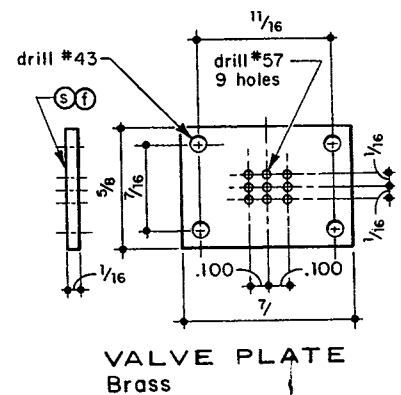
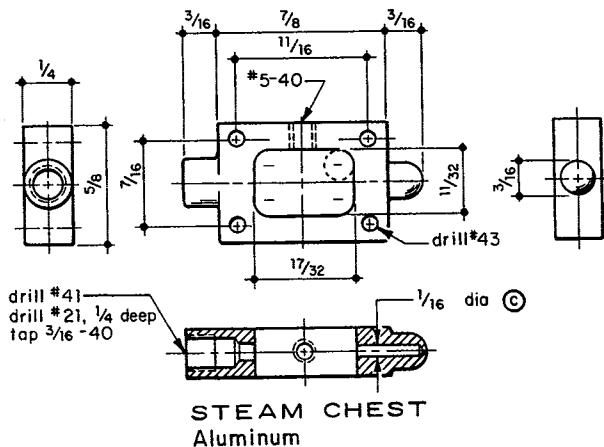
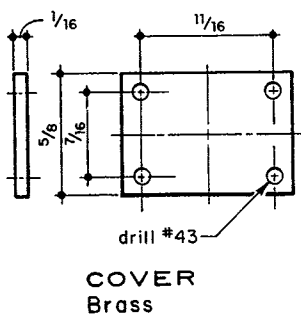
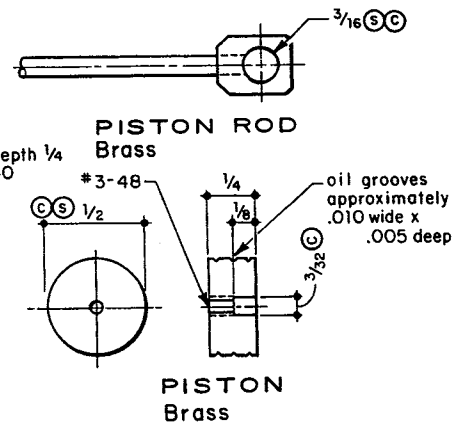
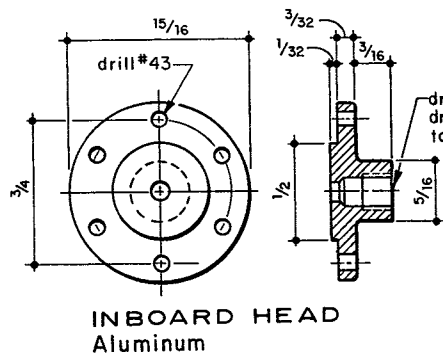
