

SOME 1903 MODELS.

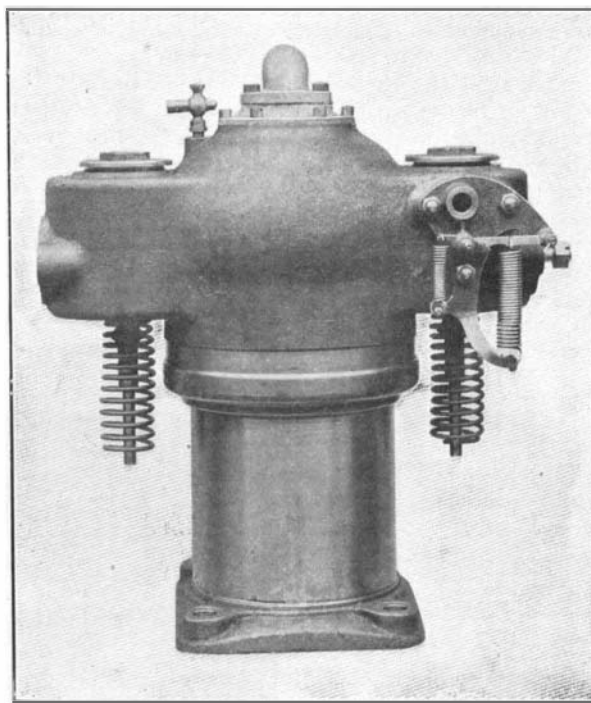
The Winton 20 horse power touring car for 1903 resembles that of last year in its main features. A slightly larger, double, opposed-cylinder motor is employed, which drives, through a spur gear transmission and chain, the rear axle. One of the noteworthy features of this motor, as can be seen in the illustration, is the copper water jacket extending from the crank case to the cylinder head, and making a box, square in cross section, of the cylinder. Copper water jackets are used on several other American cars this season, and they offer advantages that Mr. Winton has seen and made use of for years. The 1903 touring car has two speeds ahead and reverse. All ordinary running is done on the high gear by throttling the motor. When on this gear, the drive is direct by chain from the motor shaft to the rear axle. The throttle is operated by compressed air from a small plunger pump with piston rod connected to the crank shaft. The air pressure acts on small pistons fastened to the inlet valve stems, thus working against the suction of the motor pistons and keeping it from opening the valves but slightly, save when the air is by-passed by pressing on a pedal. The result is an extremely flexible throttle control. The charge-igniting spark jumps in both cylinders every time, the plugs being connected in series. This makes for simplicity, as a single spark coil and contact device only are needed. Of the two levers, the shorter one operates the slow speed and reverse, while the longer one throws in the high-speed clutch, or, when pushed forward, applies the band brake on the transmission shaft. A foot brake operates band brakes on the hubs of the rear wheels, which are shod with 32 x 3-inch detachable tires.

The Grout steam tonneau is an example of the style in steam cars for 1903. Of about half a dozen steam tonneaus seen at the New York Automobile Show, the Grout was the most conspicuous and locomotive-like in appearance, because of its cowcatcher. This serves the double purpose of clearing the road and protecting the condenser from damage in the event of a collision. The boiler is located under the bonnet. It is of 12 horse power, and is provided with a scoop below and above. The upper one, projecting above the bonnet, catches a current of air, and the draft set up over the boiler and through its flues carries all the fumes through piping to the rear. The 10 horse power engine is placed horizontally under the foot-board, and is connected by chain to the countershaft, which furnishes an independent chain drive to each rear wheel. Another feature of this car is the patented wheel throttle, consisting of a second wheel below the steering wheel and arranged to turn with it. The throttle wheel lifts up, working on a ratchet, and can be set at any desired speed, from which it can be released instantly by the foot. All parts of the Grout car are hung on an angle steel frame. The tanks furnished are sufficient for a 100-mile run. All the working parts are fitted with sight-feed oilers. The boiler has a fusible plug and low water alarm, and the car has steam, water and air pumps. It has a wheel-base of 7 feet, 32-inch wood wheels with 4-inch detachable tires, and the tonneau is removable if desired.

