pared with the loss in fuel; if it is very bad the carburetor will leak continually, as well as making it difficult to adjust.

Wash the governors perfectly clean of gum and grease with kerosene. Make adjustments to take up wear where possible. If fly balls are badly worn on hinge pins, brackets and fly balls can be drilled out, and larger size pins fitted, which will prove equal to replacing these parts. In a throttling type of governor endeavor to take out all play between governor and butter fly valve. See that the valve is not loose on its pivot; even a slight motion at this point will effect the speed regulation. If the detent plates are worn, on a hit and miss governor they should be ground to their original shape. If this cannot be done replace with new ones.

Examine Timing Gears for Wear

The timing gears should be examined for wear, this will be apparent at the point where the strain of opening the valves takes place. The small gear usually shows the greatest wear, owing to its greater number of revolutions. If the teeth on a portion of this gear are worn thin it will be advisable to replace it, although this entails considerable labor. The entire crank shaft in all probability will have to be lifted from its bearings, as well as the removal of a fly wheel or belt pulley, together with the clutch mechanism.

Crank shaft bearings should be tested for play. This can easily be done on a heavy engine by prying up on the balance wheel or end of crank shaft with a crow bar over some suitable object. If it is necessary to set the bearings shims should be removed until engine bed and crank shaft seem to be all in one piece when prying upward, yet the shaft must turn freely.

Replacing the Pistons

When the job has proceeded this far the pistons can be made ready to be put back into the cylinders. The wrist pins and bushings should be examined for play and if badly worn should be replaced with new ones. The bushings should be tightened until they are a snug fit around the pins. This is a much more important point than is commonly believed. Right here your engine may sound like a double acting trip hammer, and, if not attended to, may soon be neither a trip hammer or an engine. It is much easier to set a wrist pin with the piston out of the cylinder, although it can be done in the open crank case engine.

Special care should be taken to securely hold the wrist pin in the piston to prevent its moving out and cutting the cylinder wall Many cylinders are ruined every season from this cause. Some engines are now fitted with an extra ring to guard against this possibility.

When pistons and cylinders have been well coated with oil over the entire surface replace each piston into the cylinder it belongs to.

The connecting rod bearings can now be set. Remove a liner from each side of the bearing cap, and tighten the nuts up. If still too loose remove another liner or a thicker one, if too tight, replace the first and take out a thinner one. Never back a nut off a little; if a bearing is too tight nuts should be as tight as possible, and liners firmly held between the halves of the bearing.

Now replace the cylinder heads. If using an old gasket put it in the same position as before. If a new one is needed clean off any of the old gasket that may be sticking to the surface of the cylinder or head. Tighten each nut up a little at a time all around the head until they are as tight as possible. Do not forget to tighten each one again when the engine has run long enough to get warmed up.

Attending to the Traction Part

The traction part of the engine can now be given attention. Examine master gears and bull pinions, if badly worn, or teeth broken out new ones should be put on. Excessive wear is often caused to these gears in an engine having a dead axle, owing to a worn hub and axle, the axle being worn on top at the inner end and on the bottom outer end, allowing the drive wheels to spread out at the bottom. This results in the gears not meshing