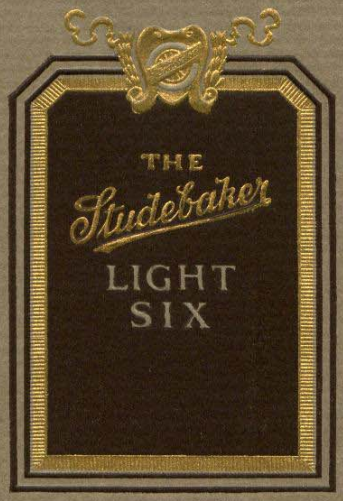


THE WORLD'S GREATEST LIGHT-WEIGHT
AUTOMOBILE

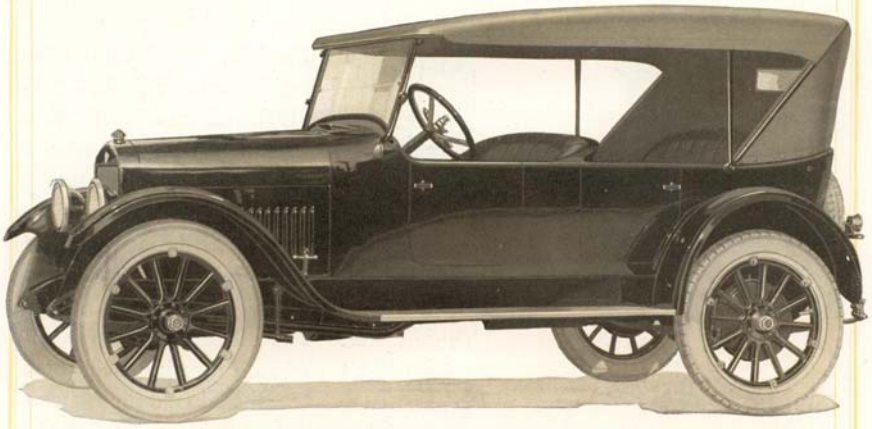
THE

Studebaker

LIGHT SIX

The World's Greatest
Light-Weight Automobile

THE STUDEBAKER CORPORATION *of* AMERICA
SOUTH BEND, INDIANA
DETROIT, MICHIGAN WALKERVILLE, CANADA



The Studebaker Light-Six

The World's Greatest Light-Weight Automobile

THE Studebaker Light-Six was designed and is produced to meet the world-wide demand for an efficient, durable and economical light-weight car. It is a real achievement in advanced automobile engineering for—

—refined and improved design, with exact balance of weight

—quick acceleration, flexibility and power per pound of car weight

—ease of operation, quietness and freedom from vibration

—economy of tires, gasoline and oil consumption.

Front view showing high, narrow tubular radiator; rugged axle construction; beautifully formed dome shaped fenders of heavy pressed steel.

Showing the Gypsy type top with large plate glass window in back; tire carrier; and shielded 15-gallon gasoline tank.

AT all driving speeds up to fifty-five miles an hour the LIGHT-SIX is freer from vibration than any car of its approximate size and weight yet produced in Europe or America. The powerful motor contains noteworthy inventions and improvements by Studebaker engineers, and is most efficient in utilizing the low grades of fuel now on the market. The clutch, transmission, axles, gears, brakes and operating mechanism generally are co-ordinated in design, manufactured by one organization, and function harmoniously as a complete, well-built, reliable automobile.

The LIGHT-SIX is built complete in the most modern and complete automobile plant in the world, erected by Studebaker at South Bend especially for the production of this car. Over $20,000,000 have been spent, and the buildings, machinery and entire plant equipment are the finest that money can buy. Noteworthy for precision of measurement, quality, and completeness is the wonderful equipment of tools, jigs, dies, and gauges. All of the tools were designed and many of them made by Studebaker experts. The engines, axles, transmissions, frames, bodies, tops and other parts of the car are produced complete, under scientific methods and constant inspections to prevent errors.

Produced under these most favorable conditions, it follows that the LIGHT-SIX must be a car of exceptional quality, performance, and reliability. The reductions in costs, resulting from these economic advantages and most favorable conditions, while created by us, belong in good part to our customers, and our prices are made accordingly.

The ample leg room, comfort, convenience and completeness of equipment are evident from this front seat illustration.

The economic advantages possessed by Studebaker which make possible the low price of the LIGHT-SIX, are as follows:

—because it is manufactured complete in the most modern and complete automobile plant in the world

—because parts makers' profits are practically eliminated from the price

—because of the light weight of the car, namely, 2,550 lbs.

—because of quantity production

—and "because it's a Studebaker."

Studebaker is manufacturing only six-cylinder cars today, because of their greater flexibility, smoothness, comfort and power, and the practical elimination of vibration, which is especially annoying in closed cars. The popularity of sixes is universal, and the LIGHT-SIX meets the requirements of the

Wide opening doors, robe rail, foot rest, deep, wide, and soft seat for comfort of the passengers.

Storm curtains open with doors—a real convenience in stormy or cold weather.

most discriminating users of automobiles. Its shipping weight of 2,550 lbs. is equally distributed between the four wheels, which gives perfect balance and insures steady road holding. It is low hung, instantaneously responsive, easy to drive, and remarkably comfortable and safe.

The light weight of the car, in combination with its mechanical efficiency, insures unusual economy in fuel and tires. Mileage of from 18 to 22 miles will be obtained from each gallon of gasoline, dependent upon driving conditions and loads carried. The over-size cord tires (32x4) will, under normal conditions, run from 12,000 to 15,000 miles.

The LIGHT-SIX is made in four body styles, viz:

Touring Car: five passenger; weight 2,550 pounds; outside and inside door handles; cowl lights; genuine leather upholstery; gypsy type top with beveled plate glass window in rear; storm curtains opening with doors; ventilator in cowl; thief-proof transmission and ignition lock.

Complete protection for occupants—wind and storm proof.

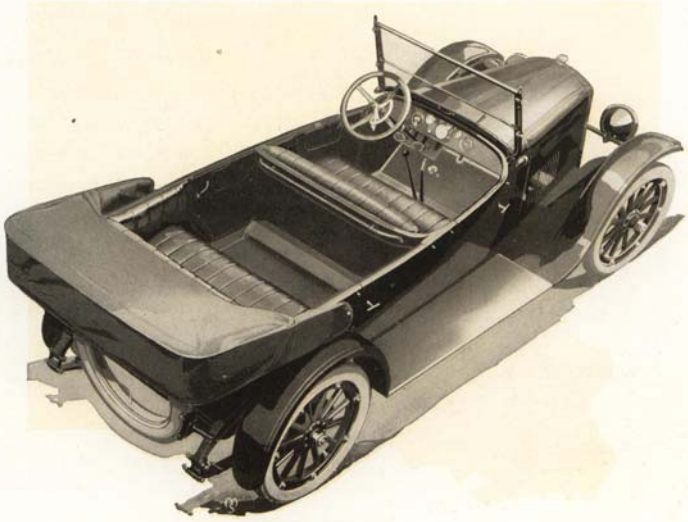
Sedan: five passenger; four doors that swing wide open; extra broad windows; three-piece windshield; dome light; side coach lamps; mohair velvet plush upholstery; ventilator in cowl; thief-proof transmission and ignition lock.