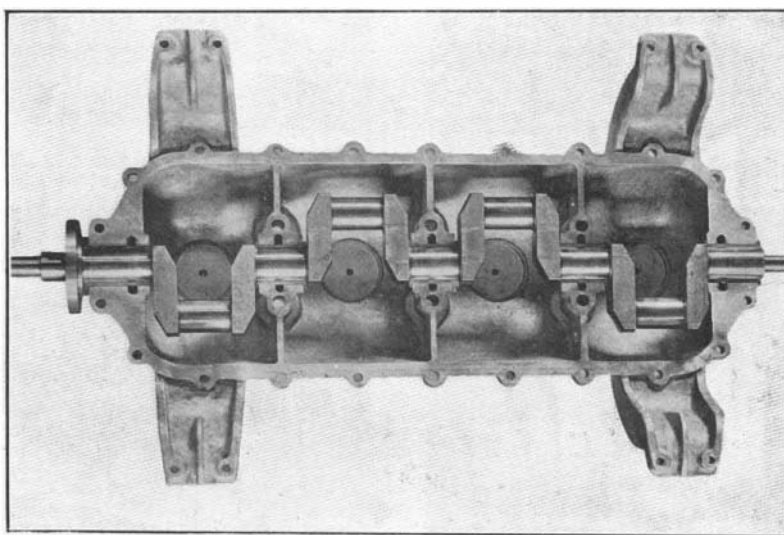
The "Arrow" tonneau is the latest production of the George N. Pierce Company. It has the rakish lines of a racer, and is a speedy little machine weighing 1,650 pounds and propelled by one of the new, 15 horse power, two-cylinder de Dion motors. Sliding gears operated by a single lever give three speeds forward and one reverse. The transmission gear shafts run on ball bearings. The gear box is connected directly to the rear axle (where a bevel gear drive is employed) through a shaft with universal couplings, and on its front end is connected to the conical flywheel clutch of the motor. The machinery is all mounted on an under-frame of steel tubing, which distinguishes the Pierce machine from other American makes. Hub brakes on the rear wheels and a double-acting brake on the transmission shaft add to the safety of the car. It is equipped with 32-inch wheels, shod with 3½-inch tires, and mounted on four long, semi-elliptic springs, all of which, combined with a wheel base of 6 feet, 9 inches, give it very easy riding qualities.

The Oldsmobile was the first successful American runabout to be built and marketed at a reasonable figure. Since its introduction two years ago, many improvements have been made on it, although the motor, transmission, and arrangement of machinery remain

practically the same. Mr. Olds was the first to mount the machinery frame on two long side springs connecting the front and rear axles, thus doing away with the running gear with reaches, and making an exceedingly flexible gear. His knowledge of gas engines enabled him to design an automobile engine that would operate successfully. A good idea of this engine can be had from our view of the same with cylinder cut away, showing piston, mechanically operated exhaust



CYLINDER OF PEERLESS MOTOR, SHOWING MECHANICALLY-OPERATED VALVES AND IGNITER.



CRANK SHAFT AND CRANK CASE OF PEERLESS FOUR-CYLINDER MOTOR.

and inlet valves, with the carburetor on the inlet pipe of the latter, and the spark plug. By changing the shape of the valve-raising cams, and employing the new carburetor, the power of the 4½ x 6-inch motor has been perceptibly increased. The transmission gear is of the planetary type and gives two speeds forward and reverse, with a direct chain drive from the motor shaft to the rear axle on the high gear. Both front and rear axles are now trussed to strengthen them, and the machine is equipped with wood wheels in place of wire ones. A hand-operated brake on the differential can be used in case of emergency. The motor develops about 4½ horse power at 700 R. P. M. The same sized engine is used in the physician's inside-operated

brougham, a new model brought out this year; but it is geared for speed of but 15 miles an hour, instead of 20, as is the runabout. A third model is a tonneau car with a two-cylinder engine of the same bore and stroke.

The new Peerless tonneau is one of the finest-appearing models brought out this year. The square, box-shaped bonnet and very long wheel base give the appearance of a speedy car that the motor is capable of fulfilling. The motor cylinders have a 4½-inch bore by a 5½-inch stroke, and its normal speed is about 900 R. P. M. The cylinders are cast in pairs and assembled to make two-cylinder, 12 horse power motors or four-cylinder, 24 horse power motors, as desired. The smaller car weighs 1,950 pounds and the larger about 2,300. The engine has a ball governor acting on a throttle valve, which can be thrown out of action at will. The inlet and exhaust valves are easily removable. On the latest Peerless racer, the inlet valves are mechanically operated, and arranged on the opposite side of the cylinder from the exhaust valves, as seen in the illustrations on this page. The other cut of the crank shaft is typical of all four-cylinder automobile motors. With the cranks set as shown, first one outside cylinder fires, then the next one to it, third the other outside cylinder, and fourth the one adjoining it. This furnishes an impulse every half revolution of the crank shaft, and makes a very steady and smooth-running motor.

