

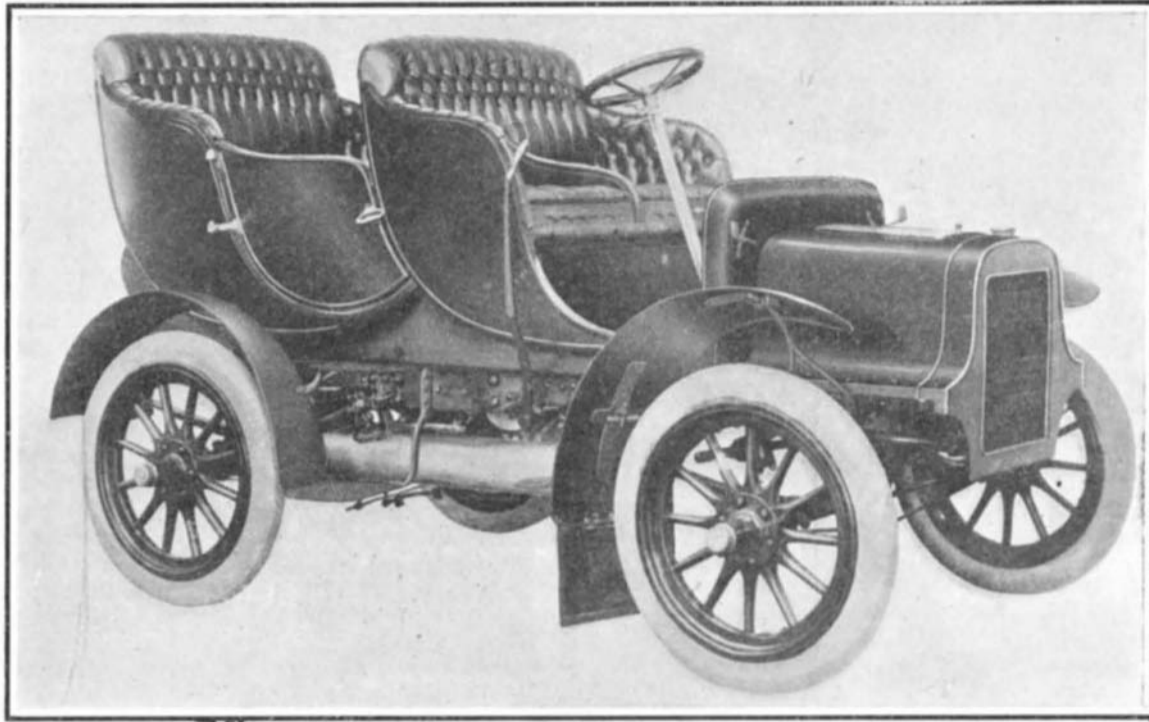
THE CADILLAC SINGLE-CYLINDER LIGHT TOURING CAR.

The graceful lines of the new single-cylinder Cadillac are apparent from our illustration. As far as the mechanism is concerned, this has undergone no radical change since the first car was built over three years ago. The workmanship is so good that many of the early cars are still in use to-day after receiving many hard knocks, yet being in constant service for several seasons. Simplicity and service are the things for which this car is noted chiefly. It is so constructed that any of the parts (including the crankshaft bearings) may be readily and cheaply renewed. Its single cylinder is fitted with a copper water jacket which is clamped in place without the use of gaskets. A thorough water circulation is maintained by a positively-driven centrifugal pump. The carbureter consists of a simple mixing valve operated by the suction of the motor. The spark plug is made up of two mica plugs set in a suitable cap. As both terminals of the plug are insulated, it does not short-circuit readily. The 1906 car is fitted with a mechanical oiler driven by a cam on the countershaft. This oiler forces oil through large pipes to the bearings, cylinder, and crank, the result being that the wearing parts are always properly lubricated. A very good feature of the car is that the starting crank can only be put on when the spark is retarded—an arrangement which makes a "kick back" of the engine impossible. The bore and stroke of the motor is 5 inches. Eight horse-power is guaranteed at the start, but after an engine has been run several months, a brake test

will often show 10 horse-power or over at 1,300 R. P. M. The runabout will go 20 to 30 miles on a gallon of fuel, and the touring car 17 to 20. On English roads as high as 40 miles on a gallon has been attained. The front end of the machine is supported by a transverse

THE OLDSMOBILE TWO-CYCLE AND FOUR-CYCLE TOURING CARS.

