

Barney Oldfield says:



SPARK PLUG TROUBLES.

The spark plug is the means of introducing into the combustion chamber of the engine a spark gap formed between the ends of two wires. The spark jumps this gap, as it does so imparting its heat to the gas mixture, thus exploding it. Simply stated, this is the function of the plug—to explode the mixture by means of the heat of a spark, but at the same time the plug itself must be able to withstand the tremendous heat and pressure inside the cylinder; it must not allow escape of the gas mixture, it must unfailingly transmit current so the gap will be jumped and it must do this many thousands of times a mile of running. When one considers the work a spark plug has to do, it is surprising how well and how long this little part remains in service. Plug trouble today is not so common as it was years ago, and we have heard of plugs functioning without any attention for as many as 20,000 miles.

There are hundreds of designs of plugs made of a variety of materials and made in numerous shapes and styles. It is easy to see how difficult it is to design a plug to meet all the conditions demanded of it, yet the modern spark plug does its work admirably well. I wish to describe in this article the construction of plugs, the way to install them properly, the type to get and not to get, plug troubles and how they may be remedied.

Perfect Insulation Important
Since the end of the plug must introduce a gap into the combustion chamber, there must be two wires, the electrodes with their ends separated to form the gap. One of these electrodes which takes the current from the cable or wire from the ignition device must be perfectly insulated so no current will leak out, while the other electrode must be grounded in some way. This latter always is attached to the spark plug shell or the metal part which screws into the cylinder while the other one, called the center electrode, always is imbedded in an insulator made of porcelain, stone, mica, etc. The insulator and shell are then joined together to make a unit of the plug, and this is done either by cementing them together, forcing them to compression tightness by means of a nut, etc.

Of course it was two parts must not fit together that no mixture escapes, and the usual way of obtaining this tightness is by introducing a gasket or two between the parts. Plugs are made with open or closed ends, but certain engines only will operate successfully with one type. Often a closed end plug gives trouble with an engine which, operating with open end plug, gives entire satisfaction.

The really important parts of the spark plug are the insulator and electrodes. The former is usually made of mica or porcelain so as to withstand the tremendous heat and also changes of temperature without cracking. Porcelain and various stone compositions are used, but of course this type is more easily cracked than mica, both by the heat and by a wrench when installing. These materials may be used in combination in an outer stone best form consisting of an outer stone insulator and an inner mica one. The only trouble with mica is that it is liable to absorb oil, but if the construction is right this may be prevented altogether. The one advantage of the combination types is that there is double protection, so that if one insulator becomes broken the other will prevent current from leaking. In buying a plug you cannot tell by looking at the insulator whether it is good or not, because some cheap stone looks just like good material. The reliability of the maker is the thing to consider.

Watch Cracked Insulators
Electrodes must be of such material as not to be quickly affected by heat, spreading and changing the gap size, or burning away altogether. Nickel wire, or similar high heat resisting wire, usually is used, but the car owner should take note of the thickness of the electrodes. Thick ones last longer than those of small diameter.

The commonest trouble with spark plugs is caused by cracked insulators, which then allow of current leakage, causing a poor spark or none at all at the gap. Often one cannot tell by examining the outside whether the insulator is cracked, because the trouble may be in the hidden portion. The only safe way is either to dismantle the plug if it is not of the one-piece type or test it by laying it on the cylinder head with the plug cable attached. Then by cranking the engine the gap may be watched for a good spark. Cracks, except hidden ones, may be noticed if the engine is operating in a dark area; sparks will be seen on the outside of the insulator.

Fouling is another plug trouble. This term refers to the carbonization of the electrode ends and bottom of the insulator, resulting in a short circuit since the current will pass through the carbon instead of jumping the gap which offers greater resistance. The carbon deposits in troublesome quantity because oil is enmeshed on the plug, and if the plug is of the sort which retains the oil carbon forms there. It is usual to hook shape the ground electrode so that oil will tend to flow away from the gap.

When plugs become carbonized they should be cleaned by immersing in kerosene and then removing and scraping off the carbon. The scraping may be done with a knife, but care should be taken not to roughen the parts as this makes a good footing for more carbon. When plug fouling persists the cause should be gone into—probably leaky piston rings, too much oil, too thin an oil, worn or pitted cylinders, etc.

