

FORD MOTOR CARS



Ford-Motor-Cars

FORD-MOTOR-COMPANY
DETROIT - MICH - U - S - A

Standard Manufacturers—American Motor Car Manufacturers' Association

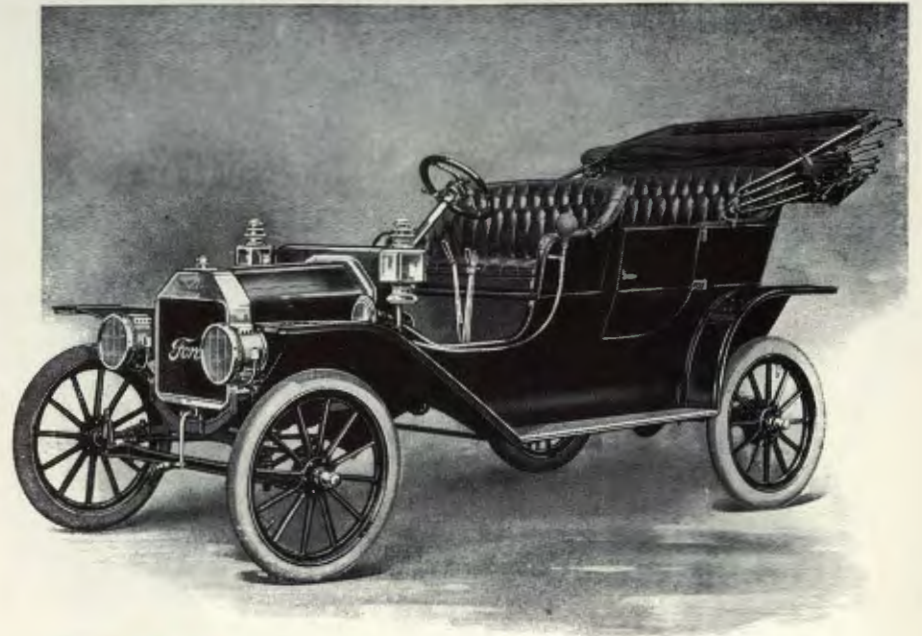


*High Priced Quality in a
Low Priced Car.*

Privately Reprinted 1976
Alvin E. Anderson, Jamestown, New York

WATCH THE FORDS GO BY

Two



Ford Motor Cars

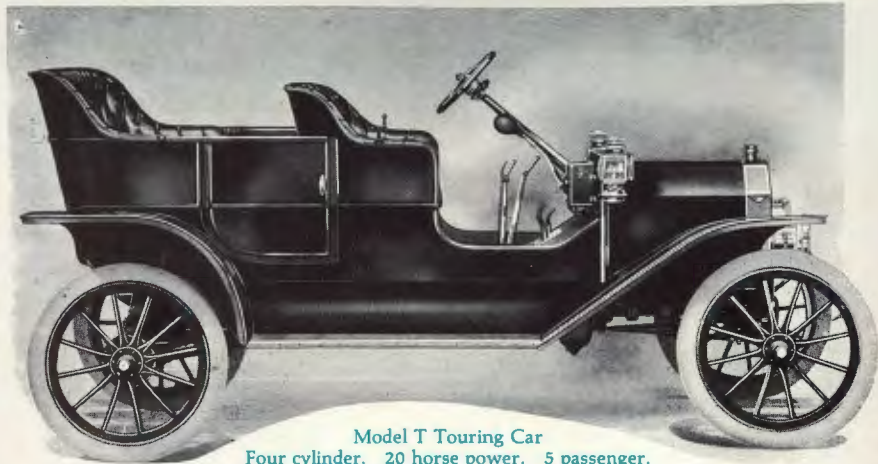
With this manufacturer claiming to make the best car, and that manufacturer asserting his to be superior, with the catalog of each claiming all the good features and relegating the bad to the other, the prospective buyer is at a loss to know what to believe and which to buy. Without the past record of the manufacturer as a guide, the chances are in favor of the buyer making a grievous mistake.

In catalog writing the law of inverse ratio often applies. Especially is this true of automobile catalogs. The newer the car the more effusive must be the description and the more extravagant the claims. What the makers lack in experience they must make up in type. But it is actual, practical, convincing experience that counts, and that the buyer of Ford cars obtains, and any statement made herein is made only because Ford experience has justified the assertion and Ford responsibility is back of it.

HIGH PRICED QUALITY IN A LOW PRICED CAR

Three

FORD MOTOR CARS



Model T Touring Car
Four cylinder. 20 horse power. 5 passenger.
\$850.00 f. o. b. Detroit.

In spite of standard practice to the contrary, we are not going to lay extravagant claims to all the good things in sight. There are excellent features in other cars, but better features or as high grade materials as are used in the Model T Ford cannot be found in any other car at any price. A better car is not and cannot be made.

That's a statement that would appear to be out of reason if Henry Ford did not have five years of continuous success on a similar proposition. Since the first Ford, Ford has been first as the maker of a high grade car at half the other man's price.

The Guarantee

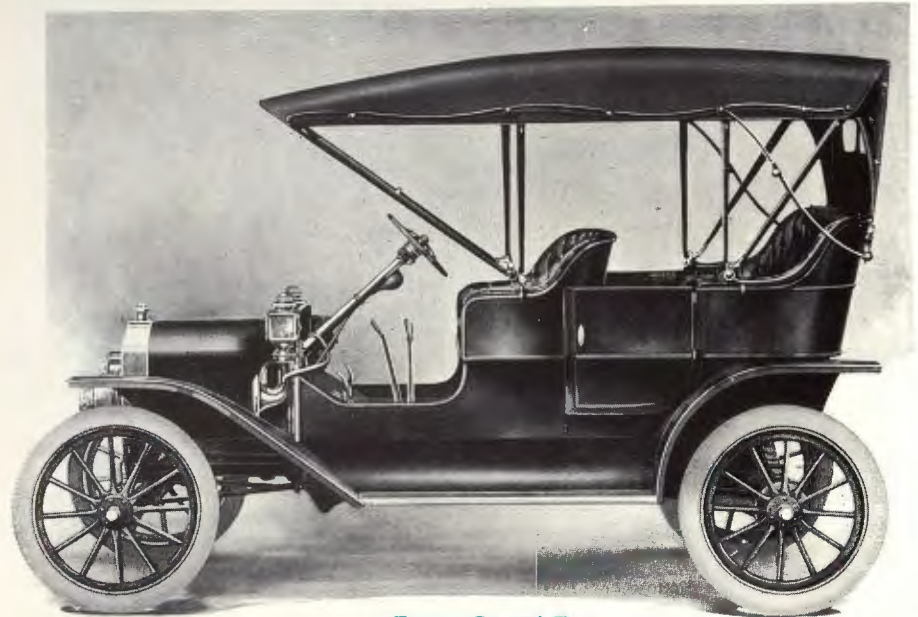
Henry Ford has built more automobiles than any other manufacturer and he has never designed or built a failure. Twenty-five thousand successful cars bearing the Ford imprint are in use today and are just so many testimonials of Ford success. This is your guarantee when you buy a Ford car.

