

Fig. 1—Two views of the unit power plant used in the new model 36 Chalmers for the season of 1912, which is almost identical with this year's model 30, except that it has a $4\frac{1}{4}$ -inch bore and $5\frac{1}{4}$ -inch stroke, an unusually large and conveniently arranged oil filler, a Rayfield carburetor with dash adjustment, an aluminum web from the crankcase to the frame to protect the motor from road dirt, a compressed air self-starting device whose features are illustrated and described on the following page, and a number of other minor refinements in detail.

FOR 1912 the Chalmers line will comprise three chassis models carrying thirteen different body styles. Foremost among these is the Chalmers 36, the new model, which has a motor built along the same lines as that of the 30 of this year, and which is equipped with a compressed air self-starting device.

The characteristic features of the new model 36 are: the unit power plant shown in Fig. 1, shaft drive with two universal joints, a floating rear axle, 36 by 4-inch wheels, a wheelbase of 115 inches and a four-speed gearset. To this chassis will be fitted four body types, including a fore-door touring car, fore-door pony tonneau, Berlin limousine and cab side limousine.

The Chalmers 30 and 40, with which the public already is familiar, are continued with no radical changes but with such improvements and general refinements that another season's development has made practicable.

Thirty in Five Body Types

The Chalmers 30 for 1912 appears in five body types: a fore-door touring, fore-door pony tonneau, open front pony tonneau, torpedo roadster, and inside-drive coupe. All types this year are sold fully equipped and, except the coupe, at the same price as the 1911 touring car without equipment. All 30 bodies, except the open-front pony tonneau, are of the full fore-door type and, like the 36, all have the forward compartments ventilated. The dual ignition system is used and all of the important features that have been characteristic of this model are retained. The 30 coupe and torpedo roadster chassis differ from the regular 30 chassis in that they have a 102-inch wheelbase instead of 115 inches. Both carry large gasoline tanks on their rear decks.

Like the 30, the Chalmers 40 for 1912 is little changed mechanically and is sold fully equipped for the same price as the 1911 40 without equipment. The 40 chassis has a wheelbase of 122 inches and carries

The Chalmers Line for 1912

Three Chassis Models Offered Carrying Thirteen Different Styles of Bodies, with the 30 and 40 Continued and the 36 Added to the Line

Old Models Are Changed But Little

three body types: a fore-door touring car of seven passengers' capacity, a torpedo of four passengers' capacity, and a detachable pony tonneau of four passengers capacity which is readily convertible into a racy roadster.

As for the mechanical details of the new 36, the motor has its cylinders cast en bloc, as shown in the illustrations, with the inlet valves in the heads and operated by pushrods and rocker arms, and have their springs enclosed in brass jackets, whilst the exhaust valves are in offset pockets on the sides as in an L-type motor, and operated directly by pushrods from the same camshaft that operates the inlet valves. This construction permits of the use of extra large valves, which facilitate the passage of the gases. The cylinders have a $4\frac{1}{4}$ -inch bore and $5\frac{1}{4}$ -inch stroke,

as compared with the 4 by $4\frac{1}{2}$ -inch cylinders of the 30; and the internal mechanical details of the entire motor are quite clearly shown in Fig. 5.

The crankshaft is of the same short stubby two-bearing type, which has been a feature of the 30 since its inception, and other distinctive features claimed for this motor are: a new piston ring which eliminates motor-smoking; an unusually large camshaft, and pushrod tappets of extreme size; unusually heavy rocker arms and a new crankcase construction which protects the upper working parts of the motor from road dirt.

The crankcase of the motor, which is of cast aluminum, is of the barrel type, in which the crankshaft, with its two large annular ball bearings intact, is shoved into place from the rear end. The construction

