

CRAIG - HUNT Inc.

SPEEDWAY Engineering

The material for this article on Craig-Hunt is from the Jarvis Collection. The article is from an upcoming book on Model T Speedsters. Correspondence is invited. Jarvis Collection. Box 2245. Alderwood Manor, WA 98036.

The author would like to thank the following: Ralph Dunwoodie, John Burgess, Ish Charif, Bill Deibel and the Indy Motor Museum.

Craig-Hunt Inc. was one of the earliest of the speed manufacturers to produce racing heads to get more power out of the Model T Ford engine, and the first with the overhead cam, dual ignition and four valves per cylinder. The Peugeot cars with their four valves per cylinder had made such an impression on the racing crowd at Indy that many were trying to cash in on what they called the "Sixteen-Valve Peugeot Type Racing Head.

In 1918 their address was listed as Craig-Hunt Inc., 235 N. Pennsylvania St. Indianapolis, Indiana.

The heads were built for racing only and not for touring cars or trucks. Later an eight-valve head was made for speedsters or street use. The price of the head was \$85.00 in 1918. The early heads had bare camshafts and you placed the lobes according to the timing you desired and then pinned the lobes in place. Soon the cams came as we know them today, with the timing already taken care of. The rocker arms each worked two valves and the cam end of the rocker arm was actually a roller that ran on the cam lobe. Very impressive. A parts book lists the cam lobes for the early models at \$1.75 each.

The early models of the sixteen-valve heads had chain driven camshafts, with the chain being driven off a special pulley or sprocket that fits on the end of the crankshaft. Later a bevel gear drive was introduced and did away with the chain stretching. The early heads could be converted over to the gear drive.

Underslung brackets, front and rear, were also available, as well as a racing body. The early model bodies had a short tail section and along about the summer of 1918 they brought out the familiar boattail Speedway Bodies. The price was \$150.00, F.O.B. Indianapolis. This was a clean, sharp looking body and was sold by other manufacturers to complete their line of speed equipment.

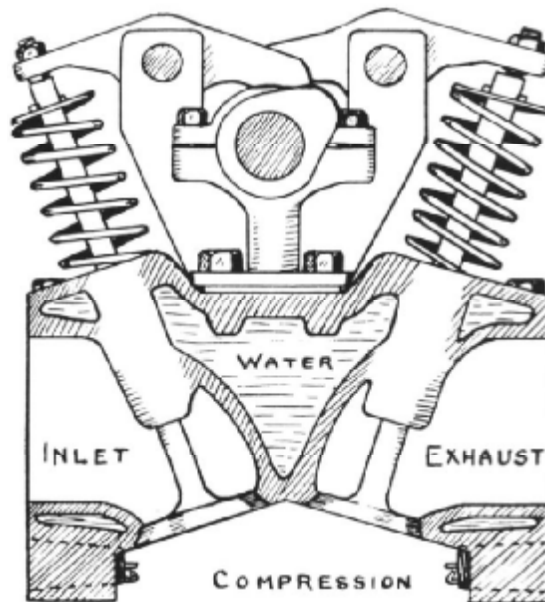
Craig-Hunt moved to a new address; 910 N. Illinois St., Indianapolis.

In the spring of 1920 Craig-Hunt Inc. became Craig-Hunt Motors, advertising in the automotive trade journals that they would enter the automotive field with a low-priced car. They were to continue their line of

Model T racing equipment. J. R. Craig, President; W. L. Hunt, Vice-President and C. L. Zechiel as Secretary-Treasurer. There were several advertisements throughout the summer and while they gave specifications that sounded like a disguised Model T with a sixteen-valve Craig-Hunt head, no pictures appeared. An ad in August had an artist's sketch of what could have been a disguised Model T Ford,

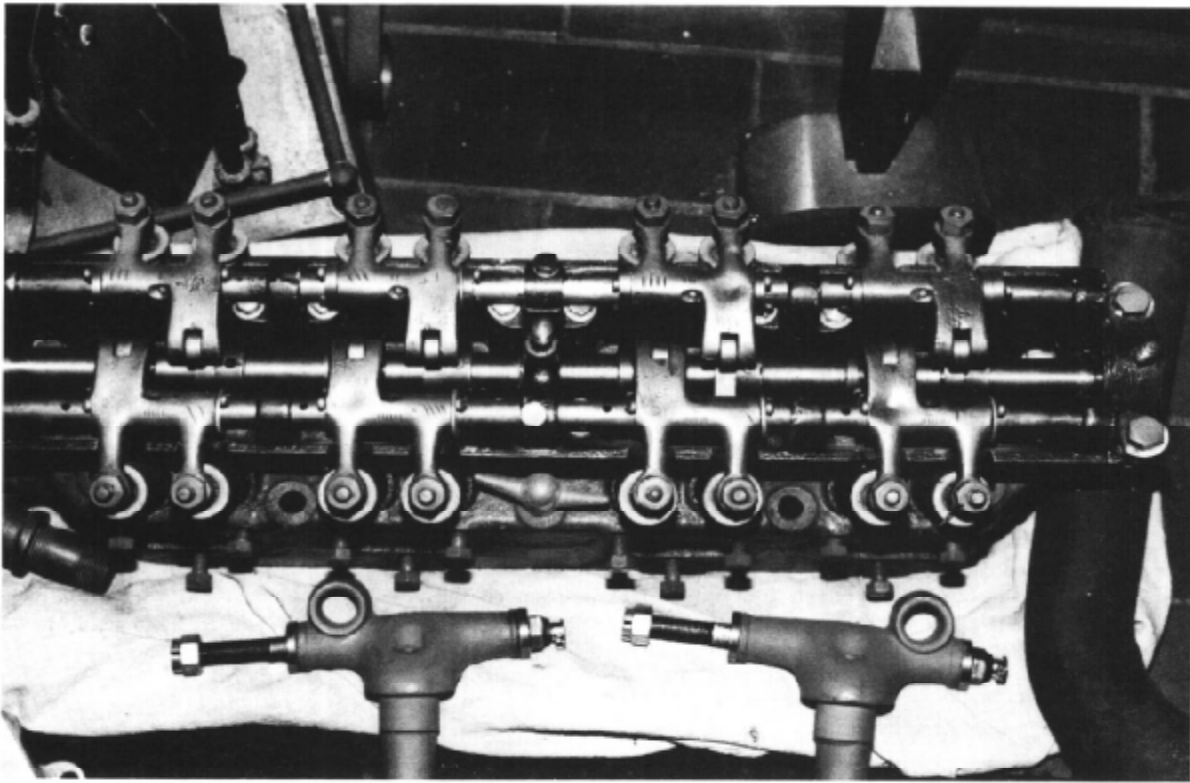
On October 14, 1920, Craig-Hunt Motors went into receivership and so ends Craig-Hunt Motors.

More information on the company can be found in the excellent article by Keith Marvin in the December 13, 1977 issue of *Old Cars*.



Craig-Hunt 16-Valve

Sixteen-valve Craig-Hunt cross section sketch showing the valve position. The valves are twenty degrees off center to allow larger valves to be installed. Photo from *Fordowner* magazine, March 1920, page 40.



The sixteen-valve Craig-Hunt with the cover off. The single cam down the center. Rocker arms forked at the valve end and a roller bearing on the other. Photo courtesy Ish Charif Collection.

Enter Speedway Engineering Co. with the same cast, with a new slogan, "Making the Ford Fleet-Footed. Their line of Model T speed parts has been expanded. A new bevel gear camshaft drive has been designed to take place of the chain drive. Letters to the company mention that the chain had a tendency to stretch.

At this time an eight-valve Speedway head was introduced that was for the owner who just needed more power for his Ford - for sedans, trucks, or just hilly country. It was a conventional eight-valve head with two intake ports, as well as the exhaust ports, all on the right side. The exhaust will connect up with the stock exhaust pipe.

Speedway Engineering Co. also offered a complete race car, able to make 90 mph, in the \$1500-\$1700 price range, depending on what equipment you wanted. A special block had been developed that was available in either aluminum or gray iron. The aluminum block weighed in at only 42 pounds without the steel sleeves.

More information on the Special Speedway block can be found in Post Publications *Fast Ford Handbook*, page 67.

Although Craig-Hunt did a lot of advertising during the period from around 1918 through the early Twenties, apparently they were a small company. Bill

Hunt's race car must have kept them broke and always looking for money.

In his book, *Gentlemen Start Your Engines*, Wilbur Shaw tells of his first meeting with Bill Hunt:

Mother was operating a rooming house at the time, the old Sterling R. Holt home at Meridan and 16th Streets. One of her boarders was Mac McConnell, an Illinois University graduate and an advertising salesman for the Chilton Class Journal. Occasionally he borrowed my Milburn to make business calls and I accompanied him on one of these trips to the Speedway Engineering Company on North Illinois Street.

There I met Bill Hunt and realized immediately that I wouldn't be happy until I was in the same kind of business as Bill. I was sold on him personally, too. Bill built race cars and drove them. In order to keep from starving, he also manufactured 8-valve and 16-valve cylinder heads for Model T Fords.

Ten minutes after I'd met Bill, I propositioned him for a job. "I don't need another man right now," was Bill's comeback. "but if you want to wash parts and do all the other dirty work around the shop, I'll pay you twelve-fifty a week.

I said "Okey" and went tearing back to Churchman and Taylor.

When I told Mr. Churchman I was quitting in order to go to work for Bill Hunt he exclaimed, "Wilbur, you're crazy. I know Bill Hunt, and I know you're making more money right now than he does.

Bill Hunt went broke while Wilbur was building his first race car on the second floor of the building. Hunt rented out the bottom but let Wilbur finish his car upstairs.

Hunt was a race driver as has been mentioned and, in fact, drove one of the S.R. Frontys in the 1924 Indy 500 race. But, that is another story. He continued his association with Wilbur Shaw as a helper and friend as late as Shaws victories at Indianapolis.

The final part of the Craig-Hunt story is what makes these searches so interesting. I had received half a dozen pieces of Craig-Hunt literature last winter. The head is so impressive that I began to think I should try to get one. In February I was able to see an original with the cam cover off. This was even more impressive. So I decided to run a few ads for a sixteen-valve Craig-Hunt.

One day while I was at work, my wife called and said that Bill Deibel had called, lived nearby and had a sixteen-valve Craig-Hunt. I thought that this was my lucky day. It was, but not as I had thought. Bill knew nothing of my ad but had talked to a friend in California who knew I had the literature, and just wanted to talk Craig-Hunt.

Bill was in New York in 1958 and saw in the New York Times an ad for a 1908 Ford touring car and a 1911 Model T Ford race car. He went out to New Jersey where a Ford dealer of many years, Alvin Duryea, had just lost his Ford car franchise although he still had the tractor and implement franchise. He wanted to sell the two cars mentioned and wanted bidders to put their bid in an envelope, to be opened later.

Bill was high bidder on the race car. The car had been

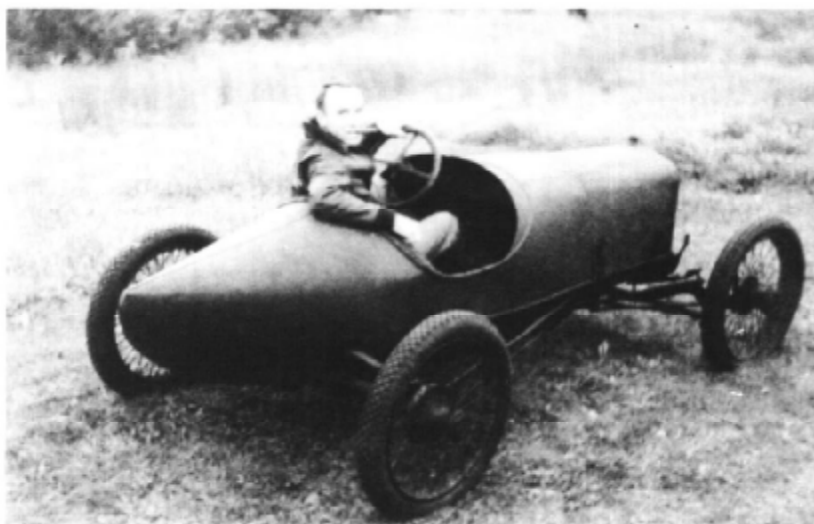
sold new in 1911 by Mr. Duryea (no relation to Duryea cars). Mr. Duryea took the car back in trade in 1915 and decided to make a race car out of it. It was raced from 1915 through 1920, at which time it was put on the second floor. It was not moved from there until 1958 when the car was purchased by Bill Deibel.

The car had not been started since 1920. The racer carries an AAA oval brass registration plate dated August 23, 1919, as a "Ford Special Chassis No. 1, Engine No. 872,672 (which is a 1915 number). Duryea said it had had more than one engine as "engine blocks were cheap. It presently has a 1920 engine and number and was presumably new for the last season it was raced. The plate also shows engine size as 176.7 Cu. In. and a wheel-base of 84 inches. The Triple A registration number is 154.

The photo shown was taken in 1958. The "driver is Gordon Wills, whose father drove a Chevy dirt track car in and around Carbondale, Pennsylvania, in the 1920s.

