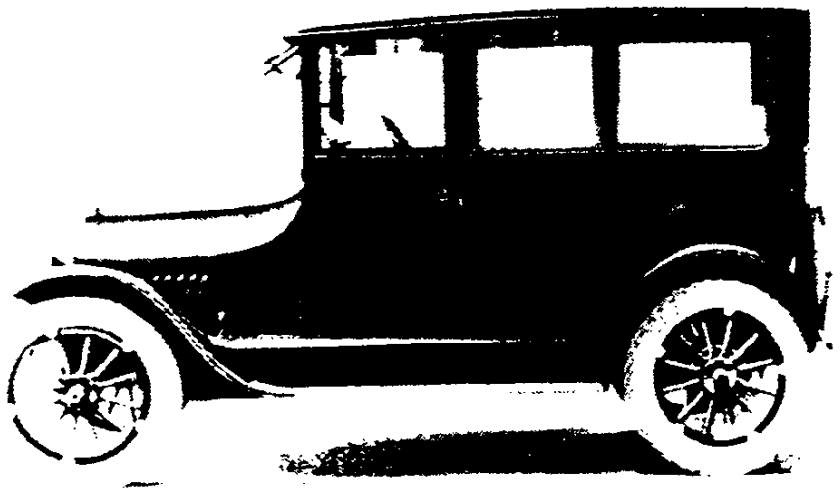
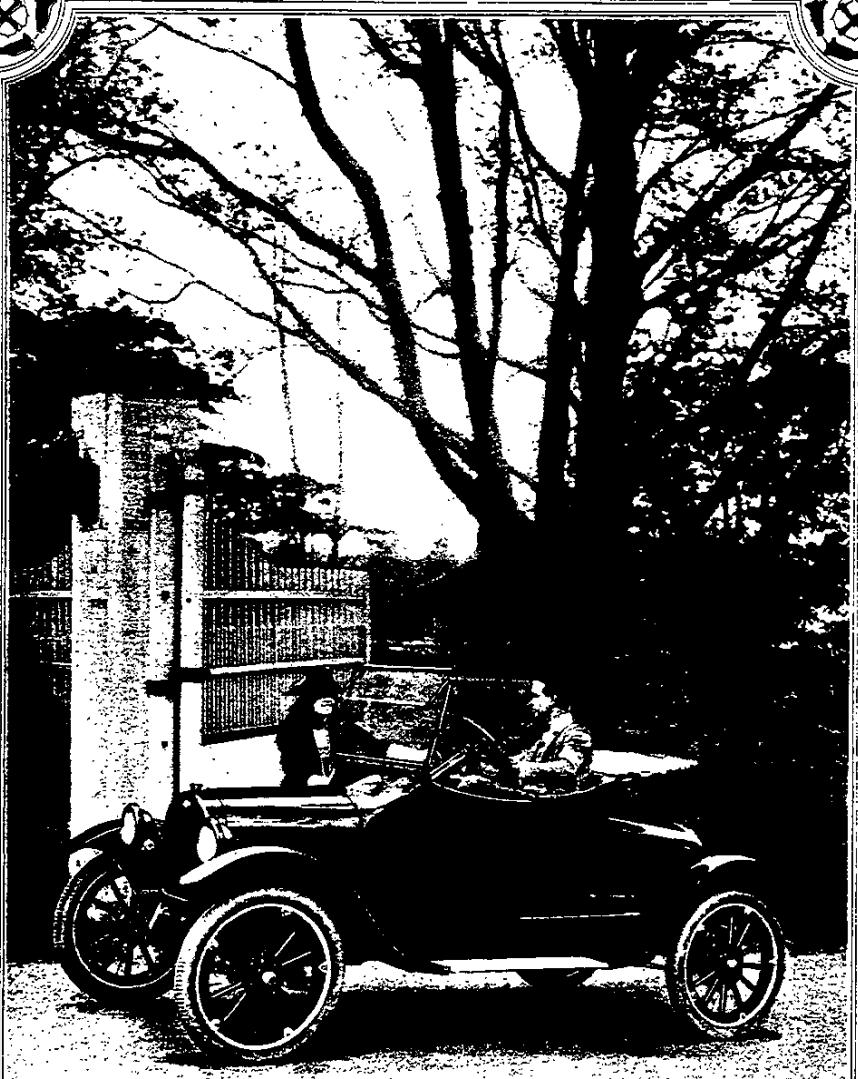
CHEVROLET



1921 Chevrolet. Series 490. sedan. HAC

1921



For Economical Transportation

CHEVROLET

"Four-Ninety"

ROADSTER

CHEVROLET

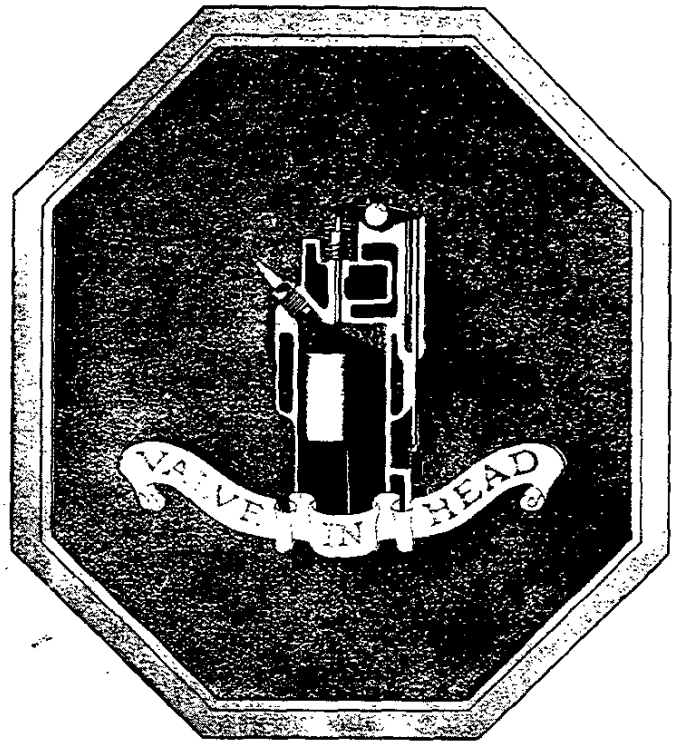
CHEVROLET

The Product of Experience

CHEVROLET

of B 20" Roadster

THE CHEVROLET "FB 20" ROADSTER FULFILLS THE REQUIREMENTS OF THOSE WHO DESIRE THE UTMOST REFINEMENT IN COMFORT AND APPOINTMENTS, IN ADDITION TO THE ESTABLISHED RELIABILITY AND ECONOMY OF CHEVROLET PERFORMANCE



Valve-In-Head Motor Spells Maximum Economy

GASOLINE IS INTRODUCED DIRECTLY INTO THE CYLINDER HEAD AND EXPLODED THERE. THE FULL FORCE OF THE EXPLOSION COMES INTO DIRECT CONTACT WITH PISTON HEAD. FOR THIS REASON CHEVROLET POWER IS MAXIMUM WITH A MINIMUM USE OF FUEL.

CHEVROLET MOTOR COMPANY

FACTORIES

North Tarrytown, N. Y.; Flint, Michigan; Oakland, California; Bay City, Michigan
Oshawa, Ontario; St. Louis, Missouri; Fort Worth, Texas; Toledo, Ohio

SALES HEADQUARTERS

Atlanta, Georgia — Baltimore, Maryland — Boston, Massachusetts — Buffalo, N. Y.
Chicago, Illinois — Cincinnati, Ohio — Denver, Colorado
Flint, Michigan — Fort Worth, Texas — Kansas City, Missouri
Minneapolis, Minnesota — North Tarrytown, N.Y. — Oakland, California
Omaha, Nebraska — Oshawa, Ontario — Pittsburgh, Pennsylvania
Portland, Oregon — St. Louis, Missouri — Winnipeg, Manitoba

JOSEPH MACK PRINTING HOUSE, INC., DETROIT

Details of Construction Model "Four-Ninety"

Motor The motor is of the four-cylinder, four cycle type of medium long stroke with cylinder dimensions 3-11/16 inch bore, by 4 inch piston stroke, which gives the combination of power at low as well as high speeds. Flexibility, silence and durability characterize the Chevrolet valve-in-head engine. The horsepower rating (A.L.A.M.) is 21.7. This rating is made on an arbitrary formula and does not express the real power of this engine. The horsepower it actually develops cannot be determined by theory, bore, stroke, compression, piston displacement or other formulae. The Chevrolet motor is capable of developing 25 horsepower at 1800 revolutions per minute because of its design, workmanship, and valve-in-head construction, which develops from 15 to 20 per cent more power than engines of similar bore and stroke of the "L" or "T" head type.

The Chevrolet motor has many advantages in its cylinder construction—first, absence of chambers and pockets, which makes possible the full machining of the combustion chamber, making fewer recesses for the accumulation of carbon. Second, all the gasoline vapor explodes directly on the piston head and all the power goes to the crankshaft. Third, all cylinder surfaces are exactly alike, and each cylinder will handle its charge in exactly the same way under all speeds. Fourth, it cleans the cylinders of burned gases more completely on the exhaust stroke of the piston, which forces the burnt gases straight out through the exhaust valve at the top of the cylinder. The fresh gas introduced through the inlet valve on the next charge finds a clean cylinder, which produces a greater expansion and a correspondingly greater piston pressure when fired. Fifth, the detachable head makes possible the easy installation of valves and springs, and insures rapid and accurate valve grinding.

Motor Support The motor is supported at the front by a malleable iron cross arm securely fastened in front of the case, the outer ends of which are securely riveted to frame side members. Two malleable iron arms bolted on integral cast brackets on the cylinder block extend rearward and bolt on the transmission; these also support the transverse clutch operating shaft, pedals, and electric starting motor, making a unit type power plant and insuring a perfect alignment between crank shaft, clutch, and transmission shaft. These arms rest on and are securely bolted to a pressed steel cross member and on brackets suspended from frame side members opposite the fly wheel. The transmission is also supported by a V-shaped diagonal support from the rear and top of the cylinders. This form of motor suspension insures practically all the advantages of the so-called "three point" method, without any of the disadvantages of instability, vibration and undue wear.

Cylinder Material The cylinders are made of selected close grain gray iron properly seasoned, cast integral with the upper half of the crank case, resulting in remarkable rigidity. The joint at the base of the cylinders is eliminated and the cylinder resistance load is spanned to the crank case walls and bearings through continuous walls properly placed to distribute each strain. The strain on each cylinder is greatly reduced because of the support given by the adjoining cylinders and the ribs in the casting.

Removable Heads The removable cylinder head is a one-piece casting, which contains the spark plugs, valves and their upper actuating parts, such as valve rocker arms, which can be easily taken off, and permits the grinding of valves, removal of carbon, and cleaning out of water jackets. It is different from the ordinary valve-in-head motor in that it has no valve cages, and by this form of construction the possibilities of leakage are removed, with a corresponding reduction of many parts. Thus, also reducing the weight and permitting

and .003", are placed between caps and connecting rods to simplify tightening of bearings.

Crank Shaft The crank shaft is a drop forging of high carbon steel and especially heat treated. It has liberal proportions and is accurately balanced. It has three main bearings and all bearing surfaces accurately ground to .005" limits. The front bearing is 2-5/16 inches long by 1⅜ inches diameter; center 1½ inches long by 1-21/32 inches diameter; rear 2-11/16 inches long by 1¾ inches diameter. The crank shaft at the third or rear bearing is hollow, being drilled and fitted with a square steel plug, the tapered conical end of which projects into the rear throw of the fourth connecting rod bearing. The function of this plug is to supply a small amount of oil to the clutch thrust bearing. The front and rear bearings are die cast babbitt and the center bronze backed with babbitt lining and accurately scraped and "run in." All are split in half, which allows them to be either taken up or new ones easily installed, being supported by rigid caps, which are held to the cylinder block by studs and cotter-pinned nuts. Removing the oil pan allows inspection or adjustment of main bearings, connecting rods, cam shaft, etc.

Crank Shaft Offset The crank shaft is offset; that is, instead of being placed directly in line with the middle of the cylinders, it is set ⅜" to the right of the center line of the cylinders.

By this method, the force of the explosion is expended to greater advantage, and pushes the piston down on the power stroke with greater strength than would be possible to obtain if it were on the dead center line.

Flywheel The flywheel is a gray iron casting accurately machined, extra heavy with gear teeth cut on its perimeter for the electric starting motor pinion. The flywheel is bolted to an integral flange of .the crank shaft.

Lubrication The motor lubrication is known as the constant level splash system. The oil is circulated by means of a gear pump mounted on the gear case and driven by the generator armature shaft. It draws the oil from the lowest point of the oil pan and distributes it to the center main bearings and into small oil pockets under each connecting rod into which the connecting rod spoons dip at each stroke; the spray of oil caused by the rapid splashing of the connecting rod spoons lubricates the cylinder walls, cam shaft, wrist pins and other interior motor parts, collecting in pockets above the crank shaft bearings and cam shafts, from which holes lead to the bearings. The excess oil falls back to the reservoir to be used over again. The oil pan is of pressed steel secured to the cylinder block with bolts and sealed by a cork gasket. A breather and oil filler pipe is conveniently located on left side of the motor. The oil level is determined by opening the upper level pet cock on the left side of the oil pan. A suitable oil pressure gauge located on the instrument board indicates the flow of oil through the system.

Carburetor Zenith improved double jet carburetor is used. It is the simplest in construction and most efficient and economical carburetor ever designed. The intake manifold is seamless steel tubing. Carburetion is aided by the utilization of heated air from a jacket on the exterior of the exhaust tube, passing through a flexible tube to carburetor air intake. The generous application of heat prevents condensation of low grade gasoline in the manifold, and produces better economy and performance. The carburetor is equipped with a dash choke for easy starting in cold weather. Throttle is controlled by a lever below the steering wheel and is also operated by an accelerator pedal. The gasoline is "fed" to the carburetor by gravity direct from gasoline tank, under the front seat, at a sufficient elevation above the carburetor to insure a steady flow of gasoline at all times. A shut-off cock is provided on gasoline pipe line at the tank. The gasoline tank is of heavy gauge tinned steel, with a capacity of

ten gallons, and is clamped to steel brackets supported from the frame side member.

