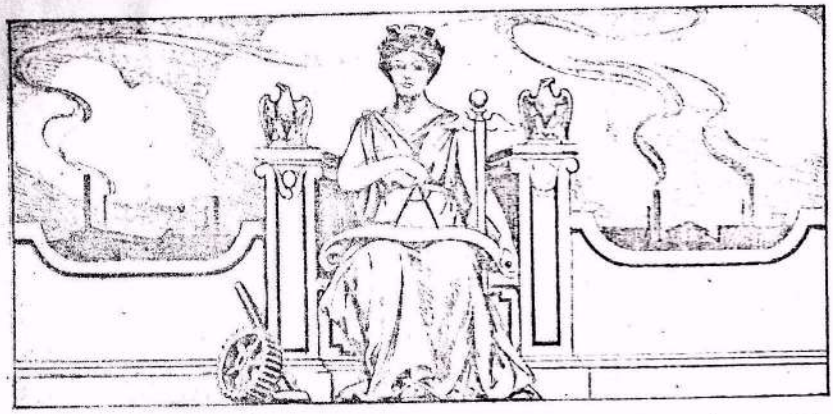
THE THOMAS FLYER ~ FORTY

The E. R. Thomas Motor Co.

Buffalo, N. Y.

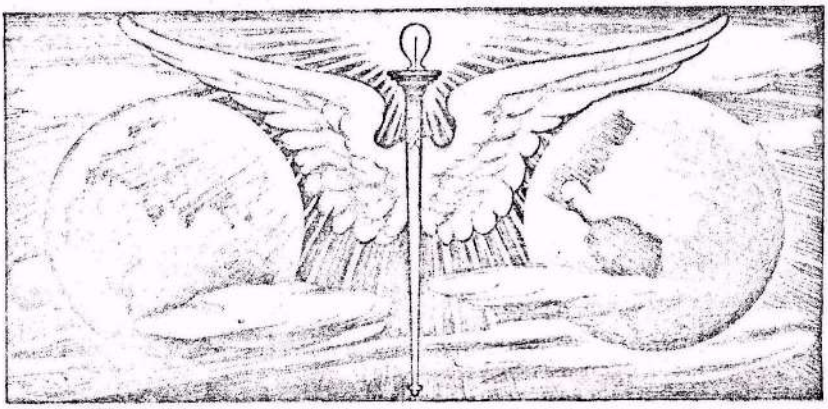
Member Association of Licensed Automobile Manufacturers



The THOMAS INDUSTRY

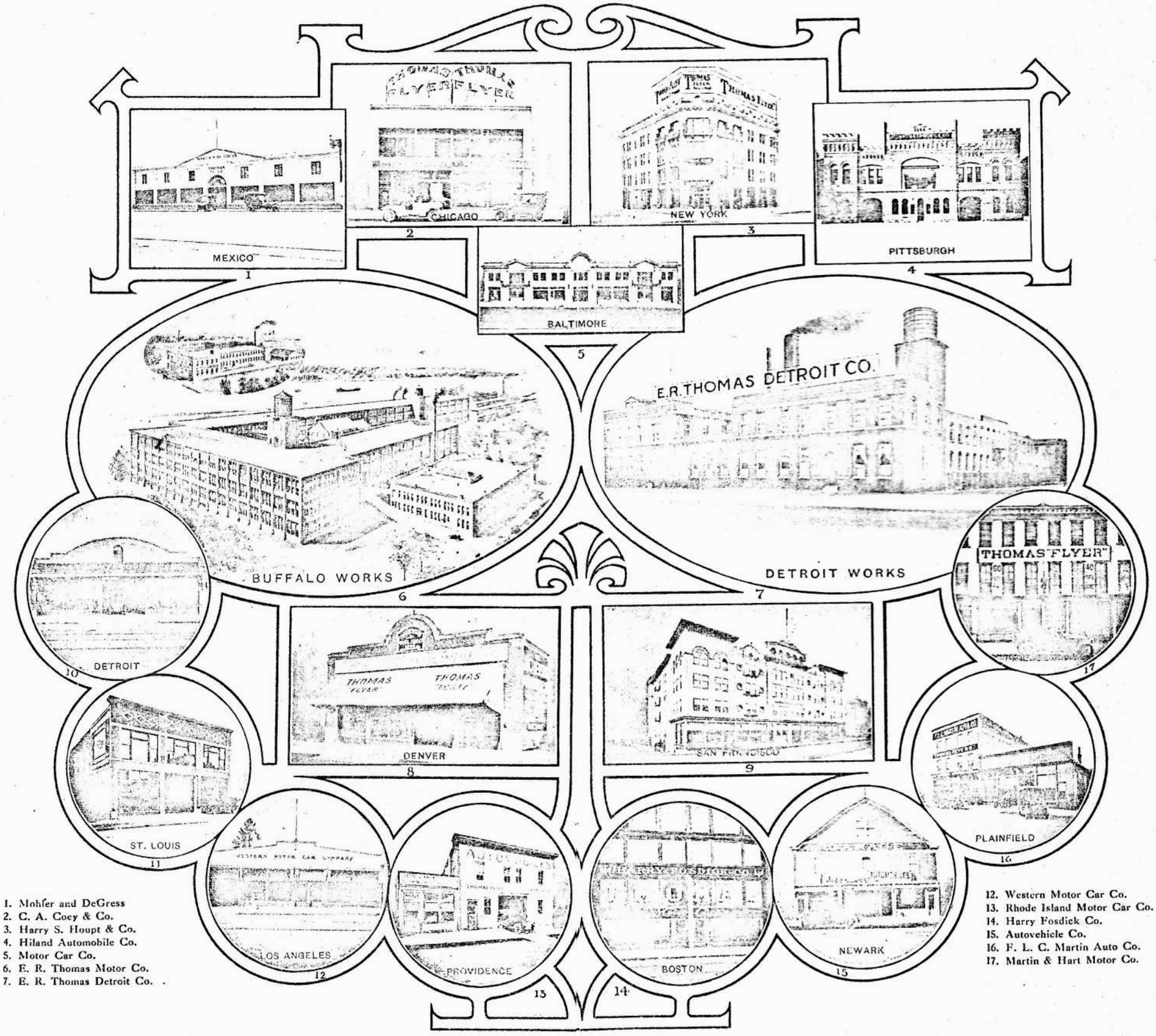
MUCH has been written and more has been said in an effort to set forth the merits of various makes of cars. We, as manufacturers of the Thomas cars, intend to say a good deal in regard to the details of their construction, their performances and their worth, but there is one, and only one, question of vital importance to the purchaser, and that is, "Which car will give the best service?" The following figures should prove to be the most convincing kind of an argument.

Six years ago our annual product was about fifty cars. Our factory contained an aggregate of 3,200 square feet, and we employed a small force of men. We now have on our books orders for over 1,500 cars, amounting to over five millions of dollars. Our factories in Buffalo and Detroit contain an aggregate of 300,000 square feet, and we employ over 1,500 men. Such a record could only have been made through the absolute satisfaction of over a thousand level-headed business men who have purchased Thomas cars.



FOREIGN & AMERICAN EXPERIENCE

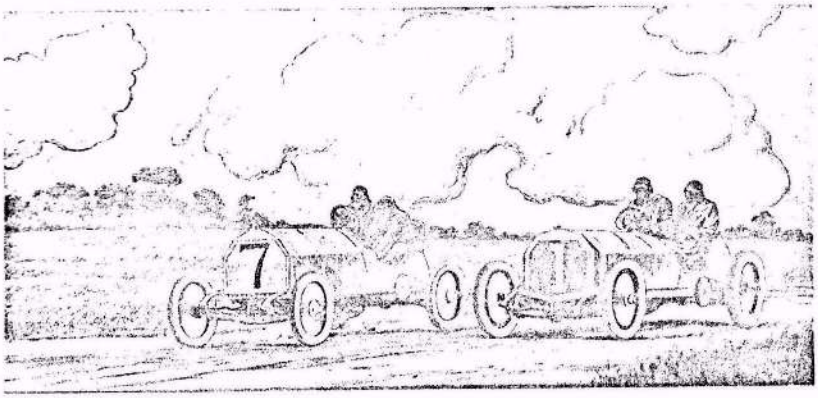
MOST American designs are foreign imitations. We do not imitate, but combine the best foreign with the best American methods of construction. We have united with our own superb force of American designers and engineers, who have placed the Thomas in the very front rank of American cars, a corps of most successful designers and engineers abroad, under whose supervision have been constructed since 1897 some of the foremost foreign cars, including two Gordon-Bennett Cup winners. It is obvious that the best car of two worlds is only possible by uniting the best talent and experience of two worlds.



1. Mohler and DeGress
2. C. A. Coey & Co.
3. Harry S. Houpt & Co.
4. Hiland Automobile Co.
5. Motor Car Co.
6. E. R. Thomas Motor Co.
7. E. R. Thomas Detroit Co.

8. Mathewson Automobile Co.
9. Pioneer Automobile Co.
10. Grant Brothers Auto Co.
11. Park Automobile Co.

12. Western Motor Car Co.
13. Rhode Island Motor Car Co.
14. Harry Fosdick Co.
15. Autovehicle Co.
16. F. L. C. Martin Auto Co.
17. Martin & Hart Motor Co.



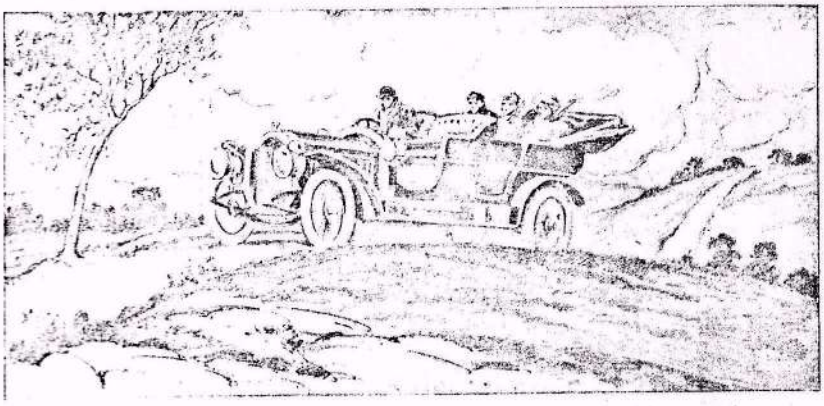
The VANDERBILT CUP THOMAS FLYER

THE lessons learned from the construction of a racing car are invaluable to the manufacturer of a touring car, as every factor of safety, weight, material, workmanship and design is involved to the extreme.

The slightest defect of any factor must develop with the tons of impact of terrific speed.

The Thomas Flyer, barely finished the day of the race, delayed only by the enforced use of leather non-skid tires, completed two hundred and seventy miles of terrible speed and strain without mechanical adjustment of any kind, easily beating all American cars, and beating six well tried out foreign racers. Under the conditions, the most remarkable record ever made.

ABSOLUTE PROOF OF EXTRAORDINARY ABILITY



The 60 HORSE POWER THOMAS FLYER

THE few words which we have written on the preceding pages, dealing with the growth of the Thomas business and the methods which we have adopted, should be sufficient to convince the most skeptical, but we want to go into details a little more fully before beginning a minute description of the Thomas cars from the tires to the tonneau.

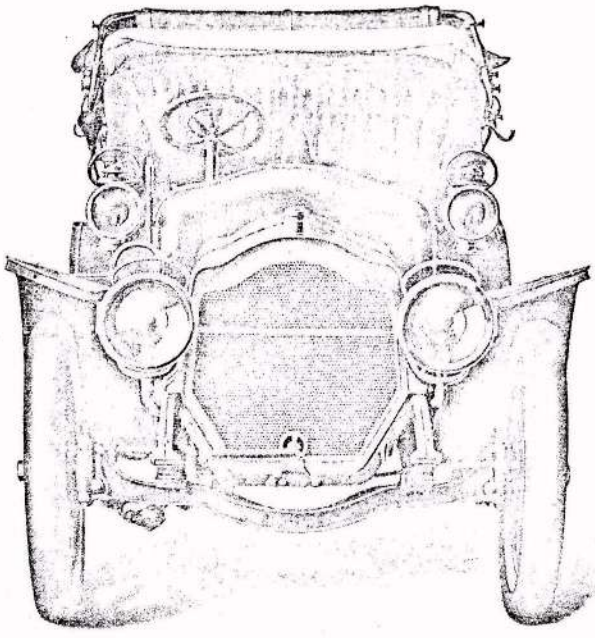
Every manufacturer who conducts his business for the benefit of his customers, and whose sole desire is to give satisfaction, thoroughly tests each and every car before it is delivered. These tests are exhaustive both as to shop and road tests, but the greatest test of worth is that of the cars after they are delivered. One thousand and eighteen high powered Thomas cars are in use in all parts of the country, on all sorts of roads, under all sorts of conditions, and with all sorts of drivers. This is the greatest test conceivable, and 1,018 high powered cars are giving satisfaction. Nothing is perfect, however, and the drivers of these cars (whom we are glad to say take such an interest in us that they may almost be said to be on our testing force) inform us of the possibilities of refinement, and we immediately take steps to put these into effect. Realize what this means to the intending purchaser. He is getting the benefit of the usage and testing of more than a thousand cars under more than a thousand conditions. Backed up by our ability, is it conceivable that a more ideal method of manufacturing a perfect car could be developed? On one of the following pages is a list of the records made by Thomas cars, but we have not included in that list the record made by every Thomas car since the day it left the factory. Further than that we won nearly every touring car event of note last season, all made with different cars, by different owners, some of them with brand new cars without special preparation, such as are shipped from the factory every day, all of which were tests of reliability.