Specifications are as follows:

- Craig-Hunt 16-valve head (chain drive)
- Duryea homemade one-man racing body
- Duryea modified and dropped Ford front axle
- Duryea redesigned Ford rear axle
- Rocky-Mountain type brakes, hand operated
- Two-speed auxiliary transmission, make unknown
- Pasco knock-off wire wheels
- Bergen carburetor
- Pressure type lubrication system
- Pump type water cooling
- Combination Bosch high-tension magneto, and Remy distributor ignition
- Stewart speedometer (only instrumentation)
- Special type steering gear.
- Allegedly has special racing crankshaft and pistons, and flywheel without magneto.



Home-made speedster body with a sixteen-valve Craig-Hunt engine. Photo taken in the summer of 1958. The car had not been started nor touched since 1920. Photo courtesy of Bill Deibel.

The car participated as No. 6 in the "Olympic Park Trophy Race Decoration Day, Tuesday, May 30, 1916, at the Olympic Park Track in Newark, New Jersey, which was AAA sanctioned; W. Harvey, Jr. Official Representative AAA Contest Board and Referee. There were two other AAA officials on the program also.

The car qualified fifth out of nine entries, at 40-2/5 seconds with a half-mile flying start. The track was a half-mile track. Results in the five succeeding events are unknown, but it still started in the last event. This was an open class, not just Fords. The other cars were: two Stutz, a 90 H.P. Fiat, a National which bumped a 100 H.P. Mercedes. The other cars were just called "specials" so their make is unknown, but it makes the Ford's qualifying time impressive.

MOTOR AGE

June 5, 1919

Making the Ford Fleet-Footed

Indianapolis Concern has Sixteen-Valve Head and Special Fitting for Ford Speed Enthusiasts.

RACING enthusiasts who select the Ford engine as the powerplant for their cars probably have found out by this time that increased valve and port area coupled with a correctly designed speed camshaft will aid more in increasing the volumetric efficiency of the engine than any other improvement that can be made. On this page are shown several illustrations of the Craig-Hunt sixteen-valve Peugeot type racing head for Fords. This head was designed for use on racing cars and speedsters where speed and power are the aim but Craig-Hunt, Inc.,

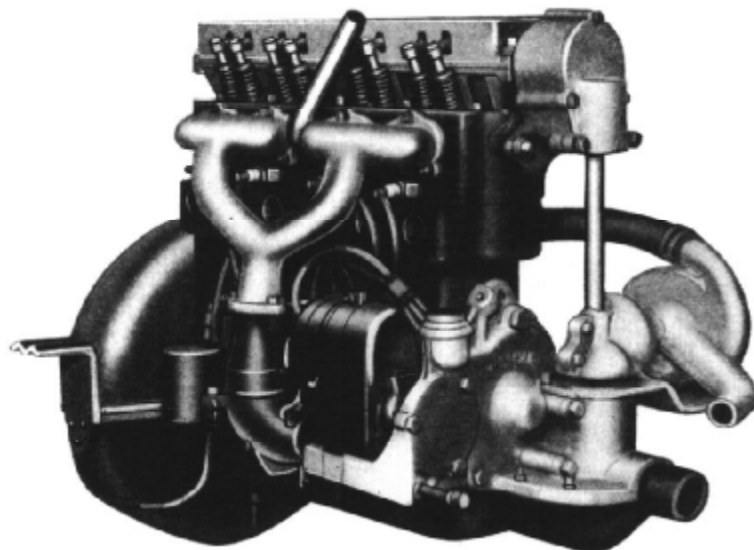
Indianapolis, Ind., who manufactures this head, does not recommend it on the touring car or truck. It is stated that a speed from 70 to better than 90 m.p.h. can be had with this head when properly installed. The maker points out that the use of this head also increases the compression, doubles the valve area and at the same time lends the speed and power producing advantages of overhead valve construction without the use of heavy outside push rods. There are four valves for each cylinder, two intake and two exhaust, located overhead and seated at an angle of 20 degrees.

The valves are 1-1/2 inch in diameter and operated by rocker arms of the forked type, in pairs. Each rocker arm is operated by the overhead camshaft which runs on three ball bearings, all of which are enclosed in an oil tight aluminum housing. The cams are of the roller-follower type, each of which dips in oil, and thereby lubricated, the roller end of the rocker arm.

One of the features of this head is the use of two sets of plugs per cylinder. Each of these enters the combustion chamber below and between the valves on each side of the head. The camshaft is driven by a high-speed roller chain from a sprocket attached to the front end of the crankshaft in place of the fan pulley. No fan is used. The special intake manifold furnished with the head is flanged for either 1-1/2 or 1-1/4 inch carburetors. The head is amply water jacketed, each valve port being entirely surrounded by water to prevent warpage. Each outfit comes with special manifold, special stud bolts, chain sprocket and gaskets. It can be placed on a Ford cylinder block in a short time without any machine work.

The head can be had for either standard or oversized

MAKING THE FORD FLEET-FOOTED



Craig-Hunt 16 Valve Head
Speedway Bodies
Underslung Parts

To make certain you will be ready for the summer races and pleasant spring driving in sport cars **BUILD NOW.**

Our fast speed head and attractive body will make a wonder product out of your Ford. You will have unlimited speed and power in a roadster that will be the envy of your friends. No one will pass you up or the roads and driving the Ford will become a real pleasure and delight. Our speed products are equally supremely efficient for race driving and pleasant fast road work. We have produced the head that gets the speed-beautifully, wonderfully and efficiently.

Headquarters for Speed Specialties, hollowed and counterbalanced crankshafts, complete oiling systems, water pumps, racing pistons, connecting rods, piston rings for speed, wire or disc wheels, special racing exhaust manifolds, all for the Ford racing and speed cars. Special racing cars complete.

SPEEDWAY ENGINEERING CO., 910 N. Illinois St.,

INDIANAPOLIS, Ind.

cylinder blocks. Thus it will be possible for an owner to get an old cylinder block which will be well seasoned, have it reground and with the attachment of a sixteen-valve head secure a pretty fast racing job. One of the illustrations shows the Ford block installed in a special frame, with a high-tension magneto and racing carburetor. In this case the driveshaft has been shortened considerably and the engine moved back about twelve inches from the front axle.

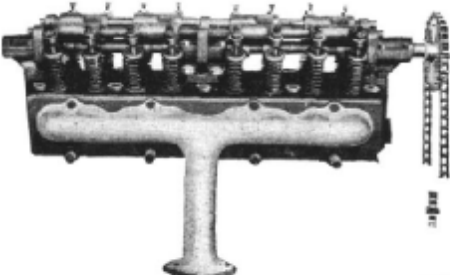
The Craig-Hunt company builds special Ford racing bodies, known as the Speedway racing body. These have a radiator shell of the new Fiat type fitting over the regular Ford radiator. The filler cap screws into place in a stock radiator, making it unnecessary to make any changes. The seats are 32 inches wide, deeply cushioned and fitted with long springs. The tail of the body is built after the French Peugeot torpedo design. It is formed over a canoe type wood frame, which is designed to enable the use of the Ford stock gasoline tank. The apron or drop of the body is a permanent part of the latter and designed to give the car a lower appearance, covers the frame and assists in forming a more or less perfect streamline effect. The driver sits low, but has full vision ahead. The body is so designed that mounting it on a chassis has been simplified and requires but the tightening of six bolts. It is made of 21-gauge metal.

For those who want to undersling the Ford frame, this company furnishes brackets that greatly simplify the work. As the Ford chassis now stands it is too high for track racing and some sort of underslinging means must be resorted to. The price of the sixteen-valve Craig-Hunt complete is \$150., which is also the price of the Speedway body.

WHY WE SPEND MONEY BOOSTING OUR 16-VALVE HEAD

People who install any overhead valve cylinder head on the Ford motor, do so for one or more of the following reasons: Novelty, efficiency, speed or power. For any or all of these reasons, if given full consideration, our head is the one eventually to be chosen. In offering it to the public we have only the layman to convince of its superiority. The mechanic or anyone with an understanding of the internal combustion engine has only to read the technical description in our catalogue or observe the general design of the head to be instantly convinced that it is the only attachment of the kind on the market that *can* possibly produce the maximum results for which all Ford heads have been designed. Tests have proved that, regardless of conditions, our head will out run, out pull, out perform in any manner all other Ford heads now on the market by such a margin as to completely demonstrate its superior mechanical design.

The head has many features which make this true, but the one big reason is general design. The various features are not new, untried ideas, being worked out at the expense of the public, but are all tried and proven, most of them having been used in one way or another for the past ten years. The head is a combination of the best ideas taken from the highest developments in the motor world. Every requirement of a perfect cylinder head has been given careful consideration. Consider the following facts: The Speedway 16-valve head is lighter by far than any other head, 8 or 16-valve, on the market. Weight must be considered regardless of power. The



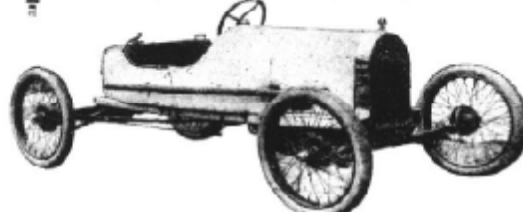
CRAIG-HUNT 16-VALVE PEUGEOT TYPE RACING HEAD

FOR FORDS—FASTEST IN THE WORLD

The Craig-Hunt 16-Valve Peugeot Type Racing Head for Fords can be put on your Ford, making it the fastest car on the Boulevard or Highway. It is the only head equipped with an overhead camshaft. Two sets of spark plugs insure a speedy explosion. The Craig-Hunt head has larger valves than any other head on the market. Built throughout for SPEED. Price F. O. B., Indianapolis, \$85.00.

Within the last few years small car racing has become very popular, and with this popularity comes the demand for more power and speed. The popularity of the Ford and its sturdy construction make it the leading car in all races.

and it is for this purpose that the Craig-Hunt 16-Valve Peugeot Type Racing Head was designed. The use of this head on the Ford motor increases compression, doubles the valve area, and at the same time lends the speed and power-producing advantages of overhead valve construction without the use of heavy push rods of the Buick type. It was patterned after the best known and fastest motors on the market, the Peugeot and 16-valve Stutz-Wisconsin.



RACING BODIES

Built to order, either from your designs or we can copy any of the jobs used on the speedway race cars about the country. The cut shows one of the many types we are building. Price varies from \$60.00 to \$175.00, according to design, upholstery, etc. Estimates furnished on receipt of requirements.

Cut shows our regular racing type radiator, which holds one gallon more water than the ordinary radiator on the Ford car. Price, \$38.00. Your old radiator rebuilt like design, price \$20.00.

SPECIAL GEARS FOR RACING

To obtain the best results in different track races, it is advisable to change your gear ratio. These gears are made of the best material, and workmanship is guaranteed. Can be furnished in either 3 to 1, 2 1/2 to 1 or 2 3/4 to 1. Price per set, \$15.00.

COMPLETE RACING JOBS

We are prepared to furnish complete Ford racing jobs and guarantee from 60 to 85 miles per hour. Prices according to speed guarantee and equipment.

CRAIG-HUNT INC., 235 N. Pennsylvania Street, Indianapolis, Indiana

Advertisement which appeared in the February 1918 issue of *The Fordowner*.

position of the valves, size of valves and size and shape of ports are also important. Note these facts: The two intake and two exhaust valves are seated in the combustion chamber at an angle of 20 degrees from the vertical. This arrangement only can allow the use of four full 1-1/2 inch valves – the largest possible valve area in the 3-3/4 bore. Placing the valves at this angle allows short and easy gas passages. The port area is a trifle larger than the area of the valves and each one is free so that there can be no chance for back pressure, due to constricted ports. The ports in this head are shorter, larger and more direct than in any other Ford head. Placing the valves at an angle allows a large quantity of water to run directly over the top of the combustion chamber (where the most heat is generated) and around each valve, valve stem guide and spark plug. Water jacketing of the head was carefully studied and is ample to cool the head perfectly at racing speeds. There are two spark plugs for each cylinder. Practically all the most expensive racing motors are so equipped. This is another feature of our head not to be found on any other. The plugs are located one on each side of the combustion chamber below and between the intake and exhaust valves directly over the piston, giving positive, quick and complete firing of each charge. For those who deem it unnecessary to use double ignition, one set of plugs can be stopped off.

The large valves, ports and water space are power features. Many motors deliver power but do not have speed enough for racing work. The speed possibilities of all motors are largely controlled by the weight of parts and the speed of the valve operating mechanism.

One has only to glance at the design and construction of the leading racing motors either foreign or American to learn that the overhead camshaft is universally recognized as the fastest type of valve operation. We adapted it to the design of our head. A motor's speed can only run as high as the valve action will permit it to run. Consequently the motor using push rods can not have the speed possibilities of one without. The valve springs which return the rocker arms and push rods have more work to do and cannot possibly do it as quickly. In a motor with the valves operated by push rods it is necessary for the valve spring to return the rocker arm, the push rod, which must run through some sort of a guide and then the push rod which bears on the cams. In our head the cam strikes on the roller in the rocker arm which opens two valves at once, the only duty of the valve spring being to return the rocker arm to a closing position. The entire mechanism runs in oil. There is no undue friction due to parts running in the open as on push rod operated motors.

