engine crank shaft to produce one revolution of the transmission or driving shaft. Pulling the controlling lever closer to you, brings it into the high speed. In high speed, the transmission or driving shaft makes the same number of revolutions as the engine crank shaft.

Now that the positions of the controlling lever have been learned, be sure that this lever is in the neutral position, that is, between the reverse and low speeds, then let off the brake, taking care to hold the main clutch out by means of the foot pedal at the left of the steering post. The spark should now be advanced by drawing it toward you about one and a half inches and the throttle should also be opened about the same amount. The main clutch may now be let in by allowing the foot lever to move slowly toward you. With the control lever in the position referred to, viz., the neutral, between reverse and low speeds, the operator may now back the car by pushing this lever forward, or to go ahead slowly by pulling it towards him. This should be done gently and not with a jerk. When the car has gotten under way on the low speed, pull the lever into the intermediate speed. After the car has gotten under way at this speed, pull the control lever into the high speed position. The speed can then be controlled by the throttle and spark.

The transmission may also be handled like a sliding gear, viz.: by disengaging the main clutch by means of the foot lever, then setting the controlling lever at the speed desired, then again letting in and engaging the main clutch.

In the use of the brake lever and the controlling lever it is important to pull them straight back or push them straight forward; do not pull or push them sidewise.

TO START ON SPARK.

The motor may also often be started on the spark, that is without the necessity of cranking, frequently for a considerable length of time after it has been stopped. When it is desired to do this, place the spark lever on center and place the governor controlling (throttle) lever parallel with it as in crank starting, then close switch on dash coil. If the vibrator does not work, retard spark by moving spark lever slowly from you. Then as soon as the motor starts, advance the spark by drawing spark lever toward you to centre position.

If the vibrator works but motor does not start, it will be necessary to crank in the usual manner.

TO STOP THE CAR.

To stop the car: First disconnect the main clutch and apply the brakes by means of right foot lever, then set the emergency brakes by means of the hand lever at the side of the car, move the controller lever to the neutral position, place the spark lever in dead centre position and the throttle lever parallel with it, then turn off the switch. The car is now in condition to be started on the spark as explained in the preceding paragraph.

TO COAST.

To coast on the level, simply disengage the main clutch by pressing forward on the left foot pedal.

The best method when coasting down hill is without the use of the brakes at all and is done as follows:

Close the throttle and retard the spark so that the engine will run very slowly, then engage the high speed clutch. If this does not hold the car sufficiently, then engage the intermediate speed.

If the hill is too steep for this to hold, then engage the slow speed gears.

The principle of this method will be understood when you realize that the same combination of gearing which changes the ratio between the engine shaft and the rear axle, which makes it easier for the engine to drive the car, will, when the car is compelled to drive the engine, have exactly the opposite effect, which is the case when the above method is used in descending a hill.

BRAKES.

There are two sets of brakes. One set expands within the drums on rear wheels and are applied by a hand lever at the side of the car. The other set contracts on the rear wheel drums and are applied by the right foot lever. The application of either set of brakes automatically releases the main clutch, disconnecting the motor from the transmission. Both sets of brake bands should be kept properly adjusted so that they will grip sufficiently when applied yet be perfectly free when not applied. It is also advisable, particularly on a new car, to give the brake bands a little oil occasionally. The left foot lever is for the purpose of releasing the main clutch only.

COMMUTATOR AND SPARK COILS.

In case of trouble with spark coils, which you are unable to correct, or when repairing is required, do not send them to us, but correspond with the coil manufacturer, whose name and address will be found on the coil.

When batteries require re-charging, do not send them to us, but send them to some station near you which is equipped for that work.

Each spark coil is adjusted by means of the knurled adjusting screw. The contact points on these screws, as well as the one on the spring, are made of platinum. Should these become pitted and uneven it will be necessary to smooth them off to an even surface by means of a fine flat file. After redressing the points, see that the platinum point on copper ribbon is directly under and in line with the adjusting screw.

The vibrator should be adjusted so that it will give an even vibration and secure the proper working of the motor. This can be determined by turning the screw to the right or left and secure the more rapid movement of the motor.

If it should be necessary to disconnect the primary wiring which connects the spark coils with the commutator, it will save time, especially for a person not familiar with re-wiring, to tag or mark in some way, each end of the four wires so that they may readily be re-connected.

When putting in new wires, or when the above suggested method of identifying each wire has not been observed, it will be advisable to disconnect the primary wires from the coils and commutator and proceed as follows:

Place the spark lever at the steering wheel about midway on the sector and remove the spark plugs, allowing them to rest on the tops of the cylinders, but leaving them connected with the secondary wires which connect them with the coil, and then turn on the switch.

Remove the forward cover from the side of the crank case so as to be able to see the position of the crank. Next crank the motor, bringing the piston in the forward cylinder (hereinafter designated "No. 1") to the completion of the compression stroke. This position is on dead center—about one-third of a revolution of the fly-wheel after the inlet valve has closed.

Now having the wires disconnected from both commutator and coils, first connect the primary wires with each coil. Next observe the position of the rotating arm in the commutator, noting the contact plate with which the roll on said rotating arm comes in contact and attach the primary wire from the first coil (the coil at the left as you sit in the car) to the terminal which connects with the contact plate with which the commutator roll is contacting. To determine which one of the four primary wires is attached to the first coil, it will be necessary to test them in the following manner: Hold the metal terminal at the end of one wire in contact with any part of the motor and the wire which causes the vibrator of the first coil to act and which causes a spark at the plug at the first cylinder, is of course, the wire which is connected with the first coil. The second, third and fourth wires are identified in the same manner. As the rotating arm in the commutator turns to the right, the primary wire from the second coil should now be attached to the terminal to the right of the one just connected. The wire from the fourth coil should be attached to the third terminal, and the wire from the third coil should be attached to the fourth terminal.

The order in which the cylinders are fired is 1, 2, 4, 3, etc. (the forward cylinder being No. 1) but the order in which the commutator roll contacts with the contact plates is 1, 2, 3, 4; therefore contact plate No. 1 connects with coil No. 1, contact plate No. 2 connects with coil No. 2, contact plate No. 3 connects with coil No. 4, and contact plate No. 4 connects with coil No. 3.

The secondary wire on coil No. 1, which is at the left, should connect with spark plug in cylinder No. 1, No. 2 coil with

cylinder No. 2, No. 3 coil with cylinder No. 3 and No. 4 coil with cylinder No. 4. Spark plugs should be kept clean. Washing in gasoline is a good practice as the film of oil which adheres to the plug will be removed; this will prevent the carbon adhering to it which would short-circuit the plug.

An excessive amount of oil in the engine will cause short-circuiting of the plugs.

TIMING THE VALVES.

The fly-wheel is marked as follows:

I O meaning Inlet Opens
I C meaning Inlet Closed
E O meaning Exhaust Opens
E C meaning Exhaust Closed

Each of the above appears twice on edge of the fly-wheel. Nearly underneath each "E O" is an "O." When an "O" is exactly at the top of the fly-wheel, it indicates that the crank shaft and piston are on "centre", that is, that two of pistons are at their highest points and the other two at their lowest points.

The positions of the above mentioned letters on the fly-wheel, are clearly indicative of the correct timing of the valves. There being four cylinders, the inlet and exhaust valves must be timed on each separately. As valves are all timed before the car leaves the factory, these instructions will be found adequate for such slight adjustments as may possibly from time to time be advisable.

For example: Take the forward cylinder. Turn the fly-wheel until the inlet valve *begins* to open. If it is correctly timed, the letters "I O" stamped on the fly-wheel will be exactly at the top. If not, the valve should be timed so that it *will begin* to open when the letters are at the point mentioned. Now, turn the fly-wheel in the direction that motor regularly runs, a little more than half a revolution, when the letters "I C" will appear at or close to the top. The inlet valve should be so timed that it will have *entirely closed* when the letters "I C" are at the top. Now take the Exhaust Valve. This should be so timed that it will *begin* to open just as an "E O" has reached the top of the fly-wheel and should be entirely closed just as "E C" on the opposite side has reached the top.

The adjustments of the inlet and exhaust valves are made by lengthening or shortening the valve lifting rods by means of the adjusting collars on the lower ends of same.

When the cam shaft gear and crank shaft gear have been disengaged for any purpose, it will be necessary, when reassembling them, to see that the tooth which is stamped "O" on one gear, enters the space (between the teeth) which is stamped "O" on the other gear.

ADJUSTMENT OF STEERING GEAR.

When it becomes necessary to adjust the steering gear to take up any slight wear that may occur, take out the plug with a wrench from front of steering gear case and tighten the screw. This forces the jaws apart at that end, but it clamps the opposite ends more closely together and takes up the "play."

To take up any end play in the steering staff, first loosen the clamp bolt which holds upper part of steering gear casing, then turn the large plug which is just at the top of the steering gear housing at the point where the steering staff enters the latter. The plug is provided with a hexagon head, so that it may be adjusted with an ordinary wrench.

ADJUSTMENT OF CARBURETOR.

Carburetors are adjusted on cars before leaving our factory and ordinarily should not require re-adjusting very soon, unless, perhaps to meet different atmospheric condiitons, such as change of altitude or temperature. When adjustments are necessary, proceed as follows:

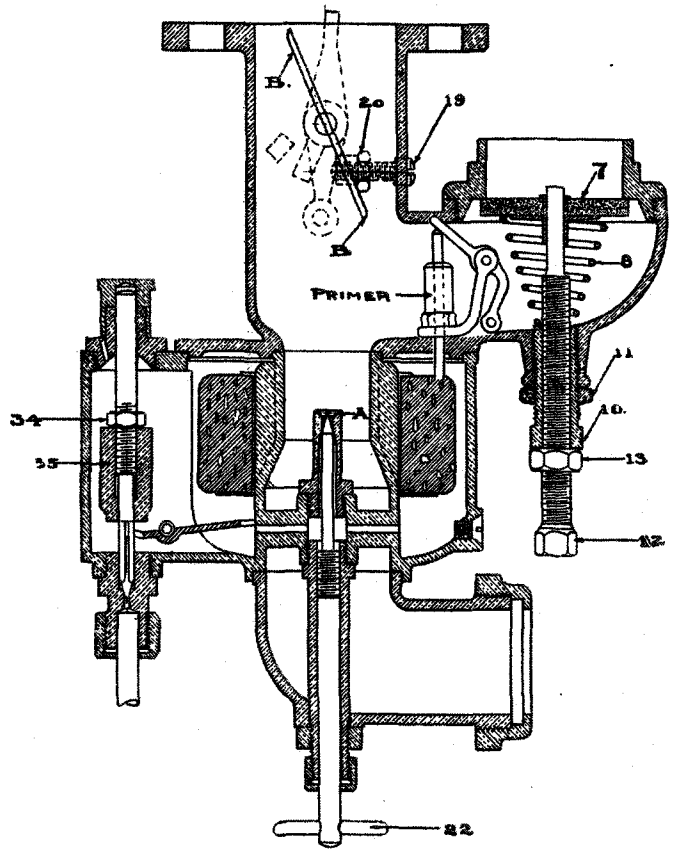
Start the motor as usual, then place the governor controlling (throttle) lever (the long one at the steering wheel) in its extreme forward position and the spark lever on the centre (indicated on sector by "C"). When the levers are placed as just stated the motor should run slowly, but the speed may be increased or decreased by the adjustment of the stop screw (19) which regulates the opening of the butterfly valve (B) through which the gasoline vapor passes from the carburetor to the combustion chambers. To increase the valve opening, turn the screw (19) to the right; to decrease the opening, turn screw (19) to the left. The object of the stop screw (19) is to regulate the opening of the butterfly valve (B) which admits the gasoline vapor into the combustion chambers, so that it will not close entirely; the limit of its closing being determined by the adjustment of stop screw (19) as above explained. After setting the stop screw (19), lock it with the nut (20). Now regulate the gasoline supply to the carburetor by means of the needle valve handle (22) until the correct mixture is obtained, that is until the motor runs uniformally and best with the throttle lever, spark lever and set screw (19) placed as above indicated.

When the correct adjustments for low speed work have been determined, then adjust for high speed. To do this, **leave the spark lever on centre, "C,"** as before and the governor controlling (throttle) lever in its extreme forward position. Then hold the butterfly valve wide open either by holding down the accelerator pedal or by the rod which extends from said pedal to the butterfly valve. Now loosen the hex nut (13) and adjust the high speed stop screw (12) until the action of the auxiliary air valve (7) produces the most uniform and highest speed. Then set hex nut (13) up against (10) which secures the adjustment.

In making above adjustments be sure to have spark lever on centre "C." This is important, because with the spark lever in centre position, the speed of the motor when the car is standing, will be approximately what it would be when the car is running at a high speed with the spark advanced.

With adjustments made for low and high speeds, next consider intermediate speeds. Between low and high speeds, the action of the auxiliary air valve spring (8) (when properly adjusted) governs the quantity of air supplied. For example, set the governor controlling (throttle) lever at the further backward point on the sector, and with the motor running at this intermediate speed, observe as follows: If the tension of air valve spring (8) is too weak, it admits too much air, giving a weak mixture causing the motor to "miss fire." To correct this, loosen hex nut (13) and jamb nut (11), being careful to hold (12) from turning, and turn the spring adjusting screw (10) to the right or upward until resistance is sufficient to prevent too much air entering and until the best results are obtained. Then be sure to set jamb nut (11) up tight and hex nut (13) up against (10) thus locking adjustment.

If the tension of air valve spring (8) is too strong, the motor will not take enough air, this will cause too rich a mixture of gasoline vapor, making the motor drag or become sluggish and the exhaust will emit **black** smoke. This condition may be readily determined by pressing down on the



Carburetor

leather air valve (7). If by doing this, the motor speed increases, it indicates that tension of spring (8) is too strong. To correct this, loosen the hex nut (13) and jamb nut (11), being careful to hold (12) from turning and turn spring adjusting screw (10) to the left or downward, backing it out until tension is relieved sufficiently to admti the correct amount of air to give uniform and highest speed with the throttle and spark levers in position mentioned. Then be sure to set jamb nut (11) up tight and the hex nut (13) up against (10), which locks the adjustment.

It is important to bear in mind that when turning spring adjusting screw (10) that high speed stop adjusting screw (12) be held from turning, otherwise the adjustment for high speed, originally made, will be lost.

If, for any reason, it has been necessary to remove the carburetor from the motor or take it apart; in replacing it, carefully examine all connections, then turn on the gasoline from the main storage tank, close the needle valve entirely by means of the valve handle (22) then open it about 1½ to 1¾ turns, and proceed to adjust according to above instructions.

An adjustment (34) has been provided for the needle valve, which admits the gasoline into the float chamber. The weight (35) on this valve should be so adjusted that the gasoline level will be maintained in the float chamber at a point so that the gasoline will not run out of the spraying nozzle. The best action will be obtained when the chamfered portion in the top spraying nozzle is about half filled with gasoline as shown by dotted lines at (A). This adjustment will not have to be altered excepting when the needle point or needle seat becomes badly worn.

THE GOVERNOR.

The purpose of the governor is to automatically regulate and maintain practically a steady speed of the motor and of the car without its being necessary for the driver to be constantly altering the position of a throttle lever to meet varying road conditions.

To illustrate: Suppose a car is running at say twenty miles per hour. Upon encountering a grade, the tendency of the motor would be to slow down somewhat owing to the increased power necessary to ascend the grade. But as soon as the speed of the motor commences to decrease, the governor ring will not revolve so rapidly, consequently there is less centrifugal force to hold it up, and it begins to assume an oblique or slanting position. But in so doing, it automatically opens the throttle further, thereby giving the motor a heavier charge and more power with which to accomplish the extra labor required. This same principle applies when striking a bad piece of road, sand or mud.

Again—Suppose the car starts descending a grade; the burden on the motor being removed, the tendency would naturally be for the speed to increase, but as soon as this commences, it causes the ring to move toward the horizontal position and consequently partly closes the throttle, decreasing the charge, which of course, decreases the speed of the motor. The same illustration will apply in cases where the main clutch is suddenly disconnected. Ordinarily this would allow a motor to "race", but the governor automatically throttles it down at once.

The governor controlling (throttle) lever (the long one at the steering wheel) does not act directly on the throttle of the carburetor, but acts on the governor by increasing or decreasing the tension of the spiral spring which offers the resistance to the tendency of the revolving governor ring to assure a horizontal position, and this in turn acts on the throttle of the carburetor.

Pulling the governor controlling lever toward you, increases the tension on the spiral spring in the governor, causing the latter to open the throttle. Pushing the lever from you, decreases the tension on the spring and this causes the governor to close the throttle.

The governor controlling lever may be set at any desired point on its sector and the speed of the car thereby produced will be practically maintained.

In case of emergency when it is desired to obtain an instant increase in speed, it can be accomplished by pressing with the foot on the accelerator pedal in the floor of the car. This opens the throttle instantly, without touching the governor controlling lever, but immediately upon releasing the accelerator pedal, the car settles back to the speed at which the lever is set.

Governors are set at the factory, so that by drawing the governor controlling lever as far back (toward the driver) as possible that the car will, presuming that everything else is working properly, attain a rate of speed of about 20 to 25 miles per hour. If greater speed is desired, it is accomplished by use of the accelerator pedal.

AXLES

The rear axle housing should always contain enough oil so that the large bevel gear will dip into it. To place the oil therein, remove the plug from the spherical part of the housing. The first filling will require about one quart of oil. It is also advisable not to use too much. To prevent this another plug is provided on the underside of the sphere. When placing the oil in the housing, remove the plug from the underside of the sphere so that any excess will run out. The quantity of oil should be maintained on a level with the under plug.

TO REMOVE REAR WHEEL.

Remove hub cap with spanner wrench, take out cotter pin and unscrew end nut. Remove rear wheel with wheel puller. If necessary to remove the Hess-Bright bearings from the wheel, take out screws which hold the dust shield and unscrew the latter which is screwed in with a right hand thread.

TO REMOVE REAR AXLE FROM CAR.

First, jack up the car, uncouple brake connecting rods and detach strut rod at its forward end. Detach rear universal joint and remove yoke, collar and dust cap from the drive shaft. Remove clips which hold springs to perches on axle. The latter may then be taken from under the car.

TO ADJUST GEAR MOUNT BEARINGS.

It will be noted that the housing is spherical in the centre and extends on either side nearly to the end of the axle.

First—Back off the collars at each end of the housing with a spanner wrench, then take out the sixteen bolts which hold the two halves of the housing together and remove the top half. This affords access to the driving and differential gears. To adjust the bearings, first loosen each nut-lock and turn up the nuts which bear on the cones. These bearings should be neither too tight nor too loose but so adjusted that they will run freely and so that the large bevel gear will properly mesh with the driving pinion on the end of the drive shaft. After adjusting the bearings, be sure to again tighten the nut-locks.

If necessary to remove the inner or live axle, or half of it, take off the top half of the housing as above indicated. Loosen the nut-locks which hold the cones of the gear mount bearings. Then take out the eight bolts which hold the gear mounts together and drive out the pins which hold the gear mounts to the live axle and remove the keys. The live axle may then be taken out.

TO REMOVE FRONT WHEEL.

Remove hub cap with spanner wrench, take out cotter pin and remove nut from end of spindle. Wheel will then come off easily.

If necessary to remove the inside Hess-Bright bearings, take out the screws which hold the dust cap and unscrew the latter, which is screwed in with a right hand thread.

ADJUSTMENT OF TRANSMISSION BRAKE BANDS.

The transmission brake bands should be so adjusted that they will grip properly when brought into action but at the same time should be just loose enough so that they will be free when released. Access to the adjusting parts may be obtained by opening the door in the sheet metal dust shield, just beneath the frame of the car.

COMMON SOURCES OF TROUBLE.

Inadequate lubrication.

Imperfect vibrator action. The vibrator can be seen by taking top off the coil box.

Dirty spark plugs.

Exhausted batteries.

Loose or broken wires.

Tight bands or any imperfect adjustment.

Dirty gasoline.

Water in the gasoline.

Frozen circulating water.

Lack of circulation of water.

Charred or sticky valve stems.

Common sources of troubles do not include accidents, and such things as may be occasional or accidental troubles.

Of these, the first, inadequate lubrication, is by far the most detrimental, as it may ruin all of the most important wearing surfaces of the motor, as well as cause serious damage to other parts of the car.

"A FEW DON'TS."

Don't try to start without the switch turned on.

Don't try to start without seeing that the spark lever is in dead centre position.

Don't try to run without oil, water and gasoline.

Don't crank a motor, that is, don't turn it over the compression more than three or four times after priming. If it does not start at once there is something wrong.

Don't drive fast nor attempt to stop quickly on a wet, slippery road or pavement.

Don't drive fast around corners; it is dangerous and destructive especially to tires.

Don't allow an automobile to stand in cold weather with pure water in the circulating system. It will freeze and burst something. In cold weather use some good anti-freezing solution.

Don't run a motor fast when the automobile is standing still; there is no worse abuse.

Don't advance spark lever too fast or too far (crank shafts can be broken by injudicious use of spark advance).

REPAIRS.

In the event of claims or the necessity for repairing on such parts as **TIRES, SPARK COILS, BATTERIES OR RADIATORS,** do not send these to us. It only incurs extra expense because we would be obliged to re-ship them to the factories. In all such cases correspondence should be opened direct with the makers of the parts and if necessary the same should be sent direct to said makers or their branches, transportation prepaid.

The names and addresses of makers will be found on these respective parts, excepting radiators. The latter are made by the Whitlock Coil Pipe Co., of Hartford, Conn.

CADILLAC

TRADE MARK
REGISTERED

1906—1907—1908

PRICE LIST OF PARTS

MODELS

K-M-S-T

Including Engine Parts for Models
A, B, C, E, F, K, M, S and T

This Price List is in effect on and after June 1, 1914, and supersedes all previous quotations.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Cadillac Motor Car Co.

Detroit, Michigan, U. S. A.

Third Edition

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IMPORTANT.

We will not be responsible for Errors in filling Orders if these Instructions are not followed.

To facilitate the prompt and correct handling of orders for parts, it is essential that these instructions be carefully followed.

In order that parts may be the more readily located, this list is arranged by general groups, as, for instance, the engine group, the rear axle group, the frame group, etc., and under the headings of these groups will be found listed all the parts that compose them.

Parts designated as right or left are those that are on the right or left hand side as you sit in the machine.

Parts must be ordered by the number and by the name as given herein, and the model of the car and the motor number must also be stated. The motor number will be found stamped on the crank case.

If in doubt as to the correct name of the parts wanted, send a sketch of them and give their dimensions, or, better still, send us the broken parts, *charges prepaid,* with your order for the new parts. If this is done, be sure to write your name and address plainly on the package, and to tag each part so returned with your name and address and the motor number of the car from which the part is taken. Be sure to write us at the time you send the package, stating what you are sending and whether sent by freight, express or mail. *This must be done regardless of any previous correspondence had with the Company.*

Do not order cars and parts in the same letter. Make a separate order for each, because the orders go to separate departments. Do not write anything on the order-sheet unless it refers directly to that particular order. Write about other subjects on a separate sheet so that it will go directly to the proper department.

TERMS NET CASH WITH ORDERS F. O. B. DETROIT.

The prices in this list are strictly net, and no discount is allowed to others than our authorized dealers. Cash must accompany all orders for parts, and unless it is sent with the order, we shall be obliged to hold the shipment for remittance. We do not send parts C. O. D., and orders for parts to be sent by mail must be accompanied by a sufficient amount to cover postage.

Parts claimed defective and for which free replacement is asked, must be sent to us for inspection within sixty days from the date of purchase, and a letter of advice must be sent at the same time, giving engine number, date of purchase, etc. Transportation charges must be prepaid or the shipment will not be accepted from the carrier.

TIRES, SPARK COILS AND BATTERIES. In case of defective construction, claims for repair or replacement must be made, and the defective parts sent to the maker of the parts.

We do not list such minor parts as wood screws, washers, and cotter pins, for the reason that these can readily be obtained in any hardware store.

We list no part at less than five cents, for the reason that even though it may not be worth more than one or two cents, the cost to handle and fill such orders is several times the price of the part.

CADILLAC MOTOR CAR CO., Detroit, Mich.

ENGINE.

Models A, B, C, E, F, K, M, S and T.

The following engine parts apply to Models A, B, C, E, F, K, M, S and T. In ordering you must give us the engine number which is stamped on engine frame.

595	Engine complete, assembled	$250.00
550	Engine frame with caps and bearings assembled	40.00
529	Engine frame with caps, cap screws and studs	32.00
500	Stud for attaching engine frame to front engine support	.10
501	Nut for stud for attaching engine frame to front engine support	.05
502	Jam nut for stud for attaching engine frame to front engine support	.05
503	Stud for attaching engine frame to rear engine support	.10
504	Nut for stud for attaching engine frame to rear engine support	.05
505	½" Columbia lock nut for stud for attaching engine frame to rear engine support	.05
L 79	Cylinder stud for engine frame 7/16x14 (eight) ... each	.20
L407	Nut for engine frame cylinder stud 7/16x14 (eight) ... each	.05
L 33A	Main bearing cap, right, for engine frame	2.00
L 34A	Main bearing cap, left, for engine frame, flywheel side	2.00
L 83	Cap screw for engine frame main bearing cap ⅜-16 (four) ... each	.10
506	Bronze elbow and oil tube for crank pin	.40
551	Main bearing bushing, right, with two liners, for engine frame	3.40
552	Main bearing bushing, left, with two liners, for engine frame	3.40
	(These bearing bushings are supplied in pairs only with liners as above. Be sure to state whether for right or left side.)	
L 36	Liner for engine frame main bearing bushing	.20
L204	Air valve for engine frame	.20
L 80	Top stud for engine frame ⅜-16 (two) ... each	.15
L406	Nut, small, for engine frame top stud ⅜-16 (two) ... each	.05
L 76	Top stud for engine frame ½-12 (four) ... each	.15
L408	Nut, large, for engine frame top stud, ½-12 (four) ... each	.05
L412	Columbia lock nut for engine frame top stud	.05
L419	Washer, for engine frame top stud	.05
549	Engine frame with caps, cap screws, and top cover plate with hand hole cover	36.00
554	Engine frame with caps, bearings and top cover plate assembled	44.00
555	Top cover plate for engine frame with main bearing adjusting screws and check nuts and hand hole cover assembled	4.00
556	Top cover plate for engine frame with main bearing adjusting screws and check nuts	3.60
L241	Gasket for engine frame top cover plate (two sections)	.05
L 89	Adjusting screw on top cover plate for adjusting main bearing (two) ... each	.20
L411	Check nut for main bearing adjusting screw, ⅝"	.05
L 30	Hand hole cover plate for engine frame top cover plate	.40
L244	Gasket for engine frame top cover hand hole cover plate	.05
L 84	Cap screw for engine frame top cover hand hole cover plate (two) ... each	.05

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

557	Engine frame with bearings, caps and bottom cover plate assembled	60.00
558	Engine frame with bearings, caps, top and bottom cover plate assembled	64.00
559	Bottom cover plate for engine frame, complete, assembled	20.00
	(Comprising the twenty following items and commutator complete).	
L 32	Bottom cover plate for engine frame including the three following items	6.00
L184	Oil hole bushing for engine frame bottom cover plate	.10
L 46	Cam shaft bushing, commutator end, for engine frame bottom cover plate	.50
L 45	Cam shaft bushing, eccentric end, for engine frame bottom cover plate	.45
L 82	Cap screw for engine frame bottom cover plate (six) ... each	.10
L242	Gasket for engine frame bottom cover plate	.10
L147 / L 44A	Exhaust cam shaft with commutator cam	.85
L426	¼" drip cock for engine frame bottom cover plate, K and M	.30
4279	¼" drip cock for engine frame bottom cover plate, S and T	.40
L146	Semi-circular key for engine exhaust cam shaft commutator	.15
L 39	Exhaust cam for engine	.85
L 37	Valve gear for engine exhaust cam shaft	1.75
560	Eccentric with cap and strap assembled for engine cam shaft	5.00
	(These parts are not furnished separately.)	
L201	Cap screw ⅜-16, for engine cam shaft eccentric cap and strap	.10
L406	Nut ⅜" for engine cam shaft eccentric cap and strap cap screw	.05
561	Cam slide with roll and pin, assembled for engine exhaust	1.50
L 41	Slide for engine exhaust cam shaft roll	.85
L 43	Screw for engine exhaust cam slide, K and M	.20
4213	Screw for exhaust cam slide, S and T	.20
L208	Washer for engine exhaust cam slide screw	.05
L412	⅜" Columbia lock nut, for engine exhaust cam slide	.05
514	45° bronze elbow for engine cam shaft eccentric cap and strap	.20
512	Grease cup extension tube, for engine cam shaft eccentric	.20
562	Eccentric with cap and strap and push rod assembled for engine cam shaft	6.00
L195	Inlet valve push rod for eccentric	1.00
L197	Shim for eccentric push rod	.10
L196	Clip for eccentric push rod	.10
L202	Cap screw for eccentric push rod	.10
513	Bracket and cap screw for eccentric push rod grease cup	.20

CYLINDER.

L 1	Cylinder (for Model A only)	8.00
L 1A	Cylinder	8.00
	Note—Cylinders were made of two kinds; one had cylinder drain cock nearest valve chamber, while the water jacket was drained by a cock farthest away and nearer the clamping ring. The other was made vice versa. The former was used on some of the Model "A" cars, while the latter was used in our later types.	
564	Cylinder and water jacket assembled, comprising cylinder water jacket with drip flange water jacket clamping ring valve chamber nipple and drip cock	15.00
565	Cylinder, water jacket and valve chamber with exhaust valve assembled	24.00

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

566	Cylinder, piston, connecting rod, water jacket, valve chamber and exhaust valve and mixer assembled	62.00
4278	¼" drip cock for cylinder	.60
508	Trigger wire for cylinder drip cock	.10
L 86	Nipple for cylinder drip cock	.10
L 87	Nipple nut for cylinder drip cock	.10
L 26	Clamping ring for cylinder and water jacket	2.00

WATER JACKET.

Note—Water jackets always come with the flange for drain cock brazed on. There are two designs; one for each of the two style cylinders.

L 24A	Water jacket with drip flange, for cylinder	3.50
4279	¼" drip cock for cylinder water jacket, S and T	.40

VALVE CHAMBER.

