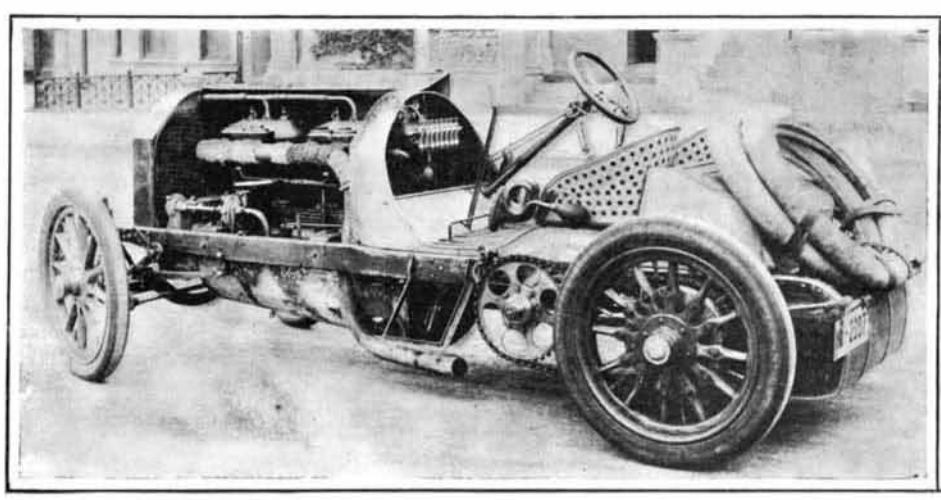
AMERICAN RACING CARS FOR THE INTERNATIONAL CUP RACE.

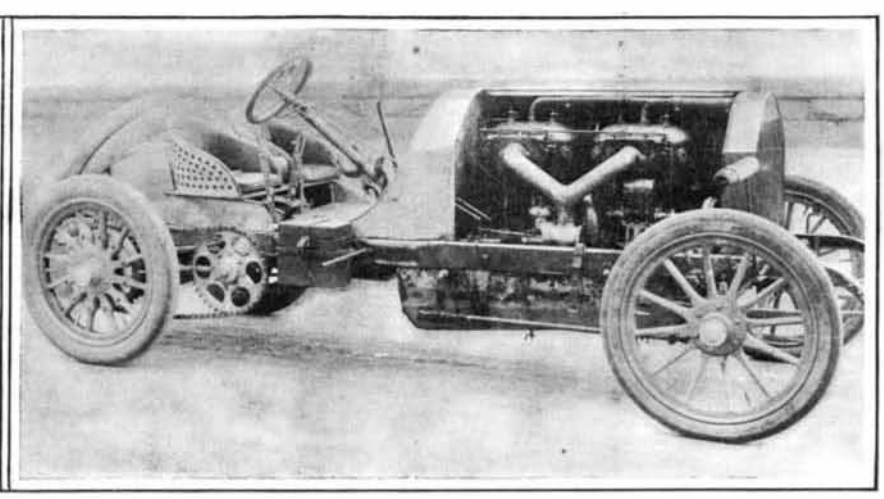
Attention has been drawn to the nearness of the classic Bennet cup race by the shipment abroad recently of two of the American cars which are to represent our country this year. After the disappointment the American public has had in the performance of the machines that have represented us heretofore, it is gratifying to know that this time, if we do not win, it will not be because we have not truly representative machines, composed of the best material and put together with the greatest skill that America can produce.

The 140-horse-power Locomobile racer shown on this page is owned by Dr. H. E. Thomas, of Chicago, Ill. It was specially designed by Mr. A. L. Riker, and constructed under his supervision at the Locomobile Company of America's factory in Bridgeport, Conn. Instead of following the usual custom of building a racer first and developing a touring car from it, Mr. Riker has proceeded in the reverse order; and the huge racer is simply an enlarged model of the touring cars the firm is at present producing. Cars of this type have had a thorough test in tours and endurance runs during the past three years, and their reliability is well known; so it is reasonable to suppose that the driver of the racer, Joseph Tracy, will not have to contend with those minor breakdowns that often lose a race.