Cooling System The motor is cooled by a belt-driven centrifugal water pump, fan and a cellular type radiator of generous capacity. Both the fan and water pump are driven from the crank shaft. The pump is connected by a hose to the bottom of the radiator, or outlet, and forces a supply of cooled water to the water jackets surrounding the cylinder walls, thus insuring proper circulation at all motor speeds. When cold, the motor and radiator have a capacity of 1¾ gallons. The water pump is readily accessible by removing the bolts which fasten it to the cylinder block.

Fan The fan consists of a hub to which is riveted four pressed steel blades. The hub has an adjustable flange which tightens or loosens the fan belt, depending on whether the flange is screwed in or out of the hub. Screwing it in tightens, while the reverse loosens the belt. A grease cup in the pump housing lubricates the fan and pump shaft.

Radiator The radiator has a graceful appearance, and conforms with the lines of the hood. It is supported by bolts to the frame cross member, and held in a vertical position by a tie rod to the dash. This method minimizes the tendency to leak.

Clutch The clutch is a pressed steel cone, embodying durability, strength and lightness. Its frictional surface faced with leather directly engages with the inner beveled edge of the fly wheel. The clutch cone is held against the flywheel by a heavy coil spring enclosed in the clutch hub. Pressing down upon the clutch pedal disengages the clutch cone from the fly wheel. Six adjustable compensating springs make the clutch engagement easy.

Clutch Control The clutch operating mechanism is exceedingly simple, consisting of a transverse clutch operating yoke upon which are secured the clutch pedals, and the clutch collar operating against the face of the clutch hub.

Clutch Collar The clutch collar is one of the greatest refinements made in the history of automobile construction. It is a patented device, covered by eleven claims, owned by this Company and used exclusively on Chevrolet cars. It consists of a cored bronze casting holding about a cupful of oil, sufficient for three hundred miles' use and easily refilled by raising the floor board. In the frictional surfaces, wood plugs are inserted extending into the oil receptacle. Through these plugs, the oil exudes (or sweats), lubricating the frictional surfaces of collar and clutch hub, and prevents heating and cutting. To some extent, the clutch collar acts as a brake, so that when the clutch is disengaged it will stop, which in turn stops the transmission gears, and they may be easily shifted without clash.

Transmission The transmission is of the selective sliding gear type. There are three speeds forward and one reverse. The gears and shafts are of high carbon steel, heat treated. The gears have deep cut teeth with a wide face. The main and clutch gear shafts revolve on two large annular ball bearings; the countershaft gears revolve on plain bronze bearings. All the gears, shafts and bearings are encased in a dust-proof and oil-tight malleable iron housing, which is very accessible. A V-shaped diagonal support extending from the top of the motor to the transmission case makes practically a unit power plant. The shifting rods and interlocking pins are mounted in the malleable iron cover. The centrally located gear shifting lever, pivoted by a ball and socket on the extended part of transmission cover, has short travels in all directions of speed changes and operates with perfect ease.

The heat treatment given to transmission gears is not to make them hard and brittle, but rather soft and tough.

The most beneficial result obtained is the ability of a correctly heat treated steel to withstand to a degree of very high efficiency the wear placed upon it. The next result, of almost equal importance, is the corresponding reduction in weight possible, both of which reduce the cost

of maintenance and insure a prolonged life for the car.

Transmission Gear Reduction

This is based on Engine Speed

1st Speed	3.32 to 1
2nd Speed	1.77 to 1
3rd Speed	Direct
Reverse	4.2 to 1

Universal Joint The universal joint is the ring and yoke type and extremely strong. It is of high carbon steel, hardened and ground. All moving parts have large bearings, which are lubricated automatically from the transmission case.

Rear Axle The rear axle is the three-quarter floating type, extremely strong, light and of simple construction, of our own design and built by us. The rear axle housing consists of malleable iron differential case of two halves, firmly bolted together. Seamless steel tubing connects the malleable iron supports for brakes and wheel bearings to the differential housing. A truss rod is suspended underneath and supports the complete housing. The differential is mounted on inner ends of axle shafts. The thrust action of the differential is taken by a large thrust bearing of special design on the left half of the differential housing. Inner ends of the axle shafts revolve on liberal size Hyatt roller bearings. The rear wheel hubs are keyed directly to tapered ends of the axle shafts. Liberal size Hyatt high duty roller bearings, the rollers of which are heat treated high carbon steel, revolving between hardened and ground bushings, comprise the rear wheel hub bearings. The inner bushing is an integral part of the hub and the outer bushing is pressed into the axle housings, placing the bearings almost in the direct load carrying center of the rear wheels. By this construction, the side pressure or skidding force due to uneven pavements, ruts, and turning corners is sustained by the axle housing, while the axle shafts merely transmit the turning power from the differential to the wheels. A tubular housing encloses the pinion or propeller shaft, which extends forward from the rear axle, terminating in the splined end of the universal joint. The universal joint ball

moves in its retainer, which is secured to the transmission case. The pinion or propeller shaft revolves on a liberal high duty Hyatt roller bearing next to the pinion and at the forward end on the cast iron bushing pressed in the tubular housing. Means are provided for the adjustment of pinion to bevel gear, and the end thrust is taken up by a special design of ball bearing, called the pinion shaft thrust bearing. Ample provision is made for the lubrication of the working parts of the rear axle, through a filler plug in the differential housing and grease cups in brake flanges.

Differential We know that the function of the differential is to permit one rear wheel to travel faster than the other, or independent of the other when required. If such a device were not used, turning corners would be almost an impossibility, as without it, both wheels would move at the same speed and have the same tractive force, whereas to turn demands that one wheel travel faster than the other. The differential accomplishes this feat in the following manner:

Three small pinions, called differential spider pinions, mounted on as many axles of a small spider, mesh with two larger gears called the differential side gears, which are keyed to the axle shafts. The differential case, which consists of two halves, bolted together (one carrying the bevel ring gear), form the bearings for the spider axles. When the car is moving forward in a straight line the complete differential turns forward, being driven by the drive pinion through the bevel ring gear. When the car turns a corner and one wheel is required to travel slower than the other, this difference in rate of speed of the axle shaft is taken up in the action between the differential side gear and the spider pinion. In other words, the twisting tendency of the shafts is taken up in the differential pinions and gears.

The propeller shaft and the bevel-ring gears of differential are special chrome nickel steel, heat treated.

The spring seats of the rear axle are car-

ried on bearings surrounding the axle tubes and mounted near the brake support, which places the load of the car almost in the direct load carrying center of each rear wheel. The driving thrusts from the rear wheels are transmitted to the frame of the car through rear springs, thus climinating the complicated, extra weight, radius rods, and giving flexibility of drive obtainable in no other way. The torque reactions from the bevel pinion and brakes are provided for by the propeller shaft tubular housing.

The gear ratio of the rear axle is 3-7/11 to 1, adopted as best suited for power, economy, speed and hill climbing.

Brakes The brake equipment consists of two pair of powerful, double acting bands, operating directly on the rear wheel brake drums, which are ten inches in diameter, with faces 1¼" wide. The service brakes contract upon the outside of the drums and are operated by the left foot pedal, which also operates the clutch. The emergency brakes expand within the drums and are operated by the right foot pedal, which has a fine-tooth ratchet on foot pedal pad, which bolts on pedal, and catches into a plate secured to toe board. The brake bands are lined with asbestos containing a reinforcement of fine copper wire. The lining is riveted to the band by copper countersunk rivets. The connections between brakes and pedals are by rods from the pedals to intermediate levers supported on the propeller shaft housing. Complete adjustment of the brakes may be made by lifting the floor board under driver's feet, and by a few turns of the turnbuckles on brake rods all play or wear is taken up.

The connections from the intermediate brake levers and shaft on the propeller shaft to the brakes are by cables, which do not rattle like rods. All brake adjustments are easily made and maintained.

Front Axle The front axle is of the "I" beam type—one-piece drop forged with integral yokes and spring seats, made of special steel, double heat treated; it is extremely strong,

so as to withstand both the horizontal and vertical stress to which the axle is continuously subjected. The steering knuckles and arms are drop forged of high carbon steel, heat treated. Bushings are pressed in each of the steering knuckles and arms. They are reamed in place so that a perfect bearing fit may be had on the king bolts, which are hardened and ground and secured by cotter-pinned nuts. The king bolts are well lubricated by means of grease cups mounted on the top.

Wheels The wheels are the artillery type, having twelve strong spokes, made of second growth hickory, thoroughly seasoned. They are mounted on substantial hubs with large flanges on the outside and six hub bolts, which pass through the spoke. Clincher demountable rims are standard. The front wheels revolve on cup and cone-type ball bearings, having twelve ½" steel balls in inside cup and eleven ⅜" balls in the outside cup, which are well adapted for the purpose, for they are designed to take care of end thrusts, which occur in turning corners, in addition to the ordinary radial load.

Frame The frame is channel section, pressed steel, of liberal proportions; the side members being 3-9/16" maximum depth, and tapering towards front and rear without sudden change of cross section. It is provided with three cross members securely fastened to the main members with good-size hot driven rivets. The frame consists of very few parts, which obviates the necessity of excessive riveting and thus preserves the full strength of the frame. It is tapered from 28" wide in front to 37⅞" at rear, insuring that the body rests solidly on the frame its complete length. The frame being exceptionally narrow in front permits the car to turn in a small circle.

Steering Gear The steering gear is of our own design. It is of the compound reduction spur gear type neatly and compactly designed with ample bearing surfaces, and adjustable for wear, mounted on the

frame and secured by bolts. The shaft carrying the steering or Pitman arm has a bearing on the motor front cross member. The steering wheel is wood, 15" in diameter. The steering column is of large diameter and enameled black, and the spark and throttle rods are fastened on the outside.

The steering drag link or connecting rod is the connection between the steering gear and the steering arm on the front axle. The ends are provided with ball and socket joints between spring cushions, which form the bearing surfaces for the balls on the steering arm and the Pitman arm.

Springs The front and rear springs are cantilever type. The leaves are of high carbon steel triple heat treated. The ends are secured by clips and bolts to box brackets on the frame and to the front axle spring seats.

The rear axle and wheels, in going over obstructions or depressions, move in an arc approximately described above the point of anchorage of the forward end of springs. The springs are made long so the axle and wheels practically travel in a vertical line.

There are no shackles to become loose and cause rattling. The springs extend fore and aft from the frame side members to the front and rear axles.

Spring flexibility is as follows:—All front springs on all "Four-Ninety" Models test 300 to 325 lbs. to the square inch. The rear springs of "Four-Ninety" Coupe and Touring Models test 145 to 155 lbs. to the square inch. Rear springs of the "Four-Ninety" Roadster test 115 to 125 lbs. to the square inch. Rear springs of "Four-Ninety" Sedan and Light Delivery test 185 to 200 lbs. to the square inch.

Electrical System The electric system for ignition, starting and lighting is a separate unit and consists of an electric generator, starting motor, wiring harness, starting switch, lighting and ignition switch.

Wiring for Ignition and Lighting The wires in every part of the chassis are protected by flexible metal conduits, and are covered with an insulation which is impervious to oil, heat or water, and which at the same time affords perfect electrical insulation. The wiring system is the single wire ground return type, only one wire being required to each connection, the chassis frame serving as a return path for the current.

Generator The electric generator is of a high efficiency type; light in weight and small over all dimensions. It is operated at one and one-half times engine speed, and is mounted on the engine timing gear housing. All parts are entirely enclosed, which protects the interior from dirt, oil, and water. The armature revolves on bearing adaptors and is driven by the timing gears of motor. The brushes are accessible for inspection by removing an easily detached cover. Its electrical control is absolutely automatic with a circuit breaker in the line; its function being simply to break the circuit between the generator and battery, whenever the car stops.

Storage Battery The 6 volt, 3 cell Willard Storage Battery has a capacity of 5 amperes for 18.75 hours. In other words it will hold enough electric energy to last 18.75 hours, if the energy withdrawn is five amperes per hour. It is suspended from the chassis frame and beneath the body front floor board, which makes a perfectly accessible place where it can be inspected and filled.

Starting Motor The electric starting motor is of the 6 volt, double wire system. It is a separate unit, small and compact, weighing 20¼ pounds. It is of extremely high efficiency and will turn the engine at 150 to 160 revolutions per minute. The engaging mechanism is of the most advance type, and the simplest, no reduction being necessary beyond the starting motor pinion gear to the fly wheel. When the current is supplied to the starting motor, the pinion gear is instantly and automatically drawn in mesh with the fly wheel gear, and when

the engine starts under its own power, the pinion gear automatically draws out of the mesh.

The starter switch is located on the diagonal brace of engine with its push button extending above the toe board. It is operated by the driver's foot.

Ignition The Ignition current is drawn from the storage battery, passed through ignition switch, a coil and igniter to the spark plugs. This system supplies a current of uniform strength regardless of motor speeds.

The igniter is neatly and compactly designed. It can be taken apart without disturbing the timing and it is impossible to reassemble it incorrectly, or cause any variation in the timing on account of special locating lugs. The contact points are extra heavy and will, as a rule, outlive the car. It is mounted in a vertical position where all its parts are very accessible and is driven by spiral gears from the rear end of generator shaft.

The coil has a heat proof case, neat in appearance, and absolute protection of terminals. The windings will carry voltage strain far in excess of the rating, and its internal construction makes impossible the snapping of connections so commonly occurring in coils.

Lighting and Ignition Switch The lighting and ignition switch is mounted on the instrument board. The lights are turned on and off or made bright or dim by turning a knob. The ignition is turned on or off by inserting a key through a slot in the knob and giving it a quarter turn. The removal of the key automatically locks the switch and prevents theft.

Lamps The electric head lamps are 9 inches diameter finished in black enamel, each fitted with a 12 candle power bulb. The tail lamp is 3½ inches diameter, finished in black enamel, fitted with a 4 candle power bulb. At the side a white light illuminates the license plate.

A fuse is located in the lighting switch, to protect the system against short circuits and may be easily removed when necessary. Head

lamps are set high for appearance and to lessen the road shadows. They are supported on heavy pressed steel brackets, which are bolted to the front fender irons. The brackets are so designed as to allow the adjustment of the lamps to any angle for convenience in focusing.