L 98	Dowel pin for valve chamber	.10
L 18	Nipple for valve chamber, K and M	.85
R-4-18	Nipple for valve chamber, S and T	1.00
	Valve chamber complete with exhaust valve and bell crank assembled	8.75
L 17A	Valve chamber (or combustion chamber) only	5.00
568	Exhaust valve for cylinder, assembled	1.40
569	Exhaust valve with stem for cylinder	.75
L223	Foot for cylinder exhaust valve stem foot	.45
L225	Cotter pin for cylinder exhaust valve stem foot	.05
L105	Spring for cylinder exhaust valve	.10
L 23	Bell crank for cylinder exhaust valve	.85
L 88	Pin for cylinder exhaust valve bell crank	.45
L125	Set screw for cylinder exhaust valve bell crank pin	.10
L405	Cotter pin for cylinder exhaust valve bell crank	.05
L106	Rod for cylinder exhaust valve	.45
B600	Brass elbow for cylinder exhaust valve bell crank (for grease cup)	.20

SPARK PLUG.

570	Double spark plug complete	2.20
L 19	Holder for double spark plug	.40
L 22	Clamp with set screw for double spark plug	.70
L 85	Set screw for double spark plug clamp	.10
L 20	Gland for double spark plug	.35
L433	Core, for double spark plug	.50
509	Holder for commercial spark plugs (for use with plugs other than ours)	.30

MIXER OR CARBURETOR.

581	Mixer complete	20.00
L166	Mixer body	6.00
4262	Air relief cock for mixer body, S and T	.50
L 78	Cap screw for mixer body (four) each	.05
582	Inlet valve complete for mixer	1.50
583	Inlet valve with stem for mixer	.80
L104	Spring for mixer inlet valve	.10
L 16	Foot for mixer inlet valve stem	.45
L 88	Pin for mixer inlet valve lever	.45

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

L102	Pin for mixer inlet valve stem	.10
L195	Eccentric push rod for mixer inlet valve	1.00
L197	Shim for mixer inlet valve eccentric strap	.10
L196	Clip for mixer inlet valve eccentric strap shim	.10
L202	Cap screw for mixer inlet valve eccentric push rod	.10
515	Bracket and cap screw for mixer inlet valve eccentric grease cup	.20
584	Diaphragm valve complete for mixer	.50
L193	Mixer gauze	.20
L198	Priming rod for mixer	.10
L219	Coil spring for mixer priming rod	.05
L220	Pin for mixer priming rod coil spring	.05
585	Lifter with end and set screw for mixer priming rod	.25
586	End and set screw for mixer priming rod lifter	.15
516	Trigger for mixer priming rod lifter	.10
517	Clamp for mixer priming rod lifter trigger	.10
L168	Clamping nut, large, for mixer air intake tube	.30
530	Air intake tube with cap and clamping nut, for mixer, complete	1.50
L167	Mixer cover with diaphragm valve stem bushing	.80
L 77	Screw for mixer cover	.05
L184	Bushing for mixer cover	.10
L214	Shield for mixer cover	.20
L187	Adjusting spring, flat, for mixer	.10
589	Adjusting screw with pin, for mixer adjusting spring	.15
L186	Binder for mixer adjusting spring adjusting screw	.25
L191	Screw for mixer adjusting spring adjusting screw binder	.10
L 77	Screw for attaching mixer adjusting spring	.05
L173	Roller, small, for mixer inlet valve lever	.20
L178	Pin and cotter pin, for mixer inlet lever roller	.20
L235	Lever for mixer inlet valve	1.25
L237	Roller, large, for mixer inlet valve lever	.45
L412	Columbia lock nut, large, for mixer inlet valve lever roller	.05
L175	Throttle cam for mixer	.85
L176	Arm for mixer throttle cam	.80
L179	Screw for mixer throttle cam arm	.10
L174	Roll for mixer throttle cam arm	.30
L192	Washer for mixer throttle cam arm	.10
L412	Columbia lock nut for mixer throttle cam arm	.05
L189	Coil spring for mixer throttle cam arm	.10
L188	Guide pin for mixer throttle cam arm	.10
L434	Adjusting screw for mixer throttle cam arm	.10
L435	Check nut for mixer throttle cam arm adjusting screw	.05
590	"T" and union for mixer feed pipe	.40
L200	Settling chamber or well for mixer T union	.20

COMMUTATOR.

591	Commutator complete	2.50
L144	Body for commutator, B, C, E and F	.75
L274	Body for commutator—K and M	.75
L146	Semi-circular key with cotter pin for commutator	.15
L150	Fibre support, lower, for commutator spring	.20
L151	Fibre clamping block, upper, for commutator wire	.15
L416	Screw for commutator wire clamping block 12-24-1" Filister head	.05

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

L145	Commutator flat spring	.05
	Clamping screw for commutator flat spring 12-24-¾" Filister head	.05
L418	Nut for commutator flat spring clamping screw	.05
L152	Adjusting block for commutator (fibre)	.15
L416	Screw for commutator adjusting block 12-24-1" Filister head	.05
L148	Guide pin for commutator spring	.05
520	Adjusting screw and nut for commutator flat spring	.10
521	Commutator rest (attached to engine frame)	.10
L147	Commutator cam or contact point	.25
L212	Brass shunt spring for commutator	.05
522	Coil spring, 14" long, for commutator and safety slide lever	.20

CRANK SHAFT AND FLY WHEEL.

We do not sell a crank shaft without fly wheel attached for the reason that it is impossible to press the fly wheel to the crank shaft, as we desire it done, without the use of special machinery, such as we have.

When a new crank shaft is required, it is necessary to send us the old crank shaft with fly wheel and other fixed parts attached, prepaid, properly identified, accompanied by a letter of advice, and we will send a new crank shaft with fly wheel and other fixed parts. If your fly wheel is in perfect condition, we will allow for it with the other parts returned, a credit of $10.00 list on the price of $32.00.

563	Crank shaft and fly wheel assembled	32.00
L 38	Crank shaft valve gear	1.25
L100	Pin for crank shaft valve gear	.10
L 95	Pin for crank shaft thrust washer	.05
L213	Oil ring for crank pin	.20
L101	Pin for crank pin oil ring	.05
L 91	Oil cup for crank pin	.10
	(Crank shaft counter balances are not sold separately.)	
L103	Key for crank shaft fly wheel	.10
L114A	Starting crank ratchet with set screws for crank shaft fly wheel	1.00
L228	Set screw for crank shaft fly wheel starting crank ratchet	.10
L 53	Driving gear for crank shaft	1.75
L 94	Pin for crank shaft driving gear	.10
L 96	Brass ring for crank shaft driving gear holder	.20
L 73	Key (No. 13 Woodruff) for crank shaft clutch sleeve (two) each	.10
507	Starting crank, K and M	2.00
4240	Starting crank, S and T	2.00

PISTON AND CONNECTING ROD.

592	Piston assembled	11.00
L2-3	Piston and three rings assembled	8.25
	(Pistons are not sold without rings.)	
L 3	Piston ring (three) each	.75
L101	Pin for piston ring (three) each	.05
571	Piston pin and plug assembled	2.00
L217	Piston pin plug	.50
L 7	Piston pin bushing	1.00
L 90	Oil tube for piston	.10
572	Piston and connecting rod complete with connecting rod assembled, comprising parts above and those below	18.00

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

573	Connecting rod assembled with piston end bushing, crank end bearings, oil tube, adjusting screw, Columbia lock nut, cap and dowel pins	8.00
574	Connecting rod complete as above, but without crank end bearings	6.00
L226	Pin for connecting rod cap	.10
L251	Adjusting screw for connecting rod cap	.40
L440	Columbia lock nut for connecting rod adjusting screw	.05
L 8	Bushing for connecting rod (crank end bearing) per pair	2.00
L240	Dowel pin for connecting rod bearing	.05

TRANSMISSION.

593	Transmission gear case complete, less high speed clutch parts	50.00
575	Transmission gear case with gasket, pins and gears	24.00
576	Transmission gear case with pins only	8.00
L 92	Pins for gear case, for long and short bushing gears. (six) (each)	.20
L 57	Bushing for transmission gear case	.75
L 51, L 51½	Gear with long bushing for transmission	2.50
L 51½	Long bushing for transmission gear	.50
L 52, L 52½	Gear with short bushing for transmission	2.50
L 52½	Short bushing for transmission gear	.50
L222	Gasket for transmission gear case	.20
577	Transmission gear case cover complete	16.00
L248, L 48½	Transmission gear case cover only with bushing	3.60
L 77	Screw for transmission gear case cover (twelve) each	.05
L230A	Oil hole plug for transmission gear case cover	.10
L 48½	Bushing for transmission gear case cover	.85
L 49	Internal gear for transmission	8.00
L 93, L 58	Driving sprocket, 9 tooth, with nine pins	2.00
	or	
L 58A, L 93	Driving sprocket, 10 tooth, with nine pins	2.00
L 93	Pins for driving sprockets (nine) each	.05
L 59	Thrust collar for main bearing	.70
L259	Thrust collar for main bearings (for use with 9 tooth sprocket only)	.70
L 60	Thrust washer for main bearing	.50
578	Friction drum assembled	10.00
L 50	Friction drum only	7.00
L 57	Gear case bushing	.75
L 54	Friction drum driven gear	1.75
L 56	Bushing for friction drum driven gear	.60
L 55	Bushing for transmission internal gear	.60
L 53	Driving gear for crank shaft	1.75
594	Friction disc complete	5.75
579	Friction disc with leathers and rivets	3.00
L 62	Leathers with rivets for friction disc per set	1.20
L221	Reenforcing plate for friction disc	.50
L 64	Friction disc sleeve	1.60
L 71	Screw for friction disc (eight) per set	.25
L232	Release spring for friction disc	.10
L 68	Washer for friction disc release spring	.10

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

HIGH SPEED CLUTCH PARTS

4061	High speed clutch ring (two used) .....each	1.00
L282	High speed clutch ball race	1.00
3673	Balls for high speed clutch ring (per set of 30)	.60
580	High speed clutch adjusting nut complete	1.25
	Comprising the three following parts:	
L 67A	Adjusting nut only for high speed clutch, Models B, C, E and F	1.00
	or	
L265	Adjusting nut for high speed clutch, K, M, S and T	1.00
L 72	Set screw with check nut for high speed clutch adjusting nut	.15
L128	Pins for high speed clutch adjusting nut (which drive pump paddle) .....each	.05
L 66	Washer for high speed clutch, for use with old rings	.30

GREASE CUPS

B254	Grease cup complete	.35
523	Grease cup cap	.15
512	Extension tube for grease cup (as used on eccentric push rod)	.20
513	Bracket and cap screw for grease cup extension	.20
514	45° bronze elbow for grease cup extension	.20

WHITNEY CHAIN AND PARTS

540	Chain complete, K and M	7.50
4284	Chain complete, S and T	8.00
541	Chain center block assembled	.12
542	Chain side link, plain	.03
543	Chain rivet	.02
544	Chain master link	.14
	Cotter pins for chain (per 100)	.50

NOTE:—We do not guarantee chains or chain parts, nor do we repair or exchange broken parts gratis. In case of breakage or repairs, the matter must be taken up with the manufacturers, viz.: Whitney Manufacturing Company, Hartford, Conn.

Prices on chains are subject to change without notice, being governed by the chain manufacturers, and not by us.

FRAME.

	Frame complete less springs and radius rods, but including all parts riveted to it (1906), K and M	80.00
	Frame complete less springs and radius rods, but including all parts riveted to it (1907), K and M	80.00
	Frame complete, same as above, Model "S"	80.00
	Frame complete, same as above, Model "T"	80.00
B1904	Side bar for frame, right, 1906, K and M	8.00
B1093	Side bar for frame, left, 1906, K and M	8.00
4046	Side bar for frame, right, 1907, K and M	8.00
4045	Side bar for frame, left, 1907, K and M	8.00
4712	Side bar for frame, right, Model "S"	8.00
4711	Side bar for frame, left, Model "S"	8.00
4316	Side bar for frame, right, Model "T"	8.00
4317	Side bar for frame, left, Model "T"	8.00
B 154	Escutcheon or crank hole plate for left frame side	.20
B 436	Cap screw for frame side escutcheon	.05
B1091	Bearing for starting crank, on left side frame	.40
B 6	Cross member of frame for steering bracket, K and M	3.60
4309	Cross member of frame for steering bracket, S and T	3.60

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

4306	Brackets for brake shaft right or left on steering bracket cross member, S and T	.45
B 5	Rear cross brace for frame, K and M	4.00
4318	Rear cross brace for frame, S and T	4.00
B1092	Support for radiator	.30
B 939	Cross member of frame for radiator support	1.25
B 940	Cross member of frame for water tank support, K and M	1.50
B 937	Support for water tank, right	.75
B 938	Support for water tank, left	.75
4296	Support for water tank, right, S and T	.75
4295	Support for water tank, left, S and T	.75
B 65	Bracket for buffer block, on frame side	.50
B 490	Buffer block for frame side	.10
B 449	Rear outrigger or spring hanger for frame, right, with stud, nut, washer, cotter pins and rivets, K and M	2.00
B 450	Rear outrigger or spring hanger for frame, left, with stud, nut, washer, cotter pins and rivets, K and M	2.00
4293	Rear outrigger or spring hanger for frame, right, S and T	2.00
4292	Rear outrigger or spring hanger for frame, left, S and T	2.00
B 453	Forward hanger and pivot bracket with pivot, stud, nut, washer, cotter pins and rivets for right rear spring, 1906 K and M	2.00
B 454	Forward hanger and pivot bracket with pivot, stud, nut, washer, cotter pins and rivets for left rear spring, 1906, K and M	2.00
4070	Forward hanger and pivot bracket with pivot, stud, nut, washer, cotter pins and rivets for right rear spring, 1907, K M, S and T	2.00
4071	Forward hanger and pivot bracket with pivot, stud, nut, washer, cotter pins and rivets for left rear spring, 1907, K, M, S and T	2.00
B 143	Stud with nut, washer, cotter pins and rivets for frame rear spring hanger	.15
	Nut for frame rear spring hanger stud	.05
B 57	Pivot for frame rear pivot bracket	.50
B 36	Hanger, right, for front spring	.50
B 37	Hanger, left, for front spring	.50
B1211	Pin for front spring hanger	.05
B 422	Reenforcement plate, right, for frame	.50
B 421	Reenforcement plate, left, for frame	.50
B 4	Engine support, rear	12.00
B1162	Engine support, front, only	4.00
	Engine support, front, complete with right and left pivot brackets and pivots, controller shaft brackets and controller shaft with high speed lever arm, reverse lever arm and reverse lever arm driver	9.00
B 447	Pivot bracket and pivot, right, front	1.20
B 448	Pivot bracket and pivot, left, front	1.20
	In ordering above pivot brackets, state whether the distance from the top surface of the bracket to the center of the pivot is 3⅞ or 2⅛ in. (The top of the bracket is the surface which is in contact with the engine support.)	
B 56	Pivot for frame front pivot bracket	.50
B1146	Brackets, right, for controller shaft	.40
B1147	Bracket, left, for controller shaft	.40
B 106	Step, front, right or left K and M	1.25
B1103	Step, rear, upper or left, Model "S," "M" and "T"	1.00

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

4496	Hanger for running board, Model "S" ..... each	2.00
4308	Hanger for running board, Model "T" ..... each	2.00
4720	Bracket for tail lamp	.50

Steps.

B 106	Step, front, right or left, Model "K" and "M"	1.25
B1103	Step, rear, upper right or left, Model "M" and "T"	1.00
B1164	Washer for upper rear step	.05
B 157	Clamp cap for upper rear step	.10
	Cap screw for upper rear step clamp cap	.05
B1307	Step, rear, lower, right or left, Model "M"	1.25
B 635	Hanger for rear lower step	.80
	Cap screw for rear lower step hanger	.05

Fender Irons K and M.

1906

B1157	Fender iron, front for front fender, right or left, forked	1.25
B1143	Fender iron, rear for front fender, right	.60
B1142	Fender iron, rear for front fender, left	.60
B1102	Fender iron, front for rear fender, right, forked	1.25
B1101	Fender iron, front for rear fender, left, forked	1.25
B1207	Fender iron, rear for rear fender, right	.60
B1158	Fender iron, rear for rear fender left	.60

Fender Irons K and M.

4032	Fender iron, front for front fender, right, forked	1.25
4033	Fender iron, front for front fender, left, forked	1.25
4031	Fender iron, rear for front fender, right	.60
4030	Fender iron, rear for front fender, left	.60
4024	Fender iron, front for rear fender, right, forked	1.25
4025	Fender iron, front for rear fender, left, forked	1.25
4023	Fender iron, rear for rear fender, right, Model K	.60
4022	Fender iron, rear for rear fender, left, Model K	.60
4021	Fender iron, rear for rear fender, right, Model M	.60
4020	Fender iron, rear for rear fender, left, Model M	.60

Fender Irons Model "S"

4713	Fender iron, front, for front fender, right	1.25
4714	Fender iron, front, for front fender, left	1.25
4717	Fender iron, rear, for front fender, right	.60
4716	Fender iron, rear, for front fender, left	.60
4718	Fender iron, front, for rear fender, right	.60
4719	Fender iron, front, for rear fender, left	.60
4715	Fender iron, rear, for rear fender, right or left	.60

Fender Irons Model "T"

4315	Fender iron, front for front fender, right	1.25
4314	Fender iron, front, for front fender, left	1.25
4031	Fender iron, rear, for front fender, right	.60
4030	Fender iron, rear, for front fender, left	.60
4322	Fender iron, front, for rear fender, right	1.25

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

4323	Fender iron, front, for rear fender, left	1.25
4021	Fender iron, rear, for rear fender, right	.60
4020	Fender iron, rear, for rear fender, left	.60

Spring Shackles.

4325	Spring shackle for rear end of rear spring, right or left, with pins, S and T	.60
B1160	Spring shackle, for rear end of rear spring, long, right or left, with oiler and pins	.60
B1667	Spring shackle, for front end of rear spring, short, right, with oiler and pins	.60
B1668	Spring shackle, for front end of rear spring, short, left, with oiler and pins	.60
B1208	Pin for short spring shackles	.10
B1210	Pin for long spring shackles	.10
B1661	Spring shackle, front	.60
B1209	Pin for front spring shackle	.10
B 461	Oiler for spring shackles	.10
B1227	Bolt for front spring shackle	.15
B1228	Nut for front spring shackle bolt	.05
B1211	Pin for shackle at rear end of rear spring, S and T	.10

Radius Rods.

When ordering rear radius rods, you must state exact length of the tube. The standard length of the tube for 1906 was 15 inches—for 1907, 15¾ inches, and for 1908 is 18¾ inches.

	Radius rod, front, right, complete with end cups, bolts, nuts, and oiler, K and M	4.00
	Radius rod, front, left, complete with end cups, bolts, nuts, and oiler, K and M	4.00
	Radius rod, front, right, complete with end cups, bolts, nuts, and oiler, S and T	4.00
	Radius rod, front, left, complete with end cups, bolts, nuts, and oiler, S and T	4.00
	Bolt and nut front radius rod	.05
	Oiler for front radius rod	.10
	Radius rod, rear, right or left, complete, 1906, K and M	4.00
	Tube for rear radius rod, 1906, K and M	1.00
	Radius rod, rear, right or left, complete, 1907, K and M	4.00
	Tube for rear radius rod, 1907, K and M	1.00
	Radius rod, rear, right or left, S and T	4.00
	Tube for rear radius rod, S and T	1.00
	Adjustable end complete, right hand thread, for rear radius rod	1.50
	Adjustable end complete, left hand thread, for rear radius rod	1.50
	Bolt and Columbia lock nut for rear radius rod adjustable end	.05
	Check nut, right hand thread for rear radius rod adjustable end	.05
	Check nut, left hand thread for rear radius rod adjustable end	.05

Springs.

When ordering springs, be sure to state Model for which they are wanted, also whether for right or left side, as they are not interchangeable.

Note:—Unless ordered, clips and nuts will not be sent with springs. If clips and nuts are wanted PLEASE SO ORDER.

B1073	Spring, front	3.50
	Bushing for front spring	.10

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

B 241	Plate for front spring	.15
4783	Plate for front spring "S" and "T"	.30
B 242	Clip with nuts for front spring	.25
4734	7/16" Lock washer for spring clips	.05
B1353	Nut for front spring clip	.05
3980	Shim for front spring	.15
B1071	Spring, rear, right, Model "K"	3.00
B1072	Spring, rear, left, Model "K"	3.00
B1069	Spring, rear, right, Model "M"	3.00
B1070	Spring, rear, left, Model "M"	3.00
4288	Spring, rear, right, Model "S"	3.00
4289	Spring, rear, left, Model "S"	3.00
4290	Spring, rear, right, Model "T"	3.00
4291	Spring, rear, left, Model "T"	3.00
B 241	Plate for rear spring	.15
B 640	Clip with nuts for rear spring	.25
4447	Clip, with nuts, for rear spring, S and T	.25
B1353	Nut for rear spring clip	.05
B 813	Shim for rear spring	.15
4734	7/16 lock washer for rear spring clips	.05

GASOLINE SYSTEM.

	Gasoline tank, 1906, K and M	8.00
4073	Gasoline tank, 1907, K and M, or S and T	8.00
B1556	Settling chamber for gasoline tank	1.00
B1665	Drain plug for gasoline tank settling chamber, K and M	.05
B 977	Valve stem with handle for gasoline tank settling chamber	.40
B1240	Handle for gasoline tank settling chamber valve stem	.15
B 975	Stuffing nut for gasoline tank settling chamber valve stem	.10
B 971	Flange for gasoline tank hand hole	.05
B 972	Cover plate for gasoline tank	.15
4009	Wire gasket for gasoline tank cover plate	.05
4232	Screws for gasoline tank cover plate, per set of six	.10
B1296	Brass plug for gasoline tank cover plate	.15
B1323	Chain and ring for gasoline tank cover plate plug	.05
B1294	Auxiliary valve body for gasoline tank, 1906, K and M	.50
B1295	Stem for gasoline tank auxiliary valve, 1906, K and M	.10
B1240	Handle for gasoline tank auxiliary valve stem	.15
4054	Auxiliary valve body for gasoline tank, 1907, K and M, or S and T	.50
4059	Stem for auxiliary valve body, 1907, K and M or S and T	.10
4060	Stuffing nut for gasoline tank auxiliary valve stem, 1907, K and M or S and T	.10
4057	Spring for gasoline tank auxiliary valve stem, 1907, K and M or S and T	.05
4058	Collar for gasoline tank auxiliary valve stem, 1907, K and M or S and T	.05
B 975	Stuffing nut for gasoline tank auxiliary valve stem, 1906, K and M	.10
B1665	Drain plug for gasoline tank auxiliary valve	.05
	Nut for attaching gasoline tank to support	.05
B 629	Feed pipe for gasoline tank 15½" long	.40
736	Union for gasoline tank feed pipe	.40
590	Tee with union for gasoline tank feed pipe (on mixer)	.40
L 200	Well or settling chamber for gasoline tank feed pipe	.20
B 841	Support, right, for gasoline tank	.50

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

B 842	Support, left, for gasoline tank	.50
B1309	Foot for gasoline tank	.10
B1310	Stud for gasoline tank foot	.10
	Columbia lock nut for gasoline tank foot stud	.05
	Bolt and Columbia lock nut for gasoline tank support	.10
B 472	Cross brace, long, for gasoline tank support, 1906, K and M	.10
4068	Cross brace, long, for gasoline tank support, 1907, K and M or S and T	.10
B 473	Cross brace, short, for gasoline tank support	.10
	Columbia lock nut for gasoline tank support cross brace	.05

LUBRICATOR.

McCord.

When ordering lubricator parts, you must state the number and letter of the lubricator for which part is wanted. The number will be found stamped on the cover. The letter is on a small plate on the front of the lubricator body.

	Lubricator complete, less pipes and connections	26.00
	Lubricator complete, less pipes and connections, cast iron body	20.00
	Body only for lubricator, cast iron	4.00
	Body only for lubricator, aluminum	10.00
	Cover only for lubricator	1.50
	Gauge glass for lubricator	.20
	Cup with strainer for lubricator filler	.60
	Plug for lubricator filler	.35
	Glass for lubricator sight feed	.10
B1629	Clamp for attaching lubricator body to engine frame	.60
B1732	Sheave with cap screws for lubricator (on fly wheel hub)	.55
	Sheave on lubricator	.60
B1749	Belt for driving lubricator, K and M	.45
4733	Belt for driving lubricator, S and T	.45

Oil Pipes and Connections.

B1540	Oil pipe to crank pin 12¾" long, with two special union nuts	.30
B1541	Oil pipe to cylinder 18" long with two special union nuts	.30
B1542	Oil pipe to main bearing, left 11¾" long, with two special union nuts	.30
B1543	Oil pipe to main bearing, right, 13½" long, with two special union nuts	.30
B1560	Special nipple for oil pipes (three) each	.10
	Oil tube and elbow for crank pin	.40

LUBRICATOR.

Lavigne.

Lavigne lubricator complete, less pipes	25.00
Body for Lavigne lubricator	10.00
Cover for Lavigne lubricator	2.50
Pulley for lubricator on lubricator	1.00
Drive shaft and worm for lubricator	1.50
Stuffing nut for lubricator main worm shaft	1.00
Packing nut for lubricator main worm shaft	.40
Secondary shaft and worm-gear for lubricator	2.50
Screw bushing for lubricator secondary shaft	.35

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

	Gauge glass for lubricator	.10
	Washer for lubricator gauge glass	.05
	Screw plug for top of lubricator gauge glass	.15
	Valve stem for bottom of lubricator gauge glass	.40
	Packing nut for lubricator gauge glass valve stem	.15
	Bleeder body for lubricator	1.25
	Valve for lubricator bleeder body	.15
	Cap for lubricator bleeder valve	.10
	Spring for lubricator bleeder valve	.05
	Center piece or valve body for lubricator bleeder	.20
	Lock nut for lubricator bleeder body	.15
	Packing nut for lubricator bleeder body	.15
	Oil pipe from bleeder body to pump body	.30
	Plunger for micrometer shell for lubricator	1.50
	Micrometer shell for lubricator plunger	1.00
	Packing nut for four feed pump body or lubricator	.15
	Cross head for lubricator pump pistons	4.00
	Connection arm for cross head and drive shaft on lubricator	.60
	Cam shaft for cams and worm gear in lubricator	.30
	Cam, right, for lubricator driving shaft	1.25
	Cam, left, for lubricator driving shaft	1.25
	Worm gear with cam for lubricator cam shaft	4.00
	Four feed pump body for lubricator	6.00
	Rocker bar for lubricator four feed body and rolls	1.00
	Roller for lubricator rocker bar	.10
	Pin for lubricator rocker bar roller	.10
	Arm for lubricator rocker bar	.25
	Taper valve for lubricator four feed body	1.50
	Spindle for lubricator taper valve	1.00
	Spring for lubricator taper valve	.05
	Bushing for lubricator taper valve spindle	.35
	Filler plug for lubricator	.40
	Strainer	.40
	Bleeder slide	.10

Oil Pipes and Connections.

4111	Oil pipe to crank pin 8" long with two special union nuts	.30
4110	Oil pipe to right main bearing 10" long with two special union nuts	.30
4112	Oil pipe to cylinder 14¾" long with two special union nuts	.30
4109	Oil pipe to left main bearing 8½" long with two special union nuts	.30
B1560	Nipple for oil pipe to cylinder	.10
4095	Nipple for oil pipe to right and left main bearings (two) each	.10
4090	Belt for driving lubricator	.45
B1732 / B1733	Sheave with cap screws (on fly wheel)	.55

WATER CIRCULATING SYSTEM.

Radiator.

B 343	Radiator complete	20.00
B1763	Brass strips for radiator	.20
	Tube with fins for radiator	1.25
B1765	Fins for radiator tubes	.05

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

B1764	End bends for radiator tubes	.20
4277	⅛" pet cock for radiator	.30
B1092	Support for radiator, right or left	.30
	Bolt, nut and washer for radiator support	.05

Water Tank.

	Water tank complete with steel strap supports and brass cap, 1906, K and M	3.00
	Filler nozzle for water tank, 1906, K and M	.40
B 780	Cap for water tank, 1906, K and M	.25
4003	Water tank complete with steel trap supports and brass cap, 1907, K and M	3.00
	Water tank complete with steel strap supports and brass cap, S and T	3.00
B1521	Steel strap support, right, for water tank with bolt and nut, K and M	.40
B1522	Steel strap support, left, for water tank with bolt and nut, K and M	.40
4299	Steel strap support, right, for water tank with bolt and nut, S and T	.40
4300	Steel strap support, left, for water tank with bolt and nut, S and T	.40
	Bolt and nut for water tank support	.10
4048	Brass cap for water tank, 1907, K and M or S and T	.25

Pump.

	Pump complete, 1907, K and M or S and T	6.00
L 119A	Pump body (part that attaches to chassis)	1.60
L 119½	Pump inside half complete, 1907, K and M or S and T	4.00
4040	Pump cover, 1907, K and M or S and T	1.00
L 121A	Pump gasket	.08
L 122A / L 271	Pump impeller with shaft, 1906, K and M	.80
L 122A / 4042	Pump impeller with shaft, 1907, K and M or S and T	.80
4044	Pump gland or brass stuffing nut, 1907, K and M or S and T	.45
L 266 / L 267	Pump driver with spring	.60
L 267	Pump driver spring	.10
4043	Pin for pump driver, 1907, K and M or S and T	.05
L 125	Pump driver set screw	.10
L 77	Pump screws (for holding the two sides together) 2 used	.05
L 436	Pump bolts and nuts for holding the two slides together, per set, 4 used	.10
B 268	Pump screw head bolt and nut (for attaching pump to chassis)	.10

Water Circulating Pipes and Connections.

848	Water outlet pipe with nipple for union tee (from radiator to union tee)	2.00
B1125	Vent pipe with pet cock and union, K and M	1.00
	Vent pipe with union and pet cock, S and T	1.00
	Water pipe (from tank to pump), S and T	1.00
	Water inlet pipe with pet cock	2.50
B1131	Union for water inlet pipe	.20

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

B1133	Nipple in valve chamber for water circulation	.30
B1716	Elbow for water tank	.20
4101	70° elbow for water tank	.20
B1132	Union elbow for water pipe	.20
B 781	⅛" pet cock for water pipes	.15
B1136	Tee for water pipe	.40
4311	Tee for water pipe	.40
B1137	Union nut for water pipe	.10
B1133	Nipple for water circulating pipes	.10
B1533	Support, front, on side bar, for water outlet pipe	.10
	Bolt and nut for water outlet pipe support	.05
B1535	Support for water outlet pipe (on front of engine support)	.10
B1567	Support for water outlet pipe (on gasoline tank support, right)	.10
B1536	Support for water pipe (on steering bracket angle)	.10
B1534	Hanger for water inlet pipe (on rear engine support)	.15
B1141	Support for primer	.15
B1327	Hose connection for water tank, 3¼" long	.08
B1326	Hose connection for water tank, 8⅝" long	.22
B1325	Hose connection for water tank, 15¾" long, K and M	.40
4326	Hose connection for water tank, S and T, 13¼" long	.35
B1328	Clamps for hose connection ... each	.15

MUFFLER.