Each head is equipped with a special camshaft designed for speed. The special camshaft is an absolute necessity for speed motors. A slow or sluggish cam makes a slow motor. The cam design and setting is the result of several years of experimenting with this head. The cams are straight lift and drop with a wide nose. The lift gives the valve a lift of 9/32 of an inch which will admit all the gas possible through the port opening. The cams are set so that maximum speed results may be obtained. No other Ford head, 8 or 16-valve, offers the advantages of this *special overhead speed camshaft*.

The materials used throughout the head are of the finest obtainable. Each head is equipped with tungsten steel valves. No attempt has been made to build the Speedway head at a cheap price. It is not a cheap accessory for the Ford and we offer it to the public with absolute confidence as the most powerful, speedy, perfect overhead valve cylinder head on the market. No

machine work is necessary to install it.

Yours truly,
SPEEDWAY ENGINEERING CO.
C. S. Zechiel, Gen. Mgr.

"MAKING THE FORD FLEET FOOTED"

The above is a reproduction of a form letter mailed to interested parties by Speedway Engineering Company, on their letterhead.

THE FORD AS A RACING CAR Copyrighted 1924

by
P. W. Cornelius

The Hunt sixteen valve head for Ford motors is of the overhead camshaft, Peugeot type. It is the original overhead valve cylinder head for Ford motors. The overhead camshaft has been used on very fine and fast racing cars of both American and foreign design with great success.

The sixteen valve head is equipped with valves of high grade tungsten steel, 1-5/16 inches in diameter, in the clear, and set at an angle of twenty degrees to the vertical. The valves are operated in pairs by rocker arms of the forked type. The combustion chamber is machined to an inverted "V" shape. The ports and gas passages are also machined. The ports are oval in shape, with one for exhaust and one for intake on each cylinder. They are 2-1/4 inches long and 1-5/16 inches high, which affords a great volume for gas flow. The cam follower is of the well known mushroom type. The camshaft runs in oil in an oil tight aluminum housing, made in two parts. The head can be equipped with three different camshafts to produce a valve opening of 5/16, 7/16 and 15/32 of an inch. The head is equipped for two sets of spark plugs, located on the sides of the head. The drive is generally through a vertical shaft and bevel gears, from the front end of the crankshaft. The vertical shaft is carried on ball bearings, with gears and bearings running in oil. A high speed silent chain drive can also be furnished. This chain is completely housed and well lubricated. The intake manifold can be furnished for one or two carburetors of 1-1/4 or 1-1/2 inches. The head is well water jacketed with each valve seat entirely surrounded by water to prevent warping.

STOPPING OIL LEAKS

There is presently on the market a product called *Silicone Form A Gasket* distributed by the Pematex Co. which will allow the use of old gaskets or even eliminating the gasket altogether. This blue-colored sealant "skins" within fifteen minutes and is dry to the touch within one hour and is fully cured in twenty-four hours. I would not recommend this product on the head gasket but it works excellently anywhere from the rear end to and including the starter, generator, transmission cover, etc. with perfect results.

If it is applied somewhat uniformly on both sides of the gasket, or only on one surface if the gasket is eliminated, and then the parts are drawn down carefully just enough to squeeze out the excess material, this excess can be trimmed with a knife or razor blade. Then let dry for twenty-four hours and then draw up snug.

William Kemdt
Waukon, Iowa

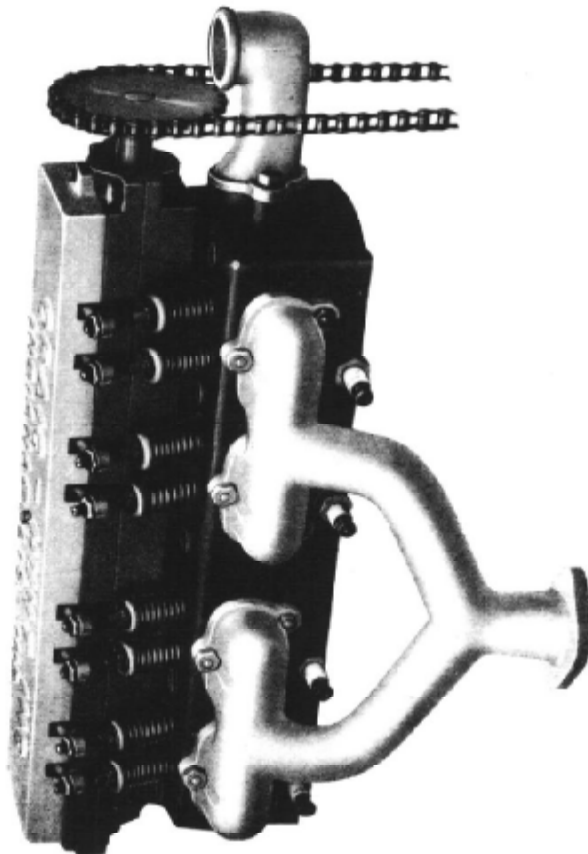
CRAIG-HUNT : Incorporated

EXCLUSIVE MANUFACTURERS FORD SPEED SPECIALTIES

910 NORTH ILLINOIS STREET : INDIANAPOLIS, INDIANA

Craig-Hunt 16-Valve Peugeot Type Racing Head for Fords

FASTEST IN THE WORLD : FOR SPEED ONLY



Intake Side of Craig-Hunt Racing Head

The CRAIG-HUNT 16 Valve Head was designed for use on Racing, Speedster and Sport Cars, where maximum speed and power is the chief requirement. It embodies all well known features of the Peugeot and the 16 Valve Stutz-Wisconsin Racing Motors familiar to all and makes them applicable to the Ford Motor.

CONSTRUCTION DETAILS

There are four valves for each cylinder—two intake and two exhaust—located overhead and seated at an angle of twenty degrees. Valves are $1\frac{1}{2}$ in. in diam-

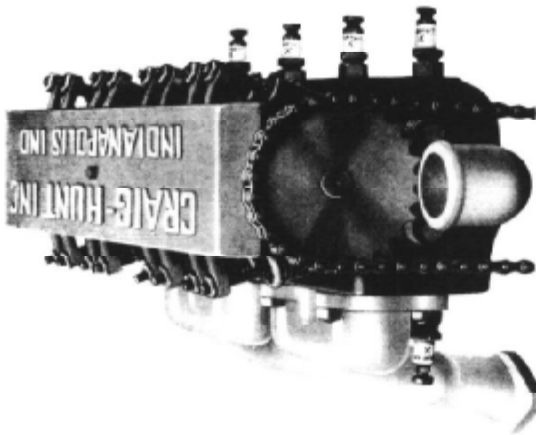
eter and are operated by rocker arms, of the forked type, in pairs. Each rocker arm is operated by the overhead camshaft which runs on three ball bearings all of which are enclosed in an oil contained aluminum housing, which is bolted into place in the alley between the valve stems. The cams are of the roller follower type each of which dip in oil and thereby lubricate the rocker arm rollers and the rocker arms. The Head is equipped for two sets of $\frac{1}{2}$ inch spark plugs each of which enter the combustion chamber, below and between the valves on each side of the head, allowing double ignition, if wanted. The camshaft is driven by special high speed roller chains, from a sprocket attached to the front end of the crankshaft in place of the fan pulley. Use of the special racing camshaft, with which each head is equipped and the large valve and port area makes a fan unnecessary. The special intake manifold furnished with the Head is fanged for either $1\frac{1}{2}$ in. or $1\frac{1}{4}$ in. carburetor. The Head is amply water jacketed each valve seat being entirely surrounded by water to prevent warping and each head is heat treated to insure against the casting changing shape after being used.

FEATURES OF THE CRAIG-HUNT RACING HEAD

It has the largest valve and port area of any head on the market for Fords. It is the only head having four $1\frac{1}{2}$ in. valves in each cylinder (largest valve area possible in 3 $\frac{1}{2}$ in. bore.) It is the only 16 valve Ford Head on the market built with the special overhead speed camshaft, eliminating all speed retarding push rods, etc. It is the only 16 valve Ford head equipped for two sets of spark plugs. Stock Ford valves may be used in case of emergency in this head. It has more features of prominent racing motors than any other head. It is the only 16 valve head using special steel valves.

The CRAIG-HUNT 16 Valve Racing Head is not built to a price. It is of the best workmanship and materials obtainable—this fact and that it is the fastest Ford Head on the market—we guarantee. Not the cheapest but the best.

Each outfit is furnished complete with special manifold, (Unizek) special stud bolts, chain and sprockets and Head gasket and can be placed on the Ford cylinder block in a short time, without any machine work. Furnished for either standard or oversize blocks. Price, \$1520.00 F. O. B. Indianapolis.



Front View Showing Two Sets of Spark Plugs

Speedway Products

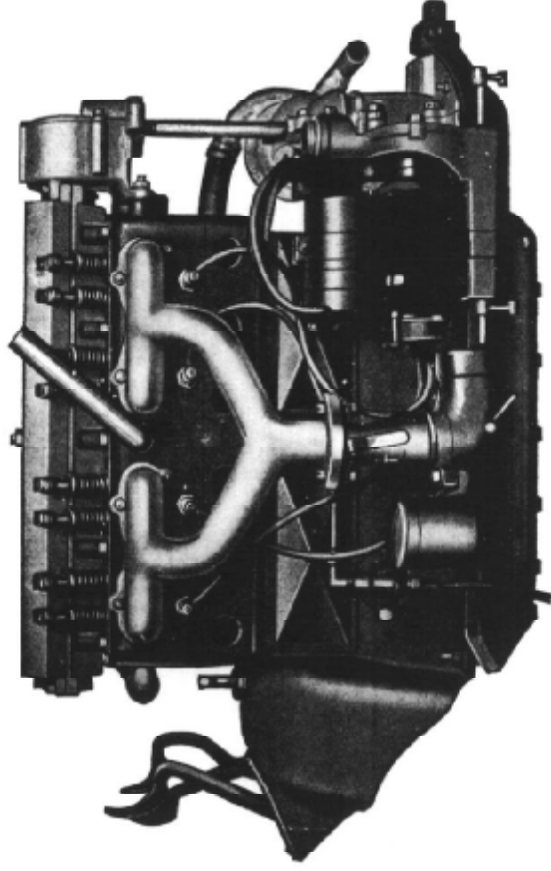
Heads and Other Ford
Speed Specialties



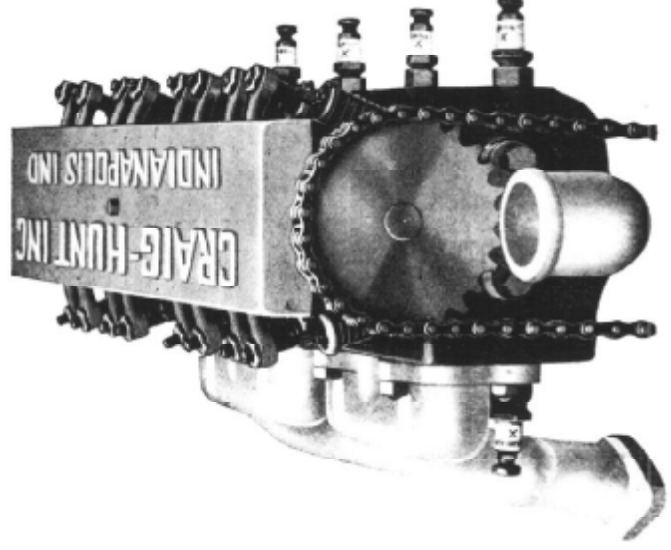
*Making the Ford
Fleet-Footed*



Speedway Engineering Co.
910 NORTH ILLINOIS STREET
INDIANAPOLIS, IND., U. S. A.



Head Equipped with Bevel Gear Camshaft Drive



Front View Showing Two Sets of Spark Plugs and Chain and Sprocket Drive

Speedway 16-Valve Peugeot Type Racing Head for Fords

The Speedway 16-valve overhead camshaft head is not an experiment. The principles in its design and construction have been used in many of the fastest racing motors built in America and in foreign countries. The overhead camshaft has identified itself with racing motors through the Stutz-Wisconsin 16-valve, the Bugatti French car, the Monroe, built by Louis Chevrolet, the Chevrolet-Frontenacs, DePalma's Ballot, the Liberty Motor, the Hall-Scott and the Duesenberg 8 in a Row.

The Speedway head has adapted the speed principles of these cars to the Ford motor and has produced wonders in speed, power and economy.

It is not alone the theory of construction, however, which has convinced racers of the speed qualities of our head. Everywhere when actually used on stock Ford motors and specially equipped Fords our head has proved its fast qualities. Race after race on dirt tracks has been won by the Speedway head. This in competition with many different makes of speed cars of both cheap and expensive construction. We have had numerous letters from users of our heads who have won many dirt track races and who say they are ready to meet all comers—no matter what the design or price of the car used.