We are the largest manufacturers of high powered cars in the world. We maintain the largest, most experienced and

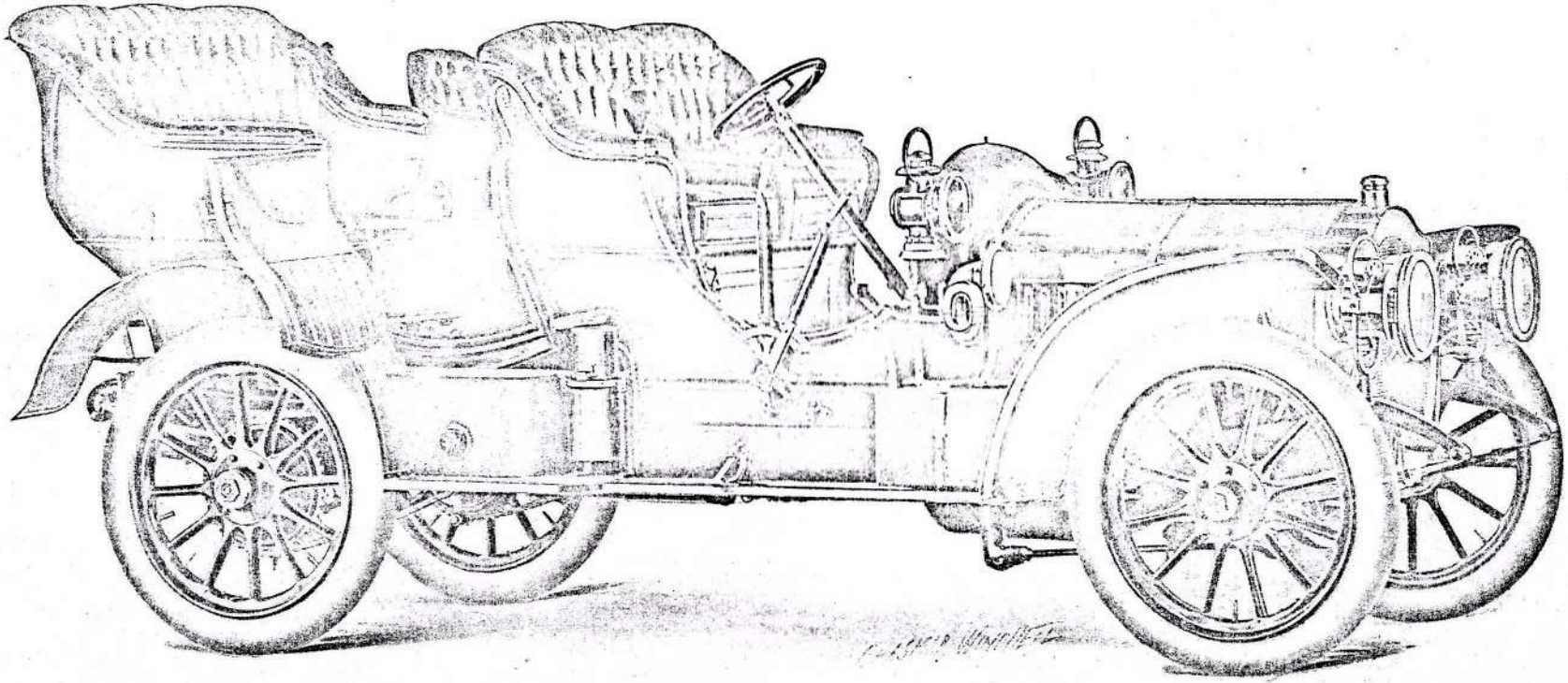
most expensive corps of foreign and domestic engineers and designers of any factory in the world. We have proved our ability by constructing one of the greatest racers, which embodies to the extreme the highest degree of automobile skill and workmanship. We combine more modern features of safety and efficiency than any other manufacturer. We thoroughly believe in our product in every detail, and are confident that not one defect will develop during the entire season. We, as the manufacturers, wish to assume the responsibility for all these assertions rather than leave them to the dealer, for the purchaser is entitled to the strongest assurance which a responsible manufacturer is justified in making.

We wish to emphasize the fact that an honest comparison will convince the most skeptical that the Thomas Flyer far excels every leading competitor in the details of modern construction in the way of:

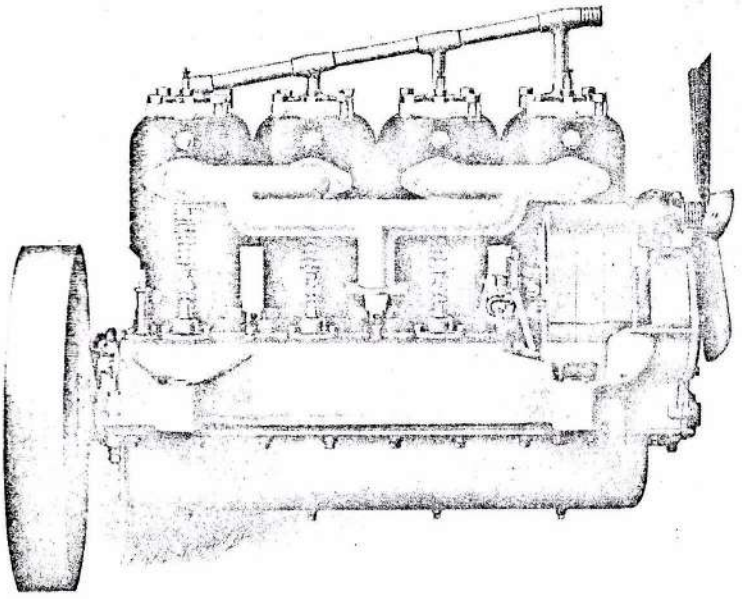
Two entirely separate and distinctive ignition systems, spark plugs, wires and all, an imported Bosch high tension magneto and an Atwater-Kent spark generator. Four forward speeds instead of three; forged axles instead of tubing; triple disc clutch instead of cone or multiple disc; cross steering rod in rear instead of in the front of front axle; 36-inch wheels and tires; annular bearings on transmission, sprockets and rear wheels; roller bearings on front wheels; back stop safety device, chain pulling forward on both bearings; anti-gear stripping device, extra large transmission gears that don't strip; dust-proof body and completely encased frame sides, seating seven passengers; two auxiliary revolving seats; curved aluminum dash with solid mahogany fittings; geared fan, pump and magneto, oiler and spark generator; very efficient and expensive lubricating device; suit case compartment; coat rack; trussed and reinforced frames; forged radius rods, etc.,



HEAD-ON VIEW OF THOMAS FLYER



THOMAS FLYER, 60 HORSE-POWER—$4,000, f. o. b. Factory



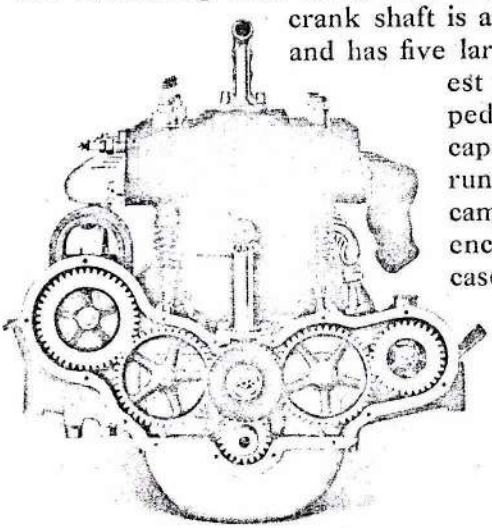
INTAKE SIDE OF MOTOR

On pages 20 and 21 will be found a sectionalized view

tending to show that the Thomas is the most complete car made.

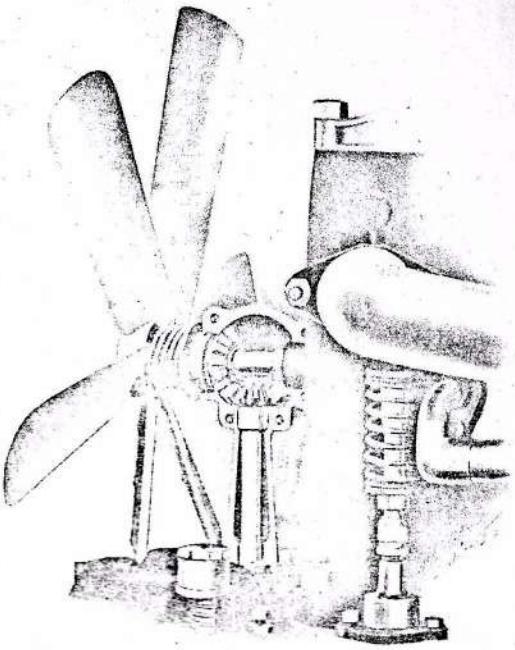
Its motor is of the four-cylinder vertical type, these cylinders being cast individually and with the water jackets integral. To obtain the utmost of service in a motor, every working part must be positive in its action, and so the fan, magneto, water pump, spark generator and oiler are all operated by shafts and bevel gears and universal joints working from the crank shaft gear.

Taking its position in the van in the market of new design by the best engineers in the world, squared cylinders have been adopted with a bore and stroke of 5½ inches, the resultant horse-power being sixty. Inlet and exhaust valves are on opposite sides of the motor and are mechanically operated. Five accurately ground and fitted rings are used on each piston, the connecting rods being drop-forged of nickel steel. The crank shaft is a nickel steel drop forging and has five large bearings, the one nearest the flywheel being equipped with a chain oiler, with capacity for 1,000 miles of running. All of the gears and cam shafts are completely enclosed within the crank case where they are afforded not only protection from accidents but are better lubricated than would be possible in any other position. For cooling the motor a cellular radiator of large capacity is used. A gear pump, gear driven,



METHOD OF ENCASING GEARS

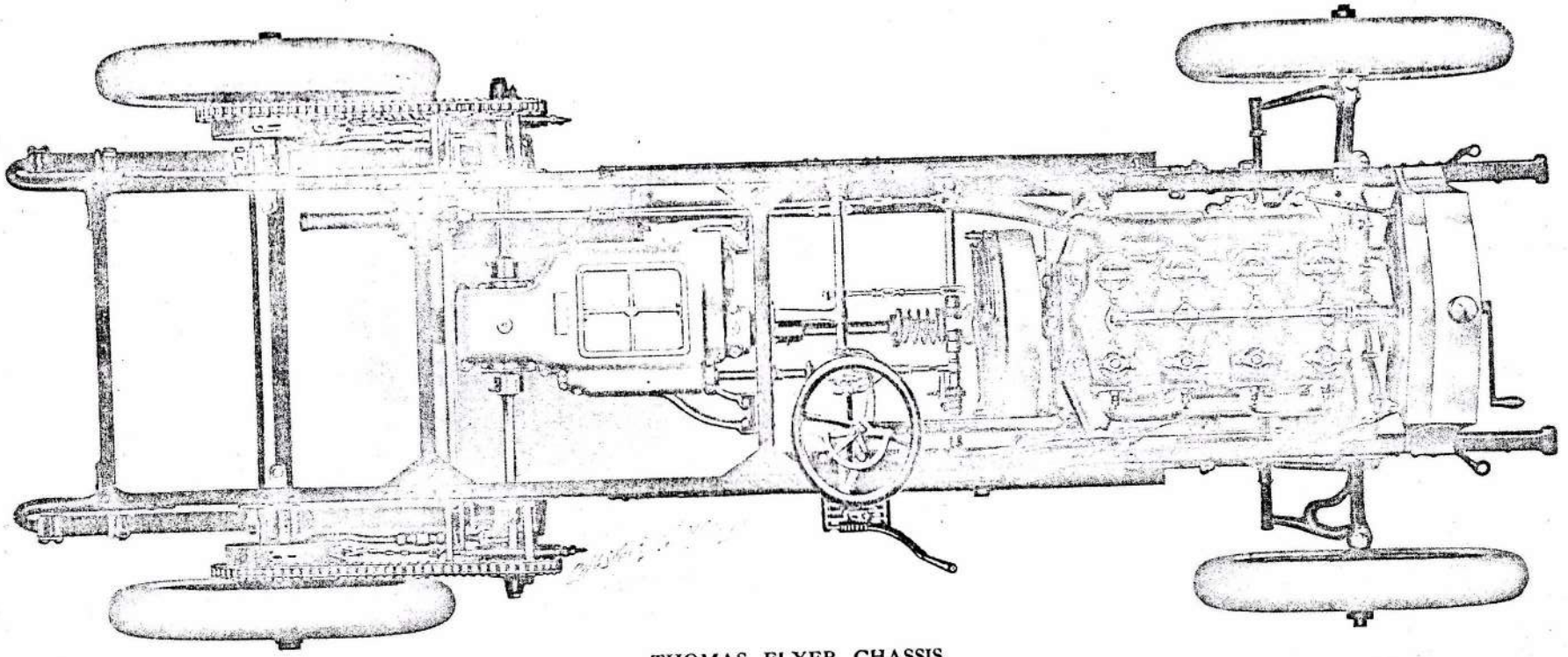
connects with the bottom of the radiator and forces water to the jackets which cover the piston stroke. From there the water leads to the top of the radiator where it is effectually cooled. The fan, working in conjunction with this radiator, is a striking example of the care and ingenuity that have been used in the construction of the entire car. It is driven by a shaft leading from the crank shaft gear which works a bevel gear in direct connection with the fan. To do away with any strain on the fan which might follow the sudden starting of the motor, a cone clutch with a coil spring is placed between the bevel gear and the fan proper. When the motor is started, this clutch slips until the speed of the fan has been accelerated in proportion to that of the motor when the slipping stops.