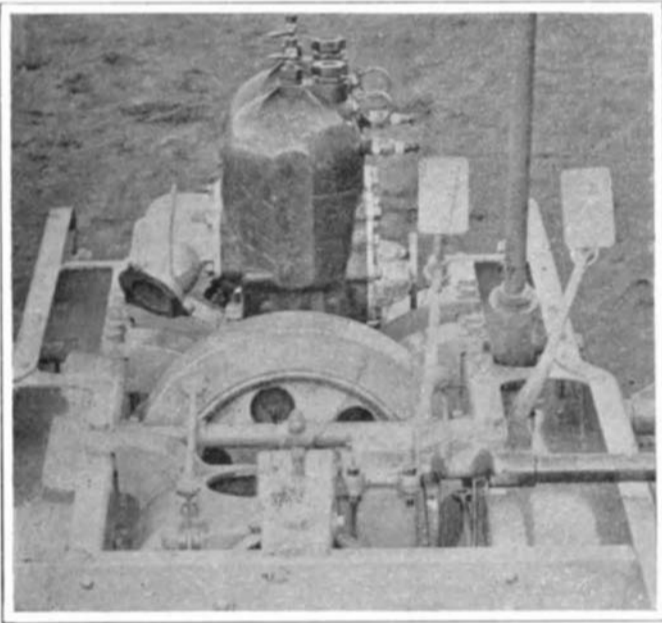
The Olds Motor Works have this year brought out a new, light, side-entrance tonneau, shown herewith, which has for its motive power a two-cylinder, vertical, two-cycle engine, placed in front under the bonnet. The chassis of this car is identical with that of the larger four-cylinder four-cycle touring car. The front end of the two-cycle chassis is shown herewith. The motor is substantially constructed, having a large crankshaft and bearings 3 inches long. The latter have adjustable boxes for taking up the wear. A relatively high compression (about 8 pounds) is obtained in the crankcase, the space of which is filled by aluminium disks on the crankshaft. The transfer ports are of liberal dimensions, and as direct as it is possible to make them. The result is that about 25 horse-power is obtained with two 5 x 5-inch cylinders. This power is transmitted to the rear wheels through a three-speed sliding-gear transmission of the selective type and the usual universally-jointed propeller shaft and bevel gear drive at the rear axle. The latter is fitted with roller bearings, while the transmission has babbitt bearings, lubricated by oil-soaked waste. The transmission gears are of high-carbon steel, tempered and hardened. The lower half of the transmission case is removable, and the upper half is provided with an inspection cover for examining the gears. The view of the chassis from beneath shows very distinctly the arrangement of the different parts. A universal joint



