1931

Duesenberg

DUESENBERG

It is a monumental answer to wealthy America's insistent demand for the best that modern engineering and artistic ability can provide . . . . Equally it is a tribute to the widely-recognized engineering genius of Fred S. Duesenberg, *its designer, and to* E. L. Cord, *its sponsor, for these men in one imaginative stroke have snatched from the far future an automobile which is years ahead and therefore incomparably superior to any other car which may be bought today.*

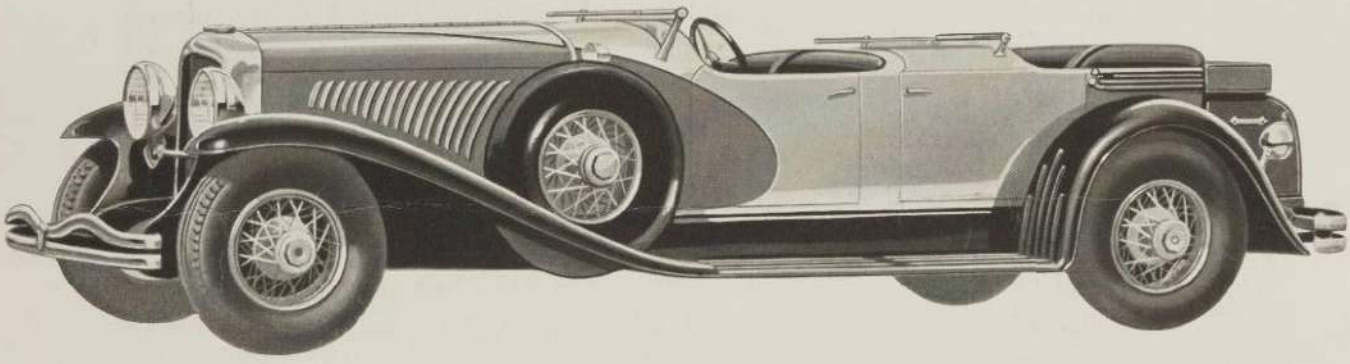
DUESENBERG

"The World's Finest Motor Car"

THE OBJECT OF THIS BOOK is to be informative; to give you a partial insight into the design, the structural strength, the metallurgy and the numerous exclusive ways in which Duesenberg provides for your utmost safety, comfort and enjoyment .... The same motives which actuate the creation of any masterpiece prompt the building of this, the world's finest motor car. In every realm of human endeavor there is innate in certain men the driving desire to produce something that excels with finality. Always there is devotion to an ideal with only one thought in mind: to produce the best, forgetful of cost or expediency or any other consideration. When this is finally accomplished the work is acclaimed a masterpiece by those who are in a position to know; it is recognized as a standard by which all other things of its kind are judged .... This is true, whether the creation be a Taj Mahal, a Grecian vase, Cellini's metal craft, a Rembrandt painting—or a Duesenberg car.

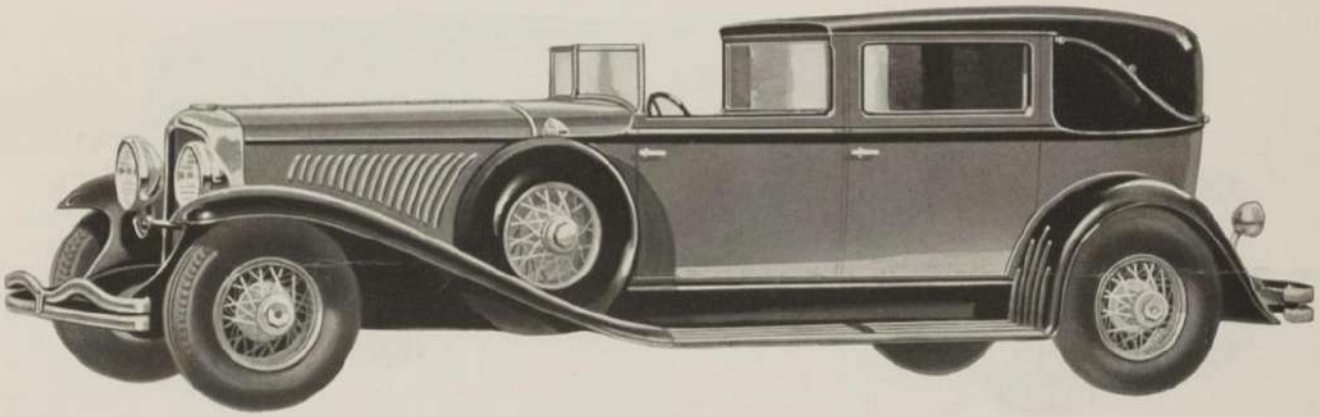
WE SAY this without egotism. The superlatively fine has no need to be boastful. So confident is Duesenberg of the unquestioned supreme position its product occupies, that a nameplate is considered superfluous. Nowhere on the car do you find the name Duesenberg. But everywhere throughout the car you discover those master strokes of engineering and design and construction obtainable only in a Duesenberg .... Yet the Duesenberg is marketed on the same basis as the most popular-priced car; dollar-for-dollar value. The Duesenberg price is set by the car's inherent worth.

NECESSARILY, its appeal is to only a very few. Any masterpiece can only be appreciated by those who understand the principles upon which its greatness is based. Therefore the ownership of a Duesenberg reflects discernment far above the ordinary .... We are not the first to have had the ambition to build the world's finest motor car. But in our case this achievement was made possible by the experience and the creative genius of the man who designed it .... For many years the world has recognized his name as a synonym for scientific pioneering, for high precision standards, and for performance attainments outdistancing all others. The climax of Fred S. Duesenberg's lifetime of effort and study is summed up in this new car .... We submit the new Duesenberg, after more than two years of untiring zeal, to excel every other car in the world, in every way.



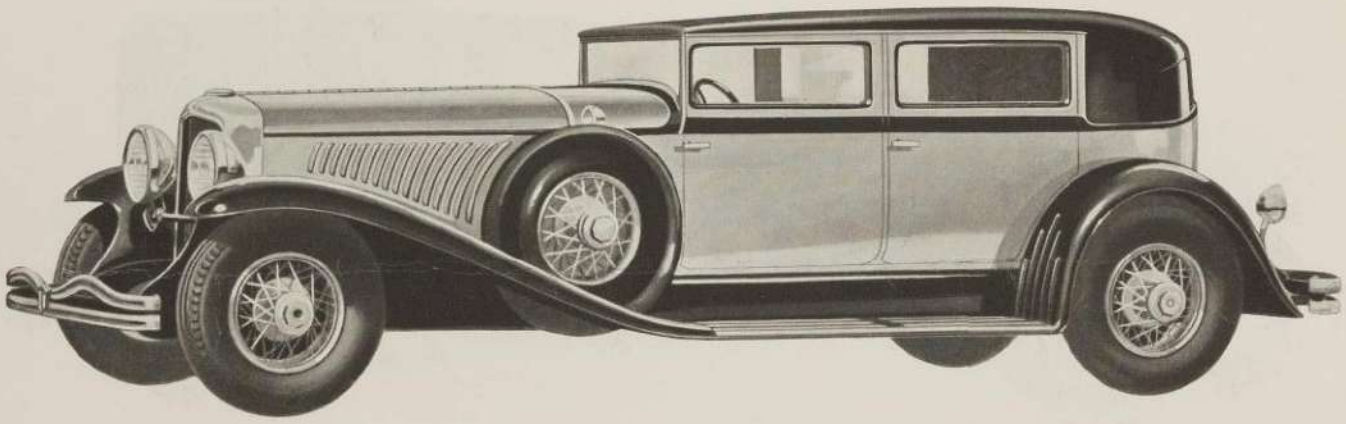
THE PHAETON

Distinction clothes every line of this sporty five-passenger open model, and its beauty is greatly accentuated by the novel depressed curved panel which increases the apparent height of hood and cowl. The top folds smartly into small compass, its horizontal lines emphasizing the length of the car. The rear compartment has a tonneau cowl and hinged windshield. Both it and the forward windshield may be swung down parallel to their cowls. This model, by one of the finest custom body builders, is one of many in stock for immediate delivery. Paint, upholstery and top material are optional. The wheelbase is 142½ inches.



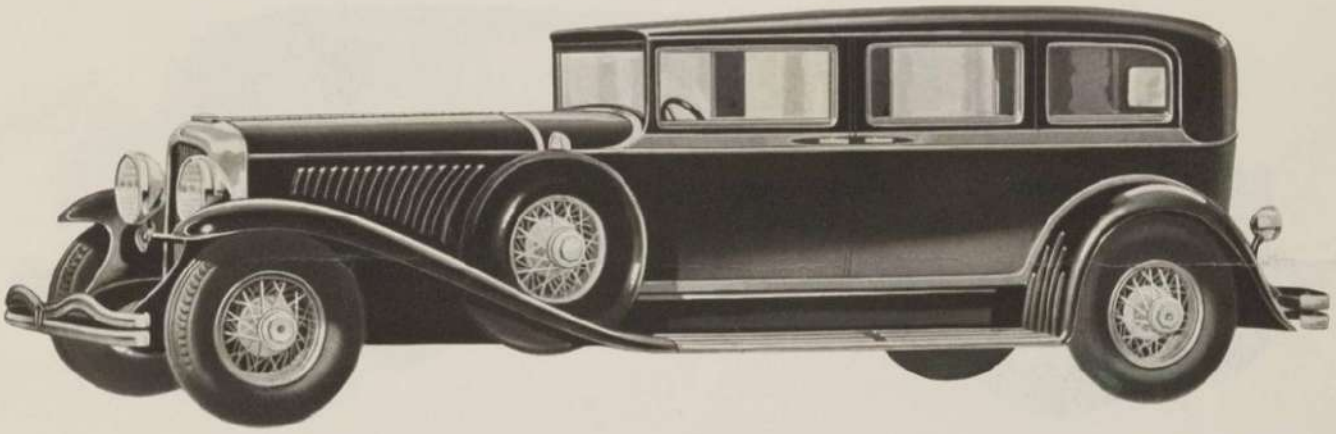
THE ALL-WEATHER CABRIOLET

An exceptionally stylish design for four, six or seven passengers, depending on body width and auxiliary seats. While possessing ample headroom, the low sleek lines of its long 153½-inch wheelbase chassis are accentuated by a high belt panel, and a rear quarter with lowered base line. The car is transformable in a few moments into an equally appealing closed drive type by raising the front windows cleverly concealed in the doors, and by attaching the roof which goes over the driver's compartment.