The Jones-Corbin car, also shown on this page, is a light-weight, speedy little machine for two people. Its motive power is an 8 horse power de Dion motor, driving, through a sliding three-speed change gear, a countershaft, whence the drive is by chains to the rear wheels. The car is fitted with roller and ball bearings throughout. A beehive radiator is used for cooling the water, which is circulated by a powerful friction-driven pump. The steering wheel has a locking arrangement for keeping it where it is set. A speed of 35 miles an hour is guaranteed for this machine, the weight of which is but 700 pounds. A tonneau car of the same type, fitted with a 9 horse power motor, is also under construction.

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Reduction of Noise in Automobiles.

The Motor World in a recent issue contains some timely remarks on the reduction of noise in automobiles. It says:

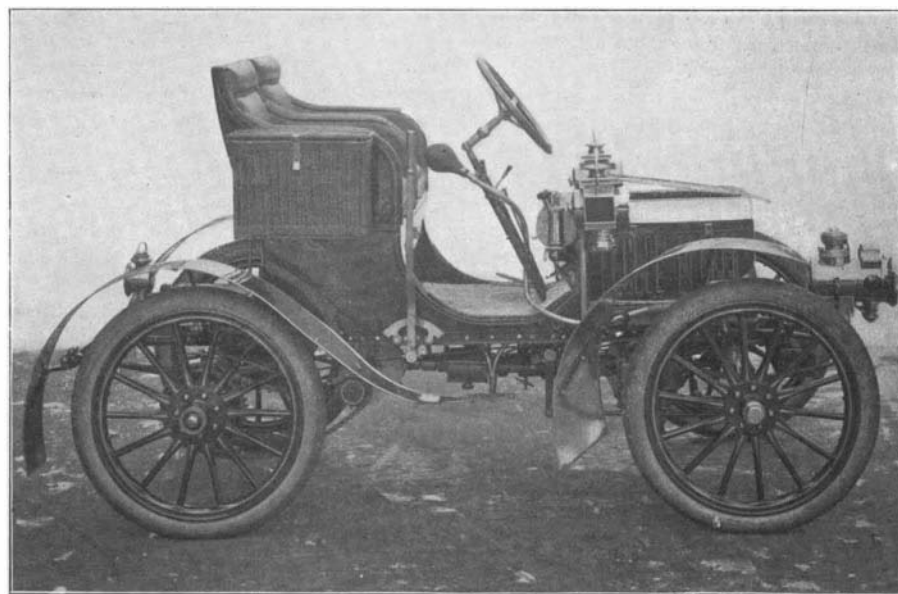
"As long as users were content to put up with the noise of gasoline cars, no very determined effort was made to silence them. There are both difficulties and drawbacks in the way, and with the many other problems to be solved it was felt that the matter of undue noise could well wait a little while. But the time for action has arrived, and real efforts to reduce the noise to a minimum are being made, and with no small degree of success.

"If by means of improved valves, etc., an approach to noiselessness can really be reached, as seems to be believed by not a few makers, a big step forward will be made. To strive to remedy the trouble at the exhaust end is to run the risk of encountering a boomerang. No one can avoid the conclusion that the exploded charge must find ready egress if back pressure is not to result. No matter how ingenious the construction of the muffler may be, it will almost certainly be regarded with suspicion. Loss of power will not be readily put up with; if there must be a choice of evils ninety-nine out of a hundred users will choose the noise—at least, until there is some pretty convincing evidence brought forth on the other side. The general public will welcome any diminution in the volume of sound emitted by the exhaust. Users, more discriminating, will first want to know whether it is an unmixed blessing."