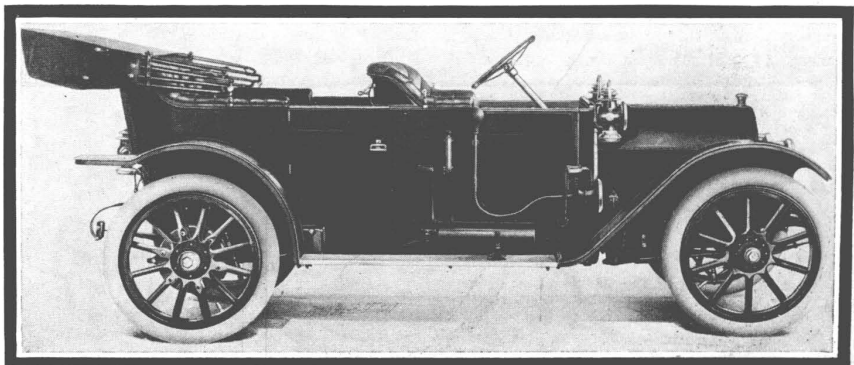


FIG. 2—THE CHALMERS 36 FOREDOOR TOURING CAR FOR 1912

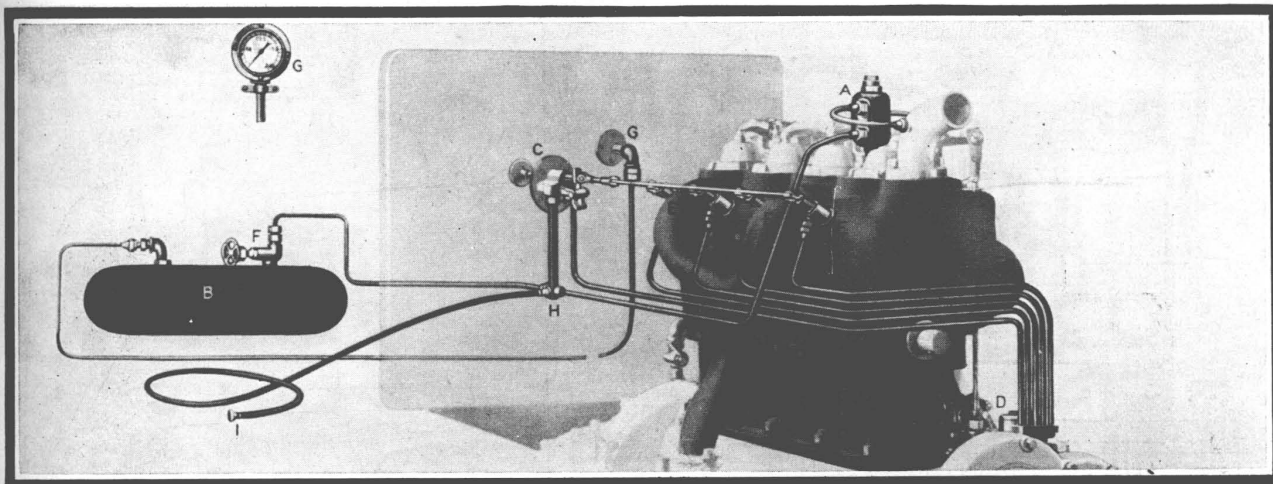


Fig. 3—Showing the features of the compressed air self-starting device which is a part of the regular equipment of the Chalmers model 36. In this system air is forced from No. 1 cylinder through the check-valve A and suitable piping to the storage tank B carried under the body of the car. When it is desired to start the motor the valve C on the dash is opened, and air released from the tank is conducted to the distributor D, which delivers it to the cylinders at E. G is a gauge on the dash, H the tire hose connection, and I the tire valve connection

New Ideas in Chalmers 36

Self-Starter Which Also Can Be Used for Inflating Tires One of the Innovations—Four-Speed Gearset Also Found on Newcomer

Fore-Door Bodies Continue to be Popular

of this case differs from that of the 30 in that an integral web closes in the space between the motor and the frame. The motor is supported on four short stout legs cast integral with the case; two of these being opposite the front end of the motor and two opposite the encased fly-wheel.

Circulating Splash Lubrication

Lubrication of the motor is by means of a constant level splash system with a gear pump to maintain the circulation. A lower portion of the case, which forms the oil reservoir, is detachable for inspection of the internal crankcase mechanisms and adjustments of the connecting-rod bearings. When the motor is in operation the oil, after being drawn through a strainer, is forced by the gear pump from the reser-

voir, back into the splash compartments of the crankcase proper, and the overflow from these splash compartments returns to the reservoir below, to be again strained and recirculated.