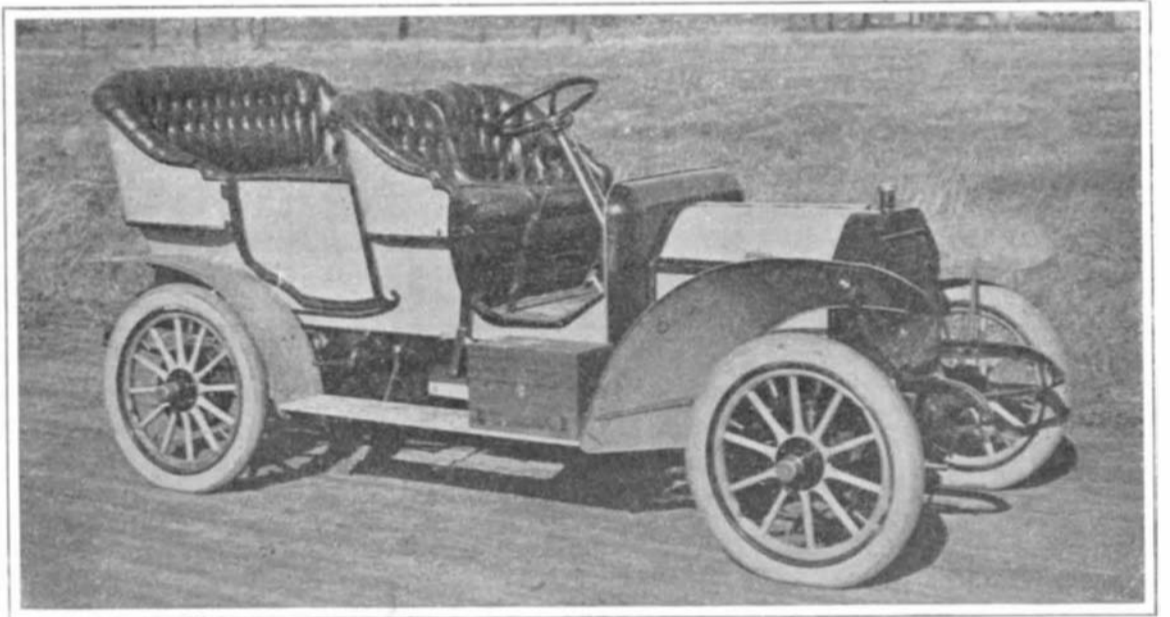
THE NEW CADILLAC 8-HORSE-POWER SINGLE-CYLINDER TOURING CAR.

spring mounted on a rocker which sets upon the upwardly-curving tubular front axle. Thus the axle can be raised at either end without affecting the body in the least. The car is fitted with double band brakes on the differential, which is driven from the engine by a hardened detachable roller chain of the cotter-pin type. The Cadillac company are also making two four-cylinder cars having 4 3/8 x 5 and 5 x 5 engines respectively and being fitted with their three-speed planetary gear. These cars are very similar to that illustrated in our issue of December 16 last.