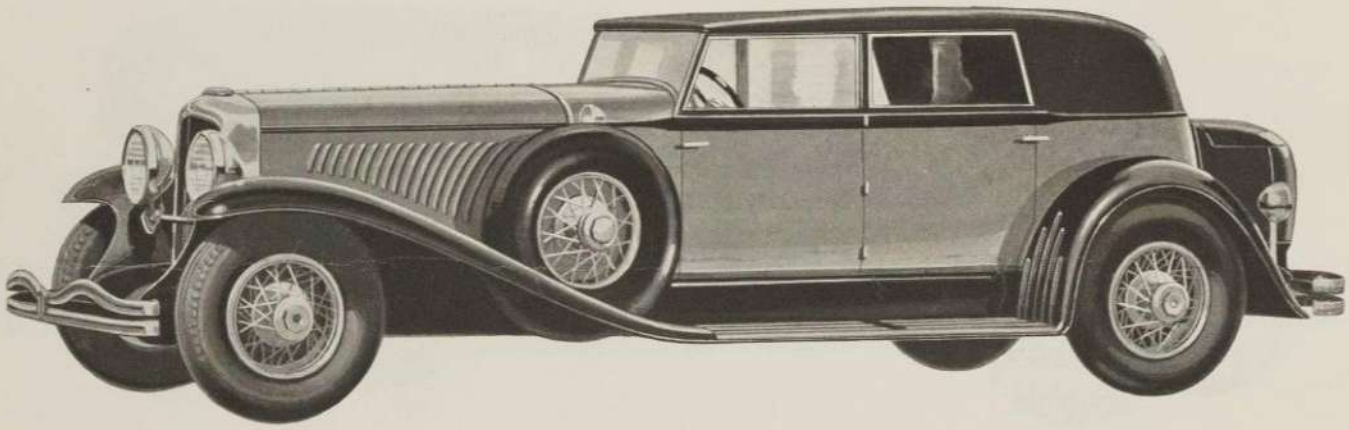
THE FIVE-PASSENGER SEDAN

This beautiful model wins instant acclaim, particularly because of its remarkable roominess and unusual comfort. The seat angles and the liberal dimensions of the driver's compartment deserve special mention. It is also built with rear quarter windows. Like all Duesenberg custom bodies, the interior is exquisitely finished and furnished. Upholstery and colors are optional. The wheelbase is 142½ inches.



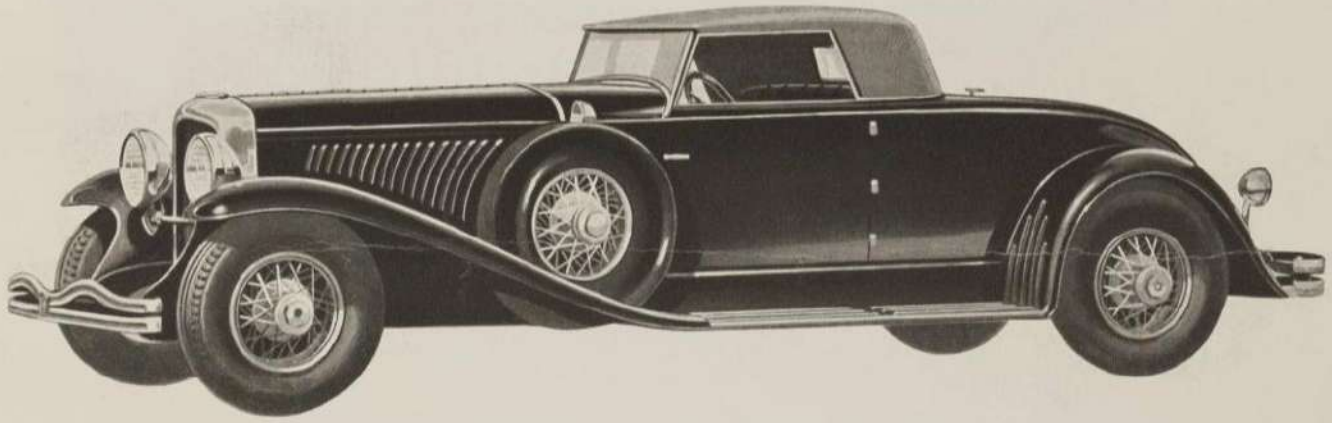
SEVEN-PASSENGER ENCLOSED DRIVE SEDAN

Harmonious curves explain the comeliness of this seven-passenger sedan, a two-purpose car, chauffeur-driven with the partition glass up and owner-driven with it down when it disappears without a trace beneath precisely filled wooden flaps which finish off the top of the front seat back. With equal ingenuity, no marring channel on the ceiling is required to receive the raised glass which rests snugly against the head lining backed by a sponge rubber strip concealed above. The front seat is fully comfortable. The wheelbase is 153½ inches.



CONVERTIBLE SEDAN

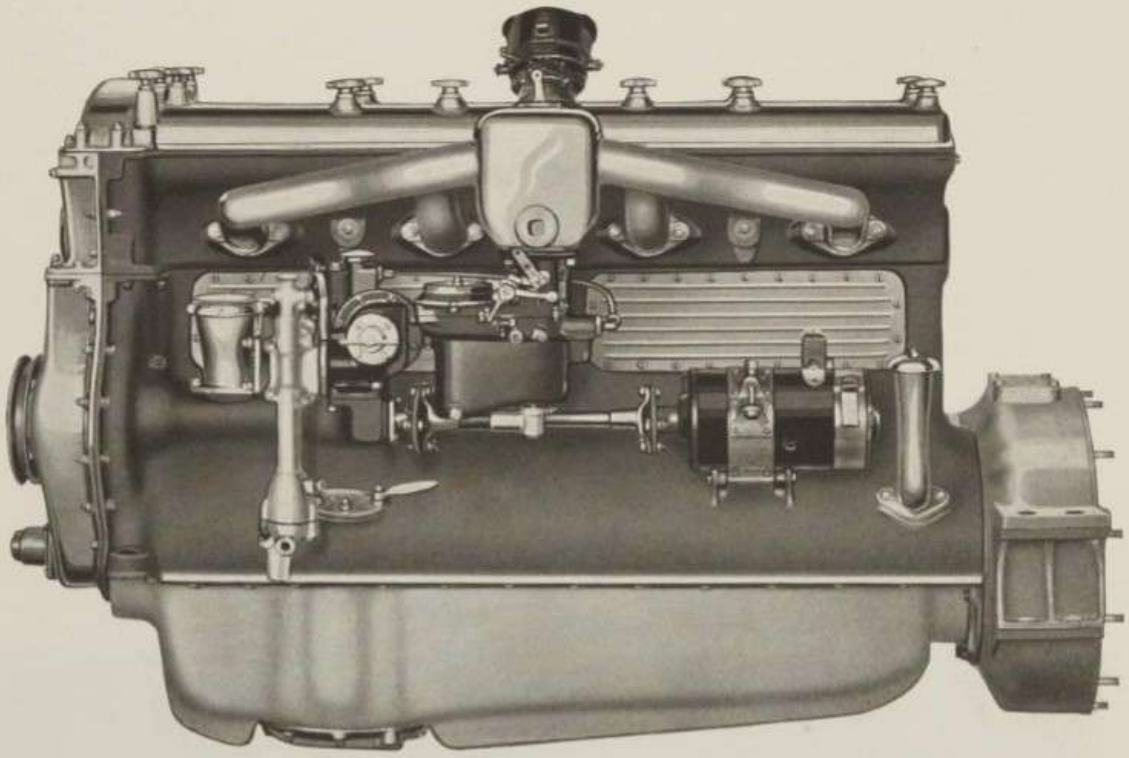
With top up this car is an inconceivably smart sedan. Windows, windshield and back panel have the same harmonious slope. In a jiffy it becomes a most attractive sport touring car by dropping the windows into the doors and lowering the top which folds into small space to form a horizontal line perpetuating the wide belt moulding. The wheelbase is 142½ inches.



CONVERTIBLE ROADSTER

The ideal personal car for any man or woman. With top down it is the raciest of roadsters; with top up the sportiest of closed cars. There is a roomy carrying compartment behind the cushion back and a comfortable rumble seat for occasional passengers. Harmony of line, a characteristic feature of all Duesenbergs, is seen to excellent advantage in this model. The curved louvres in the hood match the contour of the spare tire. The sweep of the rear deck blends into the rear fender. The long, graceful front fender and the reverse curve on the tip of the rear fender add to the impression of length and lowness.

The wheelbase is 142½ inches.



A BEAUTIFUL ENGINE

Clean design is a feature of the Duesenberg engine. This view shows the fuel pump and timing box, intake manifolds and carburetor, ignition distributor and generator. The cylinder block and upper half of crankcase are a single rigid casting.

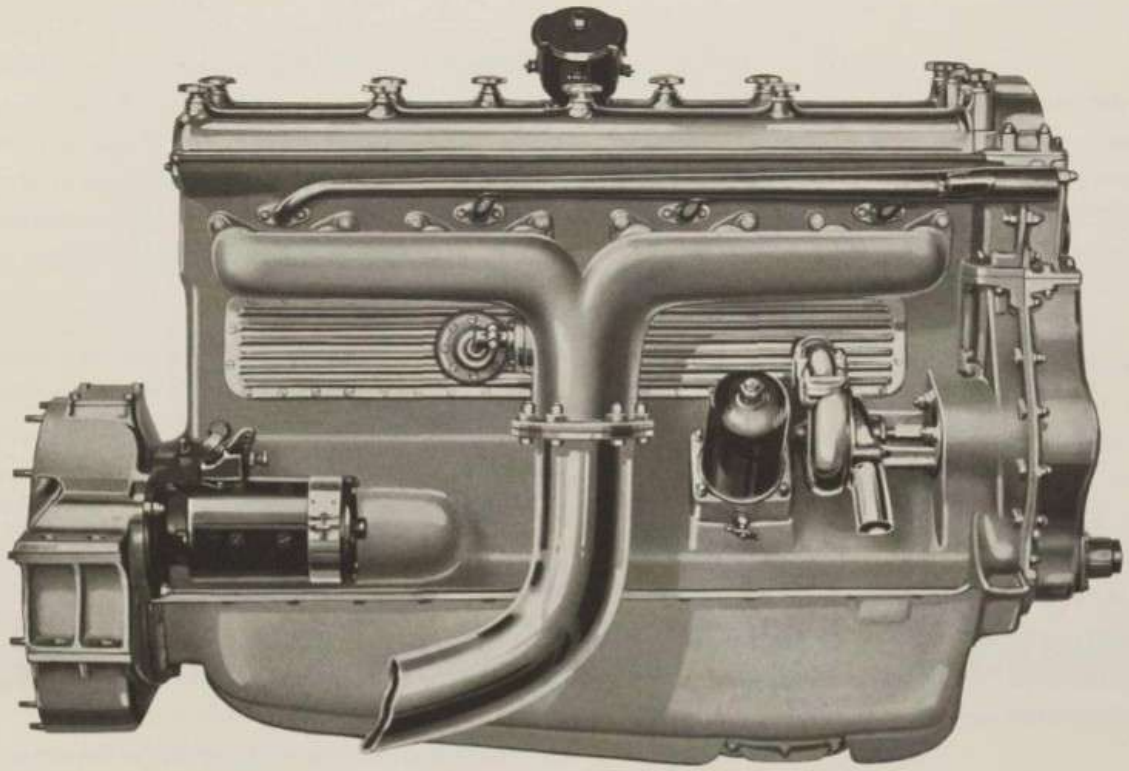
265 HORSEPOWER

TO THE majority of drivers content to roll along the open road at 50 to 70 miles per hour, the Duesenberg must have a strong appeal because of the effortlessness and steadiness of its performance. The impression of speed in an automobile is due not so much to the rate at which the scenery flies by, as it is to the fuss which engine and chassis make. Thus if engine noise and vibration are excessive at 60 or 70 miles per hour, and if the car does not cut a clean, true path down the road, these rates of travel seem high, unpleasant, and must result in nervous fatigue to driver and passengers, whereas an automobile which runs quietly, smoothly, effortlessly, and true as an arrow at these speeds becomes a delight to operate.

Then, too, experience proves that the closer an automobile is brought to its maximum speed the less attractive its performance. If a 70-mile-an-hour car is driven 65 miles per hour, the whole mechanism is working so hard, like a runner out of breath, that critical motorists, at least, must object to its effort. But the maximum speed of the Duesenberg is so high that even 100 miles per hour cannot be regarded as particularly hard work, and incidentally it traces just as true a line down the road as lesser cars at one-third this speed.