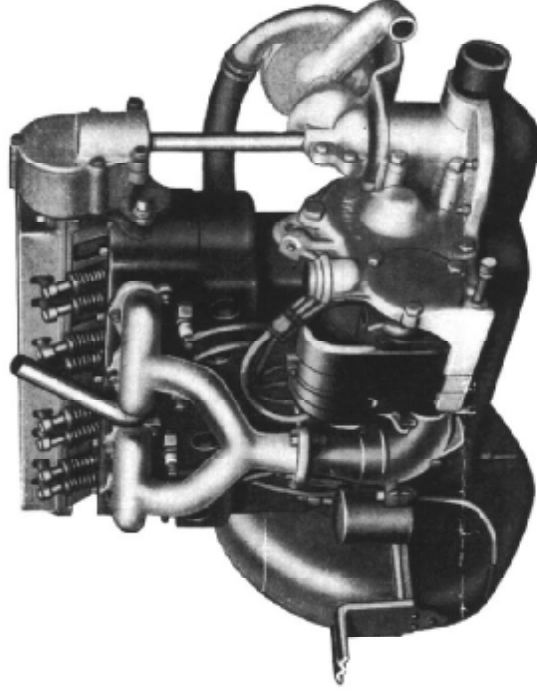
Reasons for speed are of little consequence when one once has the speed. Still we offer, to those who may desire reason, that our speed comes from the facts that: The Speedway head has the largest valve and port area (four 1½-inch valves per cylinder), possible in 3% bore. It is the only 16-valve head for Fords equipped for double ignition or two spark plugs to each cylinder. It has a special camshaft designed for speed work. It has an overhead camshaft which eliminates push rods and all other speed retarding mechanism. It has the proper compression for speed work. The intake manifold is designed to give the volume and velocity necessary for maximum speed.

We now build an aluminum housed bevel gear drive for the camshaft. This drive has been used the past season by race drivers with excellent success and is recommended where the highest speed and endurance are required. It operates from a gear attached to the front end of the crankshaft. The attachment shown in the photograph for pump or magneto is not a part of the camshaft drive. It is furnished only on special request. It has proved to be an excellent device for driving either the pump or magneto.

CONSTRUCTION DETAILS

There are four valves for each cylinder—two intake and two exhaust—located overhead and seated at an angle of twenty degrees. Valves are 1½ inch in diameter and are operated by rocker arms, of the forked type, in pairs. Each rocker arm is operated by the overhead camshaft which runs on three bearings all of which are enclosed in an oil contained aluminum housing. The cams are of the roller follower type each of which dips in oil, thereby lubricating the roller end of the rocker arm. The head is equipped for two sets of plugs, each of which enters the combustion chamber below and between the valves on each side of the head. The head is built to be equipped with either a special high speed roller chain and sprockets attached to the front end of the camshaft, or a bevel gear drive

fully housed and running on ball bearings in oil. No fan is used. The special intake manifold furnished with the head is flanged for either 1½ inch or 1¼ inch carburetor. The head is amply water jacketed, each valve seat being entirely surrounded by water to prevent warping. It develops 52 horse power at 3200 R. P. M.



Front End View Showing Bevel Gear Drive and Magneto or Pump Attachment

The Speedway 16-Valve Racing Head is not built to a price. It is of the best workmanship and materials obtainable—this fact and that it is the fastest Ford Head on the market we guarantee. Not the cheapest, but the best.

Each outfit is furnished complete with special manifold (Intake), special stud bolts, chain and sprockets or bevel gear drive and head gasket and can be placed on the Ford cylinder block in a short time, without any machine work. Furnished for either standard or oversize blocks.

PRICES

With bevel gear drive.....	\$215.00
With chain and sprocket drive.....	165.00
Bevel gear drive alone.....	60.00
Pump or magneto attachment alone.....	20.00
Bevel gear drive and pump or magneto attachment.....	75.00

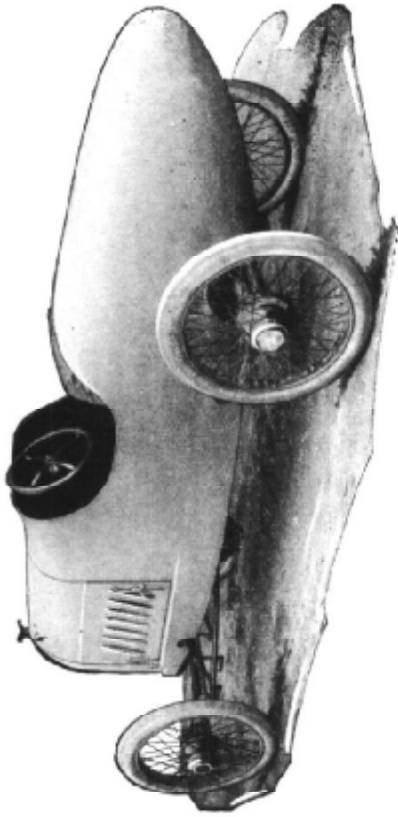
F. O. B. INDIANAPOLIS.

SPEEDWAY BODIES

(TRADE-MARK)

FOR THE FORD RACER, SPEEDSTER OR SPORT CAR

(Illustration from actual photo)



The **CRAIG-HUNT** Speedway Body has proved itself the most popular special body ever marketed. The metal work is of 21 gauge Auto Steel, and all important seams are welded and finished. The flared cowl, a feature found only on the highest priced custom built racing bodies has a tendency to direct air currents up and over the driver's head.

The body is heavily bound with round metal which makes it rigid and free from vibration. All wood work is of oak, gained together with glue and screws. The seating space is exceptionally comfortable for two people, having ample leg room, and the cushions, which are 34 inches wide, are upholstered with a good grade of manufactured leather over curled hair and long coil springs.

The hood is hinged top and sides louvers on each side panel. Tail is of the famous French Peugeot Terpedo design. It is formed over a canoe type light wood frame. The tail is exceptionally rigid, all seams welded. The radiator shell furnished with the body is provided with a filler cap which screws into place in the stock Ford radiator, making it unnecessary to use another radiator. It entirely eliminates the Ford appearance.

The apron or drop is a permanent part of the body and is designed to give the car a lower appearance, covers the frame and assists in forming a stream line effect.

There is ample room for carrying pump, jack and tools. The tool box is reached by unsnapping the rear seat cushion and removing same. The FORD gasoline tank may be used in the tail, by shortening same. Hole for filling is on right side, immediately aft the mechanic's seat.

The body is so designed as to make installation simple, and it may be installed in a very short time. Bodies are primed with a heavy coat of filler. Painting, \$25.00 extra. Weight of body, ready for shipment, about 250 pounds.

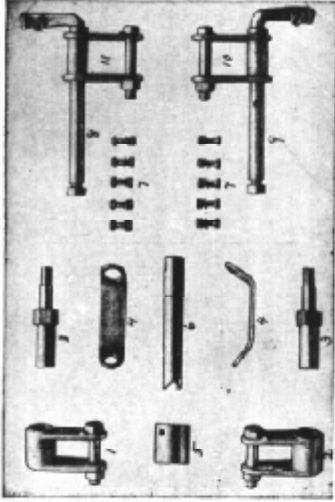
Price, complete with radiator shell, \$150.00. F. O. B. Indianapolis.

OUR \$125 BODY OUTFIT

We also offer this same general design with hood of three pieces, but not hinged, without tool compartment and hole for filling gasoline tank, and with less expensive upholstery, built throughout of lighter wood and metal, complete with the light-weight underslung parts. Price, complete with radiator shell and underslung parts, \$125. F. O. B. Indianapolis.

Underslung Equipment for Fords

SAFEST FASTEST EASIEST TO INSTALL



In order to make a racy speedster of your Ford with road safety, class and speed, it is necessary to lower the frame and body line. All Ford track race cars of merit are underslung. The Speedway Underslung parts are instantly recognized to be the simplest, cheapest and easiest to install of any method. They are rigid and correct in design. No give nor sway at any speed. Holds car firmly to road. Drops the frame 7 inches. Gives the car straight line drive with road clearance of 5 1/2 inches. Lengthens the wheel base 3 inches. Not necessary to alter drive shaft. Does not interfere with the steering gear. No machine work necessary to install; parts are complete—nothing more to buy.

Speedway underslung parts are the original parts for lowering the Ford frame and springs.

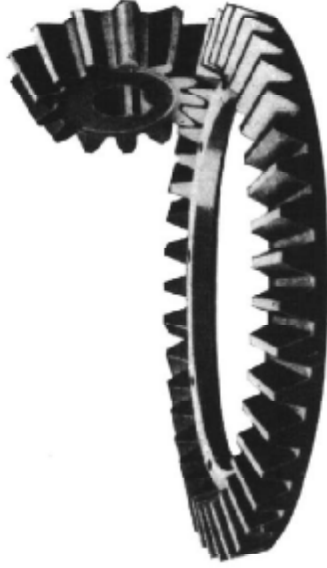
We guarantee each set of parts to make the frame suspension stronger than the original Ford.

PRICE, \$15.00

F. O. B. INDIANAPOLIS

Complete instructions with each set.

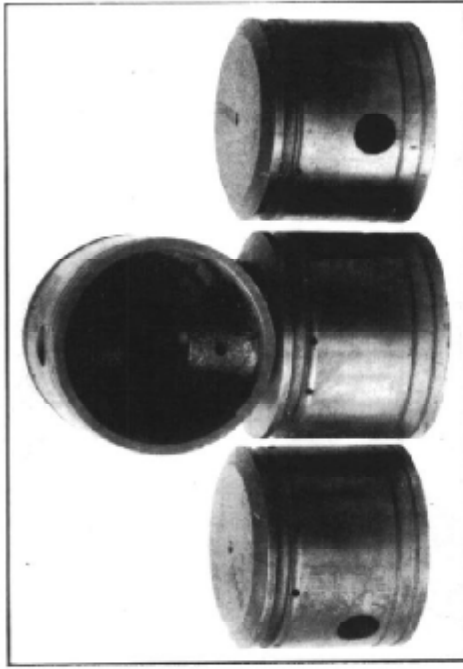
Gears for Racing



We furnish only the highest grade nickel steel gears, carefully cut and guaranteed to fit. Ring and Pinion gear—ratio 3 to 1. Price, per set, \$17.50.

Ring and Pinion gears—ratio 2 1/4 to 1. Per set, \$17.50.

Racing Pistons



Speedway Racing Pistons are designed and built especially for HIGH SPEED work. They are of the short, two-ring type. The weight has been reduced to the minimum without sacrificing the strength and sturdy construction necessary for high speed work. The head is heavily ribbed, and the piston pin bosses are amply supported. These pistons are made from semi-steel castings and are very light and tough—will outwear two sets of ordinary pistons. They weigh approximately 1 1/2 pounds each, and are accurately balanced. Price, per set, \$27.50.

We can furnish the above piston in MALUMINUM, a high grade aluminum alloy. Price, per set, \$32.50.

NOTE: We are prepared to furnish any special racing piston to order.

Su-Dig Series Spark Plugs

FOR DOUBLE IGNITION

For those who do not wish to go to the expense of installing a two-spark magneto, for use of firing two spark plugs in each cylinder, for which the SPEEDWAY 16-VALVE RACING HEAD is fitted, we recommend the use of SU-DIG SERIES PLUGS.

This spark plug has both electrodes passing through the porcelain with a binding post on each. The plug is connected in the ordinary manner to the magneto with high tension wire to one of the binding posts, and from the other post a wire is run to the ordinary plug. This allows both plugs to fire simultaneously. Two spark ignition gives quick and complete firing of each charge, more power, quicker acceleration and more speed. Price, per plug, \$1.75.



Oil and Water Pumps

We can furnish to order oil pumps either double check hand pumps of various sizes, plunger pumps for running off of the camshaft, or the small gear pump for force feed lubrication, when using the Hollow Crankshaft listed elsewhere in the catalogue.

Price of plunger pump..... \$ 7.00

With set of lead pipes.....

7.50

Price of gear pump, brass.....
Oiling system complete, including gear pump bracket, gears for driving same, and oil lead pipes for running to main bearing caps, bearing caps and Hollow Crankshaft, especially recommended for racing cars, with instructions for installing.....

67.50

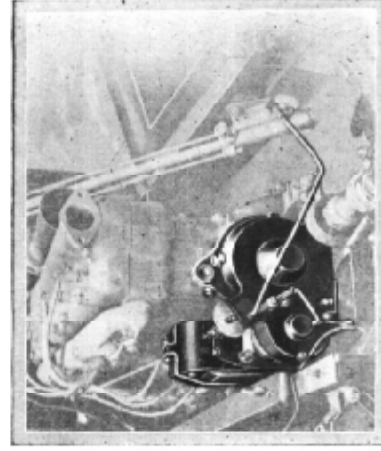
Hand pumps, price depending on size..... \$6.50 to 18.00

Centrifugal water pumps for use with the Bevel Gear Drive 16 Valve Head..... 15.00

Brown Sub-Base Oilers, including a sub-oil base for additional oil under the connecting rods, complete with gauge..... 11.00

Sight Feed for use on dash with mechanical oil pumps. Price, \$2.00.

