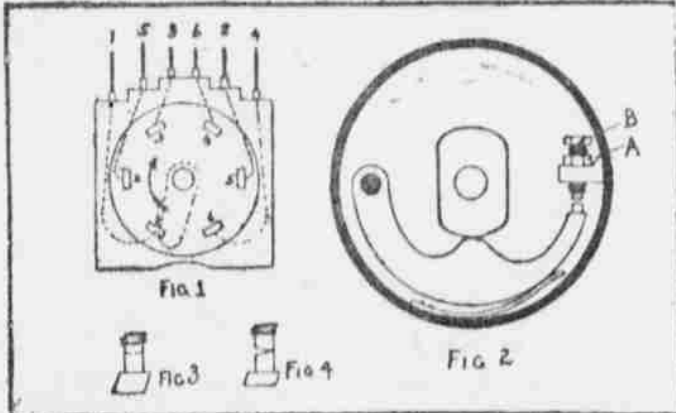


The Automobile Simplified

BY FREDERICK C. GUERLICH, M. E.

An intimate talk on the working units of the automobile discussed in such a way that the layman can easily understand them.

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AUTO LESSON NO. 98.
Troubles and Care of the Magneto.
 As has often been said, there are three things essential for the proper running of the gasoline engine, namely, perfect ignition, good compression and proper mixture. In this lesson we will assume that compression and mixture are O. K., and that the ignition is by a magneto.

When the engine fails to start because of no current going to the spark plugs, the interrupter points may be short-circuited because of oil or moisture. This is often the case on a wet or foggy day. On such a day a drop of water may also have condensed on the safety spark gap. Remedy: Thoroughly wipe all the parts of the magneto dry.

Failure to start may also be due to the engine being cranked too slowly. This is liable to be the case when the car has a self-starter and the storage battery is practically discharged. Remedy: Crank by hand, or, having no crank, jack up one rear wheel, shift to high and crank by turning the wheel. If some one will use the self-starter for you at the same time, the latter will not be very hard to do.

Sometimes screw B, of Fig. 2, will work back or forth, so that the interrupter points do not open or do not close. Remedy: Adjust points and tighten lock nut A.

The secondary circuit of the magneto is seldom the cause of an engine, which was running well before failing to start. However, the secondary collector brush may have worked up and so not make contact, or moisture or oil may have gathered on the outside of it, on the conductor bar or on the safety spark gap. Remedy: Screw down the brush or wipe the other parts dry. The magneto itself is seldom the cause of missing, excepting when the interrupter points are dirty or pitted

so as to spark. Missing due to the ignition, when the ignition is by magneto, is generally due to a faulty spark plug or to a loose or short-circuited wire.

Care of the Magneto.
 While "let it alone" is good advice, as regards the magneto, I give here some of the things which may have to be done to it once in a long while. The magneto needs but little oil about once in two weeks, in each all holes generally being sufficient. In this respect, I might say that electric instruments generally must not be given too much oil, as the oil may work into the instrument and so cause a short circuit.

Occasionally the distributor plate should be removed and wiped with a cloth moistened with gasoline. Should the distributor plate be badly caked with carbon (sworn from the brush) it can be removed by gently rubbing with a fine emery cloth, but great care must be taken to remove all of the abrasive material after doing this.

Periodically the interrupter should be examined and cleaned. Treat the interrupter arm to see if it is free and snaps closed quickly.

Timing the Magneto.
 The timing of the magneto is done in practically the same way as the timing of the distributor system. In the distributor system, however, any segment of the distributor can usually be taken to connect the wire leading to cylinder No. 1, while with the magneto it is customary to call either the lower left or lower right-hand segment (depending upon the direction of rotation), No. 1. The steps to take are as follows:

1. Find the direction of rotation of the magneto armature shaft and distributor brush. They will be op-

...the one another in practically all instances.

1. Find the firing order of the engine.
2. Cylinder No. 1 at top dead center, in with the compression and power strokes.
3. Retard spark-control lever fully.
4. Determine which segment of the distributor is No. 1. This will be the lower left-hand one when the distributor loop revolves in a clockwise direction, and the lower right-hand when it revolves counter-clockwise.
5. Turn the magneto shaft in the direction of rotation until the distributor brush is approaching segment No. 1, then look at the interrupter points and continue to slowly turn in the shaft, in direction of rotation, until the interrupter points just begin to open.
6. Fasten the shaft, being careful not to change the setting and also be certain that the distributor brush is in contact with segment No. 1.
7. Connect the secondary cables to the spark plug in the firing order.

