



Exhaust Echoes



SEVEN YEARS' WORK IS BEHIND NEW FORD ELECTRIC STARTER

Henry Ford tested the Ford starting and lighting system on his own car for one year.

Ten months ago the Ford Motor company was not manufacturing electric starters; today the output of its starter department is greater than that of any other manufacturer of electric starting devices in the world. Its nearest competitor makes 1,000 a day, whereas the Ford company's output is fast approaching the 3,000 mark, 2,881 already having been manufactured in one day.

The Ford starter—and generator, for it is really two separate units—is not the result of a new idea or of a sudden decision. More than eight years ago Mr. Henry Ford's vision saw the need, and his electrical engineers were instructed to begin experimenting. After seven years of constant research, which took into consideration the many different climates in which the Ford car is used, together with the factors of size and weight and an adaptability to quantity production, twenty-three trial jobs were built. These were tested in many different ways. Mr. Ford himself used one on his car for a year. Still the engineers continued their experiments and improvements.

Then came the order from the government for 15,000 three-ton tanks, each one of which was to be equipped with two synchronized Ford motors. A starter was essential, so the one now being installed on Ford cars was evolved. But, only one starter and generator was used to turn over the two Ford motors in each tank.

January 1, 1919, the Ford Motor company began equipping enclosed cars with this new starting and lighting system. Ford engineers say that although the entire system—starter and generator—weighs only thirty-one pounds, it produces a higher torque output (constant rotary motion) pound for pound, than any other system on the market.

When the department for building the starting and lighting systems first began production, fifty hours' labor was charged to each unit, but now that machinery and equipment have been installed, the time per unit is four hours. Two huge armature impregnating ovens have been installed, each with a capacity of 1,700 every eight hours. In these ovens the armatures are dried, soaked in varnish and dried again. Eight hours' time is required for this one operation.

The power from the starter to the motor is applied through the well known Bendix drive, which automatically engages the starter, and then, once the motor is started, the starter immediately disengages. It is equipped with oilless bearings and needs practically no attention.

Within another thirty days or six weeks the Ford company expects to be making enough starters so that every Ford car will be equipped with the new Electric starting and lighting system.

The first census of the United States was taken in 1790, during the administration of George Washington. It related solely to population.

OVERLAND 4 PRODUCTION PASSES 300% MARK; WILL BREAK RECORDS

"Remarkable progress," is the way John N. Willys, president of the Willys-Overland company, expresses his satisfaction after a week's visit in Toledo spent in intimate study of conditions today at the big Overland plant.

In conferences with executives, Mr. Willys, during the week approved the plans for a huge production program scheduled for the two new models the company will market this year. These new cars are Overland 4, which is now in quantity production, and the new Willys-Knight model.

"Production of Overland 4 already has passed 300 per day," Mr. Willys said. "Within a short time I expect that the scale of production at the Toledo plant will equal any previous figures in the history of the company, and from then on should surpass former records." The plant here now ranks second in the country's total production of automobiles.

"Although the new Overland was designed two years ago, and engineering models have been under contract test for that entire period, factory production plans," Mr. Willys said, "could not be started until late last November, when the armistice released the plant from war work. And yet in August this year, Overland 4 was in production.

"Usually it requires a full year or more for an automobile company, however well equipped, to get under way with a new model. Even then the manufacturer generally has the advantage of being able to use many of the dies and tools necessary for previous models, or he is able, with very slight changes, to incorporate in the new model, some former parts, such as axle, steering gear and the like.

"But Overland 4 and the new Willys-Knight differ from any other cars heretofore made at Toledo. Parts from former models could not be used. This meant starting out new from the bottom up.

"Eight thousand special dies and tools had to be designed, built and installed at the Toledo plant to take care of the 10,000 operations on the Overland 4, alone. Markets for raw materials which had been greatly disturbed by war conditions, had to be organized. Factory methods and routine had to be changed over from war work. A great quantity of new machinery had to be built and installed.

"A tremendous job! And it was accomplished in the face of extraordinary difficulties between the months of November 1918 and August of this year. This, in spite of delays common to all manufacturers in getting materials, parts, dies and tools, on which our program depended, and in spite of the shortage of labor which all manufacturers have encountered since the war.

"We could use more labor in certain classes of work today. In this we are no different from other manufacturers, but we are overcoming this difficulty, and more houses in Toledo would materially help right now.

