

ALVARO S. KROTZ and the Sears Motor Buggy

By Don McCray

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Alvaro S. Krotz and his
Sears Motor Buggy.

PIONEER INVENTOR, designer, and builder, Alvaro S. Krotz, 90, died on December 9, 1954, at Beloit, Wisconsin. In spite of his advanced years he has always been very active, and was recently quoted as saying after his 90th birthday, "I hope to live to be 100 as there are so many things I want to do." He was born November 3, 1864, and as he often put it, "In a log cabin in northwestern Ohio during the Civil War."

Truly, we owe a great deal to Mr. Krotz for the active pioneering he has done in the automobile industry. He was not a publicity seeker, being content to develop his own ideas, always keeping himself busy at something, even in his later years. During his long life he made a rich contribution to the industry that is little known to most of the younger generation.

It is difficult to pay tribute to such a prolific man as Mr. Krotz without recalling some of the more important contributions he has made to the advancement of automotive engineering. He graduated from Valparaiso University, and while still in his twenties, soon began to concentrate his efforts on the improvement of wheels, axles, bearings, and other devices that could be used on either electric or gasoline automobiles. When he was only 32 years old he had filed his first automobile patent, on March 9, 1897. This first patent covered a steering and power control. In 1898-99 he built a couple of electric automobiles which incorporated the devices illustrated in this patent, and they were successfully operated.

In 1897 he also accomplished what was considered a major feat for such a young engineer, the building of the first electric street car line in Springfield, Ohio.

He designed the first storage battery for the Willard Storage Battery Company, and for Mr. A. T. Willard he built a few complete electric automobiles, one especially for Mr. Willard's personal use, in 1901.

He did his early experimental work in Springfield, Ohio, and it was there that he became interested in the improving of tires. He claims to have invented the first "mutilated" tread tire, and the tire machinery to make it.

He writes, "Nobody drove cars in the winter. Tire treads were smooth. Furthermore, there never was power enough to slip the wheels even with smooth tires. Anti-freeze solutions were unknown, therefore cars were drained and stored for the winter season, and during early spring and late fall. And, if one was brave enough to drive to another city, or 'take a trip' as it was then called, his greatest difficulty was in finding places to buy gasoline and oil. Gasoline was kept in the basement or grocery cellar, and carried out to the car in spouted and bailed cans. You can well believe the two strainers carried by every driver, one for gas and one for oil, were quite necessary before the advent of filling stations."

He has also written, "Very few people now realize that up to 1903, most automobiles were equipped with solid tires, and all tires, solid or pneumatic, had smooth treads." His first notched tread, or "mutilated" tread tire as it was referred to in the patent, was sold together with the machine he devised for making this tread, to the Kelly-Springfield Tire Company in 1903. Many other tire and tire manufacturing machinery patents were issued to him from 1900 to 1915.

The first gasoline automobile he de-

signed was built by the Grant Axle and Wheel Company directly after his return from France in late 1900, where he purchased several French accessories. He was chief engineer for this company, and he perfected a friction reducing roller bearing they manufactured.

Although he held over 100 practical automobile patents, most members regard him as the designer and builder of the Sears Motor Buggy. When he came home from his trip abroad he was determined to build a gasoline automobile. He has said that it wasn't until 1906 that he was satisfied that he had designed a really successful car. In that year he had completed his plans for the car which was later to become known as the Sears. He claims that in September of 1907, he had the first one completed and road tested, and it was so good that in 1908 he built about a dozen of them. These were used for further testing and to demonstrate to Sears that a reliable car could be built which anyone could afford.

He was a keen scholar of automotive engineering principles, and his final conception of the Sears proved this fact. In all of his cars he employed heavier than usual components and this made them more reliable on rural roads. He made photographs of his cars going through sand, mud, and even hub-deep in snow, a feat he said was possible even with friction transmission if it was kept in the low ratio and the engine not raced. Racing the engine was apt to burn the contact wheel facing.