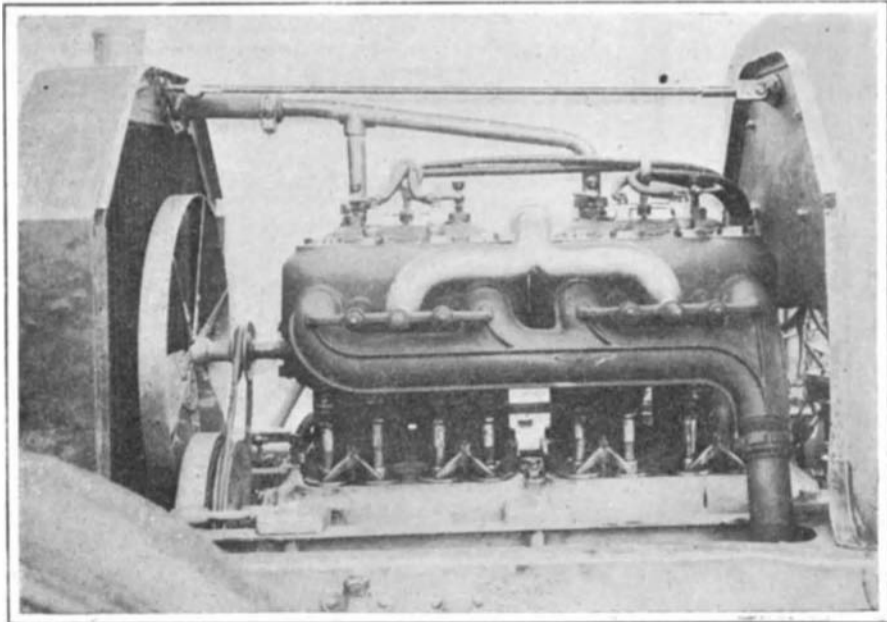
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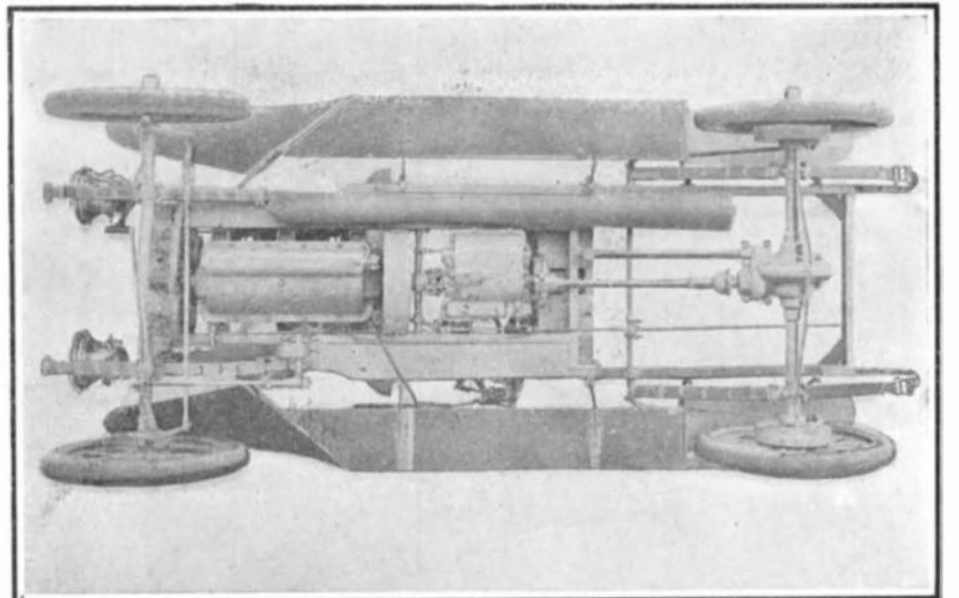
FRONT END OF CHASSIS OF OLDS 2-CYCLE CAR, WHICH HAS TWO 5 x 5-INCH CYLINDERS.



THE OLDS LIGHT, 2-CYLINDER, 2-CYCLE TOURING CAR. WEIGHT, 1700 POUNDS.



THE 4 1/4 x 4 1/4, 4-CYLINDER, 4-CYCLE OLDS TOURING-CAR MOTOR.



UNDER SIDE OF CHASSIS OF OLDS 4-CYLINDER CAR. A TYPICAL CHASSIS WITH BEVEL GEAR DRIVE.

attached to the latter. The gears are all inclosed and run in oil. The camshafts may be easily removed, and the crank bearings can be adjusted through the inspection covers in the crankcase. High-tension magneto ignition is employed, the magneto being gear-driven direct from one of the camshafts. A coil is used in connection with the magneto, and the distributor on the same directs the current to the spark plugs of the various cylinders. A metal-to-metal cone clutch running in oil is located in the flywheel of the engine.

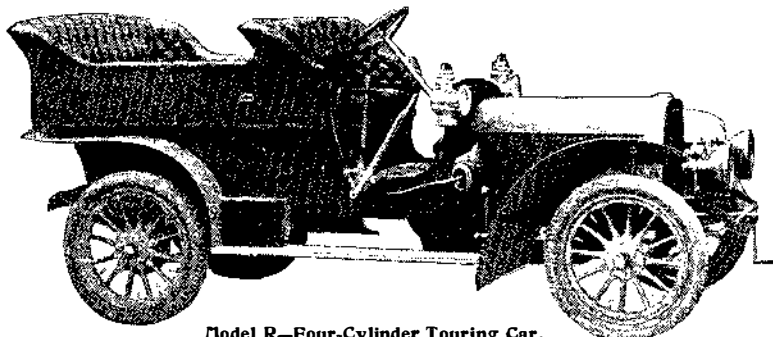
THE OLDSMOBILE TWO-CYCLE AND FOUR-CYCLE TOURING CARS.