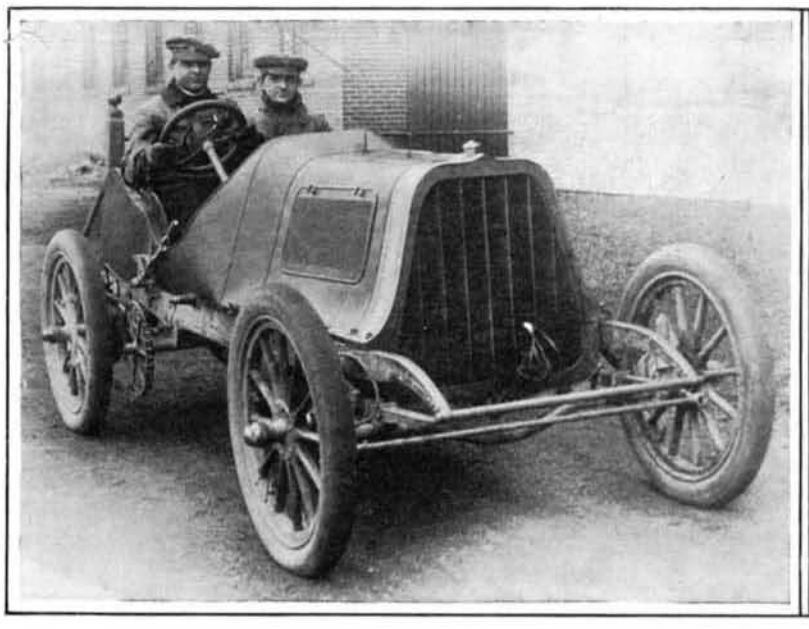
The photographs of the machine reproduced herewith show clearly its simplicity. The four cylinders of the engine, the bore and stroke of which are each 7¼ inches, are cast integrally in pairs, the walls being as light as possible without sacrificing strength. The crankshaft is of nickel steel, bored hollow to allow of the passage of oil to the cranks, and also to reduce weight. The practice of reducing weight by boring has been carried even to the minutest pins of the car, but has not been used on any parts where it would reduce essential strength in the least degree, such as the axles, frame, etc. There is no fan behind the radiator, which is of the corrugated ribbon type. The motor has mechanically-operated inlet and exhaust valves located in valve chambers on opposite sides of the cylinders. Make-and-break igniters operated from a slidable camshaft, having special cams for varying the time of the spark, are used. The current is supplied regularly from a gear-driven magneto, but two sets of accumulators and a coil are carried in reserve in a box on the frame beside the driver's seat. All these parts are visible in the picture showing the inlet valve side of the motor. The carbureter, spark and throttle levers and their connections, gear-shifting and brake levers, and clutch and brake pedals are also visible in this view, as well as the steering rod running forward to the front wheels from the bell crank depending from the frame, and which is moved by worm gearing at the foot of the steering column when the wheel is turned. The carbureter is of the automatic type, with an auxiliary air valve in the vertical elbow on the left-hand end, and the main air inlet through the pipe below the branch pipe to the right-hand pair of cylinders. This pipe draws hot air from around the exhaust pipe on the opposite side of the motor and has, besides, a shutter (seen open in the portion of it beside the carbureter) through which cold air can enter and regulate the temperature of the air supply. The two small levers below the steering wheel operate a piston throttle valve in the carbureter, and slide the igniter cams respectively. The long vertical lever in the center of the machine throws the clutch in or out directly in case the pedal connection should fail. This lever can be seen better in the other view, which shows the exhaust valve side of the engine, with the huge 3-inch exhaust pipe. One of the arms of the leather-lined flywheel clutch is visible in this view at the rear end of the casing below the motor, and through the step for the mechanic. On the dashboard is seen the oil tank, with its row of eight sight feeds connected by a pipe to its bottom. By squeezing the rubber bulb rapidly a number of times, enough pressure is placed above the oil in the tank to force it up and through the sight feeds for some minutes, whence it goes by gravity to the cylinders and crankshaft bearings of the engine. The oil pump, placed horizontally beside the oil tank, is used to force oil periodically into the crank case. Another small hand pump between the two seats is used to put pressure on the gasoline tank at the rear, for the purpose of forcing gasoline up to the carbureter. The exhaust pressure is not used in either case, the hands of the mechanic solely being relied upon. The centrifugal water-circulating pump is seen at the base of the motor in this picture also, it being on a gear-driven shaft rotated from the incased two-to-one gears at the front of the motor. Two gages above the oil tank show the pressure on the water and gasoline. Attached to the frame and the front axle a V-shaped arrangement known as the Truffult suspension is to be seen. This device consists of two arms pivoted together through a friction joint, which checks the frame from rebounding suddenly when the wheel passes over an obstruction. A car fitted with this device is said to ride smoothly at high speed and on an uneven road. The Richard-Brazier car that won the race last year was fitted with it. The racer has 3½ x 36-inch Diamond tires on the front wheels, and 4½ x 36-inch tires on the rear. Its wheel base is 109 inches and the tread, 54. The frame is of pressed steel and nickel steel is used throughout the car as far as possible. Ball bearings are used in the wheels and transmission. The latter gives three speeds and a reverse. The gears and their shafts are cut from single billets of steel. The transmission gives a speed reduction of 1 to 3 on the low gear, 1 to 2 on the second, and there is none on the high. The large size of the sprockets is to be noted. All of these have 38 teeth. 1¼-inch pitch, ⅝-inch Diamond chain is used. The drive is direct on the high speed, and at 900 R. P. M. of the motor, the car should make 90 miles an hour. The engine is one of the largest entered in the race, surpassing in size all of those on the French cars which are expected to compete. (See Scientific American for May 6th, 1905, for the sizes of some of these.) Its bore and stroke in millimeters are 184. The horse-power that it is capable of developing under the best conditions is in the neighborhood of 140, although the horse-power contracted for by Mr. Thomas was only 90. A brake test has shown 95 horse-power at 700 R. P. M. That it has ample power to hold its own with any foreign machine, can be seen from the fact that it covered 25 miles in 35 minutes over hills recently on the north shore of Long Island, when following Mr. W. K. Vanderbilt, Jr., on his 90-horse-power Mercedes. This is a rate of 42.14 miles an hour. A mile in 42 4-5 seconds was done in a test on a level road, and another in 45 on a 6 per cent grade, which correspond to speeds of 82.8 and 80 miles an hour respectively.