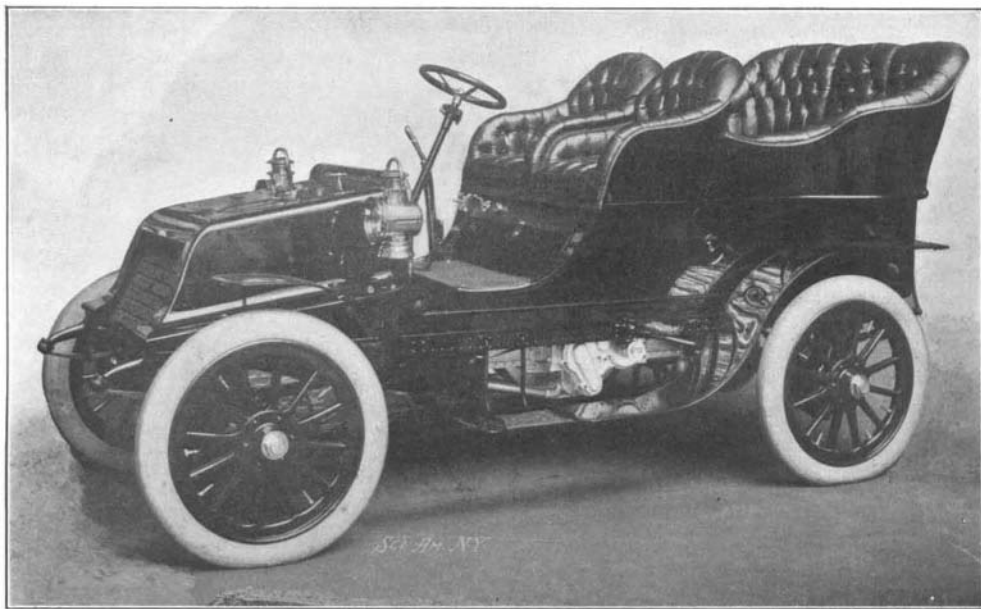
In throttling a motor with inlet valves actuated by suction, it is a matter of great difficulty, if not an impossibility, to regulate by hand the admission of air to the mixing chamber in a way to secure an absolutely uniform mixture when the motor is running at far below its normal speed. To avoid this inconvenience, a new system of carburetor has been designed, in which this admission of air is regulated automatically by the engine, so that, as the mixture is always the same, and only varies in quantity, the motor will run at a low speed without danger of stopping through the admission of poor gas.

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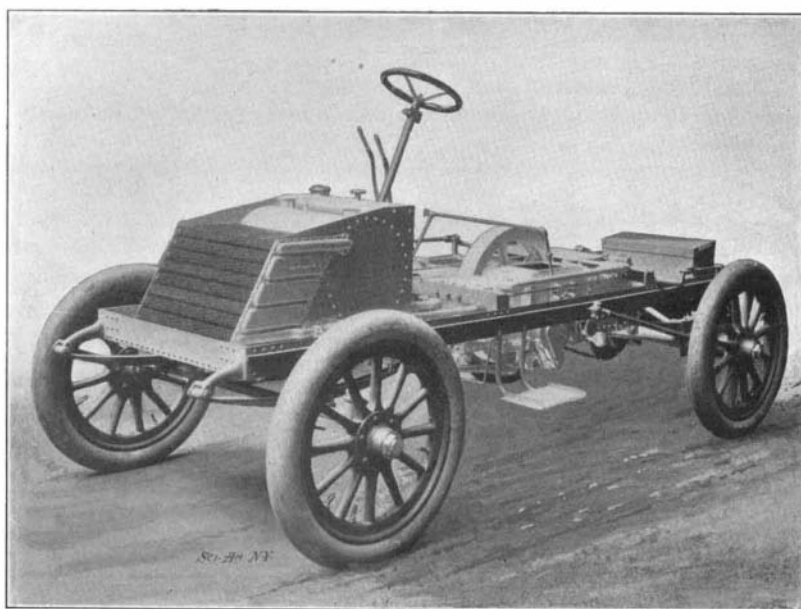
The first bicycle works in Japan are about to be started by a syndicate of eighteen Japanese financiers with a capital of 150,000 yen.