Horn The electric horn is concealed under the hood. The push button is located on a bracket under the steering wheel, and is operated by the left hand.

Control The gear shift lever is located at the center of the driving compartment and operated by the right hand. The clutch and service brake are operated by a single pedal. Pressure on the pedal first throws out the clutch, and, if continued, applies the service brakes. The emergency brake is operated by the right foot pedal. The hand operated spark and throttle levers are conveniently located underneath steering wheel on a stationary friction sector. The throttle is also operated by a foot accelerator conveniently located on the toe board to the right of the emergency brake pedal.

"Four Ninety" Body The body is streamline type, long and graceful, all angles having been eliminated. The construction is sheet metal over strongly built hard wood frames, securing the desirable combination of lightness and strength. The doors are of unusual width and offer easy entrance and exit; the hinges are concealed, the door handles are inside, the front door is cut back of the forward edge of the front seat cushions, thus giving easy entrance to the front seat. The rear seat accommodates three people comfortably, and the tonneau is roomy, measuring 26¾ inches. The front seat has ample room between dash and seat, measuring 27¾ inches, providing most comfortable position for both driver and passenger.

Length and Width of All "Four-Ninety" Model Seats

"Four-Ninety" Touring—Front seat 17" from seat board to top of back. 13" from top of cushion

to top of back. 39" from side arm to side arm. Rear seat 16" from top of cushion to top of back. 19½" from seat board to top of back. 47" from side arm to side arm.

"Four-Ninety" Touring Car doors measure: Front door, 19". Rear door, 20".

"Four-Ninety" Roadster, 18" from seat board to top of back. 14" from top of cushion to top of back. 43" from side arm to side arm. Width of door, 19".

"Four-Ninety" Sedan—Rear Seat 46½" wide. Height of rear back from seat board 25½". Depth of cushion 6".

"Four-Ninety" Coupe—Width of seat 46½". Height of back from seat board 25½". Depth of Cushion 6".

Upholstering The upholstering is fastened over hair interlaced. The method of upholstering is the "straight pipe" type which has advantage over the tufted type in that it provides for a neater and softer finish and a more secure binding of hair. No clinch buttons are used and the springs are only slightly compressed in this type of upholstering, thus giving greater spring play and improving the riding qualities of the car. This style is also more sanitary. The backs and seats are provided with springs. The cushions are deep and durable.

The tonneau floor is covered with a carpet and the front floor and toe board are covered with linoleum and bound with metal moulding.

Characteristics of "Four-Ninety" Upholstery Material

Beautiful—As handsome, luxurious and satisfying to sight and touch as the finest grain leather.

Strong—Its super-strong base and extra tough coating will stand up under any service. It has twice the tensile strength of ordinary split leather.

Impervious—Absolutely water, grease, stain, dust and germ proof—nothing gets under its skin.

Cleanable—May be kept as clean and sanitary as glass by washing with soap and water.

Lasting—Unaffected by sunlight, heat, cold, smoke or fumes. Does not oxidize nor grow hard. Insects do not attack it.

Windshield The rain vision and ventilating windshield is fastened to brackets which are integral with cowl dash. It is quickly adjusted for rain or ventilating purposes. The lock is of the pivot construction.

Top The top is held to the windshield by clamps and the rear by straps. It is made of Chevrolet Rayntite Material with black lining. Is easily cleaned, durable and fast color. Side curtains and a dust cover are standard equipment.

Finish The complete car is finished in black. After the first operation of polishing and buffing the metal parts of the body, and the various coats of color and varnish put on, it is then black enamelled and the body is baked for a number of hours, at a very high temperature.

Fenders and Running Boards The fenders and side aprons are of heavy gauge sheet metal, the lines of which blend into those of the body and hood in the most effective and pleasing manner. The fenders are slightly crowned, coming well over the wheels with ample clearance for wheels and skidchains. Fully enclosed by side aprons to prevent mud and water being splashed between the wheels, running boards and body. They are finished in black enamel and baked to give a lasting finish and to prevent spotting.

The running boards are oil treated hard wood, suspended at easy stepping height, covered with linoleum and bound with metal mouldings.

Hood The ventilated hood is of sheet steel with hinged panels, finished in black enamel and baked. Carefully fitted to prevent squeaks. The sides are clamped by means of hinged type catches, two on each side, also a handle is riveted on each side.

Tires Four-Ninety Models (Touring, Roadster and Light Delivery) both front and rear, are 30 x 3½ non-skid tread, clincher all around. Sedan and Coupe: Front 31 x 4 wrapped tread plain; rear 31 x 4 wrapped tread, non-skid.

Wheelbase The wheelbase is 102".

Tread 56 inches.

Weight The combination of light weight with liberal size car is due to the wonderful simplicity of design. This gives low consumption of fuel and a minimum cost for tire maintenance. The weight is equally distributed over the chassis, which eliminates swaying of car and minimizes skidding. This car holds the road well and is easy to handle.

Turning Radius Steering is so designed that the car can turn in either direction in a circle with a radius of 20 feet. This feature is of great advantage while operating in crowded thoroughfares.

Dimensions Over All Length over all, including fenders, top down: Touring 12'-6", Roadster, 11'-6". Width over all, including fenders, 5'-5".

Road Clearance 9½ inches.

Mechanical Changes in All "Four-Ninety" Models for 1920-1921

Springs Both front and rear springs have been redesigned to give easier riding qualities and also to reduce, to a minimum, any liability of spring breakage. New spring brackets have been designed both for the front and rear springs which give support to the top and bottom of the springs. That is, the spring is supported by the bracket, which will prevent spring bolt breakage. The diameter of the spring bolt has also been changed from 7/16" to 9/16".

Fenders Fenders have been redesigned into what is known as the Reverse Curve Type, that is, the fender follows more closely the wheel. At the same time, sufficient clearance has been provided so that skid chains can be used without striking. This change gives a longer running board, which, with the changed type of fenders, improves the appearance of the car immensely.

Frame The frame has been strengthened by a new center cross member, which has an extension forming one set of step hangers. This improvement makes the frame very rigid.

Head Lamp Bracket New brackets have been designed for the head lamps. These are made of pressed steel, which are bolted to the front fenders. They are of Universal type, so that it will be possible to change the direction of the light rays to any position. This eliminates the use of the lamp bracket tie rod.

Carburetor Choke Rod The carburetor choke adjusting rod has been changed to the same type as used on the Model "FB", that is, adjustable, which will, in addition to improving the appearance, make the operation of the choke better.

Foot Rest and Tool Box The new feature is a combination foot rest and tool box located at the front of the tonneau floor. The tool box is sunk part way into the floor and the corner of it acts as a foot rest. It is an integral part of the body.

Under Pan The under pan or mud pan has been redesigned and is fastened to the side of the frame, which makes it easier to put on and take off; in addition it gives the car a more finished appearance.

"Four-Ninety" Roadster

The Roadster will have the same general improvements as the Touring throughout. The same body will be used, but the reverse curve fenders will change and improve the appearance considerably. Trimming is being changed to the same type as that used on the Touring Car, involving a corresponding change in cushions and back springs.

Top Trimming "Four-Ninety" Models are trimmed with Du Pont's Fabrikoid, with lighter composition material for doors and kick-pads. Top is single texture rubber, 32 oz. weight. It is French long grain in medium bright finish having non-fading black back.

It is one of the most flexible and easy working top materials ever produced. It folds compactly when the top is lowered, and the wrinkles smooth out quickly when the top is raised again. Pure, live rubber gives the coating its remarkable strength and durability, and renders the material thoroughly weather proof and wear resisting

The initial appearance is the most important thing in a top from the car dealer's standpoint, and this material has beauty and style. It is rich appearing and in every way suitable for making good looking smart tops. It tailors splendidly and keeps its shape, does not sag nor shrink after being stretched into place, and

does not hold dust and dirt. Actual service will prove it to be exceedingly tough, durable and long lived—a material that preserves its appearance and gives absolute protection through seasons of hard wear. Curtains—single texture material—20 oz. weight and same color back.

Two circular, 5⅝" plate glass windows have been placed in the back curtain of the top.

Body Trimming The body trimming has been revised considerably, giving a more pleasing effect to the eye besides increasing the riding qualities immensely. The cushion and back springs have been made longer, and are so placed as to give ample room for freer movement, which insures easier riding qualities without bumping. The top roll on the seat has been removed, and the trimming pleats are straight "pipes" as before. This gives the upholstery a neater appearance and, particularly, easier to clean and keep free from dust.

Enclosed Models

Four-Ninety Sedan Tires front and rear, 31 x 4, moulded type rib tread. Left hand door is made secure with a Yale lock, while the other is provided with an inside catch. Both doors are equipped with a double latch safety device. The front floor boards will be covered with carpet and bright scuff plates bearing the Chevrolet name plate are to be placed on the door sills.

Four-Ninety Coupe The doors are hung with three (3) hinges in the front. Top is to be 4" longer, and will have a metal back panel. The rear sill is to be moved back 8", and deck raised approximately 2", with rear end arranged to conform with contour of fender. The seat back will be moved ahead 1½". A small compartment will be added between the seat back and the deck. The quarter window will be approximately 2" wider. Roof will be the same as the present "Four-Ninety" Sedan. Tires, front and rear, 31 x 4, moulded type ribbed tread. The right hand

door is made secure with a Yale lock, while the one on the left side is provided with an inside catch. Doors are equipped with a double latch safety device.

Bodies Both the Sedan and Coupe bodies will be of the solid post type of construction to insure greater rigidity. Both bodies will be made of maple and oak wood, first and second grade, and covered with sheet steel.

The upholstery of these bodies is gray Bedford cord cloth.

Specifications
Model "Four-Ninety" Touring

Motor: Four-cylinder, valve-in-head type, 3 11/16" bore, 4" stroke.

Cylinder: Cast en-bloc (including upper half of crank case). Head detachable.

Valves: 1½" diameter.

Connecting Rod Bearing: 1⅜" diameter, 1⅞" long.

Crankshaft Bearings: Front, 1⅜" diameter, 2-5/16" long; Center, 1-21/32" diameter, 1½" long; Rear, 1¾" diameter, 2-11/16" long.

Camshaft Bearings: Front, 1-5/16" diameter, 2⅜" long; Center, 1-9/32" diameter, 2" long; Rear, 1¼" diameter, 1-7/16" long.

Oiling System: Splash, gear pump and individual oil pockets. Oil pressure gauge.

Carburetor: Zenith improved double jet.

Ignition: New improved Remy.

Clutch: Cone type with adjustable compensating springs.

Transmission: Selective type, sliding gear; three speeds forward and reverse.

Cooling: Water pump; radiator extra size.

Front Axle: Drop-forged I-Beam.

Rear Axle: Three-quarter floating, wheel bearing carried on the wheel-hub and in axle housing, not on axle shaft. Hyatt roller bearings.

Brakes: Emergency, internal expanding type; service, external contracting type; 10" brake drums. Foot control.

Wheels: Wood, artillery type, demountable rims, large hub flanges.

Tires: 30" x 3½", non-skid front and rear.

Drive: Left side; center control; spark and throttle under steering wheel. Foot accelerator.

Steering Gear: Spur and gear, adjustable for wear. 15" steering wheel.

Springs: Cantilever type, front and rear.

Body: Five-passenger Touring Car.

Wheelbase: 102".

Equipment: Electric lights and starter, highest type two-unit system, double wiring used. Complete lamp equipment. Universal adjustment on head lamps; top, top cover and side curtains; tilted windshield; speedometer; electric horn; extra rim and carrier on rear; complete tool equipment, including pump and jack. Foot rest, robe rail.

Specifications
Model "Four-Ninety" Roadster

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore, 4" stroke.

Cylinders: Cast en-bloc (including upper half of crank case). Head detachable.

Valves: 1½" diameter.

Connecting Rod Bearings: 1⅜" diameter, 1⅞" long.

Crankshaft Bearings: Front, 1⅜" diameter, 2-5/16" long; Center, 1-21/32" diameter, 1½" long; Rear, 1¾" diameter, 2-11/16" long.

Camshaft Bearings: Front, 1-5/16" diameter, 2⅜" long; Center, 1-9/32" diameter, 2" long; Rear, 1¼" diameter, 1-7/16" long.

Oiling System: Splash, gear pump and individual oil pockets. Oil pressure gauge.

Carburetor: Zenith improved double jet.

Ignition: New Improved Remy.

Clutch: Cone type with adjustable compensating springs.

Transmission: Selective type, sliding gear; three speeds forward, and reverse.

Cooling: Water pump, radiator extra size.

Front Axle: Drop-forged I-beam.

Rear Axle: Three-quarter floating, wheel bearing carried on the wheel-hub and in axle housing, not on axle shaft. Hyatt roller bearings.

Brakes: Emergency, internal expanding type; service, external contracting type; 10" brake drums. Foot control.

Wheels: Wood, artillery type, demountable rims, large hub flanges.

Tires: 30" x 3½", non-skid front and rear.

Drive: Left side; center control; spark and throttle under steering wheel. Foot accelerator.

Steering Gear: Spur and gear, adjustable for wear. 15" steering wheel.

Springs: Cantilever type, front and rear.

Body: Two-passenger Roadster.

Wheelbase: 102".

Equipment: Electric lights and starter, highest type two-unit system, double wiring used. Complete lamp equipment, universal adjustment on head lamps, top, top cover and side curtains; tilted windshield; speedometer; electric horn; extra rim and carrier on rear; complete tool equipment, including pump and jack.

Specifications
Model "Four-Ninety" Sedan

Motor: Four cylinder, valve in-head type, 3-11/16" bore, 4" stroke.

Cylinders: Cast en-bloc (including upper half of crank case). Head detachable.

Valves: 1½" diameter.

Connecting Rod Bearings: 1⅜" diameter, 1⅞" long.

Crankshaft Bearings: Front, 1⅜" diameter, 2-5/16" long; Center, 1-21/32" diameter, 1½" long; Rear, 1¾" diameter, 2-11/16 long.

Camshaft Bearings: Front, 1-5/16" diameter, 2⅜" long; Center, 1-9/32" diameter, 2" long; Rear, 1¼" diameter, 1-7/16" long.