1907 K and M, S and T.

	Muffler assembled with ends and tie bolts, 1907, K and M	6.00
	Muffler assembled with ends and tie bolts, S and T	6.00
	Muffler complete with discharge pipe, relief valve hanger and roller yoke	9.50
3188	Muffler end, front, 1907, K and M	1.00
4365	Muffler end, front, S and T	1.50
3187	Muffler end, rear, 1907, K and M	1.00
4366	Muffler end, rear, S and T	1.50
2759	Outside shell for muffler, 6½" in diameter, 1907, K and M	.60
4367	Outside shell for muffler, S and T	.60
2762	Inside shell No. 4 for muffler, 5½" in diameter	.50
2760	Inside shell No. 3 for muffler, 4½" in diameter	.40
2763	Inside shell No. 2 for muffler, 3½" in diameter	.30
2761	Inside shell No. 1 muffler, 2" in diameter	.20
4126	Tie bolt for muffler (three) each	.20
	Nut for muffler tie bolt	.05
B1166	Elbow for muffler exhaust connection pipe (on valve chamber)	.40
4149	Pipe from valve chamber to muffler with two flanges	1.00
B1167	Flange for muffler exhaust connection pipe	.20
B1662	Gasket for muffler exhaust connection	.10
4171	Exhaust nipple for front end of muffler	.40
4147	Hanger, front for muffler, on exhaust tube	.15
4210	Bolt and nut for exhaust tube hanger	.05
4169	Tube for muffler exhaust nozzle	1.00
4170	Clamp for muffler discharge pipe	.30
4227	Bolt and nut for clamp	.05
4127	Strap hanger for muffler exhaust pipe	.15
	Bolt and nut for strap hanger	.05
4148	Hanger, rear, for muffler	.10
	Bolt and nut for rear muffler hanger	.05
	Relief valve for muffler, assembled	1.00

Order Parts by number and name in full and give number of motor.

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4143	Body for muffler relief valve	.60
4146	Lever for muffler relief valve	.15
4144	Valve for muffler relief body	.20
4145	Spring for muffler relief valve	.10
	Yoke, roller and pin for muffler assembled	.25
	Foot treadle complete for muffler relief	.30
B 129	Treadle for muffler relief	.15
B1546	Block only for relief foot treadle	.10
	Wire for muffler relief	.05
B1628	Flange on muffler	.30
B1112	Body for muffler relief valve	.50
L1533	Outside flange for muffler	.30

ELECTRICAL OR SPARKING SYSTEM.

Spark Coil.

	Spark coil complete with cutout switch	14.00
	Box for spark coil	2.00
	Cover for spark coil box	.75
	Hook for spark coil box cover	.05
	Ratchet contact screw with platinum point	1.25
	Contact spring with platinum point	1.00
	Bogert hammer	.25
	Stop screw for bogert hammer	.10
	Base for contact screw	.50
	Base for contact spring	.50
	Insulation cap for secondary terminals	.25
	Knurled flat nut	.05
	Knurled top nut	.10
1574	Battery box	1.50
1575	Cover for battery box	.40
	Hook for battery box	.10
	Switch plug	.25

Wires.

B1671	Commutator wire	.40
B1670	Switch wire with terminals	.30
B1672	Circuit wire with terminals from coil to cyl. (8)	.25
B1669	Reach wire with terminals	2.00
B 273	Terminal for reach wire	.05
B1583	Cleat for reach wires	.10
B1582	Binder clamp for reach wire cleat	.10
	Bolt and nut for reach wire clamp	.05
B1701	Support for reach wires	.20
	Connecting wires for batteries, each	.05

Spark and Throttle Control.

	Spark rod with lever, 1906, K and M	1.00
	Spark rod with lever, 1907, K and M	1.20
	Spark rod with lever, S and T	1.20
4437	Spark rod only, S and T	.40
B1170	Spark rod only, K and M	.40
B1305	Lever for spark rod, 1906, K and M	.60
B1771	Lever for spark rod, 1907, K and M	.60

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

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B1773	Dog for spark lever, 1907, K and M or S and T	.10
B1774	Spring for spark lever dog, 1907, K and M or S and T	.05
B1729	Spring for lower end of spark and throttle rods, K and M	.05
4440	Spring for lower end of spark and throttle rods, S and T	.05
B1538	Arm for spark rod (lower end)	.30
	Set screw for spark rod arm	.05
B1151	Pull rod for spark advance, K and M	.15
4438	Pull rod for spark advance, S and T	.15
B1148	Shaft for spark advance	.45
B1116	Safety lever for spark advance shaft	.40
	Screw for spark advance safety lever	.05
B1152	Safety slide for spark advance	.15
B 96	Screw for spark advance safety slide	.05
B1149	Pin and cotter for spark advance safety slide	.05
B1145	Bracket for spark advance shaft	.20
	Throttle tube with lever, 1906, K and M	1.00
	Throttle tube with lever, 1907, K and M	1.20
	Throttle tube with lever, S and T	1.20
B1304	Lever for throttle tube, 1906, K and M	.60
B1770	Lever for throttle tube, 1907, K and M or S and T	.60
B1773	Dog for throttle lever, 1907, K and M or S and T	.10
B1774	Spring for throttle lever dog, 1907, K and M or S and T	.05
B1539	Arm for throttle tube (lower end), K and M	.40
4441	Arm at lower end of throttle tube, S and T	.40
B1169	Throttle tube only	.40
	Screw for throttle tube arm	.05
B 196	Reach rod for throttle, K and M	.15
4439	Reach rod for throttle, S and T	.15
B1203	Support for throttle reach rod	15
	Screw for throttle reach rod support	.05
B1150	Commutator hook	.10

Steering Connections.

	Steering staff casing complete, including spark and throttle rod levers, 1906, K and M	7.00
	Steering staff casing complete, including spark and throttle rod levers, 1907, K and M	8.00
	Steering staff casing complete, including spark and throttle rod levers, S and T	8.00
L 239	Tube only for steering staff, K and M	1.25
4297	Tube only for steering staff, S and T	1.25
B1306	Segment for steering staff casing, 1906, K and M	1.50
B1772	Segment for steering staff casing, 1907, K and M	2.00
4319	Segment for steering staff casing, S and T	1.50
B1172	Flange for steering staff casing, K and M	2.00
4294	Flange for steering staff casing, S and T	2.00
	Steering wheel complete	4.50
B1259	Spider for steering wheel, K and M	2.50
B1259	Spider for steering wheel, S and T	2.50
B 459	Rim for steering wheel	1.75
	Screws for steering wheel, per set of four	.10
B1553	Cap nut for steering wheel	15
B1239	Key for steering wheel	.10
L 133 / L 280	Steering staff with pinion assembled	5.00
	Bronze bushing for steering arm	.20

Order Parts by number and name in full and give number of motor.
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L 133 / 4298	Steering staff with pinion assembled, S and T	5.00
	Key for steering staff pinion	.10
L 134	Steering rack	2.00
L 129A	Bracket casting for steering rack	2.50
4079	Brace for steering staff, 1907, K and M	.40
L 136A	Shield for steering rack	1.00
L 131A	Bushing (eccentric) for steering rack bracket casting	1.50
L 132	Lock nut for steering rack bushing, S and T	.25
L 130	Cap plate for steering staff pinion case, S and T	.20
	Stud for steering staff pinion case plate	.05
	Columbia lock nut for steering staff pinion case cap plate stud	.05
	Steering rod with single joint and universal joint, 1906, K and M	2.75
	Steering rod with single and universal joints, 1907, K and M or S and T	2.75
	Steering rod with yokes only, 1906, K and M	1.25
	Steering rod with yokes only, 1907, K and M or S and T	1.25
	Single joint with pin and cotter pin for steering rod, 1906, K and M	.60
	Single joint with pin and cotter pin for steering rod, 1907, K and M or S and T	.60
	Pin and cotter pin for steering rod single joint, 1906, K and M	05
	Pin and cotter pin for steering rod single joint, 1907, K and M or S and T	.05
	Universal joint with pin and cotter pin for steering rod, 1906, K and M	.80
	Universal joint with pin and cotter pin for steering rod, 1907, K and M or S and T	.80
	Pin and cotter pin for steering rod universal joint, 1906, K and M	.05
	Pin and cotter pin for steering rod universal joint, 1907, K and M or S and T	.05
	Check nut for steering rod universal joint	.05

Brake.

	Brake foot lever and pawl assembled	1.25
B 47	Foot lever only for brake	.80
B1077	Pawl for brake foot lever	.25
	Pin and cotter pin for brake foot lever pawl	.05
B1702	Spring for brake foot lever pawl	.10
	Ratchet for brake foot lever pawl	.40
	Brake shaft complete with brackets, bolts and nuts, foot lever and pawl, slow speed foot lever and cable arm	4.00
B 305	Brake shaft only	1.00
B 46	Cable arm for brake shaft	.40
B 63	Bracket, right or left, for brake shaft, K and M	.35
4306	Bracket, right or left, for brake shaft, S and T	.45
	Bolt and nut for brake shaft bracket	.05
B1625	Brake cable, K and M	.40
4285	Brake cable, S and T, 10′ 2″ long	.40
	Brake cable extension complete	1.00
B1079	Turnbuckle for brake cable extension	.20
	Nut for brake cable extension turnbuckle	.05
B 13	Yoke for brake cable extension lever, L. H. thread	.25

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B 12	Yoke for brake cable extension roll, R. H. thread	.25
B 427	Pulley for brake cable extension	.10
	Pin and cotter pin for brake cable extension pulley	.05
B1639	Clamp, for brake cable, complete	.15
B 180	Ball clamp for brake cable	.05
B1626	Shield for brake cable	.10
4774	Thimble	.15

Slow Speed Control.

B1083	Foot lever for slow speed	.60
B 469	Connecting rod complete with adjustable yoke, nut, and cotter pin for slow speed, K and M	.90
	Connecting rod complete with adjustable yoke, nut and cotter pin for slow speed, S and T	.90
B1087	Connecting rod only with fixed yoke for slow speed, K and M	.60
4301	Connecting rod only with fixed yoke for slow speed, S and T	.60
	Nut for slow speed connecting rod adjustable yoke	.05
B1088	Adjustable yoke with nut, pin and cotter pin for slow speed	.25
B 532	Pin and cotter pin for slow speed connecting rod yoke	.05
	Fibres and rivets for slow speed transmission brake bands, per set of 15	.40
	Transmission brake band complete, for slow speed, including the eight following parts	3.20
	Transmission brake band with fibres, rivets and ends for slow speed	1.80
B 41	Lever for slow speed transmission brake bands	.35
B 345	Shackle for slow speed transmission brake band levers	.10
B 727	Pin and cotter pin for slow speed transmission brake band lever shackle	.05
B 182	Spring for slow speed brake band levers, S and T	.10
B1089	Holdback with pin and nuts for slow speed transmission brake band lever, S and T	.50
	Nut for slow speed transmission brake lever holdback	.05
4178	Holdback with pin and nuts for slow speed transmission brake band lever, S and T	.50
4179	Holdback with pin and cotter pin for reverse transmission brake band lever, S and T	.50
B 532	Pin and cotter pin for slow speed transmission brake band lever holdback	.05
B 93	Support for slow speed transmission brake band	.20
	Bolt and Columbia lock nut for slow speed transmission brake band	.05
	Long fibres and rivets for brake bands	.05

Reverse Control.

B 43	Reverse lever arm (on controller shaft)	.40
B 49	Driver for reverse lever arm (on controller shaft)	.30
B 468	Connecting rod complete with adjustable yoke, nuts, pins and cotter pins for reverse	.90
B1086	Connecting rod only with fixed yoke, pin and cotter pin for reverse	.60
B1088	Adjustable yoke with nut, pin and cotter pin for reverse	.25
	Nut for reverse connecting rod adjustable yoke	.05

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B 532	Pin and cotter pin for reverse connecting rod yoke	.05
	Fibres and rivets for reverse transmission brake band, per set of 15	.40
	Transmission brake band, for reverse, complete, including the eight following parts	3.20
	Transmission brake band with fibres, rivets and ends for reverse	1.80
B 41	Lever for reverse transmission brake band	.35
B 345	Shackle for reverse transmission brake band lever	.10
B 727	Pin and cotter pin for reverse transmission brake band lever shackle	.05
B1089	Holdback with pin and cotter pin for reverse transmission brake band lever, K and M	.50
	Nut for reverse transmission brake band lever holdback	.05
B 532	Pin and cotter pin for reverse transmission brake band lever holdback	.05
B 93	Support for reverse transmission brake band	.20
	Bolt and Columbia lock nut for reverse transmission on brake band support	.05
	Reverse band with lining	1.50

High Speed Control.

B1578	Control lever for high speed and reverse, Model "M," 1906	2.00
4155	Control lever for high speed and reverse, Model "M," 1907, and T	2.00
B1081	Control lever for high speed and reverse, Model "K" and S	2.00
	Controller shaft for high speed and reverse, complete	2.25
B 307	Controller shaft for high speed and reverse	1.00
B 42	High speed lever arm for controller shaft	.40
B 43	Reverse lever arm for controller shaft	.40
B 49	Driver for reverse lever arm	.30
B 467	Connecting rod, for high speed clutch, complete with adjustable yoke, nut, pin and cotter pin	.50
B1085	Connecting rod only, for high speed clutch	.25
B1088	Adjustable yoke with nut, pin and cotter pin for high speed clutch	.25
	Nut for high speed clutch connecting rod yoke	.05
	Pin and cotter pin for high speed clutch connecting rod yoke	.05
B 90	Hook or holdback, for high speed clutch, with bolt, nut and cotter pin	.25
	Bolt and nut for high speed clutch hook	.05
B1082	Stop spring for controller shaft speed lever arm	.25
B1146	Bearing, for controller shaft, right	.20
B1147	Bearing, for controller shaft, left	.20
4736	Releasing fork, for controller shaft	.60

AXLES.

K, M, S and T.

Read this Carefully Before Ordering.

We will sell complete axles and parts for same at the prices herein quoted. These cannot be purchased by you from the Axle Manufacturers.

When repairing is required which necessitates shipping the

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entire axle, do not send same to us, ship to the American Ball Bearing Co., Cleveland, Ohio. Be sure to tag the axle with your name and address, prepay charges, and write them at the same time you ship. They will then make an estimate to you direct.

When ordering axle parts, be particular to specify carefully the style axle for which part is wanted, the color of axle, the model of the machine, whether narrow or wide tread and whether for right or left side, and the number of your engine. We must have this information.

Front Axle Parts.

	Front axle complete, with complete spindles and parallel rod	36.00
1101	Tube with yoke, pivot brackets and pivots, spring perch and truss rod	18.00
1102	Rocker spring perch and King post with bolts and nuts for front axle	3.00
1103	Bolt and nut for front axle rocker spring perch and King post.	.10
1166	Hinge bolt and nut for front axle rocker spring perch and King post	.50
1104	Pin for front axle rocker spring perch	.05
1105	Stud and nut for front axle spring perch	.10
4053	Oiler for front axle spring perch hinge bolt	.35
1106	Pivot bracket with pivot, right, for front axle	1.60
1107	Pivot bracket with pivot, left, for front axle	1.60
1108	Screw for front axle pivot bracket	.05
1109	Pivot for front axle pivot bracket	.40
1110	Truss rod with nut for front axle	.50
1111	Nut for front axle truss rod	.05
1112	King pin or bolt with nut, and cotter pin for front axle spindle	1.50
1114	Steel bushing for front axle spindle (or bronze)	.40
4181	Oiler for front axle spindle king pin	.30
1116	Nut for front axle spindle	.10
	Spindle, right, complete for front axle	7.80
	Spindle, left, complete for front axle	7.80
	Spindle, right, only, for front axle	6.00
	Spindle, left, only, for front axle	6.00
1121	Stationary cone for front axle spindle (inside)	.80
1122	Adjusting cone for front axle spindle	.50
1126	Knurled head adjusting screw with expander and binding cap screw for front axle spindle	.50
1127	Expander for front axle spindle knurled head adjusting screw.	.10
1128	Binding cap screw for front axle spindle knurled adjusting screw	.05

Parallel Rods.

1135	Parallel rod complete for front axle	2.00
1136	Parallel rod with fixed yokes only. for front axle	1.25
1137	Bolt, right, with nut and cotter pin for front axle parallel rod	.25
1138	Shoulder bolt, left, with nut and cotter pin for front axle parallel rod	.50
1139	Nut for front axle parallel rod yoke bolt	.05
	Steering arm bushing	.20
	Brass bushing for parallel rod bolt	.30

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Front Wheel.

	Front wheel complete with rim, less tire	18.00
	Hub complete for front wheel	8.00
1152	Outside flange for front wheel hub	2.00
	Inside flange complete for front wheel hub	6.00
1154	Inside flange for front wheel hub with ball cups	4.80
B1786	Ball cup, inside, for front wheel hub, inside flange	1.00
1156	Ball retainer, inside, for front wheel hub, inside flange	.20
1157	Felt washer, inside, for front wheel hub, inside flange	.15
1158	Retainer, inside, for front wheel hub inside flange felt washer	.25
1159	Balls, 11/16", for front wheel hub inside flange inside ball cup ..... each	.07
B1788	Ball cup, outside, for front wheel hub inside flange	.80
1161	Retainer, outside, for front wheel hub inside flange balls	.10
1162	Balls, 7/16", for front wheel hub inside flange outside ball cup	.03
1163	Bolt with nut for front wheel hub flanges	.10
1164	Nut for front wheel hub bolt	.05
1165	Cap for front wheel hub	.80

Rear Axle.

	Rear axle complete, with differential gear and sprocket	75.00
	Rear axle complete, without differential gear	45.00
	Housing complete for rear axle with spider and other fixed parts	30.00
1403	Housing tube with spider, spring perch and pivot bracket with pivots and buffer bracket for rear axle, right side	15.00
1404	Housing tubes for rear axle, same as above, left side	15.00
	Spring perch for rear axle	2.00
	Bolt and nut for rear axle spring perch	.10
	Nut for rear axle spring perch bolt	.05
	Pivot bracket with pivot for rear axle	1.40
1408	Pivot for rear axle pivot bracket	.40
	Oiler for rear axle pivot bracket	.10
1409	Buffer cup with bolt and nut for rear axle	1.25
1410	Bolt and nut for rear axle buffer cup	.10
1411	Truss rod, long, with nut, for rear axle	.40
1412	Truss rod, short, with nut for rear axle	.40
1413	Nut for rear axle truss rod	.05
1414	Collar for rear axle tube	.20
1415	Roller cage, outside, long, for rear axle	.50
1416	Rollers for rear axle, outside roller cage (8 used) ..... each	.30
1417	Roller cage, inside, short, for rear axle	.45
1418	Rollers for rear axle, inside roller cage ..... each	.25
1419	Felt washer for rear axle	.10
1420	Retainer for rear axle felt washer	.10
1421	End thrust complete for rear axle	1.60
1422	Ball cup for rear axle end thrust	.65
1423	Ball race for rear axle end thrust	.50
1424	Retainer for rear axle end thrust balls	.10
	Balls for rear axle end thrust (19 per set) ..... each	.02
1425	Rear axle shaft, long end, left	3.00
1426	Rear axle shaft, short end, right	3.00
1427	Collar for rear axle shaft	.20

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1428	Pin for rear axle shaft collar	.05
1429	Key for rear axle shaft differential	.10
1430	Wheel key for rear axle	.10
1431	Nut for wheel end of rear axle shaft (slotted)	.25
1435	Oil cup for rear axle	.10
1436	Housing bolt with nuts for rear axle brake band	1.25
1437	Nut for rear axle brake band housing bolt	.10
1438	Lock nut for rear axle brake band housing bolt	.10
1439	Arch housing bolt, upper, with nuts for rear axle	1.25
1440	Arch housing bolt, lower, with nuts for rear axle	1.25
	Hold up spring for rear axle brake band	.25
1442	Nut for rear axle brake band housing bolt	.10
1443	Lock nut for rear axle brake band housing bolt	.10
1444	Brake band complete, with lining ends and bell crank, for rear axle	3.00
1445	Brake band with ends and lining for rear axle	2.50
1446	Mohair lining with rivets for rear axle brake band	.60
1466	Bell crank, right, for rear axle brake band	.50
1467	Bell crank, left, for rear axle brake band	.50
1448	Pin for rear axle brake band bell crank	.05
	Differential gear complete with sprockets for rear axle	30.00
	Drum with internal gear for rear axle differential, either side	4.50
1453	Oil cup for rear axle differential drum	.10
	Central web for rear axle differential gear	6.00
1455	Pinions for rear axle differential gear central web ... each	1.50
	Sprocket, 31, 34, 38, 41 or 45 tooth, for rear axle with screws	5.80
	Screws for rear axle sprocket ... each	.05
1465	Rubber buffer for rear axle, K and M	.50
4466	Rubber buffer for rear axle, S and T	.50

Rear Wheel.

1475	Rear wheel complete less tire	18.00
1476	Inside flange for rear wheel	4.00
1477	Outside flange of rear wheel	2.00
1478	Axle key for rear wheel hub	.10
1479	Bolt and nut for rear wheel hub	.10
1480	Hub cap for rear wheel hub	.80
	Hub complete	6.00

Dash and Hood.

	Dash only	18.00
	Hood only	12.00
	Dash, hood and radiator complete, with dash lamp bracket, 1906, K and M	50.00
	Dash, hood and radiator complete, 1907, K and M or S and T	50.00
	Dash and hood complete, 1906, K and M	30.00
	Dash and hood complete, 1907, K and M or S and T	30.00
B1314	Filler cup for hood, 1906, K and M	.60
	Hatch cover for hood, 1906, K and M	.40
	Cover for hood with latch and hinge, 1907, K and M or S and T	1.20
4051	Cover only for hood, 1907, K and M or S and T	.40
B1652	Hinge for hood cover, 1907, K and M or S and T	.20
	Latch complete for hood cover, 1907, K and M or S and T	.50
4088	Handle for hood cover latch, 1907, K and M or S and T	.15

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4089	Barrel for hood cover latch, 1907, K and M or S and T	.20
4087	Button for hood cover latch, 1907, K and M or S and T	.05
4086	Spring for hood cover latch, 1907, K and M or S and T	.10
B1555	Side shim, right, for hood	.15
B1554	Side shim, left, for hood	.15
4156	Hood floor complete, 1907, K and M	1.00
4475	Hood floor complete, S and T	1.00
4135	Support for hood floor, right, 1907, K and M	.60
4134	Support for hood floor, left, 1907, K and M	.60
B 643	Lamp bracket for dash, right	1.00
B 644	Lamp bracket for dash, left	1.00
B 737	Bolt and nut for attaching lamp bracket	.10

FLOOR PARTS.

B1614	Lock for front floor door, 1906, K and M	.20
4117	Hinge for front floor	.05
B1095	Reinforcement plate for front floor, K and M	.20
4305	Reinforcement plate for front floor, S and T	.20
B1299	Iron cleat for front floor latch door, 1906, K and M	.15
4118	Iron cleat for front floor, 1907, K and M, S and T	.15
B1778	Iron for toe board of front floor, 1907, K and M	.30
B1631	Riser for front floor, right, 1906, K and M	.30
B1632	Riser for front floor, left, 1906, K and M	.30
4018	Riser for front floor, right, 1907, K and M, S and T	.40
4017	Riser for front floor, left, 1907, K and M, S and T	.40
B1557	Battery box cleat and floor riser, 1906, K and M	1.00
4050	Battery box cleat and floor riser, left, 1906, K and M	1.00
4307	Floor riser and battery box support, S and T	1.00
B1078	Ratchet for brake foot lever, on front floor	.40

Body Brackets.
K and M.

B 309	Body bracket or clip, middle, on Model K	.20
B1734	Body bracket or clip, rear, on Model K	.20
4133	Body bracket or clip, Model M	.20
4434	Body bracket or clip, Model "S" (four used) ... each	.20
4435	Body bracket or clip, Model "T"	.20
	Cap screw for body bracket	.05
B1457	Brass bolt, long, for attaching front of body, 1906, K and M	.10
B1456	Brass bolt, short, for attaching front of body, 1906, K and M	.10
4097	Brass bolt, long, for attaching front of body, 1907, K and S	.10
4098	Brass bolt, short, for attaching front of body, 1907, M and T	.10

Body Parts.
1906 K and M.

	Cushions for front seat ... each	6.00
	Heel board complete for front seat	4.00
	Lock for front seat heel board	.40
	Hinge, upper, for side entrance door, right (bronze)	1.00
	Hinge, lower, for side entrance door, right (bronze)	2.00
B1612	Lock complete less handle for side entrance door, right	1.00

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

B1640	Handle for side entrance door lock, right	1.00
	Latch plate for side entrance door lock, right	.10
	Hinge, upper, for side entrance door, left (bronze)	1.00
	Hinge, lower, for side entrance door, left (bronze)	2.00
B1613	Lock complete less handle for side entrance door, left	1.00
B1640	Handle for side entrance door lock, left	1.00
	Latch plate for side entrance door lock, left	.10
B1649	Hinge pin and cap for side entrance door hinges	.10
	Heel board for rear seat	4.00
	Lock for rear seat heel board	.40
	Hinge for rear seat heel board	.05
	Upper and lower toe boards ... each	.25

Body Parts.

1907 K and M

	Heel board complete for front seat, Model "M"	4.00
	Heel board complete for front seat, Model "K"	4.00
	Latch complete for front seat heel board	.40
4065	Handle for front seat heel board latch	.20
4064	Latch piece for front seat heel board latch	.05
4063	Spring for front seat heel board latch	.05
4062	Escutcheon for front seat heel board latch	.10
	Heel board complete for rear seat	3.00
	Latch complete for rear seat heel board	.40
4065	Handle for rear seat heel board latch	.20
4064	Latch piece for rear seat heel board latch	.05
4063	Spring for rear seat heel board latch	.05
4062	Escutcheon for rear seat heel board latch	.10
	Hinge, upper, for side entrance door, right	.50
	Hinge, lower, for side entrance door, right	1.00
	Hinge pin for side entrance door hinges, right	.05
	Door hinge, upper, right (for Victoria body)	1.00
	Door hinge, lower, right (for Victoria body)	2.00
	Pin for door hinges (for Victoria body)	.10
	Lock complete less handle for side entrance door, right	1.00
	Handle for side entrance door lock, right	1.00
	Latch strike for side entrance door lock, right	.10
	Hinge, upper, for side entrance door, left	.50
	Hinge, lower, for side entrance door, left	1.00
	Hinge pin for side entrance door hinges, left	.05
	Door hinge, upper, left (for Victoria body)	1.00
	Door hinge, lower, left (for Victoria body)	2.00
	Pin for door hinges (for Victoria body)	.10
	Lock complete less handle for side entrance door, left	1.00
	Handle for side entrance door lock, left	1.00
	Latch strike for side entrance door lock, left	.10

S and T

	Heel board complete for front seat, Model "T"	4.00
	Heel board complete for front seat, Model "S"	4.00
	Latch complete for front seat heel board	.40
4065	Handle for front seat heel board latch	.20
4064	Latch piece for front seat heel board latch	.05

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

	Hinge for rumble seat, Model T	.20
4208	Spring for front seat heel board latch	.05
4062	Escutcheon for front seat heel board latch	.10
	Heel board complete for rear seat	4.00
	Latch complete for rear seat heel board	.40
4065	Handle for rear seat heel board latch	.20
4064	Latch piece for rear seat heel board latch	.05
4208	Spring for rear seat heel board latch	.05
4062	Escutcheon for rear seat heel board latch	.10
4454, 4456	Hinge, upper for side entrance door, right	.50
4459, 4461	Hinge, lower, for side entrance door, right	1.00
4478	Hinge pin for side entrance door hinges, right	.05
4076	Lock complete, less handle, for side entrance door, right	1.00
4077	Handle for side entrance door lock, right	1.00
4075	Latch strike for side entrance door, right	.10
4455, 4457	Hinge, upper, for side entrance door, left	.50
4458, 4460	Hinge, lower, for side entrance door, left	1.00
4478	Hinge pin for side entrance door hinges, left	.05
4076	Lock complete, less handle, for side entrance door, left	1.00
4077	Handle for side entrance door, left	1.00
4075	Latch strike for side entrance door, left	.10

FLOOR MATS.

B1565	Rubber mat for front floor, 1906, K and M	2.50
B1566	Rubber mat for rear floor, 1906, K and M, Victoria	1.50
4153	Rubber mat for front floor, 1907, K and M	2.50
4154	Rubber mat for rear floor, 1907, K and M	1.50
4332	Rubber mat for front floor, 1908, S and T	2.50
4490	Rubber mat for rear floor, 1908, "T"	1.50

Deck Parts.

	Fastener complete for deck lid	.60
4081	Handle for deck fastener	.15
4084	Barrel for deck fastener	.20
4085	Spring for deck fastener	.10
4083	Strike plate for deck fastener	.10
4087	Latch piece for deck fastener	.05

Fenders.

1906 K and M.

	Fender, front, right, with splash leather	4.00
	Fender, front, left, with splash leather	4.00
B1154	Fender, front, only right	3.00
B1155	Fender, front, only left	3.00
B1713	Splash leathers for front fenders, Model K, per pair	1.50
B1528	Splash leathers for front fenders, Model M, per pair	1.50
B1630	Iron attaching strips for front fender splash leathers	.10
B1683	Fender fastener complete	.25
	Clamp for fender fastener	.10
	Set screw for fender fastener	.10
	Nut for fender fastener set screw	.05

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.

Read page 3 before ordering.

B1255	Fender, rear, right or left with step bracket	3.00
	Bracket only	.15

1907 K and M.

	Fender, front, right, with splash leather	4.00
	Fender, front, left, with splash leather	4.00
4039	Fender, front, only, right	3.00
4038	Fender, front, only, left	3.00
B1528	Splash leathers for front fenders, Model M, per pair	1.50
B1713	Splash leathers for front fenders, Model K, per pair	1.50
	Iron attaching strips for front fender splash leathers	.10
	Fender fastener complete	.25
3218	Clamp for fender fastener	.30
3219	Eyebolt for fender fastener	.15
3221	Nut and washer for fender fastener	.10
4036	Fender, rear, right or left, with step bracket, M	3.00
4037	Fender, rear, right or left, Model K	3.00

1908 Models S and T.

4730	Fender, front, right, Model "S"	5.00
4731	Fender, front, left, Model "S"	5.00
4728	Fender, rear, right, Model "S"	3.00
4729	Fender, rear, left, Model "S"	3.00
4429	Fender, front, right, Model "T"	5.00
4430	Fender, front, left, Model "T"	5.00
4313	Fender, rear, right or left, Model "T"	3.00
3852	Plate on fender for fender fastener	.30
3851	Hook for fender fastener	.15
4324	Eyebolt for fender fastener	.15
3220 / 3221	Nut and washer for fender fastener	.10

Running Boards.