Coupe-Roadster: two passenger; genuine leather upholstery; ventilator in cowl; side coach lamps; three-piece windshield; broad windows and wide opening doors; compartment under rear deck for tires and luggage; light in weight and smart in appearance; thief-proof transmission and ignition lock.

Roadster: Three-passenger; outside and inside door handles; genuine leather upholstery; storm curtains opening with doors; large plate glass window in rear curtain; ample luggage space under rear deck; ventilator in cowl; cowl lamps; thief-proof transmission and ignition lock.

Large, horizontal curtain lights afford clear vision.

Harmony and grace of body lines; extraordinary roominess and convenience; completeness and accessibility of controls and instruments are clearly portrayed in this aeroplane view.



THE STUDEBAK

SPECIFICATIONS

SEATING CAPACITY—Five passengers.

WHEELBASE—112 inches.

WEIGHT—2,550 pounds.

MOTOR—Six cylinder, 3¼" x 4½", cast en bloc, with upper half of crank case cast integral; aluminum detachable head; 40 horsepower; three-point suspension; valves set at an angle of 20 degrees silently operated by bell-crank construction; three timing gears driven by silent chain, with convenient outside adjustment; 10" connecting rods; 4 bearing crankshaft; connecting rods and crankshaft machined on all surfaces

LUBRICATION—Splash and positive distribution.

COOLING SYSTEM—Centrifugal pump circulating system, with thermostatic control; tubular radiator; four-blade fan.

GASOLINE SYSTEM—Vacuum feed with 15-gallon tank in rear, hung from a protecting shield.

CARBURETION—Improved horizontal feed carburetor, mounted at top of motor, with warm air connection from exhaust manifold; horizontal and short intake manifold cast in detachable head with internal hot spots.

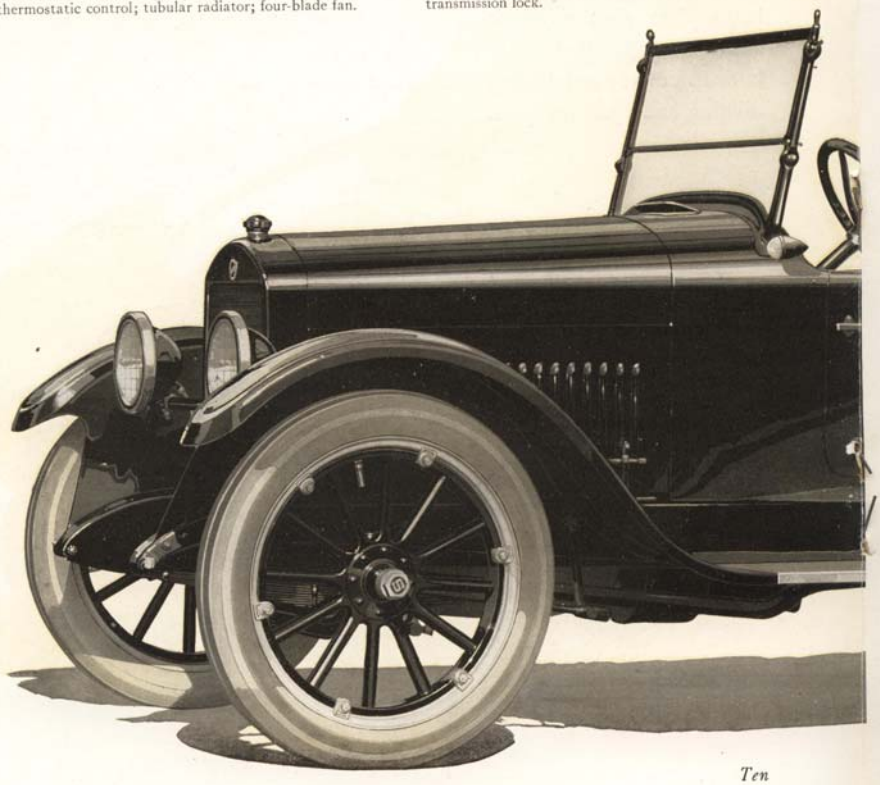
ELECTRIC SYSTEM—Double unit generator and starter; Bendix drive.

IGNITION—Battery; semi-automatic spark control.

ELECTRIC LIGHTS—Large headlights with improved deflecting lenses; speedometer light; tail light.

CLUTCH—Single disc, dry plate type.

TRANSMISSION—Amidship separate unit mounted on sub-frame; three speeds forward and reverse. Thief-proof transmission lock.



ER LIGHT-SIX

of TOURING CAR

GEAR RATIO—4.55 to 1.

PROPULSION—Tubular propeller shaft with two flexible disc universal joints.

REAR AXLE—Improved semi-floating; spiral bevel gear drive; full taper roller bearing equipment.

DRIVE—Hotchkiss.

SPRINGS—Front and rear semi-elliptic; front 36 x 2 inches, 7 leaves; rear 50 x 2 inches, 7 leaves, underslung.

TIRES—Cord, 32 x 4 inches, non-skid on rear.

BRAKES—Foot brake, external contracting, 14⅛ x 2 inches; emergency brake, internal expanding, 13¾ x 1¾ inches.

LOCKS—Built-in, thief-proof transmission and ignition lock.

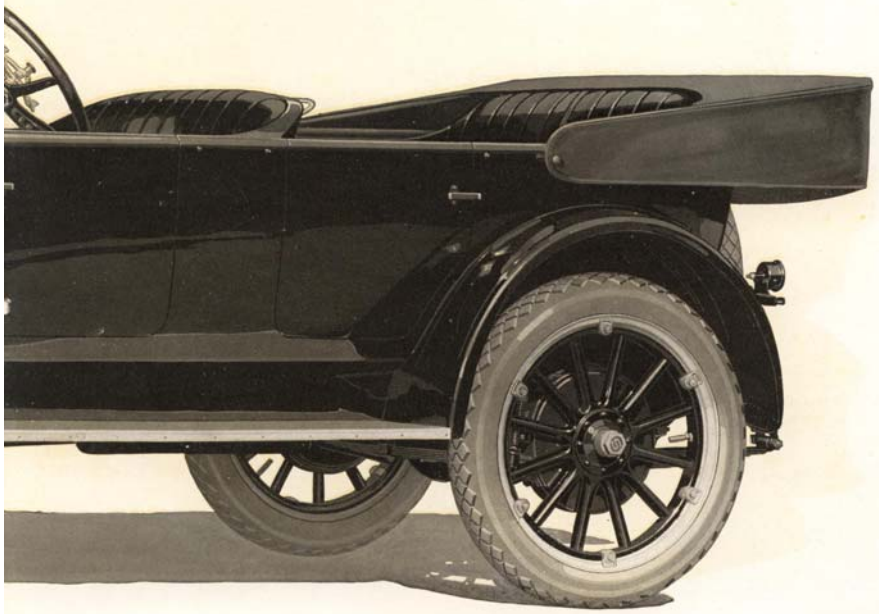
FENDERS—Heavy pressed steel, oval-crown design.