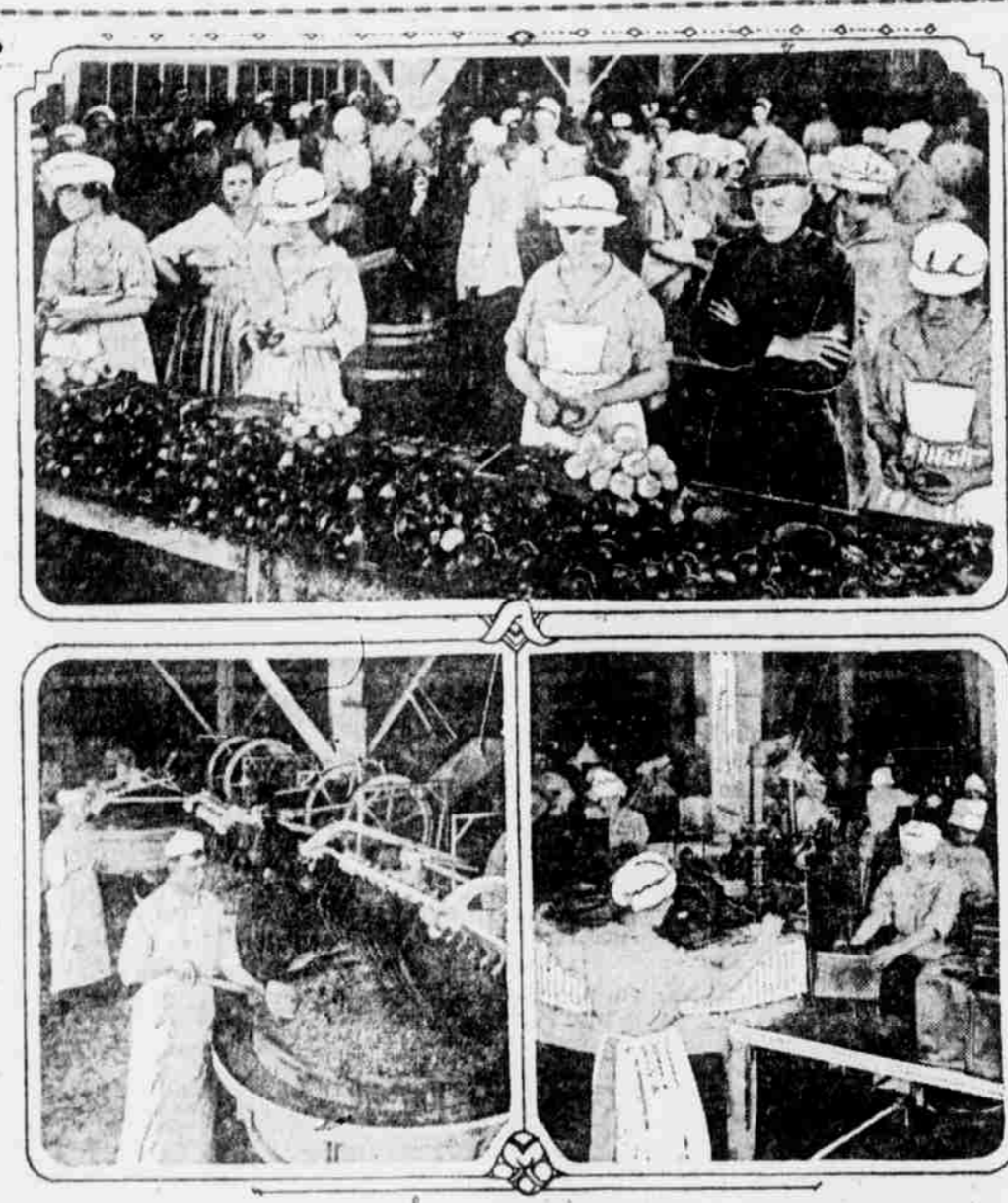
There is one difference in the instruction as given above, and the instruction for timing as given by one of the magneto manufacturers, namely, in the fact that I have told you to set cylinder No. 1 at top dead center, and spark fully retarded, while the magneto maker's instruction is to set cylinder No. 1 about one-half to five-eighths of an inch of piston travel before dead center and to have the spark lever fully advanced. Where the flywheel is marked by the manufacturer of the car or engine with an "M" or "Magneto," then the advance setting should be used, as when the mark M is on top, the piston will be about one-half inch before dead center. If however you do not have this guide you will find it almost impossible to set the cylinder the proper distance before dead center, and I would then use the retarded setting.

