

**A REVOLVING-CYLINDER MOTOR CAR.**

A machine of distinctive design, and having a motor of decidedly original construction is illustrated herewith. This machine showed its capabilities in the Chicago-St. Paul tour last July, when it covered the 500-odd miles through mud and rain in good time, it making the best time of the two air-cooled cars which completed the run.

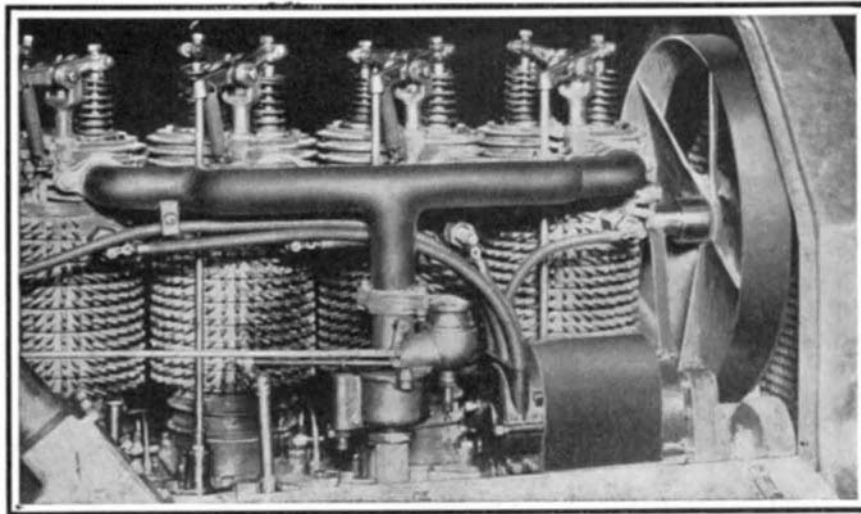
The motor of this car is similar to the Balzer engine described in our 1904 Automobile Number, the main difference being that the former has its cylinders revolving in a horizontal instead of a vertical plane. The A. F. motor is controlled by variable compression, the charge from one cylinder being almost entirely expelled and sucked into another when the engine is running light. The carbureter is replaced by a gasoline pump which sprays the fuel through a pipe, *P*, into chamber, *C*, containing a leather gas-supply bag from which the gas is drawn to the cylinders through passages, *D*. The mixture is obtained by regulating the stroke of the pump. The spark is advanced automatically according to the speed of the motor. A positive-feed oil pump lubricates all parts of the motor with certainty. A single spark coil with vibrator answers for all the cylinders. The spark jumps outside the motor from the stationary conductor, *B*, to the porcelain binding post, *F*, on the revolving crankcase, whence the secondary current passes through a wire to the plug, *G*. The inlet and exhaust valves are in the cylinder heads, each pair being operated by a single lever pivoted between them and rocked by suitable cams in the crankcase. Auxiliary exhaust ports, *E*, with wire gauze, make a muffler unnecessary. The entire power plant, transmission included, weighs 480 pounds, 230 pounds of which represents the weight of the motor. The revolving part of the motor—cylinders and crankcase—weighs 190 pounds; so that, although there is no flywheel, the effect of a 190-pound flywheel is obtained. The motor weighs only 9 pounds to the horse-power. At a speed of 600 R. P. M. the air rushes over the longitudinal flanges of its cylinders at the rate of a mile a minute. This positive cooling of the cylinders at all speeds and without the use of fans or blowers, is the one chief feature of this car. Because of it, the car can be run at all times and under all conditions without loss of power from overheating. A 5 x 5 five-cylinder motor giving 45 horse-power is

the largest engine that has been built thus far, but engines of still greater horse-power could no doubt be made to run successfully.