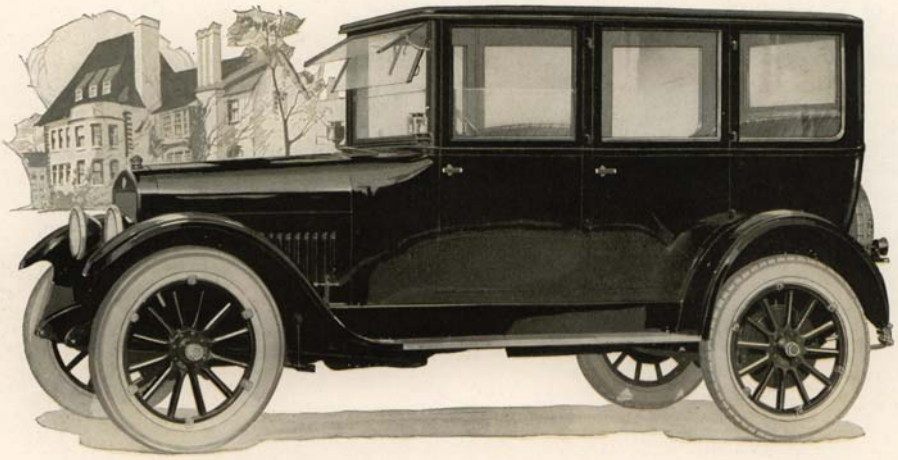
UPHOLSTERY—Genuine leather, French plaited.

TOURING CAR TOP—One-man Gypsy type, large bevel plate glass window in rear; curtains open with doors.

EQUIPMENT—Rain vision slanting windshield; electric horn; cowl lights; electrically-lighted walnut finished instrument board, on which are mounted carburetor choke, light and ignition switch, oil indicator, speedometer driven from propeller shaft, ammeter, fuse box, ventilator in cowl; combination robe and hand rail across back of front seat; outside and inside door handles; carpet-covered foot rest in tonneau; gasoline gauge on tank in rear, complete set of tools; tire carrier in rear with extra rim

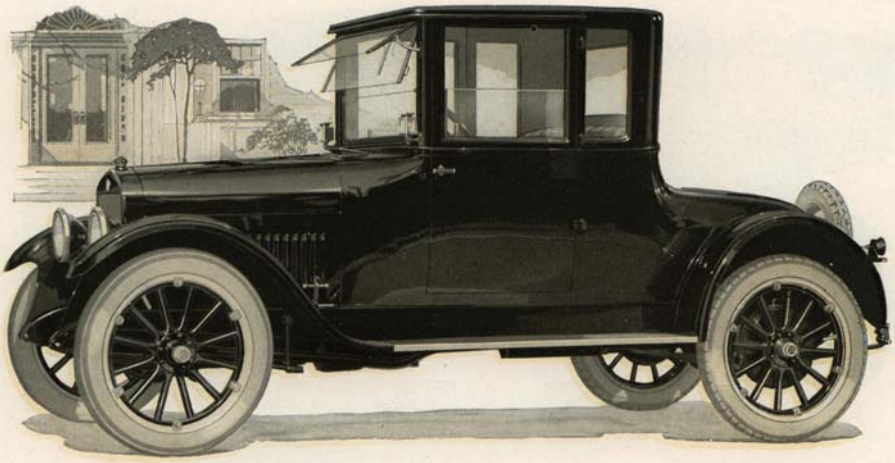
(These specifications are subject to change without notice.)





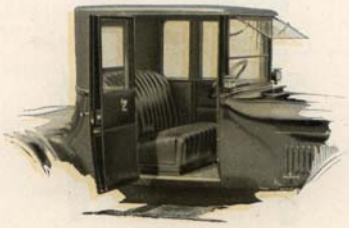
THE five-passenger Sedan—a masterpiece of the Studebaker body builder's art; four doors that swing wide open; dome light; side coach lamps; mohair velvet plush upholstery; ventilator in cowl; thief-proof transmission and ignition lock.

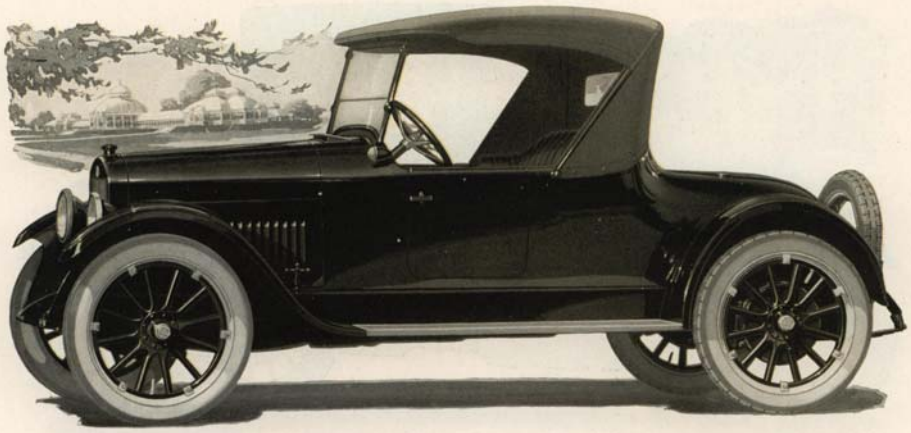
The highest type of enclosed car—for year 'round service in town or country.



THE two-passenger Coupe-Roadster; unusually serviceable in all kinds of weather, for individuals, for small families, for professional men and business men; room under rear deck for tires or luggage; ventilator in cowl; side coach lamps; thief-proof transmission and ignition lock. Body designed and built by Studebaker experts.

Interior is upholstered in genuine leather, laid in parallel plaits; wide seat affords ample room for two adults in perfect comfort; windows are raised and lowered by simple automatic device.

