

Repairing the Tractor

Detailed Instructions for Overhauling—When Repairs are Necessary

By JNO. J. WRIGHT

It is not the intention of this article to explain the principle of the gas engine, or to enter into a detailed description of the various types of engines in general use, but rather to help the tractor owner or operator to overhaul the tractor in preparation for the season's operations.

While it will be possible to cover but a portion of this broad subject in detail, the endeavor will be to give prominence to those points which generally need attention on a worn tractor. It may not be necessary to dismantle the entire engine, however. It is seldom that it is possible to remove any vital part without first going through a process of preparation which consists of stripping off all obstructions, fore and aft.

To begin with, all dirt and grease should be removed from every part of the engine, after having scraped off all the loose dirt; an old broom and half a pail of kerosene will make light work of removing the grease. Every part should be given a rigid inspection to locate worn or defective parts.

Remove the cylinder heads, using care not to break the gaskets, loosen the connecting rods, and pull the pistons, clean the carbon off the pistons and cylinder heads and out of the combustion chamber. Take the rings off the pistons, being careful to note the order in which they were on each piston. Care should be used to avoid breaking rings when lifting them out of the grooves; this may easily be done by the use of three or four shims of tin,

about half-an-inch in width, inserted under the points of the ring, then spaced around the piston at equal distances apart, thereby raising the ring up to the level of the piston surface, when it can easily be slipped over the grooves and off the piston. These means can be used equally well to replace rings on pistons.

Scrape the carbon out of the grooves. Examine the rings for wear, if they are narrower than the grooves, or if broken, replace with new ones. Fit new rings into the cylinder before putting them onto the piston; if too large, file enough off the points to make a slight clearance.

Testing the Valves

Now test the valves, which can be done in most types of engines by pouring a little gasoline into the port leading from each valve to the manifold. If the gasoline leaks past the valve it should be ground. Where it is not possible to test in this manner the valve and seat should be examined. If they do not present a bright surface around the entire circumference they

will prove defective. See that valve springs have sufficient tension to close valves properly; if not they should be replaced. Valve guides also should be renewed if badly worn.

Cleaning the Cooling System

A matter of vital importance, especially in a water-cooled engine, and which is very often overlooked, is the cleaning of the cooling system. The water jackets should be thoroughly washed out, using a force pump and hose. Take a small rod to dislodge the mud and scale, at the same time forcing water into the jacket. Disconnect the piping and tap lightly to remove the scale, afterwards flushing it out with the force pump. Use the same means to wash the sediment out of the radiator or cooling water tank, after having opened the drain.

If a rotary circulating pump is used in the system examine the bearings, and if necessary repack the gland on the driving shaft. Where the pump is of the plunger type the plunger and valves should be replaced if considered to be defective.

Take all lost motion out of mechanism operating the plunger. No leak should be permitted to exist at any point, whether it be a water or oil-cooled motor.

The Lubricating System

The lubricating system should be put in first class shape. On it the life of the tractor depends, present and future. If it consists of a force feed pump the cover should be taken off and all dirt and foreign matter removed. After this uncouple all the distributing pipes at the pump end and pump a quantity of kerosene through the pump, discharging any dirt that may have lodged in the plunger barrels, at the same time making sure that each unit is working.

Connect the pipes again, to their former positions on the pump and disconnect each one at the point where it enters the cylinder or bearing as the case may be. Force some kerosene through the pipes to remove the old oil which may have hardened while lying in the pipes. Stop every leak found in the pipes or connections. If the ratchet method is used to drive the pump see that the motion is not reduced through wear to pins and connecting bar between pump and propelling member. The spiral belt which is generally used on the rotary-driven pump should be made tight enough to guard against slipping.