The transmission is of the planetary type giving two speeds ahead and a reverse, but a simple arrange-

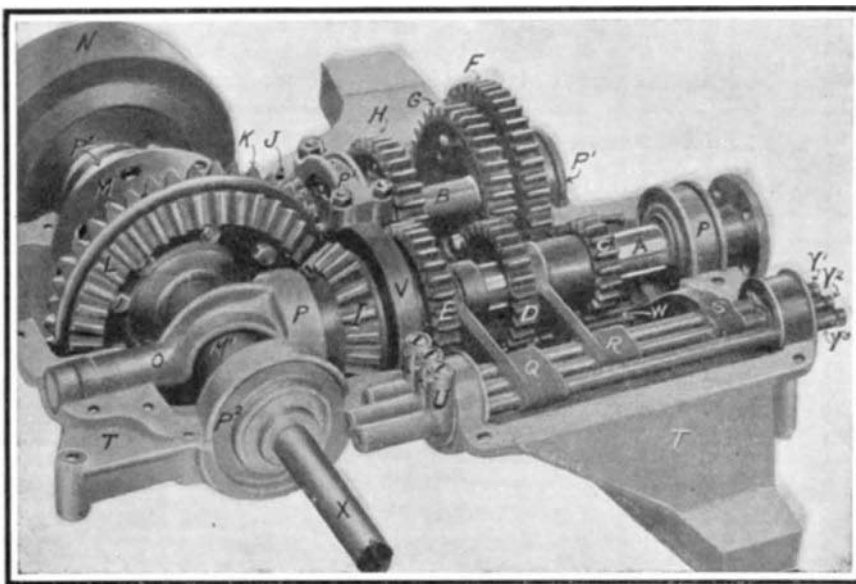
differential on the live rear axle transmits the power.

Because of the light weight of the power plant, the car with its heavy closed body weighs only 2,000 pounds. The steering control levers can be quickly changed to the inside if necessary, and the front seat and footboard be closed. The car is thus an ideal two-passenger car for stormy weather or a five-passenger open car (by letting down the windows) for fair weather.



**THE 4 1/4 x 5 1/2 KNOX 4-CYLINDER AIR-COOLED MOTOR.**

Note the auxiliary coil springs on rocker arms of inlet valves; also wires running direct to spark plugs from high tension distributor on gear-driven magneto. The carbureter and fan are also plainly visible.



**THE NEW MERCEDES-TYPE SELECTIVE TRANSMISSION HAVING A DOUBLE BEVEL GEAR DRIVE.**

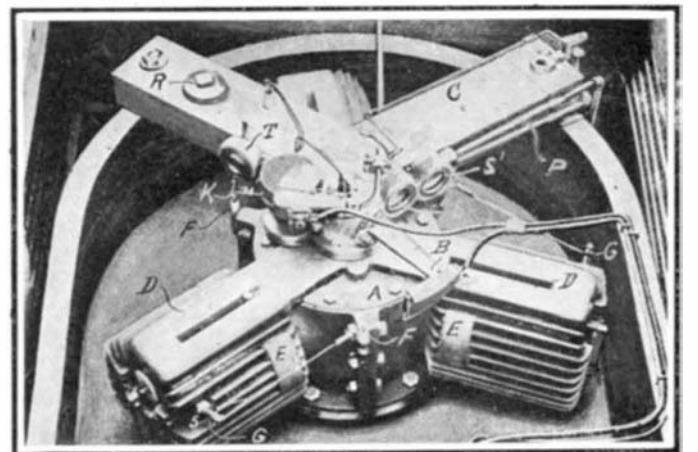
ment of sliding gears used in connection with it makes possible the obtaining of two more speeds ahead and another reverse. The countershaft carrying the transmission is directly below the motor and is driven through bevel gears. A single chain from it to the

integral. Reverse gear, *W*, is mounted between two supports on the bottom of case and shifted by fork, *S*, and shifter bar, *Y'*, into mesh with *C* and *F* for the reverse motion. Spring-pressed balls in the cases, *U*,

(Continued on page 49.)