SMOOTHNESS

The 100-mile figure is mentioned to emphasize the extreme ease with which rates of 40 and 60 miles per hour are maintained. These are loafing speeds. Wear and



AN IMPRESSIVE POWER PLANT

The Duesenberg engine is a delight to the eye, and is symptomatic of the inherent excellence of the whole car. The cylinder block is enameled green and the large exhaust pipe is finished in heat-proof green enamel. All other visible parts, including nuts, are either chromium plated or finished in polished aluminum.

tear, noise and vibration all are negligible. At a mile a minute it runs as pleasingly as other cars at 30 miles per hour.

SUPERIORITY

Just as its speed exceeds by many miles that of any other automobile, so does it excel in all its other features, including fineness of material, strength, comfort, durability, and so forth—an outstanding automobile from every angle.

POWER

The unprecedented power of the engine is due more to skillful design than it is to mere size. Its eight cylinders, with a bore and stroke of $3\frac{3}{4}$ by $4\frac{3}{4}$ inches, and a piston displacement of 420 cubic inches, fail to account for the fact that 265 horsepower is delivered at 4200 revolutions per minute. Rather, the secret of its great dynamic energy lies mainly in the excellence of its valve mechanism. Four valves are used per cylinder, two intake and two exhaust, whereas single intake and exhaust valves are customary. In addition these valves are so placed in the cylinder head that they offer minimum obstruction to the flow of gases in and out of the cylinders. Because of these features the "breathing capacity" of the engine is high; that is, unusually full charges of mixture are drawn in, while exhaust gases are expelled with minimum power loss.

RUGGEDNESS

The valve mechanism is exceptionally rugged and trouble-proof, as may be proved by stating that it is patterned after the construction exclusively used on racing cars, but unavailable for lesser passenger cars because of its prohibitive cost. The gain in power due to this excellent valve mechanism is approximately the same as would be realized if a conventional two-valve engine were fitted with a super-charger.

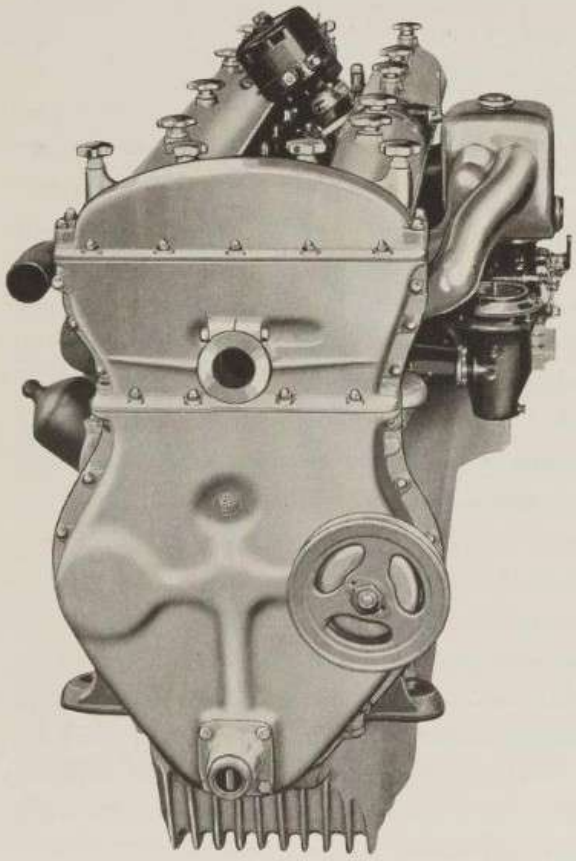
SUPER ACTIVITY

The great reserve power of the engine also explains its thrilling acceleration and its ability to romp up hills in high gear too steep for lesser cars. With a rear axle gear ratio of 3½ to 1 the engine develops 165 horsepower at 60 miles per hour. Only 60 horsepower is required to drive the car at this rate on a level road, leaving 105 horsepower in reserve for acceleration, hill-climbing, or both, available the instant the throttle is opened.

At a mile a minute, therefore, the throttle is more than half closed with the engine producing only 37 per cent of the power in it. Thus lightly loaded it must give long life and freedom from trouble.

ACCELERATION

Because of the unusual reserve power it is really amazing how quickly 60 or 80 miles per hour may be reached when accelerating from a walking pace in high gear. Therefore a minimum amount of time is lost on the road in slowing down or stopping. In a very few seconds the car is again running at whatever speed the driver wishes, and consequently the elapsed time from point to point is considerably reduced. Likewise exceptional reserve power permits steep hills to be climbed without slackening speed and therefore without loss of time.



Front view of engine.

90 MILES IN SECOND

Super-acceleration and hill-climbing ability may be secured in second gear, which is so silent that it cannot be distinguished from high. Second gear noise has been suppressed to the point of inaudibility by employing two pairs of internal-external gears. To state that the maximum speed in second gear is 90 miles per hour is merely to illustrate and to emphasize the unusual superiority which distinguishes every detail of the Duesenberg mechanism.

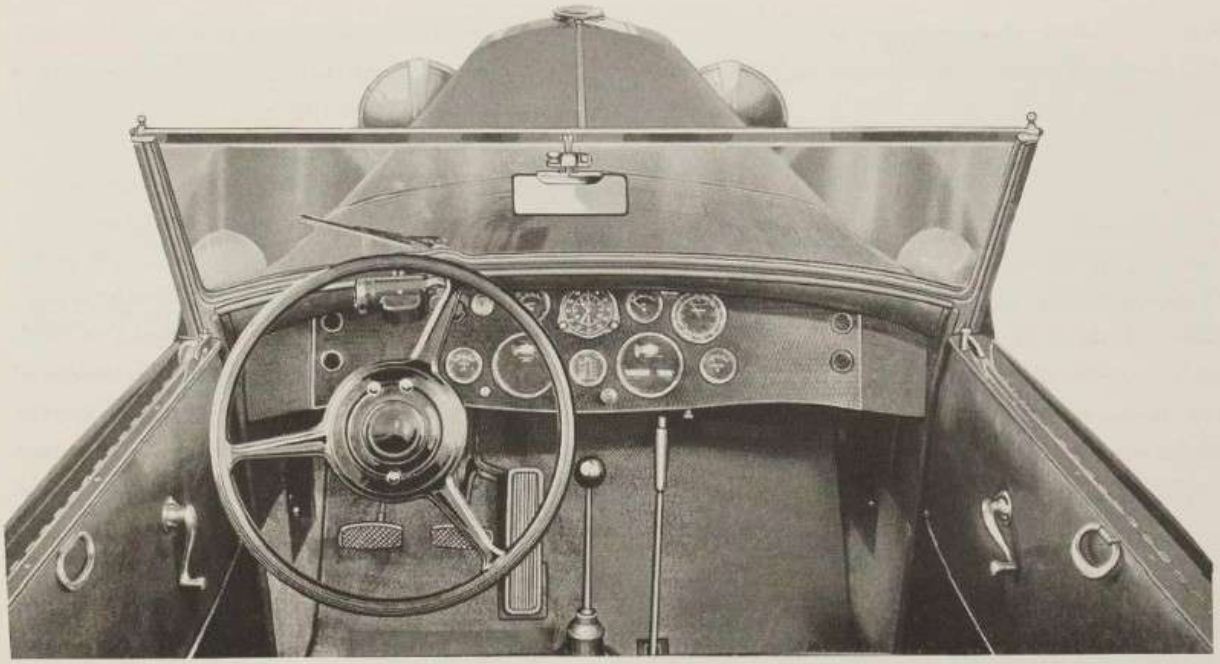
SIMPLE TO DRIVE

The Duesenberg is just as easily handled as the smaller cars, and on the open road it is much more readily controlled than even the shortest, lightest automobiles. Gearshifting is easy, particularly between high and second gear, since these gears are "engaged" by moving a comparatively light shaft instead of sliding heavy gears, as in the conventional transmission. Even at speeds above a mile a minute shifting may be accomplished without effort.

Clutch and brake pedals are as easily operated as on much smaller cars. The clutch action is smooth and positive. The four-wheel brakes are unusually powerful and will bring the car to a quick, smooth stop with only moderate pressure of the foot on the pedal.

EXCLUSIVE BRAKES

The internal hydraulic brakes of the utmost simplicity and reliability have been designed by Mr. Duesenberg, who, by the way, was the first in this country to produce an automobile with four-wheel brakes—in 1921. The latest Duesenberg brakes are a direct outgrowth of these original hydraulic brakes. Brake drums are provided with ample cooling fins, thereby prolonging lining life and eliminating possibility of chatter.



EASY TO DRIVE

A Duesenberg is an easy car for anybody to operate, as indicated by the convenience of the control mechanism. The instrument panel is a handsome design with the most complete set of instruments ever supplied on an automobile.

STABILITY

Great emphasis must be placed on the excellence of the Duesenberg's road-holding ability at all speeds on all highways. Whether on straight road or curve it traces a true, steady course without the slightest pitching or sidesway—even above 100 miles per hour.

Due to perfect weight distribution, low center of gravity and other factors, the car negotiates curves as though it were on rails. Here its easy, accurate steering is particularly appreciated. Curves may be taken at surprising rates of speed without the slightest skidding.

SUPERLATIVE COMFORT

Riding quality such as no other car possesses is built into the new Duesenberg. Whether the pace be fast or slow, the road smooth or rough, the passengers ride with surprising ease and comfort. Many factors contribute to this excellence, including a long wheelbase, small unsprung weight, long scientifically designed half-elliptic springs, double-acting hydraulic shock absorbers.

One of the major considerations in building a car to ride exceptionally well at ordinary speeds is small unsprung weight; that is, relatively low weight of axles and wheels as compared to the weight above the springs. Similarly, low unsprung weight is a prime requisite for smooth, stable running at high speed.

Small unsprung weight involves clever design, plus the willingness to go to the extra expense of manufacturing parts which are both light and over-strong, of the finest, most suitable, costly materials.

SECRET OF STABILITY

To the uninitiated the frame may not seem to be a very important unit, yet in many respects it is the most important item in the automobile. Only by devising a most rigid, adequate frame is incomparable steadiness at high speed possible. Without the right frame exceptional power would be of little use. Because of the excellence of the Duesenberg frame the radiator is perfectly steady at all speeds, and the possibility of front-wheel flapping (shimmying) is absolutely eliminated. Then, also, perfection in body construction can

only be attained when preceded by an abnormally rigid frame. The Duesenberg frame excels all others by an unusual margin.

Exceptional stability also requires spring shackles with negligible side play, and carefully fitted, long wearing spring bolts and bushings. No other car approaches the Duesenberg in the splendid construction of these features. The large bronze-to-steel wearing surfaces in the shackles are a real innovation in automotive construction, continuously protected against wear by the automatic chassis lubrication system.

EASIEST TO CARE FOR

Every effort has been made on this tremendously fine car to reduce its care to a negligible minimum. No other automobile, large or small, low or high priced, is so easy to look after. Chassis lubrication is wholly automatic, sending oil at 80-mile intervals through copper tubing not only to all spring shackles but also to the linkage on all four shock absorbers, to the drag link, to the drive shaft bearing at the front end of the torque tube, to the rear universal, and to the clutch throwout mechanism. It is the most complete system of chassis lubrication yet devised. Regular lubrication of these parts not only postpones wear indefinitely but also prevents annoying squeaks.

A pair of signal lights tell the driver when the system functions. Every 80 miles a red light at the left of the instrument board glows to indicate that the chassis lubricating plunger is in operation. A green light immediately beneath comes on to show that there is oil in the chassis lubrication reservoir.

There is another pair of lights at the right side of the instrument board. A red one glows every 700 miles to remind the driver that the engine oil should be changed while a green one which registers at 1400 miles suggests that the battery may need water.