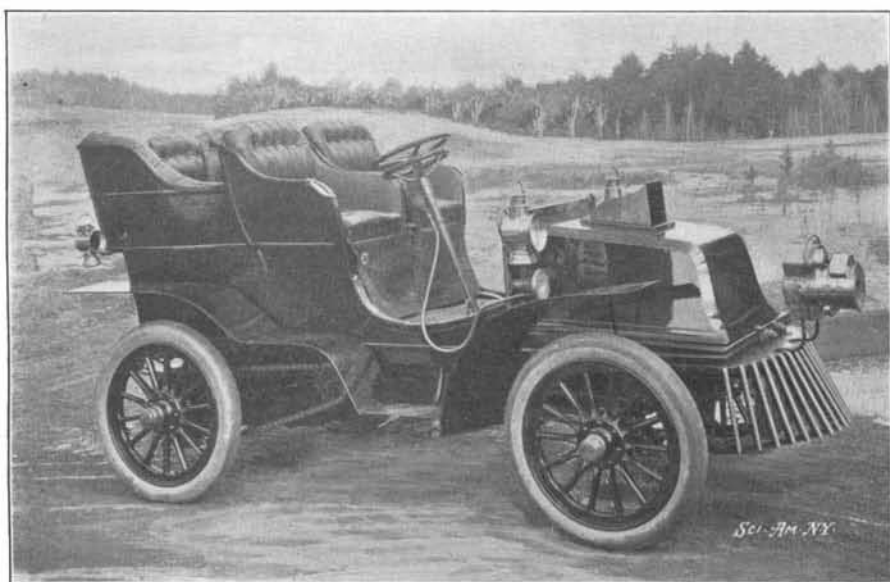
THE JONES-CORBIN 8 H. P. LIGHT-WEIGHT GASOLINE CAR.



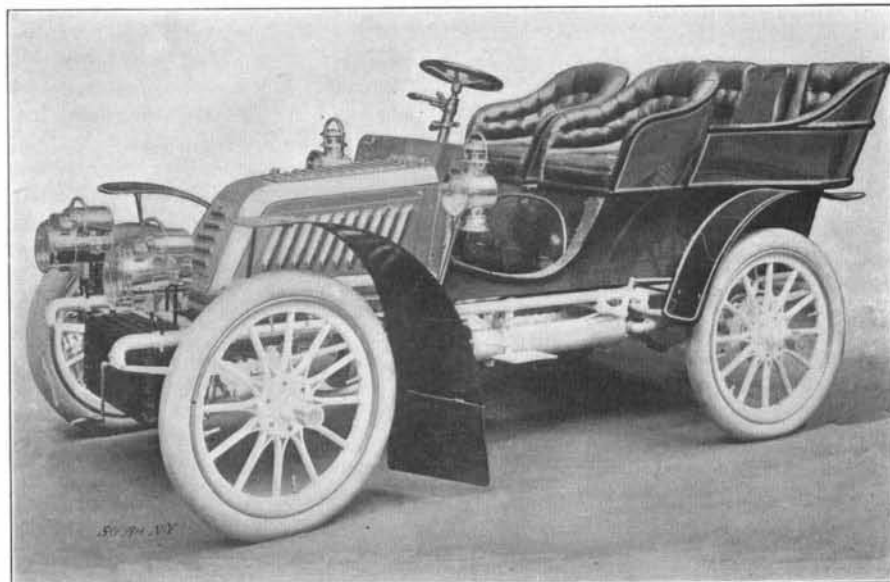
The Winton 20 H. P. Touring Car.



Chassis of Winton Touring Car.



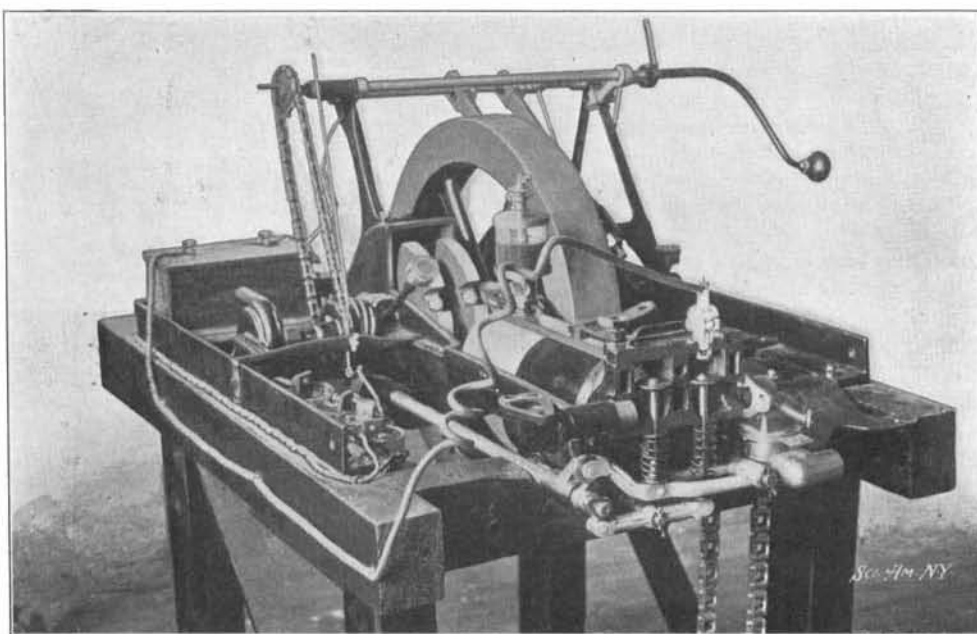
The Grout Steam Tonneau.