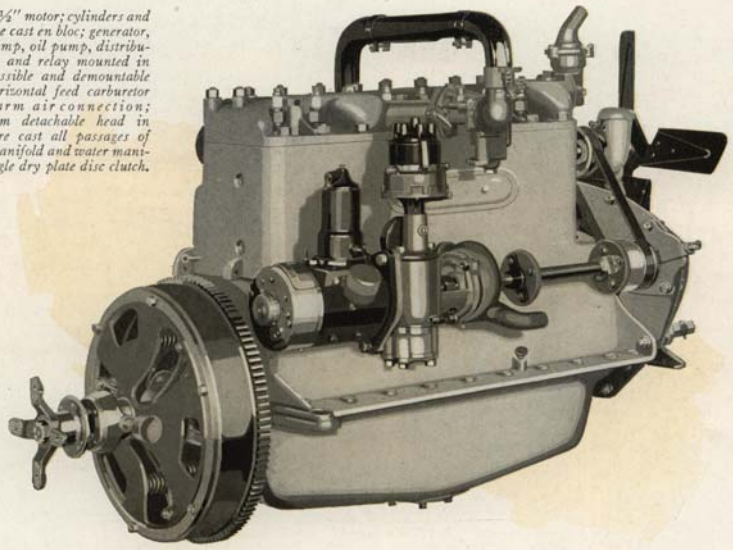




THE three-passenger Roadster; a convenient, light, easily operated car which is popular with the small family, business and professional men; ample luggage space under rear deck; ventilator in cowl; cowl lights. Body designed and built by Studebaker engineers.

The lines of the top harmonize with the graceful body; the wide doors are equipped with outside and inside door handles; tailored storm curtains open with doors.

3⅛" x 4½" motor; cylinders and crankcase cast en bloc; generator, water pump, oil pump, distributor, coil, and relay mounted in one accessible and demountable unit; horizontal feed carburetor with warm air connection; aluminum detachable head in which are cast all passages of intake manifold and water manifold; single dry plate disc clutch.



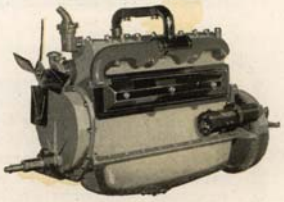
Mechanical Features

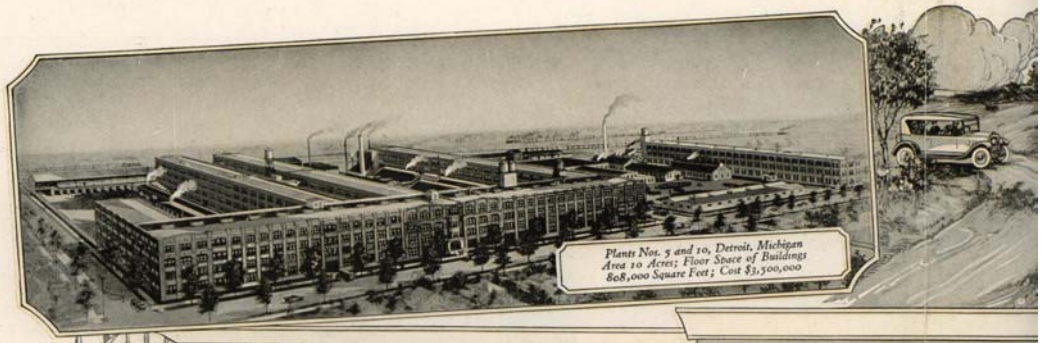
The Engine

ORIGINAL and refined design, developed from sound and tried engineering principles, is the outstanding feature of the LIGHT-SIX engine.

In general it embodies the latest improvements and advancements in engine construction. It is suspended at three points, is of an improved L-head type having inclined valves, cylinders cast en bloc integral with upper half of crankcase, detachable cylinder head, and completely machined combustion chambers. The rated horsepower is 35 to 40, the bore being 3⅛", and the stroke 4½".

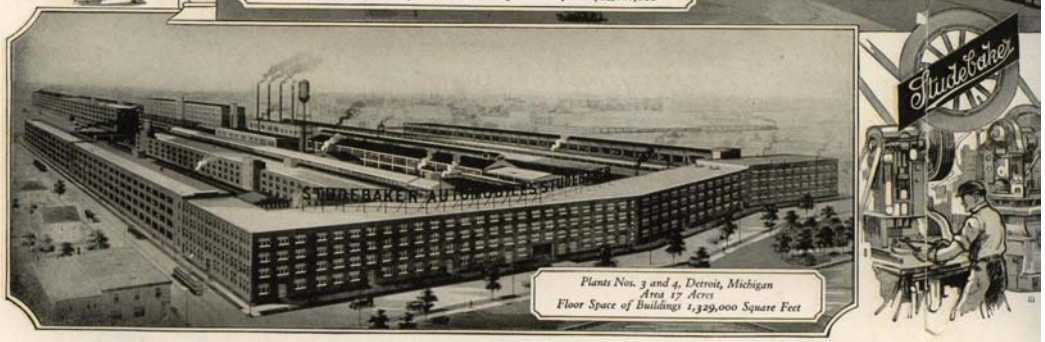
Clean accessible left side of motor showing aluminum timing gear case; exhaust manifold; valve cover plate; warm air stove; starter with Bendix gear drive.





Plants Nos. 5 and 10, Detroit, Michigan
Area 10 Acres; Floor Space of Buildings
808,000 Square Feet; Cost $3,500,000

New Modern Automobile Plant No. 2, South Bend, Indiana
Area 85 Acres; Floor Space of Buildings 3,700,000 Square Feet
Manufacturing Capacity 150,000 Automobiles per Annum; Cost $20,000,000



Plants Nos. 3 and 4, Detroit, Michigan
Area 17 Acres
Floor Space of Buildings 1,329,000 Square Feet

ABOUT five years ago The Studebaker Corporation determined to build a large, modern automobile plant at South Bend, with a production capacity of five hundred cars per day. Construction engineers and production experts made exhaustive investigations and studies of the construction, equipment and methods of numerous modern plants throughout the United States, and incorporated in the plans for the South Bend plant every improvement and practical device for economical production developed by this investigation.

Commodious space and equipment are provided in the new plant for the laboratories, experimental department and engineering department, where research ex
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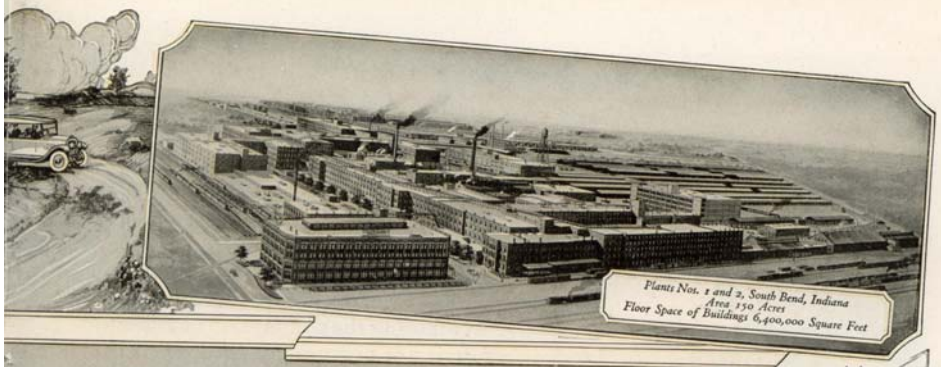
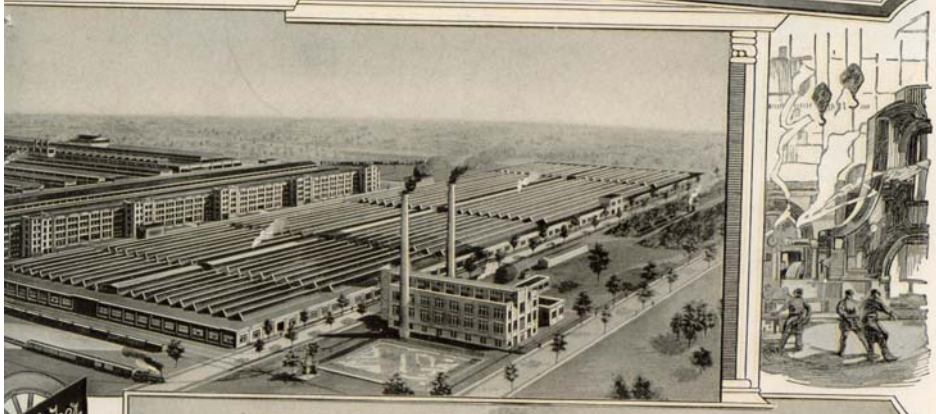


