

STUDY NEEDED TO FIX SPEEDOMETER

Oiling of Moving Parts Proves
Quite Helpful.

FOUR TYPES ARE IN USE

Changing of Tires From One Size
to Another Often Causes In-
accurate Readings.

Among the subsidiary mechanical units of the modern motor car, which only gives trouble on occasion, must be included the speedometer. In spite of the delicate nature of this instrument it is not often that the motorist has occasion to attempt repairs of it. However, when such an occasion does arise, some knowledge of the device is essential.

At the present time there are in service four definite types of speedometer: magnetic, centrifugal, hydraulic and that driven by air current. The magnetic type of speedometer is probably the most popular type, as far as the number of makes of cars on which it finds a place. A typical construction in this class employs but one moving part—a circular magnet. Over this magnet, but not touching it, is an inverted metallic cup, on the rim of which is a row of figures, indicating the miles per hour. The dial is mounted on a steel shaft with jeweled bearings at the top. A hairspring is fitted to resist the pull of the magnet and this also serves to return the cup to zero when the car stops. In general a temperature compensator is fitted in this type to prevent the hairspring being affected by climatic changes.

Air Current Type Popular.
Within the past year or so the air current type of speedometer has been achieving considerable popularity. This type of instrument employs a stream of air to turn the dial, which indicates the mileage.

A typical construction in this class has a flexible shaft driving an air circulator consisting of the top of an aluminum gear placed in the head of the instrument and opening into an air chamber. This latter has two openings, one an entrance for the air, the other an exit. A dial fitted with a vane is pivoted in the chamber. A current of air is forced into the chamber by the revolutions of the gear, and this stream striking the vane revolves the dial to show appropriate figures. A hairspring is used to return the dial to zero when the car stops.

The centrifugally operated speedometer is actuated on the same principle found in the flyball governor. Weights are mounted on the moving shaft by means of levers or cranks, so that the movement of the weights by centrifugal force is communicated through the shaft to the dial. When the car speed increases the weights are thrown outward, and are connected with the dial through the shaft, pull the former around to the right and display the correct figures for the miles per hour.

The hydraulic type of speedometer has not gained any considerable following as yet, though its many excellent qualities may eventually win it recognition.

All speedometers have certain characteristics in common: the variations in type generally refer to the means employed of actuating the mileage dial. All these instruments have a connection in the shape of a rotating shaft that is flexible and is housed in a flexible housing running to some running part of the mechanism, usually the front wheel. On the end of this shaft is a gear which meshes with a gear on the moving part employed. This shaft is driven from the car's mechanism and in turn it drives the mechanism of the speedometer through some sort of joint. It has in the past been the practically universal custom to connect the speedometer with a front wheel, but recently the trend of engineering the propeller shaft has come into marked favor. Now some makers are beginning to connect the speedometer with the transmission shaft, and claims of maximum quiet, perfect lubrication and protection are made for this location.