The assurance that goes with an established reputation is your assurance in buying a Ford car. It's the same old name, the same dependable imprint on the car, the same old company and the same old organization that the world has learned to know and trust as builders of automobiles that make good.

WATCH THE FORDS GO BY

Four

FORD MOTOR CARS



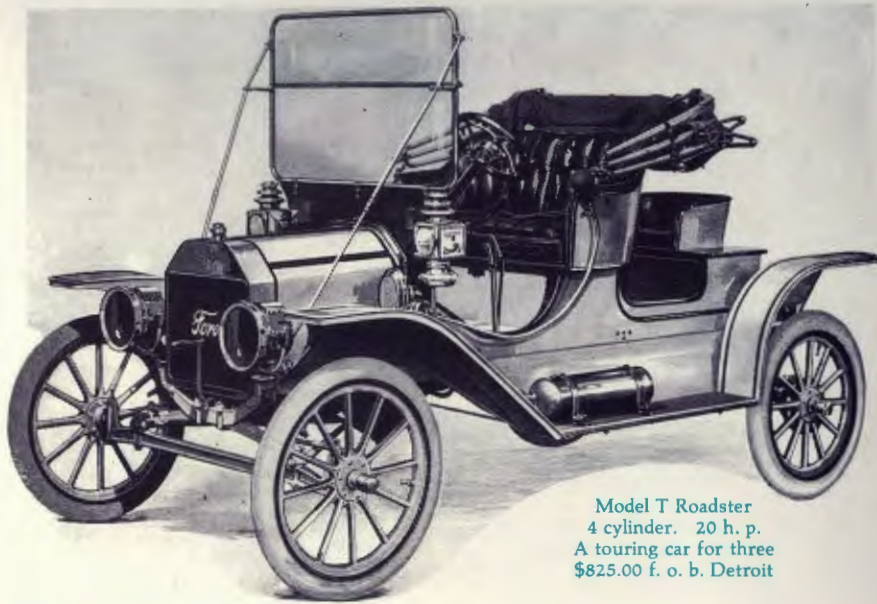
Touring Car with Top

The Model T car occupies the same position as a touring car that the Ford runabout has held. It offers the only chance to secure a high grade family car at a reasonable price—a price lower than the runabout price of any car but Ford. Think of it; a four cylinder, twenty h. p., roomy, powerful, five passenger touring car of pleasing appearance and superior design; a commodious family car, backed by the guarantee of the financially strongest company in the business, and then note the price—\$850.00F.O.B. Detroit.

The only parallel offer in the history of the automobile industry was in the introduction of the now famous Ford runabout. That car revolutionized motor car conditions, inaugurated the movement toward a general lowering of price, and at a single bound secured a monopoly of the runabout trade of the world. The quality of the car retained and increased the prestige which the low price started.

HIGH PRICED QUALITY IN A LOW PRICED CAR

Five



Model T Roadster
4 cylinder. 20 h. p.
A touring car for three
\$825.00 f. o. b. Detroit

Proven by Service

At the time this edition of the catalog was issued, January 1st, 1909, several hundred Model T cars had been delivered and were in actual and satisfactory service. The reports are uniformly enthusiastic, the car has proven every claim made for it, and demonstrated its superiority. Cars have been shipped into every State of the Union, to every country in Europe, to Asia, Africa and Australia, and have made good.

Twelve months actual service in Model T cars, one of which was driven twenty thousand miles before the car was announced, proved to us the car was right. It was given every possible test before the public knew there was such a car and only after it was known to be right was it placed on sale, tho to make sure Mr. Ford held it back a year. We knew it was right, now hundreds of buyers have demonstrated the same fact.

Dealers everywhere agree that in this new car Henry Ford has more than surpassed any previous effort, and that to demonstrate is to sell, if the prospect has any intention or ability to buy.

WATCH THE FORDS GO BY



Model T Coupe
4 cylinder. 20 h. p. Inside driven.
\$950.00 f. o. b. Detroit

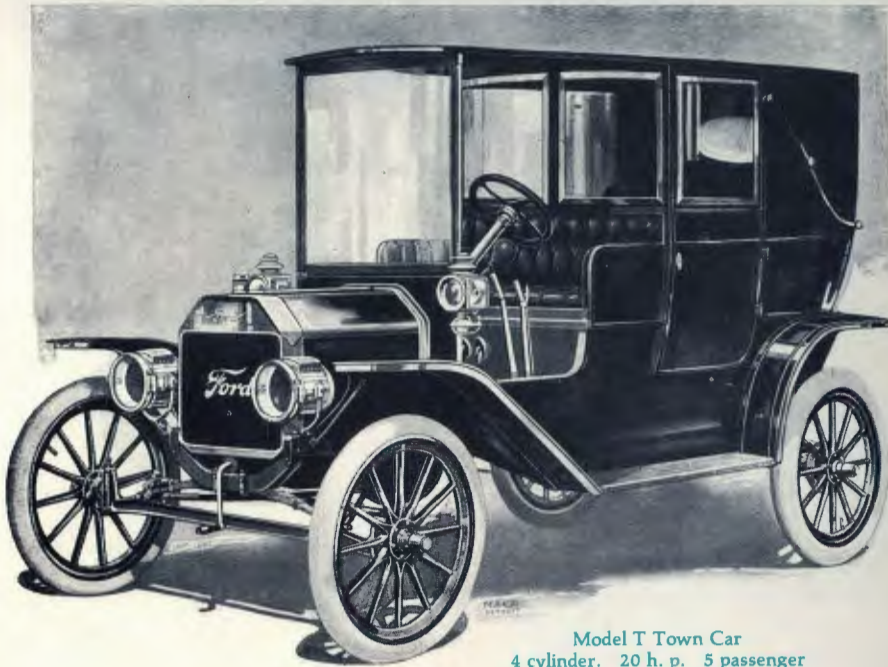
Vanadium Steel

The Model T is built entirely of the best materials obtainable. No car at \$5000 has higher grade, for none better can be bought. Heat treated Ford Vanadium steel throughout; in axles, shafts, springs, gears—in fact a vanadium steel car—is one evidence of superiority.