WEIGHT MODERATE

Despite the fact that the Duesenberg is large and extraordinarily powerful, it weighs no more than other large cars—about 4900 pounds with body. Yet it has far more generous wearing surfaces and is much stronger at every point. The ampleness of its proportions with moderate weight is due to clever design plus the use of expensive alloy steels and the extensive use of heat-treated aluminum alloy parts wherever possible. Abnormal strength with less weight is only attainable where cost is completely secondary to the will to build an automobile which far exceeds all others.

ALUMINUM PARTS REDUCE WEIGHT

Although involving considerable extra expense aluminum alloy parts are used wherever possible to secure moderate weight, and all are heat-treated to give double strength. The list includes: Pistons, connecting-rods, dash, instrument board, instrument board supports, steering column bracket, differential housing, differential housing cover, pinion housing, tail lamp bracket, torque tube yoke, torque tube brackets, flywheel housing, engine oil pan, timing chain covers, camshaft covers, water jacket covers, water pump, intake manifold, front and rear axle drum covers, all brake shoes, spare wheel supports, gas tank filler body, fuel pump housing, "timing box" housing.

UNUSUAL LIFE

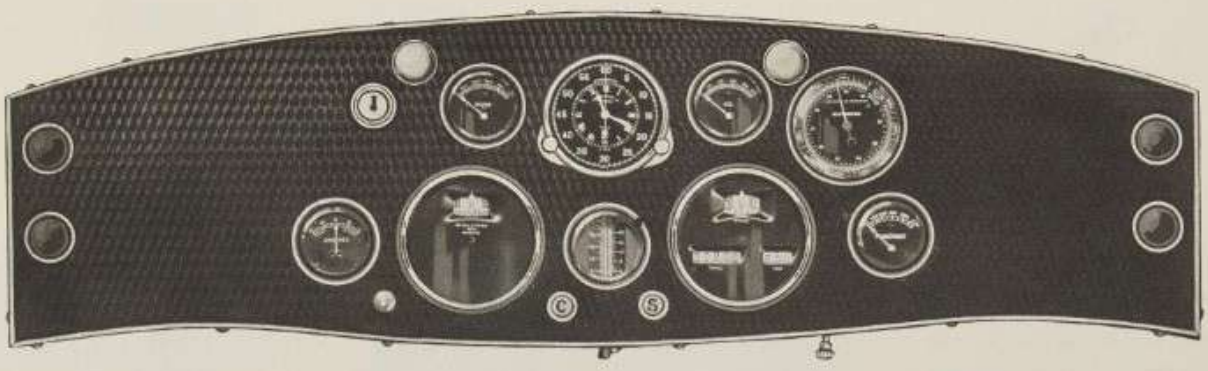
Similarly its incomparable wearing quality, its ruggedness and dependability are due to most generous wearing surfaces of fine material carefully fitted. Bearings and other wearing surfaces are 50 to 100 per cent oversize. Perfectly effective lubrication also adds considerably to the wearing quality, and the same may be said concerning the skill with which the individual parts are designed.

EXCELLENCE

The surprising fuel economy is a yard stick of the thorough-going superiority of this motor car. It delivers 11 to 13 miles per gallon because of: the high-efficiency of the engine; the small friction of its completely ball-bearing running gear; the minimum wind resistance of its low chassis.

MANY INSTRUMENTS

An unprecedented array of instruments increases the convenience of operating the car. An accurate speed-



INSTRUMENT PANEL

This beautiful panel of engine turned oxidized nickel contains the following instruments: Automatic lights denoting changing of oil, chassis lubrication and battery care—brake pressure gauge—ammeter—oil pressure gauge—tachometer—split second stop clock—150-mile per hour speedometer—gasoline gauge—altimeter barometer—water temperature gauge—ignition lock—carburetor control—starter control.

ometer with a 150-mile an hour scale registers the speed, a tachometer indicates engine revolutions per minute, an altimeter tells the elevation above sea level, an eight-day clock with a split-second hand gives "stop-watch" readings from 1/5 second to 30 minutes. Four signal lights remind the driver concerning lubrication and battery water. Other instrument board units include: Gasoline gauge, oil pressure gauge, engine heat indicator, ammeter, starter button and choke button. The instrument panel is attractively finished in (jet black) oxidized engine-turned nickel, with the instruments separately mounted. White lettering is used for maximum visibility.

The steering wheel is placed at a more nearly vertical angle for exceptional convenience in handling the car. The steering column is adjustable as to height to suit varying requirements of drivers. Gearshift and brake levers stand high so that they are easily reached.

Headlamps, parking lamps and bumpers are of special Duesenberg design to harmonize with the motif of the car. The combination tail, stop and backing light has an 8-inch diameter so that the rear road is splendidly illuminated when the light is turned on by placing the gear lever in reverse. Running boards are of polished walnut protected by chromium plated ribs. Due to the exceptionally long, graceful front fenders, the running boards are correspondingly short.

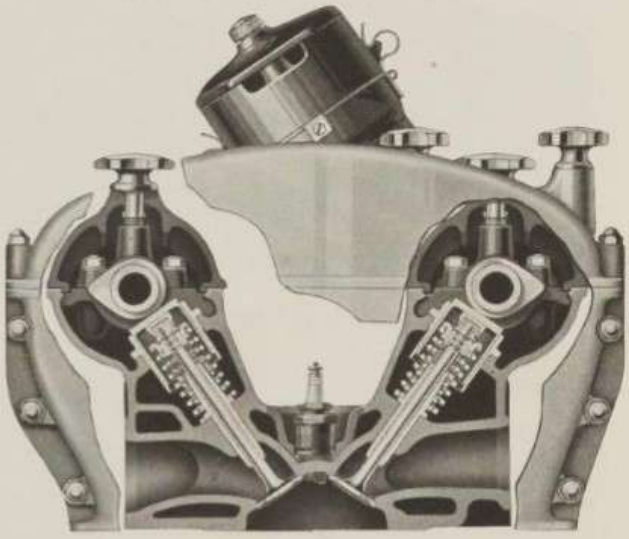
Six chromium-plated wire wheels with specially heavy spokes are standard equipment with each car. The spare wheels are carried at the side of the hood and are supplied with tires and tubes. Wire wheels are used because of their unusual strength, combined with moderate weight, resiliency, and ability to conduct heat away from the tires.

CHROMIUM PLATED PARTS

The use of chromium plating on an unusual number of parts not only prevents corrosion but adds great distinction to the appearance of the car. Parts chromium plated include: Radiator, wheels, all lamps and their brackets, tie-rod tube, dash moulding, bumpers, hood brackets, oil filter, generator drive shaft, generator strap, all exposed bolts and nuts on engine, gas tank filler cap, running and instrument board moulding, glass bezels on instrument board, radiator tie rod.

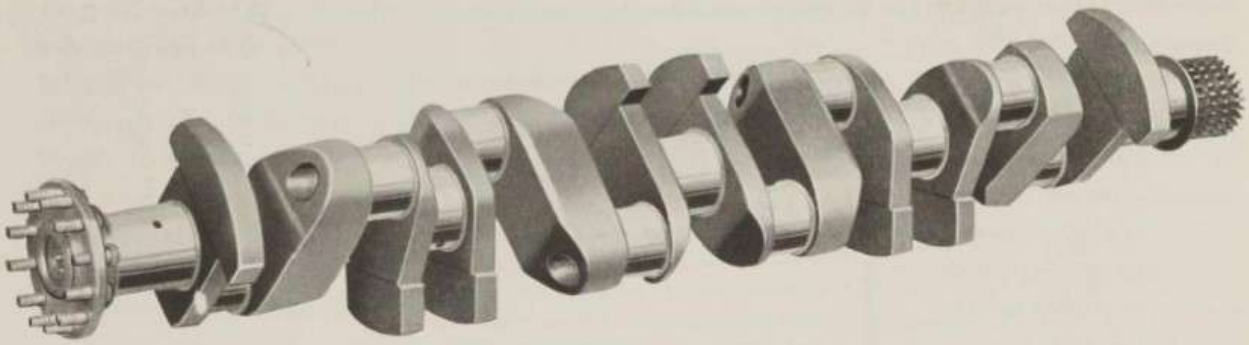
HIGH-EFFICIENCY, RUGGED VALVE MECHANISM

The extraordinary power of the Duesenberg engine is largely due to the excellence of the valve mechanism — unavailable for lesser automobiles because of its excessive cost. Four valves per cylinder are used, two intake and two exhaust, and the increase in power obtained by this single feature is approximately the same as secured by fitting a super-charger to a two-valve engine. The valves are placed in the cylinder head, and directly actuated by two overhead camshafts, one for intake and one for exhaust. This type of valve arrangement is admittedly the most efficient known, as well as the most rugged, as proven by the fact that it is used exclusively on racing cars. Gases sweep directly in and out of the combustion chamber without making any sharp turns and therefore with minimum frictional loss. Four valves give a 40 per cent larger passage than two valves of the same area, reducing frictional loss in the gases. Four small valves are much more readily cooled than two large ones, thus adding to valve life. Valves are adjusted by shims, and the adjustment "stays put," as is not always the case with other types of adjustment. Because of these features the valves stay tight indefinitely. The valves are exceptionally quiet, partly because of quieting ramps on the cams and partly because the cams operate in a trough automatically kept full of oil.



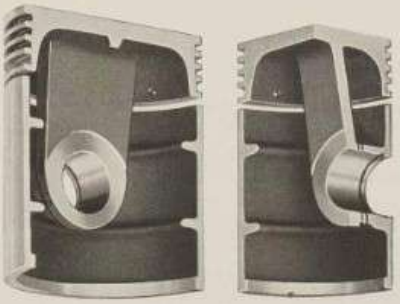
COMBUSTION CHAMBER

The combustion chamber is ideal for most efficient combustion, of compact design, with the spark plug located at the center so that the flame front has a minimum distance to travel. Spark plug and valve seats are fully surrounded by ample water jackets to effectively cool spark plug and valves. All these features permit the use of high compression with resulting increase in power and fuel economy.



CRANKSHAFT

Particular care has been taken in designing the crankshaft to secure smooth engine operation and long bearing life. It is exceptionally rigid, is of unusual diameter, 2¾ inches, is supported in five ample main bearings, is made of the finest, double heat-treated alloy steel, and carefully balanced statically and dynamically to the smallest fraction of an ounce. Scientifically devised counter-weights accurately counterbalance the centrifugal force of crank throws and connecting rods, thus greatly increasing main bearing life by removing the heavy bearing pressures which this force otherwise imposes.

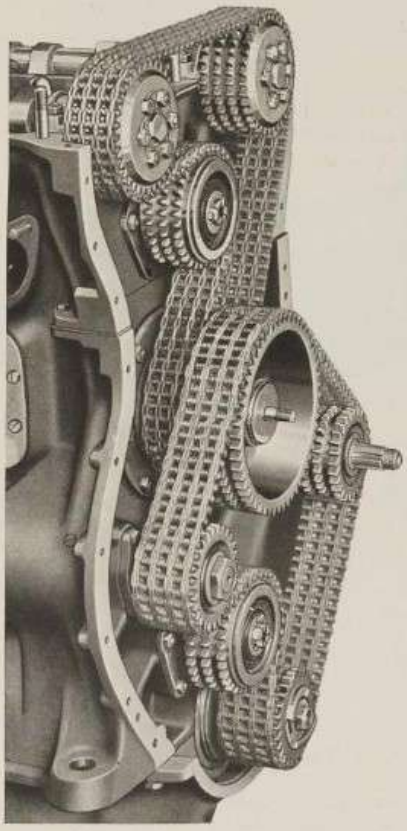


LIGHT, LONG-WEARING PISTONS

Duesenberg pistons are unique. Made of a specially hard aluminum alloy of exceptional wearing quality, the split skirt is attached to the piston head in such a way that when heated it expands at exactly the same rate as the cylinder bore, providing a perfect fit at all times. These aluminum alloy pistons are also ideal because of their great heat-conducting ability and because their light weight insures smooth engine running. The piston is fitted with three rings to hold compression and one ring to control oil. Especially noteworthy is the fact that these pistons are inherently designed to remain true and round, a prime consideration in securing amazingly long piston and ring life.