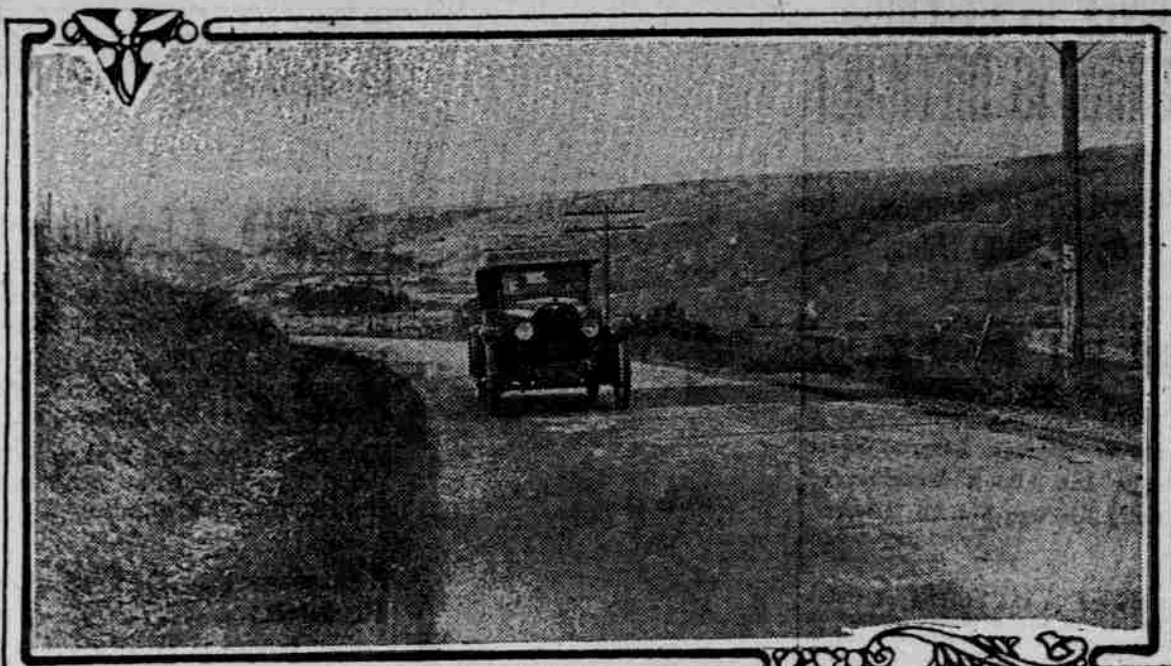
Internal Fixing Difficult.
When something goes wrong with the internal economy of the speedometer itself the car owner can do nothing but take it to the service station. He would stand but a small chance of repairing his watch as the instrument. However, there are other arrangements that he can repair. For instance, the connecting at the bottom of the speedometer head sometimes shakes loose, so that while the shaft still revolves, the dial does not register anything. To fix this, the end of the shaft should be loosened from the head, pushed firmly in place and tightened again. Again, the flexible shaft may bind in the housing due to abrupt bends and then the speedometer will fail to register. When trouble occurs look first at the shaft and see that it has as few bends in it as possible, and these long and sweeping.

Another thing to watch is in making a change from one size tire to another on the wheel that drives the speedometer. This will make the readings inaccurate. Even a change to oversize will cause inaccuracy. For instance, on one make of instrument the makers announce that if a change is made from 34 to 4-inch tires to 38 to 4½, the 68-tooth gear used in the former will have to be changed to a 72-tooth gear.

It sometimes happens, where the driving gears are of fiber, that a noise is caused by loosening of the parts. By using a little fine laundry soap the gears may be swollen again, so that they mesh better. It is a good thing to give the moving parts a little oil from time to time, but where the gears run exposed this will not be very effective.

In some cases the speedometer has been in service for some time the dial begins to fluctuate, a condition induced by vibration. In some instances this becomes a chronic condition, but again it may simply be due to looseness in the fastenings and connections, which the service station will fix in a jiffy. If the speedometer suddenly fails to register mileage and speed, the first place to examine is the driving shaft. Disconnect the flexible shaft at the head and, with the front wheel being revolved, see if the shaft revolves without jerking. If the shaft runs smoothly the trouble lies in the instrument itself. It happens sometimes that a link in the shaft is broken, so that when the part is disconnected in this way the broken end will catch at intervals. While the shaft is disconnected turn it in the head and see if the dial works.

JORDAN CAR IN THE LAND WHERE WHEAT IS KING.



SCENES ALONG THE HIGHWAY BETWEEN WALLA WALLA AND PENDLETON, THE TWO EAST-OF-THE-MOUNTAINS GRAIN CENTERS.

The motorist in making the trip of 45 miles from Pendleton to Walla Walla will find about 40 miles of delightful paved road across rolling farm country, where wheat fields and summer fallow form a checkerboard. The remaining four miles, a stretch near Weston, about half way between the two terminals, is a dirt road forming a detour around paving operations. The hard-surfacing is being rushed and by August 1 should be completed, forming continuous pavement between the two cities. The car in both photos is Jordan.

FEW REFUNDS ARE FILED

GASOLINE USERS SHOULD BE
FAMILIAR WITH TAX LAW.

One Cent Back on Purchase Price
When Fuel Is Not Used in
Motor Vehicle.

SALEM, Or., June 18.—(Special.)—Numerous claims for refunds of taxes paid on motor fuels are being filed after the 90-day statutory period for presentation has expired, according to a statement given out today by Sam A. Koser, secretary of state.

"While claims for refunds are usually small in amount, the right to a refund is secured by statute, and it is always more or less of an unpleasant duty to reject a claim simply because the time limit has expired," said Mr. Koser. "Such action is likely to subject the department to the criticism of standing on technicalities, and for this reason it is desirable that every purchaser of motor fuels should become thoroughly conversant with the various provisions of the refund law, and especially that section which places a limitation upon the period during which claims for refunds may be filed for auditing and payment."