Model "S"

	Running board, right or left, complete	4.00
4498	Running board, right or left only	.60
4497	Brass binding for running boards, each piece	.50
4499	Rubber mat for running board, right or left	1.20
4272	Step bolts for running boards, ¼ x 1¾ (twelve) ... each	.05
	Brass screws for binding on running boards, per set	.30

Model "T".

	Running board, right, complete	6.00
	Running board, left, complete	6.00
4321	Running board, right, only	1.00
4320	Running board, left, only	1.00
4334	Rubber mat for running board, right	2.00
4333	Rubber mat for running board, left	2.00
4335	Brass binding for running board, short piece	.60

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

4336	Brass binding for running board, long piece	.60
B 738	Step bolts for running boards and fenders (twelve) ... each	.05
4272	Step bolts, ¼ x 1¾, for running boards and hangers (twelve) ... each	.05
	Washers, ¼" (twelve) ... each	.05
	Brass screws for attaching binding on running boards, per set	.35
4494	Angle plate for running board and rear fender	.15
4493	Reinforcing plate for rear end of running boards	.10
4464	Angle plate for running board and rear fender	.15
4463	Angle plate for running board and front fender, left	.15

Top and Body Irons.

1907 Model "K"

4241	Top iron (front, two) ... each	.40
4244	Prop iron for top (two) ... each	.60
4251	Body iron for top iron, right, front	.50
4252	Body iron for top iron, left, front	.50
4253	Body iron for top iron, left, rear	.80
4254	Body iron for top iron, right, rear	.80
4250	Corner iron for seat, right	.20
4249	Corner iron for seat, left	.20

Model "M"

1907 Straight Line Body.

4243	Top iron, front (two) ... each	.30
4242	Top iron, middle (two) ... each	.60
4245	Top iron, rear (two) ... each	.40
4246	Body iron for top iron, front (two) ... each	.60
4247	Body iron for top iron, middle (two) ... each	.60
4248	Body iron for top iron, rear (two) ... each	.80

Model "S"

4707	Top iron, front (two) ... each	.40
4706	Prop iron for top (two) ... each	.60
4701	Body iron for top iron, front, right	.50
4702	Body iron for top iron, front, left	.50
4703	Body iron for top iron, rear, right	.80
4704	Body iron for top iron, rear, left	.80
4495	Corner iron for seat (two) ... each	.20

Model "T"

4277	Top iron, front (two) ... each	.30
4476	Top iron, middle (two) ... each	.60
4245	Prop iron for top (two) ... each	.40
4448	Body iron for top iron, front, left	.60
4449	Body iron for top iron, front, right	.60
4445	Body iron for top iron, middle, right	.60
4446	Body iron for top iron, middle, left	.60
4450	Body iron for top iron (two) ... each	.80

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

Tool Kit.

B1672	Tool kit, complete	15.00
B 816	Wrench, end size ¾x¾"	.30
B1547	Wrench, end size 1"	.30
B 819	Wrench, end size ⅜x⅝"	.25
B 818	Wrench, end size ½x⅝"	.25
B 817	Wrench, end size ¾x9/16"	.25
B 820	Wrench, end size ⅝x1-1/16"	.30
	Monkey wrench	.60
B 825	Pliers	.60
	Spark plug	2.20
	Master link (for chain)	.14
	Starting crank	2.00
	Oil gun	.50
	Oil can	.30
	Water funnel	.50
	Gasoline funnel	.50
	Tire repair kit	3.00
	Tire pump, Miller	2.00
	Screw driver, long	.15
	Screw driver, short	.10
	Canvas tool bag	.25
	Hub cap wrench	.20
	Lubricator wrench	.35
	Lubricator key	.25
	Stapley pump	5.00

Order Parts by number and name in full and give number of motor.

Read page 3 before ordering.

CADILLAC

Price List of Parts

Model H

This Price List is effective on and after Oct. 1st, 1911, and supersedes all previous quotations.

Prices are subject to change without notice

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Cadillac Motor Car Company

Detroit, Michigan, U. S. A.

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Instructions

Unless these Instructions are carefully followed, we will not be responsible for errors or delay.

To facilitate the prompt and correct handling of orders for parts, it is imperative that these instructions be carefully followed.

In order that parts wanted may be readily located, this list is arranged by groups; for example, the Engine Group, the Gasoline System, Cooling System, Electrical System, etc., and under these respective headings will be found listed all parts that compose the groups and systems.

A number of parts are designated as "Right" and "Left." The "Right" side is the right side as you sit in the car.

Parts **positively must** be ordered by serial part-number and by name in full as given herein. Also state the **model, the year of make, and the motor number of the automobile.** The motor number is stamped on the top of the crank case, in front of the first cylinder, on the side nearest the lubricator.

If in doubt as to the correct designation of the part desired, send a sketch of it, giving dimensions. Or, send us the broken parts, **charges prepaid,** with your order for new parts. **Be sure** to write **your own name and address** plainly on the package. Tag each individual part contained in the package with your name and address, also state on the tag the **model** and **year** of **make** and **motor number** of the car from which the part is taken. **Be sure** to write us at the time you send the package, stating what you are sending and how (mail, express or freight). This must be done **regardless of any former correspondence. Be sure** to prepay carrying charges. Our Receiving Department refuses to accept packages on which charges have not been prepaid.

When ordering cars and parts at the same time, make a separate order for each, because cars and parts are handled by different departments. Write on the order sheet nothing that does not directly refer to that particular order; write about other subjects on another sheet, so that it may go directly to the proper department.

If these requests are not complied with, we cannot hold ourselves responsible for errors and delay.

Terms Net Cash with order, F. O. B. Detroit.

The prices in this list are net, and no discount will be allowed to others than our authorized dealers. Cash positively must accompany all orders for parts, because we open accounts with none but our authorized dealers. Unless cash is sent with order, it only delays matters by necessitating our writing for remittance. We do not send parts C. O. D. Orders for parts to be sent by mail must be accompanied by a sufficient amount to cover postage.

Parts claimed to be defective and for which free replacement is expected, must be sent to us, tagged as required, for our inspection within sixty days from purchase of the automobile. A letter of advice must be sent at the same time, giving engine number, date of purchase, etc. Unless carrying charges are prepaid, the package will not be accepted.

TIRES, SPARK COILS AND BATTERIES. We will sell Tires, Spark Coils and Batteries, but we do not replace such parts gratis. In case of defective construction, claim must be made, and defective parts sent direct, to the makers of such Tires, Spark Coils or Batteries.

Above parts sent to us will not be accepted from the Transportation Co.

We do not list such parts as wood screws, washers and cotter pins, for the reason that these can readily be obtained in any hardware store.

We do not list any part at less than five cents, for the reason that, though the part may not be worth more than a cent or two, the cost to handle it is several times that amount.

Cadillac Telegraph Code

Study this carefully before attempting to use it.

This telegraph code has been formulated for the convenience and economy of Cadillac dealers and users in telegraphing orders for parts.

When the order can be transmitted in a ten-word day message or a fifty-word night lettergram, we advise that plain language be used for the reason that in such cases there is no advantage or saving in using the code.

You are also cautioned not to use these code words in night lettergrams or day letters, as the telegraph companies will not permit it. The use of code words in night lettergrams or day letters will subject them to full toll charges; therefore, night lettergrams and day letters must be sent in plain English.

While this code system is extremely simple to understand and use, it must be used with absolute exactness or, like any code, it is worse than useless.

These same code words are also used in other Cadillac part lists. It is therefore necessary when this code is used, for us to know the book from which the parts are ordered.

The word which must be used to indicate parts ordered from this book is

Harmony

This word "Harmony" must be used immediately preceding the words indicating the parts ordered, as shown in the following example:

Example

Suppose you wanted to wire an order for the following parts to be shipped by express:

One pump cylinder for lubricator.
Two clutch rings for high speed clutch.
One bracket for starting crank.
One hand brake sector.

The first item in the foregoing list will be found on page 15, the 14th line, the code word for which is CETAB.
The second item is on page 17, the 46th line and the code word is SOBED.
The third item is on page 21, the 9th line and the code word is RALED.
The fourth item is on page 30, the 10th line and the code word is SAFIG

The whole telegram, therefore, would read:

Cadillac Motor Car Company,
Detroit, Mich.
Express harmony one cetab, two sobed, one raled, one safig.

(Signed).....

CADILLAC MODEL H PRICE LIST OF PARTS

It will be seen that where two or more lines are required to describe a part, there is a code word in front of each line. The code word in front of the first line is the one that should be used, although if by mistake you should use the one which is in front of the second line, no harm will result.

Where there are division headlines in heavy type throughout the book, code words are opposite them and also opposite blank spaces, but these have no significance to you.

In other words, the only code words with which you have anything to do are those which are in front of the first line describing the part which you want to order.

CAUTION

In writing your telegrams, it is absolutely necessary that they be written so plainly that there will be no possible chance of the telegraph operator making any mistake in reading them, because a single letter transmitted incorrectly will change the word entirely and might cause us to ship the wrong article. Be careful not to confuse letters. Do not confuse C. with G. Do not confuse H. R. P. B. and K. or E. with F. It is best to have all telegrams typewritten and carefully checked over before sending.

The Cadillac Company will not be responsible for errors which may occur as the result of incorrectly written or incorrectly transmitted telegrams.

THE CODE WORDS SHOULD NOT BE USED WHEN ORDERING PARTS BY MAIL.

CODE WORD		MOTOR.	
BADAB CADAB DADAB FADAB		Motor complete with transmission and brakes, support tubes, carburetor, governor, and commutator, tested ready for use	$1,100.00
KADAB LADAB		Engine Base, lower half with studs, oil tube and plugs	85.00
MADAB PADAB	R-4-280	Stud for fastening base, upper to lower half (four) .....each	.15
RADAB SADAB	R-4-371	7/16" Columbia lock nuts for above studs (four) (per doz., .50).....each	.05
TADAB ZADAB	R-4-671	Stud for fastening base, upper to lower half (six) .....each	.15
BEDAB CEDAB	R-4-670	Stud for fastening base, upper to lower half (four) .....each	.15
DEDAB FEDAB KEDAB	R-4-369	½" Columbia lock nuts used on under side of lower half for studs R-4-670 (four) (per doz., .50).....each	.05
LEDAB MEDAB	R-4-370	7/16"x14 R. H. hex. nuts for R-4-279 and R-4-670 (ten) (per doz., .50).each	.05
PEDAB REDAB SEDAB	R-4-703	7/16" slotted hex. nuts for studs R-4-671 and R-4-670 (ten) (per doz., 1.00) .....each	.10
TEDAB	R-4-279	Studs for main bearing caps (ten).each	.25
ZEDAB BIDAB	R-4-370	7/16"x14 R. H. hex. nuts for R-4-279 (ten) (per doz., .50).....each	.05
CIDAB DIDAB	R-4-371	7/16" Columbia lock nuts (ten) (per doz., .50) .....each	.05
FIDAB	R-4-418	Studs for oil pan arm cap (twelve).each	.12
KIDAB LIDAB	R-4-376	½"x12 R. H. hex. nuts for R-4-418 (twelve) (per doz., .50).....each	.05
MIDAB PIDAB	R-4-369	½" Columbia lock nuts (twelve) (per doz., .50) .....each	.05
RIDAB	R-4-237	Oil tube .....each	1.00
SIDAB	R-4-211	½"x90° elbow for oil tube.....	.40
TIDAB	R-4-212	½"x45° elbow for oil tube.....	.40
ZIDAB BODAB	R-4-395	¼" pipe plugs for engine base, lower half (five) (per doz., .50).....each	.05
CODAB DODAB	2791	Taper pin for engine base (per doz., .25) ..... each	.05
FODAB		Engine base upper half, with studs.....	80.00
KODAB LODAB	R-4-270	Stud for attaching cylinders (sixteen) (per doz., 1.00) .....each	.10
MODAB PODAB RODAB	R-4-369	½" Columbia lock nut for above studs, used on underside (sixteen) (per doz., .50) .....each	.05
SODAB TODAB	R-4-368	½" hex. nuts for studs R-4-270 (sixteen) (per doz., .50) .....each	.05
ZODAB BUDAB	R-4-283	Stud for hand hole cover (six) (per doz., 1.00) .....each	.10
CUDAB DUDAB	R-4-372	Hex. nuts for attaching hand hole cover (six) (per doz., .50).....each	.05
FUDAB KUDAB	R-4-673	Stud for cam slide holder (twelve) per) doz., .50) .....each	.05
LUDAB MUDAB	R-4-704	Hex. nuts for attaching cam slide holder (twelve) (per doz., .25).....each	.05
PUDAB RUDAB		Columbia lock nut for attaching gear guard, upper (per doz., .50).....	.05
SUDAB TUDAB ZUDAB		Stud for gear guard, upper (per doz., .50)	.05

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.
Read Instructions before ordering.
The telegraph code key-word for this book is HARMONY.

CODE WORD			
BAFAB		Hand hole cover plate with handles and	
CAFAB		name plate (two) .....each	4.50
DAFAB	R-4-389	Handle for hand hole cover plate (four)	
FAFAB		..... each	.10
KAFAB	R-4-404	Gasket for hand hole cover plate (two)	
LAFAB		(per doz., .50) .....each	.05
MAFAB	R-5- 32	Cam slide holder (four).....each	2.00
PAFAB	R-4 46	Liners for cam slide holder (four)..each	1.00
RAFAB	R-4-454	Gaskets for cam slide holder (four) (per	
SAFAB		doz., .50) .....each	.05
TAFAB	R-4-339	Screws for cam slide holder (twelve)	
ZAFAB		(per doz., .50).....each	.05
BEFAB		Main bearing bushing, front, No. 1 (two	
CEFAB		pieces) with two liners.....	5.00
DEFAB		Main bearing bushing, middle inter-	
FEFAB		mediate, No. 3 (two pieces) with two	
KEFAB		liners	5.00
LEFAB		Main bearing bushing, intermediate (two	
MEFAB		pieces) with two liners, Nos. 2 and 4	
PEFAB		(two) .....each	5.00
REFAB		Main bearing bushing, rear, No. 5 (two	
SEFAB		pieces) with two liners.....	5.00
TEFAB		NOTE—Two styles of middle crank	
ZEFAB		shaft bearings (No. 3) have been used.	
BIFAB		On the earlier Motors the three inter-	
CIFAB		mediate bearings (Nos. 2, 3 and 4) were	
DIFAB		the same but on later product the middle	
FIFAB		bearing (No. 3) is flanged on both ends.	
KIFAB		In ordering middle bearings (No. 3) you	
LIFAB		must state style wanted.	
MIFAB	R-4-306	Dowel for main bearings (five) (per	
PIFAB		doz., .50) .....each	.05
RIFAB	R-4- 35	Cap for main bearings (five).....each	1.20
SIFAB	R-4-434	Cap for oil pan arm (six).....each	.80
TIFAB	R-4-326	Set screws for oil pan arm cap (six).each	.15
ZIFAB	R-4-373	5/16" check nut for oil pan arm cap set	
BOFAB		screw (six) (per doz., .50).....each	.05
COFAB	4529	Set screws for cam shaft (four) (per	
DOFAB		doz., 1.00) .....each	.10
FOFAB		¼" hex. nuts for cam shaft set screws	
KOFAB		(five) (per doz., .50) .....each	.05
LOFAB	R-4-538	Cam shaft cover, rear	.80
MOFAB	R-4-342	Screws for cam shaft cover (four) (per	
POFAB		doz., 1.00) .....each	.10
ROFAB	R-5- 80	Aluminum housing for governor gear	
SOFAB		and cam shaft gear assembled with	
TOFAB	R-5- 81	two bolts and nuts	15.00
ZOFAB			
BUFAB			
CUFAB			
DUFAB		**MOTOR SUPPORT TUBES.**	
FUFAB			
KUFAB		Engine support tube, right, with plugs..$	14.00
LUFAB		Engine support tube, left, with plugs...	14.00
MUFAB			
PUFAB			
RUFAB			
SUFAB			
TUFAB			
ZUFAB			

Order Parts by serial part number and name in full.
Give number of motor.
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CODE WORD			
		CRANK SHAFT AND FLY WHEEL.	
BAHAB		Crank shaft and fly wheel assembled in-	
CAHAB		cluding the two following items.....	115.00
DAHAB	R-4-527	Crank shaft only, O. S.....	90.00
FAHAB		(For use with old style bushings.)	
KAHAB	5000	Crank shaft only	90.00
LAHAB		Fly wheel only, with eight studs and oil	
MAHAB		tube	25.00
PAHAB	R-4-379	Studs for fly wheel (eight).....each	.15
RAHAB	R-4-378	Nuts for attaching crank shaft to fly	
SAHAB		wheel .....each	.15
TAHAB	R-5-153	Oil tube for fly wheel.....	.20
ZAHAB	R-4-600	Plug for fly wheel oil tube.....	.15
BEHAB	R-4-568	Crank shaft cam gear	2.00
CEHAB	R-4-735	Pin for crank shaft cam gear (per doz.,	
DEHAB		.50) .....each	.05
FEHAB	R-4-569	Thrust washer for crank shaft.....	.90
KEHAB	R-4-348	Key for crank shaft.....	.15
LEHAB	R-4- 29	Fly wheel ring	5.00
MEHAB	R-4-344	Pipe plug for fly wheel ring.....	.05
PEHAB	H 417	Crank shaft starting ratchet.....	2.00
REHAB	R-4-217	Pin for starting ratchet 1⅜", No. 5	
SEHAB		taper (per doz., .50).....	.05
TEHAB	R-4-197	Hess-Bright bearing, No. 212, for fly	
ZEHAB		wheel	14.50
BIHAB		The following parts were used on	
CIHAB		Model "H" cars on which the Governor	
DIHAB		was not used.	
FIHAB	4551	Sleeve for front of crank shaft.....	.40
KIHAB	4552	Washer for front of crank shaft.....	.10
LIHAB		No. 208 Hess-Bright bearing for crank	
MIHAB		shaft	7.50
PIHAB	R-4-610	Nuts for crank shaft sleeve (two)..each	.90
RIHAB			
SIHAB		**CAM SHAFT ASSEMBLY.**	
TIHAB		Cam shaft assembled with gears and	
ZIHAB		Hess-Bright bearing .....$	50.00
BOHAB	R-4-567	Cam shaft only	7.00
COHAB	R-4-536	Cam shaft bearings (four).....each	4.00
DOHAB	2813	Cam shaft bearing at front of cam shaft	2.75
FOHAB	R-4-570	Separators for cam shaft bearings (four)	
KOHAB		..... each	.15
LOHAB	R-4-520	Inlet cam on cam shaft (four).....each	.90
MOHAB	R-4-521	Exhaust cam on cam shaft (four)..each	.90
POHAB	R-4-214	Pins for cam shaft cams (eight) (per	
ROHAB		doz., .50) .....each	.05
SOHAB	R-4-363	Washer for end of cam shaft (per doz.,	
TOHAB		.50) .....each	.05
ZOHAB		Screw for end of cam shaft (per doz.,	
BUHAB		.50) .....each	.05
CUHAB	2807	Cam shaft gear with spur gear for cam	
DUHAB	2808	shaft (iron)	14.00
FUHAB	4611	Fibre cam shaft gear with commutator	
KUHAB	2807		
LUHAB		gear (Fibre ¾" wide)	14.00
MUHAB		Hess-Bright bearing (No. 208) on cam	
PUHAB		shaft	7.50
RUHAB	2810	Set screw for cam shaft (per doz., .50)	
SUHAB		..... each	.05
TUHAB		1¼" No. 3 taper pin for cam shaft (per	
ZUHAB		doz., .50) .....each	.05

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CODE WORD			
BAKAB		The following parts were used on Model "H" cars on which the Governor was not used.	
CAKAB			
DAKAB	4548	Cam shaft	10.00
FAKAB	4546	Bearing at front end of cam shaft	4.00
KAKAB	4553	Bushing in gear guard for cam shaft	1.50
LAKAB	4544	Cam shaft gear with commutator gear (fibre 1" wide)	14.00
MAKAB	4547		
PAKAB			
RAKAB			
SAKAB		**CYLINDER, WATER JACKET AND VALVE CHAMBER.**	
TAKAB			
ZAKAB			
BEKAB		Cylinders, water jackets and valve chambers can be furnished assembled only, owing to the necessity of special machinery in assembling. In case of breakage of any of these parts, upon the return of the complete assembly, charges prepaid, we will make the necessary repairs and charge only for the parts used.	
CEKAB			
DEKAB			
FEKAB			
KEKAB			
LEKAB			
MEKAB			
PEKAB			
REKAB			
SEKAB		Cylinder, water jacket and valve chamber assembled	$ 25.00
TEKAB			
ZEKAB	H-1- 98	Dowel for valve chamber (per doz., .25) each	.05
BIKAB			
CIKAB	R-4- 18	Valve chamber nipple	1.75
DIKAB		Inlet valve assembled, comprising the three following items	2.00
FIKAB			
KIKAB		Inlet valve and stem	1.50
LIKAB	R-4- 16	Inlet valve foot	.40
MIKAB	R-4-160	Inlet valve spring (per doz., 1.00)..each	.10
PIKAB		Exhaust valve, assembled, comprising the three following items	2.00
RIKAB			
SIKAB		Exhaust valve, with stem	1.50
TIKAB	R-4- 16	Exhaust valve, foot	.40
ZIKAB	R-4-160	Exhaust valve spring	.10
BOKAB	R-4- 20	Air cock cap	1.00
COKAB		Air relief cock, complete	.80
DOKAB	R-4- 19	Spark plug cap	1.00
FOKAB	R-4-377	Spark plug	1.00
KOKAB	R-4-467	Gasket for spark plug and air cock caps	.10
LOKAB		Adjustable valve rod complete including the two following items	1.25
MOKAB			
POKAB	R-4- 23	Adjustable valve rod only	.60
ROKAB	R-4- 24	Adjusting nut with screw for adjustable valve rod	.60
SOKAB			
TOKAB		Cam slide block assembled with roll and pin (eight) each	1.40
ZOKAB			
BUKAB		**PISTON AND CONNECTING ROD.**	
CUKAB		Piston and connecting rod assembled, including the eleven following items	27.00
DUKAB			
FUKAB		Piston assembled, including four following items	16.00
KUKAB			
LUKAB		Piston with three rings	12.00
MUKAB	R-4-227	Piston rings each	1.00
PUKAB		Piston pin and plug	3.00
RUKAB	R-4- 7	Piston pin bushing	1.00
SUKAB			
TUKAB			
ZUKAB			

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CODE WORD			
BALAB		Connecting rod assembled with cap, oil tube, crank end bearings, and piston pin bushing	12.00
CALAB			
DALAB			
FALAB	R-4- 8	Connecting rod bushing, crank end, with dowel	2.00
KALAB			
LALAB	R-4-362	Oil tube for connecting cap	.20
MALAB	R-4-297	Connecting rod cap hinge pin (per doz., .50) each	.05
PALAB			
RALAB	H-1-243	Cap screw for connecting rod	.40
SALAB	H-1-439	Columbia lock nut for connecting rod (per doz., .50) each	.05
TALAB			
ZALAB			
BELAB			
CELAB		**GOVERNOR AND COMMUTATOR.**	
DELAB			
FELAB		Governor and commutator, complete, assembled	$ 80.00
KELAB			
LELAB		Governor complete, including forty-five following parts	70.00
MELAB			
PELAB	R-4-548	Governor body or housing, inner half	12.00
RELAB	R-4-547	Governor body or housing, outer half	10.00
SELAB		Body with fibre ring and contact points	4.00
TELAB	R-4-593	Cap for governor housing	.60
ZELAB	R-4-631	Coil spring for top of governor shaft (per doz., .50) each	.05
BILAB			
CILAB	R-4-556	Commutator shaft, vertical (with keyway)	3.00
DILAB			
FILAB	R-4-641	Sleeve for governor shaft, upper	.60
KILAB	R-4-643	Pin for governor shaft sleeve (two)	.10
LILAB	R-4-642	Sleeve for governor shaft, lower	1.60
MILAB	R-4-647	Key for governor sleeve (two) (per doz., .50) each	.05
PILAB			
RILAB	R-4-649	Shoe for governor sleeve (four) (per doz., 1.00) each	.10
SILAB			
TILAB	R-4-648	Pin for governor (per doz., .25)....each	.05
ZILAB	R-4-450	Yoke for governor, short	3.00
BOLAB	R-4-451	Yoke for governor, long	3.00
COLAB	R-4-652	Pin for governor yokes (four) (per doz., .25) each	.05
DOLAB			
FOLAB	R-4-542	Trunnion for governor	.75
KOLAB	R-4-597	Trunnion pin for governor	.15
LOLAB	R-4-594	Spring for governor	.15
MOLAB	R-4-595	Link for governor	.60
POLAB	R-4-543	Ring for centrifugal governor	1.00
ROLAB	R-4-596	Yoke for centrifugal governor ring	.25
SOLAB	R-4-598	Screw bushing for governor shaft	2.40
TOLAB	R-4-610	Lock nut for screw bushing	.70
ZOLAB	R-4-552	Cover for commutator gears	5.00
BULAB	R-4-554	Commutator shaft gear	1.60
CULAB	R-4-702	Commutator shaft nut	.10
DULAB	R-4-551	Spur gear for commutator stud	1.60
FULAB	R-4-555	Mitre gear for commutator stud	2.00
KULAB	R-4-612	Stud for commutator gears	.40
LULAB	R-4-705	Nut for commutator gear stud	.10
MULAB	R-4-347	Washer for commutator gear stud (per doz., .25) each	.05
PULAB			
RULAB	R-4-651	Commutator gear key	.05
SULAB	R-4-613	Bushing for commutator cover	.80
TULAB	R-4-345	Washer for ½" stud (per doz., .25).each	.05
ZULAB	R-4-599	Lock nut for ball race	.50

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CODE WORD			
BAMAB	R-4-611	Lock washer for ball race (per doz., .50)	
CAMAB		..... each	.05
DAMAB	R-4-609	Knipe combination ball bearing at top of	
FAMAB		governor (two) .....each	.35
KAMAB		The following parts were used on	
LAMAB		cars on which the Governor was not	
MAMAB		used.	
PAMAB	R-4-632	Spacer for commutator .....$	0.15
RAMAB	R-4-553	Bearing for commutator	1.20
SAMAB	R-4-609	Knipe bearings for commutator (two)	
TAMAB		..... each	.35
ZAMAB	R-4-631	Spring for top of commutator shaft (per	
BEMAB		doz., .50) .....each	.05
CEMAB	4549	Commutator shaft, vertical (late type)..	1.00
DEMAB	R-4-554	Commutator shaft gear	2.25
FEMAB	R-4-599	Lock nut for ball race.....	.55
KEMAB	2843	Inside ball race for bearing at bottom of	
LEMAB		commutator shaft	.25
MEMAB	2844	Adjusting cone for bearing at bottom of	
PEMAB		commutator shaft	.25
REMAB	2845	Stationary cone for bearing at bottom of	
SEMAB		commutator shaft	.20
TEMAB		Balls for bearing at bottom of com-	
ZEMAB		mutator shaft .....each	.01
BIMAB	R-4-598	Screw bushing for vertical commutator	
CIMAB		shaft	2.40
DIMAB.	R-4-610	Lock nut for screw bushing.....	.70
FIMAB	4545	Aluminum support for commutator.....	2.40
KIMAB	R-4-552	Cover for commutator gear.....	3.50
LIMAB	R-4-680	Cap screw for attaching aluminum sup-	
MIMAB		port to commutator gear cover.....	.15
PIMAB	R-4-706	Nut for cap screw (per doz., .50)...each	.05
RIMAB	4560	Gear guard, upper and lower, assembled	12.00
SIMAB	4559		
TIMAB	2786	Oil tube for gear guard at cam shaft..:	.10
ZIMAB	4612	45° elbow for oil tube.....	.20
BOMAB		Oil tube for gear guard at crank shaft..	.15
COMAB	4613	90° elbow for oil tube.....	.20
DOMAB	2790	Connection for oil tube and grease cup.	.10
FOMAB		Empress grease cup for gear guard	
KOMAB		(two) .....each	.35
LOMAB	H-1613	Cap screw, short, for holding halves of	
MOMAB		gear guard (three) (per doz., .50)	
POMAB		..... each	.05
ROMAB	H-1713	Nut for cap screw (per doz., 1.00).....	.10
SOMAB	4555	Cap screw, long, for holding halves of	
TOMAB		gear guard (two) (per doz., .50).each	.05
ZOMAB	R-4-703	Nut for cap screw (per doz., .50)...each	.05
BUMAB	H-1601	Cap screw, short, next to engine base	
CUMAB		(per doz., 1.00) .....each	.10
DUMAB	H-1713	Nut for cap screw	.15
FUMAB	4589	Cap screw for attaching gear guard to	
KUMAB		engine base (per doz., 1.00).....each	.10
LUMAB		Four point bearing complete, for lower	
MUMAB		end of governor shaft, comprising the	
PUMAB		three following items	.60
RUMAB	R-4-606	Inside ring for four point bearing of	
SUMAB		governor shaft	.35
TUMAB	R-4-607	Outside upper ring for four point bear-	
ZUMAB		ing of governor shaft.....	.35

