

BREAKS NOT ALWAYS FAULT OF MATERIAL

Trouble Often Traceable to Other Causes.

VIBRATION HARD ON PARTS

Bad Alignment Is Another Prolific Cause of Breakage That Frequently Is Overlooked.

Every automobile owner at one time or another has had occasion to study a repair bill for replacement of broken or injured parts, and once, at least, has endeavored to show the manufacturer that the failure was due to "poor ma-

pany has under serious consideration the establishment of Canadian plants for the assembly of Paige cars and trucks. R. D. McCain, one of the traveling representatives of the Paige company, is now in Canada and one of the purposes of his trip is to survey the situation and gather data bearing upon such a move on the part of his company.

During the last two years the Paige factory has been greatly enlarged, many large units having been added to the factory group, and all the manufacturing facilities have been vastly increased. It is planned to increase production very materially and the company is now in a position to do so, but the present demand for cars is so great that it is impossible to supply all the cars the American dealers are calling for.

Confronted with this situation and with the constantly increasing opportunities for Canadian business in mind, Paige executives are considering plans to take care of present and future demands in the Dominion market while at the same time the utmost is done to satisfy the clamor for cars on this side of the border.

Ironing Out Fender Dents.

The greatest care must be taken in straightening out dents in the fenders, if the parts are not to assume a battered appearance. The only satisfactory method is to remove the fender and get it on the bench. Beneath it should be

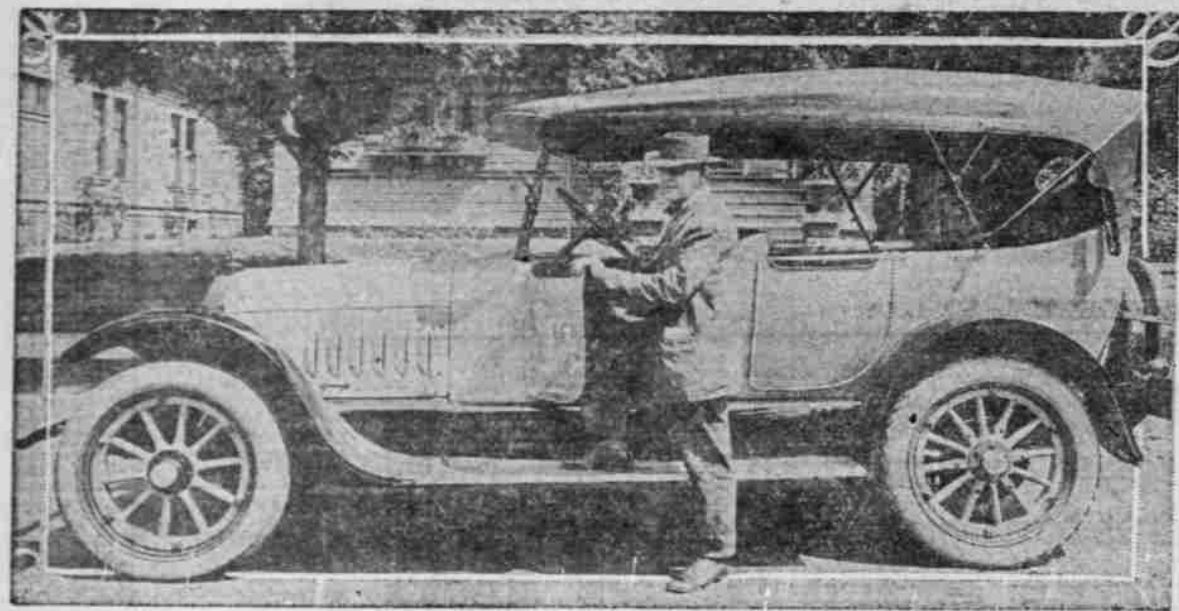
DRIVER'S WORK IS EASIER

ELECTRIC LIGHTS AND STARTER ON GRANT TRUCKS.

Special Springs Provide Cushion for Battery and Solve Problem Long Bothersome.