Oiling System: Splash, gear pump and individual oil pockets.

Carburetor: Zenith improved double jet.

Ignition: New Improved Remy.

Clutch: Cone type.

Transmission: Selective type, sliding gear; three speeds forward, and reverse.

Cooling: Water pump, radiator extra size.

Front Axle: Drop-forged I-beam.

Rear Axle: Three-quarter floating type, wheel bearing carried on the wheel-hub in axle housing, not on axle shaft. Shafts and gears of high carbon steel heat treated. Hyatt roller bearings.

Brakes: Emergency, internal expanding type; service, external contracting type; 10" brake drums. Foot control.

Wheels: Wood, artillery type, demountable rims, large hub flanges.

Tires: Front 31" x 4", moulded type, ribbed tread front and rear.

Fenders: Front and rear fender. Skirts extended to meet the radiator splash guard and rear splash guard on body.

Drive: Left side, center control; spark and throttle under steering wheel. Foot accelerator.

Steering Gear: Spur and gear, adjustable for wear. 15" steering wheel.

Gasoline Supply: 12-gallon tank, hung on rear, with gauge; Stewart vacuum system.

Springs: Cantilever type, front and rear.

Body: Five-passenger Sedan with divided front seats, right hand seat reversible, solid post construction.

Wheelbase: 102".

Equipment: Electric lights and starter; highest type 2-unit system, double wiring used. Complete lamp equipment, including headlight dimmer; universal adjustment on head lamps; speedometer; electric horn; extra rim and carrier on rear, complete tool equipment, including pump and jack.

Specifications
Model "Four-Ninety" Coupe

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore, 4" stroke.

Cylinders: Cast en-bloc (including upper half of crank case). Head detachable.

Valves: 1½" diameter.

Connecting Rod Bearings: 1⅜" diameter, 1⅞" long.

Crankshaft Bearings: Front, 1⅜" diameter, 2-5/16" long; Center, 1-21/32" diameter, 1½" long; Rear, 1¾" diameter, 2-11/16" long.

Camshaft Bearings: Front, 1-5/16" diameter, 2⅛" long; Center, 1-9/32" diameter, 2" long; Rear, 1¼" diameter, 1-7/16" long.

Oiling System: Splash, gear pump and individual oil pockets.

Carburetor: Zenith improved double jet.

Ignition: New Improved Remy.

Clutch: Cone type.

Transmission: Selective type, sliding gear; three speeds forward and reverse.

Cooling: Water pump; radiator extra size.

Front Axle: Drop-forged I-beam.

Rear Axle: Three-quarter floating type, wheel bearing carried on the wheel-hub and in axle housing, not on axle shaft. Shafts and gears of high carbon steel, heat treated. Hyatt roller bearings.

Brakes: Emergency, internal expanding type; service, external contracting type; 10" brake drums. Foot control.

Wheels: Wood, artillery type, demountable rims, large hub flanges.

Tires: Front, 31" x 4", moulded type, ribbed tread front and rear.

Fenders: Front and rear fender. Skirts extended to meet the radiator splash guard and rear splash guard on body.

Drive: Left side, center control; spark and throttle under steering wheel. Foot accelerator.

Steering Gear: Spur and gear, adjustable for wear. 15" steering wheel.

Gasoline Supply: 10-gallon tank.

Springs: Cantilever type, front and rear.

Body: Two-passenger Coupe, solid post construction.

Wheelbase: 102".

Equipment: Electric lights and starter; highest type two-unit system, double wiring used. Complete lamp equipment, including headlight dimmers; adjustable head lamps; speedometer; electric horn; extra rim and carrier on rear, complete tool equipment, including pump and jack.

Specifications
Chevrolet "Four-Ninety" Light Delivery Wagon

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore, 4" stroke.

Cylinders: Cast en-bloc (including upper half of crank case). Head detachable.

Valves: 1½" diameter.

Connecting Rod Bearings: 1⅜" diameter, 1⅞" long.

Crankshaft Bearings: Front, 1⅜" diameter, 2-5/16" long; Center, 1-21/32" diameter, 1½" long; Rear, 1¾" diameter, 2-11/16" long.

Camshaft Bearings: Front, 1-5/16" diameter, 2⅛" long; Center, 1-9/32" diameter, 2" long; Rear, 1¼" diameter, 1-7/16" long.

Oiling System: Splash, gear pump and individual oil pockets. Oil pressure gauge.

Carburetor: Zenith improved double jet.

Ignition: New Improved Remy.

Clutch: Cone type with adjustable compensating springs.

Transmission: Selective type; sliding gear, three speeds forward and reverse.

Cooling: Water pump; radiator extra size.

Front Axle: Drop-forged I-beam.

Rear Axle: Three-quarter floating, wheel bearing carried on the wheel-hub and in axle housing, not on axle shaft. Hyatt roller bearings.

Brakes: Emergency, internal expanding type; service, external contracting type; 10" brake drums. Foot control.

Wheels: Wood, artillery type, demountable rims, large hub flanges.

Tires: 30" x 3½", non-skid front and rear.

Drive: Left side; center control; spark and throttle under steering wheel. Foot accelerator.

Steering Gear: Spur and gear, adjustable for wear; 15' steering wheel.

Springs: Cantilever type, front and rear.

Wheelbase: 102".

Equipment: Electric lights and starter, highest type two-unit system, double wiring used. Complete lamp equipment, four-post top, side curtains; adjustable windshield; speedometer; electric horn; complete tool equipment, including pump and jack.

Model "FB" Specifications

Motor The motor is of the four-cylinder, four cycle type with cylinder dimensions 3-11/16 inch bore, by 5¼ inch piston stroke. The horsepower rating (S.A.E.) is 21.7. It is capable of developing 34 horsepower on block test.

The motor is supported at the front by a pressed steel cross arm bolted securely to the front of the case, the outer ends of which are securely held to frame side members in special supports. The rear end of the motor is supported on a motor arm, of pressed steel and is held securely to the frame side members in special malleable iron brackets, the most desirable form of suspension possible. The transmission case of malleable iron is bolted directly to the rear motor support, being so constructed as to completely cover the fly-wheel; bendix drive gear; clutch and equalizer shaft, making a most complete unit power plant.

Valves The intake and exhaust valves are alike and interchangeable; of the bevel seated type, 1½ inches in diameter, giving a 1-5/16 inch clear opening, which gives a maximum flow of gases to and from the cylinders. They are operated by rocker arms and push rods, from cams having a lift of ¼ inch.

Camshaft The camshaft is a drop forging of high carbon steel, with integral cams, heat treated and ground to .005" limits on bearing surfaces and cam lobes. The cams are of the large oval type, which raise and lower the valves gradually, which assures quietness. It is located on the right side of the motor and completely housed in the cylinder block, but readily removed from the forward end. The shaft is of liberal diameter to avoid deflection when lifting valves and is supported by three plain bearings, the front 2¼" long by 1-9/16" diameter; center 2" long by 1½" diameter; rear 2" long by 1-15/32" diameter.

Pistons and Piston Rings The pistons are cast iron, accurately finished by grinding and carefully fitted with proper allowances for expansion. Extra long (being 3⅝" over all) in order to better distribute the side thrust between the cylinders and pistons and thus reduce the wearing of both.

Connecting Rods The connecting rods are of "I" beam section, drop forged from high carbon steel, heat treated, and carefully machined to reduce reciprocating weight to a minimum. At the crank shaft end they are fitted with babbitt bearings, brass backed, of two halves 2.12 inches long by 1.5015 inches in diameter. The bearing caps are secured to the connecting rods by nickel steel bolts, especially heat treated, and held by cotter pinned nuts. Thin shims of varying thickness .002" and .003" are placed between caps and connecting rods in order to simplify taking up when they become loosened from use.

Crankshaft The crankshaft is a drop forging of high carbon steel and especially heat treated. It has liberal proportions and is accurately balanced All bearing surfaces are accurately ground to .0005" limits. It has three main bearings, the front and rear are die cast while the center is babbitt, brass backed. The front bearing is 2-11/16" long by 1½" diameter; center 1-31/32" long by 2" diameter; rear 3½" long by 2" diameter.

Lubrication The motor lubrication is known as the constant level splash system. The oil is circulated by means of a gear pump mounted on the gear cam and driven by the generator armature shaft. It draws the oil from the lowest point of the oil pan and distributes it to the main bearings and into small oil pockets under each connecting rod into which the connecting rod spoons dip at each stroke; the spray of oil caused by the rapid splashing of the connecting rod spoons lubricates the cylinder walls, camshaft, wrist pins and other interior motor parts, collecting in pockets above the cam shaft bearings from which holes lead to the bearings. The

excess oil falls back to the reservoir to be used over again. The oil pan is of pressed steel, secured to the lower crank case with bolts and sealed by a cork gasket. A breather and oil filler pipe is conveniently located on left side of the motor. The oil level is determined by a gauge located on the left side of the cylinder block. A suitable oil pressure gauge located on the instrument board indicates the flow of oil through the system.

Carburetor The intake manifold is of cast iron with a warm air jacket, which surrounds the manifold with hot air, to aid carburetion. Hot air from the exhaust manifold is also utilized, passing through a flexible tube to the carburetor air intake. The jacketed intake manifold permits the use of smaller jets in the carburetor which results in increased gasoline mileage.

Gasoline Tank The gasoline is "fed" to the carburetor from the gasoline tank, which is at the rear of the frame. The Stewart Vacuum system insures a steady flow of gasoline at all times and altitudes. The gasoline tank is of heavy gauge steel rectangular in shape, with a capacity of 17 gallons, clamped to steel brackets at the rear of the frame.

Radiator The radiator has a graceful appearance, and conforms with the lines of the hood. It is supported by bolts to the frame cross member, and held in a vertical position by the top section of the hood which is securely fastened to the radiator and to the dash. This method minimizes the tendency to leak, since the radiator is held firmly in place.

Clutch Its frictional surface, faced with leather directly engages with the inner beveled surface of the flywheel. The cone is provided with adjustable spring pressed plungers or expanders, which are under the clutch leather, the proper adjustment of which prevents, so-called "grabbing" and causes the load to be picked up evenly and smoothly.

The clutch spring tension rod seats into the flange on the rear end of the crank shaft, and is

equipped with a clutch thrust bearing. The rod then passes through the fly wheel and supports the clutch hub, which in turn encases the spring. The clutch spring is actuated by the clutch pedal, through the fork and clutch collar. The expansion or contraction of the clutch spring engages or disengages the clutch in the fly wheel. The hub is machined with a splined hole in the rear end, which slips on the splined end of the transmission main drive gear.

Clutch Control The clutch operating mechanism is exceedingly simple, consisting of a transverse clutch equalizer shaft, which transmits the impulse from the clutch pedal to the clutch drive ring through a circular clutch collar on two equalizer levers. The pedals are set forward on a separate pedal shaft and act upon the equalizer shaft through a clutch lever.

Transmission Sliding gear, selective type with three forward speeds and reverse. Direct drive on high speed. Shafts are of high grade steel heat-treated operating on New Departure ball bearings.

Transmission spline or main shaft: 1⅝" large diameter, 1¼" small diameter.

Gears are of nickel steel, heat-treated.

Pitch of gears 6-8.

Face of gears ¾.

The transmission is carried on a frame, bolted to fly-wheel housing and can be quickly and easily removed. It is located immediately under driver's floor boards, permitting direct connection gear shift lever and gives the utmost accessibility for inspection and lubrication.

Transmission Gear Reduction

1st Speed	3.525 to 1
2nd Speed	1.736 to 1
3rd Speed	Direct
Reverse	3.966 to 1

Front Axle The front axle is of the "I" beam type—one-piece drop forged with integral yokes and spring seats, made of high grade steel, heat treated; it is extremely strong, so as to withstand both the horizontal and vertical stress to which the axle is contin-

uously subjected. The steering knuckles and arms are drop forged of high carbon steel, heat treated. Bushings are pressed in each of the steering knuckles and arms. They are reamed in place so that a perfect bearing fit may be had on the king bolts, which are hardened and ground and secured by cotter-pinned nuts. The king bolts are well lubricated by means of grease cups conveniently located.

Rear Axle An adjustment for the bevel pinion has been provided. This consists of a cage which screws into the propeller shaft housing and supports two heavy duty ball bearings. This new feature makes it possible to adjust the meshing of the bevel pinion and drive gear without the use of shims or the removal of the axle. Access to the adjustment is had through a small hand hole plate on the housing.

Differential The gear ratio of the rear axle is 4⅝" to 1 adopted as best suited for power, economy, speed, and hill climbing.

Brakes The brake equipment consists of two pairs of powerful, double acting bands, operating directly on the rear wheel brake drums, which are 12 inches in diameter, with faces 2" wide. The service brakes contract upon the outside of the drums and are operated by the right foot pedal. The emergency brakes expand within the drums and are operated by the hand brake lever, which has a fine tooth ratchet mounted on the transmission cover. The brake bands are lined with asbestos containing a reinforcement of fine copper wire. The lining is riveted to the band by copper countersunk rivets. The connection between brakes and pedals are by rods from the pedals to intermediate levers on the brake equalizer shaft, which is supported on the frame center cross member. Complete adjustment of the brakes may be made by a few turns of the wing-nuts on brake rod at the pedal or hand brake lever.

The connections of the intermediate brake levers and shaft on the cross member to the brakes are by rods, which have drop forged steel yokes on the ends—one end being adjustable. All brake adjustments are easily made and maintained.

Drive The driving load is transmitted from the crank shaft to fly wheel to clutch, to transmission, to universal joint, to propeller shaft, through the pinion and bevel ring gear, to the axle shafts, to the rear wheels.

Wheels The wheels are the artillery type, having twelve strong spokes, being made of second growth hickory, thoroughly seasoned. They are mounted on substantial hubs with large flanges on the inside and eight hub bolts on the front and twelve on the rear, which pass through the spoke. Straight side demountable rims are standard. The front wheels revolve on special Chevrolet cup and cone type ball bearings, made by Chevrolet under the direction of New Departure. They have eleven 9/16" steel balls in inside cup and nine 15/32" steel balls in the outside cup, which are well adapted for the purpose because they are designed to take care of end thrusts, which occur in turning corners, in addition to the ordinary radial load.