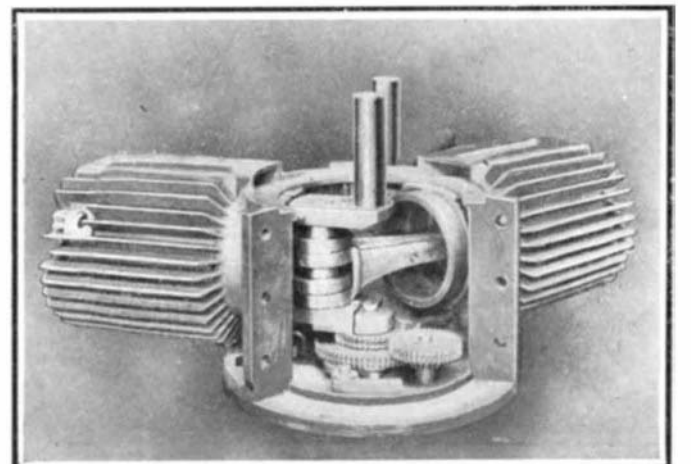


**AN EX-SPEAKER AND A WELL-KNOWN SENATOR READY TO RIDE IN AN ADAMS-FARWELL REVOLVING-CYLINDER MOTOR CAR.**



**THE MOTOR AS SEEN WHEN BACK COVER IS RAISED.**

The motor is located under rear seat and can be readily inspected from behind the car. Parts: *A*, revolving crankcase; *B*, arm carrying insulated sector to which jump-spark wire is attached; *C*, gasoline tank and carbureter; *D*, inlet and exhaust passages to valves in head; *E*, auxiliary exhaust ports; *F*, porcelain binding post connected to spark-plug *G*; *K*, commutator; *P*, gasoline pipe from pump; *R*, oil tank; *SS'*, bulls' eyes showing gasoline level; *T*, ditto for oil.



**MOTOR WITH ONE CYLINDER REMOVED, SHOWING ARRANGEMENT OF THREE CONNECTING-RODS ON ONE CRANK.**

**Business and Personal Wants.**

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. In every case it is necessary to give the number of the inquiry.  
**MUNN & CO.**

