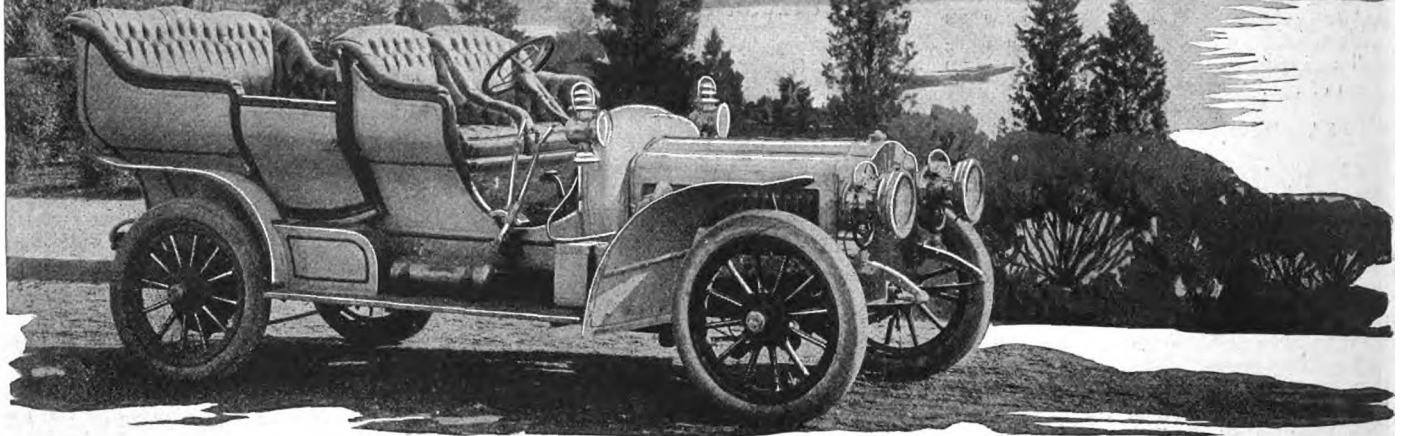


THE NEW THOMAS CAR



THE Thomas Flyer for next year is a 50-horsepower machine which shows many radical changes over the present Thomas car. The E. R. Thomas Motor Co. has spared nothing in making the construction of the present car high grade. By way of changes it can be noted that the atmospheric inlet valves have been replaced by mechanically operated valves, and that the inlets and exhausts are placed on opposite sides of the cylinders. Instead of the cone clutch there is one of the disk type, four forward speeds are used in the gear case, and the wheel base as used at present, from 104 and 110 inches as used at present, to 118 inches, very long springs have been added and four brakes fitted. The unique style of Thomas bodies is retained, but the top of the back seat is lower, eliminating the heavy appearance associated with the very high back. The square corner effect is replaced by easy corner curves. Chain drive, hollow metal dash, ample carrying compartments, and most of the other features are retained.

The sub frame, so common on this year's machines, has been dropped, the motor now being carried direct on the main frame side pieces, which are offset in front for this purpose as well as to increase the turning angle. These side pieces are of deep section and taper considerably toward the rear, but not so much to the front. In cross bracing channel sections are used, each being riveted and supported by large gusset plates, also riveted in place. Where the side pieces are offset they are reinforced by heavy channel pieces.

Instead of using tubular axles, the drop forge I-beam type are now employed. These are made of steel and have been treated for this purpose in order to stand shocks, stresses and strains. The rear axle is one piece, including the spring seats, in this way eliminating the use of brazed spring seats. The knuckle forgings are

machine tapered, with large fillets, and are attached to the I-beam yokes by a hardened and ground pin. All wearing parts are fitted with hardened steel bushings. The road wheels are made to take 34 by 4½-inch tires and each revolves on two races of Hess-Bright ball bearings. The weight of the car is approximately 3,000 pounds.

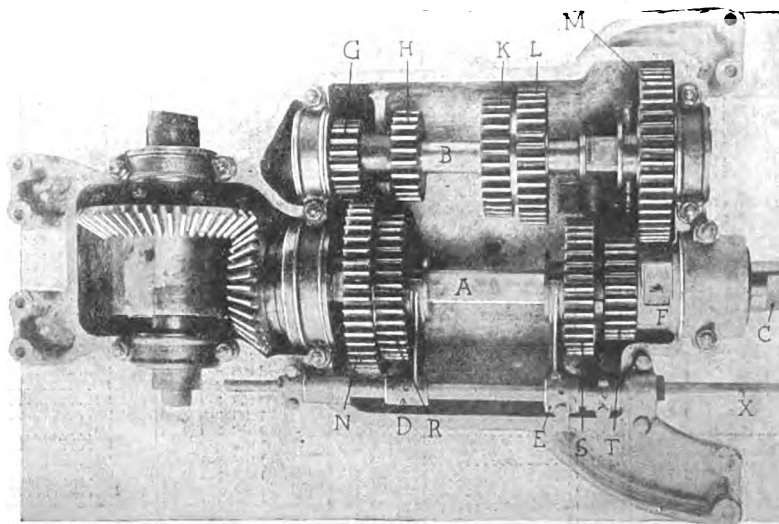
In the construction of the motor, each cylinder is made in a separate casting, with such parts as the inlet and exhaust valve ports, cylinder heads, and water jackets forming an integral casting. All valves are made interchangeable and are placed in the bottom of their respective ports, the method of removal being through openings in the valve port heads. The inspection caps over these ports are ground to fit and are secured by a cross yoke, held in place by a setscrew, the loosening of the screw and giving the yoke a half turn being sufficient to lift the cover plate out. Both camshafts are encased within the crank chamber and are driven by external gears of the combination type, having very wide faces and protected by an aluminum shield. The crankshaft is a drop forging, ground to a finish all over and runs in long plain bearings fitted with chain oilers. Each oil pit beneath the crankshaft bearings carries a supply sufficient