Although he made a few parts for the test cars himself, the later production models were all assembled with parts he had designed, a few of which were his own patents. In those days it was more practical

and economical to secure the various parts from suppliers who were specialists on certain units. The 1908 test cars Mr. Krotz sold without name-plates, and had he bothered to put a name on them they could have properly been called the "Krotz Motor Buggy." Sears had been convinced, and in the fall of 1908 signed their first contract with Krotz.

He built the cars for Sears in a substantial-looking factory at Harrison and Loomis streets, in Chicago. The building still stands today and is now occupied by the General Outdoor Adv. Co.

Actual sales promotion of the Sears line of cars did not begin until 1909 when a "Special Motor Buggy Circular" was offered to customers receiving the Spring general catalog. Six months later, in the Fall and Winter 1909-10 catalog, the Sears vehicle was listed for the first time as a regular mail-order item. Page 1150 of this catalog shows the car listed as item No. 21R333, "Sears Motor Buggy," \$395.00 or \$25.00 less without fenders and top.

Cars sold locally were delivered ready to run, but mail-order customers received their car in a crate, and had to assemble it on the freight platform when it arrived before they could drive it home. The crated car weighed about 1400 pounds. A gallon of lubricating oil and an instruction book were included. All the new owner had to do was to pry off the heavy crate, put on the wheels, fenders and top, put in the oil and some gas, and the car was ready to run.

The engine was two-cylinder, air-cooled, direct opposed, with a $4\frac{1}{8}$ " bore and 4" stroke, developing almost 14 horsepower. The transmission was selective friction type with the contact wheel being shifted on the countershaft by side lever. Contact of this wheel was effected against the driving disc by only a slight pressure on the foot pedal, without a ratchet to hold it in position.

The differential was Mr. Krotz's own patent, a friction clutch type working like a coaster brake on each end of the countershaft. It would pull both wheels forward or in reverse, allowing the outside wheel to coast in rounding a turn. With left-hand tiller steering, and the gas and spark controls at the top of the steering post, it was an easy car to control.

The speeds claimed were quite flexible, from 3 to 25 miles per hour without shifting the contact wheels. The timer was Mr. Krotz's own patent, as were the mufflers

used. He has mentioned that replacement mufflers cost only 85 cents each.

In the Spring and Summer 1910 general catalog, the Motor Buggy was referred to simply as the Sears Automobile. A special catalog titled *Automobiles* was issued in 1910, offering six models, all the same basic car with optional equipment, and model designations were used for the first time. In the 1910 general catalog only four of these models were shown, large full color reproductions of Models H and K, with smaller black and white illustrations of Models J and L. Four full pages were devoted to these cars in this catalog.

The complete line was shown in a special 1910 *Automobiles* catalog as follows:

Model G—without top or fenders, but with 3 black oil lamps, horn, carpet, 1 gallon of lubricating oil, tool kit, and $36 \times 1\frac{3}{8}$ " solid tires, \$370.00.

Model H—with top, fenders, side curtains and storm front, plus other equipment as above, \$395.00.

Model J—same as above, but with running boards, \$410.00.

Model K—same as Model J, but with special 38×2 " cushion tires with resilient corrugated tread, \$475.00.

Model L—same as Model J, but with 34×3 " double tube clincher pneumatic tires, \$495.

Model M—same as Model K, but with non-folding "Cab Top," flexible doors on spring rollers, two-section glass windshield with upper section folding in and fastening to top, disappearing side curtains, \$525.00.

In the Spring and Summer 1911 general catalog a surrey was offered for the first time. It was called Model P, and sold for \$495.00 without top, fenders, and running boards. This year the price of the basic Model G was lowered to \$325.00.

Extras available were a magneto, two kinds of speedometers, combination acetylene and oil lamps, or regular acetylene headlamps with a generator. Top, fenders and running boards could also be bought later for the basic models if desired.

There was no charge for the heavy, expensive crate the car was shipped in, and the customer saved on freight costs compared to having it shipped assembled. Mr. Krotz has said that Sears never did make much money on his cars—they considered it a good prestige builder, and as such they felt it was worth at least a million dollars a year in added business for them.