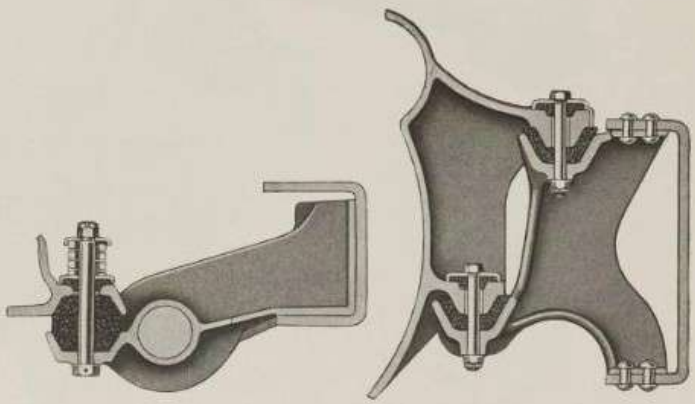
THE BEST
CONNECTING-ROD
EVER MADE

Experts pronounce the Duesenberg connecting-rod by far the finest in existence. Built of a strong, heat-treated aluminum alloy, it has been cleverly designed to give doubled bearing life and absolute freedom from breakage, while its light weight minifies engine vibration. Due to ingenious connecting-rod bolt heads, the base of the rod has double the usual thickness, thus strengthening the rod at a point heretofore admittedly weak, while the greater thickness gives a better support to the bearing, and conducts heat away from the bearing with double the usual rapidity, these two factors resulting in twice the life of the upper half of the bearing. Similarly the connecting-rod cap of forged steel has two large ribs which greatly increase both rigidity and heat dissipation, thus doubling the life of the lower half of the connecting-rod bearing. Crankpin is 2½ by 1¾ inches.



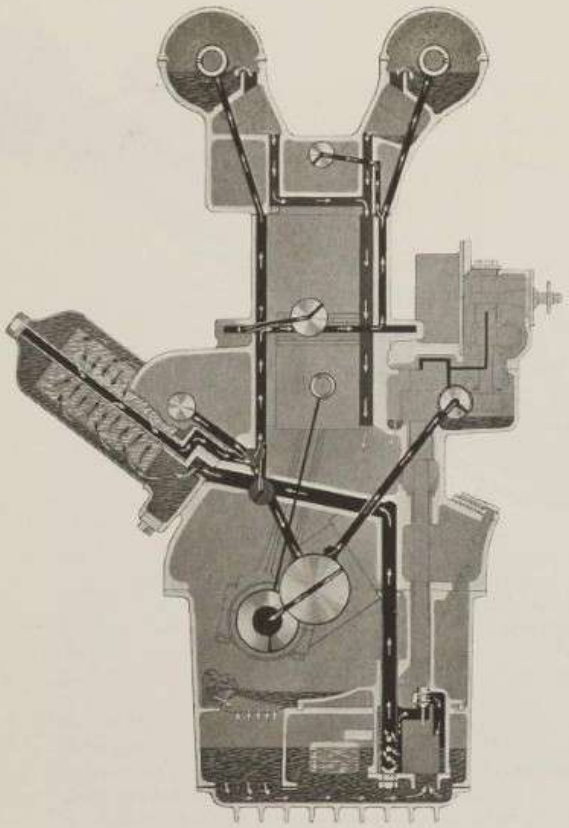
SILENT CAMSHAFT DRIVE

The two five-bearing camshafts are driven by a silent chain from a transfer gear which in turn is driven by another silent chain running to the sprocket on the crankshaft. The chains are unusually wide, 2 inches, to give long life, and both chains are kept in continuous adjustment by automatic idler sprockets.



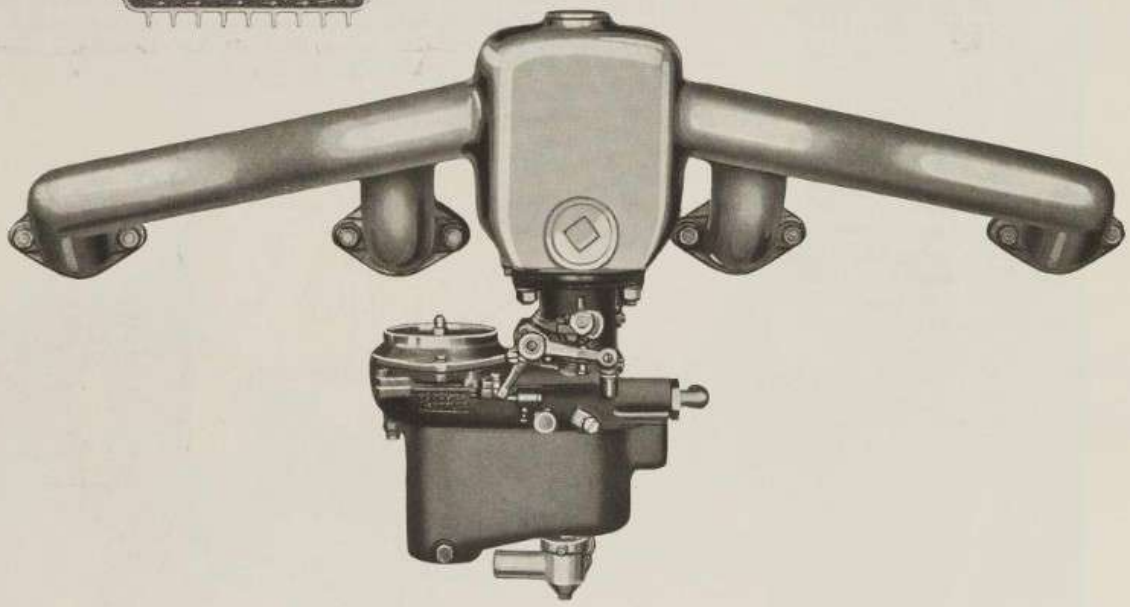
EFFECTIVE RUBBER ENGINE SUPPORTS

While the engine is inherently free from vibration, due to the excellence of its design, the very last vestige of vibration is removed by supporting the engine at four points in the frame on ingeniously designed rubber pads. The front of the engine is carried on two rubber blocks, one at either side, while the rear is mounted in four rubber supports, a pair on either side. The two units of each pair are placed several inches apart so that they hold the engine very solidly so it cannot wander and yet they effectively smother the small vibrations.



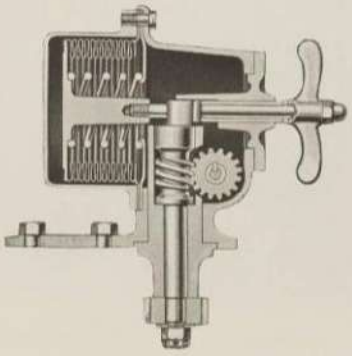
PERFECT LUBRICATION

Unusual engine life and complete freedom from trouble requires unfailing, effective lubrication. The first consideration is absolutely clean engine oil secured by three filters. A fine wire mesh screen covers the whole area of the oil pan, a similar screen surrounds the suction side of the gear oil pump, while oil from the pump is forced through a special Purolator mounted on the outside of the crankcase. In addition, pockets in the crankpins imprison any slight particles which through unforeseen circumstance the filters may not catch. Oil is supplied under pressure to practically all parts of the engine, including the five main bearings, the connecting-rod bearings, the wristpins, the five camshaft bearings, the sprocket bearings, and the bearings on the shaft which drives the generator, fuel pump and other auxiliaries. The oil pressure adjustment, drain cock lever and oil supply level indicator are conveniently placed on the right side of the crankcase.



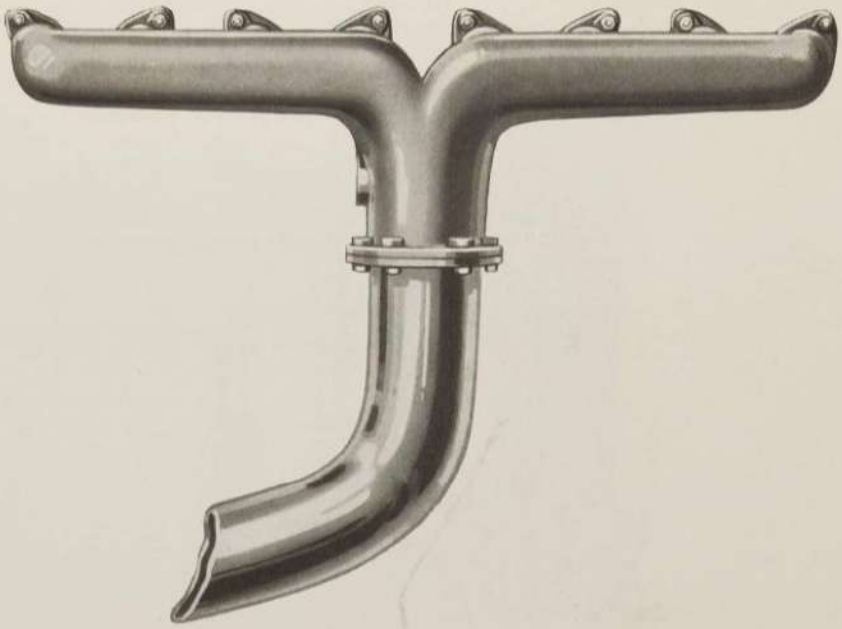
EFFICIENT CARBURETOR AND INTAKE MANIFOLDING

Maximum filling of the cylinders with mixture is secured by a duplex carburetor and manifold layout. The duplex carburetor is really two carburetors in one, with a single float chamber and single auxiliary air valve. Each carburetor has a 1½-inch opening and each supplies four cylinders through two 1½-inch polished aluminum intake manifolds. One carburetor and intake manifold feeds the two pairs of end cylinders while the other supplies the two pairs of cylinders in between. The extremely ample size of the carburetor and manifold layout, coupled with the fact that the manifolds are simply designed with few bends, assures minimum frictional loss and maximum filling of the cylinders with mixture. Their form also guarantees correct mixture distribution under all conditions, a feature assisted by allowing the branches of the manifold to slope down toward the cylinders, so that liquid particles drain into the combustion chambers. The carburetor risers are exhaust jacketed to insure perfect vaporization, the degree of heat being automatically regulated. The carburetor body is enameled green.



FUEL PUMP OF EXCESS CAPACITY

Due to unusually high overall efficiency, the car is surprisingly economical of fuel, averaging 11 to 13 miles per gallon at 50 miles per hour. Nevertheless the fuel required at full speed is in excess of that supplied by any of the usual fuel feed systems, and therefore a special fuel pump was developed, of large capacity and the utmost simplicity and reliability. The pumping element consists of a metal bellows of standard construction, actuated by a double cam which reciprocates the bellows once for each ten revolutions of the engine.