The builders of Grant motor trucks have for three years been strong advocates of electric starting and lighting as regular equipment for motor trucks. This advocacy had its inception in the fact that the motor truck is not an eight-hour worker, but is used with growing frequency after nightfall in all classes of haulage. In many cities the transfer and storage companies do a great deal of their big hauling at night because the streets are less congested and they get quicker service.

Department stores are nearly all operating deliveries in large cities on the "station" plan, that is, all merchandise for a given neighborhood is hauled at night to the distributing station on a heavy truck and from there distributed the following day by means of lighter vehicles," says A. B. Manley of the Manley Auto company. "The plan adopted by joint action of stores in a



P. J. Hanley of 209 Cook avenue in his new Peerless Eight, seven-passenger model. The loading range and sporting range of the Peerless motor particularly appealed to Mr. Hanley.

terial." When a part breaks for no apparent reason the owner comes to the conclusion that the material was poor. A recent case of axle trouble will illustrate the point. An owner broke five differential ring gears in succession, and not one lasted more than six months, three of them only a few hundred miles.

This owner insisted that the gear material was of an inferior grade and promptly told the car maker so, but an investigation showed that the ring gear was not running true; that there was point contact of teeth, and even the strongest nickel steel gear might break down under such conditions.

Four Design One Cause.
It is quite true that many parts such as axle shafts, motor supports, crankshafts, pistons, etc., may break if the material is of poor quality, but in the majority of cases even the poorest grade of metal for that particular part will stand up for a long period. The design of the part has as much to do with breakage as the material from which it is made, assuming of course that proper lubricating conditions are maintained.

It may be difficult for the owner of an automobile to understand why tool marks on an axle shaft cause breakage, but as a matter of fact this may actually be the case. Tool marks on a bearing surface is exactly like having a few high spots to take the wear and strain. Looking at the part with the naked eye it is hard to see why it should break because of a few grooves in it. A highly-polished surface has a much greater area of contact than an unfinished surface, hence it will not wear so much and can stand up for a longer period. For this reason many cheap cars, though made of good materials and well designed, but cheapened by labor saving, give a lot of trouble in smaller parts.

Closely allied with mere tool marks as a cause of breakage comes a design error which employs sharp corners instead of rounded corners. If you will look at the wheel spindle of your car you may notice that its innermost end is rounded off instead of squared. Where it is squared off the chance of breakage is greater. The accurate finishing of parts and the rounding of corners all take time and cost money, hence it is not usual to find this carried out to a great extent on any but high-grade cars.

Vibration Makes Trouble.
Vibration is another common cause of failure. Crankshafts perhaps more than any part receive a great deal of vibration because of the various forces acting on this part and the speed at which it runs. In some cars which habitually misfire this vibration becomes greater and the chances for breakage are increased. If the shaft is too small and is not well designed so far as its balance is concerned it may break in a very short time. Even the heaviest crankshaft, however, made twice as thick as usual and made of superior materials, may break more easily than a cheap shaft if attention is not paid to balance.

It is not easy for the owner to understand how a heavy and apparently stiff piece of high-grade metal can bend and twist all out of shape, due to vibration and unbalance, but such is actually the case in the engine crankshaft. If you will remember that even slight hand pressure on a table or even a stone wall causes a slight (though not measurable compression) it will be easy to see how many tons pressure to which a crankshaft is subjected at times may cause the shaft to bend out of shape.

Holes Weaken Metal.
There is another cause of failure in parts, namely that due to a weak section or use of too little metal. Every time a hole is bored in a piece of metal it weakens it just that much. The more metal the stronger the part. Some cars have parts so small in section, or thickness, at places that they soon break at that weak spot. Where small sections are used for lightness the maker must resort to the use of better quality material and better finish of the part.

Take any bearing and put a piece of sand on it and for the time the sand particle is there it takes the whole strain. It is the highest point of contact. Where two surfaces are supposed to rub they must be as smooth as glass and fitted so they rub all over. If only a portion rubs then that small portion takes the strain, and that which does not rub does not work. This shows the importance of alignment of moving parts and the need for perfect fitting and constant lubrication.