The last time the Sears line of automobiles were offered was in the Spring and Summer 1912 catalog on page 1213. In this year the Lincoln Motor Car Company assumed the assets and the factory, con-

tinuing to make cars under their name until the remaining stock of parts was exhausted, and then they specialized for a brief time on a light truck based on Krotz's design. These cars and trucks were not sold by Sears.

Although Mr. Krotz was not a racing enthusiast, one of his cars did win a round trip race from Chicago to Milwaukee in 1909, and a truck he designed was on the Chicago to Detroit race in 1911. Considering the condition of the roads, reliability rather than speed counted most in those days.

He was recognized in 1946 by the National Automotive Golden Jubilee Committee as one of the fourteen men who helped inaugurate the automotive age in America.

In recent years Mr. Krotz had been a patent attorney and consulting engineer in Rockton, Illinois, where he lived for the past twenty-eight years. Prior to moving to Rockton he was with the Janesville Machine Works in Janesville, Wisconsin, a forerunner to the present Chevrolet plant.

Alvaro S. Krotz made a rich contribution to posterity. He has proved there is no better way to stay young and cheerful than by keeping busy—a wonderful philosophy for all of us.

Mr. Krotz was a member of the AACA in at least 1949, (my oldest roster) until his death.

His favorite granddaughter, with whom I stayed, still lives in Bethesda, MD next to a group of houses built by Sears. She had been promised Mr. Krotz's own Sears, but in the settlement of his estate, another relative took it, not knowing of the previous arrangement.

This article may upset the many owners who had received sworn statements that their cars were sold previously to 1909 (some back to 1898!).

One can only swear to what they believe is the truth.

A register for Sears Cars to help owners date their cars more accurately, to find parts, and sell cars. Subscription is \$1. per year; published quarterly by Hayden R. Shepley 5467 Taylor Avenue, Port Orange, FL 32127-5585. 904-756-8580

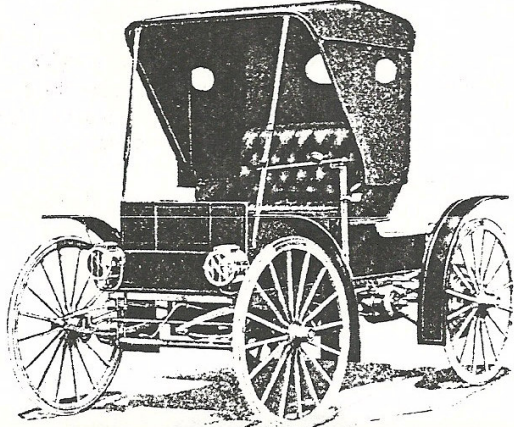
Future articles will explain the changes that will make it easier to tell one's year. Sears production started with number 1000. Gas headlights like on the auto below were standard on very early Sears.

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CYCLE AND AUTOMOBILE TRADE JOURNAL.

This article appeared in the January first issue of this weekly magazine, of 1909. It was the first mention in a 'trade' publication of the Sears car. The Fall 1909 Sears catalog had its 1st picture.

A \$370 MAIL ORDER MOTOR BUGGY
Sears, Roebuck & Co., of Chicago, Ill., one of the largest mail order houses in the country, have lately taken up the sale of automobiles and are offering a 10-12 H. P. motor buggy at \$370. or \$395 with top and fenders. The price in each case includes 3 lamps. From the cuts herewith it will be noted that the machine is a neat, trim looking rig and materials and constructive features are claimed to be thoroughly reliable and satisfactory. Sears, Roebuck & Co. claim to manufacture these



Three-quarter front view of the Sears Motor Buggy with top up. Price \$395, with top and fenders; \$370 without. Prices include lamps.

machines and as they sell direct to users, all intermediate handlers' commissions are eliminated and selling price is kept at a minimum. These cars are sold by mail, cash must accompany order, and customer pays the freight. The shipping weight including crate, etc., is 1,200 lbs.