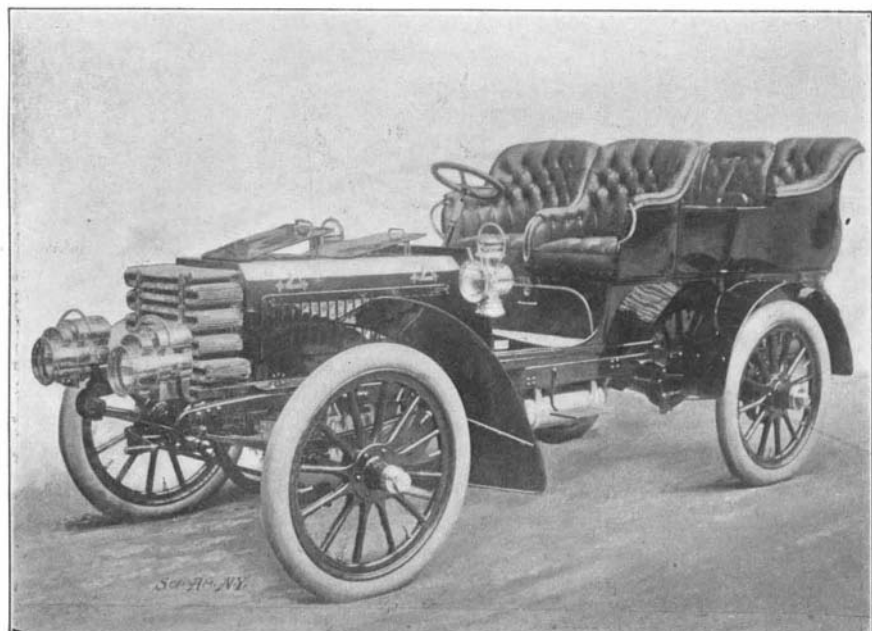
The Pierce "Arrow" Tonneau.



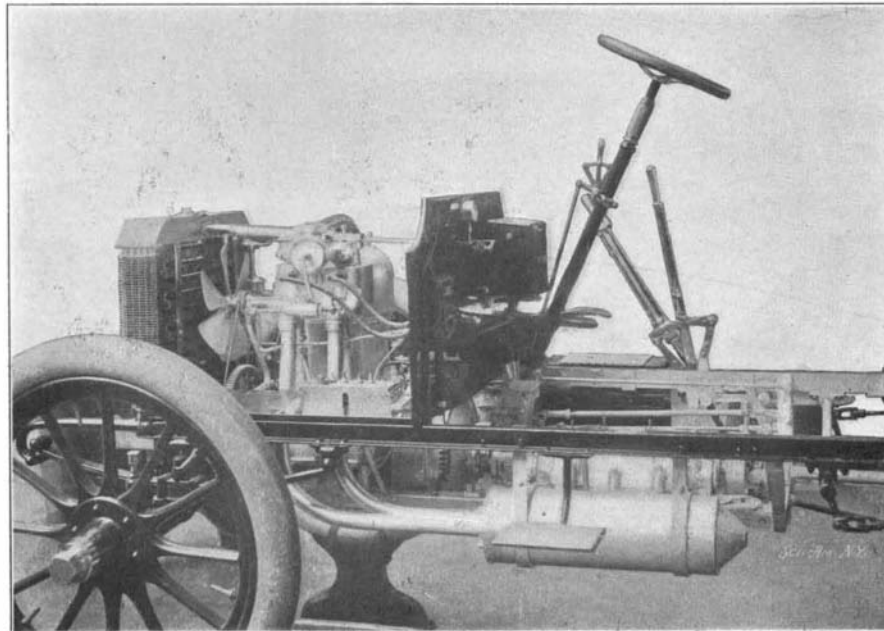
The Oldsmobile Brougham.



Oldsmobile Engine and Transmission.



The Peerless "King of the Belgians" Tonneau.



Chassis of Peerless Tonneau.

Photographs made especially for the SCIENTIFIC AMERICAN.

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