- Marine Iron Works. Chicago. Catalogue free.
- Inquiry No. 7660.**—For makers of oil burner capable of use in a wood heater.
- "U. S." Metal Polish. Indianapolis. Samples free.
- Inquiry No. 7661.**—Wanted, a manufacturer to make pressed paper tubing, particularly strong and durable, 1.0 millimeters inward clear diameter and corresponding thickness, to bear inward pressure of nearly 20 atmospheres; tubes to be about 120 centimeters long.
- Drying Machinery and Presses.** Biles, Louisville, Ky.
- Inquiry No. 7662.**—For makers of portable table to be attached to any chair.
- WANTED.—Purchaser for Monazite, Molybdenite and Wolfram. Apply Monasite, Box 773, New York.
- Inquiry No. 7663.**—For manufacturers of powder in bulk, made from silica rock.
- I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.
- Inquiry No. 7664.**—For manufacturers of machinery for making, nailing, etc., wooden boxes, as large as 29 x 19.5 x 11.7 inches.
- The celebrated "Hornsey-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Machine Company, Foot of East 138th Street, New York.
- Inquiry No. 7665.**—For manufacturers of pins.
- WANTED.—Ideas regarding patentable device for water well paste or mudjacking bottle. Address Adhesive, P. O. Box 773, New York.
- Inquiry No. 7666.**—Wanted, makers of small water tube boilers for marine use.
- I have for sale the U. S. and all foreign rights of new patent improvements in Water Tube Types of Boilers, Great economizer. J. M. Colman, Everett, Wash.
- Inquiry No. 7667.**—For manufacturers of dental goods, such as teeth and filing materials.
- Young American permanently residing in Lima, Peru, S. America, wishes to hear from firms interested to be represented there. Further information, K. Thorn, Milford, Mass., P. O. Box 181.
- Inquiry No. 7668.**—For parties engaged in erecting fire escapes.
- FOR SALE—PATENTS.—Life saver; great money maker; it is a great invention; something never introduced before; can be seen; only buyers. Apply by letter, Nicholson, 651 3d Avenue.
- Inquiry No. 7669.**—Wanted, addresses of makers of two-cycle gas engines.
- Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery tools and wood fibre products. Quadriga Manufacturing Company, 18 South Canal St., Chicago.
- Inquiry No. 7670.**—For dealers in name plates, trunk emblems, old badges, etc.
- PATENTS.—Wanted, the service of a patent expert and experienced specification writer. No one need apply who has not had a thorough education along technical lines, and who has not had experience in patent practice. Munn & Co., 361 Broadway, New York.
- Inquiry No. 7671.**—For manufacturers of producer gas machines.
- Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.
- Inquiry No. 7672.**—For manufacturers of astronomical telescopes.
- Inquiry No. 7673.**—Wanted, manufacturers of railroad iron.
- Inquiry No. 7674.**—Wanted, makers of elastic bed mattresses and pillows.
- Inquiry No. 7675.**—Wanted, name and address of the makers of the Electric Shoe-shining Machine.
- Inquiry No. 7676.**—For makers of wire artists' supplies, such as jewelry and beads.
- Inquiry No. 7677.**—Wanted, a 1,000-foot gas holder.
- Inquiry No. 7678.**—Wanted, hand knitting machines for cheap cotton stockings.
- Inquiry No. 7679.**—For makers of thermostats and heat regulators.
- Inquiry No. 7680.**—For manufacturers of molds for molding plaster.
- Inquiry No. 7681.**—For dealers in crude rubber.
- Inquiry No. 7682.**—Wanted, manufacturers of glass bottles.
- Inquiry No. 7683.**—For dealers in Canada or Brazil wax.
- Inquiry No. 7684.**—Wanted, makers of machines for weaving "K" woven wire fence.
- Inquiry No. 7685.**—Wanted, catalogues of the latest fire extinguishers by carbonic acid or other chemicals.
- Inquiry No. 7686.**—Wanted, makers of advertising clocks, about 6 feet high by 2 feet wide.
- Inquiry No. 7687.**—Wanted, a pump for drawing water out of a suck line for natural gas.
- Inquiry No. 7688.**—Wanted, machines for drying, cutting and evaporating fruits.
- Inquiry No. 7689.**—Wanted, makers of apparatus suitable for general metallurgical and heating purposes.
- Inquiry No. 7690.**—For makers of parts with which to construct a dynamo.
- Inquiry No. 7691.**—Wanted, recipes for making first-class rubber-stamp ink.
- Inquiry No. 7692.**—Wanted, recipes for making colored mill crayons.
- Inquiry No. 7693.**—Wanted, makers of hosiery machines, also of a machine by which 2 to 3 dozen Guernsey frocks can be made in 8 hours.
- Inquiry No. 7694.**—Wanted, a cement-making apparatus for mixing rubber cements.
- Inquiry No. 7695.**—Wanted, the name and address of the makers of the celebrated Chime Hall Clock movements, tubular chimes.
- Inquiry No. 7696.**—For makers of novelties or aluminum goods.
- Inquiry No. 7697.**—For makers of coal oil stove burners, also crude oil stove burners.
- Inquiry No. 7698.**—For manufacturers of induction coils.
- Inquiry No. 7699.**—Wanted, address of parties who bend sled runners.
- Inquiry No. 7700.**—For manufacturers of peppermint.
- Inquiry No. 7701.**—For manufacturers of nails, saws, wire, hinges; also cotton goods.
- Inquiry No. 7702.**—For manufacturers of ball bearings.

**THE MARMON AIR-COOLED TOURING CAR.**

(Continued from page 28.)

necessary, but the large expanding-ring brakes in the rear wheels are usually ample. The rear axle has an aluminium gear case, whose two halves are cast upon two axle sleeves, thus making an integral piece of each. The wheels and differential revolve on Hyatt roller bearings. Floating interior half-axes drive the wheels through jaw clutches on the hubs. The thrust of the bevel pinion is taken up by a rolling contact of the pinion against the bevel gear—a very simple arrangement.

Aluminium is used wherever possible throughout the car. The body is constructed almost entirely of cast aluminium, as is also the dash and fenders. Vertical fenders from running board to body are one of the good features, as they keep down both dust and mud. The entire machine, with the exception of wheels and tires, is constructed in the large new addition the company has made to its plant for this purpose. The car is one of the best-built air-cooled machines on the market. That it can make fast time under all ordinary circumstances was demonstrated by its performance in the economy test held last November.