Nobody disputes that Vanadium steel is the finest automobile steel obtainable. Ask any disinterested steel expert about Vanadium steel and listen to him enthuse about its dynamic strength and power to withstand sudden shocks, torsional strain and vibration; its tensile strength, elasticity, ductility and withal the ease with which it stands machining. We defy any man to break a Ford Vanadium steel shaft or spring or axle with any test less than 50% more rigid than would be required to put any other steel in the junk pile, and that's a conservative statement.

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Model T Town Car
4 cylinder. 20 h. p. 5 passenger
\$1000.00 f. o. b. Detroit

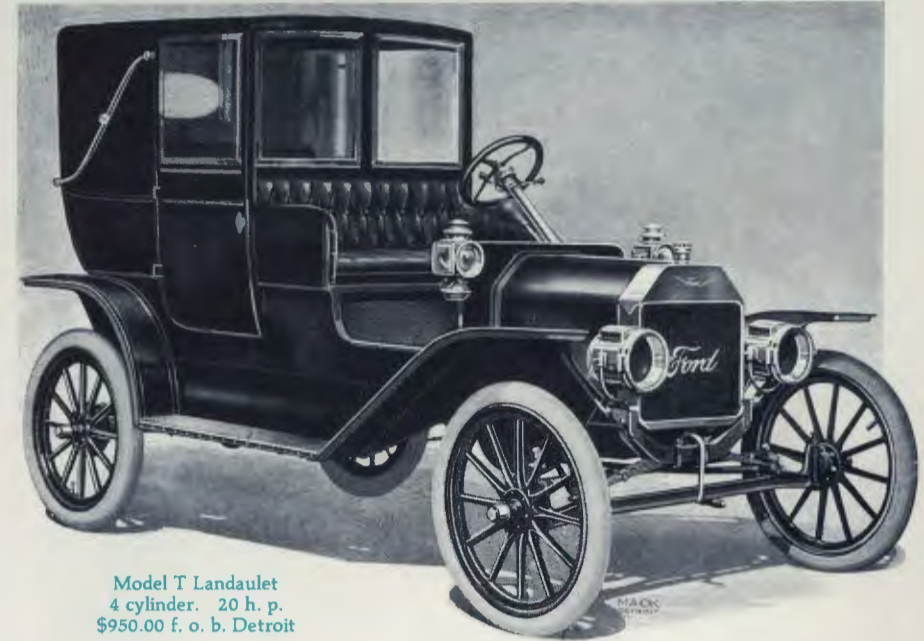
Other manufacturers are arranging to use Vanadium, but it will be two years before they can incorporate it in their cars. It took Ford two years and two hundred thousand dollars, and that's how much ahead of date a Ford buyer is. The steel analyses are our own, the heat treating and quenching formulae are our own secrets; and the steel plant at the Ford Motor Company's Works is one of the most complete in the world. (For Vanadium Steel experiments see page 26).

And Vanadium steel is but one of the items that make the Ford a quality car. In no car can you secure better wheels, better tires, better castings—in short, the materials throughout are the finest that money can buy or build.

To build so good a car at so low a price requires building in enormous quantities. That is where a Ford buyer has another advantage. The Ford Motor Company *has already worked out* the "quantity production system". With us it is no new thing to build a hun-

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FORD MOTOR CARS



Model T Landaulet
4 cylinder. 20 h. p.
\$950.00 f. o. b. Detroit

ty production system". With us it is no new thing to build a hundred cars a day; a system whereby overhead expense is reduced to a minimum and this distributed among a large number of cars has been working for three years. We know. Any other manufacturer must guess and experiment. We know how to build a lot of cars at a minimum cost without sacrificing quality.

What others can only promise, Ford has already accomplished.

25,000 Cars

We also know that people will buy these cars for we have never been able to keep pace with our orders even when our output has averaged close to 100 cars per day. So we have based our price on making 25,000 cars in twelve months, have contracted for materials accordingly, divided our non-productive expense into 25,000 parts, fixed a smaller profit and named a price which means a loss to the Ford Motor Company unless we do build them in enormous quantities.

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FORD MOTOR CARS



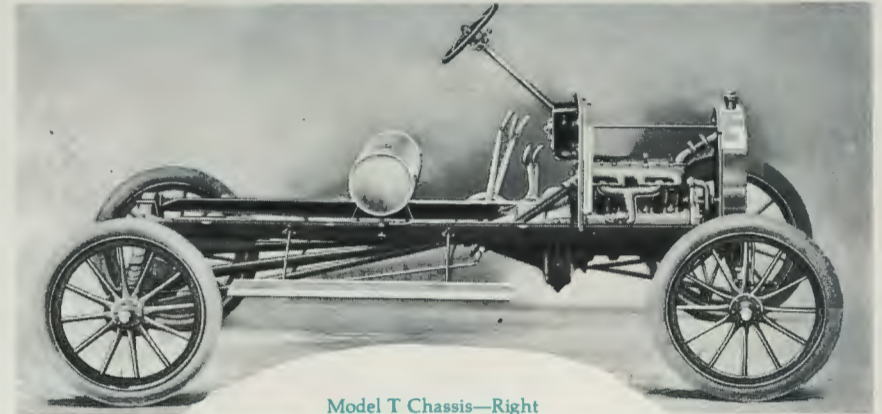
Illustrating
Four
Positions of
the Model T
Touring Car
with Top



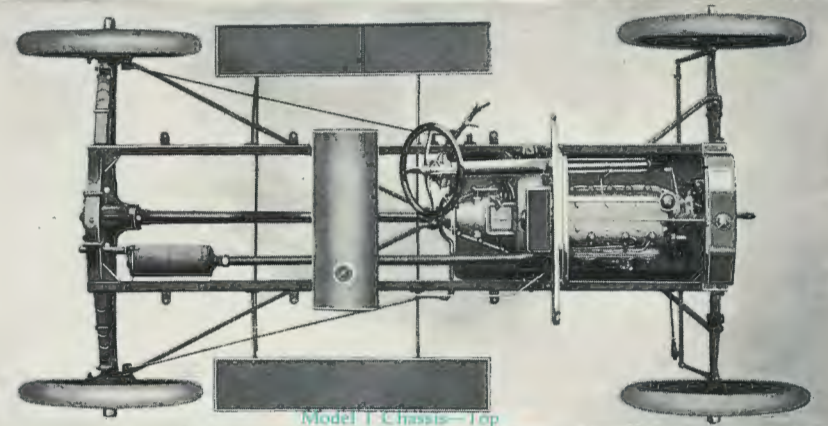
Serviceable
and of very
pleasing
appearance
from every
view point