Cooling is by means of forced water circulation, and features of the system are a Fedder's cellular radiator, short direct water connections of large diameter, a ball-bearing belt-driven fan and a centrifugal water pump. Ignition is by means of a Bosch dual system with a single set of plugs and a dash coil which pierces the dash so that just the switch portion is visible. The switch is provided with a lock and key; all ignition wires are neatly arranged and thoroughly protected from heated portions of the motor; and all connections are of a simple and substantial

design that should eliminate ignition

troubles. On the new model is used the water-jacketed intake manifold, and a water-jacketed Rayfield carbureter, a clever and convenient feature of which is a dash lever that permits of adjustment of the needle valve from the driver's seat. Thus the mixture from the carbureter can readily be enriched so that the motor will run smoothly and with plenty of power at very low speeds, and lightened for economy and speed at the higher speeds without raising the hood to reach the carbureter. All types of the 36 are provided with gasoline pressure systems.

The Chalmers Self-Starter

Perhaps the most distinctive feature of the Chalmers 36 is the air pressure self-starting device with which all types are equipped. The Chalmers self-starter is not an accessory but an integral part of the power plant. In this system compressed air is forced from No. 1 cylinder through a suitable check-valve and piping to a storage tank carried under the body of the car. When it is desired to start the engine a valve conveniently located on the dash is opened and air released from the tank, which is conducted to a distributor operating upon the same principle as the commutator used on almost all cars having double ignition systems. By means of this distributor the compressed air is delivered into the cylinders, which are ready for the working stroke in their order of firing; thus the motor is operated by compressed air instead of cranking.

It is claimed that this new feature of the Chalmers 36 has been tested on three different cars in more than 20,000 miles of driving, and it never once failed to work. Some idea of the power of the self-starter may be gained from the claim that it is possible to set the gears in second speed, shut off the ignition system and actually drive the car from stand-still, using compressed air to run the motor. The only

