

- (5) Now turn the valve about 10° or 15° and repeat the grinding operation. Continue until all the compound is rubbed off the valve seat.
- (6) Add fresh compound as necessary and continue grinding until the valve head and seat are free of pits and grooves, and until a uniform light gray band about 1/32" wide is visible around the valve and seat.
- (7) When grinding is completed, clean the grinding compound out of the valve chamber. Oil the valve stem and replace the valve in its original position.

## 22. ADJUSTING VALVE CLEARANCE (fig. 24).

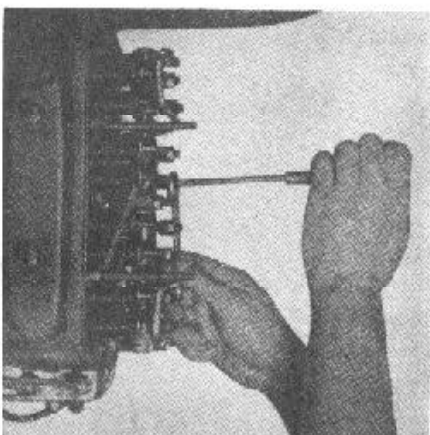
*a. General.* Proper clearance must be maintained between the top of the valve stem and the face of the rocker arm in this engine. Correct clearance is 0.006 to 0.008 in. for intake and exhaust valves. If valve clearance is too great, the valves will open late and close early. If clearance is too small, the valves will not close at all, causing a considerable loss of power. Valve clearances should be adjusted only when the engine is hot. If made when the engine is cold, they will not be accurate because of the change in temperature when the engine warms up.

*b. Procedure.* Tighten the cylinder head and rocker arm retaining bolts securely, and proceed as follows to adjust the valve clearance (use the feeler gauge in the tool kit to measure clearance):

- (1) Turn the starting crank until the cylinder you are working on is in the firing center, and both valves are completely closed. Check to see that the valves are not being held open by carbon deposits or by a sticking valve stem.
- (2) To check clearance, insert the feeler gauge between the face of the rocker arm and the top of the valve stem. Clearance is correct when the gauge can be just moved.
- (3) If adjustment is necessary, loosen the upper locknut on the rocker arm. Turn the adjusting screw to the right to decrease the clearance and to the left to increase the clearance (fig. 24).
- (4) After checking clearance with the gauge, lock the nut by holding the adjusting screw tight with a screwdriver and tighten the top nut.

## 23. MAGNETO DISASSEMBLY AND TIMING.

*a. General.* For access to the interior of the magneto for testing the coil or capacitor (fig. 25), remove the end cap. The magneto should be returned to a depot for major repairs. In an emergency, however, the high tension coil or capacitor can be replaced in the field without using



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Figure 24. Adjusting valve clearance.

special equipment. To replace the coil, remove the rotor pinion from the rotor shaft, then unscrew the bearing plate. After loosening the screws which hold the coil lamination in place, pull the coil out of the frame. If the rotor pinion is removed, it must be properly meshed with the distributor gear when reassembled. Correct meshing (or clockwise (to the right) rotation is obtained by meshing the single marked tooth on the rotor pinion between the two teeth marked C on the distributor gear.

*b. Timing Magneto to Engine.* When properly timed to the engine, the magneto provides the ignition spark at the precise instant the fuel in the cylinder should be ignited. To time the magneto proceed as follows:

- (1) Remove cylinder head cover, and tighten all cylinder head and rocker arm retaining nuts. Adjust valve clearance.
- (2) Crank the engine until piston in No. 1 cylinder (next to crank) is in top dead center position on the firing stroke. To check this, turn crank until No. 8 valve, next to radiator, has opened and almost closed. Then take hole of No. 7 rocker arm and continue to turn crank slowly until the arm nut clears the valve stem and lost motion is felt. The No. 1 piston should be at top dead center. Verify by removing the spark plug from the No. 1 cylinder and inserting a stiff wire through the hole.