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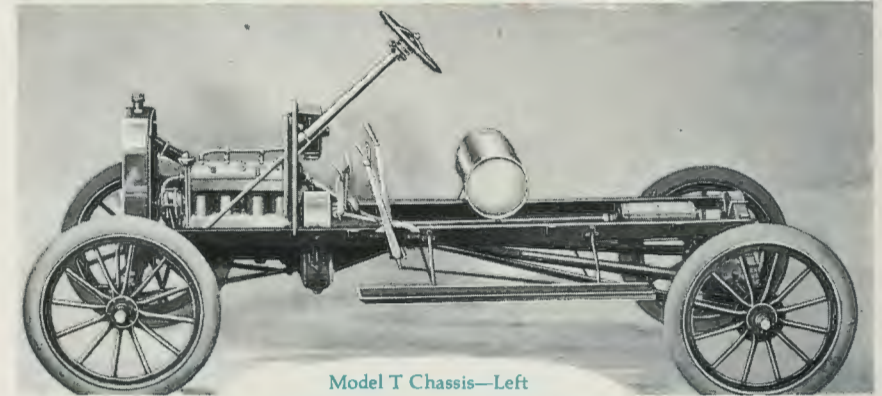
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Model T Chassis—Right



Model T Chassis—Top



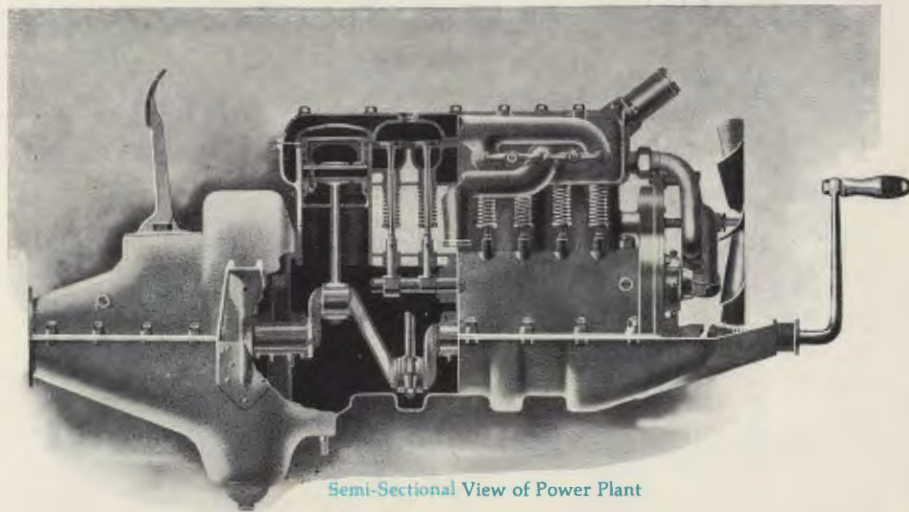
Model T Chassis—Left

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Specifications

Engine

The Model T engine is a four cylinder, four cycle one of 20 h.p.—conservative rating. Bore, $3\frac{3}{4}$ " ; stroke, 4" ; made of finest quality gray iron. Cylinders are cast in one block with water jackets and upper half of crank case integral. Inlet and exhaust on right side, large valves, each valve ground to absolute accuracy in its own seat.



Semi-Sectional View of Power Plant

The water jacketed cylinder head is a separate unit, easily removed when desired for cleaning, adjusting, etc.

The value of this construction will be recognized by anyone who has had to tear apart an engine to decarbonize a piston or grind a valve on an engine where the cylinder head was cast integral with the cylinder. With this new engine, it is only necessary to remove twelve nuts to get at all four cylinders, four pistons and eight valves.

"Horseless Age," the recognized technical authority in automobile design has this to say of this feature:

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"None of the specific advantages of block construction are sacrificed by this method of construction. The advantage to the user is in easier access to the reciprocating parts and the probability of less expensive replacements."

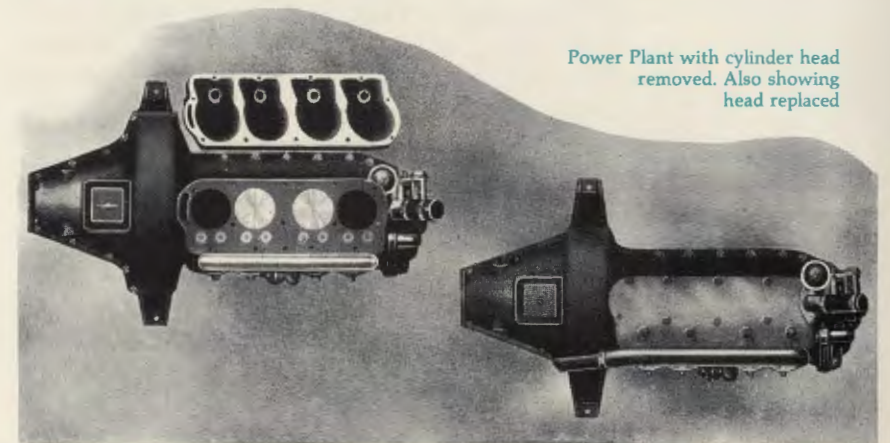
The lower half of the crank case is extended to form the lower half of the housing for fly wheel and transmission, thereby enclosing all working parts in one seamless pressed steel casing that is absolutely oil tight.

The fly wheel is back of the engine and is utilized as a rotor for the magneto generator. It likewise supports the transmission gears, which, with the rotor of the magneto, are included in the weight of the fly wheel. This is one of the means employed to lighten the car—the elimination of unnecessary weight.

Crank and cam shafts and connecting rods are drop forged each from a single piece of non-welded Ford Vanadium steel, heat treated. Cam shaft has 8 cams integral. Crank shaft is 3-bearing, all bearings extra large. All bearing surfaces are ground to absolute accuracy.

Pistons are 4 in. long of the 4 ring type ground to accuracy. Commutator in front.

Castle nuts,—the nut with a lock, the kind that cannot be jarred loose are used exclusively and throughout the entire car. Just an indication of how the smallest detail has been carefully perfected.



Power Plant with cylinder head removed. Also showing head replaced

HIGH PRICED QUALITY IN A LOW PRICED CAR

Transmission

The transmission is of the Ford Spur Planetary type—no internal gears—the type that by actual test has proven its superiority over every other type of transmission. This advantage

lies in the longer life of such a transmission—stripped gears impossible—and the smooth velvety action as opposed to the jerky vibratory action of other types, which racks transmission, engine, gears and axles.