Under the provisions of a law enacted at the last session of the legislature, a tax of 1 cent per gallon on all motor vehicle fuels sold by dealers within the state of Oregon, must be remitted to the secretary of state on or before the 15th day of the month following the month during which such sales were made. This revenue for state highway construction is in addition to the tax levied under the act of 1919, amounting to 1 cent per gallon on gasoline and other motor vehicle fuels except distillate upon which a rate of ½ cent per gallon was placed.

No authority is given for rebating the taxes paid under the law of 1919, for any reason. The law of 1921 authorizes a refund to be made of the taxes paid thereunder, or 1 cent per gallon on every kind of motor vehicle fuel, when such fuels are purchased and used for purposes other than for the operation of motor vehicles upon the public highways. Refunds are made to individual purchasers of a refund to be made of the taxes paid thereunder, or 1 cent per gallon on every kind of motor vehicle fuel, when such fuels are purchased and used for purposes other than for the operation of motor vehicles upon the public highways.

A large supply of the regular form of affidavit drafted by the secretary of state was placed in the hands of all dealers at the time the law became effective, and users of motor fuels intending to claim a refund should procure one or more of these forms from the dealer at the time of purchasing the fuel, or communicate a request for a supply of them to the secretary of state, at Salem.

Motor fuels used in boats, stationary engines, for cleaning clothing and in other industrial pursuits are subject to a refund; also the fuels used in tractors employed exclusively in farm work. Tractors operated upon the public highways are classified by

SEASIDE PAVING PUSHED

RAINS OF PAST WEEK DELAY
WORK, HOWEVER.

Detour Along the Beach From Columbia Beach to Gearhart Kept in Shape.

ASTORIA, June 18.—(Special.)—

The heavy rains during the early part of the week materially interfered with the paving on the Astoria-Seaside highway. The pavement, however, has been laid to a point about a quarter of a mile south of the Columbia beach station. During the day motorists are using the detour from Columbia beach along the ocean sands as far as Gearhart. The only trouble that has been experienced on this detour was from drifting sands on the ridges at Columbia beach. The county roadmaster has now made arrangements to have this sand cleared from the planked road every day, and also has a team on duty to render assistance in case machines become stalled.

Each night from 6:30 P. M. to 6:30 A. M. and from 6:30 Saturday evening until 6:30 Monday morning the main highway is open to travel. The rains have also retarded the work on the Melville-Wahanna cut-off and that detour will not be open for traffic to the beaches before the latter part of next week.

An official announcement has been made by John B. Yeon of the state highway commission that the section of the Astoria-Seaside highway between Miles crossing and the Warrenton cut-off will be paved this summer. This section of the thoroughfare was recently widened. Mr. Yeon also stated that the Warrenton cut-off will be graded and rocked this fall, so it can be paved next spring.

OLD-TIMERS PLAN EXPANSION

Over 100,000 Application Blanks
to Be Sent Out.

DETROIT, Mich., June 18.—More than 100,000 application blanks for membership in the Old Timers' club will be forwarded at once to all manufacturers of automobiles and motor trucks, to the secretaries of all automobile clubs in the United States, to all manufacturers of parts, accessories, materials, tools and machine shop equipment, to wholesale supply houses, to manufacturers of tractors, motorcycles, aircraft and engines, and to all advertising agencies handling automobile accounts.

Every effort is to be made by the organization to reach every executive connected with the automotive industry. The most complete mailing lists possible have been secured. The Chicago Automobile Trade association, of which Tom Hay, vice-

president of the Old Timers' club, is president, will forward 50,000 blanks to dealers, distributors and garage owners.

Even with the most careful checking the officers of the organization believe that some will be overlooked, and a request has been issued that members of the trade who have been connected for five years or more, and who do not receive blanks, forward a request to the offices of the club at 420 Book building, Detroit.

MACK OFFICIALS VISIT HERE

F. C. Atwell, Former Portland
Manager, in City With Stoner.

J. A. Stoner of Los Angeles, vice-president, and F. C. Atwell, also of

Los Angeles, assistant to the vice-president of the Mack International Motor Truck corporation, distributors of Mack trucks throughout the Pacific coast, were Portland visitors last week.

After a couple of days here spent in going over local problems with

manager Harwood of the Portland branch, the two men went on to Seattle for a brief stay. They are expected in Portland for another short visit this week prior to returning to Los Angeles. Mr. Atwell will be well

remembered here as former manager of the Portland branch of the corporation.