PAIGE PLANS PLANT IN CANADA
Constantly Growing Demand Leads to Investigation of Project.
The Paige-Detroit Motor Car com-

TWO-POWER RANGE PLEASES BUSINESS MAN.

placed a block of wood cut to fit snugly the curve of the fender. Then the dents can be pounded out with comparatively little injury to the finish and general appearance of the part. Incidentally it is a good plan to use a leather mallet for this work or to cover the head of an ordinary hammer with a number of thicknesses of cloth.

BIG YEAR SEEN FOR TIRES

AJAX RUBBER PRESIDENT TELLS OF CONDITIONS.

Industry in Better Condition Than Ever Before, Declares Horace DeLisser.

Optimism permeates the rubber industry. Business on the books has never before reached such volume and future prospects for tire manufacture and dealer alike were never so bright.

In the opinion of Horace DeLisser, president of the Ajax Rubber company, Inc., Mr. DeLisser, who heads one of the five greatest rubber companies, asserts that conditions in the rubber industry reflect those generally in American industrial circles. He points to the inherent American characteristic of confidence as the basic reason for the steady tone business has assumed.

"Taking the rubber industry as a specific example," Mr. DeLisser says, "you can search the records in vain for a year that even approaches 1919 in business probabilities. Automobile registrations as of January 1 exceed 6,000,000. This total is increasing each week. Ten of the 48 states have available funds of more than \$2,000,000 each, to be devoted in 1919 alone to the construction of good roads. This money has been available through passage of the federal aid road act.

"Importance of the automobile as America's secondary system of passenger and commodity transportation has been more than firmly established. Every car with wheels and an engine is running and is going to continue to run as long as its motor can function. Hence tire demands are ahead of the supply. The whole rubber industry cannot produce the tires this year that will actually be needed.

"I want to emphasize this point. Business owes its bright prospects to the inherent faith, confidence, of the American people. The American spirit, so aptly expressed in Chicago's slogan, 'I Will,' is what steadied business a few months back, when things were not so rosy. Now, those who make up the great buying public are in a better financial condition than ever, as a whole, before. They have had the confidence to go ahead. Every day sees a strengthening of our business fabric and readjustment to the necessarily increased peace-time basis is being accomplished."

Watch Ball Bearings.

Few owners pay the attention to the ball bearings that these latter deserve. They usually wait until the garage man calls attention to the injury done by the breakage. At least once in six months ball bearings should be inspected, the rough or worn balls replaced with perfect ones and the ball run filled with graphite and grease.

The points of the spark plugs should be spaced so that a worn dime can be inserted between the electrodes.

AUTOELECTRIC EQUIPMENT CO.

PREST-O-LITE & WILLARD STORAGE BATTERIES

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The Most Modern Tire Sales and Service Station on the Pacific Coast



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Steel Dumping Bodies can be installed

on Troy Trailers. These can be furnished in either side-dump, rear-dump or bottom-dump, as desired. The working efficiency of the truck is DOUBLED.

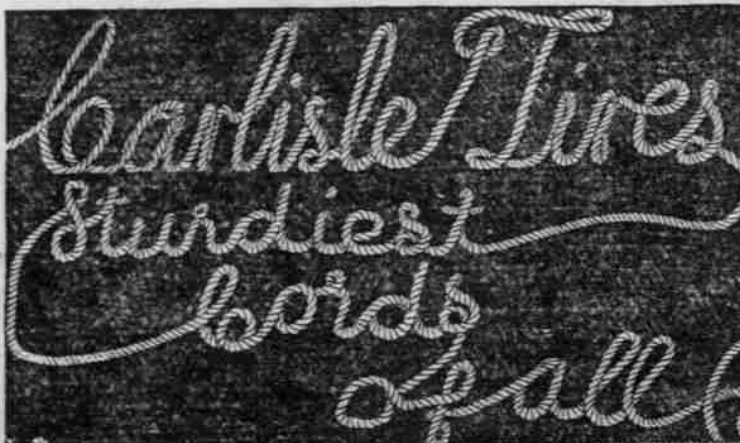
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For three months we have been temporarily located at Tenth and Burnside pending the completion of our new building at Ninth and Everett, and have asked you to put up with service which is far from our idea of Real Willard Service.

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