(Continued from page 30.)

is placed between the engine and the transmission in addition to the two protected universal joints in the propeller shaft. The motor and transmission are mounted upon a sub-frame, which is suitably braced by steel plates riveted to the main pressed-steel frame. All working parts of the machine may be removed without disturbing the alinement of the crank and transmission cases. The radiator also is mounted on the sub-frame, for the purpose of doing away with excessive vibration of this delicate member. The running board and mud guards are attached by means of tapered sockets, which makes them readily removable. This is a minor distinctive feature of the new Olds car. The four-cylinder, four-cycle motor of the larger touring car also has several distinct features. In the first place, the oiling system is very complete. The oil is pumped from an oil well in the base through passages in the crankcase of the motor to all the bearings of the same. The lower half of the crankcase contains a certain amount of oil, the splash from which is used to lubricate the cylinders. The level is maintained in the base by means of holes leading to the oil well below, any overflow passing immediately into this reservoir. A positively-driven oil pump operated from the camshaft (which is hollow and also has oil forced through it for the lubrication of its bearings) circulates the oil through the passages of the crankcase. A glass bull's eye in the front of the case shows the amount of oil present at all times. In the bottom view of the chassis the oil well is seen as a long cylinder running the length of the crankcase. The water pump is also ingeniously housed in the rear end of the crankcase, where it is driven by gears. The view of the motor shows the cylinders to be cast in pairs, with all valves located on one side and mechanically operated from a single camshaft. The contact box is at the rear end of the motor on the top of a vertical shaft, driven by bevel gears from the camshaft. Jump-spark ignition with separate coils and both storage and dry batteries is used. The clutch is of the ordinary cone type, but it is equipped with a spring device which allows the load to be picked up slowly and without any jerks. The clutch cone carries a large grease cup for the lubrication of the bearing that the clutch revolves upon when it is not engaged. The exhaust and the inlet pipes of the motor can readily be removed by taking off the clamping piece held by two nuts. The valves can be removed through holes in the valve chambers, and the valve stems and their bushings can also be taken out by undoing the clamps which hold the latter in place. The crankcase bearings are supported on the upper part of the motor base, and the whole bottom half of the crankcase can be removed when it is desired to adjust these bearings. The steering gear of this touring car is very well designed and has small grease cups on all important joints, so that the wear can be minimized. All the steering connections are easily adjusted. An irreversible worm steering gear is used. The four-cylinder car has a $4\frac{1}{4} \times 4\frac{3}{4}$ -inch motor, capable of developing 26 to 28 horsepower at 1,000 R. P. M. The machine weighs about 2,000 pounds, has 106-inch wheel base, and is capable of speeds of

HAYNES

"The Car the Repairman Seldom Sees."



Model R—Four-Cylinder Touring Car.

Vertical roller-bearing engines. Cylinders cast separately, $5\frac{1}{8} \times 6$ inches, 50 H. P. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master Clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller-bearings throughout. 108-inch wheel base, 54-inch tonneau, seating five people. Four to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, \$3,500 f.o.b. Kokomo. Full equipment.

THE EXCLUSIVE HAYNES TRANSMISSION.

If an automobile weighing 2,750 pounds, plus the weight of five passengers, is dropped over a sheer embankment of 7 feet, the machinery will receive a shock of just the same severity as if suddenly checked by shifting from high speed gear at 30 miles per hour to middle speed gear at 15 miles per hour. In the latter case, the engine must act as a brake, and the entire machine is severely strained. With the Haynes transmission, this cannot occur. A ratchet and pawl device permits the car to coast until the speed of the car and engine are relatively equal, when the pawls engage and the engines take up the load. While making the change in speed from high to middle or from high to low, the gears are running idle, permitting the operator to shift with perfect ease and without danger of burring or stripping the gears. With all forms of transmission except the Haynes, the shock of sudden change of gears may be, and frequently is, thrown upon the machine, a thing impossible in the Haynes car and one of the reasons why Haynes cars are so long-lived and cost so little for repairs and up-keep.