Don't Remove Plugs Carelessly
The gap at the plug end must be properly set. The usual gap is 1-32 of an inch, but this will vary slightly.

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in different engines. If the gap is too short the spark may be too weak; if the gap is too wide there may not be sufficient voltage to cause the current to jump it. The gap is easily adjusted by slight bending of the ground electrode.

A spark plug should not be removed or taken apart unless it is giving trouble or thought to be giving trouble. Occasionally squirt oil around the plug joints and watch to see if there is any leakage of gas. Bubbles will appear if there is leakage. At the shell to cylinder joint this may be caused by a poor gasket, dirty gasket, or worn gasket, or the plug not being screwed in tight enough. If the plug is of two parts the gasket at the joint may be dirty or bent, or the check nut may not be tight. The right length of plug should always be used. It must have the points just below the level of the cylinder head and not in a pocket where dead gases always exist. It also must not stick too far down. Find out the best type for your engine and always get that, no matter what make you get. Avoid sensational types which are said to spark even if carbonized and to give more than one spark. If they are carbonized the current will go through the carbon and not where the maker says it will.

"ASK ME" Questions Answered by Barney Oldfield

Dear Barney Oldfield: I read your weekly articles with much interest and would like you to tell me what is wrong with my car. When idling the engine the speed varies. With the hand throttle lever advanced about one inch the changing rate as marked by the ammeter hand is about 10 amperes but the engine will speed up for about 10 seconds, slow down a slightly shorter time, then speed up again, and so on, the ammeter hand showing a variation of one to three amperes.

The regular hum of the engine is accompanied by a heavier rumbling sound, apparently inside the engine. If I close the throttle the engine will make a few slow revolutions with a sort of heavy rattling noise and then stop. The car runs fairly well on the road with a mileage of 13 to 15 miles per gallon of gas. But the pick up is not as good as formerly, and the car does not make grades on high as well as it used to do.—W. E. W.

This trouble may be due to a loose butterfly valve in the carburetor, to excessive freedom in the throttle connections. These causes assume the engine fires evenly but faster and then slower. If it misfires when the trouble occurs then I would suspect unevenly adjusted valves that cause "rolling." In some engines using a vacuum feed there will be slowing down when the bottom tank of the vacuum tank is just about to fill. There will be a "hiss" and then the engine will suddenly take on a little speed.

Dear Barney Oldfield—I would like to get in the automobile game but they tell me you've got to go to college and learn the automobile complete. They tell me you can't learn the automobile from correspondence courses. Is it true? Would you advise me to take up a correspondence course?—J. S. K., Jr.

One of the most prominent engineers in the industry (J. G. Vincent) of the Packard company, got his early training with a correspondence school. You can take such a course or a book course of your own at home, and then follow this with practical training at a service station, where many makes of cars are handled. Or you can start on one make of car, which is perhaps better, and then work into the others.

Dear Barney Oldfield—There are many tablets, liquids, etc., to put in the gasoline to remove carbon. Are they of any value? Is so, please state.—E. T. W.

Not one that I have ever tried and I have tried nearly all.

Dear Barney Oldfield—I have a Ford which has been run about 2,500 miles. When I go on anything but a short trip the engine tightens up as if there were not a drop of oil in it and then it loses pep. I always keep the engine well oiled.

The engine gets that way before the water gets to the boiling point. It screeches when cranked in this condition, but pulls well until it gets this tight spell. The valves are very good and carbon cleaned. What is the trouble and how can it be remedied? I use medium oil.—J. W.

I never heard of a Ford engine being so closely fitted that it will get tight with oil in the crank case, so I believe your trouble is due to something else besides pistons and rings that fit too tightly. It seems to me that excessive crankshaft end play would carry the rods and pistons forward and cause binding or "cooking" in the cylinders and give the effect of tight fitting parts. Or the trouble may be in binding of the timing gears only.

ROBT. H. SWAIN
Distributor
113 Third Street South

DEMAND INCREASES FOR CADILLACS AS PRICE GOES DOWN

Sales Jump 90 Per Cent in Second Week After Reduction Made.

The immediate and country-wide response of the motoring public to the recent announcement of substantially lower prices on all models of Cadillac cars has been even greater than was anticipated at the factory, according to Lynn McNaughton, general sales manager of the Cadillac Motor Car company.