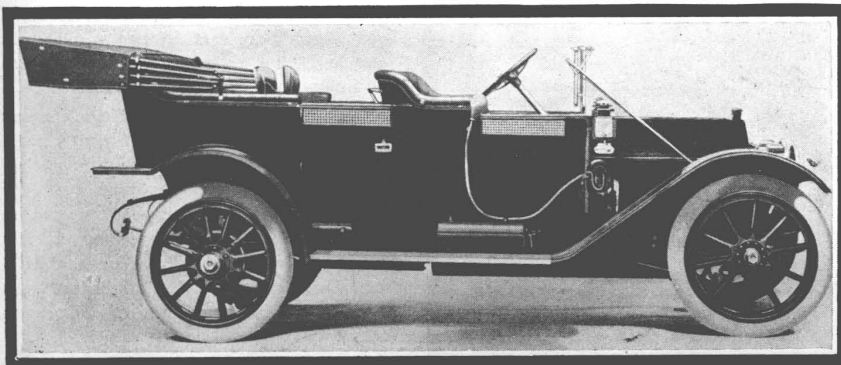


FIG. 4—FOREDOOR SEVEN-PASSENGER CHALMERS 40 FOR 1912

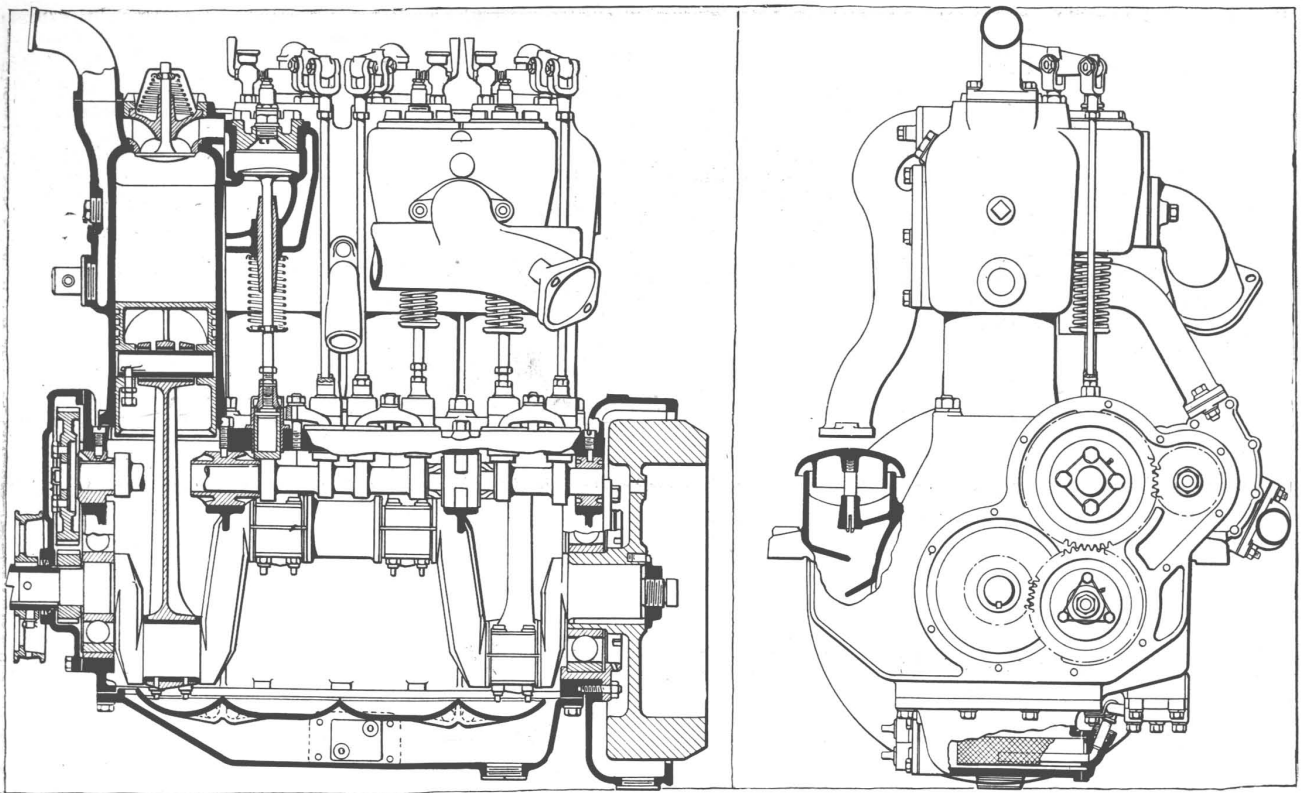


Fig. 5—Sectional side and end views of the Chalmers 36 motor, showing many interesting details of construction. With the inlet valves in the heads and the exhaust valve on the sides the valves are unusually large; inlet valve springs, guides and stems are protected from dust and dirt by brass caps. Valve tappets and pushrods are adjustable, pistons have four compression rings; the crankshaft is mounted and has two large ball bearings; the flywheel is enclosed; oil reservoir detachable; the oil filler and breather very large, and all piping short and direct

circumstance under which the self-starter will fail to work is when the motor is on dead center, a condition which seldom exists in a ball-bearing motor. In such circumstances the crank has to be used to turn the motor an inch or two, when the self-starter will do the rest.

Also Inflates Tires

In connection with the self-starting device is a tire inflater, and this combined with the Continental demountable rims, with which all types are equipped, removes the greater part of the inconvenience of

tire trouble and adds to the car's efficiency.

From the motor, power is transmitted through a clutch of the multiple-disk type, comprising thirty-nine alternating phosphor bronze and tempered saw steel disks, which operate in a bath of oil. The gearset, which is of the selective sliding gear type, gives four forward speeds and reverse, and is contained in a one-piece aluminum case, which bolts to the flared rear end of the motor crankcase to complete the formation of the unit power plant. Thus the flywheel, clutch and clutch operating mechan-

isms are for the most part thoroughly encased, and perfect alignment of the motor, clutch and gearset is assured. The main and countershafts of the gearset are in the same vertical plane, with the countershaft arranged directly below the main shaft, and both shafts are short and mounted in annular ball bearings.

The rear axle casing and torque arms are of pressed steel, which, for the rear axle, is claimed to have greater strength than the older style of cast steel housing. The front axle is an I-beam drop forging, with integral spring perches, and Timken roller bearings are employed throughout on both front and rear axles. The double drop frame is a pressed channel steel construction, mounted on semi-elliptic front and three-quarter elliptic rear springs. The front springs are 39 inches long and 2 inches wide; the rear springs are 45 inches long and 2 inches wide, and the car has a road clearance of 10½ inches.

The service brakes are of the contracting type with asbestos-lined bands acting on steel drums, and are located on the rear wheel hubs. The emergency brakes, which also operate on the rear-wheel drums, are of the internal expanding type, and have asbestos-lined shoes. These brakes are 14 inches in diameter with a 2-inch face; giving a total braking area of 362 square inches.