Plants Nos. 1 and 2, South Bend, Indiana
Area 150 Acres
Floor Space of Buildings 6,400,000 Square Feet

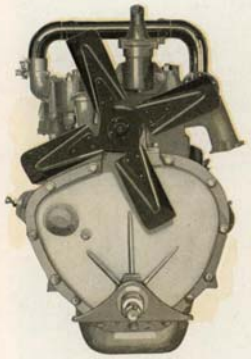


The Studebaker Corporation
Plant No. 7, Walkerville, Canada.

research experiments, and numerous tests are carried on daily by a large, able staff of engineers and chemists.

The latest heat treating and carbonizing equipment and machine shops are provided. Shops for open and closed bodies are also included, together with a warehouse with storage capacity of 3,000 cars. There are ample railway and track facilities for shipping. A large recreation hall with theatre is provided for employees' and dealers' meetings.

The Detroit plants of the Corporation continue as heretofore, producing Studebaker cars in large quantities. The South Bend plant is an addition to the capacity of the Corporation.



Front of motor showing fan and timing gear case.

Maximum strength and rigidity are obtained by casting the cylinder block integral with the upper half of the crankcase. The detachable cylinder head makes the interior of the engine quickly and easily accessible and likewise permits complete machining of the compact combustion chambers. Machining the combustion chambers insures uniformity of compression, reduces heat absorption, and aids materially in preventing carbon deposits on the cylinder walls.

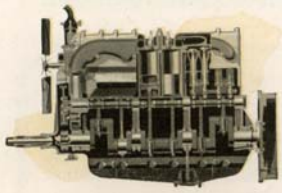
Crankshaft and Main Bearings

The crankshaft and crankshaft bearings are unusually large. Their size contributes to the rigidity of the engine and is an important factor in the reduction and practical elimination of vibration at all speeds. The crankshaft is in exact balance at all speeds.

Connecting Rods and Pistons

The connecting rods are of two-bolt type and are 10" long—an unusual length for a 4½" stroke. These long rods minimize wear on the pistons and cylinder walls and insure a better balance and longer life to the engine. Pistons are cast iron, reenforced, very light, and carry three rings.

Long 10" completely machined connecting rods; large, rigid, completely machined crankshaft with large bearings; oil reservoir; thermostat for regulating flow of water.



Crankshaft and Connecting Rods Completely Machined

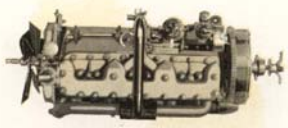
The crankshaft and connecting rods are machined on all surfaces. This practice insures exact balance and uniform weight of reciprocating and rotating parts, resulting in a smoothness, quietness of operation, and freedom from vibration at all speeds, which is remarkable. Completely machined crankshafts and connecting rods will not be found in any other moderate priced car yet produced in this country.

Internal HOT SPOT and Intake Manifold

Of the many improvements and inventions embodied in this engine, the ingenious arrangement of intake manifold and *Internal Hot Spot* for obtaining maximum power from low-grade fuels—a Studebaker invention fully covered by patents—deserves and will command the greatest attention and the widest interest.

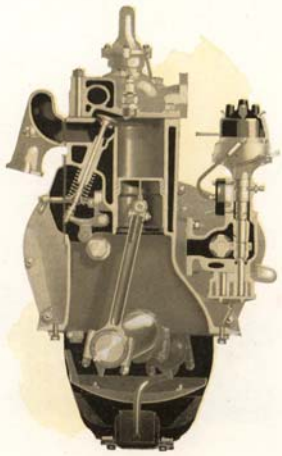
The power derived from an internal combustion engine results from the explosive force of the ignited gas against the top of the piston. This force is created by the expansion of the gas when its temperature is suddenly raised by the chemical re-action of combustion, which is commonly called explosion. Combustion or explosion is induced by the application of an electric spark to a highly sensitive and unstable gas. It is obvious that this explosive force, and the consequent power of the engine, depends largely upon the quantity of gas present in the combustion chamber when ignition takes place, and that this quantity varies directly with the temperature of the gas and is greatest when heat is sufficient for complete vaporization, but no more.

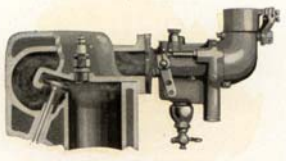
The application of heat to the intake manifold through stoves, ordinary types of hot spots, etc., as commonly employed in automobile engines, has not successfully met the issue and is decreasingly efficient because of the steady decline in the grade and quality of commercial gasoline. Commercial gasoline of today is a mixture of many characteristic fuels ranging all the way from kerosene, which is heavy and requires a great amount of heat for vaporization, up to benzine, which is light, highly volatile, and is transformed into gas at a much lower



Top of motor showing detachable aluminum head with internal hot spots surrounding spark plugs.

Sectional end view of motor bringing out clearly the relations of its various parts to each other.





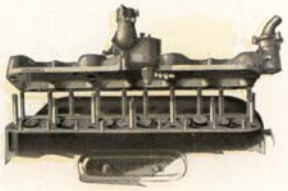
A Studebaker innovation—the ingenious arrangement of intake manifold and INTERNAL HOT SPOT, for obtaining maximum power from low-grade fuels. Carburetor is bolted direct to intake manifold.

temperature. It follows that the application of a uniform heat to all of these different fuels will not completely vaporize them. The degree of heat necessary for the kerosene elements will overheat and therefore expand the gases into which the lighter elements are transformed; and conversely, regulation of heat so that the gases from the lighter elements are not expanded will be insufficient to completely vaporize the kerosene or heavier elements, and will result in the waste of a considerable portion of the fuel.

Perfect and efficient combustion is obtained in the Studebaker LIGHT-SIX engine by the addition of the new and original *Internal Hot Spot*.