GIVE TO HARVARD FUND

North shore alumni of Harvard University were contributors to the Illinois fund, which now is almost \$200,000, according to an announcement made from the New York headquarters of the drive for the endowment fund.

An average subscription of \$800 per man has been made by the 243 alumni who have contributed to date. There are 1,736 Harvard graduates in this division.

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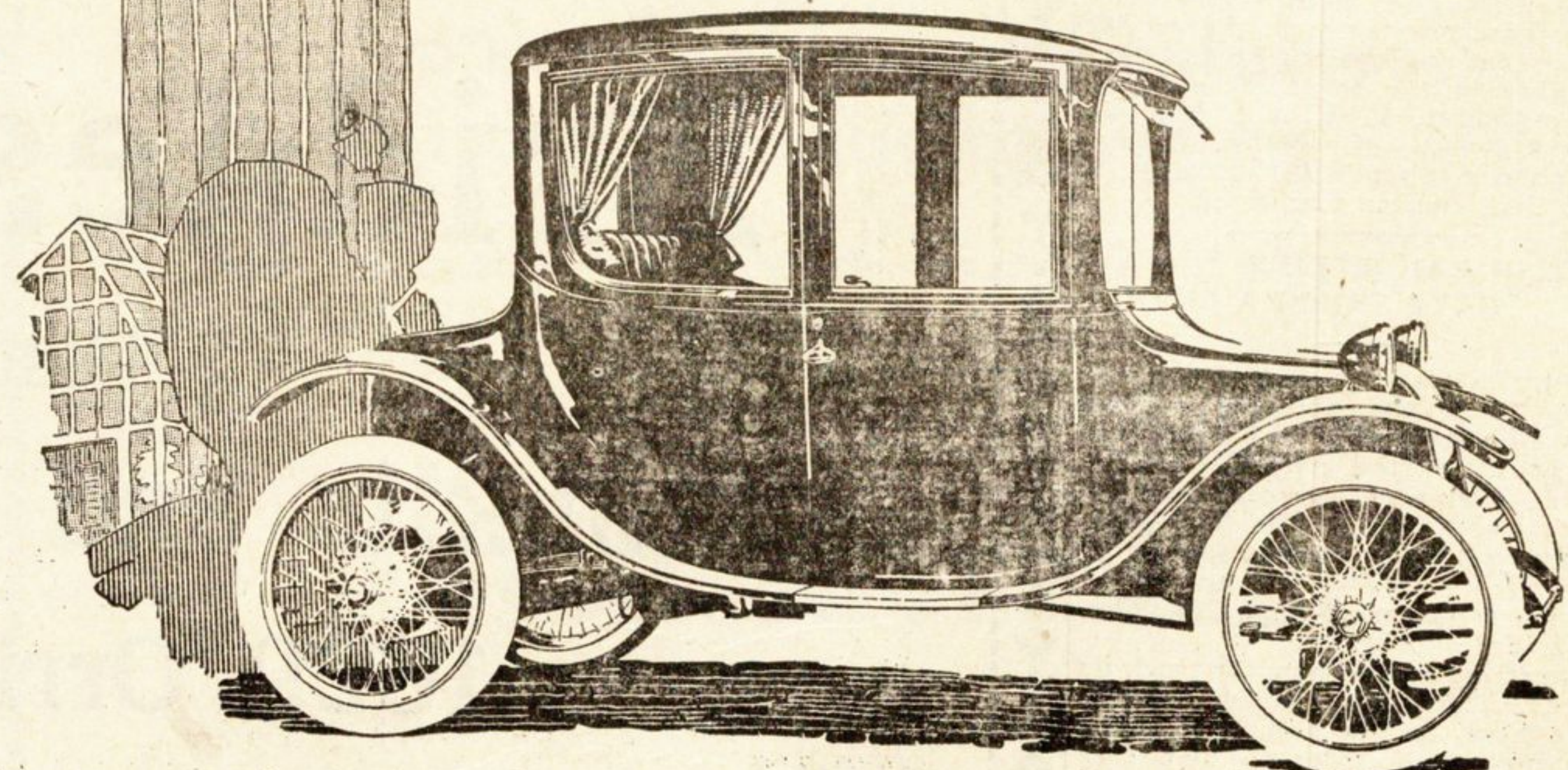
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