

The E. R. Thomas 1908 Cars

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The E. R. Thomas Motor Company, Buffalo, New York, U. S. A., has a factory entirely separate and distinct from that of the E. R. Thomas Detroit Company, makers of motor cars, although Mr. E. R. Thomas, of Buffalo, is president of both concerns. The lines of production of these two companies differ, in that the Buffalo shops turn out larger and more costly cars than are built at the Detroit factory, though in quality the cars are intended to be the same.

This description is of the Buffalo product exclusively, that of the Detroit shops being separately illustrated and described.

The E. R. Thomas 1908 Buffalo car models are four in number, a six-cylinder touring car, two different models of four-cylinder chassis, and a "Town Car," or motor cab, a closed car on a fourth chassis. This article will illustrate and describe the two 4-cylinder touring cars

this concern, has several wholly new details.

The outside appearance of the 1908 Thomas F and DX models is shown in Figs. 1 and 2. Model F is a seven-passenger touring car with 127 inches wheel base, 56 gauge and 36-inch wheels, with 4-inch front and 5-inch rear tires. The motor is 4 cylinders vertical water-cooled, four-cycle, 5½ inches square, rated as 60 H. P.

The drive is a sliding gear, four forward speeds and a reverse, with side chain driven rear wheels. The motor has a fan in front and the steel casting fly-wheel is provided with integral fan vanes. The seven-passenger body is of sheet aluminum on a substantial wood frame with steel angles and braces. The tonneau seat is unusually wide and two folding seats are placed on the tonneau body, which has ample foot space, and the body

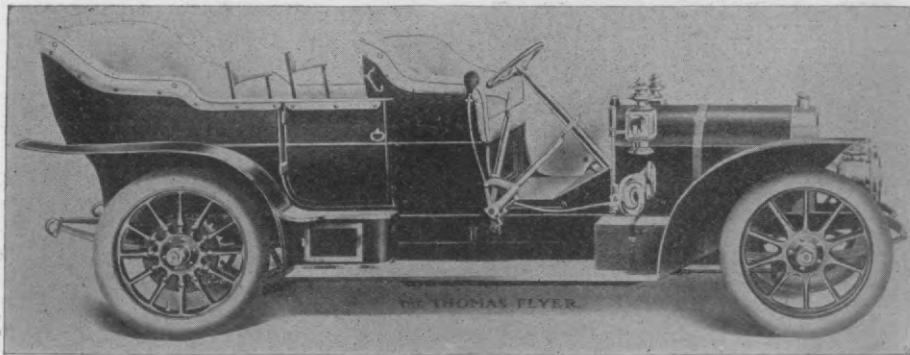


Fig. 1. The E. R. Thomas 1908 Model F seven-passenger touring car, wheel base 127 inches, gauge 56 inches, tires 36-4 inches front and 36x5 inches rear; motor, four, 4-cycle cylinders, water-cooled, 5½x5½ inches; nominal 60 H. P. The clutch is 3-discs, one of steel on each side of a bronze disc with cork inserts, double chain drive. Weight, 3000 pounds; price, \$5000, with complete equipment.

only, which have each four cylinders of the same bore and stroke, but have yet material differences in the engines, in the wheel-bases and construction generally, which make them two distinct and separate cars.

Of these two Thomas 4-cylinder 1908 cars, known as the "F" and the "DX," the Model F is the larger, 127 inches wheel-base, and the DX is the smaller, 118 inches wheel-base. Both the DX and the F models retain the distinctive features of former Thomas cars, including symmetrical cylinders with two camshafts and directly operated valves, the three-disc clutch, the three-point gear box support, and the ratchet and pawl arrangement which acts to prevent the cars from coasting backwards down hill. These especial Thomas features appear in both the DX and the F models, while the 1908 model F, which is the largest and most powerful 4-cylinder car yet produced by

design has been changed to the "straight line" effect, all making this model one of the largest, most powerful and most elegant of motor cars. The car weighs 3000 pounds, and the price is \$5000, including 5 lamps, mats, horn, complete set of tools, tire irons and acetylene gas tank, all ready for extended touring. The cape top is extra.

The model "DX" seven-passenger touring car has 118 inches wheel-base, 56 inches gauge, and the same sized wheels and tires as the model F. The motor is also the same size. The drive is a sliding gear, four forward speeds and a reverse, with side chains to the rear wheels. The body seats three passengers in the rear, has two folding chairs in the tonneau foot space, and the usual two seats in front, thus accommodating seven passengers, all facing forward. All the Thomas tonneau doors swing to the rear. The complete weight is about 3000

pounds price, \$4000, including five lamps, mats, horn, an unusually complete tool equipment, and a gas generator, and the cape top is extra.

NOTABLE FEATURES.