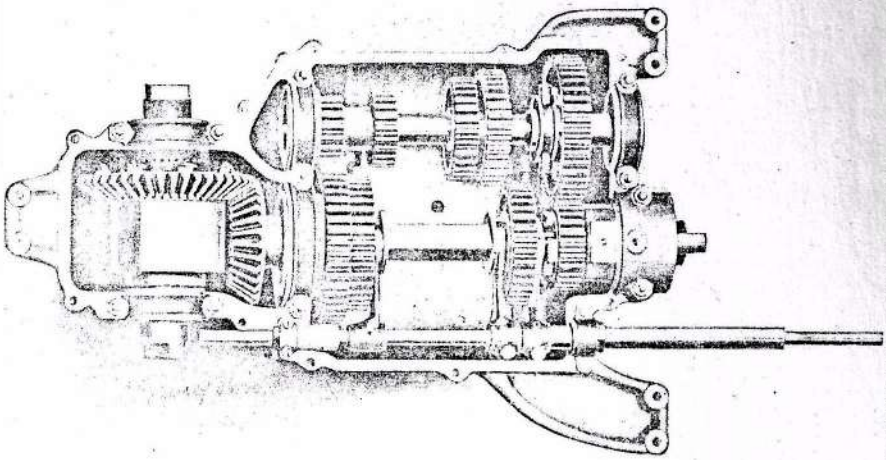
SHOWING FAN DRIVE

In the installation of an ignition system, economy and absolute reliability for the owner have been the two objects in view. Two sets of spark plugs are used, one being operated in connection with a Bosch high tension magneto and the other with an Atwater-Kent spark generator and batteries. Both systems are separate and independent. Should either of the systems become unavailable for the time being, the other one may readily be brought into use by the turning of a switch conveniently located on the dash. This, without doubt, is the costliest and most valuable system of ignition in any car on the market to-day. An automatic, variable carburetor is used. It is very sensitive, and allows a speed of six miles an hour on the high gear. The carburetor is water jacketed, insuring a uniform mixture during all temperatures. A six sight-feed, mechanical oiler is located on the dash, in constant view of the operator. Four of the feeds lead to the four cylinders, one to the crank case and one to the fan bevel gear. The oiler is operated by a shaft and bevel gears leading from the flywheel end of the intake cam shaft. Lubrication is also supplied direct in the crank case by the splash system. The bottom of the crank case is divided into four compartments, which insures a supply of oil, regardless of the grade over which the car is traveling. The engine base is bolted directly to the main frame, which is narrowed in front, in this way doing away with a sub-frame.

The clutch has been in use for two years, and although not



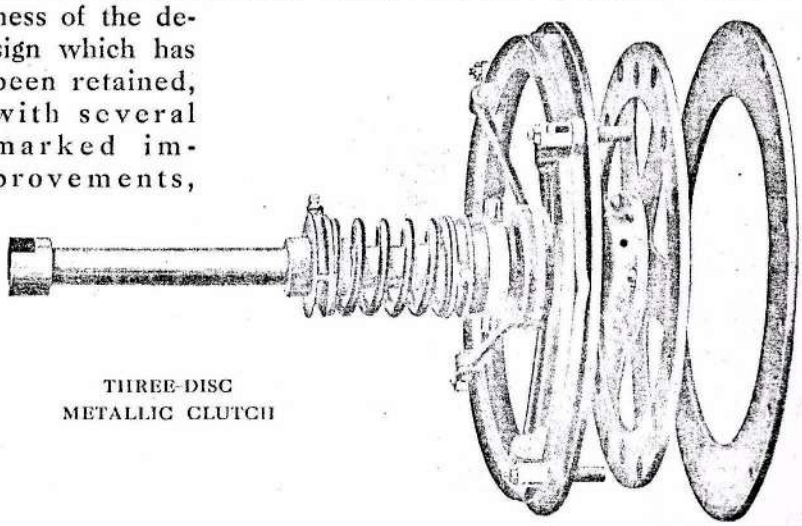
THOMAS FLYER CHASSIS



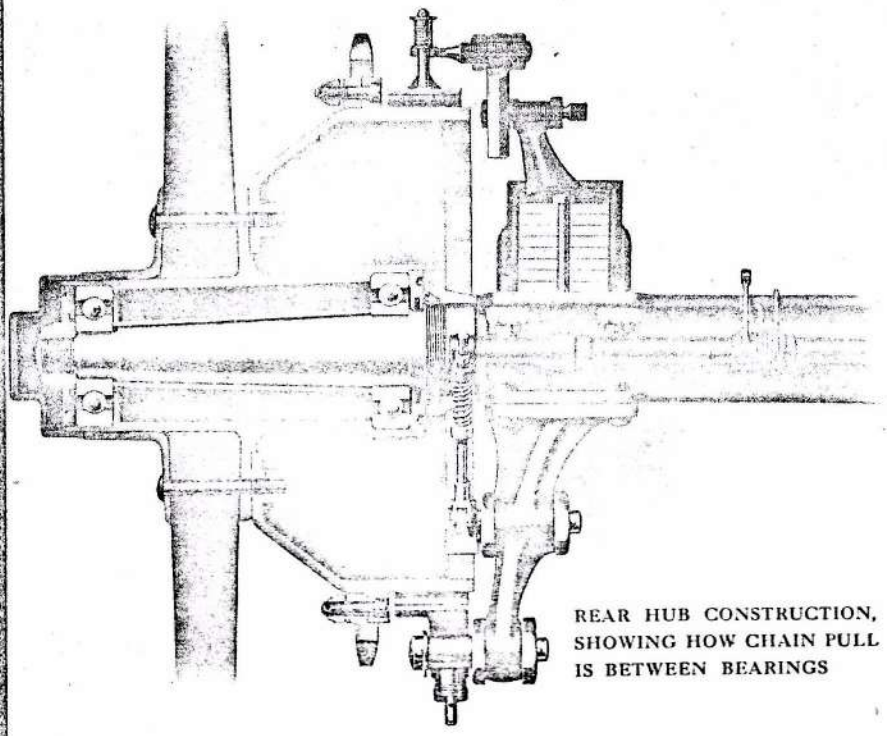
TRANSMISSION AND DIFFERENTIAL

a single defect has been found in it, it has been improved by the addition of four ball thrust bearings. It is of the three-disc, metallic type, the two outside plates being of grey iron, and the inside, or driving plate, of manganese bronze, with sixteen one-inch cork inserts, which effectually take up all jar or "chattering" when the car is started. An automatic brake has been fitted to the clutch, which checks the motion of the driving disc when it is disengaged, in this way facilitating the shifting of gears.

It is now a generally recognized fact that the sliding gear, selective type of transmission is the best for use under all circumstances, and users are gradually coming to the understanding that four speeds forward and a reverse are necessary for high-powered cars on American roads. These have been features of the Thomas for two years. All of the transmission gears and those in the differential are of nickel steel, and in both face and diameter are above the necessary factor of safety. The drive on the reverse and first three forward speeds is through the gears, and on the fourth or high speed is direct, with not a gear in mesh. In this important part of the car no expense has been spared in the procuring of materials, and the marked absence of transmission troubles last year proves the correctness of the design which has been retained, with several marked improvements,



THREE-DISC
METALLIC CLUTCH

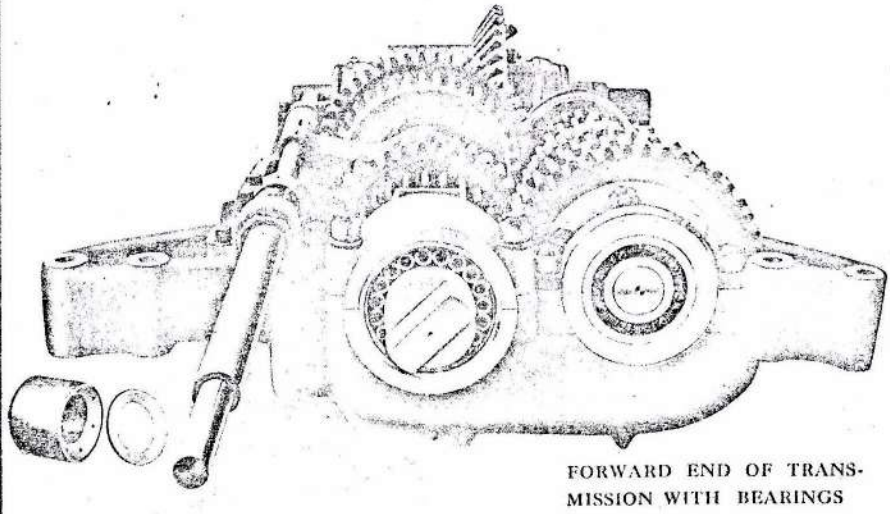


REAR HUB CONSTRUCTION, SHOWING HOW CHAIN PULL IS BETWEEN BEARINGS

including three-point suspension and the addition of an oil-tight packing box for the transmission case.

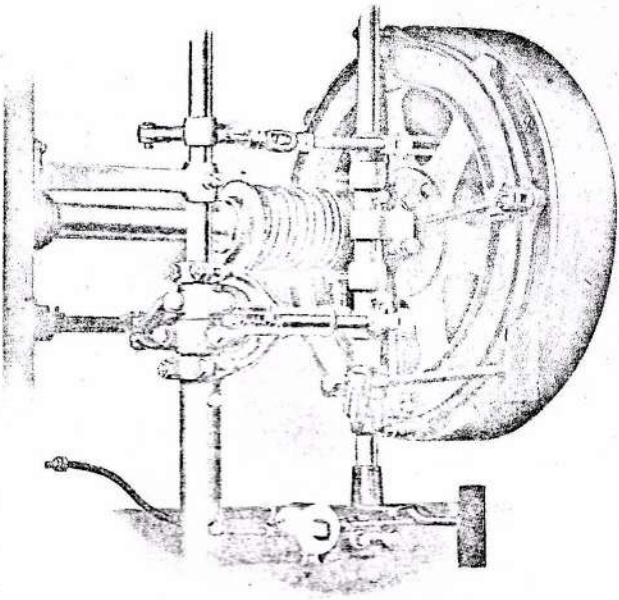
The final drive of the car is from the differential through countershafts to the sprockets, and then by double side chains to the rear wheels. The sprockets are set directly over the annular ball bearings used in them, and the chain pull on the rear hubs comes between the two annular ball bearings on each, which gives a forward pull on both of these, instead of a forward pull on one and a backward pull on the other, as would be the case should the chain pull be on the inside of these two bearings.

No point is more important in the construction of a car than the bearings. Annular ball bearings are used on the rear wheels, the sprockets, differential, rear end of the main



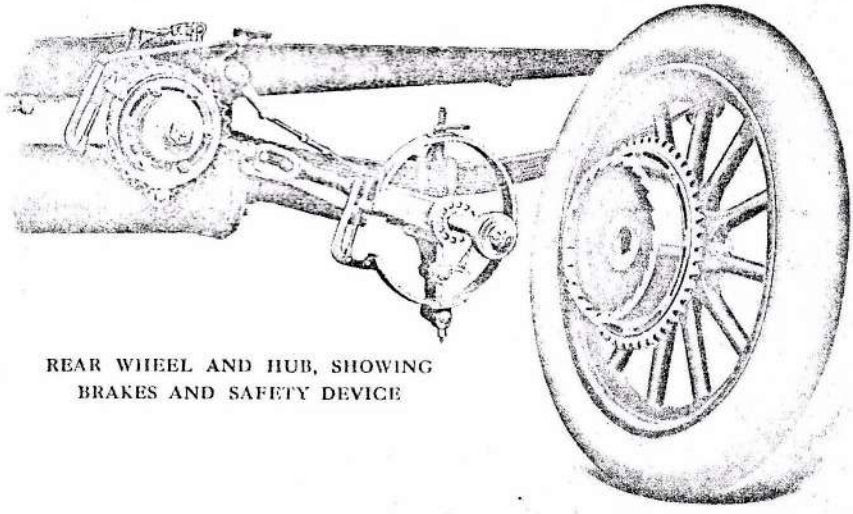
FORWARD END OF TRANSMISSION WITH BEARINGS

transmission shaft and both ends of the auxiliary shaft. Roller bearings are used on the front wheels, the forward end of the main transmission shaft and in the sector of the steering gear. Two ball thrust bearings are used in the steering column, four in the clutch, and two in the differential. With this manner of distribution, every important frictional part of the car has been provided for amply, and the possibility of loss of power through inadequate bearings entirely done away with.

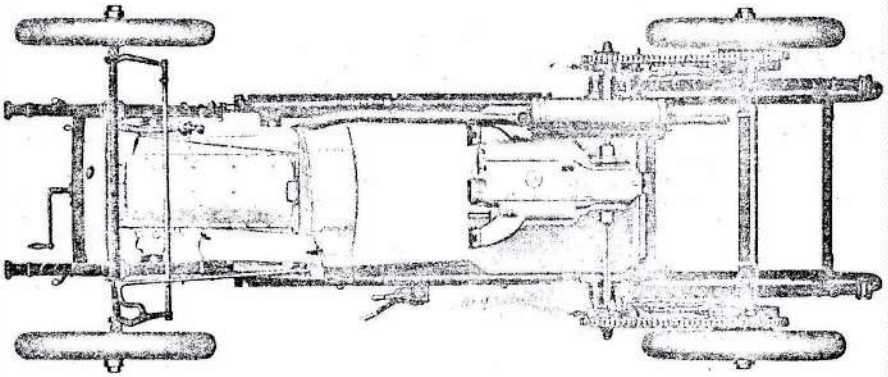


ANTI-GEAR STRIPPING DEVICE

Safety devices, both for the protection of the owner and the car itself, should be taken into consideration by every man who intends to purchase a car. The E. R. Thomas Motor Company was the first to equip a car with a device which positively insures it from backing down hill. This consists of a pawl and ratchet, the latter being attached to the rear hubs. By the operation of a small lever under the driver's seat, the pawl is thrown into contact with the ratchet, and should the car be brought to a stop on an up-grade, will effectually prevent its backing down. Imitators of this device have been many, but none have found anything to take its place. In addition to this, the car itself is protected by an interlocking device which prevents, by positive action, the stripping of gears, by reason of



REAR WHEEL AND HUB, SHOWING BRAKES AND SAFETY DEVICE



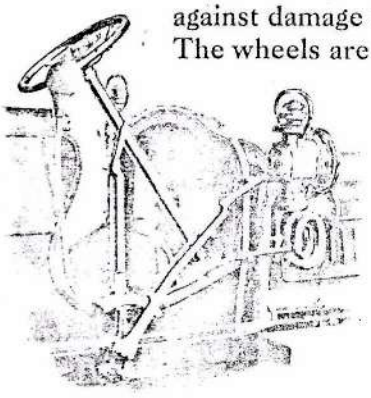
WORM'S-EYE VIEW OF CHASSIS

the clutch being engaged before the gears are entirely in mesh. The clutch is held out automatically until the gears are in perfect mesh, after which it may be re-engaged.