The Splitdorf High Tension Magneto System



The Splitdorf High Tension Magneto System for Ford cars consists of a Splitdorf High Tension Magneto and a Splitdorf Impulse Starter, together with gears, gear housing and all necessary parts for installation. The Splitdorf Impulse Starter in connection with the Splitdorf High Tension Magneto will facilitate the starting of hand cranked engines direct from the magneto, in a manner that is sure, easy and safe. The principle of operation of the Splitdorf Impulse Starter

permits the production of a strong magneto spark at the slowest possible cranking speed, or in other words, the action of the impulse starter may be compared to cranking the engine about 500 turns per minute, causing the magneto to produce an unusually hot spark, making the starting of the engine easy and sure. A housing at the drive end of the magneto contains the operating parts of the impulse starter, and a small lever projects from the housing for the purpose of engaging the mechanism manually. The Splitdorf Magneto and Impulse Starter, together with base, gears and gear housing, switch, wires, terminals, spark advance rod, plate for dash and all bolts and screws necessary are put up in a single box with full instructions for installing.

Price Complete, \$70.00

Light Weight Connecting Rods



Light connecting rods the same as light pistons allow higher motor speed and decrease vibration. All racing rods are light. Speedway Racing Rods are made from the regular FORD forgings, are I beam in section and the weight has been reduced to the minimum, still maintaining the great strength necessary to stand the strains of racing. These rods are drilled for ample oil supply and they are carefully balanced. NICKELLED, per set, \$35.00. Weight, per rod, 20 oz.

We can supply the tubular aluminumite connecting rods. These rods are extremely light and fast. Weight, per rod, 12 oz. Per set, \$37.50.

Counterbalances for the Crankshaft



One of the most important appliances on the market for the Ford car, whether it is used for the touring, truck or racing car. These counterbalance weights fit on the Ford crankshaft and are easily installed. They will NOT come off the shaft. COUNTERBALANCES eliminate the spring of the crankshaft, internal bearing friction, reduce vibration to the minimum thereby allowing higher motor speed and more power. They annul the loss of power between explosions. DO NOT OVERLOOK COUNTERBALANCES IN BUILDING YOUR RACE CAR OR INCREASING THE EFFICIENCY OF YOUR MOTOR. We sell the DUNN COUNTERBALANCES. Price, per set, with complete instructions, \$8.00.

Complete Counterbalanced Crankshafts—We can equip a Ford crankshaft using Dunn counterbalances—placing the shaft in perfect static balance. Price each\$35.00

HOLLOW CRANKSHAFT

The Ford crankshaft is drilled so that oil may be taken from the main bearings and forced out through the shaft throws to the connecting rods. This enables the builder of a Ford race car to install a force feed oiling system equal in efficiency to any of the high priced racing jobs. Price.....\$30.00

The above shaft equipped with counterbalances placed and in perfect balance.... 50.00

Pasco Wire Wheels



"P A S C O" Quick-Change Wire

Wheels prove of unusual appeal because of the distinct qualities of merit uncommon to other makes of wood and wire wheels. They may be considered an investment. Due to their heat radiation, their lightness at the rim, and their resiliency, they are a great saver of tires and gasoline. They are designed for beauty as well as durability, and on account of the large beautiful hub used, they add a great deal to the appearance of the Ford car. The wheels are interchangeable on all hubs of the car, and the hub caps all have right-hand threads, making it very simple and easy to change a wheel.

A complete "PASCO" set is comprised of five 30x3 1/2 plain clincher wheels, together with four inner hubs, four hub caps, dust cover for spare wheel and wrenches—everything needed for immediate installation on the car. Bearings are included with Front Inner Hubs. Complete set of 5 for Ford, \$80.00.

Other Racing Equipment

WE RECOMMEND AND CAN FURNISH THE FOLLOWING

Chopa Piston Rings, each.....	\$ 1.25
Roller bearings for front wheels, per set.....	10.00
Sprague steering gear—irreversible.....	25.00
Bailey thrust bearings—for differential.....	3.75
Bailey non-stall differential.....	25.00
Ford disc steel wheels.....	70.00
Foot accelerator.....	2.50
17-inch steering wheel.....	5.00
Canopy top for Speedway bodies, khaki with irons.....	35.00
Windshield for Speedway bodies, complete.....	30.00
Instrument board for Speedway bodies.....	6.00
Special exhaust manifold, outside.....	25.00
Racing exhaust manifold for 16-valve head.....	27.50

All above prices are net.

Speedway Race Cars Complete

Our Speedway dirt track race car is strong, well balanced, of good racy design and equipped with fastest motor of any Ford race car on the market. It was designed and its construction is constantly supervised by our engineer, Mr. W. L. Hurt, who has made many dirt track records and who understands more about the racing possibilities of the Ford than any engineer in America. Every part and characteristic of the car has been tested in actual dirt track competition again and again and has met the most severe requirements. It has power, speed, getaway and pickup in surprising perfection. It will make 90 miles per hour or more on straightaway surfaces and maintain this speed for hours. We do not claim it to be the fastest race car nor the most perfect one. What we do claim and are ready to back is that it is the fastest Ford car on the tracks and that it will run with equal chances for the money against any car, high or low priced, on half mile or mile tracks, for any distance up to 100 miles.

The parts being largely stock Ford the owner will find repairing or replacing parts cheap and simple. About 85 per cent. of the parts are interchangeable with the Ford.

It has the following specifications and equipment:

Speedway body, either regular or stub tail type in any color to order
 Speedway 16-valve overhead camshaft head mounted on our special Speedway block, either aluminum or gray iron
 Speedway underslung parts
 Sliding gear transmission, three forward, one reverse or planetary system
 Pasco wire wheels
 Irreversible steering gear
 Racing tires
 Outside exhaust pipe
 Westinghouse ignition
 Water pump
 Hollow crankshaft oiling system
 Speedway racing pistons and connecting rods
 Chassis except as otherwise specified stock Ford
 Standard tread and 103 inch wheel base.
 Price complete, \$1,500.00.

F. O. B. INDIANAPOLIS

We will also build the same car in any tread or wheel base to order.

Road or Sport Model

We also build the racing type as a Road or Sport car, using the same specifications and equipment properly adjusted for road use and timed so as to idle down for slow city driving and with inside exhaust manifold, lights, assembly board, accelerator, top, windshield, fenders and aluminum step if preferred, and choice of wire or disc wheels.

This model will make a very attractive, serviceable and powerful car for the driver who wants something special and is willing to pay a little higher price to get it.

We also offer the same general style Road or Sport car using the regular Ford motor with our 8-valve head and regular Ford ignition, water cooling system and transmission.

PRICES

Racing Type Road or Sport Model\$1,500.00
 Racing Type Road or Sport Model, with lights, assembly, board, accelerator, top, windshield, fenders and aluminum steps 1,700.00
 Road Car, Ford block 1,200.00
 Road Car with lights, etc. 1,400.00

F. O. B. INDIANAPOLIS

Castings and Parts, 16-Valve, Machined and in the Rough

For the benefit of those builders of racing cars who like to experiment in building cars, machining their own castings or assembling the machined ones, and for the benefit of those builders who have ideas of their own which they wish to apply to our head and block designs we are offering castings either machined or in the rough. We will furnish any casting of the parts we make and give information and sketches for machining and assembling them.

This will enable those who wish to own one of our heads, but who are not able to pay the price for machining and assembling the same, to buy the parts and perform their own labor. It also enables those who wish to modify our design or construction to better suit their own conception of speed, to procure our castings and make whatever alterations they may choose.

We offer the following castings at the prices quoted:

	Machined	Rough
16 Valve head	\$75.00	\$50.00
Camshaft housing—new or old style	35.00	17.50
Rocker arms	2.50	1.50
Rocker arm roller	.30	
Rocker arm roller pin	.10	
Rocker arm axle	.30	
Camshaft (without cams)	1.00	
Camshaft (with cams)—state old or new	15.00	
Camshaft (with cams), set	25.00	
Cams, each	1.75	
Upper gear housing for bevel gear drive	10.00	6.00
Lower gear housing for bevel gear drive	10.00	6.00
Pump attachment housing	7.50	5.00
Gears for pump attachment	6.00	
Gears for bevel gear drive	20.00	
Manifold, intake (vertical)	7.50	
Manifold, intake (horizontal)	7.50	
Cylinder head studs, each	.20	
Cylinder head gasket	2.75	
Camshaft sprocket (chain drive head)	4.75	
Crankshaft sprocket (chain drive head)	3.50	
Camshaft drive chain (chain drive head)	3.50	
Valves, tungsten, each	2.00	
Valves, steel, each	1.10	
Valve springs, each	.20	
Valve spring retainers and pins, each	.05	
Camshaft bearings (ball, old style)	1.00	
Camshaft bearings (plain, new style)	.75	

All orders to be shipped C. O. D., by express require a deposit of 25 per cent. of the amount of the order.

All freight shipments require cash in full with order.

All prices herein quoted are F. O. B. INDIANAPOLIS. No charge will be made for crating or cartage.

No goods insured unless so ordered.

All claims for shortage must be filed at once, together with paid expense bill.



Speedway 8-Valve Cylinder Heads for Fords

(Read this carefully before ordering)

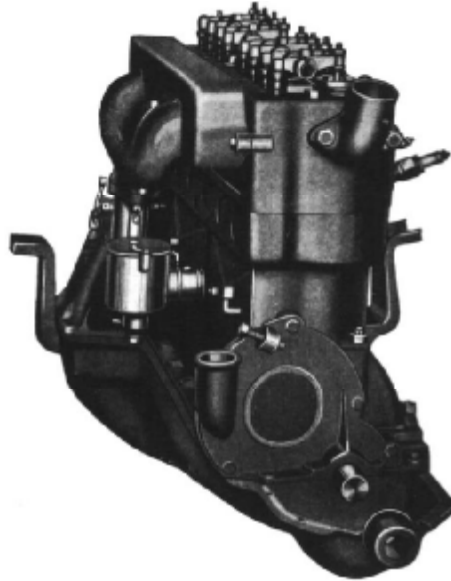
The Speedway R-Valve Head was designed for use on any Ford motor. For the touring car, where enough power can not be had for hilly country and sandy or muddy roads. For the sedan or coupe, where the extra body weight eliminates any chance of pep or reserve power from the regular Ford motor. For the speedster, where speed and power are the main factors. For trucks, which are usually overloaded, this head eliminates the use of low gear on hills and in hard going. This head positively gives an increase of 40 per cent. in efficiency when installed on the Ford motor.

The Speedway R-Valve Head is not an experiment; it has been given every conceivable test and has made good on each and every one of them. The idea of the overhead valve is old. More manufacturers of motor cars each year have adopted the overhead valve motor—this is conclusive evidence of its efficiency.

With the installation of the Speedway Head the Ford owner on his first turn of the motor can see the difference? It is not one of those contraptions which you put on your car and then wonder if it really is doing the thing it is supposed to do. You will wonder at the flexibility of the Ford, its power at low throttle and the rapid pick-up and speed. The motor stays cool, and for the number of miles traveled there is a noticeable decrease in gasoline consumption.

The head casting is of fine gray iron, the best cylinder iron that money can buy; it fits onto the Ford block in place of the old head and is held in place with the special cap screws furnished with the head. The head casting is full of water. Care has been taken to water-jacket every part of the head that needs cooling, and each part of the casting is given its proper amount of cooling water—there are no hot or cold spots in this head. Each valve is surrounded with water, as are the spark plugs and combustion chambers. The regular Ford water connection fits on the cylinder head. One of the features which made the success of the Speedway H-Valve Cylinder Head possible is the design of the ports through which the gasses pass in and out of the head. They are large and straight, the valve area being maintained throughout the port. This enables the gasses to be drawn in and pushed out without the slightest restriction. They eliminate any chance of back pressure and therefore increase the general efficiency of the head.

The valves and valve operating mechanism is simple; the valves are chrome nickel steel, made from a solid piece, the stems are ground and the stem ends are hardened; they are 1 1/8 inches in diameter. The valve stem guides are long, which insures long life and the proper seating of the valves. The valves are operated from the regular Ford cam shaft by push rods running through the old valve stem guides. The push rods actuate the rocker arms, which in turn open the valves. Due to the design of the rocker arm, the valves are opened 3/4 of an inch with the regular Ford cam shaft, making the gas passage practically double that of the regular Ford.

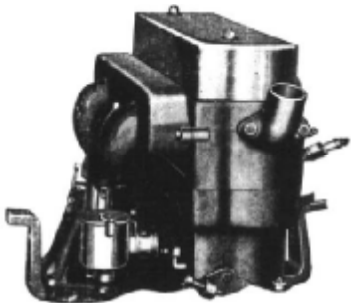


On the push rod end of each rocker arm there is a small half ball which fits into a socket of the same size on the end of the push rod; these tend to make the rocker arm action more silent and they take the side thrust off the push rod; these are hardened and ground tool steel. At the valve end of the rocker arm there is an adjustment screw which is used to adjust the clearance between the rocker arm and the valve; this allows the motor at all times to be held at a quiet, efficient valve clearance. The valves and rockers are covered with an aluminum cover, eliminating noise and preventing dirt from wearing the rockers. The intake and exhaust manifolds are cast integral, the intake at all times having the exhaust gasses passing over it, giving a fine warm mixture into the cylinder. The regular Ford carburetor may be used and good results may be obtained, but to get the maximum power and efficiency the head is intended for, the use of any good 1 1/4 inch carburetor is advised. The regular Ford exhaust pipe connects to the exhaust manifold.