Frame The frame is channel section pressed steel of liberal proportions, the side members being 4½" maximum depth, and tapering towards front and rear without sudden change of cross section. It is provided with three cross members securely fastened to the main members with good size hot driven rivets. The frame consists of very few parts, which obviates the necessity of excessive riveting and thus preserves the full strength of the frame. It is tapered from 29" wide in front to 34" at rear, insuring that the body rests solidly on the frame its complete length.

Steering Gear The steering gear is of the worm and gear type, neatly and compactly designed with ample bearing surfaces, and adjustable for wear. The worm wheel shaft projects through the frame and the steering or Pitman arm is clamped to its square end. The steering wheel is wood rim with spider 17" (except FB Sedan and Coupe which is 18 inches)

in diameter. The steering column is of large diameter with Japanned finish. The spark and throttle rods are encased in the tube together with the steering shaft.

Springs The spring suspension is the best that has yet been devised for the comfort of the passengers. One has but to ride in a Model "FB" to fully appreciate its extremely easy riding qualities. The springs extend fore and aft from the frame side members to the front and rear axles.

Flexibility of front springs on all "FB" Models test 350 to 375 lbs. to the square inch. The rear springs of "FB" Touring and Sedan test 135 to 145 lbs. to the square inch. The rear springs of the Roadster and Coupe test 115 to 125 lbs. to the square inch.

The front springs are semi-elliptic type. High carbon steel. The ends are secured by clips and bolts to lower sides of frame brackets and front axle seats.

The rear springs are semi-cantilever type. High carbon spring steel has flexibility of 135 to 145 lbs. per inch. The rear axle and wheels in passing over obstructions or depressions move in an arc approximately described about the point of anchorage of the forward end of the springs. The spring being long, the axle and wheels practically travel in a vertical line, insuring easy spring action without strain.

Storage Battery The 6 volt, 3 cell Willard storage battery has a capacity of 5 amperes for 23.5 hours. In other words, it will hold enough electric energy to last 23.5 hours, if this energy is withdrawn at the rate of five amperes per hour. It is suspended from the chassis frame and beneath the body front floor board, which makes a perfectly accessible place where it can be inspected and filled with ease.

Starting Motor The electric starting motor is of the 6 volt, single wire system. It is a separate unit, small and compact, weighing 20-¼ pounds. It is of extremely high efficiency and will turn the engine at 140 revolutions per minute. The engaging mechanism is of the most advanced type, and the simplest, no

reduction being necessary beyond the starting motor pinion gear to the fly wheel. When the current is supplied to the starting motor, the pinion gear is instantly and automatically drawn in mesh with the fly wheel gear, and when the engine starts under its own power, the pinion gear automatically draws out of mesh.

Starter Switch The starter switch is located on the Toe board with its push button extending above the board. It is operated by the driver's foot.

Lighting and Ignition Switch The lighting and ignition switch is mounted on the instrument board. The lights are turned on and off or made bright or dim by turning a knob. The ignition is turned on or off by inserting a key through a slot in the knob and giving it a quarter turn. The removal of the key automatically locks the switch and prevents theft.

Lamps The electric head lamps are 10⅛′ diameter, finished in black enamel with nickel rims, each fitted with a 15 candle power bulb. The tail lamp is 3¼ inches diameter, finished in black enamel, fitted with a 4 candle power bulb. At the side a white light illuminates the license plate.

A fuse is located in the lighting switch to prevent damage to the system, which may be easily removed when necessary. Head lamps are set high for appearance and to lessen the road shadows, they are supported on heavy brackets and are bolted to the front fender irons and connected by a tie rod.

Control The gear shift lever is located in the center of the driving compartment and operated by the right hand. The clutch is operated by the left pedal. The hand brake lever operates the emergency brake. The service brake is operated by the right foot pedal. The hand operated spark and throttle levers are conveniently located above the steering wheel on stationary sector. The throttle is also operated by a foot accelerator conveniently located on the toe board to the right of the service brake pedal.

Top The top is the conventional "one man top" held to the windshield by clamps and to the rear by straps. Side curtains and a dust cover are standard equipment. There are two 6" plate glass lights placed in back curtain.

Tires The "FB" cars have the following tire equipment, the front being 33 x 4 plain tread, and the rear, 33 x 4 all-weather tread.

Wheelbase The wheelbase is 110". This length gives ample room in the body so that there is no crowding or pinching of the seats.

Weight Weight of the touring car is 2504 (shipping weight) pounds.

Turning Radius Steering so designed that the car can turn in either direction in a circle with a radius of 21 feet.

Dimensions Over All Length over all. Touring, 14 feet 3 inches; Roadster, 13 feet 7 inches. Width over all, including fenders, 5 feet, 6 inches. Height with top up, Touring, 6 feet, 7½ inches; Roadster 6 feet, 3 inches.

Models "FB50" Touring and "FB20" Roadster Models "FB"-20—50 Roadster and Touring will be identical with the corresponding "FB" Models, except as follows:—The Radiator has been improved by drawing in the upper curves at the corners. This affects the hood slightly at the same points, but gives a much better appearance to the body as a whole, since the straight line is not broken at the cowl as in the "FB" car.

"FB" Models are trimmed with leather with the exception of doors and cowl panels. The top for "FB" Model is made from double texture rubber with a drab back. Curtains are made from single texture material, same coloring back.

Enclosed Models Chevrolet Salesmen will have every reason to be especially proud of each enclosed model for 1920-1921. Each model represents an ideal. Each car stands out distinctly as an unusual achievement. You can become so genuinely enthusiastic over these models that selling one will be a pleasure to you.

All closed car skeleton bodies are made of

maple and oak wood, first and second grade, and covered with sheet steel. "FB" Sedan and Coupe are trimmed in a striped plush velour of a gray and blue mixture.

Model "FB 40" Sedan The four doors are hinged from the front posts on three hinges, and have "L" type handles; the entire deck or top is crowned slightly so as to give it a more rounded appearance. The battery is suspended from brackets attached to the frame, which permits more room under the seat which may be used for tools or other purposes. The front floor board and toe board are covered with carpet the same as in the tonneau.

The front seat in the new "FB40" Sedan will be of the solid type to give greater stability to the body. All fixtures will have platinum finish instead of nickel, and instead of a dome light, corner lights will give an added touch of refinement.

This model is equipped with an 18" steering wheel. The right hand rear door is made secure with a Yale lock and the other doors are provided with inside catches. The rear side and back windows are fitted with silk curtains. Windows are adjusted by mechanical lifts. All doors have a double latch safety device.

Model "FB-30" Coupe The "FB30" Coupe will be arranged for four passengers having an extra folding seat in front. Radiator and hood will be same as Model "FB 50", and monogrammed scuff plates added. The right door is made secure with a Yale lock, and the other door is provided with an inside catch. The rear side and back windows are provided with silk curtains. Windows are adjusted with mechanical lifts. This model is equipped with an 18" steering wheel. Both doors have a double latch safety device, upholstery and fixtures will be the same as in "FB-40" Sedan.

Top Material The decks of Model "FB" Tops are made of double texture Luxar.

Its waterproof qualities are about three times that of a single texture material. First, the outside rubber coating is a high grade

compound which makes the fabric thoroughly impervious. Next, the upper and lower fabrics are firmly cemented together with a plastic waterproof cement containing live rubber. Finally, the heavy drill backing is itself treated by a rubberizing process. When the completed material is vulcanized, the different elements are incorporated in such a way as to make the top material waterproof clear through. All the surface compound could be removed, yet the rubber combining compound would keep out the water. It is evident that this top material would remain waterproof until it was cracked clear through.

The "FB" top material runs from 34 to 36 ounces per lineal yard of 54 inch width. It is the ideal weight for double texture top material. In that weight, the strength and heft of the fabric used and the thickness of the coating are perfectly adjusted in a finished material which has the utmost possible tensile strength and weather resistence, without the tendency to stretch and sag which heavier coated top materials develop. The strength of the material is also greatly increased by the combining adhesive which is forced between and intimately binds the fibres of the fabric. The material is splendidly adapted for all-around rugged service under the trying conditions to which automobile tops are subjected.

This material is the type known as French Long Grain, and in the Medium Finish. This finish results in maintaining the initial good appearance of the top much longer than when a dull finish is used. A special varnish which is in itself weather resisting and retards the oxidization of the rubber coating is used. As a result, the medium finish top material slowly declines in lustre, until at the end of six months, it becomes a good dull finish. On the other hand, a material which is dull at the start, will usually become a dusty dirty gray by the end of six months.

The back of the top material is an attractive shade of drab. This drab is not only better than the average from the standpoint of being fast and unfading, and treated with a dye which

materially lessens the deteriorating effect of the ordinary drab dye on cotton fabrics.

"FB" owners who are in the habit of raising and lowering their tops will find that the material remains soft and flexible, and because of the quality of the combining compound, they will have no trouble with it cracking. More and more, however, car owners are leaving their tops up permanently, and this is a very wise practice, as you know, for there is no top material made but what will remain far more shapely when the tops are left up.

Curtain Material "FB" curtain material matches the top material in grade and finish and color of back, and except that it is made upon a somewhat heavier drill, it is identical with the curtain material on model "Four-Ninety."

Double texture Luxar is one of the Du Pont Fabrikoid advertised top materials, and one which sells with a guarantee stated as follows in the company's printed matter:

"Luxar is guaranteed for one year from date of shipment against leaking, cracking, peeling, blistering or blooming."

Doors and Seats "FB" Models "FB 50" Touring, Front Seat 26" from seat board to top of back. 19" from top of cushion to top of back. 43" from side arm to side arm. This 43" is width of seat, inside measurement.

Rear Seat—48" from side arm to side arm. 19½" from top of cushion to top of back. 26" from seat board to top of back.

"FB 50"—Front Door is 18" wide.

"FB 50"—Rear Door is 19" wide.

"FB 20"—Roadster, carries the same dimensions as front seat in "FB 50."

"FB 40" Sedan—Rear Seat 49". Height of rear back from seat board 26". Depth of cushion 6".

"FB 40" Sedan—Front 2 seats; width 16". Height of back from seat board 21". Depth of cushion 4". Chauffeur's seat trimmed in leather.

"FB 30" Coupe—Driver's seat 21" wide. Passenger seat 27" wide. Height of back from seat board to top of back 26". Depth of cushion 6".

Specifications
Chevrolet "FB 50" Touring Car

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore, 5¼" stroke.

Cylinders: Cast en-bloc with upper half of crank case. Head detachable.

Valves: 1½", enclosed.

Connecting Rod Bearings: 1½" x 2⅛".

Crankshaft Bearing: Front, 1½" x 2-11/16"; Center 1-31/32" x 2; Rear, 2" x 3½".

Center Main Bearing: Doehler bronze back.

Camshaft Bearing: Front, 1-9/16" x 2¼"; Center, 1½" x 2"; Rear, 1-15/32" x 2".

Oiling System: Gear pump. Oil pressure gauge on dash.

Carburetor: Zenith improved double jet.

Electric System: Auto-Lite generator, starting motor, and lighting system. Two-unit type.

Ignition: New improved Remy system.

Clutch: Cone, leather faced, with adjustable compensating springs.

Transmission: Selective type, three speeds forward and reverse.

Front Axle: Drop-forged I-beam, with integral yokes. Wheels fitted with New Departure ball bearings.

Rear Axle: Three-quarter floating type. Shafts run on Hyatt roller bearings.

Cooling: Water pump; radiator extra size.

Brakes: Service, external contracting; emergency, internal expanding (hand-controlled); 12" brake drums.

Springs: Front, semi-elliptic; rear, semi-cantilever.

Tires: 33" x 4", non-skid on rear. Plain tread on front.

Drive: Left side, center control

Steering Gear: Worm and gear wheel; 18" steering wheel with inserted spider.

Gasoline Supply: Seventeen-gallon tank hung on rear, with gauge. Stewart vacuum system.

Wheelbase: 110".

Equipment: Electric lights and starter, highest type two-unit system, double wiring used. Complete lamp equipment, including headlight dimmers; top; electric horn; speedometer; demountable rims, with extra rim; tire carrier; license holder.

Specifications
Chevrolet "FB 20" Roadster

Motor: Four-cylinder valve-in-head type, 3-11/16" bore, 5¼" stroke.

Cylinders: Cast en-bloc with upper half of crank case Head detachable.

Valves: 1½", enclosed.

Connecting Rod Bearings: 1½" x 2⅛".

Crankshaft Bearings: Front, 1½" x 2-11/16"; Center, 1-31/32" x 2"; Rear, 2" x 3½".

Center Main Bearings: Doehler bronze back.

Camshaft Bearings: Front, 1-9/16" x 2¼"; Center 1½" x 2"; Rear, 1-15/32" x 2".

Oiling System: Gear pump. Oil pressure gauge on dash.

Carburetor: Zenith improved double jet.

Electric System: Auto-Lite generator, starting motor, and lighting system. Two-unit type.

Ignition: New improved Remy system.

Clutch: Cone, leather faced, with adjustable compensating springs.

Transmission: Selective type, three speeds forward and reverse.

Front Axle: Drop-forged I-beam, with integral yokes. Wheels fitted with New Departure ball bearings.

Rear Axle: Three-quarter floating type. Shafts run on Hyatt roller bearings.

Cooling: Water pump; radiator extra size.

Brakes: Service, external contracting; emergency, internal expanding (hand-controlled); 12" brake drums.

Springs: Front, semi-elliptic; rear, semi-cantilever.

Tires: 33" x 4", non-skid on rear. Plain tread on front.

Drive: Left side, center control.

Steering Gear: Worm and gear wheel, 18" steering wheel with inserted spider.

Gasoline Supply: Seventeen-gallon tank hung on rear, with gauge. Stewart vacuum system.

Wheelbase: 110".

Equipment: Electric lights and starter; highest type two-unit system, double wiring used. Complete lamp equipment, including headlight dimmers; top; top cover and side curtains; electric horn; speedometer; demountable rims, with extra rim; tire carrier; linecense holder.

Specifications
Chevrolet "FB 40" Sedan

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore 5¼" stroke.