This is but one of the exclusive features of the Haynes. Others are its Roller-Bearing Engines, Master Clutch, Universal Joints that do away with wear on pins, Driving Sprocket and Roller Pinion, etc. There is perfect harmony throughout its entire mechanism, which makes its cost of operation, up-keep and maintenance extremely low.

It is perfectly finished in all respects. Only the best of tested materials are used. Body is of cast aluminum and wood, designed by a leading Parisian body maker. Hand-buffed leather and gray curled hair are used in upholstery. Other exclusive features are given in our new catalogue. For prompt attention address Desk 32.

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Oldest Automobile Manufacturers in America
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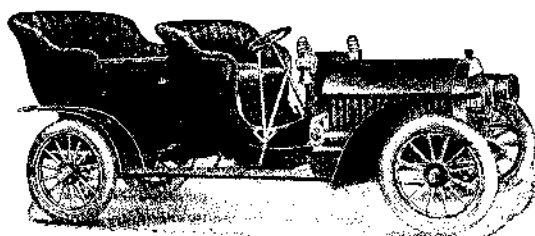
about 50 miles an hour. The lighter two-cycle car weighs only 1,700 pounds, which, with its 25-horse-power motor, should make it a very speedy and capable machine over all kinds of roads.

PEERLESS TOURING CAR.

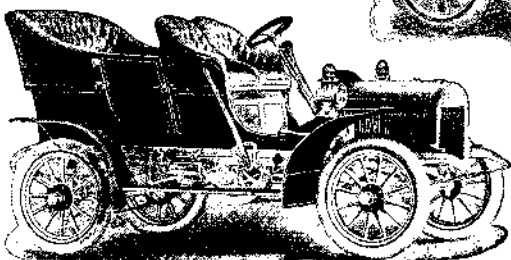
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running in oil, and the object of the box being set at an angle instead of vertical is to keep the roller always submerged, which does away with trouble from arcing. The radiator is constructed of flat copper tubes connecting with the surrounding water tank, which is a solid casting. The gear-driven centrifugal pump, housed in the crankcase and running in oil, forces the cooled water from the bottom of the radiator up through the water jackets. The clutch is of the internal expanding type, which has the following advantages: lack of weight, and a consequent lack of inertia, or flywheel effect, which is apt to prevent the quiet and quick shifting of the gears; ease of gripping; and an even distribution of the wear, which is taken up automatically. There is also no end-thrust with this type of clutch. A novel feature is the possibility of adjusting the distance of the pedal from the front seat to suit the length of the driver's leg. The transmission, which we illustrate, is a typical four-speed sliding gear of the selective type. Ball bearings are used throughout, and provision is made for oiling them from the gear case. As may be seen in the cut, there are two sets of sliding gears operated by two shifting forks. Two of the three bars shown operate these forks. The bars are locked by a transverse rod passing beneath them and through notches on their under surface. This locking rod (which is seen at the right-hand end) has a single notch which, when it is brought under any rod, frees it so that it can be moved back and forth by a vertical lever having a ball tip, which slips into the notch seen on the upper surface of each rod. The main shifting lever works in an H-shaped quadrant.