The Speedway S-Valve Head is very easy to install; it is done without any machine work and there is nothing extra to buy. Can be installed at home, or in any shop, in two or three hours.

The Speedway A-Valve Head insures maximum power because of its large valve area. All the combustion takes place directly over the piston of each cylinder, eliminating the great power loss of "L" head design by deflection and gas pockets, all the impulse coming directly on the piston itself. The spark plugs are regular Ford size and enter the combustion chamber on the left side of the motor at a 20 degree angle, firing the charge directly over the piston and the angle of the plugs, preventing fouling from oil.

Every part of this Head is built in accordance with the most modern and successful motor practice. The Speedway X-Valve Head is not a novelty accessory that will be tried and cast aside, but a necessity for the Ford which, once installed, places the Ford where it belongs, the most powerful motored car on the market for its weight—economical, flexible and fast. The price is \$85.00 complete with cover, head gasket, manifolds and special cylinder bolts.



SPEEDWAY ENGINEERING COMPANY

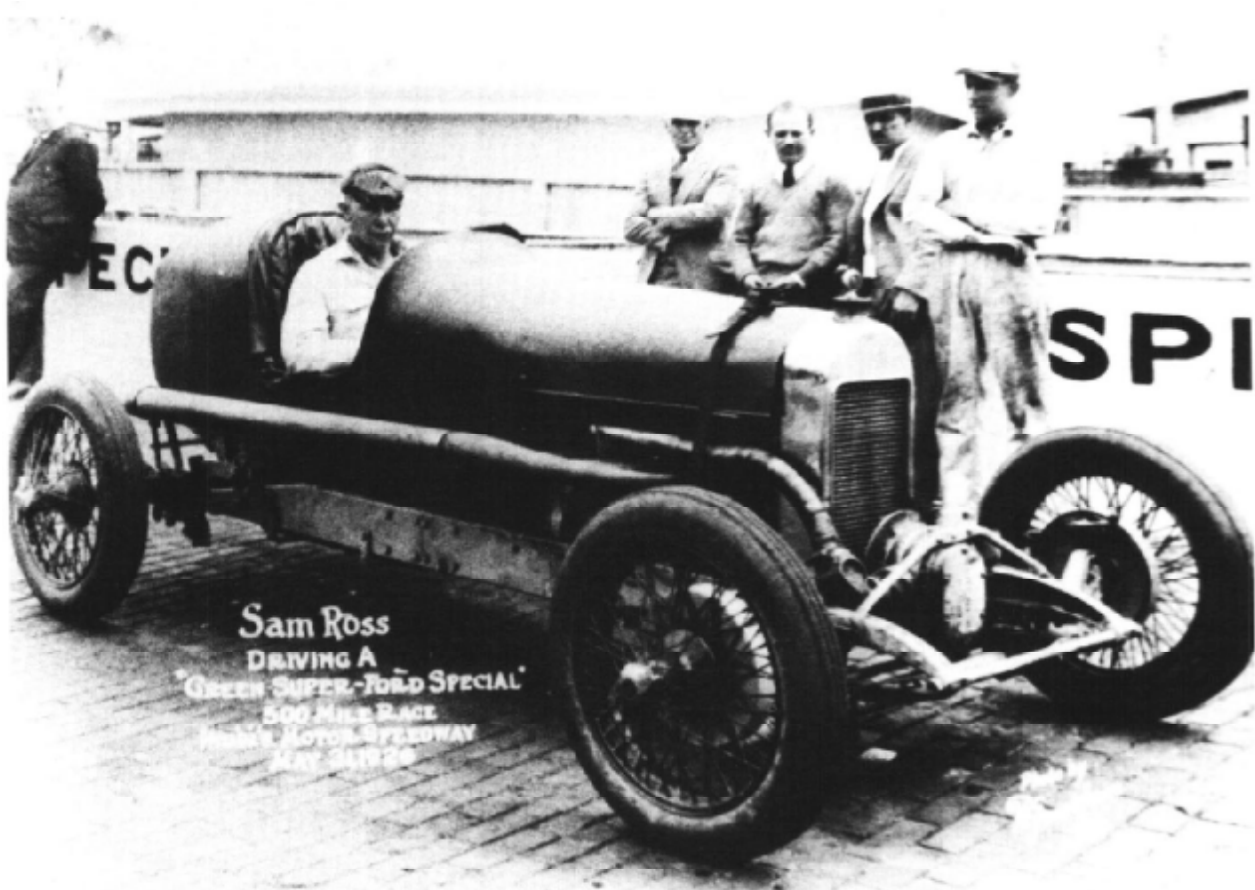
910 NORTH ILLINOIS STREET

INDIANAPOLIS, INDIANA



FORDS AT INDIANAPOLIS?

Well, There was Green Engineering



The "Green Super Ford Special which was entered in the 1926 Indianapolis 500. The car was equipped with a Model T engine of just ninety-one cubic inches and a supercharger driven from the front of the engine. Photo courtesy of the Indianapolis Motor Museum.

In the July-August 1980 issue of *The Vintage Ford* member Ed Leslie of Denver asked about the efforts of other manufacturers of Model T speed equipment who tried their hands at the Indianapolis 500. The Fronty Fords that ran at Indy in 1922, 1923 and 1924 are fairly well known, but there were others. The two Mr. Leslie mentioned, Robert M. Roof, who we will write about later, and the Green Engineering Special, which is our subject now.

The Green Engineering Company of Dayton, Ohio, developed in 1914 and put on the market in 1915, a line of light-weight racing parts for the Model T. Aluminite pistons and connecting rods, a flat-head racing head known as the Power-Plus Cylinder Head, special axles,

front and rear, as well as a complete racing car. Pop Green also did a lot of work with superchargers and in fact entered a number of supercharged cars at Indy. His Ford-based entry will be our subject.

A Green Engineering brochure has the following ad:

"Green Engineering Special SUPER-CHARGER. For all types of Racing Cars. Made for Dirt, Brick and Board Tracks. The same type Super-Charger that we installed on the "Smith Special" racing car. Used on "Super-Ford" cars increasing speed more than 1,000 R.P.M. A mechanical outfit made almost entirely of aluminum, ball bearing throughout, installed between carburetor and motor and fitted to chassis directly behind radiator. Space required, 10% inches.

The operation of this "Super-Charger is

positive and is exactly what you have been looking for to make your car faster than any others. No. 320.

The price was \$400.

Pop Green wrote a column for the *National Auto Racing News* (*Bergen Herald*). This was THE racing newspaper from 1934 until after the war. He dealt with questions that were sent in by the readers, mostly concerning the building of race cars and how to build, time and even design their own engines. Information was not readily available like it is today, so I'm sure his column was read by *many*.

Pop Green later moved to New Jersey, where they produced parts into the 1940s.

In his column of February 16, 1939, Pop Green was reminiscing about the old days.

"Fools rush in where angels fear to tread. Imagine anyone being dumb enough to take a 91-inch Model T Flathead-motored race car to Indianapolis to compete in the "500. Well, yours truly will have to confess that he was guilty, with Sam Ross of Ann Arbor, Michigan, as chief accomplice in the role of driver. This happened in 1926. The motor was supercharged with our special Roots type blower built for the job. Perhaps, after all, we may not have been quite so dumb, as we were able to get 100 miles per hour out of the flivver, but owing to the weakness in construction of the cylinder block, which would warp when the head bolts were drawn down tight enough to hold the supercharged pressure, the head gasket would last for only one fast lap and then wear out. Sam did his best, installed one head gasket after another - all kinds of head gaskets - and tried again and again, but one fast lap was all that he could get. It was customary in those days to hold a 100-mile Championship race about the middle of June following the "500, on the State Fair-ground track at Detroit, and only 91-inch cars were allowed to compete. We lowered our compression a little, figured the motor was good for 100 miles on a dirt track where it would have a chance to breath occasionally, loaded up and went to Detroit.

Twelve cars started in the race and we lined up about two thirds of the way back and the race was finally started with 20,000 fans watching. Sam turned two laps and stopped in the pits. We rushed to find out why and Sam said, "I just stopped to see if the motor was running cool. It was. so Sam finished the 100 miles with no more stops, driving a steady race. When the checkered flag dropped on Sam, he was in sixth place, and sixth place in a Championship race in those days was not to be laughed at, for it paid us \$800 - more than the total purse for most dirt track races in those days. Sixty-nine M.P.H average for the 100 miles was not so bad either for a flathead Ford Model T, 91-inch, in a 1400 pound car.

Sam Ross was a good and popular driver, had a good personality and was on the level with everyone. Have not seen Sam for a number of years but now and then a rumor leaks through that he is still in Ann Arbor raising a happy family - perhaps future race drivers. Hope if he is listening in, that we will hear from him. Rah, rah, rah for Sam Ross!

The Bergen Herald

Thursday, March 30, 1939

Department of Information by "POP GREEN

Dear Mr. Green:

I have subscribed to the National Auto Racing News for some time now, and I never miss your articles. They are the real McCoy for information. I just read your article in the February 16 issue about your 91-inch T motor and man, was that some sweet outfit! I would like to know how you brought the T down to 91 cubic inches and why you did so. I suppose the block was sleeved and a shorter-stroke crankshaft used with special rods. Were the bearing journals enlarged on the special crank? Did you use spool sleeves? How about tubular rods? And why a small motor for Indianapolis? All this has got me going around talking to myself, and I will appreciate it if you will straighten me out.

John S. Haigler.

We are glad you like the N.A.R.N. and you can be sure my articles represent only a small fraction of the good things which are contained in this publication.

The Model T 91-inch motor was reduced to 91 inches displacement as the rules in effect at Indianapolis from 1926 to 1929, inclusive, limited the displacement of motors competing in the "500 and other championship races to 91 cubic inches, and the weight of the car to a minimum of 1400 pounds without oil or gasoline. Superchargers were permitted. The Model T motor was sleeved down to three-inch bore by pressing spool type sleeves made from steel tubing into the block, which was drilled to allow water to come into contact with the sleeves. This allowed water to circulate completely around the sleeves. The block was fitted with a special circular disc crankshaft having a stroke of 3% inches. The main bearings were enlarged from the normal 1-1/4 inch to 1-5/8 inches. The crankshaft was drilled for oil pressure lubrication and a special oil pump fitted to the motor. Strange to say! stock Model T connecting rods were used, lightened and polished, bored out and babbitted to fit 1-7/16 inch crankpin bearings. These Model T rods were made from exceptionally good steel, had to be to carry the four-pound pistons used in the stock car. When pulled on a testing machine, a pull of seven tons was required to break the rod, and then the rod bolts failed first. Bearing caps showed the next weakness. No cotter pins were used in the connecting rod bolts. They were tried and the high speed sheared them off and they all landed in the bottom of the crankcase. None of the nuts came loose without cotters.

Our thanks to the Jarvis Collection for the use of the original photographs and catalogs used in the articles on Craig-Hunt and Green Engineering.

The following pages are a reproduction of an original Green Engineering brochure. The brochure is not dated but appears to be from about 1924-26.

Racing Car —and— Parts List



Green Engineering Company
Dayton, Ohio, U. S. A.

ALUMINITE

**Pistons and Connecting
Rods for All Cars**

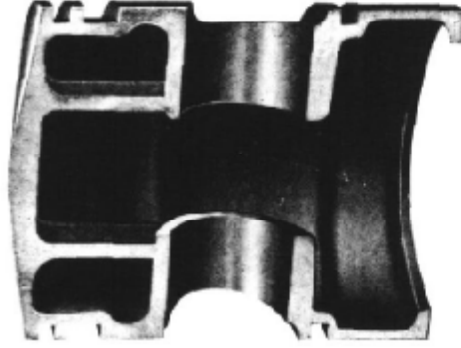
**Special Speed and Race
Car Parts for All Cars**

Everything for Racing Fords

**Famous "Super-Ford"
Racing Cars**

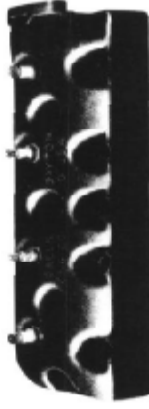
ALUMINITE

Pistons were developed in 1914 and 1915, at the time when automotive engineers saw the need of lighter reciprocating parts to be used in automobile motors. The motors at that time were sluggish, slow in get-away and had no pep. This led to ALUMINITE PISTONS and connecting rods. These parts were designed and patented by the Green Engineering Company. They were marketed in 1915 and during the past years have earned an enviable reputation by their wonderful service and durability. They are used in 90% of the successful dirt track racing cars throughout the country and in thousands of fast touring cars. They are known as the only light weight parts that will stand up under the severe service of the track.

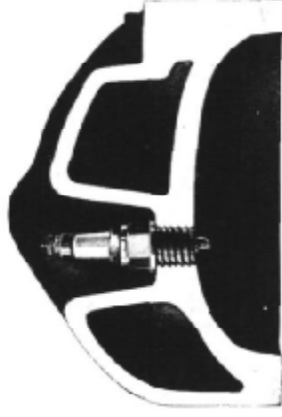


In the above sectional view of the Aluminite Piston, you can see the ribs which are independent of the walls of the piston. These ribs insure the piston against going out of round when heated and cooled. The ribs carry away the heat and also make a support from the head to the bosses giving a great excess of strength. There is only one "Aluminite." Insist on the genuine made only by the Green Engineering Company. ALUMINITE PISTONS and Rods are made for all cars. Write for quotations.