Cylinders: Cast en-bloc with upper half of crank case. Head detachable.

Valves: 1⅜", enclosed.

Connecting Rod Bearings: 1½" x 2⅛".

Crankshaft Bearings: Front, 1½" x 2-11/16"; Center, 1-31/32" x 2"; Rear, 2" x 3½".

Center Main Bearings: Doehler bronze back.

Camshaft Bearings: Front, 1-9/16" x 2¼"; Center. 1½" x 2"; Rear, 1-15/32" x 2".

Oiling System: Gear pump. Oil pressure gauge on dash.

Carburetor: Zenith improved double jet.

Electric System: Auto-Lite generator, starting motor, and lighting system. Two-unit type.

Ignition: New improved Remy system.

Clutch: Cone, leather faced, with adjustable compensating springs.

Transmission: Selective type, three speeds forward and reverse.

Front Axle: Drop-forged I-beam, with integral yokes. Wheels fitted with New Departure bearings.

Rear Axle: Three-quarter floating type. Shafts run on Hyatt roller bearings.

Cooling: Water pump; radiator extra size.

Brakes: Service, external contracting; emergency, internal expanding (hand-controlled); 12" brake drums.

Springs: Front, semi-elliptic; rear, semi-cantilever.

Tires: 33" x 4". Plain tread on front, non-skid on rear.

Drive: Left side, center control.

Body: Five-passenger Sedan, solid post conscruction, with solid front seats.

Steering Gear: Worm and gear wheel; 18" steering wheel with inserted spider.

Gasoline Supply: Seventeen-gallon tank hung on rear with guage. Stewart vacuum system.

Wheelbase: 110".

Equipment: Electric lights and starter; highest type two-unit system, double wiring used. Complete lamp equipment, including headlight dimmers; electric horn; speedometer; demountable rims, with extra rim; tire carrier; license holder.

Specifications
Chevrolet "FB 30" Coupe

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore, 5¼" stroke.

Cylinders: Cast en-bloc with upper half of crank case, Head detachable.

Valves: 1½", enclosed.

Connecting Rod Bearings: 2⅛" x 1½".

Crankshaft Bearings: Front, 2-11/16" x 1½"; Center, 2" x 1-31/32"; Rear, 3½" x 2".

Center Main Bearings: Doehler bronze back.

Camshaft Bearings: Front, 2¼" x 1-9/16"; Center, 2" x 1½"; Rear, 2" x 1-15/32".

Oiling System: Gear pump. Oil pressure gauge on dash.

Carburetor: Zenith improved double jet.

Electric System: Auto-Lite generator, starting motor and lighting system. Two-unit type.

Ignition: New improved Remy system.

Clutch: Cone, leather faced, with adjustable compensating springs.

Transmission: Selective type, three speeds forward and reverse..

Front Axle: Drop-forged I-beam, with integral yokes. Wheels fitted with New Departure ball bearings.

Rear Axle: Three-quarter floating type. Shafts run on Hyatt roller bearings.

Cooling: Water pump, radiator extra size.

Brakes: Service, external contracting; emergency, internal expanding (hand-controlled); 12" brake drums.

Springs: Front, semi-elliptic; rear, semi-cantilever.

Tires: 33" x 4", non-skid on rear. Plain tread on front.

Drive: Left side, center control.

Body: Three passenger, solid post construction.

Steering Gear: Worm and gear wheel, 18" steering wheel with inserted spider.

Gasoline Supply: Seventeen-gallon tank hung on rear, with gauge. Stewart vacuum system.

Wheelbase: 110".

Equipment: Electric lights and starter; highest type two-unit system, double wiring used. Complete lamp equipment, including headlight dimmers; electric horn; speedometer; demountable rims, with extra rim; tire carrier, license holder.

Specifications and Details
Model "T" Truck

The motor is of the valve-in-head type, four cylinder, four cycle, vertical, water cooled, bore 3-11/16"—stroke 5¼", piston displacement (4 cylinders) 224.3 cubic inches.

Motor is in unit with clutch and transmission; located in front of dash under hood. The motor arms extend to each side of the frame, the rear being carried on two heavy malleable iron castings riveted to frame and held in place by two drop forged U bolts.

The front of motor is hung into shackles which are securely bolted to motor arms and to two substantial malleable iron brackets riveted to frame. This construction absolutely relieves the power plant from all strains due to road variations, and starting with a heavy load.

Cylinders cast enbloc integral with crank case.

Cylinder head removable.

Combustion chamber all machined.

Compression pressure 92 lbs. per square inch.

Both manifolds bolted on.

Pistons: Lynite.

Piston Rings: Three—diagonally split.

Pistons have 10 oil holes for lubrication beneath lower piston ring.

Camshaft drive: Helical gears.

Three bearings on Camshaft.

Crankshaft: Three bearings.

Gear driven oil pump directly connected with generator.

Lubrication: Pressure and splash system.

Diameter of valves: 1½" both intake and exhaust.

Lift of valves ¼".

Carburetor Zenith 1 inch Q-4C. Hot air jacketed intake manifold. Throttle advance is controlled by lever mounted above steering wheel, and by foot accelerator. All the air enters the carburetor through a combined strangler and temperature regulator which provides a cold air opening during warm weather. The strangler is operated from the driver's seat and is a great aid in starting the motor in cold weather.

Governor A Monarch Governor is installed between the carburetor and the intake manifold. It is adjusted to limit the maximum speed to 25 miles an hour. This is a safeguard against overspeeding or racing the motor, etc., and a protection against abuse in driving.

Gasoline supply, gravity feed, from a tank located under driver's seat.

Gasoline Tank Gasoline Tank is of heavy terne plate absolutely non-leakable holding 13 gallons. It is securely fastened so it cannot jolt around and break the gas pipe. The filler cap is large in diameter and is located under the seat cushion where it is readily accessible for filling.

The outlet fitting is located at the extreme rear of the tank and is provided with a sediment cup to catch dirt and matter, and can be drained by removing a plug in the bottom. The gasoline line to the carburetor is of double annealed 5/16" copper pipe, and has plenty of slack in it to allow for any movements without straining or breaking it.

Frame Frame side and rear cross members are of open hearth rolled steel channel, depth 4", weight per foot 6.25 lbs. The rear cross member is securely riveted to side members by two 4 x 4 x 5/16" angle iron brackets, and a 1½ x 2½ x ¼" angle iron brace running diagonally across each corner. This is also riveted to frame side members, and rear cross member.

Second cross member is of open hearth rolled steel channel, depth 3", weight per foot 4 lbs., and is well riveted to frame side member by means of two 4 x 4 x 5/16" angle iron brackets.

Front cross member is a 2 x 3 x ¼" angle iron, hot riveted to two heavy malleable iron brackets extending from frame side members, these brackets being dropped so as to make the

cross member come right for supporting the radiator. All holes are accurately drilled instead of being punched, as punching frequently starts minute cracks which later spread and become dangerous. All brackets or castings are accurately drilled and machined where they fit against frame and great care is taken to solidly fasten them. All rivets are driven by pneumatic hammers and presses.

Width of frame Out. to Out. of side members (Rear, 35⅛"; Front, 30½").

Length of frame back of driver's seat 109".

Overhang of frame behind center of rear axle 47⅝".

Height of frame at center of rear axle from ground with load approximately 23½."

Cowl, Dash and Instrument Board The cowl is of heavy sheet steel riveted to angle iron frame. The corners are well braced with ¾" square forged tee irons. These irons support also the windshield, the dash, and instrument board, and are of heavy sheet steel well riveted to cowl frame, making the cowl in general very strong and rigid. The instrument board carries the speedometer, carburetor choke, ammeter, oil pressure gauge, lighting and ignition switch, all of which are high-class instruments neatly and conveniently arranged, and are mounted flush with the board.

Seat and Seat Riser Seat riser is of selected kiln-dried hardwood, well braced in corners, and has two compartments in one of which the gasoline tank is securely strapped and well protected. The other compartment is of ample size and can be used for luggage. The seat is wide enough to seat three people, and has a good wide upholstered lazy back which extends the full width of the seat and is so secured by neat, substantial irons which extend around on the ends of seat. The seat cushion is upholstered with hair and pantasote, and is built up on a wood frame with a sufficient number of steel springs to make same very comfortable.

Hood Hood over motor is of heavy sheet steel with three hinge rods. Center hinge rod is fastened at both ends so that it will not get out of place when sides of hood are raised. A heavy anti-squeak is used under both ends of the hood to prevent rattling. There are seven louvres, or air outlets, in each side of hood to permit a good circulation of air by fan. There are two catches on each side of the hood of the wing-nut type, which hold the hood firmly in place.

Fenders Front Crown fenders are of heavy gauge pressed steel in one piece rigidly attached to frame side member by a heavy pressed steel "V" section iron with a heavy sheet steel apron extending to frame and completely enclosing sides, protecting running boards from mud and water.

Fenders Rear Crown fenders are of heavy gauge pressed steel in one piece rigidly attached to body side boards and cross sills by a heavy pressed steel "L" shaped iron.

Ignition Remy Distributor. Manual Control.

Electric Generator The machine is enclosed in a dust and moisture proof case to ptotect it from oil, dirt, and water, and is gear driven from the camshaft gear in the gear case at the forward end of the motor. The voltage output is controlled by a third brush, which increases or decreases the field strength in proportion to the motor speed; this doing away with mechanical governors and clutches, which are liable to get out of adjustment. The generator begins to produce a charging current at a car speed of about six miles per hour.

Starter Electric Auto-Lite Company, Toledo, Ohio.

Six volt Bendix drive and is securely mounted on the rear motor arm. The brushes and commutator are easily accessible for examination by removing a sheet metal cover on the commu-

tator end of the machine. The starter switch is located in the toe boards to the right of the accelerator pedal.

Exhaust The Exhaust pipe is of steel tubing, large in diameter, and free from short bends so as not to put any back pressure on the motor. Movements of the motor on its shackle suspension will not cause the pipe to leak or strain the muffler. It is securely anchored both in muffler and in the exhaust manifold of the motor.

Muffler is built up of pressed steel and has sufficient volume to permit expansion of the exhaust gases with very little noise.

Cooling System Water capacity 13 qts. Water jackets in cylinder block castings are amply large, thus insuring proper distribution of water and uniform cooling of all motor parts. There are no pockets in which steam can form or accumulate to impede circulation.

Pump is of the centrifugal type with extra large bearing fitted with stuffing box.

Radiator is of the honeycomb type. The core is of heavy brass. The shell is of pressed steel and bolted to the core. The core has a heavy steel strap running completely around it, to which two heavy "V" shaped slotted steel springs are securely riveted. These springs rest on two steel washers and are bolted to front cross member, making radiator adjustable and absolutely absorbs all vibration and shocks due to extreme road conditions. The entire cooling system can be quickly drained of all water by opening drain cock conveniently located.

Pressed steel fan 15 inches in diameter is mounted on front of motor and the proper distance from the radiator to maintain a draft through the radiator and under the engine hood. The fan shaft has ample bearing surface and is driven by a "V" shaped leather link belt. This type of belt does not have to be tight to prevent slipping, the fan pulley being adjustable so as to get any tension on the belt that may be desired. Ample openings are provided in the side of the hood and under the dash to allow the ready escape of

the air drawn in by the fan which permits the fan to develop its full efficiency. Radiator hose connections are of best quality.

Clutch Cone type with leather face and is provided with springs under leather to insure gradual engagement. Diameter of cone 14 inches. Face of cone—2 inches.

Transmission Sliding gear, selective type with three forward speeds and reverse. Direct drive on high speed. Shafts are of high grade steel heat-treated operating on New Departure ball bearings.

Transmission spline or main shaft: 1⅝" large diameter, 1¼" small diameter.

Gears are of nickel steel, heat-treated.

Pitch of gears 6-8.

Face of gears ¾.

The transmission is carried on a frame, bolted to fly-wheel housing and can be quickly and easily removed. It is located immediately under driver's floor boards, permitting direct connection gear shift lever and gives the utmost accessibility for inspection and lubrication.

Gear Reductions

In Transmission

1st Speed	3.525 to 1
2nd Speed	1.736 to 1
3rd Speed	Direct or 1 to 1
Reverse	3.966 to 1

At Rear Axle

Worm and Worm Gear..7 to 1

Total Reduction Between Motor and Rear Wheels

1st Speed	24.67 to 1
2nd Speed	12.15 to 1
3rd Speed	7 to 1
Reverse	27.76 to 1

Control Gear shift and emergency levers are located in center, clutch and service brake pedals are located respectively on left and right side of steering column. Throttle and

spark control levers are located above steering wheels. Accelerator pedal is located at right of service brake pedal.

Drive Shafts From the transmission the drive is through a seamless steel tubing propeller shaft with three universal joints to a worm and worm gear mounted with the bevel pinion differential on rear axle shafts.

This construction prevents vibration, whipping and springing out of shape to which a long shaft is liable if it is not supported at its center with resultant strain and wear on the universal joints and bearings at each end. By using three universal joints the two sections are so shortened that steel tubing can be used and fastened directly over the universal joint hub, thus making a very strong construction.

Drive shaft is of high carbon seamless steel tubing 1⅝" diameter. It is in two sections and is supported at its center on an S. K. F. self-aligning ball bearing.

The bearing housing is filled with lubricant and is provided with a compression grease cup for re-filling it.

Universal Joints The moving surfaces are very large so that the efficiency is high. All parts are hardened and accurately ground to size. They run almost indefinitely without any appreciable wear. The average position through which the joints work is nearly a straight line. This keeps the joints in good condition and improves their efficiency.

Brake System There are two separate sets of brakes and are of the internal expanding type, acting on rear wheel brake drums. The service brake is operated by a foot pedal. The emergency brake is operated by hand lever. The brake lining is of Raybestos. Each brake shoe is 14" in diameter and 2" wide. Both sets of brake rods are provided with turnbuckles conveniently located to take up all brake wear.

Rear Axle Axle Wheel Bearing and Worm Gear Housings are of malleable iron and are assembled to a 3-15/16" O. D. Wrought Iron Tube, parts being firmly riveted together. Axle shafts are of the semi-floating type made of high carbon steel, heat treated 1-7/16" diameter on inner end tapering to 2" diameter at outer end where bearing is located. The inner end of each shaft is splined, i. e., it has six keys formed on the upset end which fit into keyways in the differential gear hub. The outer ends are mounted on large double row New Departure ball bearings.