for 750 miles. The cylinders have a bore and stroke of 5½ inches, giving the rated power at 1,000 revolutions. Each piston is ground and the five piston rings are ground to 1-10,000 inch. The wrist pin is hardened steel and ground. On the pistons are oil grooves filled by the oil admitted through the cylinder walls, one oil duct from the mechanical oiler to each piston. Forged steel connecting rods are supplied.

The cooling facilities have been increased by adding practically a third to the radiating surface and increasing the service of the water pump threefold. Little change has been made in the ignition system. It is practically the same as that used for the last 2 years, with the single unit coil and jump spark system and with either dry cells or storage batteries. Provision has been made, however, for attaching any of the recognized magnetos, which can be directly attached to the motor and gear driven. The commutator has been improved, but, as was the case this year, will be located on the dash and is gear driven. Hitherto the wires have been gathered about the commutator, but now they are removed from sight.

The carbureter is of the automatic type and is manipulated from the top of the steering gear, as is also the lever for advancing and retarding the spark. It is directly connected to the clutch pedal with the independent throttle, which acts as a governor when either the foot or emergency brake is used. It is provided with means for taking either hot or cold air.

A mechanically operated oiler is located in the dash. The tank is of liberal size and has six sight feeds, four of them leading directly to the cylinders and two to the crankcase. The oil is delivered through the medium of individual pumps. In addition to supplying oil to the crankcase by the pump system an in-

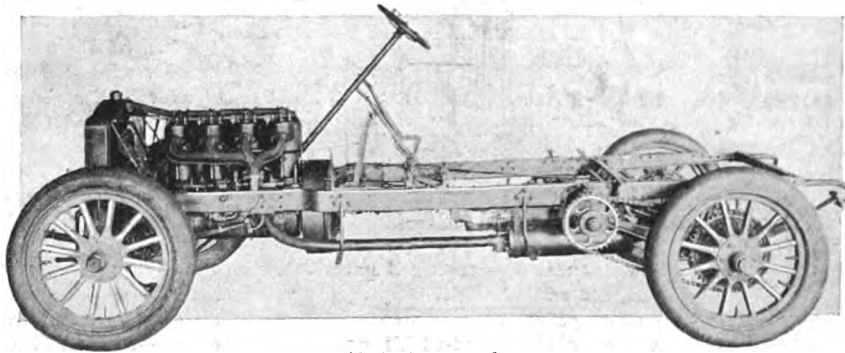


FOUR-SPEED GEAR SET OF THE 1906 THOMAS

dividual oil cup is also supplied, insuring a quantity of oil in the case. The lubrication there is by the customary splash system. In charging the case with oil two pet cocks are located in the bottom of the crank case to indicate the proper level of oil when the case is filled.

For the Thomas car next year the disc clutch has been adopted. It is a metal to metal, three-plate device. The center plate is of manganese bronze and the outer plates are of gray iron. The manganese plate, being a transmitting member, is provided with a series of holes filled with cork cushions. The push pedal, with an easy pressure, releases the clutch. The clutch is provided with ball thrust bearings and adjusting screws for taking up wear. The prevent the transmission shaft from running when the clutch is disengaged a special thrust is provided, causing the shaft to come to a standstill, enabling the operator to shift the gears easily.

In having four forward speeds in the sliding gear case, a feature common in most of the high class European machines is added. The case is carried on two of the frame cross pieces, two short curved arms on the front of the bottom part of the case supporting the front part and a pair of arms close together carrying the rear end. Enclosing of the differential gears in the rear end of the case gives that part a narrow formation, necessitating the arms being close together. The use of Hess-Bright bearings throughout the gearcase and jackshaft, with the exception of the main bearing marked F, is a leading feature. Changes in speed are gained on the selective principle, two shifting units moved respectively through the shifting arms D and E, eliminating the necessity of passing through intermediate gears when changing from a low to high speed or vice versa. One lever at the right, working in a double-slotted quadrant, is used in making speed changes. On the direct drive the shaft C from the clutch is connected with the squared main shaft A by moving forward the gear, S, as shown in the illustration, so that dental face