While the two Thomas 1908 models here illustrated and described show no radical changes, and, save in the carburetor, no absolute novelties, they do show almost complete re-designing of details throughout. The carburetor shows new details which are regarded as important. The chassis frame sides have been considerably increased in greatest depth, from $4\frac{1}{2}$ inches to $5\frac{1}{2}$. The side frame width has been increased from $1\frac{1}{2}$ to $1\frac{3}{4}$ inches, the thickness of stock remaining 5-32, as in 1907. This very material increase in both the depth and width of the chassis frame

and ground bush flanges. The wheels are on Timken rollers. The pin has a hex head on top, and a castellated nut at the bottom, and lubrication is provided by a grease cup on top.

The rear axle is the same for models F and DX, and is an I-section steel drop-forging, same as the front axle. The beam section is $2\frac{3}{4}$ inches deep by $1\frac{1}{2}$ inches wide, web $\frac{1}{4}$ inch, ribs 5-16, with large radius fillets. The largest diameter of the tapered rear axle is 2 5-16 inches. The rear wheels are on standard ball bearings, 9-16 balls inside and 7-16 balls outside. The inside ball race is against a shoulder, and a tapered steel distance tube is placed between the outside and inside ball races, so that one nut and one washer retain both ball-races. No

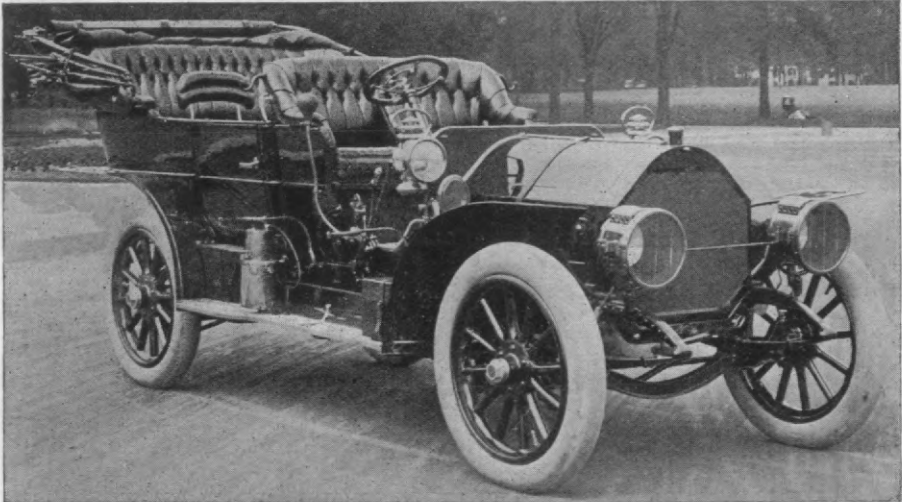


Fig. 2. The E. R. Thomas 1908 Model "DX," seven-passenger touring car, wheel base 118 inches, gauge 56 inches, front tires 36x4 inches, rear tires 36x5 inches; motor, four, 4-cycle, water-cooled, $5\frac{1}{2}$ x $5\frac{1}{2}$ inch cylinders; nominal 60 H. P. The drive is by side chains. Weight, 3000 pounds; price, including five lamps, mats, horn, complete with equipment and gas generator, \$5000.

has been accentuated by increasing the width of the lower member of the channel frame sides where advantageous; the largely increased chassis frame strength and stiffness thus obtained making it safe to omit the $\frac{1}{2}$ -inch diameter turn-buckle truss rod, with two king-posts, which has been a distinctive feature of the Thomas chassis frames up to the present time.

The front axles have been re-designed, while the rear axle gearing has been materially improved. All front wheels are on Timken rollers, while the change gear, cross-shaft and rear wheels are on standard ball bearings.

AXLES.

The front axle is the same in models F and DX, an integral I-section steel drop-forging, without welds, beam depth $2\frac{3}{4}$ inches, width $1\frac{1}{2}$ inches, web $\frac{1}{4}$ inch, and flange thickness 5-16 inch, with very large radius fillets. The yoke opening is 5 inches. The load is carried on hardened

thrust bearings are fitted. The rear hub brake drum is $13\frac{1}{2}$ inches, inside diameter, internal shoes only are used. They are fiber faced and cam-rocker expanded.

SPRINGS.

Models F and DX are equip with half-elliptics. The front springs are 40 inches long by $2\frac{1}{4}$ inches wide, tongued, grooved and banded, have 7 leaves, and are jointed to the chassis frame in front and linked in the rear. The rear springs are 54 inches long by $2\frac{1}{2}$ inches wide, tongued, banded and grooved, have 8 leaves, and are linked to the chassis frame at both ends.

Lubrication of the spring eyes and bolts is cared for by placing finished steel pins in hardened and ground steel spring-bushings, and providing every spring joint with either a heavy grease cup or a "spring" oiler.