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CODE WORD			
BAPAB	R-4-608	Outside lower ring for four point bear-	
CAPAB		ing of governor shaft.....	.25
DAPAB	R-4-653	Shaft for governor arm, upper (short)..	.25
FAPAB	R-4-654	Shaft for governor arm, lower (long)..	.20
KAPAB	R-4-442	Governor arm, upper (short) for con-	
LAPAB		trolling throttle	.55
MAPAB	R-4-441	Governor arm, lower (long) for control-	
PAPAB		ling governor	.70
RAPAB	R-4-443	Governor lever for bottom of governor	
SAPAB		vertical shaft	.85
TAPAB	R-4-659	End connection for upper throttle rod	
ZAPAB		on upper governor arm.....	.30
BEPAB	R-4-640	Nut for end connection for upper	
CEPAB		throttle rod (per doz., .25).....each	.05
DEPAB	R-4-665	End connection for lower throttle rod	
FEPAB		on governor arm, lower.....	.25
KEPAB	R-4-603	Lower throttle rod from governor arm,	
LEPAB		long, to bottom of vertical spark shaft	.55
MEPAB	R-4-602	Upper throttle rod from governor arm,	
PEPAB		short, to carburetor	.55
REPAB	R-4-662	Connection for commutator rod at com-	
SEPAB		mutator	.30
TEPAB	R-4-663	Screw for commutator rod connection	
ZEPAB		(per doz., .25) .....each	.05
BIPAB	R-4-664	End connection for commutator rod at	
CIPAB		commutator	.15
DIPAB	R-4-640	Nut for commutator rod end connection	
FIPAB		(per doz., .25).....each	.05
KIPAB	R-4-604	Commutator rod from commutator to	
LIPAB		top of vertical spark shaft.....	.55
MIPAB		Commutator complete	10.00
PIPAB		Commutator body only	3.00
RIPAB		Bronze center, for commutator, as-	
SIPAB		sembled with arm and roller.....	4.00
TIPAB		Bronze arm with roller for commutator.	1.00
ZIPAB		Roller for arm for commutator.....	.30
BOPAB		Spring for commutator bronze arm (per	
COPAB		doz., .50) .....each	.05
DOPAB			
FOPAB			
KOPAB		**CARBURETOR AND CONNECTIONS.**	
LOPAB			
MOPAB		Carburetor and connections complete...$	38.00
POPAB	R-4-585	Mixer intake connection from top of	
ROPAB		mixer to valve chamber.....	6.00
SOPAB		Bolt and nut for mixer intake connection	
TOPAB		(per doz., .50) .....each	.05
ZOPAB		Carburetor, complete	24.00
BUPAB	E- 1	Float chamber body	8.00
CUPAB	E-C- 2	Mixer chamber body	7.00
DUPAB	E- 4-A	Long needle bushing nut.....	.12
FUPAB	E- 6-A	Auxiliary air valve seat	.80
KUPAB	E- 7-A	Auxiliary air valve disc	.32
LUPAB	E- 8-A	Auxiliary air valve spring (per doz., .50)	
MUPAB		..... each	.05
PUPAB	E- 9-A	Auxiliary air valve guide screw	.40
RUPAB	E- 10-A	Auxiliary air valve spring adjusting	
SUPAB		screw	.40
TUPAB	E- 11	Auxiliary air valve adjusting screw lock	
ZUPAB		nut	.12

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CODE WORD			
BARAB	E- 12-A	Auxiliary air valve disc bushing.....	.08
CARAB	E- 13-A	Auxiliary air valve guide screw lock nut	.12
DARAB	E-C-14	Throttle rod	.24
FARAB	E-C-15	Throttle plate	1.00
KARAB	E- 16	Throttle rod screw (per doz., .50)...each	.05
LARAB	E-C-17	Throttle lever	.25
MARAB	E- 18	Throttle rod pin	.18
PARAB	E- 19	Throttle lever stop screw (per doz., .50)	
RARAB		.....each	.05
SARAB	E- 20	Throttle lever stop screw nut.....	.08
TARAB	E- 21	Spray nozzle	.16
ZARAB	E- 24-A	Needle bushing	.24
BERAB	E- 22-A	Adjusting needle and pin for spray noz-	
CERAB		zle	.24
DERAB	E- 25	Needle packing nut	.08
FERAB	E- 26	Float chamber plug screw (per doz., .50)	
KERAB		....each	.05
LERAB	E- 27	Float	1.00
MERAB	E- 39-A	Inlet elbow	1.00
PERAB	22-A	Primer lever	.24
RERAB	21-A	Primer	.24
SERAB	E- 29	Float lever	.32
TERAB	E- 30	Float lever pin (per doz., .25).....each	.05
ZERAB	E- 31-A	Float lever tube (per doz., .25).....each	.05
BIRAB	E- 32	Gasoline inlet needle guide cap	.20
CIRAB	X-C-981	Gasoline inlet needle weight lock nut..	.08
DIRAB		Gasoline inlet needle weight.....	.20
FIRAB	X-C-980	Gasoline inlet needle	.50
KIRAB	E- 36	Gasoline inlet bushing	.20
LIRAB	E- 37	Gasoline inlet bushing packing nut.....	.20
MIRAB	E- 38	Body screws for carburetor.....each	.12
PIRAB	E- 41	Gasoline inlet needle guide cap top....	.40
RIRAB	R-4-466	Gasket for mixer (per doz., .50)....each	.05
SIRAB	R-4-480	Mixer connection tee	1.00
TIRAB		Mixer connection tee bolt and nut.....	.15
ZIRAB	R-4-492	Mixer brass air tube, with two union	
BORAB		nuts, from heater pipe to bottom of	
CORAB		mixer	2.40
DORAB		Gasoline feed pipe with two union nuts.	1.00
FORAB	R-4-373	Aluminum heater pipe with set screw	
KORAB	R-4-698	and nut	3.00
LORAB	R-4-602	Throttle rod, upper	.55
MORAB	R-4-639	Throttle rod collar	.35
PORAB	R-4-634	Clamp screw for throttle rod collar (per	
RORAB		doz., .25) .....each	.05
SORAB	R-4-646	Throttle rod spring (per doz., 1.00).each	.10
TORAB	R-4-494	Collar and pin for mixer trunnion (per	
ZORAB	R-4-496	doz., .25)	.05
BURAB	R-4-495	Mixer trunnion	.15
CURAB		**Priming Rod.**	
DURAB		Priming rod with handle and end.....$	.50
FURAB	H-1436	Priming rod only	.20
KURAB	H-1434	Priming rod handle	.15
LURAB	H-1435	Priming rod end or lever	.10
MURAB	H-1437	Priming rod wire	.10
PURAB	H-1439	Priming rod bracket	.30
RURAB	H-1427	Spring for priming rod	.05
SURAB	H-1440	Screws and nuts for bracket, ¼"x20	
TURAB		(per doz., .25) .....each	.05
ZURAB			

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CODE WORD			
BASAB		**Accelerator.**	
CASAB		Accelerator complete including the five	
DASAB		following parts .....$	3.00
FASAB	H- 882	Accelerator pedal	2.00
KASAB	H- 859	Accelerator pedal bracket	.25
LASAB	H-1624	Accelerator pedal bracket attaching nuts	
MASAB		and bolts (two) (per doz., .50)..each	.05
PASAB	H- 856	Pin for accelerator pedal, bracket and	
RASAB		cotter pins	.05
SASAB		Accelerator rod, complete, including the	
TASAB		eight following parts	1.10
ZASAB	R-4-605	Accelerator rod only	.55
BESAB	H- 860	Accelerator rod yoke	.20
CESAB	R-4-638	Accelerator rod collar	.35
DESAB	R-4-634	Clamping screw for collar (per doz., .50)	
FESAB		.....each	.05
KESAB	R-4-645	Spring for accelerator rod.....	.10
LESAB	R-4-658	Support for accelerator rod.....	.30
MESAB		Accelerator rod yoke nut (per doz., .50)	
PESAB		.....each	.05
RESAB	H- 857	Pin for accelerator rod yoke.....	.05
SESAB			
TESAB			
ZESAB		**PUMP.**	
BISAB		Pump complete, comprising the twenty	
CISAB		following items .....$	20.00
DISAB	R-5-119	Pump body	6.00
FISAB	R-4-334	Screw for pump body	.10
KISAB	R-4-485	Pump driving shaft	.60
LISAB	R-4-349	Key for pump driving shaft (two) (per	
MISAB		doz., .50)	.05
PISAB	R-4-482	Inside driving gear for water pump....	3.00
RISAB	R-4-488	Bushing for pump shaft.....	.40
SISAB	R-4-489	Gland for water pump.....	.24
TISAB	R-4-486	Bushing for pump gland.....	.55
ZISAB	R-5- 39	Outside driving gear for water pump...	1.60
BOSAB	R-4-484	Shaft for pump driven gear.....	.24
COSAB	R-4-483	Inside driven gear for pump.....	3.00
DOSAB	R-5-120	Pump cover	6.00
FOSAB	R-4-487	Bushing for pump driven gear.....	.40
KOSAB	R-4-372	⅜"x16 hex. nuts for pump cover (two)	
LOSAB		(per doz., .50) .....each	.05
MOSAB	R-4-674	Stud for attaching pump (two)....each	.10
POSAB	R-4-549	Cover for pump gear	2.50
ROSAB		Bolt and nut for attaching pump gear	
SOSAB		cover (two) .....each	.10
TOSAB	R-4-382	Grease cup for pump	.60
ZOSAB	R-4-381	Spring for grease cup (per doz., .50)	
BUSAB		.....each	.05
CUSAB	R-4-380	Check ball for grease cup.....	.03
DUSAB	R-4-562	Connection from pump to engine.....	.55
FUSAB	R-4-561	Connection from pump to radiator.....	.55
KUSAB		Water tube for cylinder outlet on top of	
LUSAB		cylinder with three tees and elbow..	3.00
MUSAB		Water tube for cylinder inlet at bottom	
PUSAB		of cylinder with three tees and elbow	3.00
RUSAB	R-5-117	Nipples for cylinder inlet and outlet	
SUSAB		pipes (eight) .....each	.40
TUSAB	R-5-116	Union nuts for cylinder inlet and outlet	
ZUSAB		pipes .....each	1.00

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LUBRICATOR.

CODE WORD			
BATAB		Lubricator assembled complete.....$	30.00
CATAB	H- 50	Lubricator body	12.00
DATAB FATAB KATAB		Lubricator cover complete assembled, comprising the twenty-six following parts	16.00
LATAB MATAB	H- 51	Lubricator cover with long and short shaft bushings and filler bushing....	5.00
PATAB RATAB SATAB	R-4-338	Lubricator cover screws and nuts for attaching cover to body (six) (per doz., .25) .....each	.05
TATAB ZATAB BETAB	H-1618	Lubricator cover screws and nuts for attaching cover to pump cylinder body (four) (per doz., .25).....each	.05
CETAB	H- 57	Pump cylinder for lubricator.....	1.00
DETAB	H- 58	Elbow for lubricator pump cylinder....	.40
FETAB		Tube for lubricator pump cylinder elbow	.10
KETAB	H- 60	Plunger for lubricator pump cylinder..	.10
LETAB METAB	H- 74	Plunger spring for lubricator pump cylinder	.10
PETAB RETAB	H- 61	Cam follower for lubricator pump cylinder plunger	.20
SETAB	H-1210	¼" steel ball for lubricator.....	.01
TETAB	H- 63	Stop screw for lubricator cover.....	.40
ZETAB	H- 76	Lock nut for lubricator cover stop screw	.10
BITAB CITAB	H- 64	Threaded bushing for stop screw for lubricator	.40
DITAB FITAB	H- 69 H- 71	Stop with button for lubricator cover...	.30
KITAB	H- 72	Pin for lubricator	.10
LITAB MITAB	H- 77	Spring for lubricator cover top (per doz., .25) .....each	.05
PITAB	H- 62	Filler bushing for lubricator cover.....	.30
RITAB	H- 70	Shaft for lubricator	.60
SITAB		Lubricator cam shaft with cam.....	1.70
TITAB	H- 66	Bushing for lubricator shaft, short.....	.40
ZITAB	H- 67	Bushing for lubricator shaft, long.....	.50
BOTAB	H- 68	Cam for lubricator shaft.....	.25
COTAB	H- 52	Rocker arm for lubricator.....	1.40
DOTAB	H- 54	Bushing for lubricator rocker arm.....	.40
FOTAB	H- 55	Clutch washer for lubricator rocker arm	.15
KOTAB	H- 56	Clutch body for lubricator rocker arm..	3.00
LOTAB MOTAB POTAB	H- 65	Rollers for clutch body for lubricator rocker arm (twelve) (per doz., .25) .....each	.05
ROTAB	H- 69	Push-button for lubricator	.30
SOTAB TOTAB	H- 74	Springs for clutch body for lubricator rocker arm (six) .....each	.10
ZOTAB		Stand pipe for lubricator, complete.....	2.00
BUTAB	H- 84	Body for lubricator stand pipe	1.10
CUTAB	H- 86	Cap for lubricator stand pipe.....	.50
DUTAB	H- 79	Plug for lubricator stand pipe.....	.25
FUTAB KUTAB	H- 81	Gasket for lubricator stand pipe (two) (per doz., .50) .....each	.05
LUTAB	H- 78	Nut for lubricator stand pipe.....	.20
MUTAB	H- 82	Glass for lubricator stand pipe.....	.25
PUTAB RUTAB	H- 83	Washer for lubricator stand pipe glass (two) (per doz., .25).....each	.05
SUTAB	H- 85	Gauze for lubricator stand pipe.....	.30
TUTAB	H- 87	Collars for lubricator stand pipe gauze.	.25
ZUTAB	H- 71	Stop for lubricator	.15

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CODE WORD			
BAZAB	H- 73	Spring for lubricator clutch body.....	.05
CAZAB	H- 75	Ball for lubricator	.05
DAZAB FAZAB	H- 53	Valve stem arm for attaching lubricator rocker arm to valve rod.....	.80
KAZAB	H- 59	Cap for attaching lubricator.....	.50
LAZAB MAZAB		Bolts and nuts for attaching lubricator cap (two) .....each	.10
PAZAB RAZAB	R-4-326	Set screw and check nut for lubricator attaching cap	.15
SAZAB TAZAB		Lubricator pipe to engine base with union nuts	.60
ZAZAB BEZAB		Lubricator pipe to sight feed gauge with union nuts	.60
CEZAB DEZAB FEZAB KEZAB		**Lubricator Sight Feed on Dash.**	
		Sight feed on dash, complete .....$	3.60
LEZAB	H- 484	Body for sight feed on dash.....	1.25
MEZAB	H- 485	Top for sight feed body.....	.60
PEZAB	H- 489	Bottom plug for sight feed body.....	.15
REZAB	H- 490	Top plug for sight feed.....	.10
SEZAB	H- 492	Glass for sight feed.....	.30
TEZAB	H- 493	Nozzle for sight feed.....	.10
ZEZAB	H- 491	Cork washers for sight feed.....each	.05
BIZAB	H- 494	Lead washers for sight feed.....each	.05
CIZAB	H- 486	Bronze flanges for sight feed (two).each	.10
DIZAB	H- 487	Nut for attaching sight feed (two).each	.15
FIZAB	H- 488	Elbow for sight feed	.30
KIZAB	H-1209	Springs for sight feed elbow.....each	.15
LIZAB	H-1210	¼" balls for sight feed elbow.....each	.01
MIZAB	H-1204	Check nut for sight feed elbow.....	.20
PIZAB	H-1208	Plug for sight feed check valve.....	.10
RIZAB	H-1206	Cup end for sight feed check valve.....	.20
SIZAB TIZAB ZIZAB BOZAB COZAB DOZAB FOZAB KOZAB LOZAB MOZAB POZAB ROZAB SOZAB TOZAB ZOZAB BUZAB CUZAB DUZAB FUZAB KUZAB LUZAB MUZAB PUZAB RUZAB SUZAB TUZAB ZUZAB		**TRANSMISSION.**	
		Transmission complete, including groups a, b, c, d and e.....$	250.00
		Intermediate friction drum with intermediate gear and intermediate friction drum bushing	15.00
		Low speed friction drum with low speed friction drum bushing, low speed member and gear case bushing.....	18.00
		(a) Gear Case.	
		Gear case, assembled with pins, gears and bushings, comprising the five following items	88.00
		Gear case with six pins	18.00
		Intermediate gears with bushings, including the two following items ..... per set	50.00
		Change speed assembly of two 30-tooth gears, one 42-tooth gear with bushing and six pins (three set used) ..... per set	12.00

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CODE WORD			
BABED	R-5- 61	Reversing gear with bushing (three used) ....each	4.00
CABED			
DABED	R-4- 48	Internal gear with bushings....	18.00
FABED	R-4-367	Gear case cover with bushing, oil tube and plug	15.00
KABED			
LABED	R-4-681	Gear case cover screws (eighteen) (per doz., .50) ....each	.05
MABED			
PABED	R-5-107	Thrust washer for internal gear (smooth steel washer with small hole)....	.80
RABED			
SABED	R-5-108	Thrust washer for internal gear (steel with oil grooves)	.40
TABED			
ZABED	R-5-109	Thrust washer for internal gear (thin bronze washer) (two)....each	.30
BEBED			
CEBED		Pins for gear case ....each	.20
DEBED			
FEBED			
KEBED		**Model "H" Transmission Bushings.**	
LEBED	R-4- 54	Gear case cover bushing....$	2.00
MEBED	R-4-155	Intermediate gear bushing, rear....	1.00
PEBED	R-4-156	Intermediate gear bushing, front....	1.00
REBED	R-5- 53	Intermediate speed gear bushing....	2.00
SEBED	R-4- 55	Low speed gear bushing	2.00
TEBED	R-5- 56	Change speed gear bushings (three) ....each	1.00
ZEBED			
BIBED	R-5- 57	Reverse gear bushings (three)....each	.80
CIBED	R-4- 52	Gear case bushing	1.50
DIBED			
FIBED			
KIBED		**(b) Friction Disc.**	
LIBED		Friction disc, complete, including the three following items....	14.00
MIBED			
PIBED	R-4-510	Disc, only	4.00
RIBED		High speed clutch disc....	12.00
SIBED	R-5-151	Thrust washer for high speed disc. ...	1.20
TIBED	R-4-475	Spring for high speed clutch....	.15
ZIBED	R-4-511	Friction disc plates with leathers and rivets, four always sent (per set of four)	8.00
BOBED			
COBED			
DOBED	R-4-207	Leathers and rivets (16 to set).....each	.20
FOBED	R-4-416	Screws for friction disc plates.....each	.10
KOBED			
LOBED			
MOBED		**(c) High Speed Clutch.**	
POBED		High speed clutch, complete, comprising the eight following items....	10.00
ROBED			
SOBED	R-4- 72	Clutch rings for high speed clutch (two) ....each	2.50
TOBED			
ZOBED	R-4-198	¾" balls for high speed clutch rings (10 in each) ....each	.10
BUBED			
CUBED	R-4-180	Adjusting nut for high speed clutch....	2.00
DUBED	R-5-179	Adjusting collar for high speed clutch..	3.00
FUBED	R-5-185	Locks for set screws for high speed adjusting collar (four) ....each	.10
KUBED			
LUBED	R-5-181	Long screws for high speed adjusting nut (two) ....each	.40
MUBED			
PUBED	R-5-182	Short screws for high speed adjusting nut (two) ....each	.40
RUBED			
SUBED		Grease cup for high speed clutch rings ....each	.35
TUBED			
ZUBED			

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CODE WORD			
		(d) Main Clutch.	
BAFED		Main clutch, complete, includes seven following items	18.00
CAFED			
DAFED	R-4- 75	Adjusting nut for main clutch....	1.60
FAFED	R-5-154	Adjusting sleeve for main clutch....	6.00
KAFED	R-4-152	Thrust washer	1.00
LAFED	R-4-149	Thrust washer for main clutch, ⅜"....	2.00
MAFED	R-4-150	3/16" thrust washer for main clutch....	2.00
PAFED	R-4- 71	Clutch rings for main clutch (two).each	2.50
RAFED	R-4-198	¾" balls for main clutch rings (10 in each) ....each	.15
SAFED			
TAFED		Grease cup for main clutch rings..each	.35
ZAFED			
BEFED		Main clutch inner and outer disc assembled with springs and cups....	40.00
CEFED	R-4- 70	Main clutch outer disc with leathers and rivets	18.00
DEFED			
FEFED	R-4- 69	Main clutch inner disc with leathers and rivets	18.00
KEFED			
LEFED	R-4-207	Leathers for main clutch discs.....each	.30
MEFED	R-4-317	Rivets for main clutch discs.... ....per set of 96	.40
PEFED			
REFED	R-4-174	Springs for main clutch discs (eight) .... each	.15
SEFED			
TEFED	R-4-178	Spring cups for main clutch discs (sixteen) ....each	.15
ZEFED			
BIFED	R-5- 71	Nut for main clutch driver....	1.50
CIFED	2825	Screws for main clutch nut (two) (per doz., .25) ....each	.05
DIFED			
FIFED	2824	Keys for main clutch nut (two) (per doz., 1.00) ....each	.10
KIFED			
LIFED	H- 556	Dog for main clutch release, right....	2.00
MIFED	H- 557	Dog for main clutch release, left....	2.00
PIFED	H- 558	Toggle for main clutch	3.00
RIFED			
SIFED			
TIFED		**(e) Transmission Shaft.**	
ZIFED		Transmission shaft, complete, including the eight following items....	30.00
BOFED			
COFED	R-5- 66	Transmission shaft	12.00
DOFED	R-5- 58	Driving gear on transmission shaft....	4.00
FOFED	R-4-298	Pin for driving gear (per doz., 1.00) .... each	.10
KOFED			
LOFED	R-5- 74	Driver for high speed clutch....	7.50
MOFED	R-5- 73	Driver for main clutch....	6.50
POFED	R-5-235	Keys for transmission shaft (two).each	.15
ROFED	R-4-700	⅝" check nut for transmission shaft (two) (per doz., .50)	.05
SOFED			
TOFED		Pin for main clutch driver (per doz., .50)	.05
ZOFED			
BUFED			
CUFED			
DUFED		**Transmission Girder.**	
FUFED		Transmission girder assembled, including the ten following items....$	14.00
KUFED			
LUFED	R-4- 90	Girder only with end cap and studs....	10.00
MUFED	R-4- 89	End cap for transmission girder....	1.20
PUFED	R-4-326	Set screw for end cap of transmission girder	.15
RUFED			
SUFED	R-4-373	5/16" hex. nut for set screw (per doz., .50) ....each	.05
TUFED			
ZUFED			

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CODE WORD			
BAHED	R-4- 91	Center cap for transmission girder....	3.00
CAHED	R-4-333	Cap screws for transmission girder center cap (two) .....each	.15
DAHED			
FAHED		Washers for transmission girder center cap (two) .....each	.05
KAHED			
LAHED	R-4-272	Studs for transmission girder (two)...	
MAHED		.....each	.15
PAHED	R-4-368	Hex. nuts for transmission girder studs (two) (per doz., .50).....each	.05
RAHED			
SAHED	R-4-369	½" Columbia lock nuts for transmission girder (two) (per doz., .50) ....each	.05
TAHED			
ZAHED	R-4-197	Hess-Bright bearing (No. 212) for transmission girder	14.50
BEHED			
CEHED			
DEHED			
FEHED		**Transmission Brake Bands.**	
KEHED			
LEHED		Transmission brake bands complete assembled with plate .....$	20.00
MEHED			
PEHED		Reverse transmission brake band with leathers, fibres, rivets and end clips.	6.00
REHED			
SEHED	R-4-264	Fibres with rivets for reverse brake band .....each	.15
TEHED			
ZEHED	R-4-263	Leathers with rivets for reverse brake band .....each	.15
BIHED			
CIHED	R-4-100	Upper clip for reverse transmission brake band	1.20
DIHED			
FIHED	R-4-101	Lower clip for reverse transmission brake band	.60
KIHED			
LIHED		Lever with roll for reverse brake band.	1.80
MIHED	R-4- 97	Lever only for reverse brake band.....	2.00
PIHED		Pin for reverse brake band lever.....	.05
RIHED		Slow speed transmission brake band with leathers, fibres, rivets and clips.....	6.00
SIHED			
TIHED	R-4-264	Fibres with rivets for slow speed brake band .....each	.15
ZIHED			
BOHED	R-4-263	Leathers with rivets for slow speed brake .....each	.15
COHED			
DOHED	R-4-100	Upper clip for slow speed brake band..	1.20
FOHED	R-4-101	Lower clip for slow speed brake band.	.60
KOHED		Lever with roll for slow speed brake band	1.80
LOHED			
MOHED	R-4- 97	Lever only with slow speed brake band.	2.00
POHED		Pin for slow speed brake band lever...	.05
ROHED		Intermediate transmission brake band with leathers, fibres, rivets and clips	6.00
SOHED			
TOHED	R-4-264	Fibres with rivets for intermediate brake band .....each	.15
ZOHED			
BUHED	R-4-263	Leathers with rivets for intermediate band .....each	.15
CUHED			
DUHED	R-4-100	Upper clip for intermediate brake band	1.20
FUHED	R-4-101	Lower clip for intermediate brake band	.60
KUHED		Lever with roll for intermediate brake band	1.80
LUHED			
MUHED	R-4- 97	Lever, only for intermediate brake band	2.00
PUHED		Pin for intermediate brake band lever..	.05
RUHED	R-4-258	Transmission brake band plate.....	1.40
SUHED	R-4- 42	Rolls for brake band levers.....each	.50
TUHED	R-4- 99	Bell cranks for adjusting brake bands (three) .....each	1.40
ZUHED			

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CODE WORD			
BAKED	R-4-329	Set screw and lock nut for bell crank..	.15
CAKED	R-4-260	Separator for bell cranks, large, 2⅛" long	.15
DAKED			
FAKED	R-4-261	Separator for bell cranks, medium, 1¼" long	.15
KAKED			
LAKED	R-4-262	Separator for bell cranks, small, ⅞" long	.10
MAKED			
PAKED	R-4-175	Shaft for bell cranks.....	.25
RAKED	R-4- 84	Eyebolt for adjusting brake band (three) .....each	1.20
SAKED			
TAKED		Pin and cotter for brake band adjusting eyebolt (per doz., .50).....each	.05
ZAKED			
BEKED		Nut and lock nut for brake band adjusting eyebolt (per doz., .50)...each	.10
CEKED			
DEKED		Washer for brake band adjusting eyebolt (per doz., .50) .....each	.05
FEKED			
KEKED	R-4-255	Spring for adjusting brake band.....	.10
LEKED	R-4- 98	High speed clutch bell crank.....	2.40
MEKED	R-4- 42	Roll for high speed bell crank.....	.50
PEKED	R-4-300	Pin for high speed bell crank roll.....	.30
REKED	R-4- 85	High speed pull rod	1.40
SEKED		Pin and cotter for high speed pull rod (per doz., .50) ..... each	.05
TEKED			
ZEKED		Spring for high speed pull rod	.20
BIKED		High speed hold back rod with adjustable yoke, pin and cotter..	.60
CIKED			
DIKED	R-4- 86	High speed hold back rod only.....	1.20
FIKED	R-4- 87	*Adjustable yoke with pin and cotter for high speed hold back rod*.....	1.20
KIKED			
LIKED		**Muffler Connections.**	
MIKED			
PIKED	H- 716	Header for muffler exhaust pipe.....$	2.00
RIKED	H-1603	Bolt and nut for muffler exhaust pipe header, ⅜"x2⅛" .....each	.15
SIKED			
TIKED	H-1604	Bolt and nut for muffler exhaust pipe header, ⅜"x2⅜" .....each	.20
ZIKED			
BOKED	H- 718	Exhaust pipe for muffler, front, from valve chamber to exhaust header....	.40
COKED			
DOKED	H- 719	Exhaust pipe to muffler, middle, from valve chamber to exhaust header....	.40
FOKED			
KOKED	H- 717	Exhaust pipe for muffler, rear, from valve chamber to exhaust header...	.80
LOKED			
MOKED	H- 724	Exhaust pipe leading from exhaust header to left muffler.....	.60
POKED			
ROKED	H- 715	Nozzle connecting exhaust pipe to muffler	1.40
SOKED			
TOKED	H-1610	Bolt and nut for exhaust pipe nozzle..	.05
ZOKED		Plug for exhaust pipe nozzle.....	.05
BUKED	R-4-110	Exhaust connection, front, for connecting front exhaust pipe to valve chamber	1.20
CUKED			
DUKED			
FUKED	R-4-112	Exhaust connection, center, for connecting center exhaust pipe to valve chamber	1.60
KUKED			
LUKED			
MUKED	R-4-481	Exhaust connection, rear, for connecting rear exhaust pipe to valve chamber	1.00
PUKED			
RUKED			
SUKED	R-4-463	Gasket for center exhaust connection (3 to a set).....	.16
TUKED			
ZUKED	R-4-464	Gasket for front and rear exhaust connection (2 to a set).....	.16

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CODE WORD			
		Starting Device.	
BALED			
CALED		Starting crank, complete.....$	4.00
DALED	H- 406	Starting crank only.....	3.00
FALED	H- 407	Starting crank handle.....	.60
KALED	H- 408	Pin for starting crank handle.....	.20
LALED	H- 405	Shaft for starting crank.....	1.20
MALED	H- 411	Starting shaft box	1.20
PALED	H- 412	Bushing for starting crank.....	.40
RALED	H- 414	Bracket for starting crank.....	2.00
SALED	H- 417	Starting crank ratchet	1.75
TALED	H- 416	Spring for starting crank.....	.10
ZALED	H- 415	Pad for starting crank shaft.....	.05
BELED			
CELED			
DELED		**Engine Shield.**	
FELED			
KELED		Engine shield, complete (six pieces)...$	25.00
LELED	4516	Engine shield, large piece, front, for under motor, with four fasteners....	7.00
MELED			
PELED	4517	Engine shield, large piece, rear, under fly wheel with six fasteners.....	10.00
RELED			
SELED	4520	Engine shield, small piece, right side, front, with spring clamps.....	2.00
TELED			
ZELED	4521	Engine shield, small piece, right side, rear, with spring clamps.....	2.00
BILED			
CILED	4522	Engine shield, small piece, left side, front, with spring clamps.....	2.00
DILED			
FILED	4523	Engine shield, small piece, left side, rear, with spring clamps.....	2.00
KILED			
LILED		Engine shield fastener, complete.....	1.00
MILED	H-1376	Engine shield bracket	.15
PILED	H-1382	Pin for engine shield bracket.....	.05
RILED	H-1378	Shell and yoke for engine shield fastener	1.20
SILED	H-1380		
TILED	H-1375	Spring for engine shield hook.....	.15
ZILED	H-1377	Hook for engine shield fastener.....	.20
BOLED			
COLED			
DOLED			
FOLED		**FRAME.**	
KOLED			
LOLED	H-1379	Catch for engine shield hook	.10
MOLED	H-1381	Washer for engine shield hook	.10
POLED	H-1380	Shell for spring for engine shield hook	.80
ROLED	H-1378	Yoke for engine shield hook.....	.35
SOLED		Frame, complete, less springs, but including all parts riveted to it.....$	150.00
TOLED			
ZOLED	H- 101	Main side bar, right.....	20.00
BULED	H- 102	Main side bar, left.....	20.00
CULED	H- 103	Rear end cross member.....	8.00
DULED	H- 105	Cross member for front end of rear spring	4.00
FULED			
KULED	H- 106	Cross member for front engine support	6.00
LULED	H- 107	Cross member for rear engine support.	6.00
MULED	H- 109	Reinforcement plate for rear engine's support, left	5.00
PULED			
RULED	H- 124	Reinforcement plate for rear engine support, right	5.00
SULED			
TULED	H- 122	Cross member for front end of frame..	8.00
ZULED	H- 121	Cross member for front end of strut rod	3.00