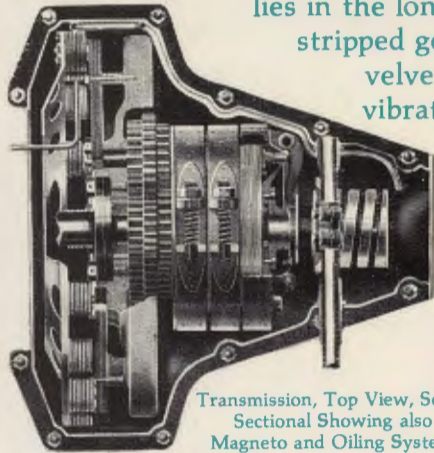
Low speed and reverse clutches are of the fibre lined steel band type. These bands grip smoothly and when disengaged spring away from drums, assuring positive action without waste of power.

In the past the only objection to a planetary transmission has been the noise when operating on slow speed or reverse. In the model T, by using externally driven gears of increased size, this has been silenced and no transmission is quieter. There is always the same quiet contented purring sound whether the car is running fast or slow, forward or backward.

The high speed clutch is of the multiple disc type so designed as to give the maximum bearing surface. This multiple disc clutch is composed of smooth steel discs interposed, and operating in an oil bath.

The reserve power of the engine and the flexibility of both engine and transmission really make a transmission gear almost unnecessary, for the Model T can climb hills or negotiate muddy and sandy roads on high speed. With the high speed in, by throttle control any speed from three to forty miles per hour can be obtained.

This transmission can be depended upon to outlive any other part of the car. Transmission troubles are unknown with the Ford Spur Planetary type.



Transmission, Top View, Semi-Sectional Showing also Magneto and Oiling System

Unit Power Plant

Incidentally it is interesting to note that the unit power plant which several manufacturers are featuring in their new models has been employed in Ford cars for four years and of necessity has obtained the highest perfection.

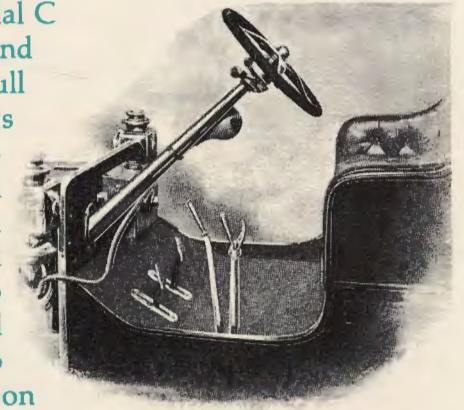
Three-Point Suspension

In addition to the fact that the engine and transmission are a unit, this unit power plant is provided with the Ford system of 3-point suspension, the entire plant being suspended at three points direct from the frame. No sub-frame is required. By an ingenious arrangement the front support of the motor, instead of being rigidly attached to the cross member of the frame, rests in a bearing so insuring maximum flexibility. The idea of 3-point suspension is carried throughout the design—the front and rear axles and the gasoline tank even utilizing that method.

Control

The system of control is especially devised for this Ford car. All forward speeds are controlled by a foot pedal, while the reverse is controlled by a hand lever. A second foot pedal controls the brake on the transmission.

To start the car, press pedal C slightly forward, throw the hand lever forward, press pedal C full forward engaging slow, then as the car gains momentum gradually release pressure on pedal and thereby throw into high speed. When it is desired to release the clutch to stop the car, it is not required to pull back the hand lever into neutral position as a pressure on the foot pedal releases the clutch and re-engages it when ready.

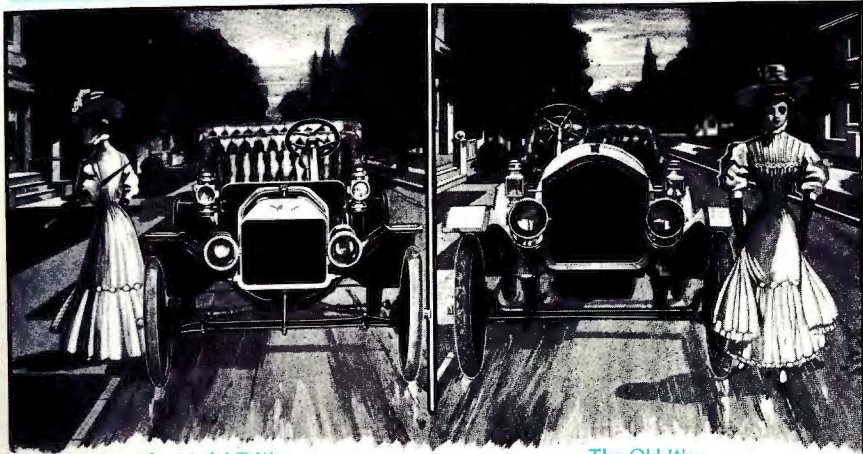


Control

A second hand lever controls the emergency brakes. These brakes are of the internal expanding type, acting in pressed steel drums attached to the rear hubs.

WATCH THE FORDS GO BY

HIGH PRICED QUALITY IN A LOW PRICED CAR



The Model T Way

The Old Way

Spark and throttle levers are located one at the left, the other at the right of the steering post, directly under the wheel.

With the spark and throttle alone any speed from a walk to high speed can be obtained without changing the gearing.

The control is on the left side, the logical place for the following reasons: The driver is then nearest the vehicle he is passing, running in an opposite direction. With it on the right he cannot see and to guess is dangerous.

With the control on the left, the driver and his front seat passenger step out directly on the clean curb. With the old way they walked around in the mud.

When the driver is seated on the right side he is at a great disadvantage in learning if a vehicle is overtaking him on his left—as required by traffic regulations—and the moment when he is about to turn to the left, looking behind him on the right a large section of the street is hidden from him by the car. To have a clear view he must stand up and look over the back, or if the design of his car prevents that, he must leave his seat and look behind from the left. A turn to the right does not require any of these precautions. Vehicles are not supposed to pass him on that side, and there is no occasion for extreme caution when changing his course in that direction.

With the wheel on the left the hand levers are operated by the left hand, leaving the right to do the more delicate work of steering.

WATCH THE FORDS GO BY

Lubrication

The system of lubrication employed in the Model T, a combination of gravity and splash is one which absolute simplicity and perfect operation combine to make it the most satisfactory ever devised.