The horizontal type of carburetor is bolted direct to the intake manifold, which is cast integral with the detachable aluminum cylinder head. The detachable cylinder head itself forms the top of each combustion chamber, and the passages of the intake manifold are cast in this head so that they lie directly over each combustion chamber at a point where the head is not cooled by water-jacket, and is very hot. Thus, small areas or sections of the lower surface of the intake walls are heated directly from the combustion chamber, and to these sections particles of unvaporized gasoline are directed by the downward inclination of the passages. These localized primary hot spots provide the higher temperature necessary to volatilize the heavy ends of fuel which pass out of the carburetor and are precipitated in the manifold, but they do not heat, and therefore do not expand the gases themselves.

The detachable cylinder head forms the top of each combustion chamber and, cast integral with it, at points where head is not cooled by water-jacket, are the passages of the intake manifold.



Intake ports and valve positions direct gases as they enter the combustion chamber so that the many globules or particles of raw fuel, which are carried through by the rush of the incoming charge, are impelled against the

Internal Hot Spot, which is a small section or area of the combustion chamber head, inclined downward and progressively heated by a diminishing of the water-jacket, so as to present a range of evaporating temperature, until at the spark plug a very high temperature is given. The globules or particles of raw fuel are carried down this progressively heated plane and with the constant rise in temperature more and more of the precipitated fuel is brought to vaporization heat until its transformation into gas is complete.

This ingenious arrangement permits of the complete vaporization and utilization of all of the elements of the fuel, leaves the gases at a low temperature and therefore, high density, with the result that a greater volume of gas is present in each cylinder at the time of explosion, and with the further result that combustion is uniform and complete. The practical results obtained are a noticeable increase in power, an added economy, an absence of carbon deposits, a freedom from trouble due to the seepage of raw fuel into the lubricating oil.

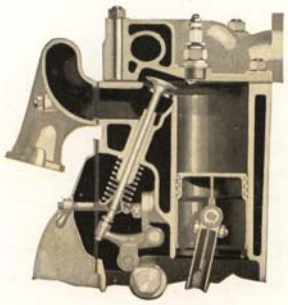
The efficiency of its engine, and consequently the general utility of the Studebaker LIGHT-SIX, have been enhanced by this improvement and invention.

Valves inclined at 20-degree angle; mechanism accessible; bell crank lift instead of mushroom push rods gives 5-16" valve lift from 3-16" cam lift.

Valves and Valve Mechanism

Valves of the standard cast-iron type are inclined toward the center of the cylinder at an angle of 20°. This inclination aids the free passage of gases to and from the cylinder, makes possible a more compact and symmetrical combustion chamber, and in addition thereto renders the whole valve operating mechanism much more accessible. The valve mechanism consists of a bell-crank lever with roller contact to cam, and with adjusting screw to valve stem. The bell-crank lever gives a maximum valve lift from

Inclining the valves toward the center of the cylinder aids in the free passage of gas and makes possible a more compact and symmetrical combustion chamber.



Timing gears driven by silent chain; lubricated by oil pumped from crank case; accessible outside adjustment.

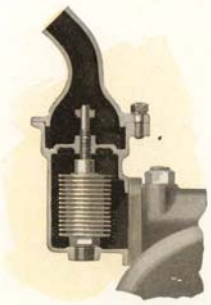
minimum cam lift and insures quicker opening and better timing. The roller contacts to cams are quiet to a degree not obtainable when the usual push rods are used.

Front Drive

The camshaft on the left side of the engine, and the accessory shaft on the right, are driven from the crankshaft, at the front end, by a silent chain. The substitution of chain for timing gears contributes to the remarkable quietness of the engine. The chain runs in an oil bath fed by the oil pressure pump, and lubrication is positive. Quick adjustment may be made without removing the gearcase cover.

Cooling System—Thermostat

The thermostat automatically regulates the volume of water passing through the cooling system, insuring a high average operating temperature for the engine.



The cooling system of the Studebaker LIGHT-SIX includes a uniform and efficient water-jacket in the cylinder and cylinderhead castings, a tubular radiator made of copper, of high heat-dissipating capacity, and proof against corrosion, a centrifugal pump driven by the accessory shaft regulating the force of the circulation according to the engine's speed. The entire cooling system is controlled by a thermostat which automatically regulates the volume of water passing through the system and maintains the operating temperature of the engine within comparatively restricted limits. This thermostatic regulation insures a higher average operating temperature for the engine with a corresponding increase in its thermal efficiency due to a reduction of heat loss.

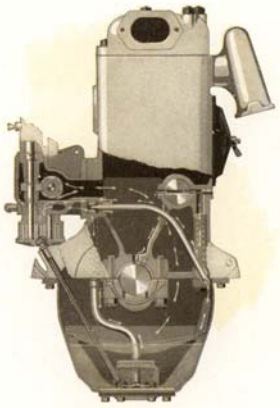
When the automatic control of a thermostat is not used the size of the radiator and the force of circulation must be sufficiently high to meet the engine's most severe and abnormal demands such as exist when the atmosphere is very warm, and roads are difficult, and load is extreme. Otherwise cylinder walls are heated to the point where lubrication fails, and pistons seize, and cylinders score. Obviously, a cooling system ample under such circumstances, and not regulated in any way, will dissipate more heat than is necessary under normal operating

conditions and will maintain the average temperature of the motor at a point lower than its efficient temperature.

The Studebaker LIGHT-SIX cooling system results in marked improvement in performance and economy in cold weather.

Lubrication

Engine lubrication in the Studebaker LIGHT-SIX is absolutely automatic. It may be simply described as a duplex system of positive feed to crankshaft and camshaft bearings and to front end drive, and the conventional splash feed to pistons and connecting-rod bearings and to accessories.

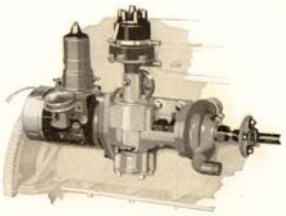


Lubrication is absolutely automatic.

Accessory Unit

All accessories, including oil pump, water pump, generator, relay, coil, distributor and automatic spark control have been combined into a convenient and compact accessory unit, mounted on a single base, placed on the right side of the engine. The accessories are easily and quickly reached and may be removed individually or as a unit. They are lubricated by splash through an opening in the side of the crankcase over which their base is mounted.

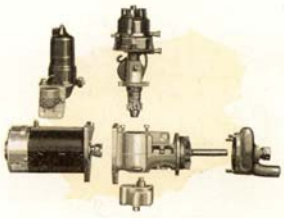
This mounting of the engine accessories on a single base, and their lubrication automatically by the engine splash, is a Studebaker improvement for which patent applications have been filed.