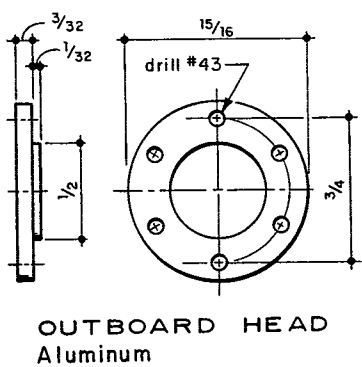
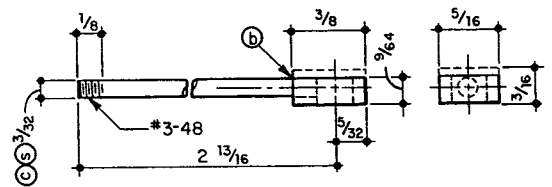
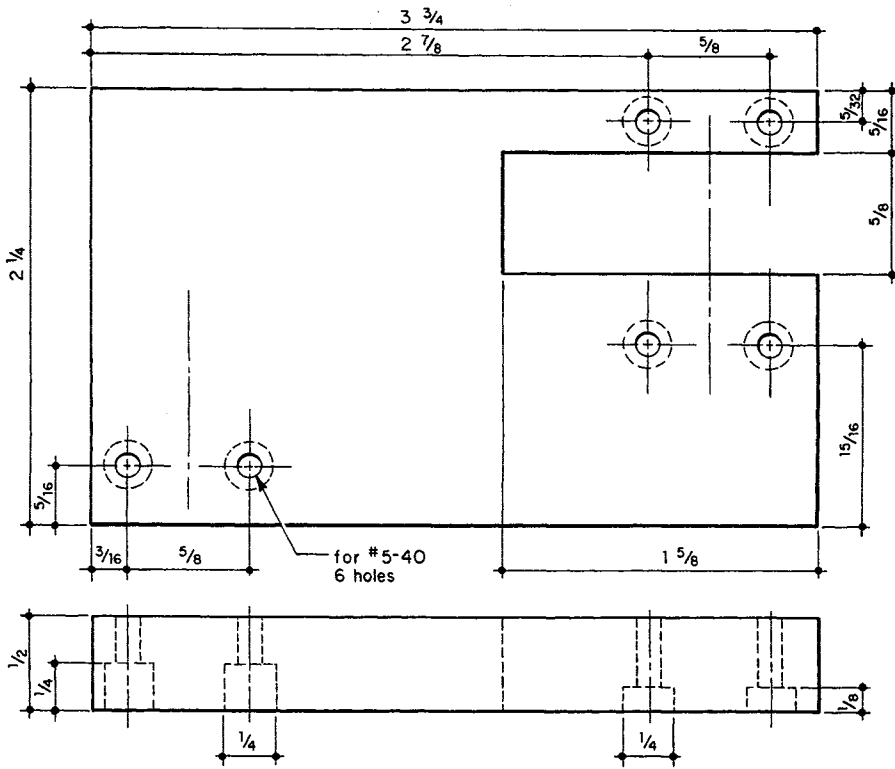
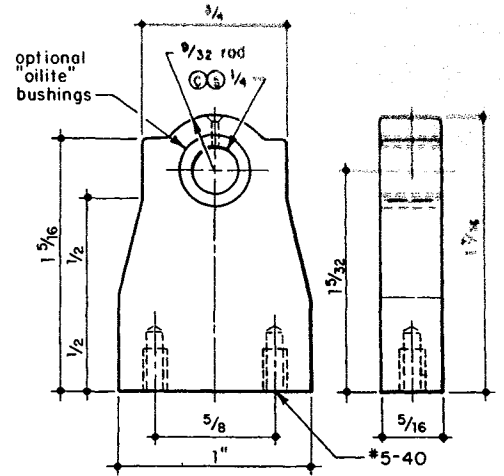