As for control, the spark and throttle levers of the 36 are located at the top of

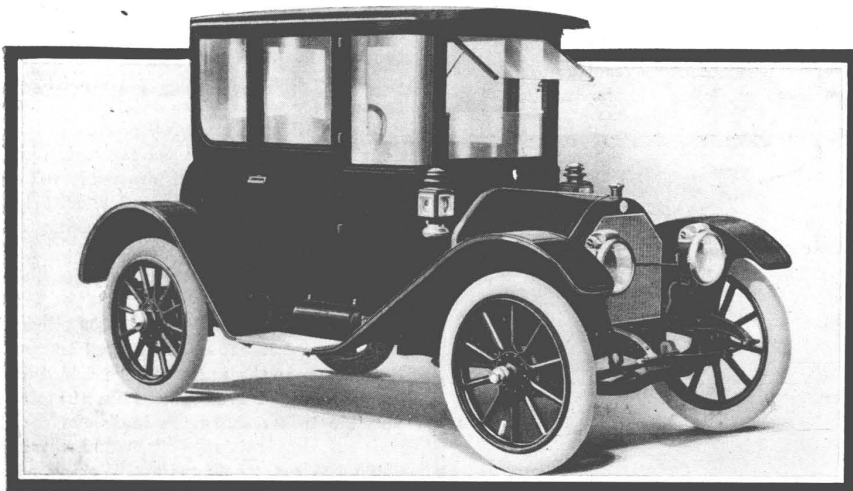


FIG. 6—CHALMERS 1912 MODEL 30 COUPE

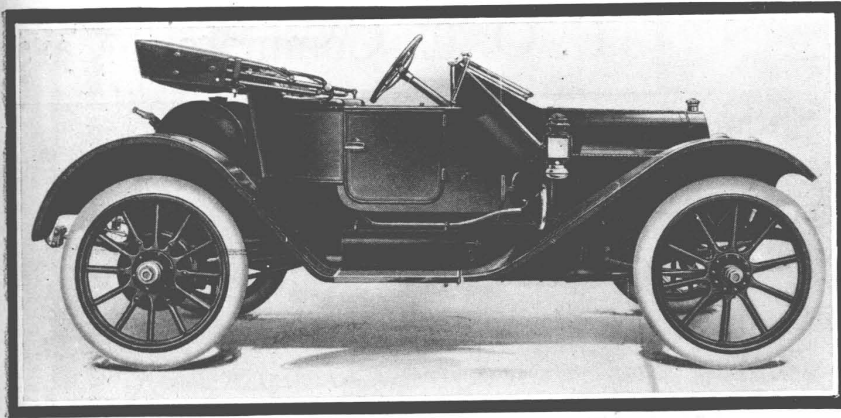


FIG. 7—CHALMERS 1912 MODEL 30 TORPEDO ROADSTER

ond floor are the engineering offices with dining room, chemical laboratory and sample room. The sample room is where all parts of the car, such as lamps, horns and magnetos, etc., are kept, there being one sample of each, which will serve as a standard for the different shipments to be checked with. The third floor is the detail room of the drafting department and blueprint room.

MOTOR CAR LITERATURE

“How to Keep Down Your Tire Expense” is an interesting booklet issued by the United States Tire Co., New York, dealing with the care and use of pneumatic tires. The book is well illustrated. There is a chapter dealing with the subject of building a tire; another is devoted to troubles, their causes and prevention; and a third to aids for injured tires.

Elegant in its simplicity, rich in its soft, dainty colorings, the 1912 catalog of the Packard Motor Car Co., Detroit, is truly an edition de luxe. The complete Packard

the steering column over the wheel and can be operated without removing the hand from the steering wheel. The clutch and service brakes are operated by a single pedal, pressure upon which first throws

H. Cameron and his corps of assistants. This building is practically completed and will be occupied in the course of a month. It is a reinforced concrete structure of 40 by 150 feet, having three stories and a