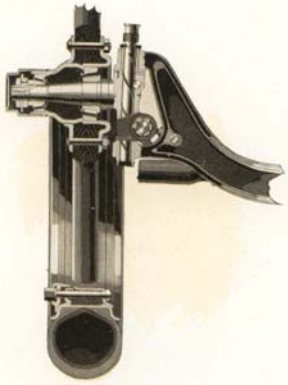


Another Studebaker improvement—a convenient and compact accessory unit, conveniently located. Accessories can be removed individually or as a unit.

Electrical System

The starting and lighting generator is a part of the accessory unit, as are also the distributor and coil of the storage battery ignition. The electric starting motor engages the flywheel through a Bendix gear, which is positive in action, and which cannot mesh with the teeth on the flywheel when the engine is running.





Steering knuckles, steering arm, etc., are alloy steel drop forgings, heat-treated to provide ample factors of safety for the severe shocks to which they may be subjected.

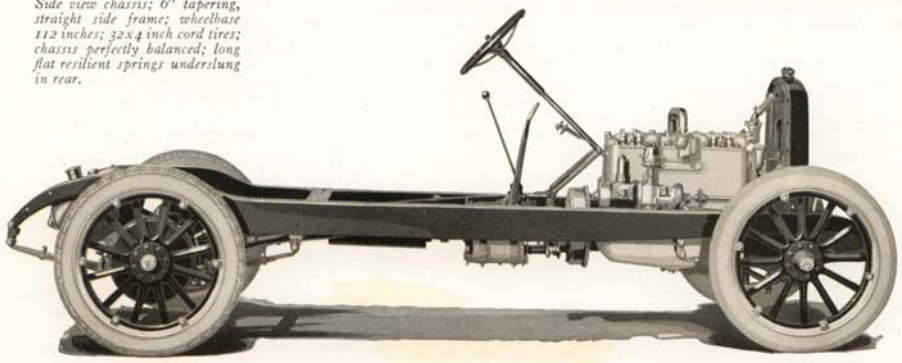
Chassis and Chassis Mechanism

The chassis and chassis mechanism of the Studebaker LIGHT-SIX is distinguished by its simple and clean-cut design. Sturdiness and safety factors sufficient for extreme road conditions have been combined with the latest advancements in chassis engineering to produce a mechanical efficiency comparable with that of the engine itself.

The performance of an automobile does not wholly depend upon the power of its engine, as engine power is but one of the factors involved. A chassis mechanism which transmits power from an engine to the resistance of the road is not a perfect machine. It absorbs a part of the power it receives in overcoming its friction; another part of overcoming the thrust where the direction of drive is changed as in the universal joints and the drive gears. Practical performance under average driving conditions is likewise affected by the ratio of gear reduction and the size of wheels, and greatly by the weight of the chassis, and of the car as a whole.

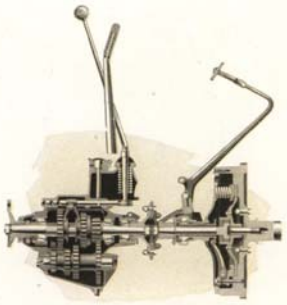
Therefore, the measure of efficient performance of an automobile is not the bore and stroke, or indicated power of the engine on block test, but rather the co-relation of all the elements of

Side view chassis; 6" tapering, straight side frame; wheelbase 112 inches; 32x4 inch cord tires; chassis perfectly balanced; long flat resilient springs underslung in rear.



its machinery for the delivery of power or energy, with minimum loss, by the tires to the resistance of the road as it may be required at varying speeds and under varying conditions.

The chassis mechanism of the LIGHT-SIX is efficient because it is correctly designed in its elements, and co-related as a whole. Angularity of drive and friction have been reduced to a minimum. The mechanical effects of gear reduction and wheel size have been carefully studied, and scientifically as well as practically determined. Weight of the car has been a fixed element of design. The result is a motor car of remarkable performance.



Single plate dry disc clutch; flexible coupling; gears and spline shafts of highest grade oil-treated alloy steel; equipped with four adjustable taper roller bearings.

The Clutch

The clutch is of the single plate dry disc type in which the driven member is a single spider rotating between two rings of friction material. Six separate springs maintain uniform pressure between the friction surfaces.

The release mechanism consists of a series of levers equalized so as to center the pressure separating the friction surfaces, when the clutch pedal is depressed. A clutch brake serves to prevent spinning of transmission gears after the clutch is disengaged, making gear shifting quiet and easy

Studebaker improved semi-floating axle with strong, light, pressed steel housing of one piece; accessible for greasing and adjusting through round cover plate on back.

Transmission—light; strong, three-point supported; easy to operate and noiseless. Built-in thief-proof transmission lock.

Transmission

The transmission is a separate unit placed amidship where it is supported at three points on an extension of the engine sub-frame. It is simple, light, and accessible. Its location aids in a proper balance of the weight of the car. There are three speeds forward and reverse. All gears and spline shafts are of oil-treated special alloy steel. Shafts are carried on four taper roller adjustable bearings

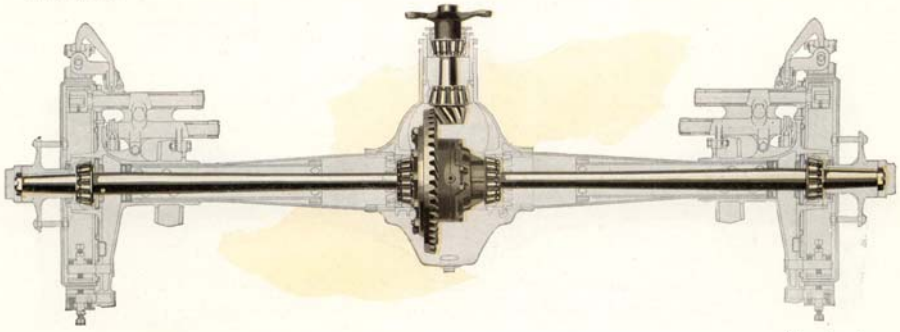
The transmission is equipped with a lock by which gears are held in a neutral position and cannot be shifted. This lock has been approved by the Board of Associated Insurance Underwriters.

The sub-frame which supports the engine and the transmission is lower at the rear by one inch, reducing angularity of drive through the tubular propeller shaft and the flexible disc universal joints, which are quiet and which require no lubrication.

Axles

The front axle is a one-piece alloy steel drop forging, scientifically heat-treated, and very strong and tough. The steering knuckles, steering arm, etc., are also alloy steel drop forgings, heat-treated to provide ample factors of safety for the severe shocks to which they may be subjected.

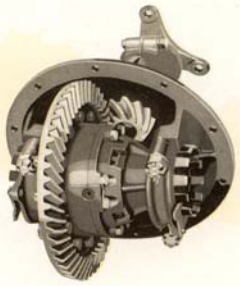
Large tapered axle shafts of the best alloy steel; spiral bevel pinion and ring gear of alloy steel; six adjustable taper roller bearings at vital points.