Oil is supplied through the opening in the top of the transmission casing. The lower part of the flywheel casing forms an oil reservoir and the flywheel revolving in the oil acts as the distributing agent, throwing the oil up against the sides and top of the casing into oil ducts which feed front and back to engine, transmission and universal joint.

A level plate in the crank case keeps the oil level constant, an overflow outlet replenishes the reservoir, the revolving crank shaft splashes the oil to all parts of the engine and guarantees ample lubrication. The flywheel splashes the oil into every part of the transmission so that ample lubrication of every working part is assured without attention other than the occasional replenishing of the supply.

Carburetor

The carburetor is also of a new design, float feed, automatic, with quintuplet ball valve, air adjustment. The control is from the dash board, making it possible to make all carburetor adjustments from the seat.

Cooling

Cooling of the Model T is accomplished by means of a radiator of ample capacity, large water jackets and a gear driven rotary pump which keeps up a continuous circulation and guarantees against excessive heating. To show how effective is this system, a Model T recently covered a distance of twenty-one miles in forty minutes, the fan being disconnected and at the end of the run the engine was just warm enough and by no means over-heated. Since then this car has run thousands of miles without this fan.

So effective has this cooling system proven as to make the fan which is provided, well nigh unnecessary. Fan is eight blade attached to pump shaft—no belts.

HIGH PRICED QUALITY IN A LOW PRICED CAR

Ignition

A low tension magneto generator of Ford design makes a simple and perfect system of ignition. This magneto has no commutator or brushes, no gearing, no contact points, no moving contacts, no moving wires; in fact, every feature which gave trouble in the hitherto accepted type of magneto has been eliminated. The rotating member is a part of the fly wheel. The stator carrying the coils in which the currents are generated, is a stationary spider permanently attached to engine, and the whole is carried in the fly wheel casing. The slightest movement of the fly wheel generates current enough to make a powerful spark. As long as the engine runs the ignition will be perfect.

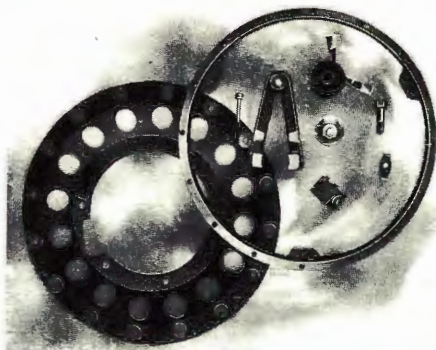
By making the magneto an integral part of the power plant the unit idea is carried out to a degree unknown in any other car. The magneto is an essential part of the power plant on cars where in that system of ignition is used. If its operation must depend upon



MAGNETO—Showing method of Construction

gears or belts it is easy for the magneto to render the entire plant unserviceable. With the magneto an integral part of the engine, as long as the engine is operative the magneto will deliver a powerful spark at the proper intervals.

This construction makes for simplicity and cleanliness, a decided advance over any other design.



Magneto Parts

WATCH THE FORDS GO BY

Axles

Front axle is I-beam section heat treated Vanadium steel, non-welded, drop forged from a single ingot. Steering knuckles and spindles are drop forged Vanadium steel, heat treated. This gives you as strong an axle as is possible to make. To break it is out of the question. A collision with a tree might bend it, but it could be easily straightened, hot or cold, and without suffering actual injury. Front wheels are carried on large ball bearings.

Rear axle is of the well known Ford design. Driving members are enclosed in a tubular pressed steel housing, each half a complete non-welded unit drawn from a single plate by a recently discovered process that insures an even strength of structure throughout. Indestructible roller bearings are fitted at hub ends of the working members. The differential is of the three pinion bevel type; all gears are drop forgings made of Ford Vanadium steel specially treated; all teeth accurately planed and hardened. If desired, the entire axle and differential can be disassembled in a few minutes.

Brakes

On the Model T a dual system of braking is employed. The service brake operates on the transmission and is controlled by pedal. The emergency brake is controlled by hand lever and operates on the rear wheels. The service brake will stop the car gently or, if necessary, will instantly lock the wheels, in either case with little exertion on the part of the driver.

The emergency brakes are of the internal expanding type, acting on pressed steel drum attached to rear hubs. While seldom necessary to use these brakes, it offers complete protection when the occasion does arise for their use.

Wheels and Tires

Wheels are of the artillery type, wood with extra heavy hubs. Tires are highest grade, clincher, 30×3" front, 30×3½ rear.

HIGH PRICED QUALITY IN A LOW PRICED CAR

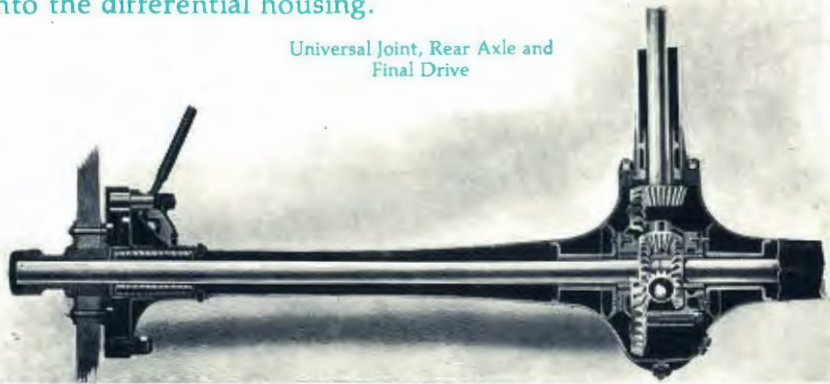
Final Drive

The Ford triangular drive system is patented in every country in the world. It is the only system in which driving shafts, universal joint, gears and other moving parts are enclosed in one dust proof and oil tight housing from transmission gear to the hub caps of the wheels. The drive is direct to the center of the chassis regardless of whether the car is running straight or turning corners; and only one universal joint is necessary. A ball-and-socket connection between the tubular torsion members of the transmission frame allows the axle to oscillate in any direction and thereby relieves the passengers of all strains and shocks due to the unevenness of the road. This system is broadly covered by letters patent in all countries.

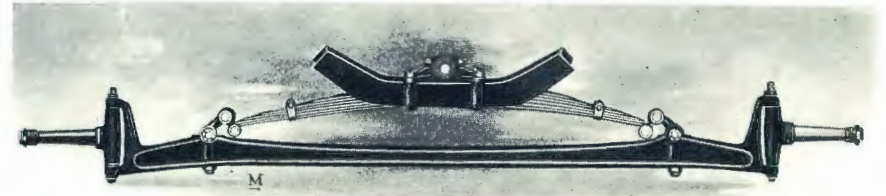
The universal joint comprises four members—the two drop forged hardened steel sections and the halves of the split retaining ring. It is, at the same time, the simplest, most efficient and most enduring universal joint ever devised, and it is automatically lubricated at all times; the owner "never knows it is in the car." The drive shaft bearings are of babbit of special analysis and treatment, carefully reamed and fitted and the oil from the universal joint flows constantly through these bearings and into the differential housing.