All of the brakes are of the leather to metal, contracting type, two on the rear hubs and two on countershaft drums. In the designing of these brakes, the braking surface was made greatly in excess of that usually employed, even for cars of this type and power. In all, a braking surface of 243.06 square inches is provided. The service brakes are on the rear hubs and the hand lever brakes on the countershaft drums.

The frame is of cold pressed steel, narrowed in front in order to give better steering facilities, and allow the attachment of the motor to the main frame. It is reinforced at the bend by channel plates, and at the front by pressed steel sections of the same material and thickness as the frame proper. It is also trussed, while further rigidity is furnished by cross members.

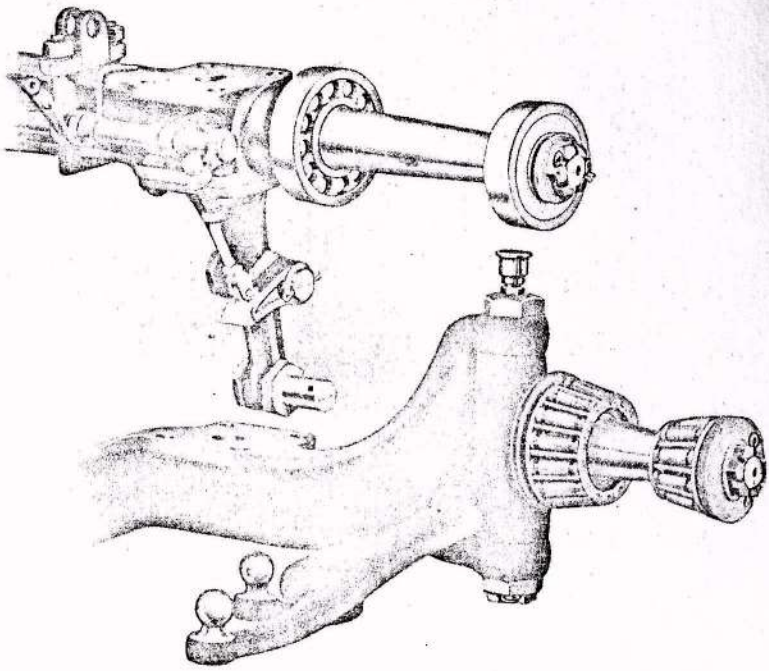
Every working part of the steering gear is a drop-forging. Two ball thrust bearings are placed at the top and bottom of the steering column, while two roller bearings, easily adjustable, are used on the sector. The spark and throttle control are through the steering column, both being placed on a sector within the steering wheel which does not move with the wheel. Both the front and rear axles of the car are of the drop-forged I-beam type, which has come to be recognized as necessary for cars which travel extensively over the ordinary American roads. The cross steering rod is placed behind the front axle, to provide against damage due to road obstructions.



THE CONTROL

The wheels are 36 inches in diameter, and the tires 4 inches in diameter for the front wheels, and 5 inches for the rear. The wheels are of second growth hickory with very large spokes and heavy flanges.

With a wheel base of 118 inches, comfortable riding is as nearly assured as may be. In the spring adjustment of this car, the utmost pains have been taken by the Thomas designers to provide every



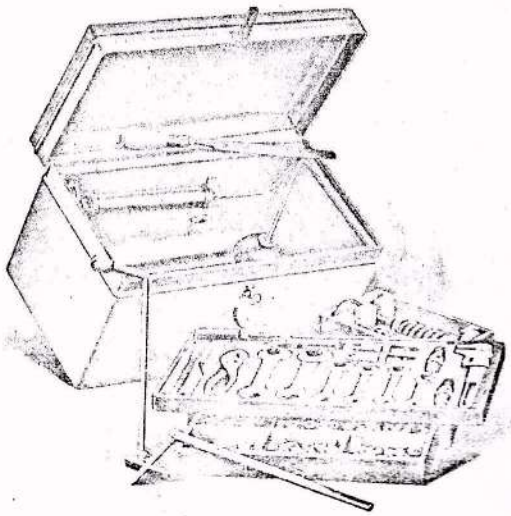
BEARINGS ON FRONT AND REAR DROP FORGED I-BEAM AXLES

possible degree of comfort that may be obtained from easy riding qualities. Both front and rear springs are semi-elliptic.

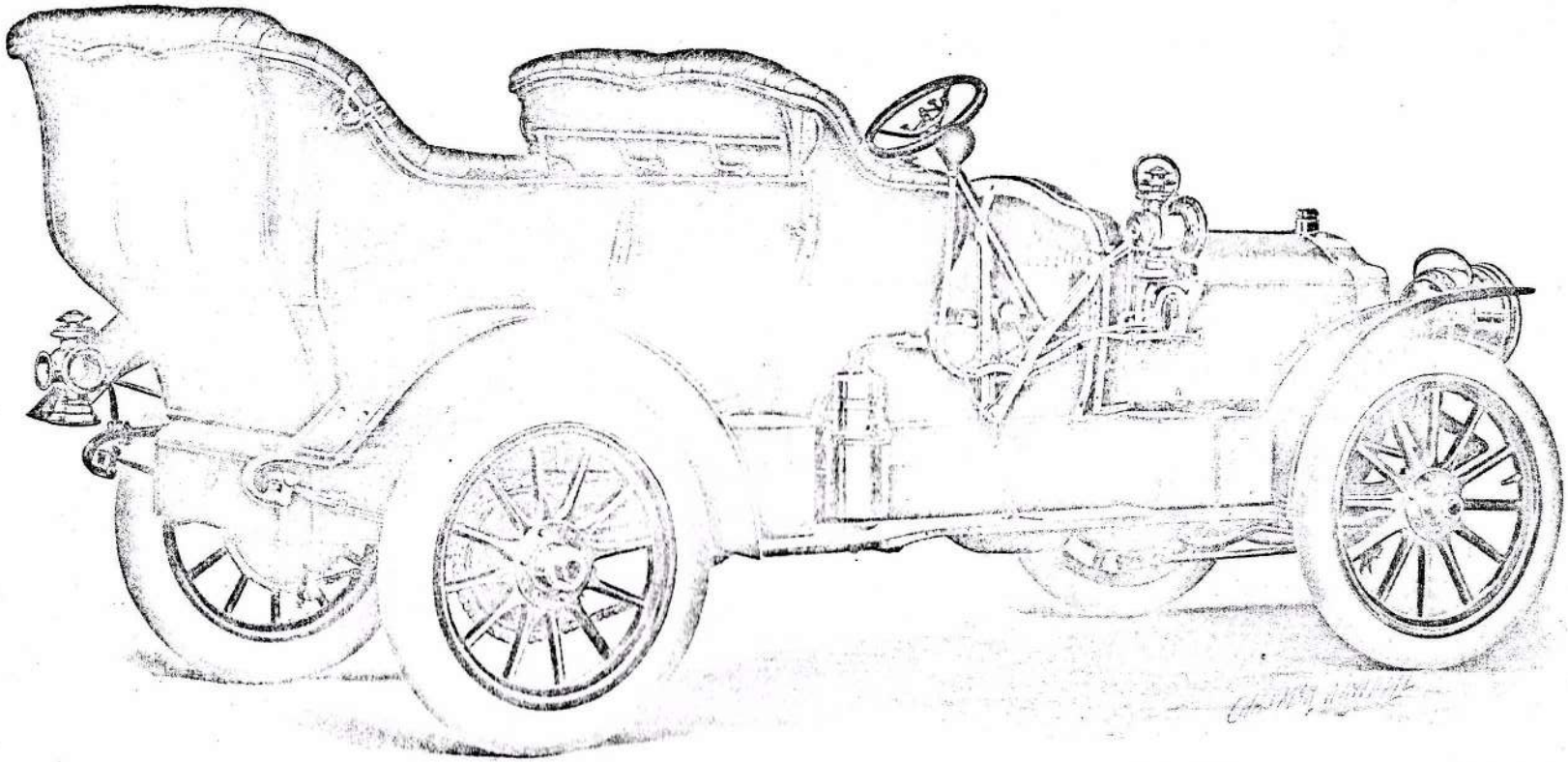
Cars are finished in royal green, royal green with red running gear, Victoria Park Lake, Victoria Park Lake with English vermilion running gear and Thomas red.

The equipment consists of two acetylene headlights, two side lamps and one rear lamp, French horn, acetylene generator, and a complete set of tools necessary for work on the car, which are enclosed in an aluminum box.

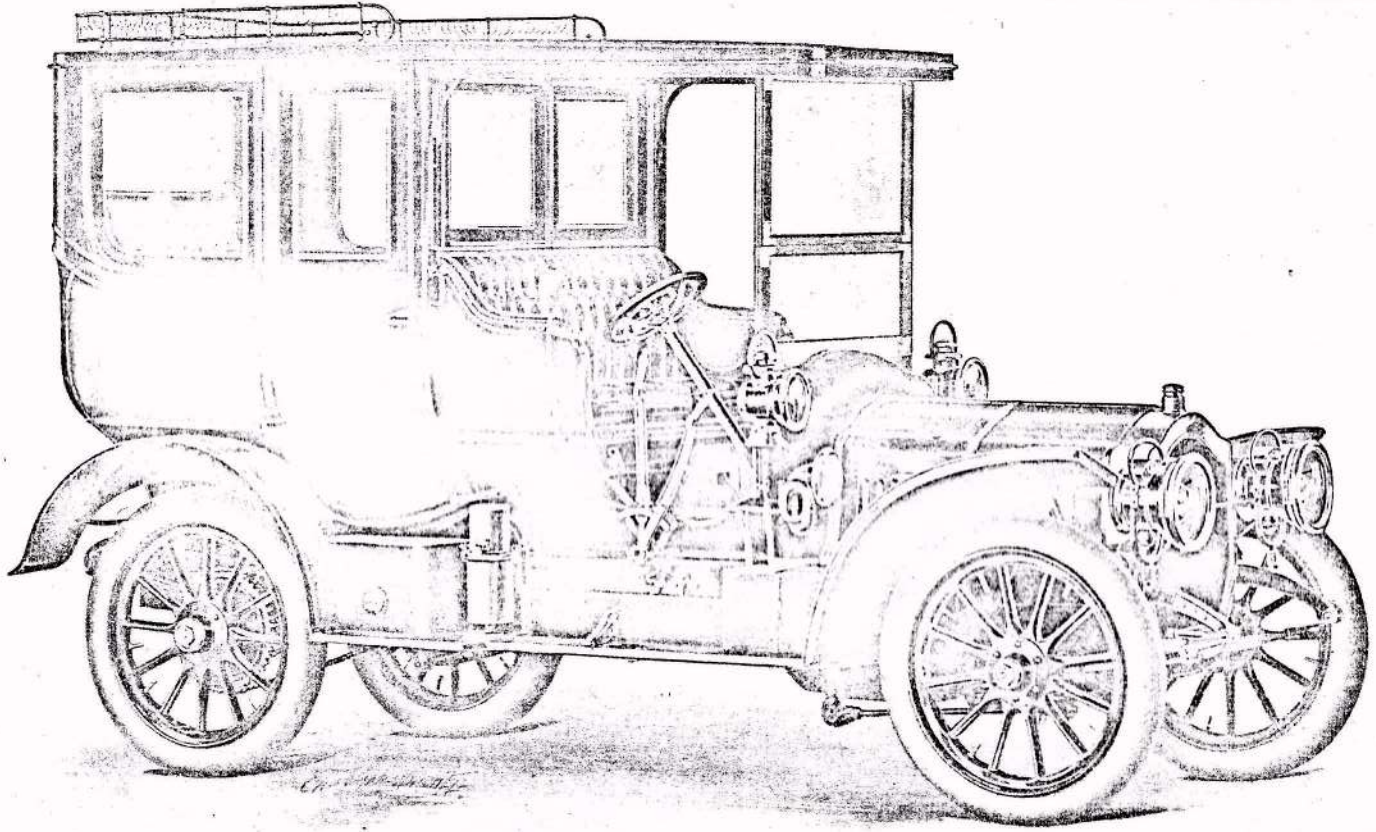
A feature of the Thomas Flyer is its dust-proof body. The lines of the body with their graceful curves, deflect the currents of dust which are drawn upward by the car's forward movement and effectually prevent it from reaching the occupants of the car. The spaces between the running boards and the frame are completely enclosed.