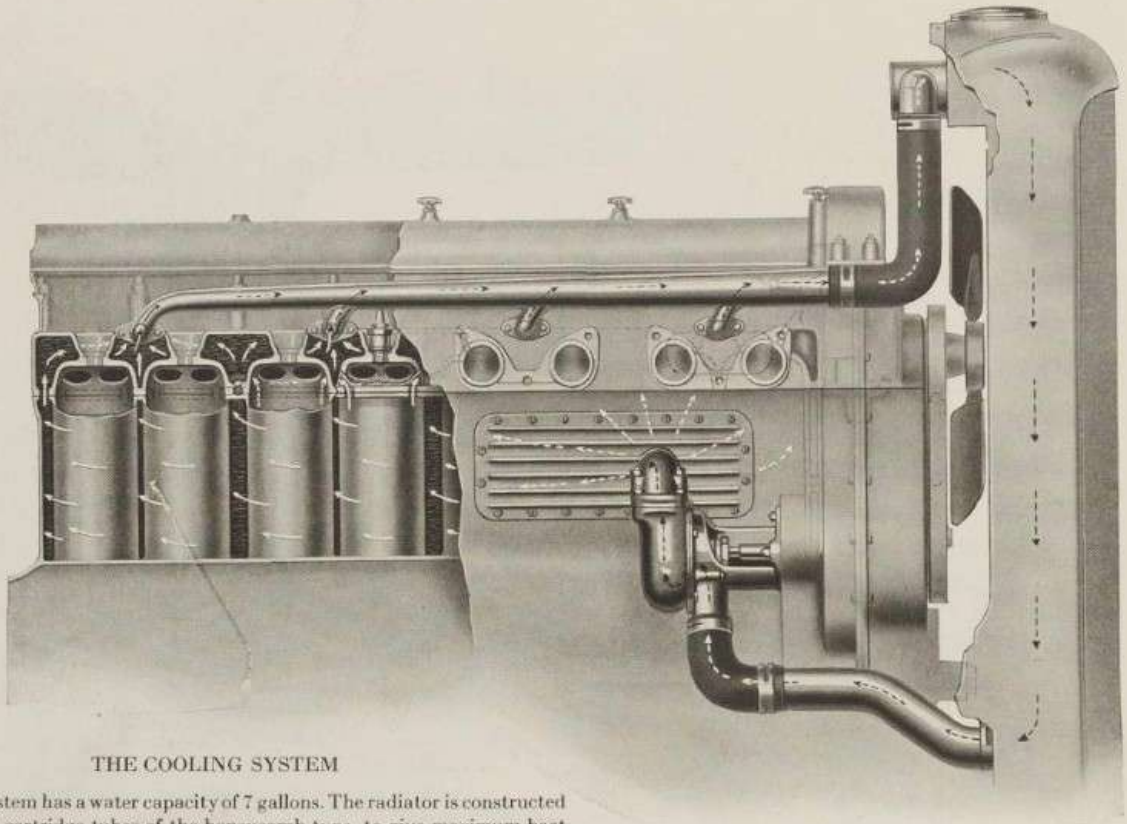


LARGE EXHAUST MANIFOLD

The exhaust manifold of exceptional size minimizes frictional losses in the exhaust gases with proportionate gain in power. It connects with a huge exhaust pipe, 4¾ inches in diameter. The manifold is surfaced with a green enamel which is absolutely unaffected by heat—an innovation. Thus not only does it match the cylinder block but it always looks bright and clean, enhancing the appearance of the engine.

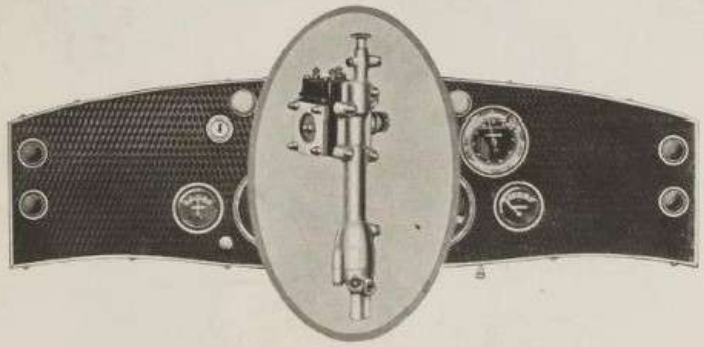
THE ELECTRICAL SYSTEM

The ignition system is designed for unusually efficient operation at all speeds. Its features include a four-lobe cam, two breakers and two coils. A specially designed and extra powerful starting motor is operated by a button on the instrument board. A generator of ample capacity gives a large output at low speed. A 21-plate battery of 160-hour capacity is used, its large size insuring unusual length of life.



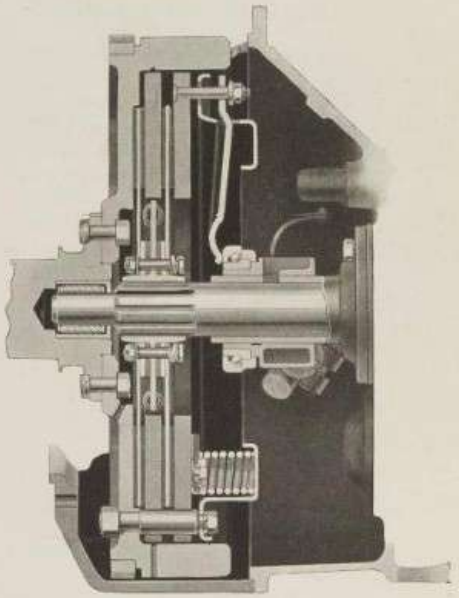
THE COOLING SYSTEM

The cooling system has a water capacity of 7 gallons. The radiator is constructed of pure copper cartridge tubes of the honeycomb type, to give maximum heat dissipation with minimum weight. Water is circulated by a large capacity pump mounted on the right side of the engine. To assure quick warmup after starting, a thermostatically operated valve in the top tank of the radiator blocks the water passage leading from the engine when the water temperature is less than 145 degrees. A high-efficiency fan with four aluminum blades and driven by Vee rubber belt draws air through the radiator.



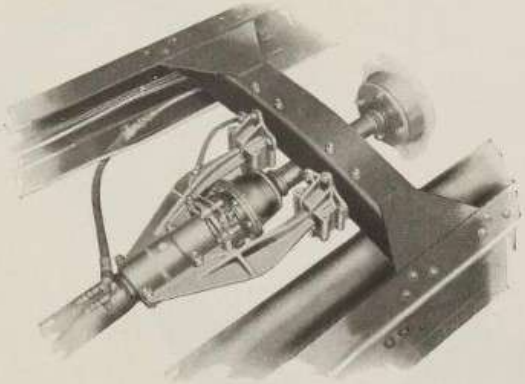
CHASSIS LUBRICATION AUTOMATIC

By a simple but almost human mechanism, the chassis is oiled automatically every 80 miles, at all points customarily attended by hand, including all spring bolt bushings, drag link, shock absorber linkage, rear universal, clutch throwout bearing, and drive shaft bearing at front end of torque tube. The operating mechanism is a "timing box" mounted on and driven by the engine. Within its housing is a simple system of gears, the slowest of which makes one revolution every 80 miles. At this distance it actuates the chassis lubrication plunger combined with it, sending oil through pipes to the various points. A red light at the left of the instrument board glows as long as the plunger is in action, while a green light directly beneath it remains on as long as there is pressure in the lines—lack of pressure tells the driver the chassis oil reservoir is empty. In addition a red light at the right of the instrument board reminds the driver at 700 miles that the oil needs changing, while a green light beneath glows at 1400 miles to indicate that the battery may need water.



SMOOTH, POSITIVE CLUTCH

A two-plate clutch of ample size provides easy, positive engagement. A coil spring drive in the clutch hub prevents small vibrations in the crankshaft and transmission from synchronizing and thus becoming audible. The clutch pilot bearing is a Hyatt roller, while a ball throwout bearing is used.

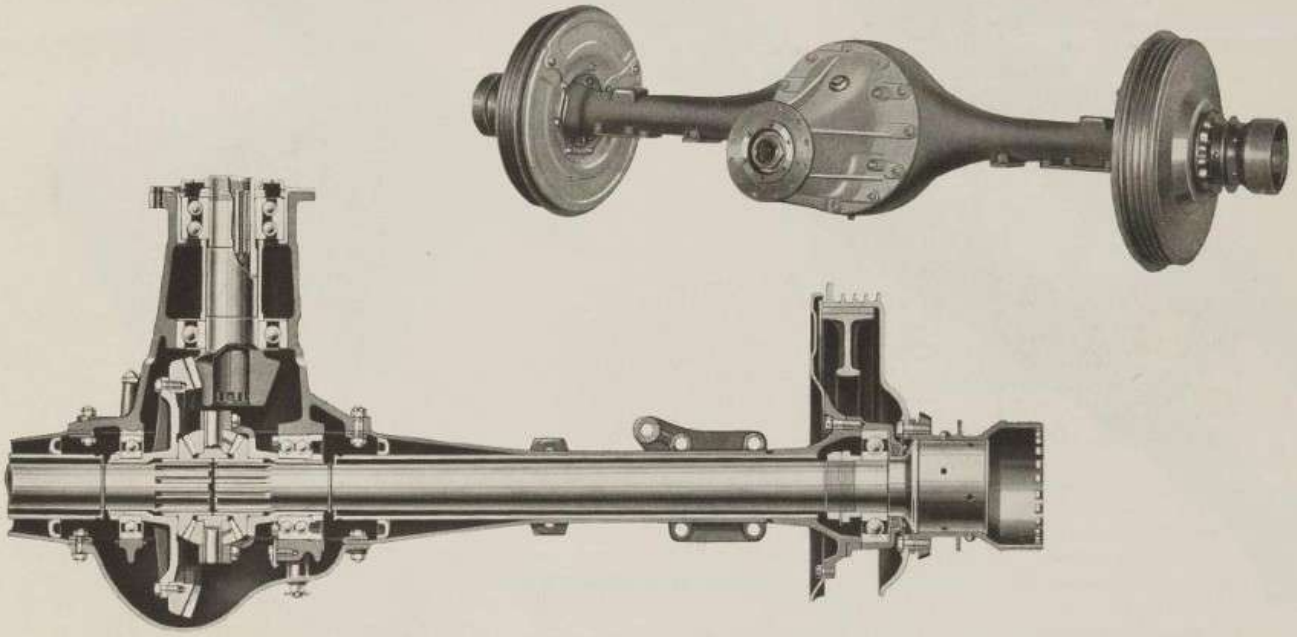


TORQUE TUBE TAKES DRIVING STRAINS

Riding quality is materially assisted by a torque tube, which relieves the rear springs of the strains of pushing the car and of resisting the turning of the wheels (torque reaction). The front of the tube is attached to a cast aluminum yoke, the ends of which rest between rubber blocks carried in cast aluminum brackets mounted on a frame cross member. Heavy braces run from torque tube to axle ends. The rubber blocks prevent rear end road vibrations from being transmitted to the car. The rear universal, within the yoke, is an especially generous all-metal design, automatically lubricated by the chassis system.