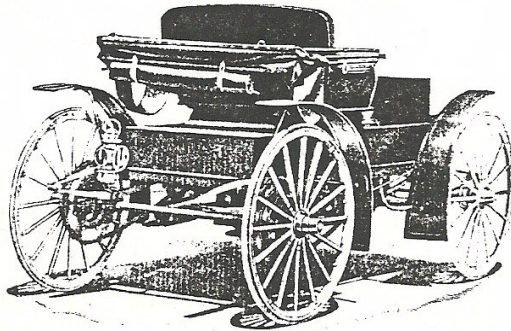
The motor is a 2-cylinder, opposed, air-cooled gasoline engine of 4 1-16 inch bore and 4-inch stroke. The crank shaft is a nickel steel forging of 1 1/2-inch diameter. A friction transmission is used and drive is by side chains from the ends of the countershaft. Diamond chains being used. An internal, expanding brake acts on each rear wheel and may be locked in position

when the car is left unattended. The wheels are 36 inches in diameter and are shod with 1 3/8-inch Diamond solid tires held in electrically welded channel rims. Timken roller bearing axles are used, 1 1/2 inches square, drop forged steering knuckles being used in front. The frame is of angle steel 2x1 1/2x3-16-inch. It is carried on 4 full elliptic springs 30 inches long.

The body is securely bolted to the angle steel frame but can be easily removed without disturbing any of the power plant parts. It is of the piano box type and measures 30 inches wide by 67 inches long. The rear portion is covered by a wood deck boot under which and under the seat there is a space 29x21 inches for carrying luggage. The fuel tank, ignition battery and spark coil are fastened to the body under the seat. The seat is 37 inches wide and is well upholstered all over including the ends in heavy "Morrocoline" imitation leather. The seat cushion is removable.

The top is a 3-bow skeleton job made of a heavy grade morrocoline with side and back curtains. When up it is held by two straps running from the front bow to the dash

The weight of the machine is 1,600 lbs. The road clearance is 13 inches; wheel



Three-quarter rear view of the Sears Motor Buggy with top down.

base 72 inches; gauge 36 inches. The gasoline tank holds six gallons, enough for 150 miles' running.

Restoration aids are below

Reproduction friction discs
William Witmer 8374 N. Main
St., Angola, NY 14006-9710
phone: 716-549-0121

Bodies (he built mine) Terry
Martin 350 N. Park Ave., War
ren, OH 44481 216-395-8442

Wheels. Wm. D. Calmer, 17 W. 4th
St., Waynesboro, PA 17268

Or ask most Amish buggy
builders; may build wheels.

Body name plates. W. C. Wil-
liams, P O Box 213, Hancock
NH 03449. (Hershey C2F 73)

Muffler assemblies: Robert
M. Jeffries, Route 1, Box 112D
Linden, NC 28356. 910-980-0771

F O R S A L E

1910 Sears. AACA & VMCCA Se
nior. Nicely restored. (have
some extra parts) \$15,000.
Donald Hess, 11 Timber Ln,
Hanover, PA 17331. Phone
717-633-9861

1911 Sears J or K; stored
15 years in dirt-bottomed
shed. Originally owned by
parents of present 80 yr.
old sisters. Charles W. Ivy,
22539 Unicorn's Horn Ln,
Katy, TX 77449. 713-347-2791

32 page Sears instruction
booklets reprinted by Ray
Lindsey, 812 Locust Ave.,
Bohemia, NY 11716. phone
516-589-5168. (winter
phone 904-439-6480).
Price \$5.00 post paid.

VOL. I NO. 2

SEARSHEET

2/95

Do the subscribers who belong to the Horseless Carriage club want to have this register affiliated with the HCO? I can't envision any advantage other than liability insurance. We would have to elect officers and have at least one meeting a year. I only intended to have this register as is stated on P. 3; just information. For non members interest, HCO dues are \$35 which includes a 6 issue magazine. There are regions in 30 states and 3 countries.

W A N T E D

Sears ignition or switch box. Ed Fabick 1321 Perkinwood SE, Warren, OH 44484
216-369-1792 about 10PM.

Want ancient type, fur or sheepskin lined, size 48 long, man's coat with similar material on huge collar. Hayden Shepley. 904-756-8580; up to 11pm.



Mr. Hayden R. Shepley
5467 Taylor Ave.
Port Orange, FL 32127



John J. Daly
1070 N. Central Ave.
Burlington, IA 52601