Note that the lever is not slightly advanced as it is with the distributor system. This is because the magneto has what is known as a lag, so that the spark actually comes slightly after the interrupter points open.

A large proportion of magnetos have the distributor plates designed as shown in Fig. No. 1. Obviously, it would be bad practice to cross the wires running from the segments to the binding posts on top, and these wires will, therefore, be cast in the plates, as shown by the dotted lines. From this you can readily reason why when the brush revolves in a clockwise direction, the lower left-hand segment is chosen as No. 1. The fingers on the top of the wires give the cylinders to which these wires would be connected were the firing order 1, 5, 2, 6, 3, 4.

This Is Intensive Gardening.
 The Goodyear Tire & Rubber company, Akron, Ohio, has encouraged the establishment of war gardens to the extent of allowing employees to utilize all lands of the company not being used for manufacturing purposes. One garden, however, has been discovered to yield both meat and vegetables, a 12-pound turtle having been captured in this one last week.

Hash Prepared Under Eye of Soldier-Inspectors



Girls peeling onions, above, men running chopping machines, below at left, and girls canning prepared hash. In the United States, much of the work being done by the soldiers, mothers and sweethearts of some of the boys in the service. Preparation of the hash at the factory insures a cleaner food, makes it easier to ship and easier to distribute to the company cooks. Every step in the making of the hash is watched by government inspectors. They can be seen in every part of the packing concern in their uniforms, watching the workmen and the machinery. Girls peel the tops of onions used in the dish. The meat, potatoes and onions are cut up by big "crookers" run by men. These knives work on big cutting boards. The men turn the ingredients with wooden paddles. The machine which cans the hash seals the can after extracting all the air from it.

AMERICAN MADE TRUCKS POPULAR WITH ARMIES

Automobiles, Motored in Parts, Were Responsible for Getting Troops to Marine in France.

The great truck, tractor and accessories exhibition, to be staged on Chicago's \$5,000,000 municipal pier in September, will be in the most patriotic sense a national exposition of war-time essentials.

When the Hun hordes made their first confident rush through Belgium in the summer of 1914 it was the taxicabs of Paris which were used for business and pleasure as are the taxicabs of any American city today—which were "hauled" all at once by the government, mobilized for the army of defense, and used to transport the thousands of handily organized Frenchmen from Paris to the Marne, when they reached in time to stop the barbarian onslaught.

Those taxicabs landed the unexpected on the Kaiser's self-confident Huns, saved lives and staged the German's last great offensive in the West. The Allies got no further than where the Paris taxicabs discharged their "soldier" fares.

Since that day the passenger car, the truck and the tractor have played a steadily increasing part in the war, and American makes have endeared themselves to the people of France and Belgium. Italy and England. Wonderful strides have been made principally in the truck and tractor lines. And the exposition, September 14 to 21, will demonstrate under one roof how "American" makes are conquering in service requiring speed, in the run of a Republic truck from San Francisco to Los Angeles. The truck, on Good-

TRUCK MAKES GOOD TIME

Averaged Thirty Miles an Hour Over California Route on Test Trip.

A noteworthy truck performance which has lately created a stir in the west and called special attention to the adaptability of pneumatic tires on trucks operating in service requiring speed, is the run of a Republic truck from San Francisco to Los Angeles. The truck, on Good-

year card tires, 37x5 front and 48x5 rear, loaded with oil, left San Francisco with A. H. Patterson, the noted western racing driver, at the wheel. Although the journey was made over roads that in some places were very rough, the truck averaged thirty miles an hour for most of the distance and at times attained a speed of forty miles an hour. During the entire trip there was neither tire nor mechanical trouble of any kind.

BIG FLAG HELPS RAISE MONEY FOR WAR CHEST

Largest Banner Ever Made Plays Part in Patriotic Ceremonies Over Country.

The largest American flag ever made was displayed recently on the front of the Willys-Overland administration building, Toledo, Ohio, signifying that the office employees of the big automobile company had registered 100 per cent in the campaign to fill the city of Toledo's war chest.

This flag, which measures 50x75 feet, and weighs in the neighborhood of 350 pounds, is owned by the employees of the H. P. Goodrich Rubber company, Akron, Ohio, and has figured recently in numerous patriotic exercises.

The flag cost \$900 and was purchased by the rubber company's employees who raised the money by general contribution, to which no one was allowed to give more than 10 cents.

During the Liberty day parade in New York city this same flag was carried along Broadway. Over \$1,200 in coins were thrown into its folds along the line of march. This same "Old Glory," with the assistance of Sousa's naval band, was the means of raising over \$7,000 for the Cleveland war chest.