The only European motor trucks now being sold in Mexico are of German origin.

Ford

THE UNIVERSAL CAR

ANNOUNCEMENT

MR. EDSEL B. FORD, PRESIDENT OF THE FORD MOTOR COMPANY, GIVES OUT THE FOLLOWING STATEMENT:

"Another reduction has been made in the list price of all types of Ford cars and the Ford truck to take effect immediately. The list prices, f. o. b. Detroit, are now as follow:

Touring Car.....	\$415.00	Sedan.....	760.00
Runabout.....	370.00	Chassis.....	345.00
Coupe.....	695.00	Truck Chassis.....	495.00
Tractor.....	\$625.00		

"The big reductions last fall were made in anticipation of low material costs which we are now getting the benefit of, and this fact together with increased manufacturing efficiency and the unprecedented demand for Ford cars, particularly during the past three months permitting maximum production, have made another price reduction possible immediately.

"Ford business for April and May, 1921, was greater by 56,633 cars and trucks than for the same two months in 1920; in fact, the demand has been even greater than the supply, so that our output has been limited, not by unfilled orders but by manufacturing facilities.

"During May we produced 101,424 Ford cars and trucks for sale in the United States alone—the biggest month in the history of our company—and our factories and assembly plants are now working on a 4000 car daily schedule for June.

"The Fordson tractor is still being sold at less than the cost to produce on account of the recent big price reductions, and it is impossible, therefore, to make any further cut in the price of the tractor."

Can you afford to go without a car any longer when Fords are selling at these new low prices? There is no reason now why you should delay purchasing a Ford car, Ford truck, or Fordson tractor.

We will gladly advise you concerning the delivery of a Fordson Tractor or the particular type of car in which you are interested. Just phone us or drop us a card.

Francis Motor Car Co.
Grand Ave. and Hawthorne

Robinson-Smith Company
Sixth and Madison Sts.

Talbot & Casey, Inc.
Grand Ave. and Ankeny

Palace Garage
Twelfth and Stark Sts.

Dunning Motor Co.
East Third and Broadway

Wm. L. Hughson Co.
Broadway and Davis

Mitchell

Now the lowest-priced Fine Six

The price reduction of the Mitchell from \$1750 to \$1490 spotlights again the Mitchell policy of always giving unusual values.

Nowhere at the price can you find a comparable car. For power, beauty, comfort and economical operation, a Mitchell brings you a new standard of excellence.

Once you see this \$1490 Mitchell, once you ride in it, you'll be unwilling to consider a lesser car. You'll agree that in this car your money buys more. And once you become a Mitchell owner, you experience constant satisfaction. The Mitchell of today has won a host of friends.

\$1490

Come at once—whether you are ready to buy or not—and become acquainted with this extra-fine car at \$1490.

for 5-Passenger Touring Car formerly \$1750
for 3-Passenger Roadster . . . formerly \$1750
\$1790 for 4-Passenger Special . . . formerly \$1950
\$2590 for 4-Passenger Coupe . . . formerly \$2800
\$2690 for 5-Passenger Sedan . . . formerly \$2900

All prices F. O. B. Racine, Wis. War tax extra

MITCHELL MOTORS CO., Inc., RACINE, WISCONSIN

Northwestern
Distributors

Broadway
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Oakland Six
\$1375 AT PORTLAND



Greatly
Improved

Let Us Survey Your Truck Problem

Practically every business in America needs and concedes the necessity of truck transportation.

But their problem is which truck and why?

Technical details (though highly important) mean little to the average business man.

Scores of truck representatives will supply you with a mass of meaningless language and literature. Still you are in doubt? Duplex has removed this doubt by their new and efficient plan of Vocational Selling and Survey.

At a great expense Duplex has installed a Research Department. Experts from this department make a special study of your business and its trucking requirements.

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You are presented with an accurate study of your hauling problem with every question fully answered.

Through the resources and machinery of our Research Department we study at first hand the length of your hauls; the length, grades and surface of your roads; the costs of operation right in your town and territory.

We figure out gasoline and oil consumption—also annual depreciation.

In short we put a microscope on your hauling problem and give you the answer with definite seasoned recommendations as applied to your business.

Thus we talk in your language. Be it in logging, oil, lumber, general hauling, timber or road contracting, we talk to you intelligently about your specific business and its transportation requirements.

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