Worm and Worm Gear Worm and Worm Gear are built by the Cleveland Worm and Gear Co. The steel worm is cut, hardened, and then finished by grinding, all by special machines and with great degree of accuracy. The bronze gear is a special alloy accurately cut and having teeth burnished to reduce friction. No adjustment is required at any time. Gears run in oil and worm gear acts as a pump which picks up and circulates oil over the worm and through the bearings. All radial loads and thrusts are taken by New Departure Bearings.

Differential Differential is of the bevel pinion type, with four (4) hardened pinions of ⅞" face, 5-7 pitch mounted on standard New Departure single row ball bearings. Spring seats are a part of the axle housing and are very strong.

Torque Torque is taken through the springs instead of through a torque arm. This construction cushions the entire power plant every time clutch is engaged.

Front Axle Drop forged I-section 2⅝" high by 1¾" wide made of open hearth steel, heat-treated.

Steel knuckles and knuckle arms are amply large, drop forged and heat-treated.

Knuckle bolts and tie rod bolts are hardened and ground and securely fastened to prevent

their turning anywhere except in the bushings provided as bearings for these bolts. Knuckle tie rod is back of axle where it is safe from accidental bending. Both ends of rod are adjustable to enable accurate lining up of front wheels. These ends are securely locked to prevent working loose.

Wheels Artillery type, standard dimensions, and have twelve hickory spokes, front and rear. Front wheel spokes are 1½ x 1⅜" oval section while rear are 2 x 2" and are of square section with slightly rounded corners. There is ample bearing surface on the fellow to prevent loosening.

Front wheels are equipped with Timken tapered roller bearings of extra large size, insuring safety against all rated loads and thrusts, and are fully adjustable for all wear.

The hubs are of malleable iron, flanges of pressed steel and of large diameter, giving a good hold on the wheels and giving them ample support.

Hub caps on front and rear wheels are of malleable iron, very neat in appearance, and heavy enough so they are not easily damaged, by collision.

Brake drums are steel stampings centered on hubs, and are held in place by twelve ½" hub bolts. No bolts go through the spokes to weaken them.

Tires Front—33" x 4" Straight Side, all Weather Tread. Rear—35" x 5" Straight Side. All Weather Tread. Cord type.

Springs High carbon spring steel semi-elliptic front and rear exceptionally long and wide, and the following dimensions:—

Front Spring

Length 37½ inches, free length.
Width 2¼ inches.
Depth at center 2-5/32 inches.
Number leaves 8.

Rear Spring

Length 53 inches, free length.
Width 2½ inches.
Depth at center 3-13/16 inches.
Number leaves 12.

Each leaf is given a number of heat treatments which are carefully controlled and checked by a most accurate system and accurate instruments, so that each leaf is in exactly the same condition. In hardening, the greatest possible care is taken to see that the steel is heated to an exact temperature before quenching to avoid the different leaves having varying hardness and internal fracture. The leaves are kept in position by a double nib punched in each leaf, which fits absolutely in the depression formed by punching the corresponding nibs in the leaf below. These nibs are punched up, while the leaf is hot, and no metal is removed. This construction eliminates holes in the leaves, for center bolts, which take out enough metal to seriously weaken a spring where the greatest strength is needed, as most springs break at this point.

Rebound clips are fitted near the ends to tie several leaves together. This relieves the top leaf of taking all the upward load when rebounds are severe. These rebound clips are so made and attached that they do not interfere with spring action in any way. A strong plate which fits the curve of the spring is put on top of the spring, and properly spaces the clips which fasten the springs to the axle. When the spring is completely assembled and lubricated, it is given an accurate test on a special testing machine to see that it checks to our requirements of capacity at certain heights, and load capacity per inch of deflection. The spring eyes are made absolutely true and at right angles to the spring, and are provided with a funnel-shaped hole to allow an ample amount of lubricant to flow to spring bolt. The spring bolts are hardened and ground, grooved for the distribution of lubricant, and are so designed that they will never turn in the brackets. All spring and shackle bolts are fed with lubricant by wicks leading from oil tanks cast in the brackets.

Steering Gear

16" Steering Wheel.
Worm and Gear type.
Ratio: 7½ to 1.
Steering Arm—D.F. Steel heat-treated.
Size of ball on Steering Arm 1⅛" diameter.

Body Length: from inside of tail board to inside of head board 114½".

Width: inside of boards 44".

Height of top from frame to highest point of top 63¼".

Length of top overall 156¼".

Top supported on each side by four stanchions whose cross sections are 1½" x 2".

Top is removable by releasing stanchions at sill cross members.

Inside dimensions from top of floor to top of sides 14¼". Mounted thereon on each are flare boards having a width of 8¼" on the slope and over hanging the vertical sides of the body approximately 6". These are braced from the sill cross member to under side of boards.

Body equipped with head board substantially fastened in place as well as a tail board supported by 3 sets of hinges.

Windshield Windshield is mounted on the cowl in a conventional manner supported by brackets of sufficient size to hold same firmly in place.

The windshield is of ordinary design and of double ventilating type both upper and lower sections being adjustable.

Weight Truck weight front end—1350. Truck weight rear end—2040. Total weight of truck—3420.

Wheelbase 125 inches.

Details of
Model G Light Truck

Specifications and Details
Model "G" Light Truck

The motor is of the valve-in-head type, four cylinder, four cycle, vertical, water cooled; bore, 3-11/16"; stroke, 4"; piston displacement (four cylinders), 171 cubic inches.

Motor is in unit with clutch and transmission; located in front of dash under hood. A malleable iron cross arm, securely fastened in front of the case, supports the motor at the front. Rivets supports hold this arm firmly to the frame side members. Two malleable iron arms bolted on integral cast brackets on the cylinder block extend rearward and bolt on the transmission. They also rest on and are securely bolted to a pressed steel cross member. The transverse clutch operating shaft, pedals and electric starting motor are supported by these arms. This results in a unit type power plant. Perfect alignment between crankshaft, clutch and transmission shaft is assured. The transmission is further supported by a V-shaped diagonal brace from the rear top of the cylinders.

Cylinders cast enbloc integral with crank case.

Cylinder head removable.

Combustion chamber all machined.

Compression pressure, 87 lbs. per square inch.

Both manifolds bolted on.

Pistons: cast iron.

Piston Rings: Three, diagonally split.

Pistons have 10 oil holes for lubrication beneath lower piston ring.

Camshaft drive: Helical gears.

Three bearings on camshaft.

Crankshaft: Three bearings.

Gear-driven oil pump directly connected with generator.

Lubrication: Pressure and splash system.

Diameter of valves: 1½" both intake and exhaust.

Lift of valves, 7/32".

Carburetor Zenith 1-inch T-4. Intake manifold in seamless steel tubing. Throttle advance is controlled by lever mounted under steering wheel, and by foot accelerator. All the air enters the carburetor through a combined strangler and temperature regulator which provides a cold air opening during warm weather. The strangler is operated from the driver's seat and is a great aid in starting the motor in cold weather. Gasoline supply, gravity feed, from a tank located under driver's seat.

Gasoline Tank Gasoline Tank is of heavy terne plate absolutely non-leakable, holding 10 gallons. It is securely fastened so it cannot jolt around and break the gas pipe The filler cap is large in diameter and is located under the seat cushion where it is readily accessible for filling.

The outlet fitting is located at the bottom of the tank and is provided with a sediment cup to catch dirt and matter, and can be drained by removing a plug. The gasoline line to the carburetor is of double annealed 5/16" copper pipe, and has plenty of slack in it to allow for any movements without straining or breaking it.

Frame All members are pressed steel channel.

Frame Side Members: Depth, 5"; width, 1¾".

Front cross member: depth in center section, 1½"; depth where riveted to frame, 1-15/16", width, 1½".

Center cross member rivets to brackets that are riveted to both frame and step hangers; depth in center, 2½"; depth where riveted to bracket, 3½"; width, 1½".

Third cross member: depth in center, 2½"; depth where riveted to frame, 4½"; width, 2".

Rear cross member: depth, 4⅜"; width, 1¾". Riveted to frame with 4 gusset plates for strengthening the joint.

Size of top gusset plates, 10⅛" x 10⅛" x 5/32" thick. Bottom plates, 4⅛" x 4⅛" x 5/32".

All brackets or castings are accurately drilled and machined where they fit against frame and great care is taken to solidly fasten them. All rivets are driven by pneumatic hammers and presses.

Width of frame Out. to Out. of side members: Rear, 37"; Front, 28".

Length of frame back of driver's seat, 76".

Overhang of frame behind center of rear axle, 19".

Height of frame at center of rear axle from ground with load, approximately 23½"

Cowl, Dash and Instrument Board The cowl is of wood framing covered by heavy sheet steel with well-braced corners. Irons also support the windshield, dash and instrument board. The latter is of wood covered with heavy sheet steel, well riveted to cowl frame, making the cowl in general very strong and rigid. The instrument board carries the speedometer, carburetor choke, ammeter, oil pressure gauge, lighting and ignition switch, all of which are high-class instruments neatly and conveniently arranged, and are mounted flush with the board.

Seat and Seat Riser Seat riser is of selected kiln-dried hardwood, well braced in corners, and has two compartments in one of which the gasoline tank is securely strapped and well protected. The other compartment is of ample size and can be used for luggage. The seat is wide enough to seat three people and has a good, wide upholstered lazy back which extends the full width of the seat and is secured by neat, substantial irons which extend around on the ends of seat The seat cushion is upholstered with hair and Fabrikoid and is built up on a wood frame with a sufficient number of steel springs to make same very comfortable.

Hood Hood over motor is of heavy sheet steel with three hinge rods. Center hinge rod is fastened at both ends so that it will not get out of place when sides of hood are raised.

A heavy, anti-squeak is used under both ends of the hood to prevent rattling. There are six louvres, or air outlets, in each side of hood to permit a good circulation of air by fan. There are two catches on each side of the hood of the wing-nut type, which hold the hood firmly in place.

Fenders Front Crown fenders are of heavy gauge pressed steel in one piece rigidly attached to frame side member by a heavy pressed steel channel section iron with a heavy sheet steel apron extending to frame and completely enclosing sides, protecting running boards from mud and water.

Fenders Rear Crown fenders are of heavy gauge pressed steel in one piece rigidly attached to body side boards.

Ignition Remy Distributor, Hand Control.

Electric Generator The generator is enclosed in a dust- and moisture-proof case to protect it from oil, dirt and water and is gear-driven from the camshaft gear in the gear case at the forward end of the motor. The voltage output is controlled by a third brush, which increases or decreases the field strength in proportion to the motor speed; this doing away with mechanical governors and clutches which are liable to get out of adjustment. The generator begins to produce a charging current at a car speed of about six miles per hour.

Starting Motor The electric starting motor is of the 6 volt, double wire system. It is a separate unit, small and compact, weighing 20¼ pounds. It is of extremely high efficiency and will turn the engine at 150 to 160 revolutions per minute. The engaging mechanism is of the most advance type, and the simplest, no reduction being necessary beyond the starting motor pinion gear to the fly wheel. When the current is supplied to the starting motor, the pinion gear is instantly and automatically drawn in mesh with the fly wheel gear, and when the engine starts under its own power, the pinion gear automatically draws out of the mesh.

The starter switch is located on the diagonal brace of engine with its push button extending above the toe board. It is operated by the driver's foot.

Exhaust The exhaust pipe is of steel tubing, large in diameter and free from short bends so as not to put any back pressure on the motor. It is securely anchored both in muffler and in the exhaust manifold of the motor.

Muffler is built up of pressed steel and has sufficient volume to permit expansion of the exhaust gases with very little noise.

Cooling System The motor is cooled by a belt-driven centrifugal water pump, fan and a cellular type radiator of generous capacity. Both the fan and water pump are driven from the crank shaft. The pump is connected by a hose to the bottom of the radiator or outlet and forces a supply of cooled water to the water jackets surrounding the cylinder walls, thus insuring proper circulation at all motor speeds. When cold the motor and radiator have a capacity of 1¾ gallons. The water pump is readily accessible by removing the bolts which fasten it to the cylinder block.

Clutch Cone type with leather face and is provided with springs under leather to insure gradual engagement. Diameter of cone, 12⅛". Face of cone, 1½".

Transmission Sliding gear selective type with three forward speeds and reverse. Direct drive on high speed. Shafts are of high-grade steel, heat-treated, main shaft operating on New Departure ball bearings.

The transmission is located immediately under driver's floor boards, permitting direct connection with gear shift lever, and is readily accessible for inspection and lubrication. The shifting rods and interlocking pins are mounted in the malleable iron cover.

Transmission spline or main shaft: 1⅜" large diameter, 1⅛" small diameter.

Gears are of high carbon steel, heat-treated.

Pitch of gears 6-8.

Face of gears ⅝".

Transmission Gear Reduction

Based on Engine Speed

1st Speed	3.32 to 1
2nd Speed	1.77 to 1
3rd Speed	Direct
Reverse	4.2 to 1

Control The gear shift lever is located at the center of the driving compartment and operated by the right hand. The clutch and service brake are operated by a single pedal. Pressure on the pedal first throws out the clutch, and, if continued, applies the service brakes. The emergency brake is operated by the right foot pedal. The hand operated spark and throttle levers are conveniently located underneath steering wheel on a stationary friction sector. The throttle is also operated by a foot accelerator conveniently located on the toe board to the right of the emergency brake pedal.

Drive Shaft From the transmission the drive is through a solid steel bar encased in a tubing to a spiral drive pinion and ring gear mounted with the bevel pinion differential on rear axle shafts. Drive shaft diameter, 1-1/32".

Universal Joint The universal joint is the ring and yoke type and extremely strong. It is of high carbon steel, hardened and ground. All moving parts have large bearings, which are lubricated automatically from the transmission case.

Rear Axle An adjustment for the bevel pinion has been provided. This consists of a cage which screws into the propeller shaft housing and supports two heavy duty ball bearings. This new feature makes it possible to adjust the meshing of the bevel pinion and drive gear without the use of shims or the removal of the axle. Access to the adjustment is had through a small hand hole plate on the housing.