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CODE WORD			
BAMED	H- 123	Rear end cross member at extreme end of frame	4.00
CAMED			
DAMED	H- 117	Rear cross member reinforcement plate for H-103, right or left.....	.75
FAMED			
KAMED	H- 113	Left front brace for rear spring cross member (two) .....each	.40
LAMED			
MAMED	H- 114	Right front brace for rear spring cross member (two) .....each	.40
PAMED			
RAMED	H- 115	Left rear brace for rear spring cross member	.40
SAMED			
TAMED	H- 116	Right rear brace for rear spring cross member	.40
ZAMED			
BEMED	H- 125	Frame cross brace (two).....each	.60
CEMED	H- 134	Front spring bracket for frame, right or left	1.50
DEMED			
FEMED	H- 150	Rear spring front bracket, right.....	2.50
KEMED	H- 151	Rear spring front bracket, left.....	2.50
LEMED	H- 152	Front engine support bracket, right....	2.50
MEMED	H-1609	Front engine support bracket bolt and nut	.10
PEMED			
REMED	H- 153	Front engine support bracket, left.....	2.50
SEMED	H- 154	Rear engine support bracket, right.....	2.00
TEMED	H- 155	Rear engine support bracket, left.....	2.00
ZEMED	H- 156	Spring hanger, rear, right.....	2.00
BIMED	H- 157	Spring hanger, rear, left.....	2.00
CIMED	H- 158	Frame front outrigger, right.....	2.00
DIMED	H- 159	Frame front outrigger, left.....	2.00
FIMED	H- 160	Bracket for foot pedal rocker shaft (two) .....each	1.00
KIMED			
LIMED	H-1250	Fender iron brackets, front (four).each	2.00
MIMED	4567	Bracket, rear, for rear fender iron (two)	.60
PIMED	4566	Bracket, front, for rear fender iron (two)	.60
RIMED			
SIMED	H- 290	Strut rod bracket.....	1.60
TIMED	4540	Tail lamp bracket.....	.60
ZIMED	H-1267	Side step, upper, right.....	1.40
BOMED	H-1267	Side step, upper, left.....	1.40
COMED	H-1129	Running board hanger.....	3.50
DOMED	H-1270	Step bracket, left.....	.20
FOMED	H-1271	Step bracket, right.....	.20
KOMED	H-1141	Bracket for lamp holders, right.....	2.00
LOMED	H-1142	Bracket for lamp holders, left.....	2.00
MOMED		Brass forked lamp holder, right.....	6.00
POMED		Brass forked lamp holder, left.....	6.00
ROMED			
SOMED			
TOMED		**Springs.**	
ZOMED	H- 670	Front spring, right.....$	12.00
BUMED	H- 671	Front spring, left.....	12.00
CUMED	H- 681	Rubber buffer holder for front spring	.25
DUMED	H- 694	Rubber buffer for front spring.....	.70
FUMED	4019	Front spring clip.....	.40
KUMED	H-1709	Front spring clip nuts.....each	.05
LUMED	H- 688	Front outrigger bolt.....	.15
MUMED	H- 689	Nut for outrigger bolt.....	.20
PUMED	H- 691	Locating plate for front spring.....	.05
RUMED	H- 692	Front spring shackle.....	1.00
SUMED	H- 685	Pin for front spring shackle.....	.25
TUMED	H- 697	Washer for front spring shackle.....	.05
ZUMED		Oiler for spring shackle.....	.10

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.
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CODE WORD			
BAPED	H- 695	Spring perch plate for front spring....	.15
CAPED	H- 696	Front spring perch block.....	.05
DAPED	H- 672	Rear spring, right, including top half..	18.00
FAPED	H- 673	Rear spring, left, including top half....	18.00
KAPED	H- 678	Rubber buffer holder for rear spring...	.25
LAPED	H- 694	Rubber buffer for rear spring.....	.70
MAPED	H- 682	Rear spring plate.....	.15
PAPED	H- 683	Rear spring clip.....	.40
RAPED	H-1709	Rear spring clip nuts.....each	.05
SAPED	H- 684	Clip for top half rear spring.....	.50
TAPED	H-1708	Nuts for rear spring top half clip.....	.05
ZAPED	H- 687	Bolt for rear spring hanger.....	.20
BEPED	H- 690	Screw and lock nut 5/8" for rear spring hanger	.30
CEPED			
DEPED	4501	Screw and lock nut, 3/4" for rear spring hanger	.30
FEPED			
KEPED	4500	Screw lock nut for rear spring hanger..	.15
LEPED	H- 691	Rear spring locating plate.....	.05
MEPED		Upper half, rear spring.....	6.00
PEPED			
REPED			
SEPED			
TEPED			
ZEPED			

GASOLINE SYSTEM.

BIPED		Gasoline and emergency tank, complete.$	36.00
CIPED		Gasoline storage tank complete comprising the seven following parts.....	22.00
DIPED			
FIPED	H- 447	Filler for gasoline storage tank.....	.40
KIPED	H- 448	Filler cap for gasoline storage tank....	.40
LIPED	H- 421	Settling chamber for gasoline storage tank	1.00
MIPED			
PIPED		Drain plug for gasoline storage tank settling chamber	.05
RIPED			
SIPED	H-1411	Bracket for three way valve on gasoline storage tank	.75
TIPED			
ZIPED		Bolt and nut for gasoline tank three way valve bracket.....	.05
BOPED			
COPED	H- 434	Feed connection on gasoline storage tank	.35
DOPED			
FOPED		Gasoline emergency tank, complete, comprising the four following parts.	8.00
KOPED			
LOPED	H- 447	Filler for gasoline emergency tank....	.40
MOPED	H- 448	Filler cap for gasoline emergency tank.	.40
POPED	H- 420	Drip connection for gasoline emergency tank	.40
ROPED			
SOPED		Plug for gasoline emergency tank drip connection	.05
TOPED			
ZOPED	H- 433	Feed connection for gasoline emergency tank	.50
BUPED			
CUPED		Steel strap for gasoline tanks with clips, supports, studs and nuts.....each	1.50
DUPED			
FUPED	H- 445	Clip for gasoline tank steel straps.....	.75
KUPED	H- 441	Stud for gasoline tank clips.....	.20
LUPED	H- 438	Support for gasoline tanks.....	.25
MUPED	H- 437	Leather spacer for gasoline tanks.....	.20
PUPED	H- 422	Union nut for gasoline pipe.....	.40
RUPED	H- 423	Washer for gasoline pipe union (per doz., .25) .....each	.05
SUPED			
TUPED		Gasoline feed pipe with union nuts.....	1.00
ZUPED	H-1413	Gasoline transfer pipe with union nuts.	.50

Order Parts by serial part number and name in full.
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CODE WORD			
BARED		Three way valve, complete, for gasoline tank, comprising the six following parts	4.00
CARED			
DARED			
FARED	H-1407	Body for three way valve on gasoline tank	.05
KARED			
LARED		Thrust washer for gasoline tank valve..	.05
MARED	H-1418	Key for gasoline tank valve.....	1.00
PARED	H-1418	Body and key for three way valve on gasoline tank	2.00
RARED	H-1407		
SARED	H-1408	Cap for three way valve body on gasoline tank	1.50
TARED			
ZARED	H-1409	Gate for three way valve body on gasoline tank	.80
BERED			
CERED	H-1416	End screw for three way valve key (per doz., .25) .....each	.05
DERED			
FERED	H-1417	Thrust washer for three way valve key (per doz., .25).....each	.05
KERED			
LERED	H-1419	Gasket for strainer and settling chamber	.10
MERED			
PERED	H-1401	Stem with pin for gasoline tank three way valve	.25
RERED			
SERED	H-1402	Thrust collar for gasoline tank three way valve	.10
TERED			
ZERED	H-1404	Gland for gasoline tank three way valve	.15
BIRED	H-1406	Lock nut for gasoline tank three way valve gland	.10
CIRED			
DIRED	H-1403	Shank for gasoline tank three way valve	.15
FIRED	H-1405	Handle for gasoline tank three way valve shank	.30
KIRED			
LIRED	H-1420	Strainer barrel for strainer and settling chamber	.05
MIRED			
PIRED	H-1421	Strainer cloth for strainer and settling chamber	.05
RIRED			
SIRED	H- 436	Strap for storage tank.....	.40
TIRED	H-1412	Running tank connecting tube.....	.20
ZIRED	H-1414	Gasket for gasoline tank valve barrel cup	.10
BORED			
CORED	H-1415	Gasket for gasoline tank valve barrel cup	.10
DORED			
FORED			
KORED			
LORED			
MORED			
PORED			
RORED			
SORED			
TORED			
ZORED			
BURED			
CURED			
DURED			
FURED			
KURED			
LURED			
MURED			
PURED			
RURED			
SURED			
TURED			
ZURED			

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.
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SPLITDORF SPARK COIL.

We will sell complete Spark Coils and parts at the prices quoted in this list, but we do not repair or replace broken parts gratis.

When they are to be repaired or replaced, you must take the matter up with the manufacturers, viz., C. F. Splitdorf, No. 17, Vandewater St., New York City.

When ordering Spark Coil parts, send sketch of part wanted.

CODE WORD				
BASED			Spark coil complete with switch	$ 50.00
CASED			Splitdorf switch plug	.10
DASED			1907 Ratchet contact screw, platinum point	1.50
FASED			Bogert contact spring, platinum point	1.00
KASED			Bogert hammer	.10
LASED			Insulating cap for secondary terminal	.10
MASED			Vibrator stop	.05
PASED			Contact spring attaching screw	.05
RASED			Top nut for binding post, knurled	.05
SASED			Round knurled nut	.05
TASED			Hexagon nut for binding post	.05
ZASED			Copper washer	.02
BESED			Cover hook	.06
CESED			Cover latch locking nut	.05
DESED			Spark coil section	5.00
FESED			Spark coil box	6.00
KESED			Unit base	1.50
LESED			Complete unit	10.00
MESED			**Primary Wiring.**	
PESED			Commutator wires (four) each	.50
RESED			Switch wire	.50
SESED			Ground wire	.50
TESED			**Secondary Wiring.**	
ZESED			No. 1 wire to cylinder No. 1	.25
BISED			No. 2 wire to cylinder No. 2	.25
CISED			No. 3 wire to cylinder No. 3	.25
DISED			No. 4 wire to cylinder No. 4	.25
FISED			Cylinders are numbered from front to rear.	
KISED				
LISED				
MISED				
PISED				
RISED				
SISED				
TISED				
ZISED				
BOSED				
COSED				
DOSED				
FOSED				
KOSED				
LOSED				
MOSED				
POSED	H-	6	Bushing for secondary wire	.30
ROSED	H-	7	Nut for bushing for secondary wire bushing	.15
SOSED				
TOSED				
ZOSED				
BUSED				
CUSED				
DUSED				
FUSED				
KUSED				
LUSED				
MUSED				
PUSED				
RUSED				
SUSED				
TUSED				
ZUSED				

WITHERBEE BATTERY PARTS.

We will sell Witherbee Batteries, and parts thereof, at prices quoted below, but we do not repair them nor replace broken parts gratis.

All claims must be made direct to the makers, the Witherbee Igniter Co., 541 West 43rd St., New York City.

Witherbee batteries, No. 66 each	$ 29.00
Jar	6.15
Cover	2.85
Gasket	.75

Order Parts by serial part number and name in full.
Give number of motor.
Read Instructions before ordering.
The telegraph code key-word for this book is HARMONY.

CODE WORD				
BATED			Rubber separator	.10
CATED			Wood separator	.05
DATED			Handle	.20
FATED			Lead plate connectors	.25
KATED			Nickel plated cell connectors	.15
LATED			Cover screws	.02
MATED			Cover washers	.02
PATED			Handle eyes	.05
RATED			Hexagon nuts	.02
SATED			Washers	.02
TATED			Knurled binding nuts	.10
ZATED			Spanner top nuts	.05
BETED			Vulcanite vent caps	.20
CETED			Positive plates	.75
DETED			Negative plates	.65
FETED			Battery box	1.60
KETED				
LETED				
METED				
PETED				
RETED				
SETED				
TETED				
ZETED				
BITED				
CITED				
DITED				
FITED				
KITED				
LITED				
MITED				
PITED				
RITED				
SITED				
TITED				
ZITED				
BOTED				
COTED				
DOTED				
FOTED				
KOTED				
LOTED	H-	5	Bracket for cylinder No. 1, two pieces, fibre	.20
MOTED				
POTED	H-	4	Bracket for cylinder No. 2, two pieces, fibre	.20
ROTED				
SOTED	H-	3	Bracket for cylinder No. 3, two pieces, fibre	.20
TOTED				
ZOTED	H-	2	Bracket for cylinder No. 4, two pieces, fibre	.20
BUTED				
CUTED			Round head machine screws for attaching brackets (per doz., .50) each	.05
DUTED				
FUTED				
KUTED				
LUTED				
MUTED				
PUTED				
RUTED				
SUTED				
TUTED				
ZUTED				

EXIDE BATTERY PARTS.

Exide batteries each	$ 25.25
Rubber jar for exide battery	1.35
Cover with knob for exide battery	.35
Positive plates for exide battery each	.85
Negative plates for exide battery each	.80
Positive straps for exide battery each	.25
Negative straps for exide battery each	.30
Wood separator for exide battery	.05
Rubber separator for exide battery	.15
Hard rubber rings for exide battery	.30
Rubber knobs for cover of exide battery	.10
Soft rubber gaskets for exide battery	.05
Flat copper connectors for exide battery	.05
Drop handles for exide battery per pair	1.00
Strap handles	.60
Wooden case without handles	2.00

Brackets for Electrical Wiring.

NOTE—In ordering Battery Parts be sure and state whether for Exide or Witherbee Batteries.

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.
Read Instructions before ordering.
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MUFFLERS.

CODE WORD			
BAZED		Right and left mufflers assembled with connecting pipe and connecting pipe hangers	$ 22.00
CAZED			
DAZED			
FAZED		Muffler, right, assembled with ends and tie rod	8.00
KAZED			
LAZED	H- 734	Muffler shell for muffler, right	1.00
MAZED	H- 713	Front muffler head for muffler, right	2.50
PAZED	H- 704	Rear muffler head for muffler, right	2.40
RAZED	H- 725	Muffler center tie rod for muffler, right	.25
SAZED	H-1700	Hexagon nut for right muffler tie rod (per doz., .25) each	.05
TAZED			
ZAZED		Columbia lock nut for right muffler center tie rod (per doz., .50) each	.05
BEZED			
CEZED	H- 727	Sleeve for right muffler center tie rod	.10
DEZED		Muffler, left, assembled with ends, cut-out and tie rod	10.00
FEZED			
KEZED	H- 734	Muffler shell for left muffler	1.00
LEZED	H- 703	Intake muffler head for left muffler	2.50
MEZED		Left muffler, rear end, with cutout valve assembled	2.80
PEZED			
REZED	H- 714	Left muffler, rear end only	2.00
SEZED	H- 711	Nipple for pipe for connecting muffler	.20
TEZED		Cutout valve rod stem with washer and cotter for rear end left muffler	.60
ZEZED			
BIZED		Cutout valve spring for rear end left muffler	.10
CIZED			
DIZED		Washer for left muffler, rear end cutout valve (per doz., .25) each	.05
FIZED			
KIZED	H- 723	Lever for left muffler rear end cutout valve	.15
LIZED			
MIZED	H- 721	Pin and cotter pin for left muffler rear end cutout valve (per doz., .25) each	.05
PIZED			
RIZED	H- 720	Links for left muffler rear end cutout valve (two), (per doz., .25) each	.05
SIZED			
TIZED	H- 726	Tie rod for left muffler	.25
ZIZED		Hexagon nut for left muffler tie rod (per doz., .25) each	.05
BOZED			
COZED		Columbia lock nut for left muffler tie rod (per doz., .50) each	.05
DOZED			
FOZED	H- 727	Sleeve for left muffler tie rod	.10
KOZED		Wire for left muffler rear end cutout valve	.05
LOZED			
MOZED		Trigger for left muffler rear end cutout valve	.15
POZED			
ROZED		Bracket for left muffler rear end cutout valve trigger	.15
SOZED			
TOZED		Screws for left muffler rear end cutout valve trigger bracket (two), (per doz., .25) each	.05
ZOZED			
BUZED			
CUZED	H- 705	Connection pipe for right and left mufflers	1.50
DUZED			
FUZED	H- 709	Hangers for right and left muffler pipe (two) each	.20
KUZED			
LUZED	H-1605	Bolt and nut for right and left muffler connecting pipe hangers (two) each	.10
MUZED			
PUZED	H- 715	Nozzle for connecting exhaust pipe to muffler	1.50
RUZED			
SUZED			
TUZED			
ZUZED			

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CODE WORD			
BABIG	H- 712	Nozzle for right muffler front head	1.00
CABIG	H-1606	Bolt and nut for right muffler front head nozzle	.10
DABIG			
FABIG	H- 706	Exhaust tube for muffler	.50
KABIG	H- 716	Exhaust pipe header	1.50
LABIG	H- 717	Rear exhaust pipe	.90
MABIG	H- 718	Front exhaust pipe	.40
PABIG	H- 719	Middle exhaust pipe	.40
RABIG	H- 722	Valve stem for muffler	.20
SABIG	H- 724	Exhaust pipe leading to muffler	2.00
TABIG	H- 728	Separator for muffler support cross member	.05
ZABIG			
BEBIG	H- 710	Clip for muffler exhaust tube	.10
CEBIG	H-1605	Bolt and nut for muffler exhaust tube clip (two) each	.10
DEBIG			
FEBIG	H- 735	Hanger for muffler exhaust tube	.15
KEBIG		Bolt and nut for muffler exhaust tube hanger (per doz., .50) each	.05
LEBIG			
MEBIG	H- 729	Rear hanger, short, for right muffler	.15
PEBIG	H- 730	Rear hanger, long, for right muffler	.15
REBIG	H- 731	Rear hanger, short, for left muffler	.20
SEBIG	H- 732	Rear hanger, long, for left muffler	.20
TEBIG		Bolt and nut for muffler hangers (per doz., .50) each	.05
ZEBIG			
BIBIG		For connections from Motor to	
CIBIG		Muffler, see following transmission	
DIBIG		Brake Bands.	
FIBIG			
KIBIG			
LIBIG			

DASH.

MIBIG	H- 767	Dash with reinforcement and shelf	$ 36.00
PIBIG	H- 768		
RIBIG	H-1127	Dash lamp holder bracket, right or left	2.00
SIBIG	H-1137	Dash lamp holder, right or left	2.00
TIBIG	H-1138	Nut for dash lamp holder	.15
ZIBIG		Dash lamp bracket screws	.10
BOBIG		Dash lamp bracket washer and nut (per doz., .50) each	.05
COBIG			
DOBIG	H-1287	Rubber mat for dash shelf	.75
FOBIG	H- 769	Floor board for dash	2.00
KOBIG	H-1128	Lamp and stanchion bracket for dash	3.00
LOBIG		(For Sight Feed see following Lubricator.)	
MOBIG			
POBIG			
ROBIG			

HOOD.

SOBIG		Hood	$ 30.00
TOBIG		Hood fastener, complete, including seven following items	.75
ZOBIG			
BUBIG	H-1100	Nut for eyebolt of hood fastener (per doz., .50) each	.05
CUBIG			
DUBIG	H-1102	Cap for cam handle of hood fastener	.10
FUBIG	H-1104	Cam handle for hood fastener	.40
KUBIG	H-1107	Spring for hood fastener	.10
LUBIG	H-1106	Eyebolt for hood fastener	.20
MUBIG	H-1108	Washer for eyebolt for hood fastener	.02
PUBIG	H- 110	Bracket for hood fastener (on side bar)	.15
RUBIG	H-1103		
SUBIG		Hood lug for hood fastener	.25
TUBIG		Nut for hood lug (per doz., .25) each	.05
ZUBIG	3439	Handle for hood	.40

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CODE WORD			
BADIG	H-1109	Hinge for hood (side bar)	.25
CADIG	H-1110	Shelf for hood, right	.35
DADIG	H-1111	Shelf for hood, left	.35
FADIG			
KADIG			
LADIG		**RADIATOR AND FAN.**	
MADIG			
PADIG		Do not send Radiators to us for repairs or replacements. All claims on account of defective material or construction must be made direct to the makers, The Whitlock Coil Pipe Co., Hartford, Conn.	
RADIG			
SADIG			
TADIG			
ZADIG			
BEDIG			
CEDIG		Radiators sent to us will not be accepted from the transportation company.	
DEDIG			
FEDIG		Radiator	$ 90.00
KEDIG		Radiator filler cap	1.50
LEDIG	H- 764	Radiator strainer	.20
MEDIG	H- 776	Radiator clamp for hood rod	.10
PEDIG	H- 754	Truss end or tie rod for radiator and	
REDIG		dash (two) ....each	.25
SEDIG	H- 753	Bronze nut for truss end of radiator	
TEDIG		and dash (two) ....each	.25
ZEDIG	H-1707	Hex. nuts for truss end of radiator and	
BIDIG		dash (per doz., .25) ....each	.05
CIDIG		Hose connection from radiator to motor,	
DIDIG		10" long	.50
FIDIG		Hose connection from radiator to pump,	
KIDIG		5½" long	.30
LIDIG		Hose clamps	.15
MIDIG		Fan complete comprising seven following	
PIDIG		items	6.00
RIDIG	H- 755	Fan only, including tube, set screws, and	
SIDIG	H- 756	oil hole cover	3.00
TIDIG	H- 755	Spider for fan	2.00
ZIDIG	H- 756	Blade for fan	.40
BODIG	H- 762	Fan pulley	2.40
CODIG	H-1623	Fan pulley set screws and lock nuts	
DODIG		(two), (per doz., .50) ....each	.05
FODIG	H- 758	Fan axle	.20
KODIG	H- 759	Bushing for fan	.20
LODIG	H- 763	Knipe bearings in fan (two) ....each	.10
MODIG	H- 761	Adjusting nuts for bearings in fan (two)	
PODIG		.... each	.15
RODIG		Oil hole cover for fan	.10
SODIG	3344	Fan belt	2.00
TODIG	H- 757	Support for fan axle, left	.30
ZODIG	H- 760	Support for fan axle, right	.30
BUDIG	3817	Nuts for fan axle support (per doz., .25)	
CUDIG		.... each	.05
DUDIG	H- 750	Driving sheave for fan	2.40
FUDIG			
KUDIG			
LUDIG		**BRAKE AND CLUTCH CONNECTIONS.**	
MUDIG			
PUDIG		Hand brake lever, complete with seven	
RUDIG		following items	$ 12.00
SUDIG	H- 965	Hand brake lever only	9.00
TUDIG	H- 978	Hand brake lever release rod with pawl	
ZUDIG		and button	1.50

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CODE WORD			
BAFIG	H- 979	Hand brake lever button	.10
CAFIG	H- 977	Hand brake lever spring	.05
DAFIG	H- 973	Hand brake lever pawl	.20
FAFIG		Hand brake lever screws	.05
KAFIG		Hand brake lever oiler	.10
LAFIG		Bracket for hand brake sector, complete,	
MAFIG		comprising the five following items	6.00
PAFIG	H- 975	Bracket for hand brake sector only	4.00
RAFIG		Oiler for bracket	.10
SAFIG	H- 974	Hand brake sector	1.60
TAFIG		Hand brake sector screws (four), (per	
ZAFIG		doz., .25) ....each	.05
BEFIG	H-1714	Hand brake sector nuts (four) (per	
CEFIG		doz., .25) ....each	.05
DEFIG		Clutch release shaft assembled, comprising	
FEFIG		the twenty-two following items	14.00
KEFIG	H- 961	Clutch release shaft only	1.60
LEFIG	H- 968	Brake foot lever with metal pad	3.00
MEFIG	H- 976		
PEFIG	H- 967	Main clutch pedal with metal pad	3.00
REFIG	H- 976		
SEFIG	H-1713	Main clutch pedal nut	.15
TEFIG	H-1601	Main clutch pedal bolt (two) ....each	.15
ZEFIG	H- 987	Main clutch pedal key	.10
BIFIG	2601	Brake rocker arm on main clutch shaft,	
CIFIG		1½" center to center	.80
DIFIG	H- 951	Brake rocker arm on main clutch shaft,	
FIFIG		2¾" center to center	.80
KIFIG	H- 556	Main clutch release dog, right	1.60
LIFIG	H- 988	Main clutch release dog key	.10
MIFIG	H-1601	Main clutch release dog bolt, left	.15
PIFIG	H-1713	Main clutch release dog nut	.15
RIFIG	H- 557	Main clutch release dog, left, 1⅞" cen-	
SIFIG		ter of hole to dog	1.60
TIFIG	2698	Main clutch release dog, left 1" from	
ZIFIG		center of hole to dog	1.60
BOFIG	H-1601	Main clutch release dog bolt, right	.15
COFIG	H-1713	Main clutch release dog nut	.15
DOFIG	H- 558	Main clutch release toggle	2.50
FOFIG	H-1602	Main clutch release toggle bolt	.15
KOFIG	H-1713	Main clutch release toggle nut	.15
LOFIG	H- 987	Main clutch release toggle key	.10
MOFIG	H- 980	Main clutch release rod, short	.80
POFIG	H- 981	Main clutch release rod, long	.80
ROFIG		Main clutch release rod, washers and	
SOFIG		cotters	.02
TOFIG		Rocker tube, long and short, for foot	
ZOFIG		brake assembled with yoke	4.20
BUFIG	H- 956	Yoke for foot brake rocker tube	2.00
CUFIG	H- 986	Keys for yoke for foot brake rocker tube	.10
DUFIG	H-1613	Bolts for yoke (two), (per doz., .50) ea.	.05
FUFIG	H- 984	Brake ratchet bolt	.15
KUFIG	H-1713	Nuts for yoke (two) ....each	.15
LUFIG	H- 959	Rocker tube for foot brake, left, short	.80
MUFIG	H- 957	Rocker tube for foot brake, right, long	1.60
PUFIG	H- 960	Rocker shaft bushing (four) ....each	.20
RUFIG	H- 958	Rocker shaft separator (two) ....each	.15
SUFIG	H- 962	Hand brake rocker shaft	1.20
TUFIG	H- 948	Foot brake rocker arm on tube for out-	
ZUFIG		side hub brake	.60

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CODE WORD			
BAHIG		Foot brake rocker arm bolt (per doz.,	
CAHIG		.50)	.05
DAHIG		Foot brake rocker arm nut (per doz.,	
FAHIG		.50)	.05
KAHIG	H- 953	Foot brake rocker arm for right or left	
LAHIG		outside hub brake	1.40
MAHIG	H- 986	Foot brake rocker arm key	.10
PAHIG	H-1613	Foot brake rocker arm bolt	.05
RAHIG		Foot brake rocker arm nut	.05
SAHIG	H- 954	Hand brake rocker arm, right, on end	
TAHIG		of shaft	1.40
ZAHIG	H-1614	Hand brake rocker arm bolt	.15
BEHIG		Hand brake rocker arm nut	.05
CEHIG	H- 955	Hand brake rocker arm, left, on end of	
DEHIG		shaft	1.20
FEHIG			
KEHIG		**Brake Pull Rods.**	
LEHIG		Pull rod for hand brake lever assembled	
MEHIG		with yokes, nuts, pins and cotter pins	1.00
PEHIG	H- 943	Pull rod only, or hand brake lever	.40
REHIG		Pull rod from hand brake lever to foot	
SEHIG		brake rocker arm, assembled with	
TEHIG		yokes, nuts, etc.	1.00
ZEHIG	H- 944	Pull rod only, from brake foot lever to	
BIHIG		foot brake rocker arm	.40
CIHIG		Pull rod from clutch release to rocker	
DIHIG		shaft, assembled with yokes, nuts, etc.	1.00
FIHIG	H- 945	Pull rod only, from clutch release shaft	
KIHIG		to rocker shaft	.40
LIHIG		Pull rod from rocker shaft rocker arm	
MIHIG		to outside hub brake lever arm, as-	
PIHIG		sembled, etc. ....each	1.00
RIHIG	H- 946	Pull rod only right or left, from rocker	
SIHIG		shaft rocker arm to outside hub	
TIHIG		brake lever arm ....each	.40
ZIHIG		Pull rod from hand brake lever rocker	
BOHIG		arm to inside hand brake lever arm,	
COHIG		complete (two) ....each	1.00
DOHIG	H- 947	Pull rod only, right or left, from hand	
FOHIG		brake lever arm to inside hand brake	
KOHIG		lever arm ....each	.40
LOHIG	H- 952	Pull rod yokes ....each	.50
MOHIG		Pull rod yoke pins and cotter pins. (per	
POHIG		doz., 25) ....each	.05
ROHIG	H-1702	Pull rod yoke nuts (per doz., .25) .each	.05
SOHIG	H- 989	Spring for rear hub brakes	.40
TOHIG	H- 990	Hook for spring	.10
ZOHIG			
BUHIG		**CONTROLLER LEVER.**	
CUHIG			
DUHIG	H- 966	Controller lever ....$	7.00
FUHIG		Controller lever bolt (per doz., .50)	
KUHIG		.... each	.05
LUHIG	H- 963	Controller lever shaft	1.40
MUHIG	H- 964	Controller lever shaft collar	.20
PUHIG		Controller lever shaft collar pin (per	
RUHIG		doz., .25) ....each	.05
SUHIG		Oiler on controller lever	.10
TUHIG	R-4-505	Controller segment for compensating	
ZUHIG		shaft	4.00