Wayne



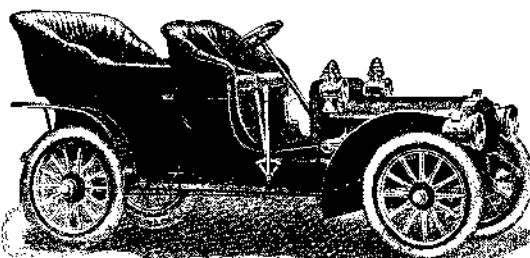
Model K is a 4-cylinder car with cylinders $4\frac{3}{4} \times 5$, cast in pairs and water cooled. Full 35 H. P. Sliding gear transmission. Three speeds forward and reverse. Equipment includes all necessary tools of the best quality, 2 side lamps, 2 acetylene head lights with generator, tail lamp and tube horn. Tires 32 x 4. Price, \$2,500.



Model H is our 2-passenger runabout. Motor 2-cylinder opposed, under hood. Cylinders $4\frac{1}{2} \times 4$, developing 14 H. P. Planetary gear transmission with DIRECT BEVEL GEAR DRIVE. The strong features of this car are extreme simplicity and accessibility. The crank case and transmission case form one casting, and the entire engine can be taken apart or assembled in half an hour. Price, \$800.

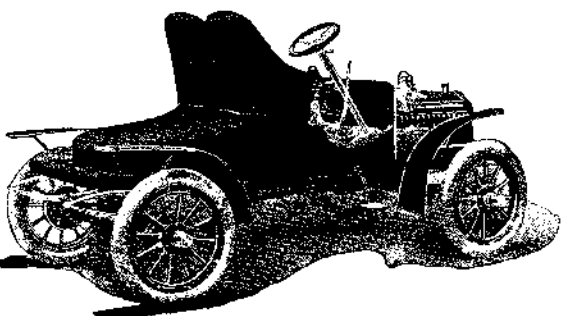
Full particulars of all these cars and the name of our nearest agent will be given if you will write

WAYNE AUTOMOBILE CO.
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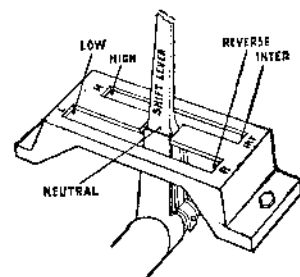
Model B, 4-cylinder, 5-passenger car, 24-28 H.P. Sliding gear transmission. Price, \$2,000.

Model C is a 20 H. P. 5-passenger car. This car has the same double opposed motor which proved so successful last season. Two seasons' use of this type of machine has proved it an ideal family car, most economical in up-keep. Planetary transmission with chain drive. Tires 30 x 3 $\frac{1}{2}$. Price, \$1,250.



The four models we offer for 1906 are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high-grade machines. In the Wayne cars the automobilist will be sure to find a car suited to his needs.

Model F is a 4-cylinder car with cylinders $5\frac{1}{2} \times 5$, cast in pairs and water cooled. Seating capacity, seven people. This car has full 50 H. P. Sliding gear transmission, with Hess-Bright ball bearings throughout. Tires 34 x 4 $\frac{1}{2}$. Price, \$3,500.



The side movement of this lever accomplishes the selecting of one of the three rods, while the forward and backward movement shifts one or the other set of gears forward or back, as the case may be. The advantages of this type of transmission are that the operator can always change from one gear to the other without passing through any idle gears. For instance, he can pass immediately from the low speed to the fourth speed except those of the latter speed. While this is an advantage for a skilled operator, a straightforward movement is easier for the beginner, and, consequently, gears of the ordinary three-speed type are generally preferable. The Peerless bevel-gear drive is also shown. The differential is open, and two of the spur pinions can be seen through the casing. On each side of the differential are ball bearings and universal joints. The latter allow of a slight movement of the driving shafts, which extend through the tubular rear axle and drive the wheels through jaw clutches on the hubs. The wheels themselves revolve on adjustable ball bearings on the tubular axle. The universal joints mentioned make it possible to dish the wheels slightly, which adds somewhat to their strength. There is also no binding if the axle gets out of line. This rear-axle construction has always been a feature of the Peerless car. The wheel base of the new car is 107 inches, and the wheels are 34 inches in diameter. The two rear springs are connected by a transverse spring that supports the body in