THE CHASSIS FRAMES.

The frame of model F is of prest

steel, 5-32 thick, 5½ inches greatest depth, 1¾ inches wide, while the lower channel member is increased in width at certain places. The one-half inch rod and turn-buckle bracing previously used has been omitted. The frame is 174 inches long, spring eye to spring eye, is in two widths, 31 inches front and 34 inches rear, and has five cross-members, with an angle steel sub-frame, 40¾ inches long by 20⅝ inches wide, on which the motor

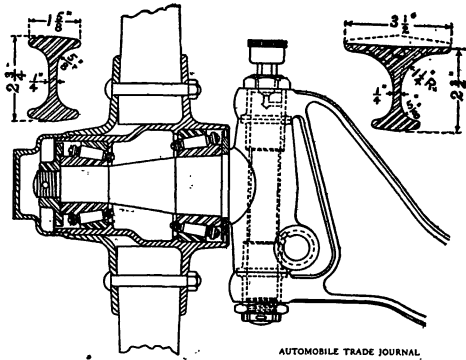


Fig. 3. Thomas 1908 Front Wheel and Axle Construction. The yoke opening is 5 inches. The stub axle pins are one inch diameter, and have hardened and ground ends in hardened and ground bushings. Note the large fillets shown in the I-beam axle section. The front axles are the same in Models "DX" and "F," and are steel drop forgings without a weld.

is placed. The top of the chassis frame is flat, and stands 5 inches above the top of the sub-frame.

The model DX chassis frame is 160-9-16 inches, spring eye to spring eye, is 30 inches wide in front, 34 inches wide in the rear and the frame sides are 4½ inches greatest depth, and made of 5-32 stock. This DX frame has four cross-members with no sub-frame, the motor being carried on four bronze brackets riveted to the insides of the frame sides.

THE MOTORS.

The DX model motor is not very much changed from that of 1907. The cylinders are the same dimension for the F and the DX, 5½x5½ inches, 60 H. P. nominal. The four cylinders are individual units, with integral water jackets and heads, a plug in the top covers the large core-print opening. Abundant water circulation room is given everywhere, both intake and exhaust valves being jacketed. The water circulation is by a 2-pinion pump.

The cylinders are symmetrical, with valves on each side, all valves the same, directly actuated from two cam shafts. The cam rollers are in forked lifters, which have individual coiled springs in bronze lifter sleeves. The roller forks are threaded at the top end to take capped, threaded length-adjustment sleeves, which are check-nut retained. The valves are all integral head and stem steel drop-forgings, all ports 2 7-16 inches diameter.

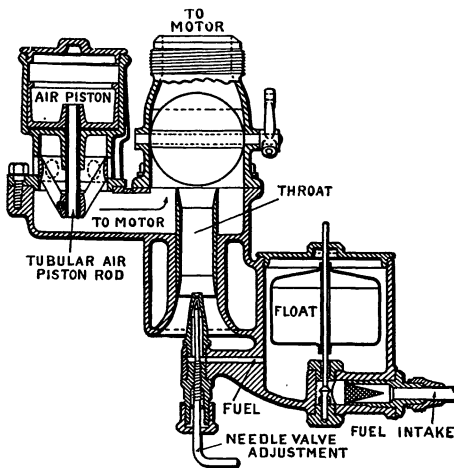
The crank-shaft journals are all the same diameter, 2 inches, the crank pins are 1⅞ diameter, and one shaft has five bearings in split babbitt boxes. The grey iron pistons are 6¼ inches long with four eccentric snap rings, cut 45 degrees, placed all above the piston pin, and pinned. The connecting rods are steel drop-forgings of grey-iron—bushed at the top end, full marine type with babbitt half-boxes and two cap-screws on the crank-pins. The crank-shaft has an integral flange and projection at the rear end to take the steel casting, fan-vane fly-wheel, which is also the principal clutch member. The cams are applied to the cam-shafts and retained by riveted taper pins. The cams are drop-forgings of high carbon steel, case-hardened and ground. The cam-shaft is soft steel, ⅞ diameter. The cam-shaft gears are steel castings and fiber, and the crank-shaft pinion is steel, applied, keyed, and nut and shoulder retained. The cam-shaft gearing is 8 D. P. direct, no intermediates.

Two complete systems of ignition are furnished. the Atwater-Kent and Bosch magneto, with storage battery and jump spark plugs. The Atwater-Kent is held in high favor by the Thomas engineers, it having given excellent results in the past season.

THE NEW CARBURETOR.