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CODE WORD			
BAKIG		Controller compensating shaft complete	
CAKIG		with compensating gear, compensat-	
DAKIG		ing cam and four controller cams	7.00
FAKIG	R-4-500	Compensating shaft only	1.50
KAKIG	R-4- 95	Compensating gear	1.75
LAKIG	R-4-501	Compensating cam	1.00
MAKIG	R-4-502	Controller cams (four) ....each	.80
PAKIG	R-4-213	Taper pins (six) 1 3/16" No. 5....each	.05
RAKIG	R-4-216	} Compensating cam slide and roll	2.60
SAKIG	R-4- 42		
TAKIG	R-4-216	Compensating cam slide	2.00
ZAKIG	R-4- 42	Compensating cam slide roll	.30
BEKIG	R-4-215	Cover for compensating cam slide	.30
CEKIG	R-4- 44	Pin for compensating cam slide (per	
DEKIG		doz., .50) ....each	.05
FEKIG			
KEKIG		FOR TRANSMISSION BRAKE BANDS	
LEKIG		SEE UNDER TRANSMISSION.	
MEKIG			
PEKIG			
REKIG		**STEERING MECHANISM.**	
SEKIG			
TEKIG		Steering mechanism complete, including	
ZEKIG		steering staff and wheel with spark,	
BIKIG		and throttle rods with spark and	
CIKIG		throttle pinions ....$	100.00
DIKIG		Steering wheel (rim and spider)	6.00
FIKIG	H- 847	Steering wheel spider	3.00
KIKIG	H- 851	Steering wheel rim	2.50
LIKIG		Spark and throttle sector arm with staff	3.00
MIKIG	H- 865	Spark and throttle sector arm only	1.00
PIKIG	H- 862	Spark and throttle sector	1.80
RIKIG	H- 870	Screws for attaching spark and throttle	
SIKIG		sector ....each	.10
TIKIG		Steering mechanism complete less steer-	
ZIKIG		ing wheel	80.00
BOKIG		Steering post with screw and end plug	16.00
COKIG	H- 812	Bushing for steering post screw	.20
DOKIG	H- 830	Nut for steering post plug	.25
FOKIG	H- 829	Flange for steering casing	1.20
KOKIG		Bronze washer for steering post	.20
LOKIG		Steel washer for steering post	.15
MOKIG		Bearing, size "Fanny," large, for steer-	
POKIG		ing post	2.00
ROKIG		Bearing, size "Edith," small, for steer-	
SOKIG		ing post	1.40
TOKIG	H- 871	Shaft for steering arm	2.50
ZOKIG	H- 819	Screw for steering post	.10
BUKIG	H- 820	Nut for steering gear	6.00
CUKIG	H- 826	Plug for steering post	.50
DUKIG	H- 833	Steering post	3.00
FUKIG	H- 872	Adjusting nut, large, for end of steering	
KUKIG		arm shaft	.20
LUKIG	H- 837	Stem for 1" ball joint	.40
MUKIG	H- 873	Adjusting nut, small, for end of steer-	
PUKIG		ing arm shaft	.10
RUKIG	H- 874	Washer, large, 1½" O. D. for steering	
SUKIG		arm shaft	.30
TUKIG	H- 875	Washer, small, beveled edge for steer-	
ZUKIG		ing arm shaft	.15

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CODE WORD			
BALIG	H- 813	Bronze bushing for steering arm shaft	
CALIG		(two) .....each	.60
DALIG	H- 876	Steel bushing for steering arm shaft....	.40
FALIG	H- 804	Yoke, upper, for steering arm shaft....	4.00
KALIG	H- 803	Yoke, lower, for steering arm shaft....	4.00
LALIG		Set screw and lock nut for yokes for	
MALIG		steering arm shaft (per doz., .50) each	.05
PALIG	H- 802	Button for yokes for steering arm shaft.	.10
RALIG	H- 814	Trunnion blocks for steering arm shaft	
SALIG		yoke (four) .....each	.30
TALIG	H- 877	Cap packing nut for end of steering	
ZALIG		arm shaft	.50
BELIG	H- 807	Faced packing nut for end of steering	
CELIG		arm shaft	.60
DELIG	H- 880	Steering shaft arm	4.00
FELIG		Ball pivot for steering shaft arm.....	.50
KELIG	H- 816	Steering case body	12.00
LELIG	H-1612	Screw for steering case body (per doz.,	
MELIG		.50) .....each	.05
PELIG	H- 815	Steering case cover	4.00
RELIG	H- 805	Cap for steering case cover.....	.80
SELIG	H- 817	Cap for adjusting plug	.20
TELIG	H- 818	Adjusting plug for steering case body..	.40
ZELIG	R-4-434	Cap for oil pan arm.....	.60
BILIG	R-4-326	Set screw for oil pan arm cap.....	.10
CILIG	R-4-373	Check nut for oil pan arm cap set screw	
DILIG		(per doz., .25) .....each	.05
FILIG			
KILIG		**Steering Connection Rod.**	
LILIG		Steering connection rod complete with	
MILIG		ends assembled .....$	8.00
PILIG	H- 844	Tube for steering connection rod.....	1.25
RILIG		End for steering connection rod, front,	
SILIG		complete	3.00
TILIG	L- 866	Sleeve for front end of steering con-	
ZILIG		nection rod	1.20
BOLIG	L-862	Sockets for steering connection rod end,	
COLIG		front (two) .....each	.50
DOLIG	L- 864	Nut for front steering connection rod	
FOLIG		end	.20
KOLIG	H- 839	Nut for steering connection	.60
LOLIG	H- 843	Screws for steering arm sleeve (two)	
MOLIG		(per doz., .25) .....each	.05
POLIG	H-1715	Lock nut for steering arm sleeve (two)	
ROLIG		.....each	.15
SOLIG		End for steering connection rod, rear,	
TOLIG		complete	2.80
ZOLIG	H- 838	Sleeve for rear end steering connection	
BULIG		rod	2.00
CULIG	H- 841	Sockets for rear end steering connec-	
DULIG		tion rod (two) .....each	.70
FULIG	H- 839	Nut for rear steering rod end.....	.60
KULIG	H- 845	Springs for rear steering connection rod	
LULIG		end (two) .....each	1.20
MULIG	H- 846	Washers for rear steering connection	
PULIG		rod end (two) .....each	.10
RULIG	H- 842	Discs for rear steering connection rod	
SULIG		end (two) .....each	.05
TULIG		Rawhide covering for steering connec-	
ZULIG		tion rod ends .....each	.60

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CODE WORD		**Spark and Throttle Parts.**	
BAMIG		Throttle tube with lever .....$	1.50
CAMIG	H- 834	Throttle tube only	1.40
DAMIG	H- 828	Bushing for throttle tube (two)...each	.10
FAMIG	H- 863	Lever for throttle tube	1.20
KAMIG		Screw for throttle tube lever.....	.05
LAMIG	H- 866	Plunger for throttle lever.....	.10
MAMIG	H- 868	Plunger spring for throttle lever (per	
PAMIG		doz., .25) .....each	.05
RAMIG		Spark rod and lever	1.20
SAMIG	H- 854	Pin for spark lever	.05
TAMIG	H- 855	Pin for throttle lever.....	.05
ZAMIG	H- 832	Spark rod only	1.40
BEMIG	H- 867	Clamp screws for spark rod lever.....	.15
CEMIG	H- 864	Lever for spark rod	.70
DEMIG	H- 869	Pratt & Whitney taper pin.....	.05
FEMIG	H- 870	Segment screw	.10
KEMIG	H- 866	Plunger for spark rod lever.....	.10
LEMIG	H- 868	Plunger spring for spark rod lever (per	
MEMIG		doz., .25) .....each	.05
PEMIG	H- 831	Spark and throttle control staff.....	1.20
REMIG	H- 827	Bushing for spark and throttle control	
SEMIG		staff (two) .....each	.10
TEMIG	R-4-449	Pinion segment for spark control.....	.80
ZEMIG	R-4-448	Gear segment for spark control.....	1.00
BIMIG	R-4-447	Pinion segment for throttle control....	1.00
CIMIG	R-4-446	Gear segment for throttle control.....	1.00
DIMIG	R-4-656	Vertical spark shaft	.20
FIMIG	R-4-637	Clamping collar for vertical spark shaft	.40
KIMIG	R-4-633	Clamp screw for vertical spark shaft col-	
LIMIG		lar (per doz., .25) .....each	.05
MIMIG	R-4-657	Bushing for vertical spark shaft.....	.30
PIMIG	R-4-442	Spark control arm for top of vertical	
RIMIG		shaft	.55
SIMIG	R-4-443	Governor arm for bottom of vertical	
TIMIG		spark shaft	.80
ZIMIG	R-4-665	End connection for spark control arm.	.20
BOMIG	R-4-659	End connection for throttle arm.....	.30
COMIG	R-4-640	Nut for throttle and commutator rods	
DOMIG		(per doz., .25) .....each	.05
FOMIG	R-4-664	End connection for commutator rod,	
KOMIG		commutator end	.15
LOMIG	R-4-604	Commutator rod from commutator to	
MOMIG		top of vertical spark shaft.....	.55
POMIG	R-4-603	Lower throttle rod from governor lever	
ROMIG		to bottom of vertical spark shaft....	.55
SOMIG	R-4-602	Upper throttle rod from governor to	
TOMIG		carburetor	.55
ZOMIG	R-4-646	Spring for throttle rod upper (two)....	
BUMIG		.....each	.10
CUMIG	R-4-639	Collar for throttle rod upper (two).each	.30
DUMIG	R-4-634	Clamp screw for throttle rod collar (per	
FUMIG		doz., .25) .....each	.05
KUMIG	R-4-640	Nut for end connection for upper throt-	
LUMIG		tle rod (per doz., .25) .....each	.05
MUMIG		The following parts were used on	
PUMIG		cars on which the governor was not	
RUMIG		used.	
SUMIG	R-4-656	Vertical spark shaft	.30
TUMIG	R-4-637	Clamp collar for vertical spark shaft	
ZUMIG		(two) .....each	.40

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CODE WORD			
BAPIG	R-4-633	Screw for vertical spark shaft clamp	
CAPIG		collars .....each	.05
DAPIG	R-4-443	Lever arm at bottom of vertical spark	
FAPIG		shaft	.80
KAPIG		Clamp screw for lever arm at bottom of	
LAPIG		vertical spark shaft (per doz., .50)	
MAPIG		.....each	.05
PAPIG		Nut for lever arm clamp screw (per	
RAPIG		doz., .25) .....each	.05
SAPIG	4598	Toggle connection for arm at bottom	
TAPIG		of vertical spark shaft	.40
ZAPIG	R-4-659	End connection for toggle connection..	.30
BEPIG	4600	Connecting rod for throttle toggle joints	.15
CEPIG	R-4-665	End connection for toggle joint, rear..	.20
DEPIG	4598	Rear toggle joint for throttle	.40
FEPIG	4601	Lever arm at steering case for carbu-	
KEPIG		retor control	.35
LEPIG	4602	Packing nut for steering case.....	.05
MEPIG	4599	Screw for carburetor control lever at	
PEPIG		steering case	.10
REPIG	4618	Slide for carburetor control lever and	
SEPIG		throttle rod	.20
TEPIG	4620	Rod for throttle control	.40
ZEPIG	R-4-646	Springs for throttle rod (two).....each	.10
BIPIG	R-4-638	Collars for throttle rod (four).....each	.35
CIPIG	R-4-634	Clamp screw for throttle rod collars(per	
DIPIG		doz., .25) .....each	.05
FIPIG	R-4-442	Arm at top of vertical spark shaft for	
KIPIG		commutator rod	55
LIPIG	R-4-665	End connection for arm at top of verti-	
MIPIG		cal spark shaft.....	.20
PIPIG	R-4-604	Commutator rod	.55
RIPIG			
SIPIG		NOTE—FOR COMMUTATOR AND PARTS	
TIPIG		SEE UNDER GOVERNOR AND	
ZIPIG		COMMUTATOR.	
BOPIG			
COPIG			
DOPIG			
FOPIG		**FRONT AXLE.**	
KOPIG			
LOPIG		Front axle complete with complete spin-	
MOPIG		dles and parallel rod .....$	90.00
POPIG		Front axle tube with yokes and spring	
ROPIG		seats	30.00
SOPIG		Steering spindle, right, complete with	
TOPIG		arms, bushing pivot and end nut...	16.80
ZOPIG		Steering spindle, only, right	16.00
BUPIG		Steering spindle, left, complete with	
CUPIG		bushings and end nut.....	12.20
DUPIG		Steering spindle only, left	12.00
FUPIG		Bolt with nut and oiler for steering spin-	
KUPIG		dle	2.00
LUPIG		Oiler for steering spindle bolt.....	.40
MUPIG		Nut for steering spindle bolt	.05
PUPIG		End nut for steering spindle	.20
RUPIG		Parallel rod complete with yokes, bolts	
SUPIG		and nuts	5.00
TUPIG		Bolt for parallel rod	.35
ZUPIG		Nut for parallel rod bolt	.05

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CODE WORD			
BARIG	H- 316	Steel bushing, upper, for steering spin-	
CARIG		dle	.60
DARIG	H- 317	Steel bushings, lower, for steering spin-	
FARIG		dle	.60
KARIG		Spring seat for front axle	5.00
LARIG		Bolt and nut for front axle spring seat.	.15
MARIG		Nut for front axle spring seat bolt.....	.05
PARIG		Screw for front axle spring seat.....	.05
RARIG		Ball joint or pivot for front axle spin-	
SARIG		dle, right	.35
TARIG	H- 302	Steering knuckle, right	1.60
ZARIG	H- 303	Steering knuckle, left	1.60
BERIG	H- 316	Bushing for steering knuckle, lower....	.50
CERIG	H- 317	Bushing for steering knuckle, upper....	.50
DERIG	H- 318	Nut for steering knuckle bolt.....	.40
FERIG	H- 319	Bolt for steering knuckle	1.60
KERIG	H- 320	Nut for steering knuckle	.20
LERIG	H- 322	Yoke for tie rod	.20
MERIG	H- 324	Bushing for tie rod	.50
PERIG	H- 325	Tie rod for front axle.....	3.00
RERIG	H- 328	Arm for front end of steering rod.....	1.00
SERIG	H- 329	Steering arm for front axle, right.....	1.20
TERIG	H- 330	Steering arm for front, left.....	1.50
ZERIG			
BIRIG		**Front Wheel.**	
CIRIG			
DIRIG		Front wheel assembled complete with	
FIRIG		rim, bearings and hub cap, less tire..$	50.00
KIRIG		Front wheel with rim, less bearings,	
LIRIG		hub cap and tire	30.00
MIRIG	H- 309	Hub outside flange for front wheel.....	2.00
PIRIG	H- 306	Hub only for front wheel (inside	
RIRIG		flange)	6.00
SIRIG	H- 321	Bolt and nut for front wheel hub.....	.10
TIRIG	H- 332	Oil retainer for front wheel.....	3.00
ZIRIG	H-1611	Bolt and nut for front wheel oil retainer	.10
BORIG	H- 307	Brass hub cap for front wheel	2.00
CORIG	H- 333	Separator for front wheel	1.00
DORIG		Hess-Bright bearing No. 407, complete	
FORIG		for inside of front wheel	12.00
KORIG		Hess-Bright bearing No. 403, complete	
LORIG		for outside of front wheel	6.00
MORIG		Wrench for front wheel hub cap.....	.20
PORIG			
RORIG		**REAR AXLE.**	
SORIG			
TORIG		Rear axle complete, assembled with bev-	
ZORIG		el gear and brakes .....$	300.00
BURIG	H- 215	Rear axle shaft, right or left.....	6.00
CURIG	H- 244	Hexagon nut for end of rear axle shaft	
DURIG		(two) .....each	.40
FURIG	H- 209	Equalizing gear for rear axle shaft,	
KURIG		right or left (two) .....each	12.00
LURIG	H- 217	Steel washer for rear axle equalizing	
MURIG		gear (two) .....each	.10
PURIG	H- 218	Flat steel washer for equalizing gear	
RURIG		(two) .....each	.10
SURIG	H- 219	Bronze washer for equalizing gear.....	.10
TURIG	H- 257	Keys for keying equalizing gears to	
ZURIG		shafts (four) .....each	.10

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CODE WORD			
BASIG	H- 262	Ball cup for rear axle gear mount (two)	
CASIG		.....each	7.00
DASIG		⅞" balls for rear axle gear mount ball	
FASIG		cup .....each	.10
KASIG	H- 259	Ball retainer for rear axle gear mount	
LASIG		ball cup (two).....each	1.00
MASIG	H- 261	Cone for rear axle gear mount (two)	
PASIG		.....each	6.00
RASIG	H- 203	Gear mount for rear axle, right side....	15.00
SASIG	H- 204	Gear mount for rear axle, left side....	15.00
TASIG	H- 228	Adjusting nut for rear axle gear mount	
ZASIG		(two) .....each	1.40
BESIG	H- 206	Driving gear with studs and nuts for	
CESIG		rear axle gear mount, right, 56 teeth	
DESIG		for 2-4/5 to 1 gear.....	16.00
FESIG	H- 277	Driving gear with studs and nuts, 56	
KESIG		teeth for 3½ to 1 gear.....	16.00
LESIG		NOTE—In ordering either driving	
MESIG		gears or drive shaft pinions, you must	
PESIG		state the number of teeth on the pinion,	
RESIG		as the face angle of the driving gear	
SESIG		must correspond with the face angle of	
TESIG		the pinion.	
ZESIG	H- 242	Washer for axle tube	.15
BISIG	H- 205	Driving shaft for rear axle.....	6.00
CISIG	H- 255	Key for front drive shaft bushing.....	.10
DISIG	H- 256	Key for drive pinion.....	.10
FISIG	H- 258	Pin for rear axle hub.....	.10
KISIG	H- 260	Tube for ball retainer.....	.20
LISIG	H- 270	Washer for rear axle.....	.10
MISIG	H- 272	Axle tube for wide tread axle, right...	.15
PISIG		Studs for rear axle gear mount driving	
RISIG		gear (eight).....each	.50
SISIG		Lock nuts for rear axle gear mount driv-	
TISIG		ing gear (per doz., .50).....each	.05
ZISIG		Check nuts for rear axle gear mount	
BOSIG		driving gear (per doz., .50) .....each	.05
COSIG		Equalizing gear spider with pinions,	
DOSIG		studs and bushings	14.50
FOSIG	H- 210	Equalizing gear spider with bushing...	6.50
KOSIG	H- 211	Bushing for equalizing gear spider.....	.60
LOSIG	H- 207	Pinions for equalizing gear spider	
MOSIG		(three) .....each	2.00
POSIG	H- 208	Studs for rear axle equalizing gear	
ROSIG		spider (three) .....each	1.60
SOSIG	H- 213	Driving shaft for rear axle assembled	
TOSIG	H- 205	with pinion	22.00
ZOSIG	H- 220	Washer for axle shaft.....	.15
BUSIG	H- 221	Washer for axle shaft.....	.15
CUSIG	H- 222	Washer for driving pinion.....	.15
DUSIG	H- 245	Collar for driving shaft.....	.20
FUSIG	H- 205	Lock for gear mount adjustment.....	.10
KUSIG	H- 253	Key for drive shaft.....	.10
LUSIG	H- 294	Spring for strut rod bolt.....	.10
MUSIG	H- 205	Pinion for rear axle driving shaft, 20	
PUSIG		tooth for 2-4/5 to 1 gear.....	16.00
RUSIG	H- 276	Pinion for rear axle driving shaft, 16	
SUSIG		teeth for 3½ to 1 gear.....	16.00
TUSIG			
ZUSIG		NOTE—In ordering either driving	
		gears or driving shaft pinions, you must	

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CODE WORD			
BATIG		state the number of teeth on the pinion	
CATIG		as the face angle of the driving gear	
DATIG		must correspond with the face angle of	
FATIG		the pinion.	
KATIG		Hess-Bright bearing, No. 307, front, for	
LATIG		rear axle driving shaft.....	8.60
MATIG		Hess-Bright bearing, No. 410, rear, for	
PATIG		rear axle driving shaft.....	20.00
RATIG	H- 223	Oil retainer for rear axle driving shaft	
SATIG		on end of housing.....	1.30
TATIG	H- 226	Bushing for rear axle driving shaft....	.60
ZATIG	H- 214	Rear axle tube, right.....	6.00
BETIG	H- 227	Clamping nut for rear axle tube (two).each	2.00
CETIG	H- 216	Rear axle tube, left.....	6.00
DETIG	H- 252	Rear axle tube keys (four).....each	.20
FETIG		Rear axle aluminum housing, upper and	
KETIG		lower half, with bolts and nuts.....	70.00
LETIG	H- 266	Spring perch for rear axle, right or left.	2.40
METIG	H- 264	Bracket for rear hub brake, right or left	8.00
PETIG		Oiler for rear hub brake bracket.....	.10
RETIG	H-1603	Cap screws and nut for holding gear	
SETIG		mounts together (three).....each	.10
TETIG	H- 292	Strut rod for rear axle.....	2.50
ZETIG	H- 291	Bolt for rear axle strut rod.....	.30
BITIG			
CITIG		**Rear Wheel.**	
DITIG		Rear wheel complete with rim, bearing	
FITIG		and cap, but less tire and beads.....$	53.00
KITIG		Rear wheel complete with rim but with-	
LITIG		out bearing or cap and less tire and	
MITIG		beads	35.00
PITIG	H- 241	Tube for rear hub.....	.40
RITIG		Sleeve for rear hub.....	.25
SITIG	H- 251	Key for rear axle hub.....	.20
TITIG	H- 229	Rear wheel hub, inside flange.....	8.00
ZITIG	H- 240	Flange for rear wheel hub, outside....	1.70
BOTIG	H- 224	Oil retainer for rear wheel hub.....	1.00
COTIG	H- 263	Brake drum for rear wheel.....	6.00
DOTIG	H-1629	Bolt and nut for rear wheel hub..each	.10
FOTIG	H- 299	Brass hub cap for rear wheel.....	2.00
KOTIG		Hess-Bright bearing, No. 310, for rear	
LOTIG		wheel hub	14.50
MOTIG			
POTIG		**Universal Joint.**	
ROTIG		Universal joint shaft, assembled com-	
SOTIG		plete, with front and rear universal	
TOTIG		joints and leather boot.....$	30.00
ZOTIG		Universal joint, front, complete.....	6.00
BUTIG	H- 25	Hub for front universal joint with pins.	5.00
CUTIG	H- 26	Ball for front universal joint.....	.80
DUTIG	H- 27	Pin for front universal joint.....	.75
FUTIG	H- 28	Shaft for universal joint.....	10.00
KUTIG		Universal joint, rear, complete.....	12.60
LUTIG	H- 19	Yoke for rear universal joint on univer-	
MUTIG		sal shaft	5.00
PUTIG	H- 20	Yoke for rear universal joint on driv-	
RUTIG		ing shaft	5.00
SUTIG	H- 22	Cross for rear universal joint.....	3.50
TUTIG	H- 21	Bronze bushings for rear universal	
ZUTIG		joint cross (four).....each	.50

Be sure to put your name and motor number on parts returned and PREPAY CHARGES.
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CODE WORD			
BAZIG	H-1615	Bolt and nut for rear universal joint	
CAZIG		(four) .....each	.25
DAZIG		Grease cup for rear universal joint.....	.35
FAZIG		Grease cup elbow for rear universal	
KAZIG		joint	.20
LAZIG		Leather boot for front universal joint..	1.25
MAZIG	H- 24	Dust guard ring for front universal joint	1.70
PAZIG	H- 30	Sleeve for universal joint shaft.....	.50
RAZIG	H- 23	Socket for front universal joint.....	14.00
SAZIG	H-1617	Set screw for front universal joint socket	.20
TAZIG	H-1700	Check nut for front universal joint	
ZAZIG		socket set screw (per doz., .25).....	.05
BEZIG	H-1616	Cap screw for attaching dust guard	
CEZIG		ring to universal joint socket...each	.05
DEZIG			
FEZIG			
KEZIG		**Hub Brakes on Rear Axle.**	
LEZIG			
MEZIG		Inside band for rear axle hub brake	
PEZIG		with lining, rivets, and end clips....$	3.00
REZIG		Lining and rivets for rear axle hub	
SEZIG		brake inside band	1.00
TEZIG	H- 902	Guard for brake band, outer.....	.25
ZEZIG	H- 903	Brake band, outer	.60
BIZIG	H- 904	Strap for brake band, outer.....	2.00
CIZIG	H- 905	Brake band, inner	.60
DIZIG	H- 906	Strap for brake band, inner.....	.40
FIZIG	H- 935	Bolt for hub brake mud guards.....	.25
KIZIG	4507	Connection for inside brake on rear hub	
LIZIG		½" hole	.20
MIZIG	4508	Screw for inside brake on rear hub, ½"	
PIZIG		diameter of shank	.80
RIZIG	4509	Nut for screw for inside brake, ½" hole	
SIZIG		(per doz., .50) .....each	.05
TIZIG	H- 940	Shaft for inside brake, right side.....	1.50
ZIZIG	H- 942	Shaft for inside brake, left side.....	1.50
BOZIG	H- 916	Screw for adjusting stop on inside	
COZIG		brake (three) .....each	.10
DOZIG	H- 917	Nut for adjusting screw on inside	
FOZIG		brake (three) (per doz., .25)....each	.05
KOZIG		Outside brake band with lining, clips	
LOZIG		and guard	3.00
MOZIG		Lining and rivets for outside brake band	1.00
POZIG	H- 915	Screw for outer brake band.....	.20
ROZIG	H- 917	Nut for screw for outer brake band...	.05
SOZIG	H- 938	Screw for adjusting stop inside brake..	.25
TOZIG	H- 919	Clip for outside brake.....	.10
ZOZIG	H-921	Hook for hub brake mud guard.....	.16
BUZIG	H- 922	Rivet for hub brake mud guard.....	.05
CUZIG	H- 923	Clip for internal brake band.....	.15
DUZIG	4542	Thumb screw for outside brake.....	.15
FUZIG	4543	Spring for outside brake.....	.25
KUZIG	H- 939	Shaft for outer brake band, right.....	1.50
LUZIG	H- 941	Shaft for outer brake band, left.....	1.50
MUZIG	H- 912	Levers for hub brake.....	1.00
PUZIG	H-1651	Pin for hub brake lever (per doz., .50).each	.05
RUZIG	H- 972	Mudguard for hub brake, front half	
SUZIG		right side with clip, set screw and	
TUZIG		lock nut	.60
ZUZIG			

Order Parts by serial part number and name in full.
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CODE WORD			
BABOM	H- 971	Mudguard for hub brake, rear half right	
CABOM		side with clips, set screws, lock nuts	
DABOM		and hooks	.80
FABOM	H- 969	Mudguard for hub brake, front half left	
KABOM		side with clips, set screws and lock	
LABOM		nuts	.60
MABOM	H- 970	Mudguard for hub brake, rear half left	
PABOM		side with clips, set screws, lock nuts	
RABOM		and hooks	.80
SABOM	H- 935	Bolt for hub brake mudguard.....	.20
TABOM		Nut for hub brake mudguard bolt (per	
ZABOM		doz., .50) .....each	.05
BEBOM			
CEBOM			
DEBOM		**BODY PARTS.**	
FEBOM		Front seat complete, including seat	
KEBOM		cushions .....$	60.00
LEBOM		Front seat cushion	12.00
MEBOM		Front seat hatch door.....	.50
PEBOM		Front seat hatch door hinge.....	.05
REBOM		Front seat heel board, complete.....	4.00
SEBOM		Lock for front seat heel board.....	.40
TEBOM		Hinges for front seat heel board.....	.05
ZEBOM	H-1223	Collar for top iron	.10
BIBOM	H-1224	Collar for top iron	.10
CIBOM	H-1240	Re-enforced plate for floor board	.25
DIBOM	H-1241	Clamp for top iron	.15
FIBOM	H-1243	Canopy top iron, right, rear.....	.40
KIBOM	H-1245	Canopy top iron, left, rear.....	.40
LIBOM	H-1267	Step	1.20
MIBOM	H-1278	Plate for body bolt.....	.10
PIBOM	H-1279	Carriage bolt for body	.25
RIBOM	H-1280	Toe board stop	.15
SIBOM	H-1281	Washer for body fastener	.05
TIBOM		Roll stick or bead for front seat.....	.40
ZIBOM	H-1113	Brass sill plate, front, right.....	.90
BOBOM	H-1112	Brass sill plate, front, left.....	.90
COBOM		Side door, right, complete with lock,	
DOBOM		less hinges and handle.....	20.00
FOBOM	H-1275	Side door handle, right.....	1.00
KOBOM		Side door lock, less handle.....	1.00
LOBOM		Side door hinge, upper, right.....	1.50
MOBOM		Side door hinge, lower, right.....	2.00
POBOM		Side door hinge pin.....	.10
ROBOM		Fastener for door pocket.....	.15
SOBOM		Side door, left, complete with lock, less	
TOBOM		hinges and handle	20.00
ZOBOM	H-1275	Side door handle, left.....	1.00
BUBOM		Side door lock, left, less handle.....	1.00
CUBOM		Side door hinge, upper, left.....	1.50
DUBOM		Side door hinge, lower, left.....	2.00
FUBOM		Side door hinge pin.....	.10
KUBOM		Fastener for door pocket.....	.15
LUBOM		Brass sill plate, rear, left.....	.50
MUBOM		Brass sill plate, rear, right.....	.50
PUBOM		Rear seat cushion	25.00
RUBOM		Rear seat hatch door.....	.75
SUBOM		Rear seat hatch door hinge.....	.05
TUBOM		Protection pad on back of front seat..	4.00
ZUBOM		Rear seat heel board.....	4.00

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CODE WORD			
BADOM		Lock for rear seat heel board	.40
CADOM		Hinges for rear seat heel board	.05
DADOM		Roll stick or bead for rear seat	.40
FADOM	H-1272	Front floor rubber mat	3.00
KADOM		Rear floor carpet	4.00
LADOM		Running board, right, complete, including the three following items	
MADOM			6.00
PADOM	H-1265	Running board, right, only	2.00
RADOM	H-1268	Rubber mat for running board, right	3.00
SADOM		Brass strip and screws for running board, right	
TADOM			1.60
ZADOM		Running board, left, complete, including the three following items	
BEDOM			6.00
CEDOM	H-1266	Running board, left, only	1.20
DEDOM	H-1269	Rubber mat for running board, left	3.00
FEDOM		Brass strip and screws for running board, left	
KEDOM			1.60
LEDOM		Front floor complete	1.00
MEDOM		Front floor hatch door	.60
PEDOM		Lock for front floor hatch	.20
REDOM		Iron for front floor hatch	.05
SEDOM		Rear floor complete	1.00
TEDOM		Rear floor hatch door	.60
ZEDOM		Lock for rear floor hatch door	.20
BIDOM		Hinges for rear floor hatch door	.05
CIDOM	H-1276	Body bracket, front, right	3.00
DIDOM	H-1277	Body bracket, front, left	3.00
FIDOM	H-1273	Center body fastener (two) ..... each	.60
KIDOM	H-1274	Rear body fastener (four) ..... each	.60
LIDOM		**Fenders.**	
MIDOM			
PIDOM		Right front fender with irons ..... $	12.00
RIDOM		Left front fender with irons	12.00
SIDOM		Right rear fender with irons	10.00
TIDOM		Left rear fender with irons	10.00
ZIDOM	H-1257	Angle plate for running board support on front fender, right	
BODOM			1.25
CODOM	H-1258	Angle plate for running board support on front fender, left	
DODOM			1.25
FODOM	H-1237	Rivet for fender, short (per doz., .25) . each	.05
KODOM	H-1238	Rivet for fender, long (per doz., .25) . each	.05
LODOM	H-1251	Bracket for rear fender iron on mud guard	
MODOM			1.25
PODOM	H-1252	Bracket for fender iron	1.25
RODOM	H-1254	Angle plate for running board support on rear fender, right	
SODOM			1.25
TODOM	H-1255	Angle plate for running board support on rear fender, left	
ZODOM			1.25
BUDOM	H-1256	Re-inforcement plate for angle support of running board on rear fender	
CUDOM			1.25
DUDOM	H-1259	Re-inforcement plate for angle support of running board on front fender	
FUDOM			1.25
KUDOM	H-1225	Fender iron, front, right	3.00
LUDOM	H-1226	Fender iron, front, left	3.00
MUDOM	H-1227	Fender iron, rear, right	3.00
PUDOM	H-1228	Fender iron, rear, left	3.00
RUDOM	H-1229	Fender iron, rear front, right	3.00
SUDOM	H-1231	Fender iron, rear rear, right	3.00
TUDOM	H-1230	Fender iron, rear front, left	3.00
ZUDOM	H-1232	Fender iron, rear rear, left	3.00

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CODE WORD		
	Battery Box Case.	
BAFOM	Battery box case with lock, hinges and mat ..... $	8.00
CAFOM		
DAFOM	Cover for battery box case, complete	3.00
FAFOM	Spring for battery box case	.05
KAFOM	Rubber mat for battery box case	.50
LAFOM	Brass strip for battery box case	.50
MAFOM	Brass corners ..... each	.10
PAFOM	Lock and key for battery box case	.75
RAFOM	Hinges for battery box ..... each	.05
SAFOM		
TAFOM	**Tool Kit.**	
ZAFOM		
BEFOM	Tool kit complete with tool bag ..... $	30.00
CEFOM	10" trimo pipe wrench	1.00
DEFOM	10" monkey wrench, B. & S.	1.75
FEFOM	4" monkey wrench, No. 97 B. & S.	.50
KEFOM	Prick punch	.10
LEFOM	Machinist hammer	1.00
MEFOM	Fan belt, cotton	.10
PEFOM	Soldering copper and handle	1.00
REFOM	Can soldering paste	.10
SEFOM	6 pieces wire solder ..... each	.03
TEFOM	Pliers	.60
ZEFOM	Oil gun	.50
BIFOM	2 spools copper wire, 1 No. 18, 1 No. 20 ..... each	.15
CIFOM		
DIFOM	2 spark plugs, rajah ..... each	1.00
FIFOM	Box assorted cotter pins	.30
KIFOM	Cotter pin puller	.20
LIFOM	Roll friction tape	.15
MIFOM	Auto Jack, Peerless No. 15	2.00
PIFOM	Oil can	.60
RIFOM	Wheel puller	2.00
SIFOM	Tire pump, Stapley	5.00
TIFOM	Tire repair kit	3.00
ZIFOM	No. 323A socket wrench, 5/16" hexagon	.60
BOFOM	No. 323B socket wrench, 3/8" square	.65
COFOM	No. 325B socket wrench, 3/8" hexagon	.70
DOFOM	Hub cap wrench for front wheel	.30
FOFOM	Hub cap wrench for rear wheel	.30
KOFOM	11/16"x7/8" open end wrench No. 294	.30
LOFOM	25/32" off-set wrench No. 267	.20
MOFOM	1-3/32" closed end wrench No. 807	.60
POFOM	Off-set screw driver	.20
ROFOM	4" flat smooth file and handle	.25
SOFOM	6" round file and handle	.16
TOFOM	8" half round file and handle	.25
ZOFOM	3" screw driver	.15
BUFOM	3¼"x5/16" screw driver	.40
CUFOM	7"x5/16" screw driver	.60
DUFOM	5/8" cold chisel	.15
FUFOM	3/8" cold chisel	.25
KUFOM	3/16" nail set	.10
LUFOM	¼" nail set	.10
MUFOM	⅛" nail set	.10
PUFOM	Tool bag	4.00
RUFOM		
SUFOM		
TUFOM		
ZUFOM		

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CODE WORD	Tool Box.	
BAGOM	Tool box with lock, hinges and mat....$	8.00
CAGOM	Cover for tool box complete.....	3.00
DAGOM	Rubber mat for tool box.....	.50
FAGOM	Brass strip for tool box.....	.50
KAGOM	Brass corners for tool box.....	.10
LAGOM	Lock and key for tool box.....	.75
MAGOM	Spring for tool box.....	.05
PAGOM	Hinges for tool box.....each	.05

TIRES.