"News of the reduction effective December 1, reached the press of the country on the morning of November 24 and began to show immediate results," said Mr. McNaughton. "Using the week ending November 25 as a base, reports from distributors from all parts of the country show an increase in sales of 22 per cent for the week ending December 2, and of 90 per cent for the week ending December 9. Deliveries in the first week mounted 60 per cent, and in the second week better than 150 per cent."

"Our distributors have found that this reduction has opened a vast field among prospective buyers who were evidently waiting for absolute assurance that motor car prices had reached rock bottom.

"Two successive reductions during the last 11 months have lowered the price of the Cadillac touring car \$1,055. Buyers apparently see in this latest reduction an end of any further decline in prices of high grade cars. Judging from the reports we are daily receiving from our distributors on sales and deliveries, these prospective buyers are convinced that the next price movement on established cars will be upward.

"Prices of nearly all raw materials used in motor car manufacture have advanced considerably during the last six months. Only the facts that the Type 61 Cadillac which has proved highly satisfactory, is to continue unchanged, on a production schedule considerably in excess of the high mark of 1922, and that the new factory buildings have brought about economies in manufacturing, made it possible for Cadillac to reduce prices so substantially at a time when every factor indicated the possibility of a material rise.

"While more than half of the Cadillac production is of closed body models, we find that with the spring rush for open cars only 10 weeks away, many buyers are purchasing open models now in order to be certain of having them when the spring days arrive."

WHEN FILLING RADIATOR
It is a good plan to start the engine when filling the radiator of a car, using a pump system. In some cases, there are places which fill with air which can be dislodged only by running the engine. The system may seem full, but after the engine has started the level will be found too low. Running the engine while filling will do away with this trouble.

The compression of an engine is tested by the springy resistance when cranked by hand.

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CORDS	
30x3 1/2	\$12.75
32x3 1/2	18.90
31x4	15.50
32x4	22.50
33x4	23.35
34x4	24.15
32x4 1/2	26.45

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Michelin Cords combine wonderful carcass strength with a tread that resists the roughest roads.

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CURE FOR CRACKING WHEELS
Cracking wheels are many times caused by the drying out of the wooden spokes. A few drops of kerosene, allowed to work into the spoke joints, will restore them to their proper condition.

How Big is a Battery Dollar?

Sometimes a saving of two or three dollars in first cost may look better than an additional five or six dollars of battery value.

That's why we offer the SR (full size) Willard Threaded Rubber Batteries. There's no need now to be satisfied with other than Threaded Rubber Insulation. You can have an SR Willard Battery and be money ahead.

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Franklin Car Sets Record in Japan

According to a cablegram just received at the factory of the Franklin Automobile company, in Syracuse, N. Y., a Franklin car has just set up a new Japanese economy record, having negotiated the 130 miles from Tokyo to Myonohita and return to the tune of 41.6 miles a gallon of gasoline. The run was conducted by the Japan Advertiser, the principal American publication in Japan, the trophy consisting of a beautiful silver cup. The Franklin car was piloted by a representative of Frazer & Co., Franklin representatives in Japan.

SHOW 'EM THE MORGUE
Men and women convicted of traffic law violations and given jail sentences in Detroit, Mich., are to be conducted through the morgue "to view the results of auto drivers' carelessness."

Averaged 20 Miles to Gallon in Buick

Twenty miles to the gallon of gasoline, except in the high mountain country, is the average claimed by J. W. Eckert, who has returned with Mrs. Eckert to his home in Rochester, N. Y., after an 11,000 mile tour in a Buick Four.

Mr. and Mrs. Eckert went first to the northwest, then to California, turning at Los Angeles for the east. The trip took 38 days of actual driving. Mr. Eckert is highly enthusiastic regarding the performance of his car.

WHEN COMBUSTION IS GOOD

If the carburetor is doing its duty the exhaust gas forced out of the exhaust should be colorless and almost entirely odorless.

Auto Wrecking and Parts
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DODGE BROTHERS MOTOR CAR

Last spring were forced to disappoint a great many prospective Dodge Brothers Car Owners, owing to our inability to procure enough cars to fill our orders. A repetition of this situation the coming spring is inevitable—only it will probably be more acute, on account of the large demand for Dodge Brothers Cars by oil operators, and also because of improved business conditions in general. In order to take care of those individuals who wish Dodge Brothers Cars but do not want immediate delivery, we have made arrangements to provide and store free all cars ordered now for spring delivery.

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