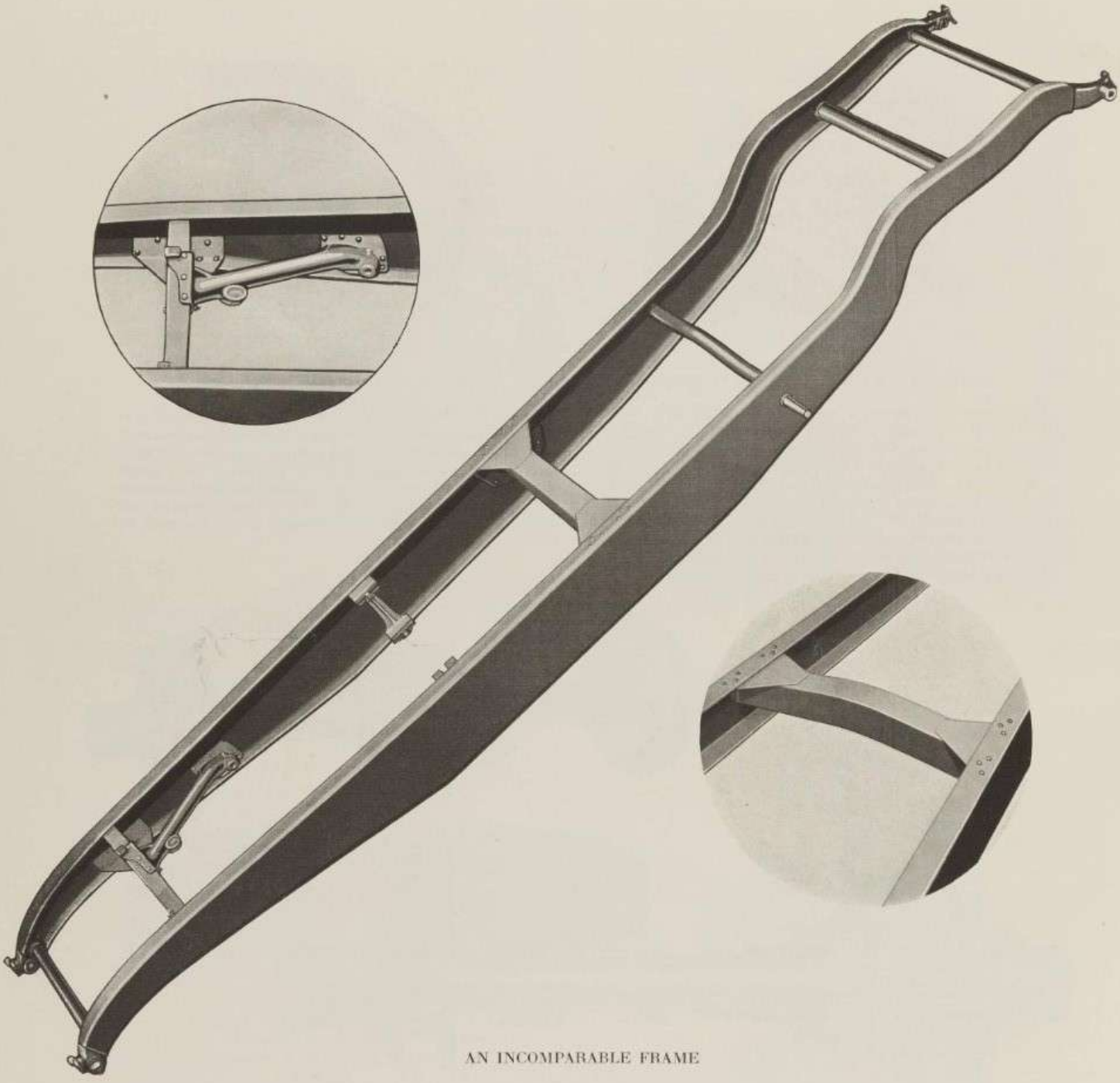
FRONT UNIVERSAL IS NEW TYPE

The front universal joint requires no lubrication because it consists of a ball and socket construction wherein eight large, oval rubber balls of special design and composition are set in suitable sockets forming the driving and driven members of the universal joint. The rubber balls prevent the transmission of road vibrations which might annoy the occupants. Only considerations of cost have heretofore prevented the popularity of this universal for passenger cars.



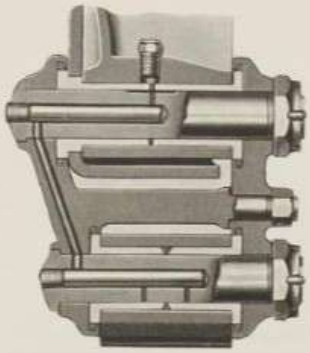
REAR AXLE HAS GREAT STRENGTH BUT LOW WEIGHT

Perfect riding quality demands low unsprung weight but manufacturers of lesser cars cannot afford to employ the expensive construction required to give minimum rear axle weight combined with great excess of strength. The Duesenberg pressed steel rear axle housing is reinforced by two heavy tubes, as shown. Alloy steel forgings weighing half as much as the customary malleable castings of lesser strength are used for mounting the wheels. Axle shafts of unusual diameter, $2\frac{3}{16}$ inches, are bored out for lightness. The pinion gear is forged integral with its shaft, which is hollow to reduce weight. The pinion shaft housing and rear cover plate are cast aluminum for lightness. Greatly oversize bearings are used. Bevel gearing of the "hypoid" type permits placing the pinion 2 inches below the center line of the ring gear, and this in turn allows the chassis to be 2 inches closer to the road. Hypoid gearing is quieter than the customary spiral bevel gearing, and its life is longer because wearing surfaces are larger. Exceptional strength, rigidity and ample wearing surfaces throughout the rear axle provide unusual life coupled with ideally silent action.



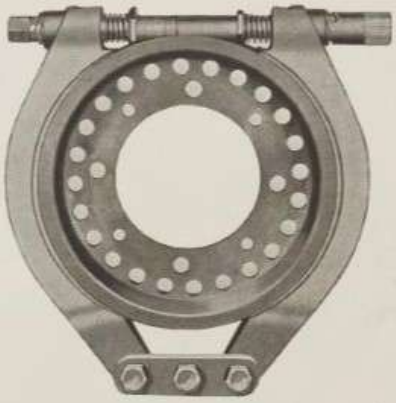
AN INCOMPARABLE FRAME

The frame is made of heavy, $\frac{3}{32}$-inch alloy steel, has a depth of $8\frac{1}{2}$ inches and the flanges are $2\frac{3}{4}$ inches wide. Six tubular cross members are provided to brace it, the largest being 4 inches square and the smallest $2\frac{1}{2}$ inches in diameter. Counting from the front, the first is a circular tube, the second is a $2\frac{1}{2}$-inch square tube which curves down to carry the radiator. Not only is it heavily gusseted and riveted to the frame but it is fitted with a diagonal brace on each side, running rearward to the frame, consisting of a 2-inch round alloy steel casting 24 inches long. This "A" type construction virtually provides a 24-inch cross member, and this feature contributes particularly to the steadiness of the car. The front of the engine is carried at the center of these castings. The third cross member is the rear engine support, and is especially effective. The fourth cross member is also unusually strong. It consists of a 4-inch square tube riveted and welded into the frame with $8\frac{1}{2}$ by 12-inch double gussets. The fifth, sixth and seventh cross members are circular tubes, the last two being placed front and rear of the gasoline tank. At the rear a double kickup in the frame side members allows the body builder more leniency in seating arrangement, while a drop in the frame at the front makes a low chassis.



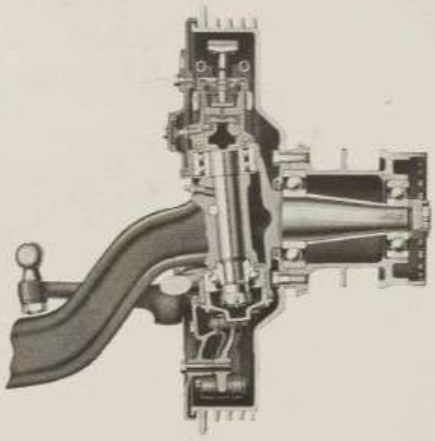
SPRING SHACKLES UNUSUAL

Freedom from squeaks and rattles, and smooth, true, stable running of the car along the road demand spring shackles free from play. For this reason, Duesenberg shackles have flanged bronze bushings with an exceptional amount of wearing surface, whereas no attention is paid to this detail on lesser cars. Automatic lubrication minimizes wear.



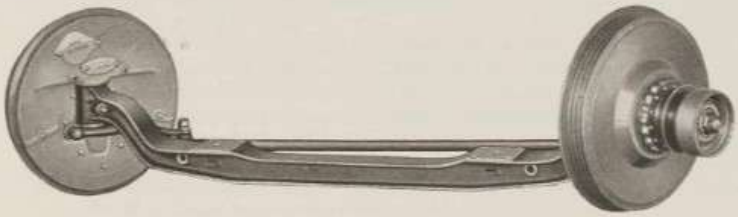
POWERFUL HAND BRAKE

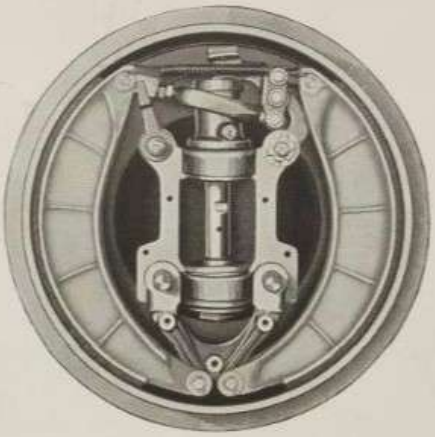
The hand brake is of such ample size that it may be used indefinitely for running as well as for parking. It is a contracting type at the rear of the transmission, and is fitted with ribbed, cast aluminum shoes.



FRONT END CONSTRUCTION

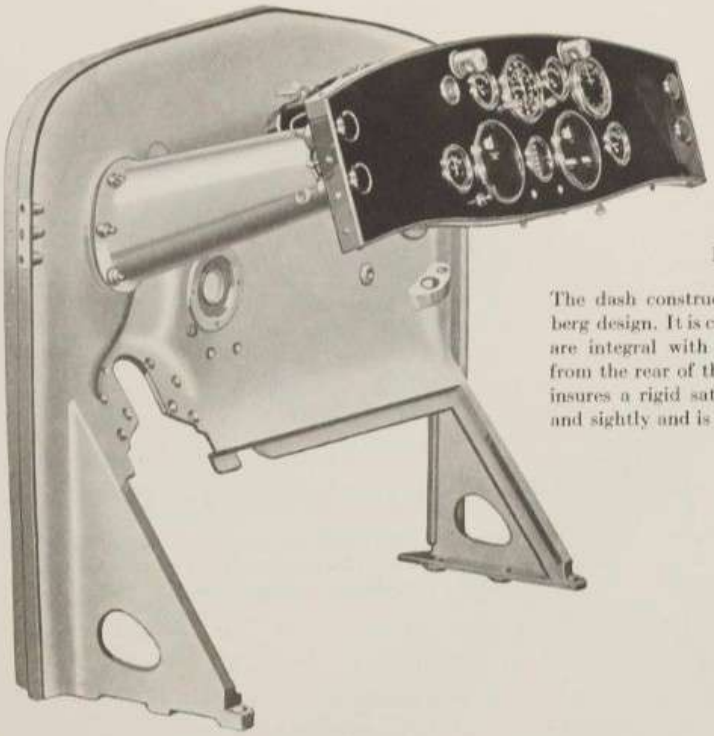
Easy steering is due not only to correct design but also to swiveling the wheels on two ample ball bearings which require lubrication but once a year. The wheels are supported on two greatly oversize ball bearings placed at considerable distance apart on the wheel spindle, thus giving an unusually solid mounting. The inner bearing, located directly in the central plane of the tire, carries the bulk of the weight, while the other bearing takes most of the side thrust. The front axle is an I-beam of great strength.