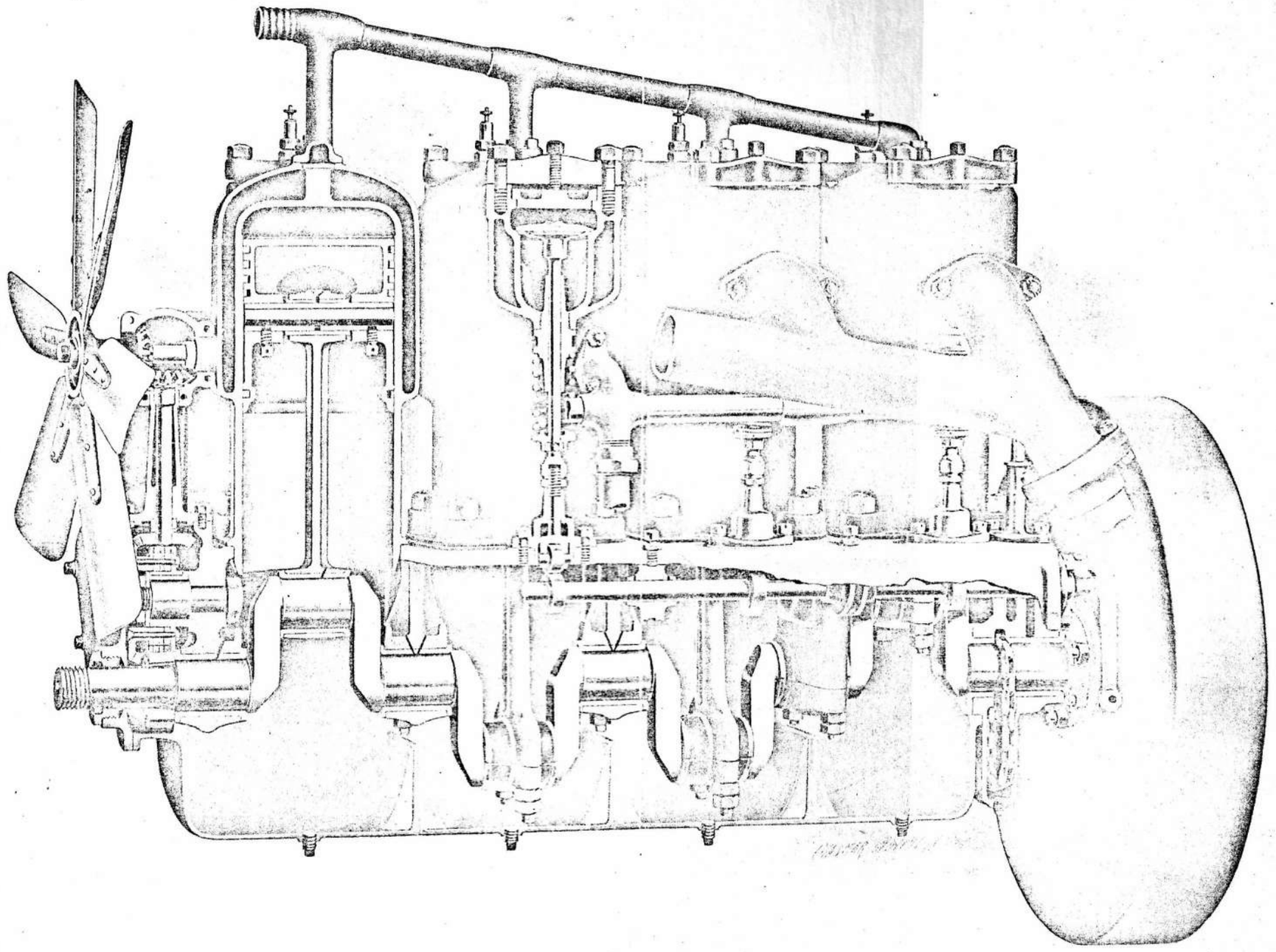
TOOL EQUIPMENT OF THOMAS FLYER



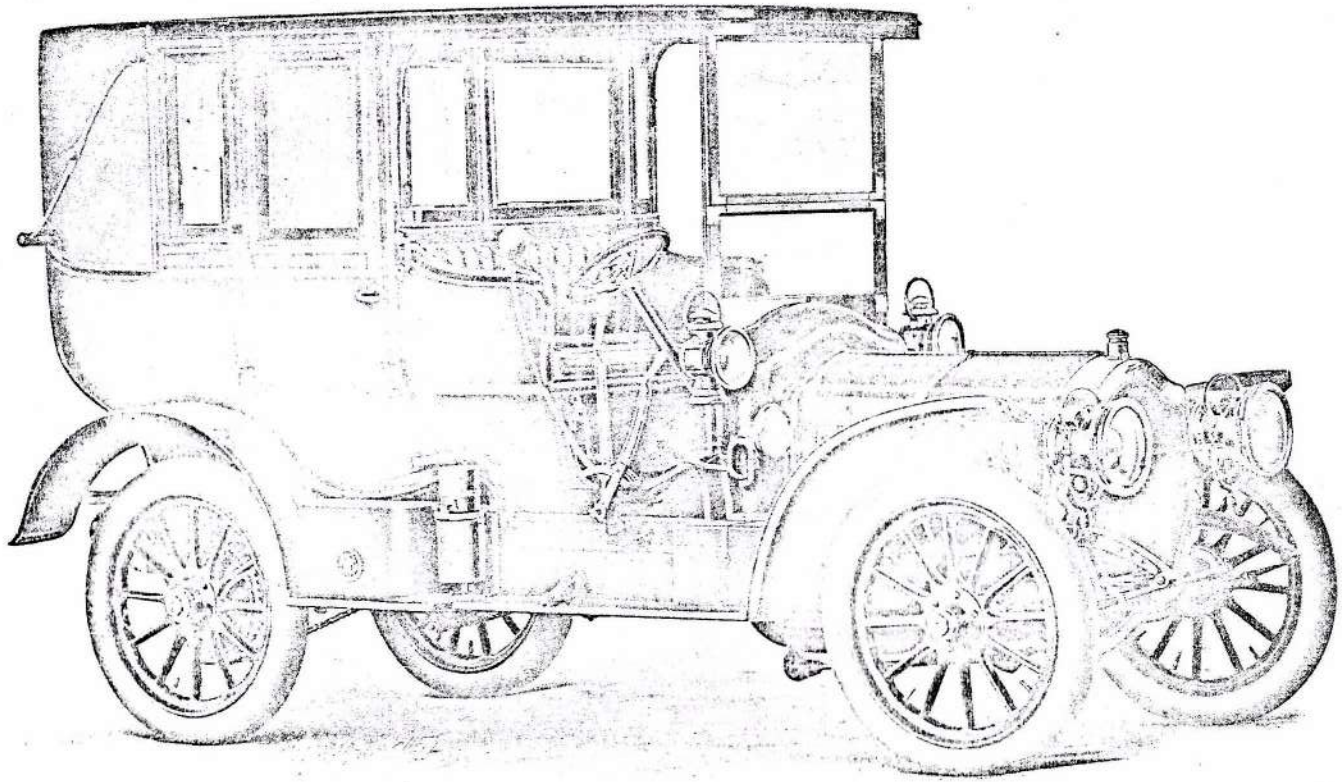
REAR VIEW OF THOMAS FLYER, SHOWING DUST DEFLECTING LINES



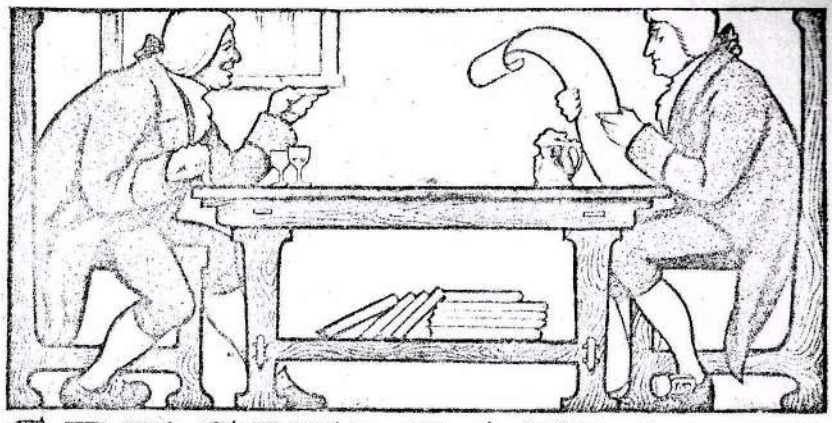
THOMAS LIMOUSINE, 60 HORSE-POWER—$5,000; with drop windows, $5,200, f. o. b. Factory



THOMAS FLYER MOTOR SECTIONALIZED

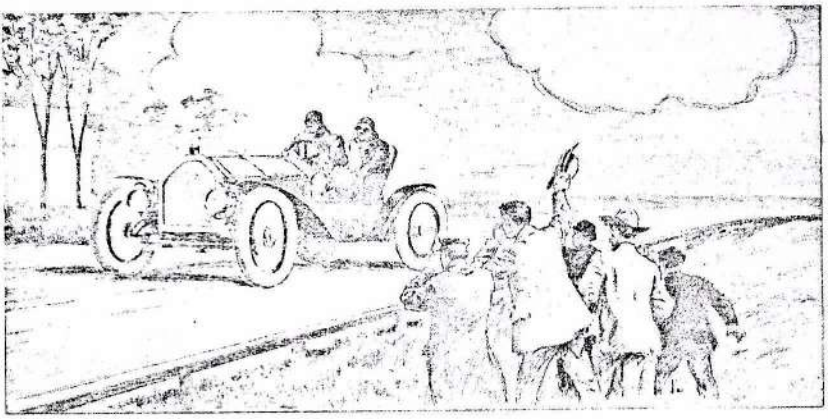


THOMAS LANDAULET, 60 HORSE-POWER—$5,200, f. o. b. Factory



SPECIFICATIONS

Styles of Cars	Runabout, touring car, demi-limousine, limousine, limousine with drop windows, landaulet.
Seating Capacity	Runabout, 2 and 3; all other styles, 7.
Wheel Base	118 inches.
Tread	56 inches.
Clearance of Axles	Front, 11 inches; rear, 13 inches.
Type of Motor	4-cylinder, 4-cycle, cylinders separate.
Horse-power	60.
Bore and Stroke	5½ x 5½ inches.
Carburetor	Automatic, water jacketed.
Ignition	Bosch high tension magneto and Atwater-Kent spark generator; both systems separate and independent, with two sets of spark plugs.
Lubrication	Mechanical, six sight feed oiler, in conjunction with splash system, in crank case.
Control	Spark and throttle on top of wheel.
Transmission	Sliding gear, selective type, four speeds forward and reverse.
Standard Gear, Touring Car	2.18 to 1 on high speed.
Clutch	Three-disc metallic.
Springs	Semi-elliptical.
Drive	Double side chains.
Bearings	Front and rear transmission auxiliary shaft, rear of main transmission shaft, differential, sprockets and rear wheels, annular ball; front end of main transmission shaft, front wheel and sector of steering gear, roller; clutch, steering post and bevel gear, ball thrust.
Radiator	Cellular, with shaft-driven fan.
Water Pump	Gear pump, gear driven.
Brakes	Two contracting, leather to metal, on rear hubs, 12¼ inches diameter by 1½ inches face; two contracting, leather to metal, on countershaft drums, 7⅞ inches diameter, 2 inches face.
Steering Gear	Worm and sector.
Wheel Dimensions	36 inches.
Tires	Goodrich clincher, 36 x 4 inches front, 36 x 5 inches rear.
Gasoline Capacity	22 gallons, including emergency supply of 2 gallons.
Water Capacity	4½ gallons.
Oil Capacity	2 quarts in crank case, 3 quarts in oiler.
Speed	Touring car, 64 miles per hour.
Weights	Runabout, 3,000 pounds; touring car, 3,200 pounds; demi-limousine, 3,500 pounds; limousine and landaulet, 3,800 pounds.
Prices	Runabout and touring car, $4,000; demi-limousine, $4,500; limousine, $5,000; limousine with drop windows, and landaulet, $5,200.



THOMAS RECORDS

Leader of the American team by a full lap in the Vanderbilt cup race. Despite the fact that the Thomas had barely been completed on the eve of the race, it not only beat every other American car but distanced six of the thoroughly tried-out foreign entries, being kept back alone by the enforced use of touring car non-skid tires. Not a mechanical adjustment was made on the Thomas during the entire race.

At the conclusion of a 5,200-mile trip through Europe with his Thomas Flyer, George H. Townsend, a college student and a novice in driving, who had not been accompanied by a chauffeur, wrote the following, a record for reliability that eloquently tells its own story:

"The trip indeed was beautiful, but I can only grant half of its pleasures to scenery and roads, the other half to Old Trusty. Racing may tell a great deal, but what more praise can a car need than to say that Old Trusty's engine stopped just twice, once because of an empty gasoline tank and the second time from a broken battery wire."

Broke best previous record for continuous running of motor, 200 hours, by over 307 hours, a total of 21 days, 3 hours and 29 minutes, or 507 hours and 29 minutes. After a stop of forty seconds, due to dirt in the gasoline, this same car broke all records for reliability in making an overland trip from New York to Chicago over newly frozen roads during zero weather and in the face of a continual blizzard, during the latter part of January.

Perfect score in Glidden tour and return to Buffalo, a trip of over 2,000 miles without a mechanical adjustment.

Three perfect scores (all Thomas cars entered) in the Chicago-Elgin-Aurora endurance contest.

Road record, Buffalo to Rochester, 68 miles, 1 hour, 32 minutes and 45 seconds.

Hill-climbing record of California, Pasadena-Altadena course.

Stock touring car record of 5 miles, standing start, in 4.55; 1 mile in 57⅘ seconds, at Atlantic Beach.

1 mile, 55⅕ seconds, Atlantic City. First and second in one-minute class, Atlantic City.

First in $4,000 and $5,000 touring car championship classes, Atlantic City.

25-mile world's record, stock touring car, St. Louis, 34.36.

50-mile Pimlico track, Baltimore, 1.06.36.

Lowered 50-mile stock touring car record, Hawthorne track, Chicago, to 1.06.19.

Again lowered 50-mile world's record for stock touring cars on track to 1.03.19¾, Philadelphia.

1 mile Price handicap, Atlantic City, Thomas from scratch, 1.21⅘.

First in free-for-all at annual hill-climb of Rochester Automobile Club.

First in free-for-all event in annual hill-climb of Granite State Automobile Club, at Manchester, Vt.

First in 5-mile novelty race, Kansas City.

Two perfect scores (only Thomas cars entered) in San Francisco, Del Monte reliability run.

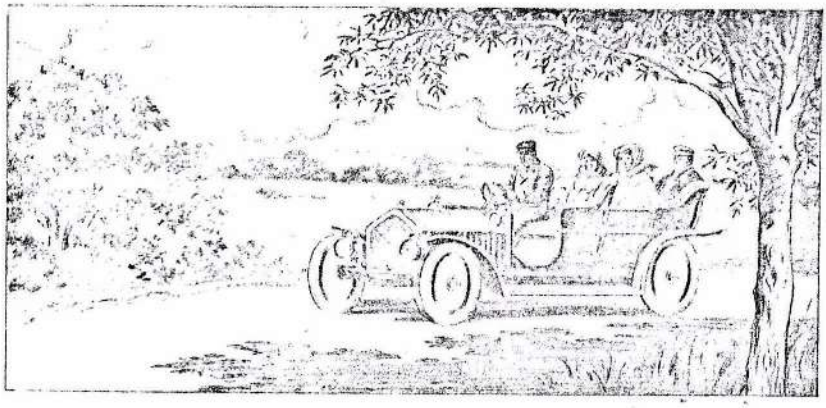
First and second in class for cars costing not more than $3,500 in annual hill climb of Colorado Automobile Club.