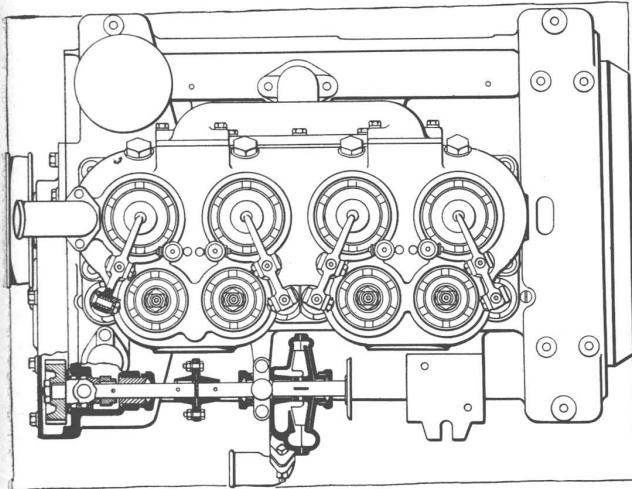


Fig. 8—A top view of the Chalmers 36 motor, showing the relative arrangement of the valves, and details of the water pump construction and drive

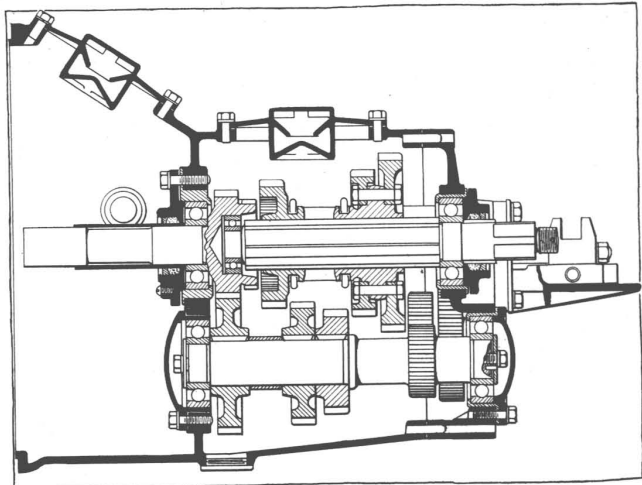


Fig. 9—A side sectional view of the Chalmers 36 gearset, showing short, stout shafts on ball bearings and compact construction throughout

out the clutch and, if continued, applies the service brakes. The emergency brakes and gear changes are operated by means of levers at the right of the driver's seat. The foot accelerator is of an improved type, combining the advantages of the button and lever types. It is so constructed and located that its use does not tire the foot.

OVERLAND FACTORY ENLARGED

With an output of 16,300 Overland cars this year and a contemplated output of 20,000 for the coming season, the Willys-Overland Co. has found it necessary to increase its factory capacity. As a result foundations already are laid for a new building 300 feet wide and 400 feet long. It will have four stories and basement. According to present plans the first floor will be given over to assembling chassis work and the remaining floors to body manufacture and painting.

Another building enlargement is the new engineering building for Designer W.

basement. The lower floor is devoted to board room, physical laboratory and model room, the latter for all models of new parts pertaining to the car. On the sec-

line for the 1912 season is portrayed in exquisite three-colored, pen-and-ink and half-tone illustrations. The usual catalog description and specifications are given.

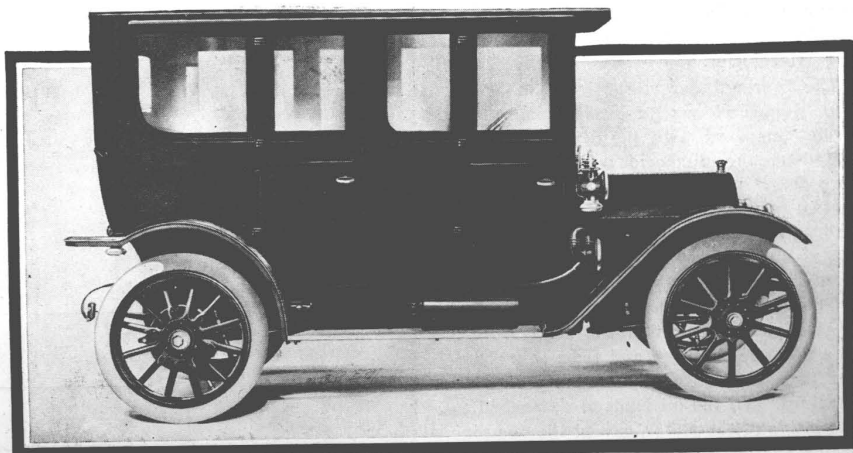


FIG. 10—CHALMERS 36 BERLIN LIMOUSINE