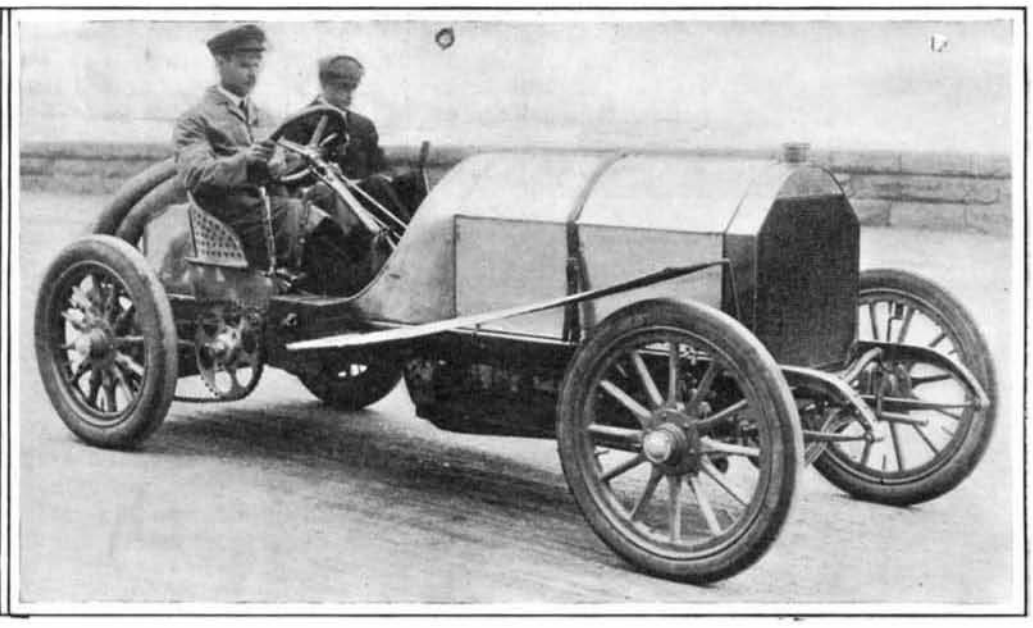
Rear of Racer, Showing the Exhaust Valve Side of the Engine, the Dashboard, and the Gasoline Tank at the Rear.



Inlet Valve Side of Engine, Showing Carbureter, Magneto, and Controlling Pedals and Levers in Front and Beside the Driver's Seat.



One of the Two 50-H.-P. Pope-Toledo Machines, Which Will Represent America in the Race in France on July 5.



The 140-H.-P. Locomobile Car. This Machine Has One of the Largest Engines of Any Entered in the Race.

THE AMERICAN RACERS FOR THE GORDON BENNETT CUP RACE.

The two Pope-Toledo racers entered for the cup event are rated at 50 horse-power only, and are comparatively low-powered cars. Their general appearance can be seen from the photograph. They are built on much the same lines as the Pope racers which did so well in the Vanderbilt cup race last fall. The engines are fitted with copper water jackets, which are a distinctive feature of all Pope-Toledo motors. Jump-spark ignition is used, the current being furnished by batteries. The cars have sliding-gear transmissions, giving only two speeds ahead and a reverse. The final drive is by chains to the rear wheels. Both front and rear wheels are fitted with 4 x 34-inch tires. The wheel base of the cars is 102 inches, and the weight of each is 2,150 pounds. The machines are constructed largely of nickel steel. Both cars were run about 2,500 miles in the vicinity of Toledo, while being tested.

In September last the railways of the Mexican republic had a mileage of 10,310. This figure refers solely to the federal lines, and does not include those of the States or belonging to companies.