Willys-Overland employees were among the most active workers for the Toledo war chest, and John N. Willys himself was one of its prime movers.

TRADE TERRITORY FOR AMERICAN CARS

Treaty Brought About by Nansen Makes Possible Exportation of Cars and Accessories.

In the land of the midnight sun, the name Fridtjof of Nansen Arctic explorer, will go down in history as the delivering saint of Norwegian motorists.

For, as a result of Nansen's successful mission in the United States, whence he came to secure a new trade treaty, the days of the automobile famine have been brought to an end and his countrymen now can purchase American cars and tires without international restrictions.

All They Need.

By the terms of this treaty, recently signed by representatives of the United States and Norway, as many motor vehicles as the Norwegians may require may be exported from this country and the following equipment may be shipped during the present year:

Seventeen thousand automobile tires casing, 8,300 inner tubes for motor cars, 1,100 solid tires for trucks, 2,100 motorcycle tires casing and an equal number of inner tubes for two-wheel vehicles.

"Before this commercial agreement with Norway was signed, there was not a tire to be had in that country and used castings sold as high as \$500 each," said George M. Dickson, president of the National Motor Car & Vehicle corporation of Indianapolis.

Famine in Automobiles.

"There was also a famine in automobiles since European manufacturers with their factories working exclusively on military vehicles, airplanes and munitions, were unable to supply the Norwegian market and wartime embargoes restricted the importation of American cars.

"Previous to the outbreak of the world war, however, Norway offered a tempting foreign market to automobile manufacturers of this country and American cars were competing successfully with machines of European make. The National company, for example, was represented by a distributor in Christiania and his sales were increasing annually. The Norwegians were particularly enthusiastic over the power and stamina of the National, which proved an efficient and reliable hill-climber of the steep mountain grades so common to the Scandinavian kindred.

"We already have renewed these former sales relations and are confident that we can lay the foundation for a rich future business in Norway, a business that will prove well worth the present war-time effort in future days of peace."

NEW APPERSON CREATES FAVORABLE IMPRESSION

Anniversary Model Meets Approval of All Who Inspect It; Stands Up Well.

Reports from all over the country to the Apperson Bros. Automobile company, Kokomo, Ind., indicate that the reception being accorded the new Apperson anniversary model makes it mark another revolutionary epoch in motor-car building. These pioneer builders of the Hoosier state have worked so many improvements into this latest product of theirs that it creates favorable discussion wherever it is seen.

Last week Walter A. Johnson, general manager of "The Field," a national agricultural magazine of New York city, drove his new anniversary Apperson from the shops in Kokomo to New York city. Upon arriving in the metropolis Mr. Johnson wrote the Apperson Brothers the following appreciation:

"Arrived safely home with the new car and want to congratulate you on the job.

"In Indianapolis we stopped off for a few moments and attracted a crowd of several hundred people. It will pay you to have a demonstrator of the car in Indianapolis all the time. One old man insisted on getting all of the details, asking the name of the maker, saying that he intended to get a car just like mine. This old fellow got away before I had a chance to ask him his name."

Big Concern Furnishes Playground.

Some of the closing of the school year the playgrounds of the Goodyear Tire & Rubber company, Akron, Ohio, have grown rapidly in popularity. Hundreds of children are daily enjoying the advantages the complete equipment of the grounds affords. A special playground superintendent looks after the children.

CHANDLER SIX

Famous For Its Marvelous Motor

Chandler Dispatch Car Delights Thousands

NO other similar model of any make has won such wide public admiration as has the new Chandler Dispatch Car. You do not find in any other car of its type such swift sweeping grace of line, such dashing style, such obvious appearance of dependable service and such riding comfort.

The Chandler Dispatch is a go-get-there car—no matter where. The great chassis on which this handsome body is mounted, distinguished among all sixes for its marvelous motor, is always ready for any task. Full of life and power and instant in its response to the throttle's slightest movement it answers every demand.

Thousands this year have chosen the Chandler Dispatch for their car. The trim and appointments throughout are of fine quality. Its high hood and radiator and beautiful electric blue finish give it most striking appearance.

Choose the Chandler as Your Car Now

Seven-Passenger Touring Car, \$1795 Four-Passenger Roadster, \$1795
 Four-Passenger Dispatch Car, \$1875; Five White Wire Wheels, \$110 Extra
 Convertible Sedan, \$2495 Convertible Coupe, \$2395 Limousine, \$3095

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