Power-Plus Cylinder Head For FORD CARS



The Power Plus Cylinder Head was designed for use on the track as well as to fill the Ford owners long felt need of something to increase the power, pep, speed and get-away of the Ford motor and to make driving the Ford car more of a pleasure. The Power Plus Cylinder Head adds enjoyment to driving as the big car efficiency is added to the light car economy.



The above sectional photograph shows the designs of the Power Plus Head. Note the free circulation of water around the spark plugs and from one end of the head to the other. The spark plug is located directly over the center of the cylinder which, with the special design combustion chamber increases the speed and power of the Ford motor to a great extent. The Power Plus Cylinder Head combines all of the accomplishments of an overhead valve outfit with none of its complications.

The Power Plus Cylinder Head is used on all Super-Ford racing cars. When used for excessive speed oversize valves are used in the block by boring out the valve ports and installing $1\frac{1}{8}$ " valves.

When ordering state whether head is to be used on racing car, speedster, touring car or Ford truck. In any of its uses Power Plus is supreme. Buy one today. Enjoy your Ford more tomorrow.

No. 187.

FORD SPEED SPECIALTIES

No. 146—ALUMINITE Racing Pistons, per set.....	\$ 12.00
No. 145—ALUMINITE Pistons, regular, per set.....	12.00
No. 146—ALUMINITE Connecting Rods, Ford, per set.....	12.00
No. 147—SPECIAL PLATES Cylinder Head, each.....	13.00
No. 236—OVERSEAS PLATES ALUMINITE Cylinder Head, complete with valves, each.....	65.00
No. 185—High Speed Camshaft, racing, standard lift, each.....	35.00
No. 189—High Speed Camshaft, racing, high lift, each.....	35.00
No. 144—SPECIAL OVERSEAS Crankshaft, each.....	178.00
No. 191—Special Five Main Bearing Shaft.....	225.00
No. 192—Special 134" Bore Cylinder Block, each.....	180.00
No. 193—Special 134" 3 1/2" Cylinder Block, each.....	195.00
No. 194—ALUMINITE Racing Pistons for sleeve shafts, per set.....	32.00
No. 195—Crown Pins for 3 1/2", 3 1/4" or 3 1/2" Blocks, per set.....	6.00
No. 196—Piston Rings for 3 1/2", 3 1/4" or 3 1/2" Blocks, per set.....	4.00
No. 211—Main Bearing Caps for oversize shaft, per set of 2.....	9.00
No. 197—Special Steel Connecting Rods for Oversize Shaft, per set.....	24.00
No. 198—Wire Wheels, Special Rating, 28 x 4—five wheels, per set.....	125.00
No. 199—Wire Wheels, 28 x 4, 28 x 4, 30 x 4, 30 x 4 1/2, per set.....	75.00
No. 200—Wire Wheels, 30 x 4 1/2 Clincher tires, per set.....	65.00
No. 201—Wire Wheels, Special 21 x 4—five to a set, per set.....	109.00
No. 215—Wire Wheels for all over-casting and bearing-hubless wheels and tires. Price on request.....	
No. 202—High Pressure Oiling System, complete, Aluminum, each.....	16.00
No. 203—High Pressure Oiling System, complete, Bronze, each.....	48.00
No. 204—Water Pump and Magneto Bracket, complete, each.....	65.00
No. 205—Special Master Carburetor for Ford Car, each.....	39.00
No. 206—Special Master Carburetor for Ford Racing Car, each.....	32.00
No. 207—Special Master 1 1/2" Gas Inlet for Ford Racing Car.....	17.50
No. 208—Special Zenith Carburetor for Racing Cars, each.....	15.00
No. 209—Scimita High-Tension Magneto, single, each.....	75.00
No. 210—Scimita High-Tension Magneto, Saddle, each.....	185.00
No. 211—Underling Parts, Mangroose Irons, Front and Rear, per set.....	28.00
No. 212—Special Roller Bearings for Oversize Axle, each.....	8.00
No. 213—Special Roller Bearings for Oversize Axle, each.....	8.00
No. 214—Special Ball Bearings and Housings, per set.....	6.00
No. 215—Special Steering Gear, castable, each.....	16.50
No. 216—Counter-Balanced Crankshaft, each.....	23.00
No. 217—Counter-Balanced Crankshaft, drilled for oil, each.....	29.00
No. 218—Special Oil Sump, each.....	20.00
No. 219—Special Ball Bearing Caps, each.....	20.00
No. 220—Special Tubular Racing Front Axle, complete, each.....	79.00
No. 221—Special Tubular Axle, equipped with Front Wheel Brakes, each.....	150.00
No. 222—Racer Truck Stop Wheel, each.....	25.00
No. 223—Racing Engines, each.....	12.00
No. 224—Racing Helms, each.....	12.00
No. 225—Head Valve—caps for Gasoline and Oil, each.....	6.50
No. 226—Special Bushing, Gasoline, Fender Cars, each.....	7.50
No. 227—Racing Exhaust Manifold, each.....	40.00
No. 186—SAFETY Front Wheel Brakes for Ford Racing Car, per set.....	75.00
No. 128—4 to 1 Racing Gears, each 3 to 1, 4 to 1, 5 1/2 to 1, per set.....	12.00
No. 129—Special Radius Rods for Ford Racing Car, per pair.....	24.00
No. 130—Special 180° Race Springs for Racing Cars, each.....	14.00
No. 131—Offset Front Springs for Ford Race Car, each.....	6.50
No. 132—Oversize Axle Shaft—1 1/2" diameter, each.....	12.00
No. 133—Special Bearings for Oversize Shaft, each.....	60.00
No. 134—Special Bearings and Housings, per set.....	36.00
No. 135—Special Ball Bearings and Housings, per set.....	36.00
No. 136—Special Racing Steering Knuckles, per pair.....	36.00
No. 137—High-Pressure Oiling System, Crankshaft Attachment, each.....	31.00
No. 138—Special Camshaft Gear, Racing, each.....	10.00
No. 139—4-in-1 Front Plate for Racing Ford, each.....	54.00
No. 140—3-in-1 Front Plate for Speedsters, Ford Ignition, each.....	21.00
No. 141—3-in-1 Front Plate for Speedsters, Bosch Ignition, each.....	50.00
No. 142—ALUMINITE Solid Side Pistons for Speedsters, per set.....	31.00
No. 143—Cylinder Block, fitted with Special Heavy Crankshaft, Bearing Caps, Bearings fitted, ALUMINITE Pistons, Ring and Pins, Special Rods, Bearings Fitted, Water Pump, Magneto Bracket and Ignition Switch, complete.....	900.00
No. 144—Cylinder Block, fitted with Special Heavy Crankshaft, Bearing Caps, and all bearings fitted and adjusted, each.....	200.00
No. 145—Special Drag Link, each.....	1.00
No. 146—Oil Gauge—1 1/2 pounds, each.....	1.00
No. 147—Oil Gauge—10 pounds, each.....	1.00
No. 148—oil Gauge—30 pounds, each.....	1.00
No. 149—ALUMINITE S&T (No. 1) Spark Plug 3/4", each.....	1.00
No. 250—Centrifugal Water Pump, each.....	17.00
No. 251—Water Pump for Speedsters, each.....	7.50
No. 252—Oil Impeller for Fly Wheel of Speedsters, per set.....	4.00
No. 253—Pitot Carburetor Gear for Speedsters, each.....	7.00
No. 254—Bosch Rear Camshaft Bearing, each.....	2.00
No. 274—Super Ford Racing Piston, each.....	180.00
No. 275—Super Ford Springs, per set of four.....	60.00
No. 276—Super Ford Special Ignition Manifold, for use two Carburetors (2 required), each.....	18.00
No. 277—Super Ford Igniter Manifold, Aluminum, will take 1 1/2" or 1 3/4" vented carburetor.....	18.00
No. 280—Ford Tubular Steel Racing Connecting Rods, per set.....	35.00
No. 278—Special Racing Steering Gear, each.....	35.00
No. 279—Racing Steering Gear, castor control, each.....	35.00
No. 280—Racing Steel Steering Wheel.....	10.00
No. 281—Aluminum Oil Sump for new style Crank Case.....	30.00
No. 201—Five Bearing Circular Axle Shaft, each.....	275.00
No. 801—Counter-Balanced Crank Shaft, each.....	45.00
No. 320—Super Clamps for any type Racing Car, each.....	400.00

SPECIAL OFFERS

Four Racing Aluminum Pistons, 4 Aluminum Connecting Rods, Hub Special Crankshaft and Front Five Carburetor \$100.00 Head for Ford Motor \$150.00

Five 28 x 4 Racing Wire Wheel, complete with Special Racing Tires and Tires. Wheels complete with 1 1/2" and Wing Type Hub Caps \$265.00

Tubular Front Axle, equipped with "Safety" Front Wheel Brakes, Five Wire Wheels, 28 x 4, Special Racing for \$150.00
Special Heavy Crankshaft, Special Aluminum Connecting Rods and Pistons to fit Cylinder Block and Main Bearing Caps bored on to fit Oversize Shaft, all bearings fitted \$265.00

SPECIALS FOR DODGE

No. 265—ALUMINITE Racing Pistons, Special, per set.....	\$ 38.00
No. 266—ALUMINITE Racing Connecting Rods, per set.....	22.00
No. 267—High Speed Camshaft, each.....	40.00
No. 268—Special Racing Crankshaft, each.....	65.00
No. 269—Racing Wire Wheels for Dodge Car, 28 x 4, per set.....	150.00
No. 270—Racing Wheel, equipped with Safety Brakes, per set.....	250.00
No. 271—SAFETY Front Wheel Brakes for Race Car, per set.....	150.00
No. 272—Master Racing Carburetor, 1 1/2" each.....	37.50
No. 300—Dodge Tubular Steel Connecting Rod, per set.....	240.00

SPECIALS FOR CHEVROLET

No. 198—ALUMINITE Racing Pistons, Special, per set.....	\$ 32.00
No. 199—Chevrolet Tubular Steel Racing Connecting Rods, per set.....	300.00
No. 200—OFF-SE7 Rocker Arms Increase Lift 1/4", per set.....	32.00
No. 201—High Speed Camshaft, each.....	45.00
No. 202—Racing Wire Wheel Five on a Set, 1924, per set.....	100.00
No. 203—Racing Wire Wheel Five on a Set, 1924, per set.....	100.00
No. 204—SAFETY Front Wheel Brakes, complete, per set.....	67.50
No. 205—Master Racing Carburetor, 1 1/2" each.....	42.50
No. 206—Special Gears, Nipal Steel, per set.....	12.00
No. 207—ALUMINITE Fly Wheel, Wire Light, each.....	65.00
No. 208—Special Oversize Crankshaft, each.....	175.00
No. 209—White Racing Suits, each.....	

TERMS—25% WITH ORDER
BALANCE C. O. D.

Oversize Axle Shaft



Made especially for racing cars and commercial cars. These extra large shafts are made from chrome vanadium steel and are very strong and durable.

No. 214 Ball Bearings and Housings
No. 213 Special Roller Bearings.

Special Racing Tubular Front Axle



Light in weight and five times stronger than any other Ford axle. Drops chassis five inches without the use of underling parts. Comes complete with special chrome-nickel steering knuckles. Used with regular Ford spring or semi-elliptic springs. Furnished for any width tread. State width when ordering. No. 220.

Special Radius Rods for Racing Fords

Made from seamless steel tubing. Light and strong and the most durable rods obtainable. Made for regular or offset cars. No. 229.

Special Racing Wire Wheels



Straight side depressed center rim 28x4. Lightest, strongest and most economical wheel on the market. Tire cannot be thrown from rim. Laced with 72 spokes. Used by all successful dirt track drivers. 3 wheels to set, complete. No. 198.

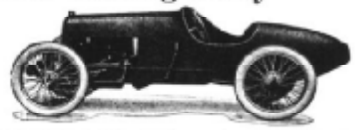
Racing Steering Knuckles



Racing Steering Knuckles to fit Ford 1-beam axle. Made from chrome-nickel steel. Will not break under any circumstances. An absolute necessity for the racing car. Comes complete with the rod and bolts. (State width of tread of car.) No. 236.

One Man Racing Body

Single seater body is designed for racing on all tracks and is the best that can be had for the purpose. Built of strong but light materials, strongly laced with angle iron and built to a high standard of perfection. Gives car proper balance and reduces air resistance. Drivers seat is padded and comfortable. All tires can be seen from driver's seat. In ordering, give wheel base of car and state whether motor is set back in frame, also method of under steering.



No. 328, Price \$125.00
No. 324 Speedster, two-passenger body 100.00

Racing Goggles



Non-breakable glass. The best goggle made for dirt tracks. Keeps the dust out of the eyes.

No. 223, Racing Goggles.
No. 299, White Racing Suits.
No. 244, White Racing Helmets.

Racing Radiator

Super-Ford design—12" wide, special racing core, 6" deep. Radiator built any desired height. Stock radiator 26" high.