First in class for cars listed at from $3,500 to $5,000, Empire City track, Mt. Vernon.

First in Dealers' Handicap (Thomas from scratch) at Empire City track, Mt. Vernon.

Note—All of the records with the exception of that of the Vanderbilt cup race were made with regular stock cars of owners, and without the aid of professional racing men or factory employees and without especial tuning up.

THE THOMAS

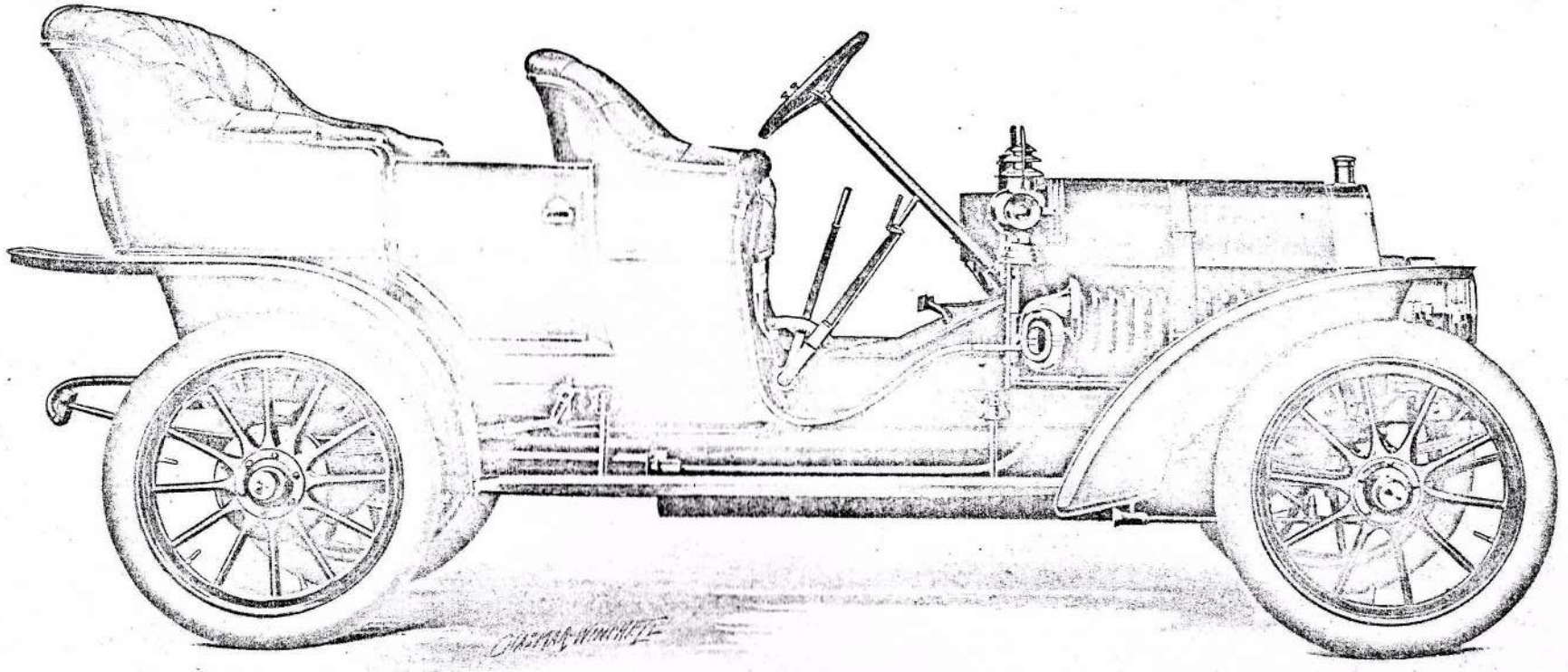


The THOMAS FORTY

IT has often been stated by those familiar with the automobile industry that the best product is obtained by the construction of only one type of car in any one plant. This method of manufacture calls forth all of the energy, originality and perseverance of the organization of any factory to bring its output to the highest stage of perfection. In placing the Thomas Forty upon the market it was deemed expedient —nay, wise—that it should be designed and built as an entirely separate product in a separate plant. In this way there could be no slighting in quality of one car for the benefit of another, as is usually the case where two different and distinct models are produced beneath the same roof. The resultant car, the Thomas Forty, has justified the idea. In its class it stands out distinctly as a modern design, and has more horse-power and greater size than any other car offered upon the American market for the price. Frame, motor, transmission, control, mechanism, in fact, everything upon the car is built according to the specifications and drawings of the Thomas Detroit engineers. Two models, differing only in body and gearing, constitute the 1907 line, both being built upon the same chassis, one, the standard touring car and the other a speed car in runabout form. Avoidance of unnecessary parts, of complication, avoidance even of the appearance of such complication, strength and weight where needed, lightness where possible, and safety always, and the result is the Thomas Forty—2,550 pounds of liveliness with a taste for space eating upon our American roads.

Rigid tests of this car in the hands of owners have proved its merits as a hill climber in such towns as Pittsburg and San Francisco, and its cross country ability in runs from Detroit to New York and other distance tests.

The details of construction of this new car will appeal to any one familiar with that which is modern in automobile design. This car is an excellent example of the tendency of the best American makers to adopt as standard certain features which are known to be right and proper. Long, wide springs, large wheels and tires, radiator on line with the front axle, absolute



THOMAS FORTY TOURING CAR—$2,750, f. o. b. Factory

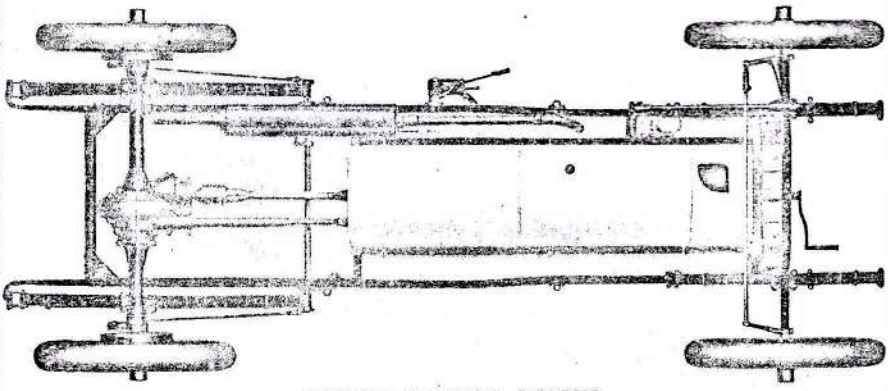
dust-proofing of motor and gears, automatic oiling of motor and transmission, ample foot room for both front and rear seats, brakes that are strong enough to hold under any conditions, bearings that need almost no attention, and other features which will be enumerated, presage much for this new and already popular car.

The wheels and tires measure 34 x 4 inches, sufficiently large for comfort and minimum tire troubles. The front axle is drop forged steel, I-beam section, with cross bar at the rear, where it is fully protected from possible obstructions in the road. Rear axle is of the semi-floating type, and roller bearings are used throughout the running gear. Frame is offset only three-quarters of an inch as it narrows toward the front, and there are few rivet holes to weaken it. The sub-frame is dropped four inches below the main frame, which lowers the motor and transmission shaft so that under normal load there is only slight angularity in the universal shaft. A steel plate is riveted between the main frame and the sub-frame, forming a portion of a very excellent dust-proofing scheme, and adding a continuous stiffening effect throughout the entire length of the sub-frame. A dust-protecting pan, instantly attachable and detachable, and of an entirely new design, is used in combination with this plate. The method of attachment, with its entire absence of bolts, nuts and screws, will be fully appreciated by the operator. Running boards are of steel, as are the mud guards. These guards are wide, with aprons to protect the body thoroughly from flying mud and dust.

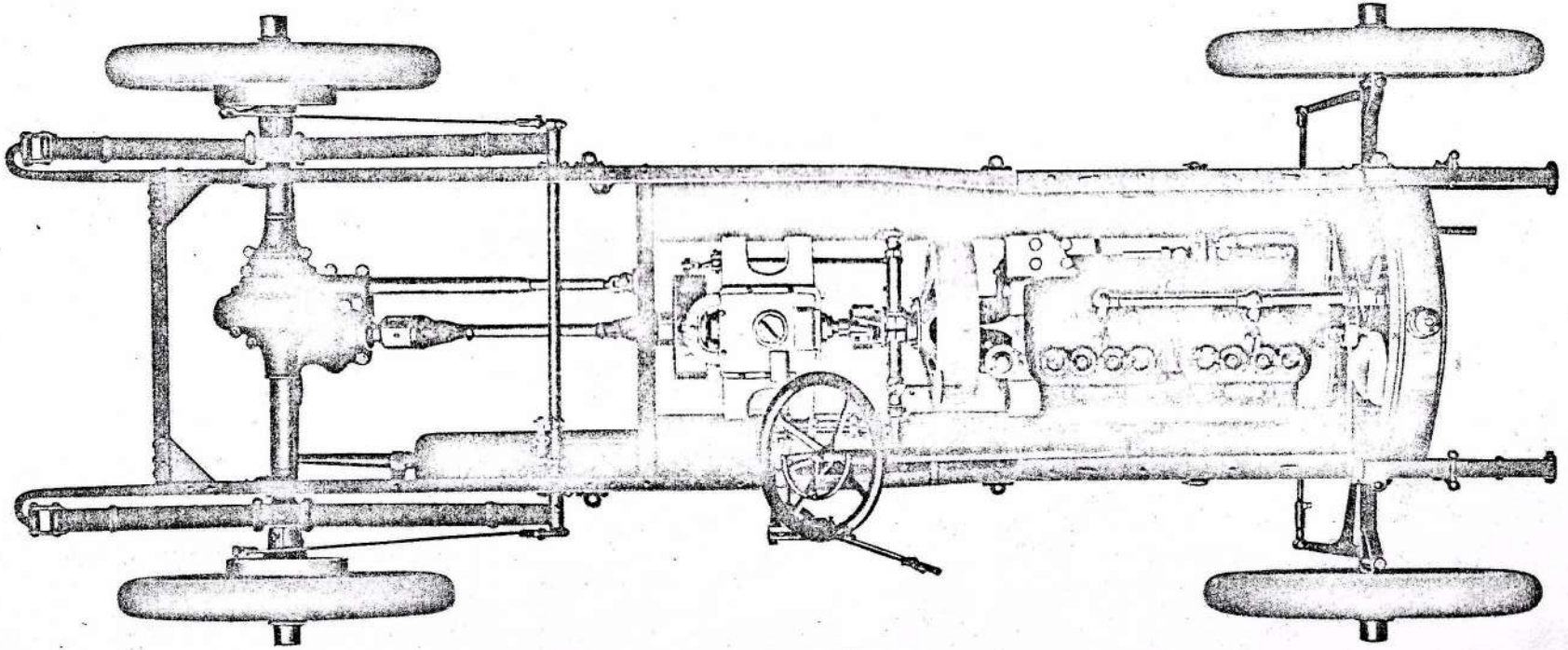
Wheel base is 112 inches. The combination of this wheel base, large wheels and low springs, produces a car which rides evenly and without jar over any road.

Torque tube is of seamless steel tubing. A heavy pair of springs at the forward end takes any driving and braking strain on the rear axle, which in some cars is allowed to come on the car springs themselves.

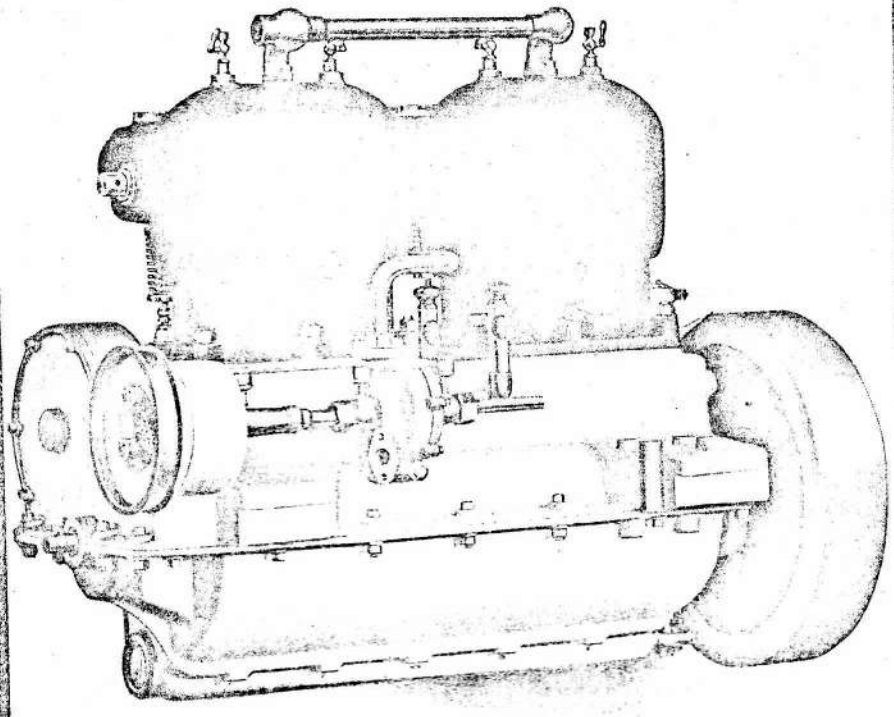
The motor design is distinctive and clean. A noticeable characteristic to the casual observer is the lack of working parts to be seen on the outside of the motor. No oil tubes are in sight, and no oil is to be found on the exterior of the motor in any place. All nuts and bolts are carefully cotter pinned. The working parts, such as piston, piston pins, piston rings and cylinders are carefully ground to a proper fit. Crank shafts and



BOTTOM VIEW OF CHASSIS



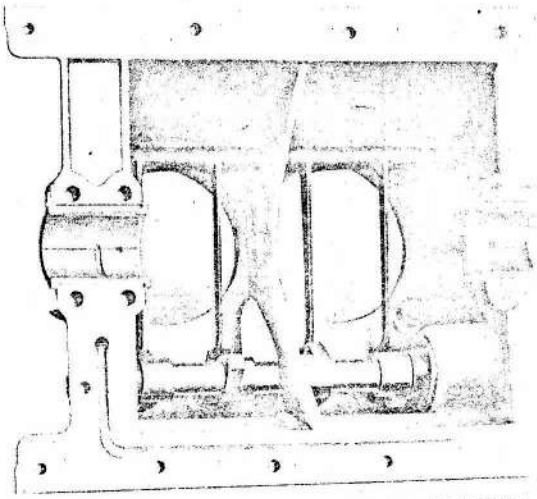
PLAN VIEW OF CHASSIS



PUMP SIDE OF MOTOR

connecting rods are, of course, drop forged, the former being of special crank shaft heat treated stock, roughed out and ground to size. Piston, cylinders and rings are of irons specified for these various parts. They are ground to interchangeability, a limit of variation of one-half thousandth being maintained. All bearing surfaces are particularly long, thus minimizing the wear at these vital points. The metal used in the bearings is pressed into shape under hydraulic pressure, which renders it exceptionally hard and frictionless. As each bearing is a duplicate of the other, replacements can be easily made after long service.