**NEW FOUR-CYLINDER AIR-COOLED MOTOR.**

(Continued from page 29.)

fit into notches in the shifter bars to locate them securely when the gears are completely in mesh. The bars are shifted by a single hand lever working in an H-shaped quadrant on the selective system. The selector box is dustproof, and contains a simple device which positively locks, in their neutral position, all the shifter bars except the one in use.

This transmission is modeled after the latest Mercedes speed-change gear. The shafts run on the non-adjustable ball bearings (which are also used on the road wheels), and the differential countershaft across the rear of the transmission is used for transmitting power to the wheels by means of sprockets and chains. The outer ball bearings of the countershaft are exactly under the sprockets. The advantages claimed for the transmission are that the divided shaft with one part running on the other (which makes a bearing difficult to oil and subject to great wear) is entirely avoided, while the shafts are much shorter between bearings, and hence have no tendency to spring while the intermediate gears are in use.

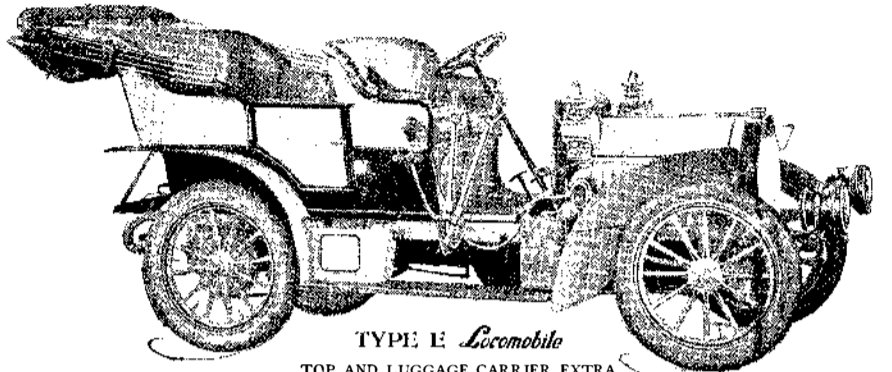
Six years ago the Knox Company built their first machine, fitted with a single-cylinder air-cooled motor of 4 horse-power. This was the first slow-speed motor of large bore and stroke to be made commercially successful. It was superseded by still larger motors of the double-opposed, horizontal type, and this year a still larger vertical, four-cylinder motor has been placed on the market. The cylinders of this engine have a 4 1/4-inch bore by 5 1/2-inch stroke. They are cast separately, and besides having reinforcing ribs near their base, they have about one-third fewer pins per square inch of cylinder surface, and the pins are about half the length of those that were used heretofore. Experiment has shown that the Knox cylinder is more efficient when a lesser radiating surface is used. As heretofore, everything is very substantial about the Knox car. The 1 3/8-inch crankshaft is supported in five separate bearings attached to the upper half of the crankcase. These bearings are 3 and 4 inches long, and those of the hollow wrist pins are 2 1/4 inches long. The valves, which are located in the cylinder heads, are 2 inches in diameter and interchangeable. They are made of a special steel and nickel alloy. Each valve cage fits into a pocket, from which it may be removed without disturbing any of the connections, and simply by unscrewing one nut. The valves can, therefore, be ground outside of the engine. Separate camshafts operate the inlet and exhaust valves, by means of push rods and rocker levers. Special auxiliary coil springs are

# Locomobile

"Easily the Best Built Car in America"

30-35 H. P., \$5,000      15-20 H. P., \$3,000

These models are almost identical in design; contain the same carefully selected materials; and are constructed throughout with equal care. Both models are furnished with complete touring equipment