Do Not Send Tires To Us.

We do not guarantee, replace or repair Tires under any circumstances. All Tires used on Cadillac cars are guaranteed by their respective makers and all claims must be made and Tires sent direct to them.

Tires sent to us will not be accepted from the transportation company.

PL-

Order Parts by serial part number and name in full.
Give number of motor.
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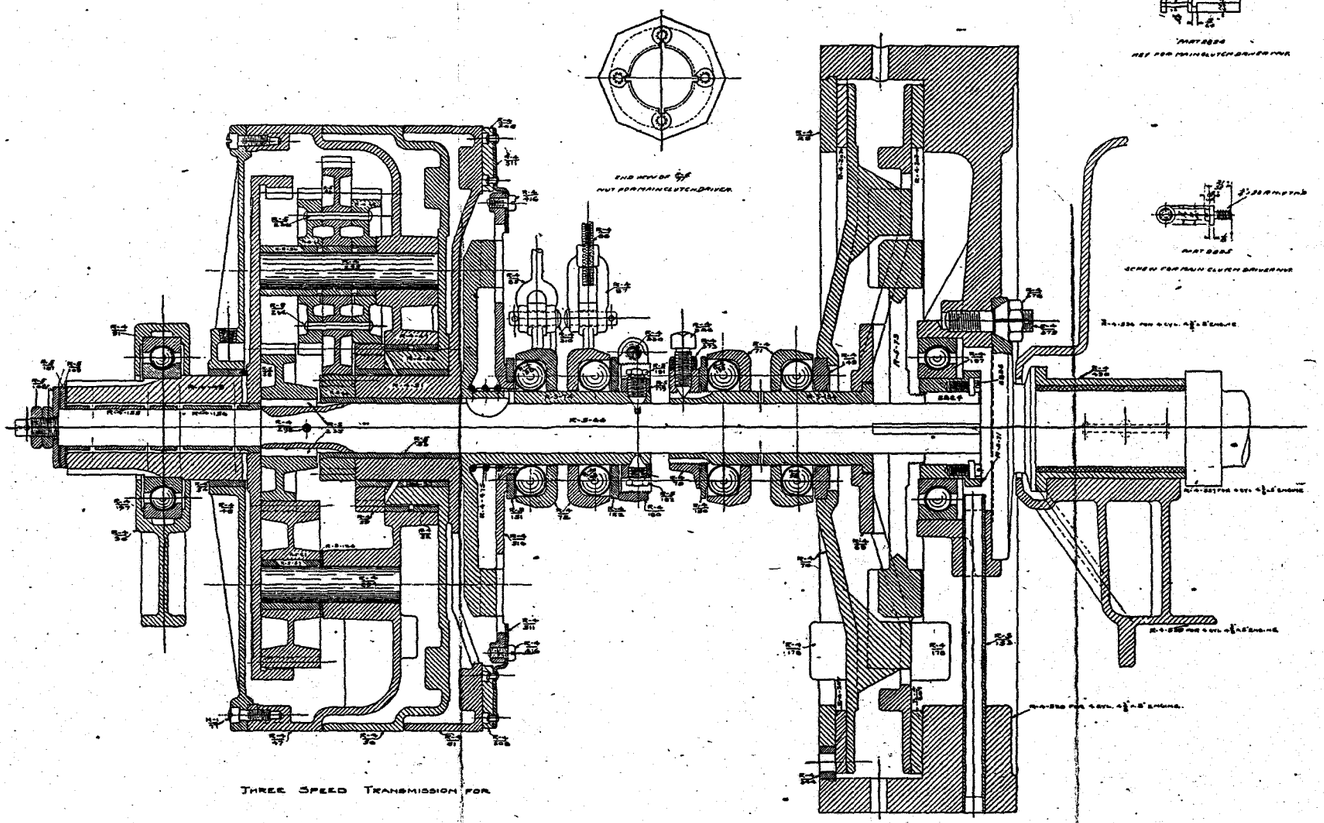
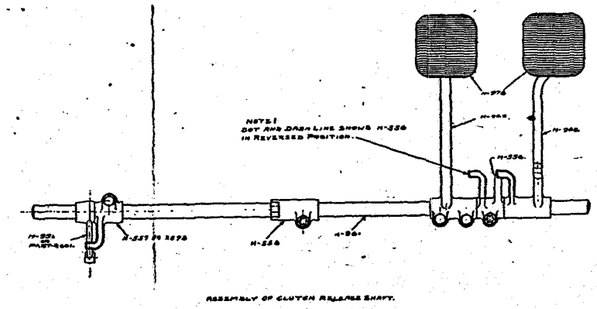
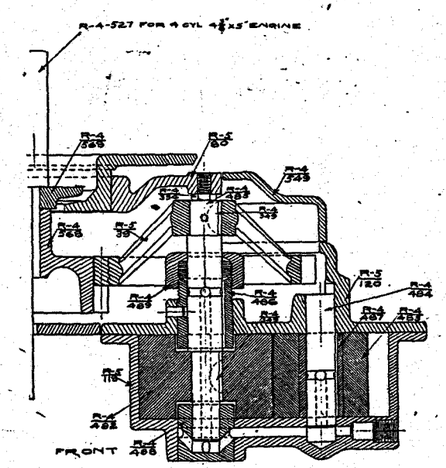


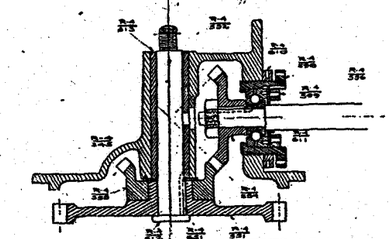
THREE SPEED TRANSMISSION FOR



ASSEMBLY OF CLUTCH RELEASE SHAFT.

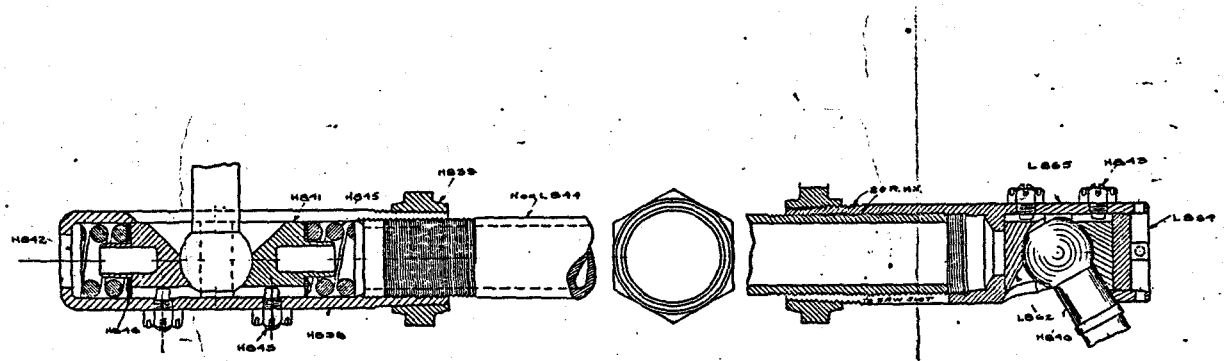


MODEL "H" PUMP.

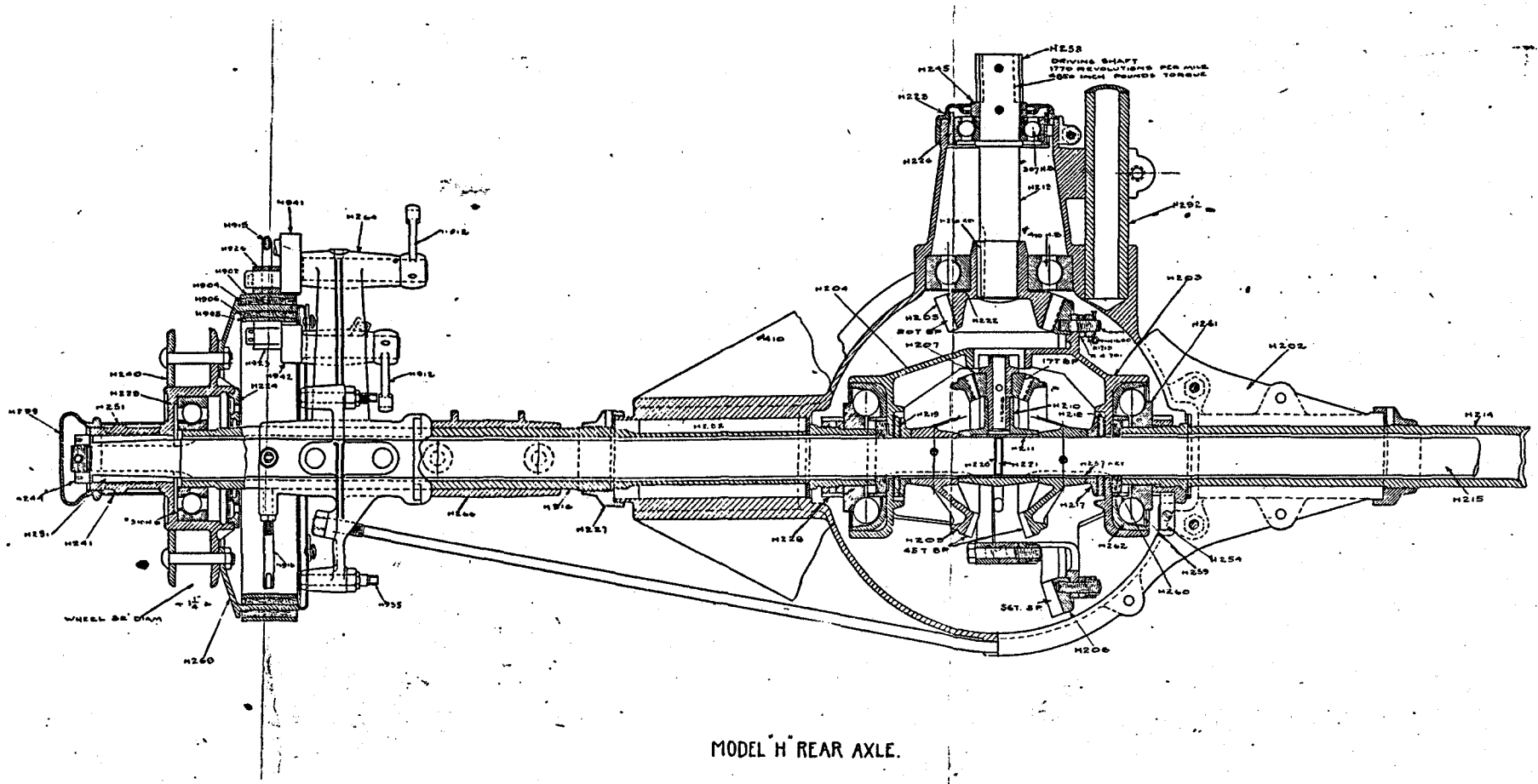


MODEL "H" GEARS OF GOVERNOR & COMMUTATOR SHAFT.

SUPPLEMENT TO CADILLAC "MODEL H" PRICE LIST OF PARTS.

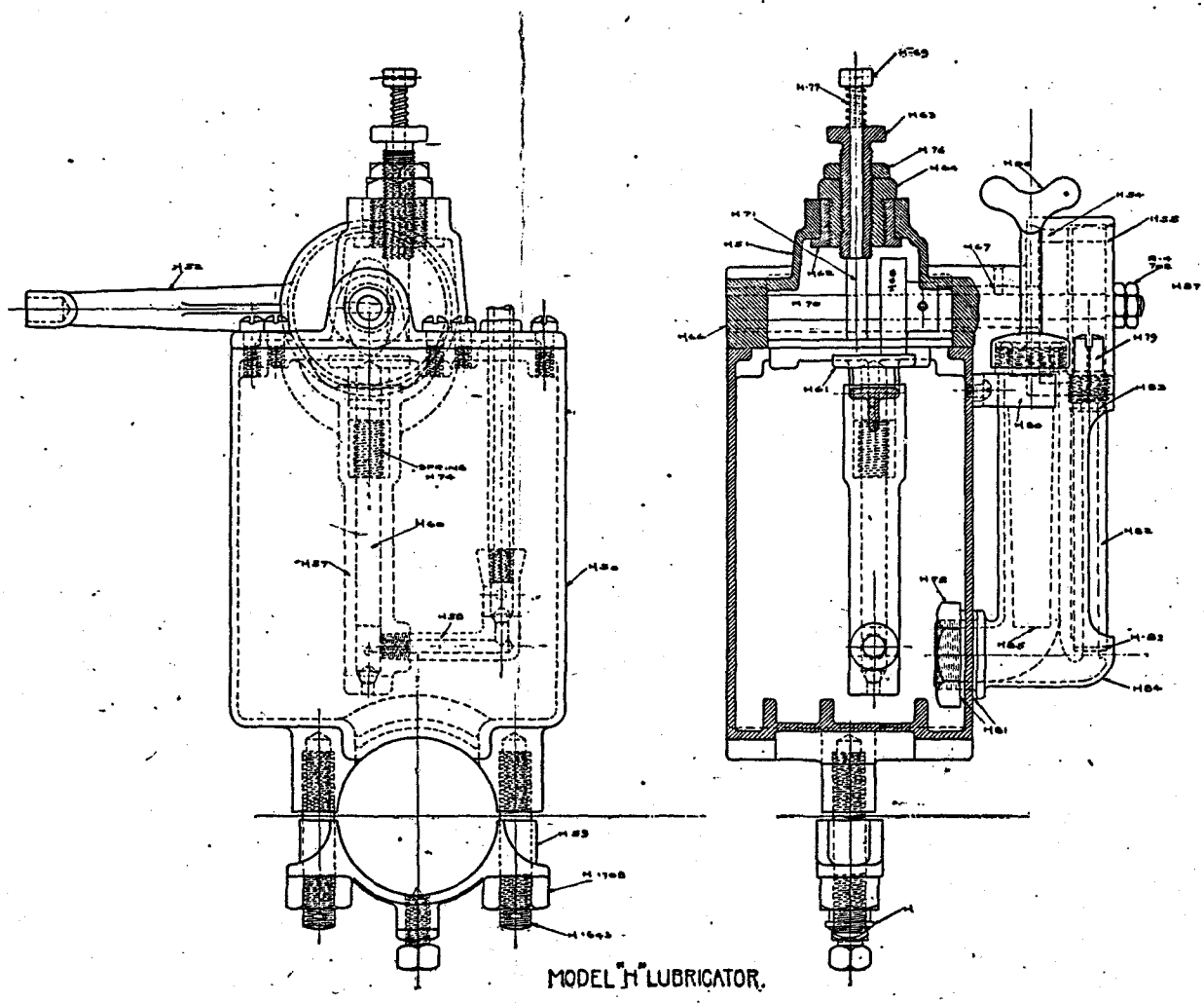


MODEL "H" STEERING CONNECTION ROD.

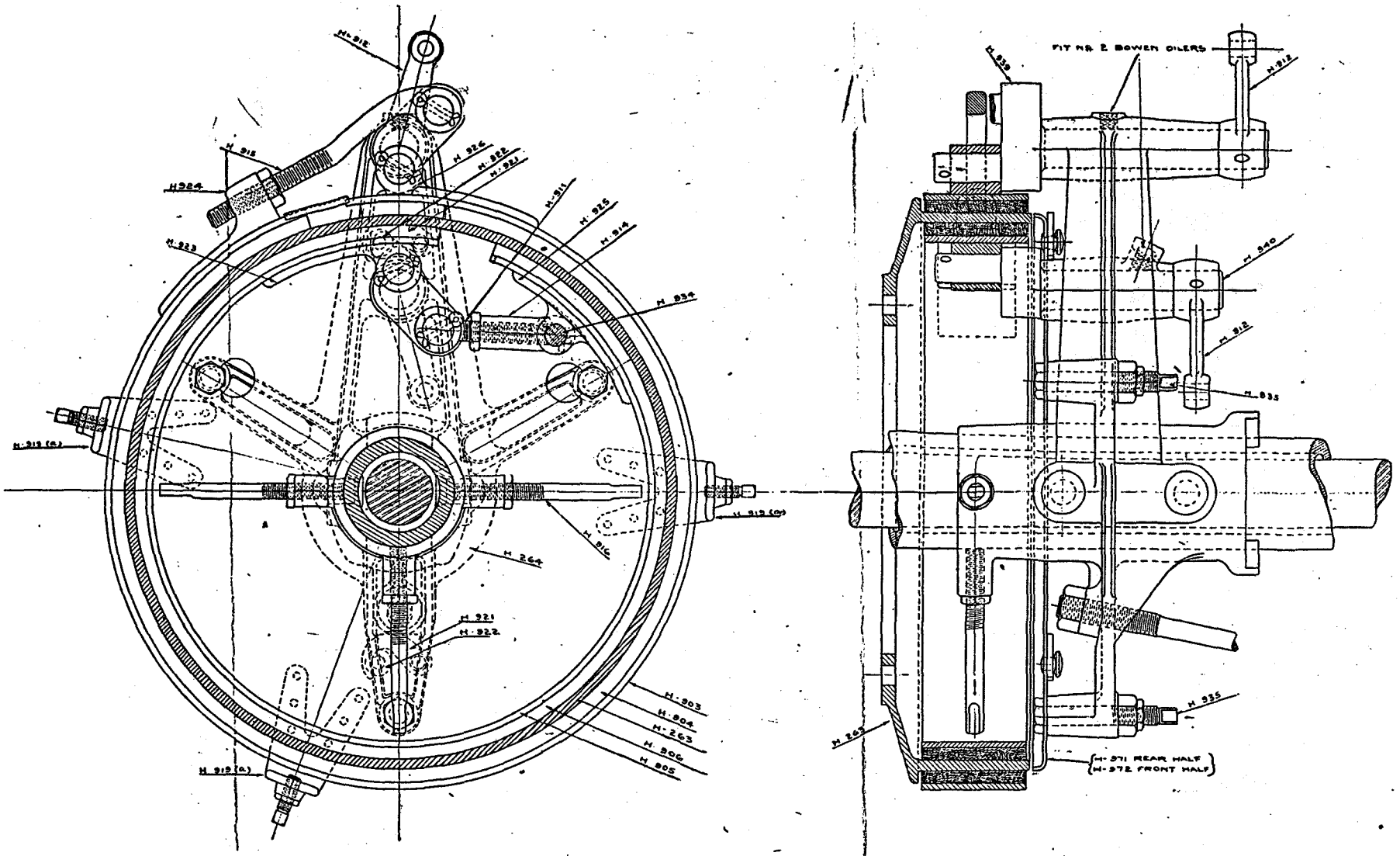


MODEL "H" REAR AXLE.

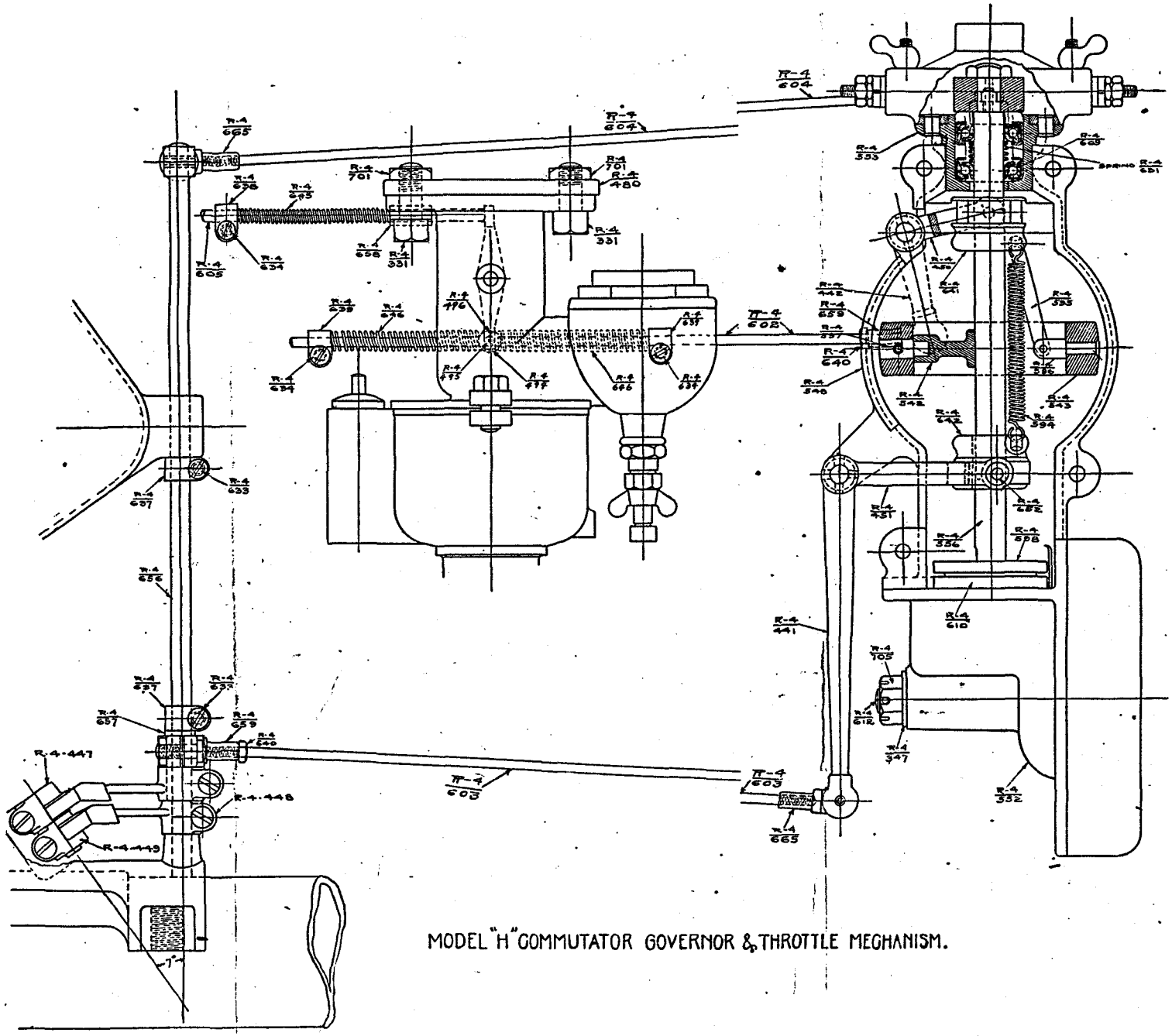
3



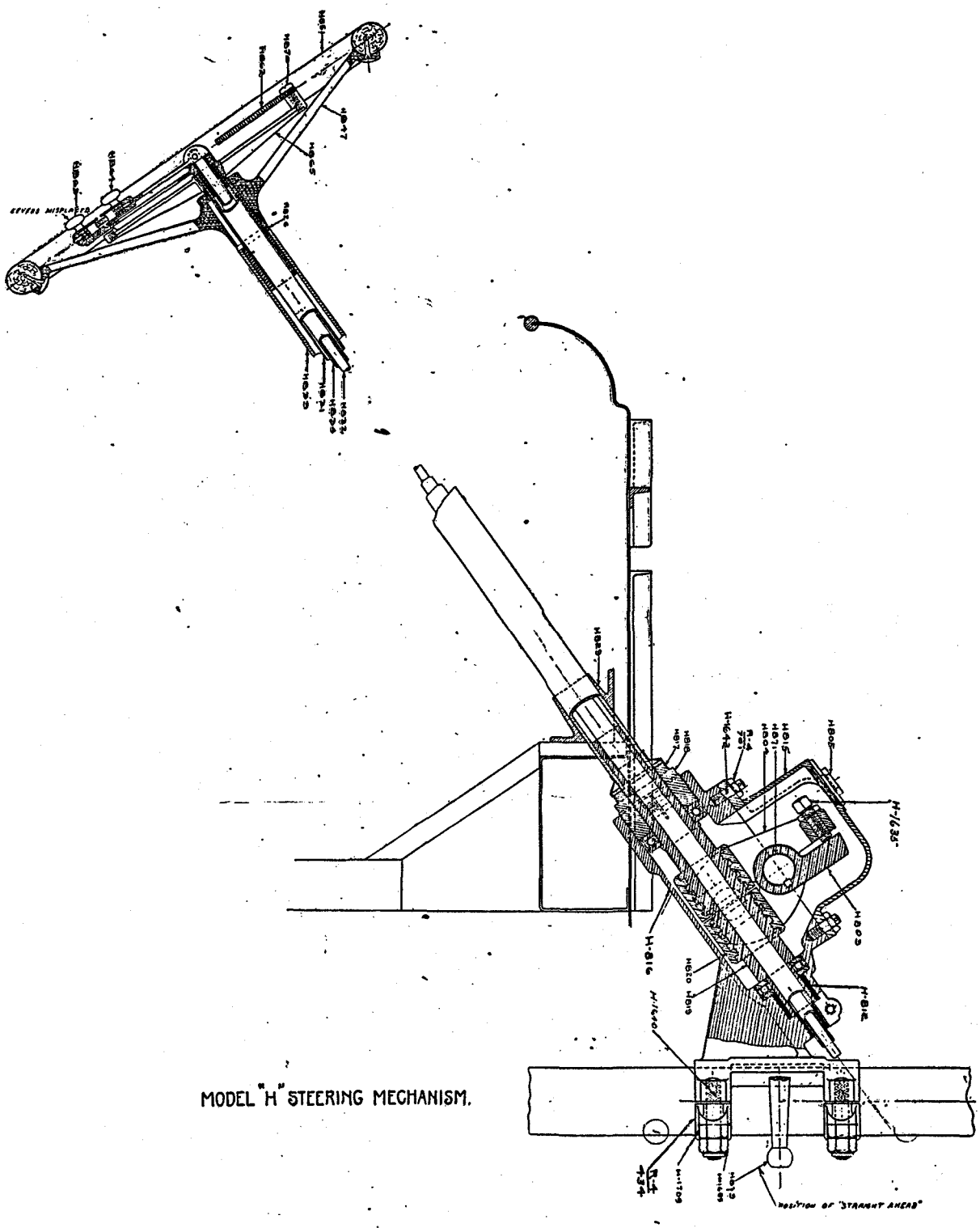
MODEL "H" LUBRICATOR.



MODEL "H" HUB BRAKES.



MODEL "H" COMMUTATOR GOVERNOR & THROTTLE MECHANISM.


H-16 30°
H-816
H-812
H-1630
H-1630
H-1630