Universal Joint, Rear Axle and Final Drive



WATCH THE FORDS GO BY



Front Spring and Axle

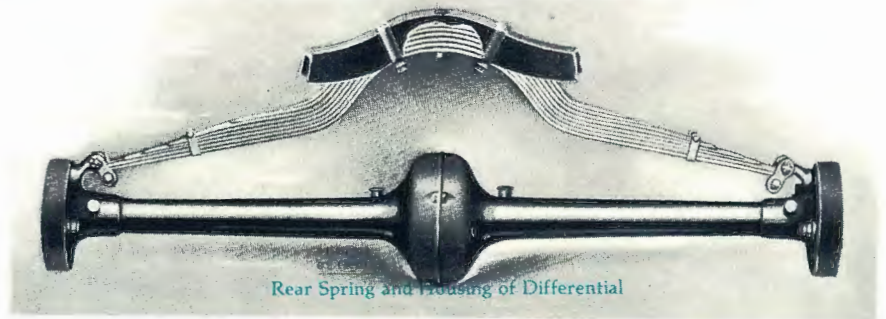
Springs

Probably no feature of the Model T car has excited more favorable comment than the spring construction — the strongest springs made, installed in a manner that insures the maximum strength.

First — the springs, front and rear, are of Vanadium steel, heat treated, semi-elliptical-transverse. It is utterly impossible to break either spring with any test less than 50% more rigid than would be required to destroy any other spring ever put into an automobile. As strong as that statement is, it is only made after a thorough testing of the spring.

No conceivable automobile accident could possibly affect the springs of this car, nor could any accident be caused or assisted by the springs. They are accident proof.

Second — the method of attaching springs to frame insures the maximum strength at that point. The springs fit inside of the



Rear Spring and Housing of Differential

HIGH PRICED QUALITY IN A LOW PRICED CAR

"U" shaped cross members of the frame, the curvature of the cross members corresponding to the curvature of the spring at the points of contact. The springs are then banded to the cross member, each with two stout Vanadium steel bands.

To break the spring is impossible—for the spring to separate from the frame is impossible, even without the bands.

Apart from the feature of safety these springs, or rather this method of spring construction, makes one of the easiest riding cars ever built. One of the genuine surprises experienced when first riding in a model T is the absence of annoying side sway and the easy action of the car on rough roads, the springs absorbing so much of the shock that other types transmit to the rider.

The rear spring is supported by shackles attached to the hub flanges so that the weight of the car is removed from the axle and the only weight on the rear axle is that of the differential.

Body

The car is equipped with any one of several styles of bodies as follows:

Touring Car	\$ 850 00
Roadster	825 00
Coupe	950 00
Landulet	950 00
Town Car	1000 00

Prices F.O.B. Detroit.

In every instance bodies are of ample proportions and pleasing lines. The finish is superior, the decorations in taste and the general effect very satisfactory. As in the balance of the car, only the finest materials are employed. No. 1 machine buffed leather, genuine hair cushions and upholstery, strong lively springs, solid trimmings.

Bodies are interchangeable.

By special arrangement of spring support as explained above, the load is not carried on the rear axle, the duty of that member being solely the driving of the car.

WATCH THE FORDS GO BY

Equipment

The regular equipment at list price includes 3 oil lamps, tube horn and gas lamp brackets. The magneto is an integral part of the power plant.

We are prepared to furnish gas lamps, tops, wind shields, speed indicators and other accessories at the lowest market prices.

Weight

What does it weigh?

No question should receive more serious consideration. For every pound of excess weight calls for more engine, more gasoline and oil and shorter tire life. The Ford car weighs 1200 lbs. No other car is nearly as light. In the Ford design not an ounce of necessary weight has been sacrificed. That it weighs less is due entirely to simpler design, elimination of unnecessary parts and the use of the highest grade material, Vanadium steel, etc. The Ford, light as it is, will stand more hard service than any other car you ever saw. With this light weight car, the Ford 20 h. p. engine is really as powerful as the 30 h. p. engine of the 2100 pound car.

Figure it Out

Passengers	600 lbs.
Car	<u>1200 lbs.</u>

1800 lbs.

Motor 20 h. p., 90 lbs. per h. p.

Passengers	600 lbs.
Car	<u>2100 lbs.</u>

2700 lbs.

Motor 30 h. p., or 90 lbs. per h.p.

and inasmuch as plenty of 30 h.p. cars really weigh more than 2100 lbs., the figures are still more favorable to Ford.

HIGH PRICED QUALITY IN A LOW PRICED CAR

FORD MOTOR CARS

In the Ford car you get at least equal results in safety, speed, power, endurance and long life that you can from any heavy car; it costs much less to operate and not an ounce of necessary weight has been sacrificed.

M. Michelin noted tire expert, in a paper recently read before the French Society of Civil Engineers said:

"The total travel of which a tire is capable is inversely proportional to the cube of the weight which it carries. For example, if the load is doubled the average wear and tear is multiplied by eight."

It's all in the know-how. Vanadium steel is one of the means, elimination of unnecessary parts, another, unit construction, a third, and so on down the line. Manufacturers no longer dispute the value of light construction. Where it was the fashion to knock when the Ford runabout was announced, it is now in order to get as close to Ford weight as possible. Some are even now claiming a light weight that differs from their scale weight. In a couple of years, maybe three years, other cars will weigh as little as the Ford Model T.

WATCH THE FORDS GO BY

Twenty-Four

FORD MOTOR CARS

Summary

MOTOR: 4 cylinder, 4 cycle, vertical, 20 h. p. 3¼ in. bore, 4 in. stroke, Cylinders cast in one block with water jackets and upper half of crank case integral, water jacketed cylinder head detachable, fine grain gray iron castings.

VALVES: Extra large, all on left side and offset.

SHAFTS: Crank and cam non-welded drop forged heat treated Ford Vanadium steel, bearing surfaces ground, cams integral and ground.

CRANK CASE: Upper half integral with cylinder casting. Lower half pressed steel and extended to form lower housing for magneto and transmission.

COOLING: Gear driven centrifugal pump.

IGNITION: Ford magneto generator, low tension, direct connected to engine drive.