TYPE E Locomobile  
TOP AND LUGGAGE CARRIER EXTRA

**Specifications of Type "E" 15-20 H. P. Locomobile Price \$3,000**

- EQUIPMENT, 5 brass lamps; horn; tire carrier; jack; tools and extra parts; locked box with trays for tools and parts; compartment carrying 4 tin cases for extra lubricants.
- MOTOR, 4-cylinder, 3 3/4" bore, 4 1/2" stroke; manganese bronze base; gears enclosed. Same general type as made by us for four seasons.
- CRANK SHAFT, machined from one solid forging.
- CAM SHAFTS, hardened ground forgings—one solid piece.
- CARBURETER, automatic type with balanced throttle valve.
- IGNITION, make-and-brake system used by us for the second season. Ignition cams solid with admission cam shaft which slides in bearings to advance or retard spark.
- MAGNETO, low tension, our design; permanent magnets from the best makers in the world; impossible to disturb any electrical adjustments by removing or replacing magneto. Oil proof armature.
- LUBRICATOR, large mechanical oiler. Large supply pipes.
- GOVERNOR, centrifugal type, prompt and positive in action.
- CONTROL, gas and spark levers on steering wheel.
- CLUTCH, cone type with ample leather face.
- UNIVERSAL JOINT, between clutch and transmission.
- TRANSMISSION, 3 speeds and reverse; direct drive on high gear; clutch shifting mechanism, gears, bearings, and differential all encased and lubricated by same oiling system.
- DRIVE, double side chains; hardened sprockets.
- RUNNING BRAKE, double acting type; 3 1/2" x 10" located on differential shaft, metal to metal surfaces.
- EMERGENCY BRAKES, internal expansion type, compensated. Large and powerful, metal to metal surfaces.
- SPROCKET DRUM, bolted to each rear wheel spoke.
- AXLES, 3 1/2" section axles front and rear.
- TIRES, 32" x 4" on all four wheels. Larger than the size recommended by the Tire Association.
- BODY, double side entrance, seating 5; extra wide doors; fitted with top irons; color and striping optional; running boards, covered with pyramid rubber bound with brass.
- WHEEL BASE, 93".

**NOTE.**—Our 30-35 H. P. Locomobile Type "H" \$5,000, is intended for those requiring greater power and greater seating capacity. The specifications are the same as those printed above with the following exceptions: Motor 4 1/2-in. bore, 5 1/2-in. stroke; Body seats 5 to 7 persons; Tires, 34 in. x 4 1/2 in., front and rear; Wheel Base, 106 in. Full illustrated descriptive matter of both cars on application to factory or any branch office.

For 12c. in stamps we will mail 12 souvenir postal cards showing 12 different views of the Locomobile running in the Vanderbilt Cup Race, making the best showing of any American car in any international contest. For 10c. in stamps we will mail a five-color poster showing the Locomobile finishing the race.

**The Locomobile Company of America, Bridgeport, Conn.**

NEW YORK, BROADWAY and 76th St. Member Association of Licensed Automobile Manufacturers  
PHILADELPHIA, 249 N. Broad St.      BOSTON, 15 Berkeley St.  
CHICAGO, 1354 Michigan Ave.

## PATENTS

### The Wealth of Nations

A PATENT gives you an exclusive right to your invention for a term of seventeen years. You can sell, lease, mortgage it, assign portions of it, and grant licenses to manufacture under it. Our Patent system is responsible for much of our industrial progress and our success in competing in the markets of the world. The value of a successful Patent is in no degree commensurate with the almost nominal cost of obtaining it. In order to obtain a Patent it is necessary to employ a Patent Attorney to prepare the specifications and draw the claims. This is a special branch of the legal profession which can only be conducted successfully by experts. For nearly sixty years we have acted as solicitors for thousands of clients in all parts of the world. Our vast experience enables us to prepare and prosecute Patent cases and Trade Marks at a minimum of expense. Our work is of one quality, and the rates are the same to rich and poor. Our unbiased opinion freely given. We are happy to consult with you in person or by letter as to the probable patentability of your invention.

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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.

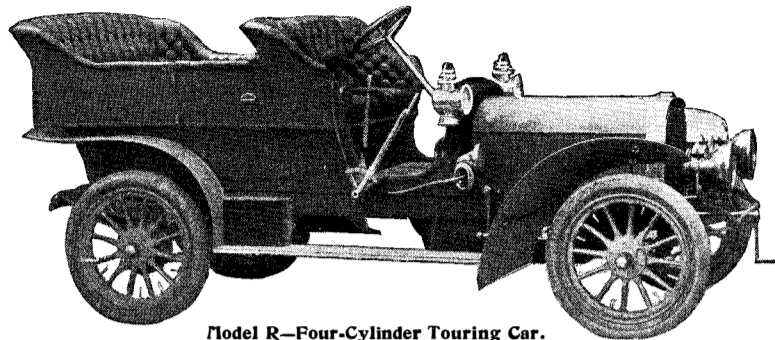
**THE OLDSMOBILE TWO-CYCLE AND FOUR-CYCLE TOURING CARS.**

(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 1/4 x 4 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 3/8 x 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.