Where lubrication is by the splash system clean out crank and cylinders, after having drained the crank case of oil, by filling with kerosene up to oil level and revolving crank shaft as rapidly as possible by hand, so that the splash from the kerosene will thoroughly clean cylinder walls and crank case. If a rotary or plunger oil-circulating pump is combined with the splash clean out the entire system; see that check valves or balls seat properly, that straining screens are not clogged, and that float or whatever means is used to indicate oil level is working freely.

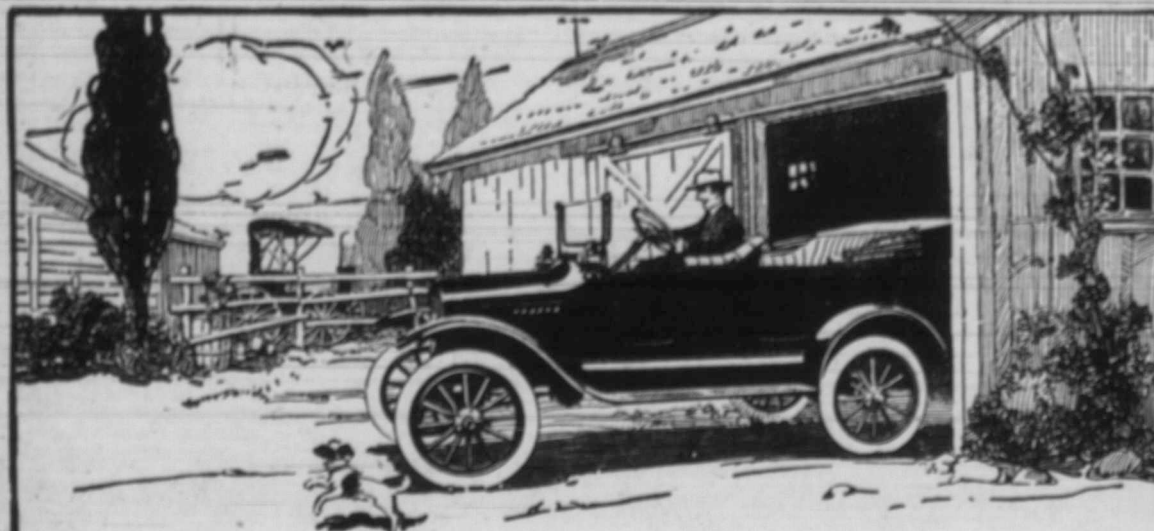
Putting Fuel System in Shape

The fuel system should be gone over, the pipes and tank cleaned; it may be necessary to remove the tank in order to get all the sediment drained out. It is not advisable to break the joints in the piping after they are once set, except where copper tubing is used, when it is much easier to make a leak-proof joint. Examine the pump. If plunger shows wear it should be renewed. Pack the gland, using graphite rolled wick of suitable size.

Where a mixer is used wash out the reservoir with kerosene; see that the needle valve nozzle is not partially stopped with dirt.

Overhauling the Carburetor

If the engine is equipped with a carburetor take it apart, making sure that the valves are in good working order. Clean out the bowl and all passages where sediment in the fuel could lodge. If the float is logged it can be dried and given a coat of shellac. However, as a rule it is better to put in a new one, as it will be subject to getting in this condition again. The cost of a new float will be but little com-



Replace Your Buggy With a Ford

MORE than 100,000 Fords are owned by people in Canada in preference to the old horse-drawn buggy and other makes of cars.

Your neighbors, and farmers in every section of the Dominion are abandoning their old buggies—selling their driving horses and buying Fords.

Ford cars are utility cars. They are built to endure the strain of constant daily use over rough roads.

These are the tests every farmer gives his car. The Ford meets them in a satisfactory manner. It is the farmer's car, so why not replace *your* horse and buggy with a Ford?

Ford

THE UNIVERSAL CAR

Runabout	\$575
Touring	\$595
Coupe	\$770
Sedan	\$970
Chassis	\$535
One-ton Truck	\$750

F.O.B. FORD, ONT.

Ford Motor Company of Canada, Limited
Ford, Ontario