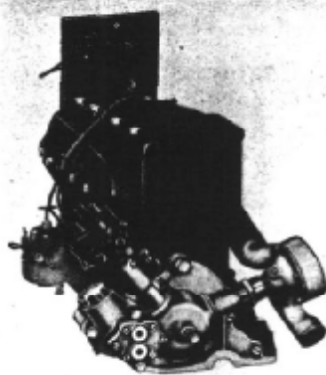
No. 226, racing radiator.

"Triple" Front Plate

Consists of water pump, oil pump and Bosch Battery Ignition.

Oil pump is gear type as per illustration and will keep up a reserve of sixty pounds. Water pump is circulating having four blade impeller. Camshaft end play adjustment provides easy adjustment of shaft.

Complete outfit made of semi-steel except water pump which is of high grade aluminum. With ordinary care this outfit will last the life of the car.



- No. 239—Triple Front Plate for Racing Ford..... **\$70.00**
- No. 240—Triple Front Plate for Speedster Bosch Compensating Ignition.... **65.00**
- No. 241—Triple Front Plate for Speedster Bosch Manual Ignition..... **64.00**

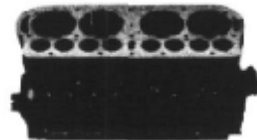
Special High Speed Camshaft

The only satisfactory Camshaft ever designed for Ford speed motors. Adds great power and speed to a Ford motor. Easily installed. Timed as follows: Exhaust valve opens 85 degrees before dead center and closes 10 degrees past upper dead center. Intake opens 10 degrees past top dead center and closes 35 degrees past the lower dead center. No. 189.

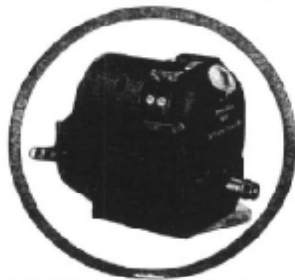


SPECIAL SHAFT, for overhead valve motors. Special Timing, standard fit No. 188.

Special Ford Racing Cylinder Block



3 1/2" cylinder diameter. Special steel cylinders. Improved water circulation. Smaller cylinder makes it possible to raise compression, also causes the use of lighter pistons reducing bearing troubles. No. 192.



Scintilla Magneto

HIGH-TENSION

The best known racing magneto furnished in single and dual spark. Guaranteed. Will stand up under the most severe service.

- No. 209—Single.
No. 210—Dual.

Tubular Steel Connecting Rods



Made from chrome nickel steel. Very light and stronger than any other rod on the market.

- No. 266, Ford rod for any size shaft.
No. 289, Chevrolet rod.
No. 300, Dodge rod.

Green High Pressure Oiling System



Consists of oil pump, camshaft extension, by-pass regulator, fittings, tubing and connections. The best oiling system that we know of for the Ford racing car. The ONLY oil pump made entirely of hard phosphor bronze. No. 203, Aluminum Pump No. 202.

Special Master Carburetor



For Ford Racing Motors. After exhaustive tests we have decided that the best results are obtained with this carburetor. Designed for great speed and getaway. In ordering state make of head used. No. 205 Ford 1 1/4" racing. No. 207 Ford 1 1/2" racing.

Special Zenith Carburetor also recommended for Ford racing motors. For all type heads. No. 208.

Oil Sump



Keeps oil at low temperature assuring lubrication at all times. Capacity three gallons. Well made of pressed steel. A necessity to all speed or race cars. For race cars gauge is removed and oil line connected in its place. No. 218.

Aluminum Sump to fit new style crank case. No. 267.

Special Ball Bearing Cap



A necessity on all Ford motors. Replaces the hub bearing and supports transmission, doing away with the usual noise resulting from the loosening of the original bearing. For all Ford motors. No. 219.

The New Wonder

POWER - SPEED

500 Miles on One Quart of Oil

35 Miles on One Gallon
of Gasoline



An old reliable metal and a brand new design.

Guaranteed not to slip, score or pump oil. Fit with .001" clearance in Ford motor. The new design split skirt takes the expansion and keeps the oil down.

The double ring seals the gap making it impossible for compression to blow through. Light weight (only 12 ounces) eliminates vibration and bearing wear. Prolongs the life of the motor. Makes Ford driving a pleasure. Increases power and speed of motor 30% to 40%.

Easily Installed

We furnish the correct size, no fitting, simply remove the heavy iron pistons and replace with the NEW WONDER ALUMINITE.



Net Price **\$20.00**
Per Set of Four.



Made of the Best—They Stand the Test

Accept No Substitute for Green Engineering Company's
Speed and Racing Parts



Special Oversize Crankshaft



Made from solid chrome-nickel steel, heat treated and put in perfect balance. Main bearings are ground to 1 1/8" diameter and connecting rod bearings are ground to 1 1/4" diameter which makes the shaft break-proof. All shafts drilled for forced feed oil pressure systems. Oversize Ford Crankshaft No. 193. Main bearing caps for above shaft, faced and drilled, 3 caps with bolts, No. 257. Ford Connecting Rods, bored out and lubricated for above shaft. Balanced. 4 to a set, No. 197.

Oversize Five Main Bearing Crankshaft



Made from special crankshaft chrome-nickel steel. Main bearings 1 1/4" diameter. Rod bearings 1 3/4" or 1 5/8" diameter, optional. Five bearing flat shaft No. 191. Circular Five bearing shaft No. 201.

"NEW LEADER" Counter Balanced Crankshaft



ONE PIECE: Drop Forging made from special crank shaft alloy steel. Shaft is made with integral counter-balances which is a great safety feature, as "bolted" on or "welded on" counter-balances are apt to loosen and fly off, which is very dangerous. The finished forging is heat treated, all bearings are ground to standard size and shaft put in perfect running balance.

No. 210 Counter-balanced shaft as above.
No. 217, same, drilled for oil pressure.
No. 202, same, except with 1 1/4" bearings throughout.

Magneto Bracket and Water Pump



FOR FORD RACING MOTORS

The one design that will hold up under the severe service of the track. Made of high grade aluminum. Nickel steel pump shaft mounted on ball bearings. Water pump made from high grade aluminum. Front cover equipped with pad to receive oil pump. No. 204.

Aluminate Racing Pistons



For all cars. Ford racing piston weighs 12 ounces. Conical head, and ribs from head to bosses serve to carry away the heat. Used by Noel Bullock in winning the Pike's Peak Penrose trophy. ALUMINITE: Pistons hold hundreds of track records. Ford Racing Car No. 184.

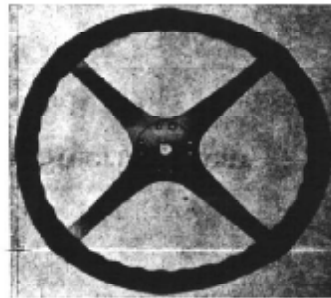


Special Racing Steering Gear

For use on speedway and dirt track racing cars. Absolutely safe. Special bracket as shown is made from manganese bronze and extends over the full depth of the frame making a very solid installation. No. 278.

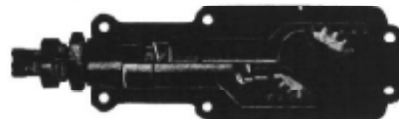
Same as above for center steering No. 279.

Spring Steel Steering Wheel



Spicer is made from extra quality spring steel. A practical and safe wheel for all Ford cars. Takes the shocks off the driver, reducing fatigue. A necessity to the racing car. Center holes is bored for regular Ford shaft, and it can be bored to fit larger shafts. No. 280.

Special Steering Gear



This steering gear replaces the Ford gear without drilling or fitting. Simply remove Ford gear and install special gear in same holes. Makes steering easy. Will not break or loosen. Made from best of materials. Eliminates road shocks and lessen fatigue from long drives. Makes Ford driving a pleasure. No. 215.

Aluminate Ford Connecting Rods



Special light weight rod for Fords. Also made for other cars. As strong as steel and one-half the weight. For Ford Speedsters—No. 186.

Green Engineering Special "SUPER - CHARGER"

For all type Racing Cars. Made for Dirt, Brick and Board Tracks.

The same type Super-charger that we installed on the "Smith Special" racing car. Used on "Super-Ford" cars increasing speed more than 1,000 R. P. M.

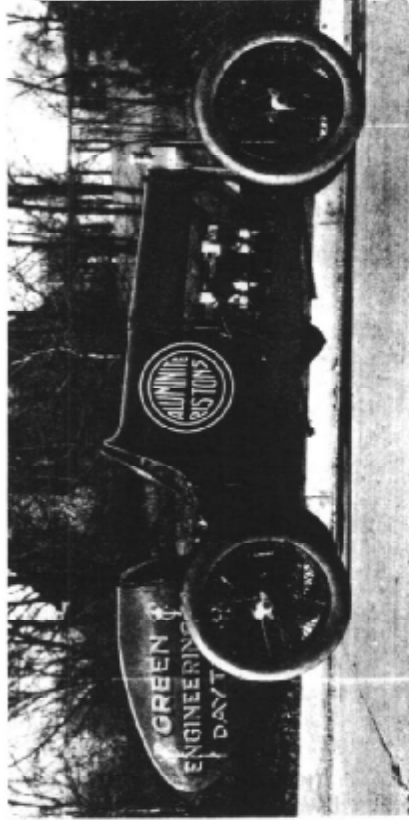
A mechanical outfit made almost entirely of Aluminum, ball bearing-throughout. Installed between carburetor and motor and fitted to chassis directly behind radiator. Space required 10 1/2 inches.

The operation of this "Super Charger" is positive and is exactly what you have been looking for to make your car faster than any others. No. 320.

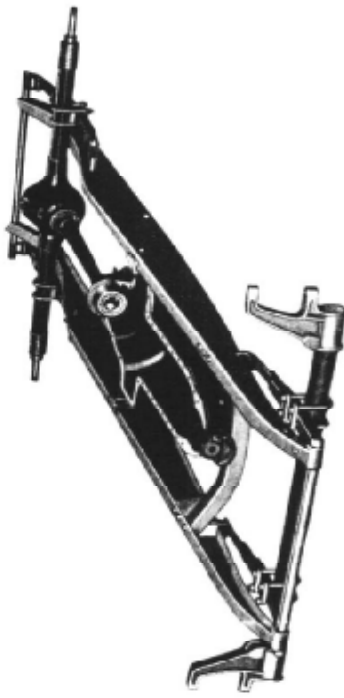
"Super-Ford" Special Racing Car

Green Engineering Co.
Special Design and Manufacture.
Built for Dirt, Brick and Board Tracks.

Racing Car of Great Speed, Light Weight and Wonderful Durability.
Superior on Dirt, Brick and Board Tracks.



"Super-Ford" Racing Chassis



FRAME
 Channel Section 6" deep at center, tapered front and rear.

SPRINGS
 Semi-elliptic, front and rear. Front 22" long. Rear 32" long and 1 1/2" wide.

FRONT AXLE
 Our special tubular design, very light and strong. Special steering knuckles for fore and aft steering. Annular ball bearings in hubs. Tread 52".

REAR AXLE
 Ford housings fitted with annular bearings in rear hubs and with ball bearing differential of our manufacture eliminating friction. Special live axles 1 1/2" diameter. Tread 52".

STEERING GEAR
 Special racing type fore and aft steering. Steel steering wheel spider reducing vibration on the driver's hands.

MOTOR
 Ford cylinder block and crankcase, either standard or 3 1/4" diameter or 3 1/2" sleeved. Aluminum racing pistons, circular crankshaft, special oil pump, water pump and magneto base. High tension magneto, double scavenging oil pump with oil tank in body eliminating large sump.

SPECIFICATIONS

TRANSMISSION
 Standard Ford Clutch, reverse gear removed. Special ball bearing at rear end.

RADIATOR
 Special racing type, 12" wide—Super Ford type.

WHEELS
 5 special 28 x 4 wire wheels with wing type hub caps. Will fit 27 x 3 1/2 or 29 x 4 1/2 tires. Special ball bearings front and rear.

STEERING KNUCKLES
 Special chrome nickel steel knuckles and special tie rod and drag link

BODY
 One main steel frame designed for minimum wind resistance.

WHEEL BASE
 90".

GAS TANK
 1.1 gallon capacity.

OIL TANK
 5 gallon capacity.

SUPERCARGER
 Green Engineering special design.

WEIGHT
 Weight of complete car 1050 pounds.

"SUPER-FORD" RACING CARS AS SHOWN ABOVE IN PHOTOGRAPH HAVE GREAT SPEED, TURNING ONE-HALF MILE TRACK IN TWENTY-SEVEN SECONDS, MILE TRACK IN FORTY-FIVE SECONDS. WHEN SUPER-CHARGED THIS SPEED CAN BE BETTERED AND WORLD'S RECORDS LOWERED. YOUR SUCCESS, IF YOU ARE A SKILLFUL DRIVER, IS ASSURED IF YOU DRIVE A "SUPER-FORD" RACING CAR.

Super Ford Racing Car complete except Super-charger.....\$1800.00
 Super Ford Racing Car complete with Super-charger..... 2200.00
 Super Ford Chassis complete as pictured..... 750.00