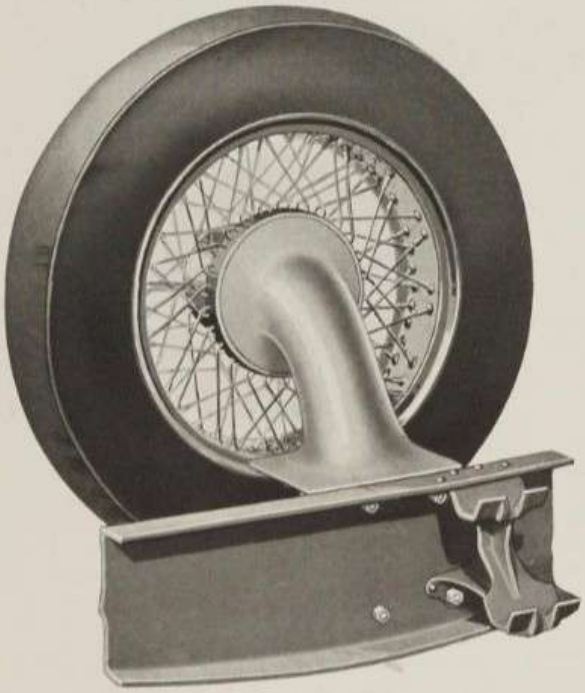
EXCLUSIVE HYDRAULIC BRAKES

The Duesenberg hydraulic braking system requires but a single piston, placed vertically to reduce likelihood of leakage and preventing chance dirt from reaching the rubber piston. The two brake shoes have a single adjustment in common. When an adjustment is required the forward shoe is brought into contact with the drum, leaving the rear shoe undisturbed, but the very first application of the brake splits the clearance equally between the two shoes. No adjustment is required at the base of the shoes where they are pivoted because these points are located so accurately an adjustment would be superfluous. Shoes are cast aluminum and drums are forged steel with five external ribs for cooling and stiffening. The master cylinder is self-filling and self-compensating as regards temperature variation.



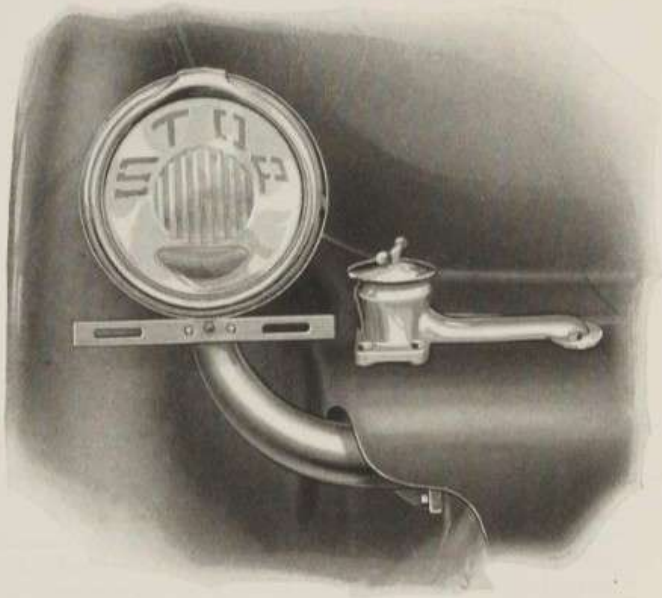
RUGGED CAST ALUMINUM DASH

The dash construction is new, and typical of the thoroughness of Duesenberg design. It is cast aluminum and the mountings for the wooden toe-board are integral with it. Two oval-shaped, hollow aluminum castings extend from the rear of the dash to support the instrument panel. This construction insures a rigid satisfactory unit, makes all electrical connections accessible and sightly and is a convenience to the custom body builder.



SPARE WHEEL MOUNTING

Both spare wheels are carried on unusually strong cast aluminum brackets riveted to the frame side members. The tire does not touch the fender well and therefore noise from this source is avoided.



A REAL BACKING LIGHT

The degree of attention to detail throughout the car is well illustrated in this view which shows an 8-inch backing light, large enough to adequately illuminate the road when the lever is placed in reverse. Large red letters cut in the reflector constitute a STOP light, when illuminated by a bulb behind, which no one can miss seeing. The tail lamp unit is placed within the main lamp near the bottom. Also note that the gasoline filler has an air discharge pipe combined with it to permit easy, rapid filling.

SUMMARY OF SPECIFICATIONS

ENGINE: Eight cylinders in line; bore 3¾ inches, stroke 4¾ inches; piston displacement 420 cubic inches; N.A.C.C. horsepower rating 45; actual power development, 265 horsepower at 4200 revolutions per minute. Cylinders and crankcase cast integrally; oil pan aluminum. *Pistons:* Special aluminum alloy, constant clearance type, with three compression rings and one oil ring. *Wristpin:* 1 1/16 inches diameter; floats in piston and rod; latter is bronze bushed. *Connecting-rod:* Unusually strong, heat-treated aluminum alloy of light weight; drilled for pressure lubrication of wristpin. Crank-pin bearing: 2½ inches diameter, 1¾ inches length. *Crankshaft:* Double heat-treated alloy steel; statically and dynamically balanced and fitted with counterbalance weights; five main bearings, 2¾ inches diameter, length from front to rear, 3 5/16, 1 7/8, 2 3/8, 1 7/8 and 2 7/8 inches. Engine is suspended in rubber at four points. Cylinder block attractively finished in green enamel.

VALVE MECHANISM: Two overhead camshafts with five bearings mounted in detachable cylinder head, with cams acting directly on valves. Four valves per cylinder for high efficiency. Two intake valves have 1½ inch clear diameter and .35 inches lift; two exhaust valves 1 3/8 inches diameter and .36 inches lift. All valves made of heat-resisting silchrome steel. Two concentric springs per valve ensure positive action at high speed. Valves are shim adjusted for permanency, clearance being .025 inch. Valve mechanism operates in bath of oil. Camshafts driven by 2-inch silent chain; automatic adjustment.

LUBRICATION SYSTEM: Gear pump in base of oil pan forces lubricant to: Main bearings, connecting-rod bearings, wristpins, camshaft bearings, chain sprocket bearings and auxiliary shaft. Three oil filters including two screens and a Purolator. Crankcase ventilating system. Aluminum oil pan has fins on bottom to cool oil.

FUEL SYSTEM: 26½ gallon gasoline tank; fuel fed by unique cam-operated pump of unusual capacity; gasoline filter; duplex carburetor of special design having two 1½-inch openings; dual intake manifolds of polished aluminum; mixture heated by exhaust jacket thermostatically controlled. Choke on instrument board.

COOLING SYSTEM: Capacity 7 gallons. Pure copper, honeycomb radiator with water thermostat; four-blade fan mounted on two large ball bearings driven by Vee endless, rubberized-fabric belt; water pump of ample capacity; cylinder block has large water spaces.

ELECTRICAL SYSTEM: Specially built starting, lighting and ignition units by Delco-Remy. The ignition system has a four-lobe cam, two breakers and two coils. The unusually powerful starter is operated by a pull button on instrument board and is engaged by Bendix gear. The generator has large capacity at low speed. The Exide battery has 21 plates and 160 hour capacity; located in battery box in right running board apron.

EXHAUST SYSTEM: Large manifold finished in heat-proof green enamel to match cylinder block. A huge exhaust pipe, 4¾ inches diameter, and mammoth muffler, 6½ by 54 inches, give perfect silencing with minimum back pressure. A by-pass pipe through the center of the muffler is provided.

CLUTCH: Two plate type. Diameter 11 inches. Woven asbestos facing. Coil spring drive in clutch hub. Clutch shaft pilots at front in large Hyatt roller bearing in crankshaft. Ample ball throwout bearing with mechanism automatically lubricated.

TRANSMISSION: Three speeds and reverse. Second gear absolutely silent due to special internal-external gear construction. Large ball and roller bearings used throughout. Gears and shafts of finest alloy steels. Transmission case is heat-treated aluminum.

UNIVERSAL JOINTS: Front universal is special rubber ball and socket construction, long wearing and silent, without need of lubrication. Rear universal is all-metal type of large size, automatically lubricated by chassis system.

TORQUE TUBE: This large steel tube surrounding drive shaft relieves springs of driving and torque strains. Front of torque tube attached to frame cross member through aluminum yoke with ends mounted in rubber blocks. Sturdy diagonal brace rods run from torque tube to axle ends.

REAR AXLE: Semi-floating type, of great strength but relatively light weight, secured by costly construction. Hypoid pinion and ring gear give long life and silent action. The pressed steel housing is reinforced by axle tubes. Pinion is integral with hollow pinion shaft mounted on oversize single and double row ball bearings. Hollow alloy steel axle shafts of large diameter, 2 1/16 inches, provide excessive strength with light weight. Differential and wheels carried on oversize ball bearings. Steel forgings at axle ends give increased strength with reduced weight. Heat-treated cast aluminum used for differential carrier, hand hole cover and pinion shaft housing.

GEAR RATIO: Various ratios between 3½ and 4½ to 1 are optional.

FRONT AXLE: Alloy steel I-beam of tremendous strength, with reverse Elliott ends. King pins carried on double row ball bearing at top and ball thrust bearing at bottom, giving easy steering and long life. Lubricated once a year. Each front wheel mounted on two annular ball bearings of exceptional size. Tie rod and drag link have ball and socket ends.

STEERING MECHANISM: Special cam and lever steering gear with oversize parts constructed of finest heat-treated alloy steel.

BRAKES: Hydraulic type, an exclusive Duesenberg design, simple and dependable. Two cast aluminum brake shoes act internally on completely machined forged steel drums with five external cooling fins. Only one hydraulic cylinder required per wheel. Master cylinder is self-filling, self-compensating type. Brakes are large, 15 inches diameter by 3 inches width. A single, simple adjustment at each wheel regulates both shoes with perfect equality. The hand brake is a two-shoe contracting type at rear of transmission. Its large size, 8 by 3 inches, permits it to be used continuously on the road, if desired.

WHEELS AND TIRES: Six wire wheels, six tires and tubes are standard equipment. Tires are 31 by 7 inches. Wheels have unusually heavy spokes, chromium plated.

SPRINGS: Wide and long with smooth, polished surfaces for easy, silent action—lubricated and fitted with spring covers. Front springs are 41 by 2½ inches; rear springs are 62 by 2½ inches. Spring action effectively controlled by four double-acting hydraulic shock absorbers engineered into chassis. Spring shackles have exceptional wearing surfaces and are automatically lubricated by chassis system.

FRAME: Tremendously stiff alloy steel frame with seven strong cross members. Depth of frame is 8½ inches, flange width 2¾ inches, thickness 7/32 inches. Double kickup at rear and single drop at front. Top of frame only 20 inches from ground.

CHASSIS LUBRICATION SYSTEM: Operated by engine, it automatically supplies oil to the following parts every 80 miles: All spring bolts and bushings, linkage on four shock absorbers, drag link, clutch throwout mechanism, rear universal joint, drive shaft bearing at front of torque tube.

EQUIPMENT: No other car is nearly so completely equipped, the items including: Six wire wheels, tires and tubes; bumpers front and rear; double-acting hydraulic shock absorbers; automatic chassis lubrication system; automatic windshield wiper; rear view mirror; spring covers; Purolator; gasoline filter; combination tail, stop and backing light 8 inches in diameter; 8-day, split-second clock; 150-mile an hour speedometer; 5000 r. p. m. tachometer, altimeter, brake pressure gauge; oil pressure gauge, ammeter, gasoline gauge, temperature indicator.

WHEELBASE: 142½ inches and 153½ inches.

BODIES: All bodies are specially made by the finest custom body builders.

PRICE: Chassis only, with fenders, running boards, hood, dash, and complete equipment, [illegible] F.O.B., Indianapolis, Ind. $9,500

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Duesenberg

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