THE 1906 THOMAS CHASSIS

teeth on its forward side interlock with others on the rear side of gear T. The gear M on the counter shaft being moved forward at the same time is taken out of mesh with T and the countershaft is left stationary on direct drive. For second speed ahead gear S is moved back, meshing with L, and at the same time M moves into place, meshing with T. For third and fourth forward speeds the unit comprising gears N and R is moved so that R meshes with K for the third speed and N with H for the fourth. In reversing gears N and G are connected by an idler. The shifting arm D is mounted on the shaft X, which is connected with the gear shifting lever, and E is on a sleeve on the shaft and is similarly connected with the shifting lever. All gears are interlocked with the clutch, the clutch being thrown out before a speed can be changed. In this year's cars all gears have a 7/8-inch width, but in the 1906 model this has been increased to 1 1/4 inches. They are all drop forged and of large diameter. All of them are made detachable, so should a break ensue or any change be necessary replacement may be made speedily. Rapid inspection of the gears is made possible by the use of a large inspection cap in the top part of the case. Final drive is through double side chains, Whitney roller chains being used. The sprockets are made with the hub part and the ring piece carrying the teeth separate, being fastened together by bolts, the object of the construction being to facilitate the changing of speed ratios without interfering with the adjustments of the jackshaft bearings.

As the differential is in conjunction with the transmission case, this also has been improved by the addition of another set of

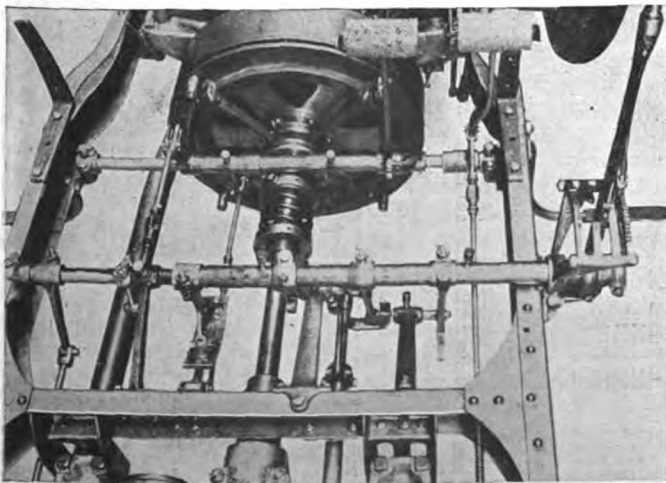
pinions, increasing the strength. The brakes are four in number, two of large dimensions on each rear wheel. Two of the brakes are of the internal expanding type and are operated by pedal and the other two are external, operated by the emergency lever, but both brakes are connected in such a manner that with one movement of the emergency lever all brakes are applied,

the clutch is disengaged and the motor throttled, but the foot brake is of such proportions and strength that by its use alone the car may be held on heavy grades.

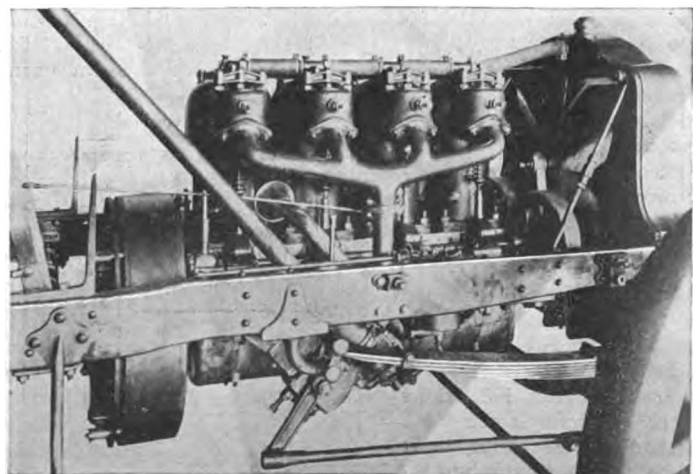
The hill-climbing safety device is retained and the strength of its construction increased. This device consists of ratchets on the outside of the rear axles, into which a dog slips by the working of a small lever at the right side of the operator. It can be engaged or disengaged while the car is traveling at any speed.

In body design the dash, made of aluminum, is shaped to conform with the hood and lockers are situated on each side for carrying small tools. Natural wood is used in the interior finish. The present side tonneau lines are retained. The rear seat is wider than before and two collapsible revolving seats, which can be stored under the cushion in a compartment under the rear seats, are added, enabling five people to ride comfortably in the back half of the car. Three designs of body are made. The touring car, limousine and the landaulet. The last two accommodate the same number of people as the touring car and their upper lines conform with the lower half of the body. The top of the touring car body folds back to the level of the rear seats, the lining of the top folding in, just giving an unobstructed view to the rear.

All styles are finished in standard colors, according to the tastes of the purchasers, running gears and bodies being finished in the same or different colors. Upholstering. The front seats are individual and, like the tonneau ones, are heavily upholstered. Extra tonneau accommodation is given for two by revolving side seats, neither of which interfere when entering or leaving.



CLUTCH AND OPERATING RODS IN THOMAS CAR



INLET SIDE THOMAS 50-HORSEPOWER MOTOR