In the sectional illustration given the auxiliary air intake assembly is revolved 90 degrees from its actual position to give an intelligible sectional diagram. This carburetor belongs to the float-feed, suction-operated, auxiliary air-intake class, and has a single nozzle. Referring to the cut at the right is shown a screened fuel-intake to the float chamber and a hand-adjusted, screw-threaded needle-valve in a stationary stand-pipe opening to an inserted throat. At the left side of the vertical charge-passage from the carburetor throat to the throttle a port is cut which opens to two vertical concentric cylinders of different sizes, the larger one above the smaller and having an applied cap fitted to the top end of the larger cylinder, and a small open-air hole drilled through the annular wall which unites the two cylinders. The lower cylinder is pierced by six air-ports, open to the atmosphere. The top larger cylinder is fitted with a cup air piston connected by a tubular piston rod to a sleeve valve, normally covering the six air ports in the lower smaller cylinder, all so that when the top air piston is lifted two separate effects take place; (a) the air above the air-piston in the top cylinder is compressed; (b) when the rise of the air-piston has reached a certain height the sleeve-valve in the lower cylinder begins to open the 6 air-ports of that cylinder so as to establish a communication between the passage from the carburetor throat and the throttle to the open air, reducing

the richness of the mixture. The air-piston is lifted by the suction of the motor, but its motion is resisted (a) by gravity, (b) by the compression of the fixed volume of air above the air-piston, and (c) by the lack of air below the air-piston, which air to supply the space below the air-piston must enter at a rate determined by the diameter of the small air-hole in the bottom of the air-cylinder. These conditions cause a weakening of the mixture when the motor reaches a certain speed, and its continued weakening so long as the motor speed increases. The small area of the air-port admission under the air-piston and the trapped air above the air-piston combine to prevent fluttering and sudden fluctuations in the auxiliary air supply. The tubular air-



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Fig. 4. The 1908 Thomas Carburetor. This is a new design, and has an auxiliary air valve of the piston type without any springs. For complete description see text.

piston rod opens the air-cylinder above the air-piston to the piston suction. The resultant action of the whole of this simple and positive carburetor auxiliary valve action, which has no springs whatever, is to make the mixture less rich when the motor runs fast than when it runs slow, and to vary the charge-richness gradually both ways, without sudden or fluttering fluctuations.

THE CLUTCH.

The Thomas fly-wheel is a steel casting, having integral exterior fan-vanes, and a friction surface which coats which a bronze ring with cork inserts and a second steel ring, all prest together by four levers and the clutch spring, or relieved from friction by the action of the clutch disengaging pedal. The spring required is light, only about 350 pounds tension, and the clutch is very soft in engagement and gives a wholly satisfactory slipping drive.

THE CHANGE GEAR.

The selective change speed gear is four speeds forward and a reverse, direct on the

high gear. The box is an aluminum casting, with applied annular ball-bearing seats of bronze, retained by pouring with fusible metal specified as "Babbit." The bronze ball-bearing seats are first machined inside, and then placed on jig-arbors and babbitted in place in the aluminum gear-box, making all the gear-box center distances alike and as nearly accurate as possible. The gears are all 6 D. P. high carbon steel, the idle gears being free on the high speed. The balance gears are bevels, and the counter-shaft members have universal joints of limited range, which engage the sprocket shafts carried in annular ball bearings in brackets fixed to the side-frames.

The steering gear is a carefully and substantially worked out worm and sector action. The sector is cut on two centers to make the middle tooth the highest. The rock-shaft is on Timken rollers and the worm thrusts are taken on ball bearings. A feature not usually seen in steering gears is the two temper-screws, check-nut retained, which limit the motion of the worm gear sector in both directions so that the steering wheels cannot be turned too far either way.

The turn-buckle length-adjustment is very largely used in the Thomas 1908 details, and all nuts have special retentions, principally castellation with split-pins, tho some check-nuts are fitted.

CONTROL.

The steering is by a worm and sector with spark and throttle levers on top of the hand wheel. There are two outside hand levers, both latched. The outside lever is pulled backward to first disengage the clutch, and then apply the internal rear hub drum brake. The inside hand lever shifts the gears. There are two large pedals, an accelerator pedal and a muffler cut-out plunger pedal. The right large pedal is pushed forward to apply the counter-shaft brakes, and the left large pedal to disengage the clutch. The accelerator pedal is horizontal, and located between the two large pedals. There are no outside rear hub drum brakes. The counter-shaft brakes, two in number, are fixed to the two counter-shaft members, and have fiber lined, constricting bands, applied by the right large pedal thru an evener, so as to give equal resistance to the turning of the two rear wheels.

Morgan & Wright, Detroit, Mich., have opened a branch at 118, 120, 122 East Tenth street, Los Angeles, Cal., for the accommodation of their Southern California trade.

Empire State Tire Company, 73-77 Erie County Bank Building, Buffalo, N. Y., has recently organized and secured the rights in New York State to manufacture the Greenwald tires, tire protectors, non-skid treads, and sectional vulcanizers.