The valves are all on one side of the cylinder, simplifying the cylinder casting and allowing the use of only one cam shaft. All valves are mechanically operated, and the setting is adjustable. The valve lifting mechanism shown in the illustration minimizes wear in these parts. The openings

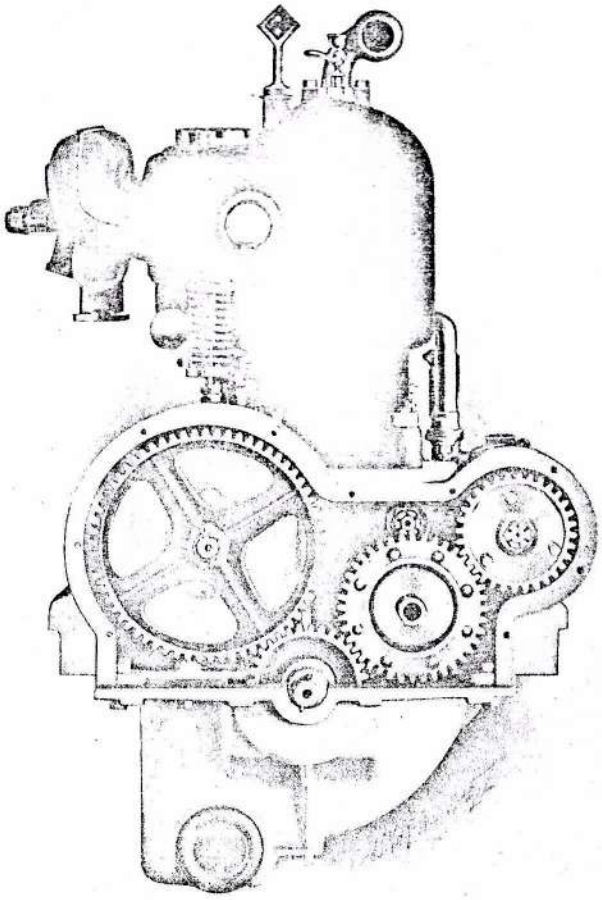


DETAIL OF ROCKER ARM MECHANISM

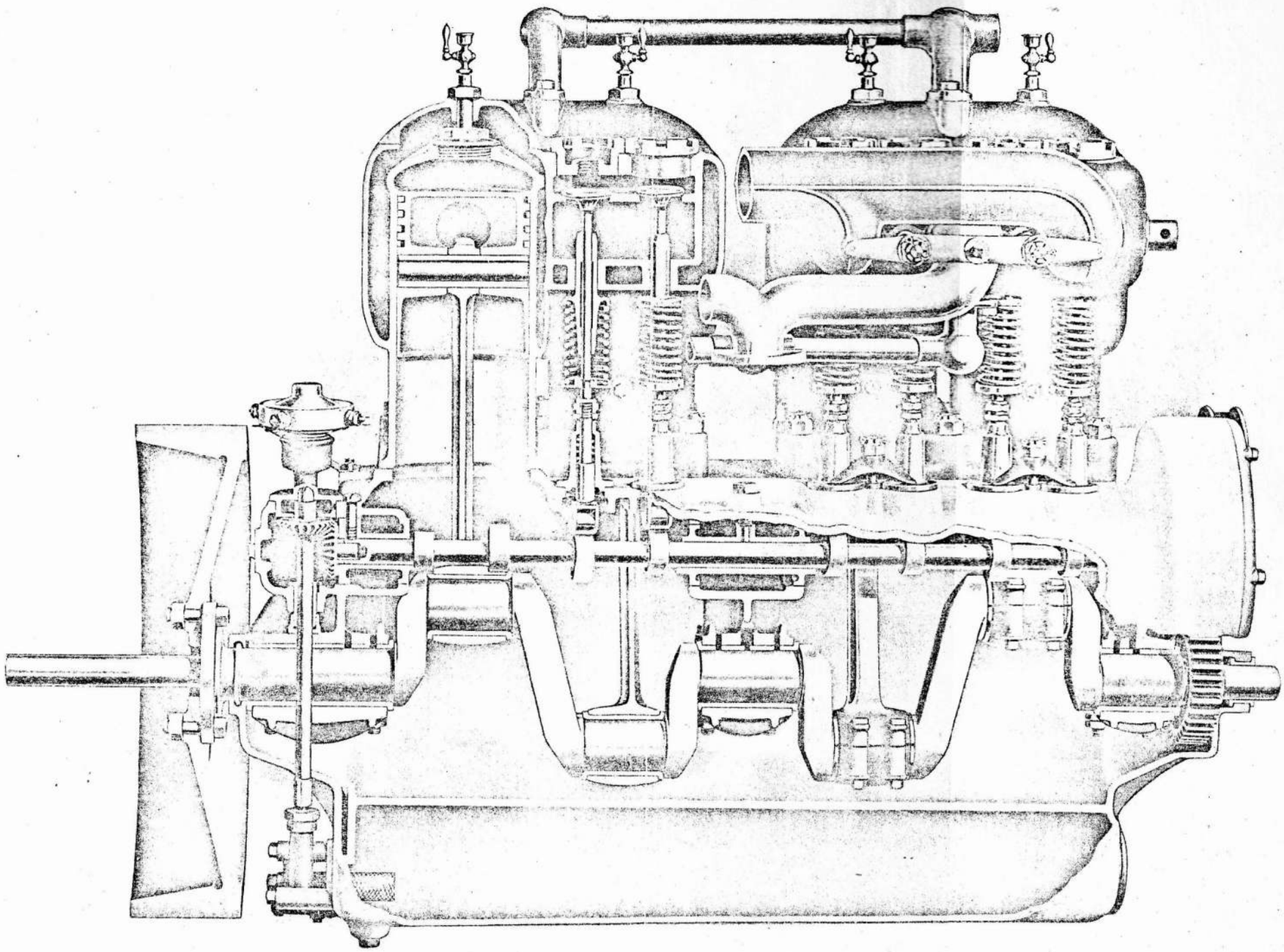
and closings of valves can be easily verified by means of a pointer affixed to crank case, and the stamping of these opening and closing positions upon flywheel itself. The aluminum crank case is not bolted vertically through the frame but horizontally, avoiding the weakening effect of bolt holes where frame strain is greatest. Cylinders are offset just an inch in such direction as to prevent side thrust against cylinder walls during operation of the working stroke when strains are highest. This offset construction makes the car a particularly good hill climber.

A notable feature is the fact that the spark plugs, valves and carburetor are all located on the right hand side of motor, and lifting up this side of the bonnet makes all these parts accessible at once, and they happen to be the only ones which one ordinarily desires to inspect. The carburetor is an automatic float feed, which gives maximum power with minimum complication of adjustment. Commutator is of accepted type and runs on ball bearings. The ignition consists of a four unit coil, storage battery and set of dry cells. Heavy insulated cable is used for all wiring.

The oiling system is unique and singularly economical, as the oil is used to its maximum efficiency. The system is self contained within the motor, an auxiliary tank being cast on the lower side of the crank case. While the motor

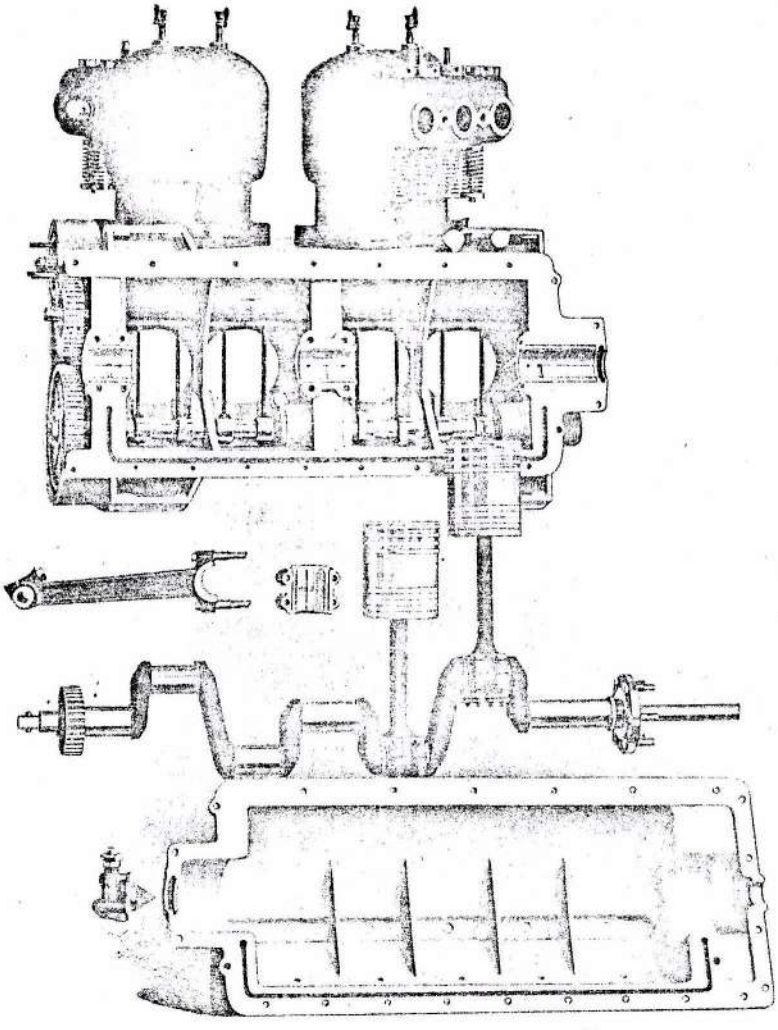


FRONT VIEW OF MOTOR



THOMAS FORTY MOTOR SECTIONALIZED

is running, the oil is constantly pumped from this reserve chamber up into the main bearings of the motor, which it lubricates and then overflows into the crank case itself. Here it oils the cylinders, pistons and connecting rods by splash lubrication. A constant level is maintained by drilling holes at a certain height in the crank case, and when the oil reaches this height it overflows through these holes back into the reserve chamber, to be again pumped through the system. In this way, every bearing is oiled by force feed lubrication, and cylinders and pistons are evenly oiled through splash lubrication from a constant level. A glass bull's-eye is provided at the front end of the reserve chamber, and on inspection this always shows how much oil is contained in this chamber. One filling of oil lasts 600 to 800 miles. The motor is sure to get its oil, as the oil pump and commutator are on the same shaft, and if anything should happen to the oiling system, the commutator would stop operation, giving warning to the driver at once that the oiling system is out of order. Thus there are no chances for cut cylinders or burned out bearings. Timing and pump gears are enclosed and are packed in non-fluid oil.



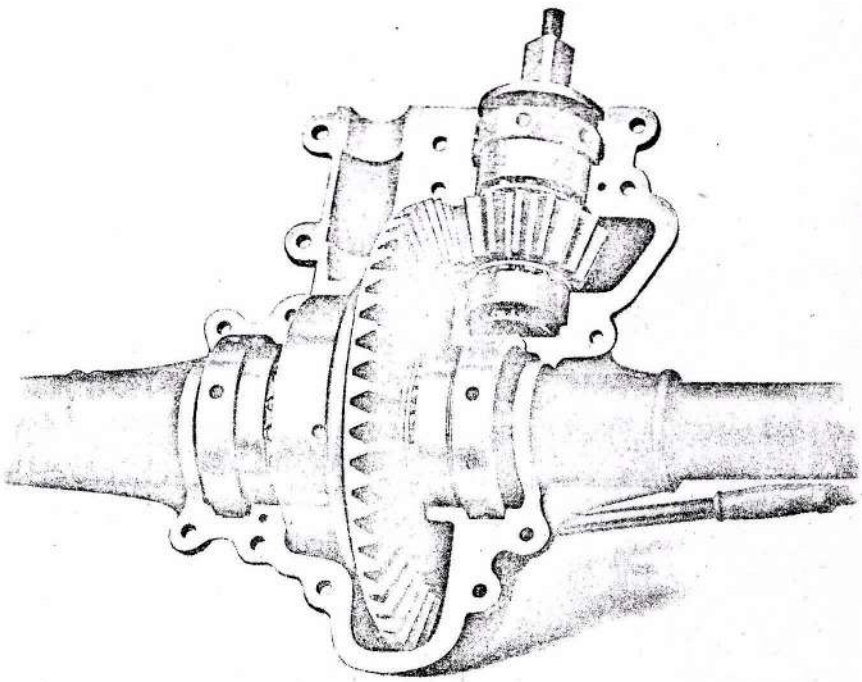
THOMAS FORTY MOTOR KNOCKED DOWN

The clutch is cone shaped, 16 inches in diameter, large enough to handle satisfactorily the full power of the motor. It is of aluminum except the hub which is of steel. Thus the spinning action due to inertia is slight, a very desirable feature in any type of clutch. Under the leather band on the cone surface there are a number of small steel springs, which tend to keep the band expanded just enough to avoid instant engagement when clutch is thrown in at starting. Power is transmitted from the clutch cone through a universal yoke or universal cross to the transmission itself.