The rear axle is of the semi-floating type successfully used in the Studebaker cars of today. The wheels are rigidly keyed to the axle shafts which carry the load, and which are mounted directly on large roller bearings in each end of the axle housing. The inner or splined ends of the axle shafts are supported by the differential bearings, which are likewise of the roller type.

Driving pinion and ring gear are of chrome-nickel steel of the improved spiral bevel type, which insures quiet operation.

The rear axle pinion carrier is a self-contained unit, including the driving pinion and differential bearings, and may be removed without taking the axle from the car.



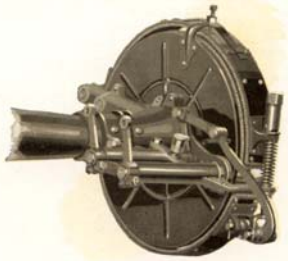
The rear axle pinion carrier may be removed without taking the axle from the car.

Drive and Springs

Drive is of the usual Hotchkiss type through the rear springs without torque arms or radius rods. Front and rear springs are both of semi-elliptic type. All spring eyes are bronze-bushed.

All springs are of alloy steel and of exceptional strength. They are the result of careful experimentation and test.

Extra large diameter brakes; easy to operate and positive in action.



Frame

The chassis frame is deep and strong, narrow at the front to allow a short turning radius, and wide at the rear conforming to the natural lines of body sills. The side members are straight and are tied together by five cross-members—the first, supporting the radiator and a front engine support trunnion; the second and third supporting the rear end of the engine and the transmission; the fourth, carrying the brake cross-shafts, and the fifth, supporting and protecting the gasoline tank.

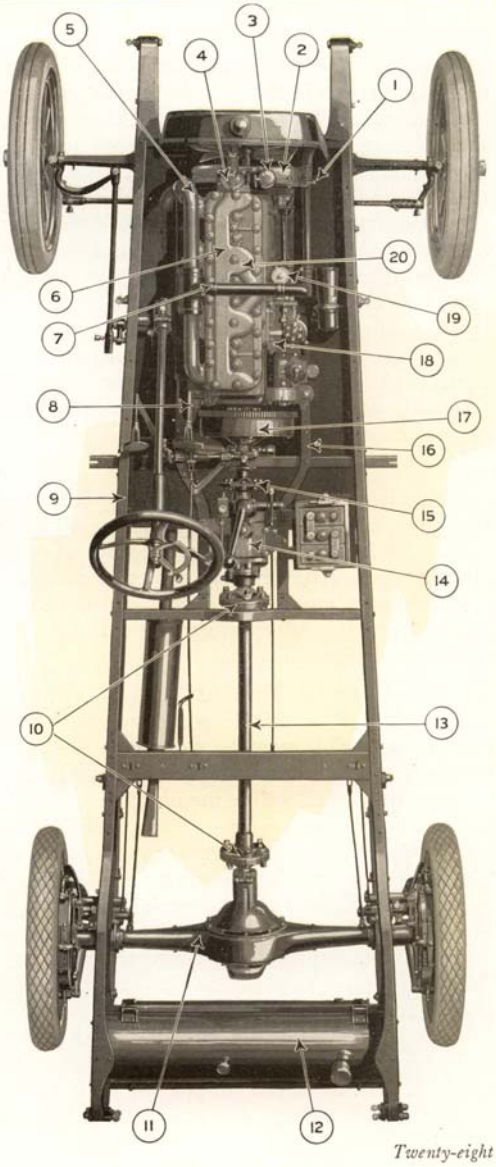
The frame is of staunch construction, designed with a large factor of safety. The side sections have a maximum depth of six inches and a thickness of one-eighth inch.

Brakes

Special attention has been given to brakes. One set internal and the other external are of ample proportion, and are simple of adjustment and readily accessible. Leverages are large and brake mechanism is powerful and easy.

Plan View of Chassis

1. Silent chain adjusting nut.
2. Aluminum timing gear case.
3. Oil filler pipe.
4. Thermostatic water regulator.
5. Exhaust manifold.
6. Aluminum detachable head.
7. Warm air stove and pipe leading to carburetor.
8. Starting motor and Bendix drive.
9. Deep channel section straight side frame.
10. Flexible disc universal joints, requiring no lubrication.
11. Pressed steel rear axle housing.
12. 15 - gallon gasoline tank with protecting shield.
13. Tubular propeller shaft.
14. Transmission suspended at three points on sub-frame.
15. Flexible disc coupling between clutch and transmission.
16. Sub-frame carrying engine, clutch, and transmission.
17. Flywheel containing single plate dry disc clutch.
18. Accessory unit containing generator, water pump, oil pump distributor, coil and relay.
19. Horizontal carburetor.
20. Horizontal intake manifold, water manifold, and detachable head.



THIS IS A

STUDEBAKER

YEAR

Studebaker Facts

Established 1852. Present capital investment, $70,000,000.

Plants in South Bend, Indiana—Detroit, Michigan—Walkerville, Canada. Second largest in the world.

Plants cover 225 acres; buildings contain 5,987,000 square feet of active floor space, and investment amounts to $35,000,000.

Inventories of raw materials, work in progress and finished goods, amount to $20,000,000.

Research and experimental laboratories, unexcelled in the industry, employing 100 skilled men.

12,500 machines used in 500 manufacturing departments.

Average number of employees, 14,000.

1,120 mechanical operations on the three models of Studebaker cars are accurate to one-thousandth (.001) of an inch; 360 to one-half-thousandth (.0005) of an inch.

680 inspectors employed in the plants. 9,500 inspections during manufacture before cars are passed for delivery. In addition 500,000 laboratory tests are made annually.

150 tons of castings made in Studebaker foundries daily. 85,000 tons of steel used by Studebaker annually.

7,000,000 gallons of fuel oil used annually in heat treating and in drop forge furnaces. 85,000,000 cubic feet of gas used annually.

Over 450,000 Studebaker cars produced and sold—valued at $540,000,000.

Studebaker cars are sold in all civilized countries and the trade-name "Studebaker" is a household word.

Studebaker Leadership

Studebaker is one of the world's largest automobile manufacturers, and a consistent leader in all developments of the automobile for the benefit of the user. Among its contributions in improved quality, better performance and greater value may be mentioned:

—*first to make extensive use of pressed steel.*

—*first to make six-cylinder motors in a single casting or en bloc.*

—*first to produce a car with crown fenders.*

—*first to sell a six-cylinder car for less than $2,000.*

—*first to use plate glass windows in top as standard equipment.*

—*first to use cord tires as standard equipment on a car selling for less than $2,000.*

—*first to produce a car, selling for less than $1,500, with crankshaft and connecting rods machined all over.*

—*first to cast the intake manifold in the detachable head.*

—*first to use, and inventor of, the internal hot spot.*

—*first to use 20° inclined, silent operating valves.*

—*first to use, and inventor of, improved mounting and lubrication of engine accessories on front drive shaft.*

—*first to produce a car in which Molybdenum steel was used.*