Axle housings are of malleable iron and are welded to a 3⅜" O. D. Wrought Iron Tube. Axle shafts are of the semi-floating type made of high carbon steel, heat treated, 1⅝" diameter.

The inner end of each shaft is splined, i. e., it has ten keys which fit into keyways in the differential gear. The outer ends are mounted on large Hyatt roller bearings. Spring seats are welded to brake flanges.

The gear ratio of the rear axle is 6.33 to 1, adopted as best suited for power, economy, speed and hill-climbing.

Differential Is of the bevel pinion type, with two hardened pinions of ¾" face, 5-7 pitch, mounted on standard New Departure Radax Ball Bearings.

Brakes There are two separate sets of brakes, internal expanding and external contracting, acting on rear wheel brake drums. The service and emergency brakes are operated by foot pedals. The brake lining is of Raybestos, each brake shoe is 12" in diameter and 2" wide. Both sets of brake rods are provided with Adjustable Yoke Ends conveniently located to take up all brake wear.

Torque Torque is taken through the springs instead of through a torque arm. This construction cushions the entire power plant every time clutch is engaged.

Front Axle Drop-forged I-section, 1¾" high by 1¼" wide, made of open-hearth steel, heat-treated.

Steel knuckles and knuckle arms are amply large, drop-forged and heat-treated.

Knuckle bolts and tie-rod bolts are hardened and ground and securely fastened to prevent their turning anywhere except in the bushings provided as bearings for these bolts. Knuckle tie rod is back of axle where it is safe from accidental bending. Both ends of rod are adjustable to enable accurate lining up of front wheels. These ends are securely locked to prevent working loose.

Wheels Artillery type, standard dimensions, and have twelve hickory spokes, front and rear. Front wheel spokes are 1-3/16" diameter while rear are 1-9/16" diameter. There is

ample bearing surface on the felloe to prevent loosening.

Front wheels are equipped with Timken tapered roller bearings of extra large size, insuring safety against all rated loads and thrusts, and are fully adjustable for all wear.

The hubs are of malleable iron, flanges are of pressed steel and of large diameter, giving a good hold on the wheels and giving them ample support.

Hub caps on front and rear wheels are of cast iron, very neat in appearance, and heavy enough so they are not easily damaged by collision.

Brake drums are steel stampings centered on hubs, and are driven by twelve ½" hub bolts. No bolts go through the spokes to weaken them.

Tires Front—31" x 4", Straight Side, All-Weather Tread. Rear—34" x 4½", Straight Side, All-Weather Tread.

Springs High carbon spring steel cantilever front and half-elliptic rear, exceptionally long and wide, and the following dimensions:

Front Spring

Length, 21⅞", under length.
Width, 1¾" inches.
Depth at center, 1⅞".
Number of leaves, 9.

The leaves of Front Springs are of high carbon steel, triple heat-treated. The ends are secured by clips and bolts to box brackets on frame and to the front axle spring seat.

Rear Spring

Length, 43¼", free length.
Width, 2½".
Depth at center, 2¾".
Number of leaves, 10.

Each leaf is given a number of heat treatments which are carefully controlled and checked by a most accurate system and accurate instru-

ments, so that each leaf is in exactly the same condition. In hardening, the greatest possible care is taken to see that the steel is heated to an exact temperature before quenching to avoid the different leaves having varying hardness and internal structure. Rear Spring leaves are kept in position by a double nib punched in each leaf, which fits absolutely in the depression formed by punching the corresponding nibs in the leaf below. These nibs are punched up, while the leaf is hot, and no metal is removed. This construction eliminates holes in the leaves, or center bolts, which take out enough metal to seriously weaken a spring where the greatest strength is needed, as most springs break at this point.

Rebound clips are fitted near the ends to tie several leaves together. This relieves the top leaf of taking all the upward load when rebounds are severe. These rebound clips are so made and attached that they do not interfere with spring action in any way. A strong plate which fits the curve of the spring is put on top of the spring, and properly spaces the clips which fasten the springs to the axle. When the spring is completely assembled and lubricated, it is given an accurate test on a special testing machine to see that it checks to our requirements of capacity at certain heights, and load capacity per inch of deflection. The spring eyes are made absolutely true and at right angles to the spring, and are provided with a funnel-shaped hole to allow an ample amount of lubricant to flow to spring bolt. The spring bolts are hardened and ground, grooved for the distribution of lubricant, and are so designed that they will never turn in the brackets. All spring and shackle bolts are fed with lubricant by elbow oil cups.

Steering Gear The steering gear is of the compound reduction spur and gear type, mounted on the motor front cross arm and secured by bolts. It is compact, has ample bearing surfaces, and is adjustable for wear. Steering column is of large diameter, enameled black. Spark and throttle rods are on the outside.

Steering wheel is of wood 15" in diameter.

Body The body is furnished as special equipment only.

Length: from inside of tail board to inside of head board, 97⅞".

Width: inside of boards, 46".

Height of top from frame to highest point of top, 56½".

Length of top over all, 140-5/16".

Top is supported on each side by two stanchions whose cross sections are 1¾" x 1⅝".

Top is removable by releasing stanchions at sill cross members.

Inside dimensions from top of floor to top of sides, 11¼". Mounted on side boards are flare boards having a width of 6" on the slope and overhanging the vertical sides of the body approximately 1¾". These are braced from the sill cross member to under side of boards.

Body equipped with head board substantially fastened in place as well as a tail board supported by 3 sets of hinges.

Windshield Windshield is mounted on the cowl in a conventional manner supported by brackets of sufficient size to hold same firmly in place.

The windshield is of ordinary design and of double ventilating type, both upper and lower sections being adjustable.

Weight Truck weight, front end—990. Truck weight rear end—1480. Total weight of truck, 2470.

Wheelbase 120 inches.

Specifications
Chevrolet Model "G" Light Truck

Motor: Four-cylinder, valve-in-head type, 3 11/16" bore, 4" stroke.

Cylinders: Cast en-bloc with upper half of crank case. Head detachable.

Valves: 1½" enclosed.

Connecting Rod Bearings: 1⅜" x 1⅞".

Crankshaft Bearings: Front, 1⅜" x 2 5/16"; Center, 1 21/32" x 1½"; Rear, 1¾" x 2 11/16."

Center Main Bearings: Doehler bronze back.

Camshaft Bearings: Front, 1 5/16" x 2⅜"; Center, 1 9/32" x 2"; Rear, 1¼". x 1 7/16".

Oiling System: Splash, gear pump and individual oil pockets. Oil pressure gauge.

Carburetor: Zenith improved double jet.

Ignition: New improved Remy.

Clutch: Cone type with adjustable compensating springs.

Frame: 5" width rear 37"; front 28". Length back of driver's seat, 76". Height, 23½" loaded.

Transmission: Selective type; 3 speeds forward and reverse.

Cooling: Water pump.

Front Axle: Drop-forged I-beam. The steering knuckles and knuckle arms are ample in size, drop-forged and heat-treated.

Rear Axle: Semi-floating, made of nickel steel, heat-treated.

Control: Hand throttle; foot accelerator.

Springs: Cantilever front, one-half elliptic rear. Front springs are 21⅞ inches long and 1¾ inches wide. The rear springs are 43¼ inches long and 2½ inches wide.

Tires: All pneumatic. Demountable type, non-skid, wrapped tread. Front 31" x 4". Rear, 34" x 4½". All weather tread.

Wheels: Artillery type, standard dimensions, twelve hickory spokes each; front wheels equipped with Timken tapered roller bearings of extra large size.

Steering Gear: Spur and gear type, 15" steering wheel. Steering arm of drop-forged steel, heat-treated.

Gasoline Tank: Capacity 10 gallons, tank non-leakable. It is located under the driver's seat.

Wheelbase: 120".

Carrying Capacity: 1500 pounds. Weight of chassis with body ~~3420~~ pounds.

Body: Length of the body from inside of tail board to inside of head board is ~~93¾~~". Width inside of boards

Equipment: Electric lights and starter, highest type two-unit system, double wiring used. Complete lamp equipment, side curtains; adjustable windshield; speedometer; electric horn; complete tool equipment, including pump and jack, demountable rims.

Specifications
Chevrolet Model "T" One-Ton Truck

Motor: Four-cylinder, valve-in-head type, 3-11/16" bore. 5¼" stroke.

Cylinders: Cast en-bloc with upper half of crank case. Head detachable.

Valves: 1½" enclosed.

Connecting Rod Bearings: 1½" x 2⅛"; Doehler bronze back.

Crankshaft Bearings: Front, 1½" x 2-11/16"; Center, 1-31/32" x 2"; Rear, 2" x 3½".

Center Main Bearings: Doehler bronze back.

Camshaft Bearings: Front, 1-9/16" x 2¼"; Center, 1½" x 2"; Rear, 1-15/32" x 2".

Oiling: Pressure and splash system. Gear driven oil pump.

Carburetor: Zenith improved double jet.

Ignition: New improved Remy system.

Governor: Governor is provided and set for 25 miles maximum. It is locked.

Clutch: Cone, leather-faced, with adjustable compensating springs.

Frame: 4"; width, rear 35⅛"; front, 30½". Length back of driver's seat, 109". ~~Height 25" loaded~~.

Transmission: Selective type; 3 speeds forward and reverse.

Cooling: Water pump.

Front Axle: Drop-forged I-beam. The steering knuckles and knuckle arms are ample in size, drop-forged and heat-treated.

Rear Axle: Semi-floating, made of high carbon steel, heat-treated.

Control: Hand throttle; foot accelerator.

Springs: Semi-elliptic front and rear. Front springs are ~~38~~ inches long and 2¼ inches wide. The rear springs are ~~38~~ inches long and 2½ inches wide.

Worm Gear Drive: The steel worm is cut, hardened and then finished by grinding. No adjustment is required at any time.

Tires: Front—pneumatic, 33" x 4", Demountable type, non-skid, wrapped tread. Rear, 35" x 5" pneumatic, cord type.

Wheels: Artillery type, standard dimensions, twelve hickory spokes each; front wheels equipped with Timken tapered roller bearings of extra large size.

Steering Gear: Worm and gear type, 17" steering wheel. Steering arm of drop-forged steel, heat treated.

Gasoline Tank: Capacity 13 gallons, tank non-leakable. It is located under the driver's seat.

Wheelbase: 125".

Carrying Capacity: 2000 pounds. Weight of chassis, 2840 pounds; with body 3420 pounds.

Body: Length of the body from inside of tail board to inside of head board is 114½". Width, inside of boards, 44".

Material Specifications of Important Units

	"490"	"FB"	"T"	"G"
Frame—Pressed Steel	"490"	"FB"		"G"
"T" use Rolled Steel				
Springs—Carbon Steel, heat-treated	"490"	"FB"	"T"	"G"
Front Axle I Beam—Drop Forged Steel Manganese and Carbon	"490"	"FB"	"T"	"G"
Steering Knuckle—Drop Forged Steel Chromium Manganese	"490"	"FB"	"T"	"G"
"FB" use New Departure Ball Bearings on steering knuckles				
"G" and "T" use Timken Roller Bearings on steering knuckles				
"Four-Ninety" use, Tool Steel Carbon, Manganese steel cones and steel balls				
Bevel Ring Gear—Drop Forged high carbon Steel	"490"	"FB"	"T"	
Pinion Gear—Drop Forged high carbon Steel	"490"	"FB"		
Pinion and Ring Gear—Mounted on New Departure Ball Bearings				"G"
Worm Gear—Drop Forged high carbon Steel			"T"	
Worm Gear—Mounted on single and double row New Departure Ball Bearings			"T"	
Main Axle Shaft—Cold Drawn Steel	"490"	"FB"	"T"	"G"
Hub and Axle Shaft Bearings—Hyatt Roller Bearings	"490"	"FB"		
Hub and Axle Shaft Bearings—New Departure Ball Bearings			"T"	"G"
Brake Lining—Raybestos	"490"	"FB"	"T"	"G"
Crankshaft—Drop Forged high carbon Steel	"490"	"FB"	"T"	
Connecting Rod—Drop Forged carbon Steel	"490"	"FB"	"T"	
Fly Wheel—Gray Cast Iron	"490"	"FB"	"T"	"G"
Cam Shaft—Drop Forged carbon Steel	"490"	"FB"	"T"	
Piston—Cast Iron	"490"			"G"
Die Cast Lynite		"FB"	"T"	
Valve—Cast Iron Head with cold rolled Steel Stem	"490"	"FB"	"T"	"G"
Clutch—Cone, leather faced	"490"	"FB"	"T"	"G"
Transmission—Main Drive Gear Drop Forged Steel	"490"	"FB"	"T"	"G"
Transmission—Sliding Gear Drop Forged Steel	"490"	"FB"	"T"	"G"
Transmission—Spline Shaft Drop Forged Steel	"490"	"FB"	"T"	"G"
Spline Shaft and Main Drive Gear mounted on New Departure Single Row Ball Bearings	"490"	"FB"	"T"	"G"
Clutch Collar—Phosphor Bronze	"490"			"G"
Malleable Iron (wood insert)		"FB"	"T"	

WEIGHTS Model, Passenger and total.	Road Weight	Shipping Weight	Passenger Weight	Total Weight	Horse Power A.L.A.M.	Horse Power Brake
"Four-Ninety" Touring Car	1900	1740	775	2675	21.7	25
"Four-Ninety" Roadster	1820	1660	310	2130	21.7	25
"Four-Ninety" Sedan	2160	1997	775	2935	21.7	25
"Four-Ninety" Coupe	2040	1880	310	2350	21.7	25
"FB-50" Touring	2745	2504	775	3520	21.7	35
"FB-20" Roadster	2640	2401	310	2950	21.7	35
"FB-40" Sedan	2947	2708	775	3722	21.7	35
"FB-30" Coupe	2818	2579	465	3273	21.7	35
"T" with express body and top	3420	3300	2000	5420	21.7	35
"T" Chassis	2840	2720	2580	5420	21.7	35
"G" Chassis and Cab	2167	2020	1950	4117	21.7	25
"G" with Express body and top	2617	2470	1500	4117	21.7	25