CARBURETOR: New design, float feed automatic with dash adjustment.

TRANSMISSION: New design Ford spur planetary, bathed in oil,—all gears from heat-treated Vanadium steel, silent and easy in action.

LUBRICATION: Combination splash and gravity system—simple and sure. Insures against insufficient or excessive lubrication.

CLUTCH: Multiple steel discs, operating in oil.

CONTROL: All forward speeds by foot pedal. Reverse by hand lever. Spark and throttle under steering wheel.

FINAL DRIVE: By carbon shaft with single universal joint to bevel drive gears in live rear axle. Ford three point system (patented in all countries) with all moving parts enclosed in dust proof casing, running in oil. Vanadium steel throughout.

FRONT AXLE: One piece drop forging in I-beam section, specially treated, Vanadium steel.

STEERING: By Ford reduction gear system; irreversible.

BRAKES: 2 sets. (a) Service band brake on transmission; (b) Internal expanding brakes in rear hub drums.

WHEELS: Artillery wood type. Hubs extra long.

TIRES: Pneumatic; rear 30 × 3½ inches, front 30 × 3 inches.

NUMBER OF PASSENGERS: Normal load touring car, 5 adults.

SPRINGS: Front and rear, semi-elliptic.

FENDERS: Enclosed full length of car.

WHEEL BASE: 100 in., tread 56 in.; 60 in. for Southern roads where ordered.

GASOLINE CAPACITY: 10 gallons. Cylindrical gasoline tank mounted directly on frame.

STANDARD EQUIPMENT: Side oil lamps, tail lamp, tube horn and gas lamp brackets. Touring Car and Roadster ironed for top

WEIGHT: 1200 lbs.

PRICE: Touring Car, \$850.00; Roadster, \$825.00; Coupe, \$950.00; Landulet, \$950.00; Town Car, \$1000.00. F. O. B. Detroit.

HIGH PRICED QUALITY IN A LOW PRICED CAR

Twenty-Five

Vanadium Steel

A great deal has been written, considerably more has been told about Vanadium steel in the last two years. No metallurgical development of the past decade has instituted wider discussion or excited greater interest. There is ample reason for this, for scientists are agreed that a proper mixture of Vanadium has a most wonderful effect on steel, increasing its efficiency to an almost unbelievable extent.



Fig. I.

It is not our intention to enter into a scientific description of this steel, but rather to illustrate what it accomplishes in Ford cars, citing it as an instance of Ford superiority, that this Vanadium steel is used throughout the entire Model T wherever strength is required.

Figure 1 shows a Model T crank shaft, Vanadium steel, heat treated, which has been subjected to enormous pressure under a steam hammer. The pressure has almost tied the crank shaft into a bow knot, but there is not the slightest suspicion of a fracture, and the shaft has since been straightened without suffering injury.

Figures 2 and 3 show a Ford Vanadium steel, heat treated, front spring in a capacity test machine. Figure 2 shows the spring deflected four inches below center, a pressure

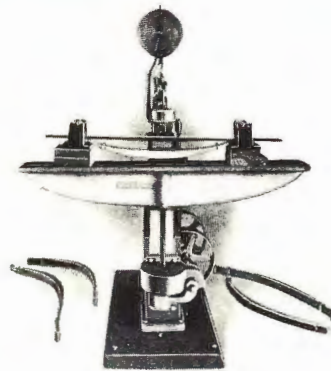


Fig. II.

WATCH THE FORDS GO BY



Figure III.

of 3000 pounds being applied. Figure 3 shows the same spring after the pressure is released. The spring has resumed its normal position without a particle of set.

Figures 4 and 5 show a rear spring subjected to the same test with similar results.

Figure 6 shows a $\frac{1}{4}$ " cross section piece of Vanadium steel, heat treated, which, placed in a vise and repeatedly hit with all the force of a husky

blacksmith swinging a 22-pound hammer, shows not the slightest effect. These tests were all applied in the presence of a delegation of engineers attending the A. S. M. E. convention, held in Detroit in July, 1908.

To use Vanadium, which is a rare element found in commercial quantities only in South America, requires a thorough knowledge of its properties and their application to specific requirements. A front axle calls for different treatment from that given a crank shaft. To know the correct proportions for each operation calls for months of experimentation. A great amount of Vanadium is not required; too much will nullify the value, too little is not enough. There were no previous records to guide; actual test had to determine the exact formula for each operation. This research has occupied nearly three solid years of Mr. Ford's time. Each piece of steel is manufactured



Fig. IV.

HIGH PRICED QUALITY IN A LOW PRICED CAR



Fig. V.

from these formulae which we have worked out. Other manufacturers will use Vanadium in time, but they must first conduct their experiments, and withal, Ford is two years ahead.

With no other steel can equal results be obtained; in no other car is Vanadium steel used except to a very limited extent. Until other cars incorporate Vanadium steel in their construction to the same extent and

with a similar intelligence, the present Model T Ford car will be superior to any car manufactured, regardless of price.

Then aside from the Vanadium, each steel part in a Model T is specially heat treated in our own plant. Heat treatments are accorded all special steels, but few manufacturers have investigated the proposition sufficiently to determine the exact treatment required for each steel part. Axles require a different heat for a different period than do springs, and the cooling process is likewise different. The proper treatment demands an exact, predetermined heat for a certain exact length of time, the heat to be quenched in a certain specific manner; all of which can only be determined by careful and extensive tests. In the Ford steel plant these tests have been made, the formulae worked out; and each piece of steel in the Model T is treated according to our own formulae, in our own steel plant, by our own engineers, and under the direct supervision of Mr. C. H. Wills, acknowledged as an authority on special steels.



Fig. VI.

To further illustrate the strength

WATCH THE FORDS GO BY

of a Ford Vanadium heat treated steel part, permit us to cite the case of the spring perch clip made of high carbon steel, the equal of any special steel other than Vanadium, the elastic limit is 55,000 pounds to the square inch cross section. With Ford Vanadium steel, as used in the spring clip of a Model T, the elastic limit is 155,000 pounds per square inch, cross section.

A second illustration: A spring of regulation spring steel same size and weight as a Model T spring showed a set when subjected to a pressure of 675 pounds. Substituting a Model T Vanadium steel spring, such as is supplied on the car, the pressure required was 3,100 pounds before the spring could be compressed to a point from which it would not return to its original position when the pressure was released.

A treatise on Vanadium steel, published in pamphlet form, will be mailed free to all interested. The foregoing is only intended to serve as a record of what this wonderful steel accomplishes in Ford cars.

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