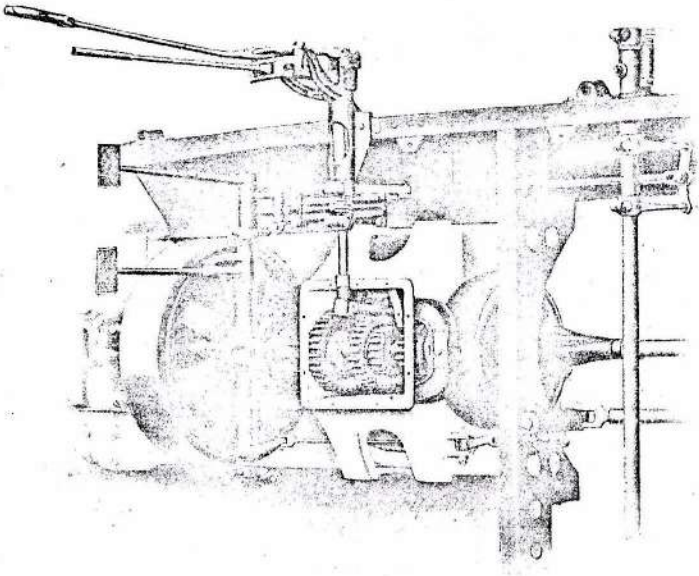
Transmission is of the three speed forward and reverse selective type, and has an entirely new system of control. The "H" plate in which the control lever operates in most transmissions is done away with, and there is no chance of the control lever sticking with this new design. A gear interlocking device is furnished, preventing the shifting of gears with clutch engaged.

The gears of the transmission are made of the best quality of nickel steel, hardened and ground, and the workmanship is of the best in the country. Shafts run on roller bearings, and these bearings are equipped with stuffing boxes, making the transmission oil tight. Power is transmitted from the clutch to the change speed gear and thence through universal shaft to rear axle. The universal shaft is of roller design. All bearing surfaces are carefully hardened and ground. Bearings are run in grease at all times, which is kept in by strong leather cases. The shaft itself is of high carbon steel stock.

The brakes of the Thomas Forty are large enough to be extremely efficient. There are two sets, first, the transmission brake, a sheet steel band 10 inches in diameter and 3 inches

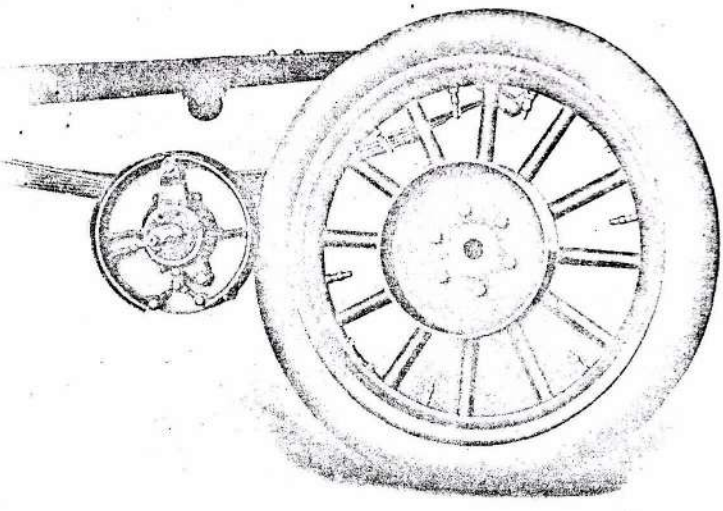


REAR AXLE AND DIFFERENTIAL

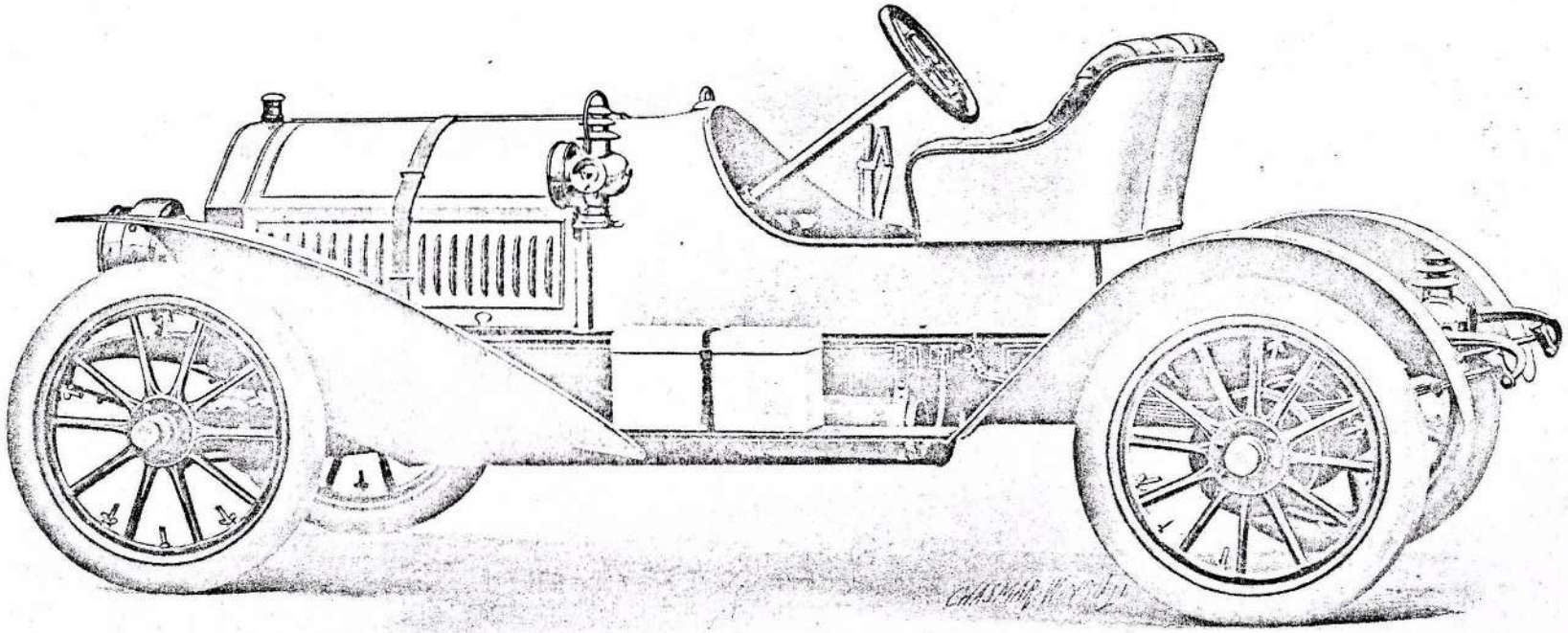


TRANSMISSION AND CLUTCH

wide, acting upon a steel drum bolted to the propeller shaft universal yoke. It is suspended with a spring at the top, insuring absolutely against the possibility of drag and friction when the brake is not in commission. This drive shaft brake is used upon the Forty as the foot or operating brake, as it is the only construction that insures absolutely equal action upon each driving wheel. The hub or emergency brakes act upon drums bolted to the rear wheel hubs and are of internal expanding construction. By the use of a steel cover, they are kept clean at all times, necessitating but little adjustment. An equalizing link allows both brakes to receive full pressure from the hand lever, causing them to take hold evenly, although they may not be in the same adjustment. Applying this brake also throws out the clutch, and either set of brakes will lock the wheels.



REAR HUBS AND BRAKES

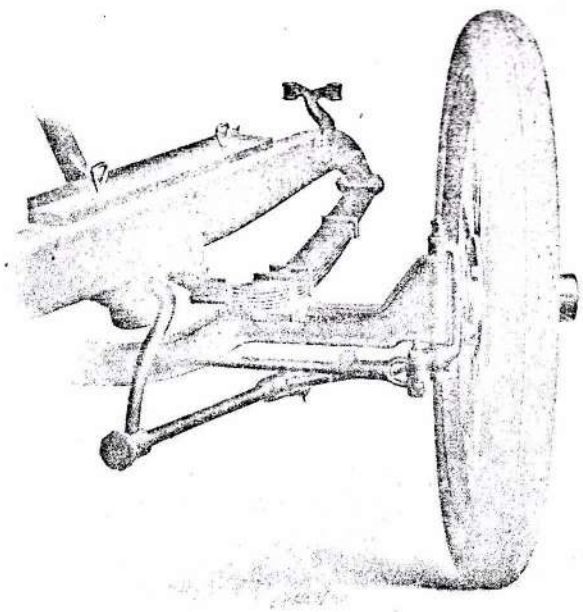


THOMAS FORTY RUNABOUT—$2,750, f. o. b. Factory

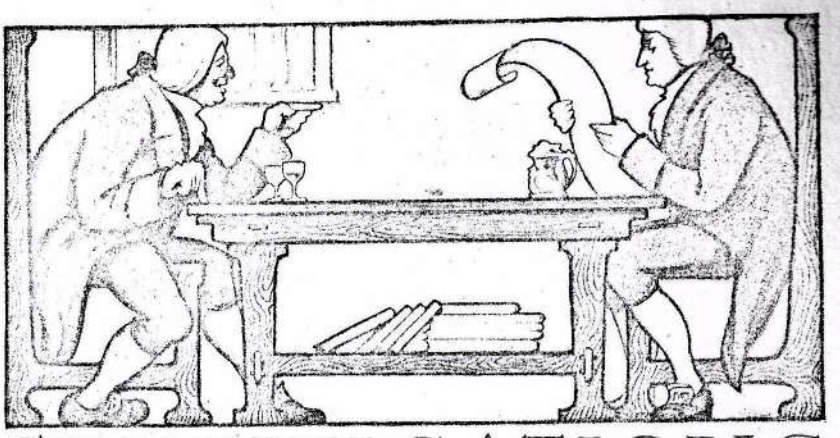
Steering gear is of the screw and nut type. Spark and throttle control levers are held upon quadrant on steering wheel and do not rotate with wheel. All gears at the end of the post are carried within an oil-tight case to avoid mud and dirt. Steering reach from gear and axle is a steel shaft with springs on each side of the axle ball arm, so that jars are taken up and not transmitted to the wheel. Steering wheel is large, being 16 inches in diameter.

Radiator is of the vertical flat tube type, which gives most excellent results. On trials, these radiator tubes have been expanded under pressure to several times their normal size without damage, showing that no serious trouble could result from freezing. The radiator simply rests upon a bracket to which it is bolted from below and is supported at the top by a rod running to the dashboard. Thus the twists and strains of the frame cannot be communicated to it. The fan blades are of sheet aluminum, and fan runs on ball bearings. The fan belt is easily adjusted by the loosening and tightening of a nut.

Equipment of the Forty is exceptionally liberal, including two acetylene headlights, two side oil lamps, tail lamp, complete lamp brackets, gas generator, storage battery, set of dry cells, horn with tube and screen, tool kit, tire repair outfit, coat rail, foot rail, tire pump, jack, and on the touring car, concealed irons for top. The runabout is provided with a brass bound rubber mat for rear deck. Upon this rear deck may be fitted tool box with chauffeur's seat, trunk, touring basket, or any equipment to please the individual taste of the owner.



FRONT AXLE AND STEERING KNUCKLE



SPECIFICATIONS

Price	$2,750, f. o. b. factory.
Weight of Car Filled	Touring car, 2,550 pounds; runabout, 2,400 pounds.
Styles of Cars	5-passenger touring car, 2-passenger runabout.
Wheel Base	112 inches.
Tread	55 inches.
Clearance of Axles	Front, 10½ inches; rear, 9½ inches.
Type of Motor	4-cylinder, 4-cycle vertical.
Horse-power	40.
Bore and Stroke	4¾ x 5 inches.
Carburetor	Automatic.
Ignition	4-unit coil and storage battery. Magneto to special order.
Lubrication	Motor, force feed, constant level; transmission and axles, splash.
Form of Control	Spark and throttle on top of wheel.
Type of Transmission	3-speed sliding gear, selective type.
Standard Gear	Touring car, 3 to 1; runabout, 2½ to 1.
Clutch	Cone, leather face, 16 inches in diameter.
Springs	Long, semi-elliptical.
Drive	Bevel gear.
Bearings	Roller in axles and transmission.
Radiator	Flat vertical tubes.
Water Pump	Centrifugal pump, gear driven.
Brakes	Transmission, 3 inches face, 10 inches diameter; hub brakes, internal, 2 inches face, 12 inches diameter.
Steering Gear	Worm and nut type.
Dimensions of Wheels	34 inches diameter.
Kind of Tires	Goodrich regular clincher tires, standard equipment.
Dimensions of Tires	Touring car, 34 x 4 inches; runabout, 34 x 3½ inches front, 34 x 4 inches rear.
Water Capacity	4 gallons.
Gasoline Capacity	18 gallons.
Oil Capacity	2½ gallons.
Speed	Touring car, 50 miles per hour; runabout, 55 to 60 miles per hour.

Guarantee

Adopted by the National Association of Automobile Manufacturers

We guarantee all goods furnished by us for sixty days following the date of their shipment, based upon the date of invoice covering the goods, this guarantee being limited to the replacement in our factory of all parts giving out under normal service in consequence of defect of material or of workmanship, without other responsibility on our part of any character. If the circumstances do not permit that the work shall be executed in our factory, the said guarantee is limited to the shipment, without charge, of the parts intended to replace those acknowledged to be defective. It is, however, understood that we make no guarantee whatever regarding pneumatic tires or the batteries. We cannot accept any responsibility in connection with any of our motor cars when they have been altered or repaired outside of our factory. Our agents are solely responsible to the purchaser of our goods for all undertakings and guarantees made by them beyond those expressed above.

Clearance Winchell Press, New York and Pittsburgh