**HAYNES AUTOMOBILE CO.**

Oldest Automobile Manufacturers in America  
KOKOMO, INDIANA

CHICAGO, 1421 MICHIGAN AVE. NEW YORK, 1715 BROADWAY  
Members A. L. A. M.

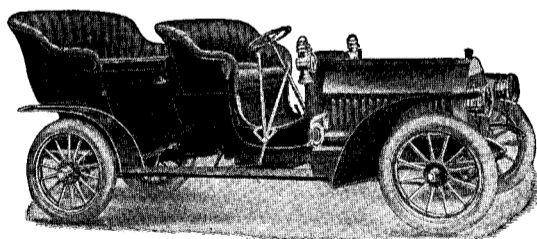
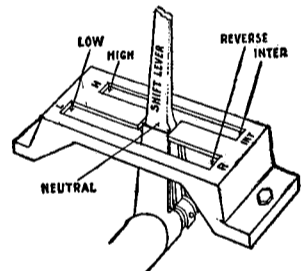
about 50 miles an hour. The lighter two-cycle car weighs only 1,700 pounds, which, with its 25-horse-power motor, should make it a very speedy and capable machine over all kinds of roads.

**PEERLESS TOURING CAR.**

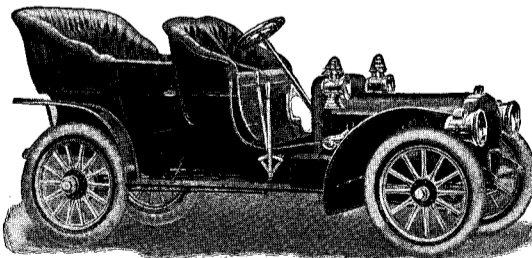
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running in oil, and the object of the box being set at an angle instead of vertical is to keep the roller always submerged, which does away with trouble from arcing. The radiator is constructed of flat copper tubes connecting with the surrounding water 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.

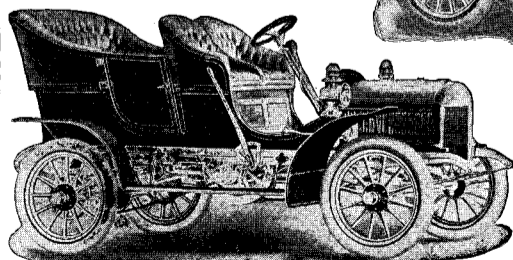
# Wayne



**Model K** is a 4-cylinder car with cylinders 4 3/4 x 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 B**, 4-cylinder, 5-passenger car, 24-28 H.P. Sliding gear transmission. Price, \$2,000.

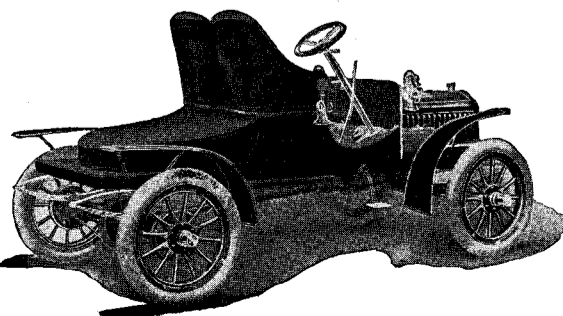


**Model C** is a 20 H. P. 5-passenger car. This car has the same double opposed motor which proved so successful last season. Two seasons' use of this type of machine has proved it an ideal family car, most economical in up-keep. Planetary transmission with chain drive. Tires 30 x 3 3/8. Price, \$1,250.

**Model H** is our 2-passenger runabout, Motor 2-cylinder opposed, under hood. Cylinders 4 1/2 x 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.**  
Dept. J. Detroit, Mich.  
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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 without throwing any gears into mesh 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