(S)	smooth	(P)	press fit or "loctite"
(C)	close fit	(b)	braze or solder
(f)	flat		

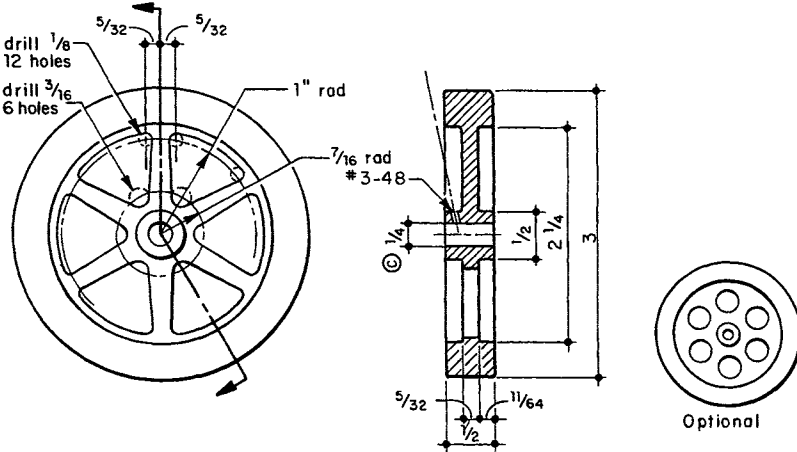




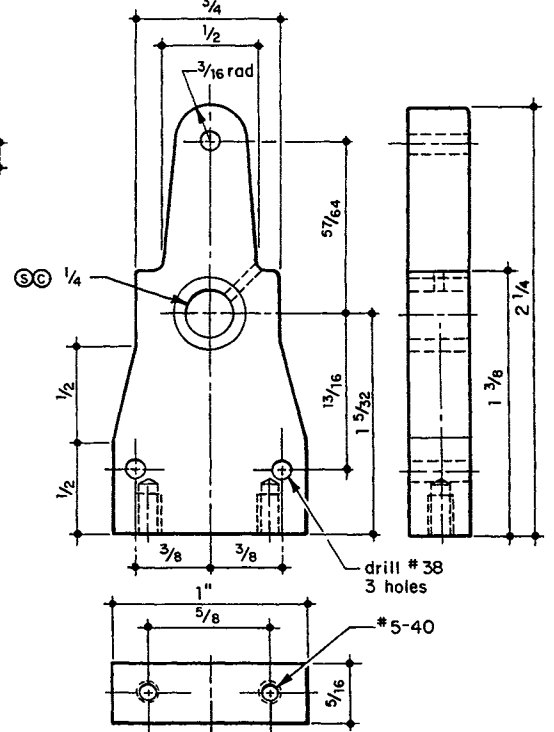
**BASE**  
Aluminum



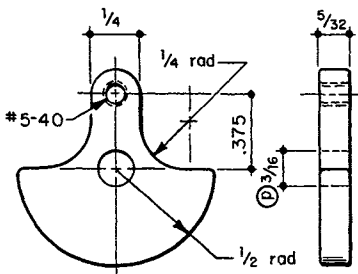
**REAR BEARING**  
Aluminum



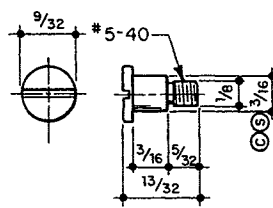
**FLYWHEEL**  
Aluminum



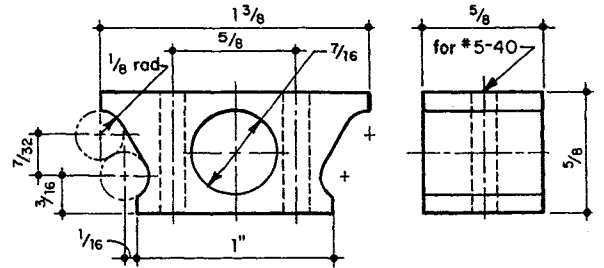
**FRONT BEARING**  
Aluminum



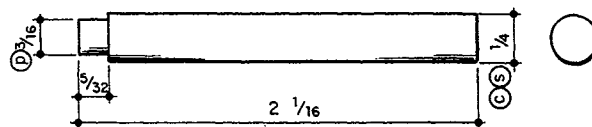
**CRANK**  
Steel



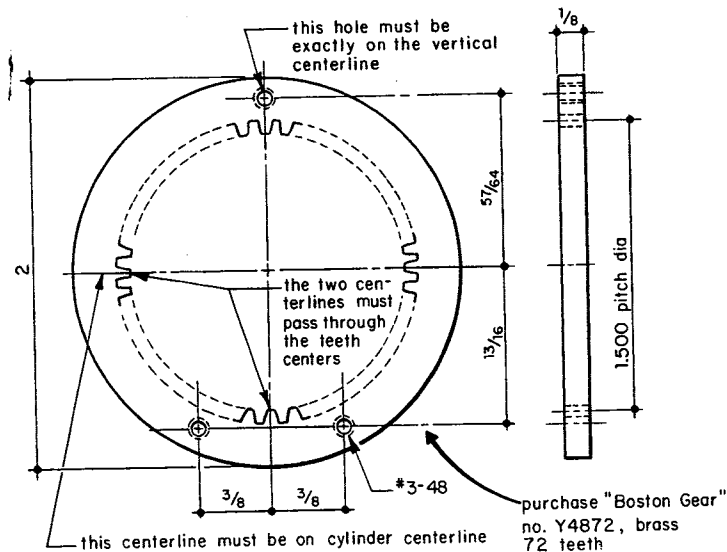
**CRANK SCREW**  
Steel



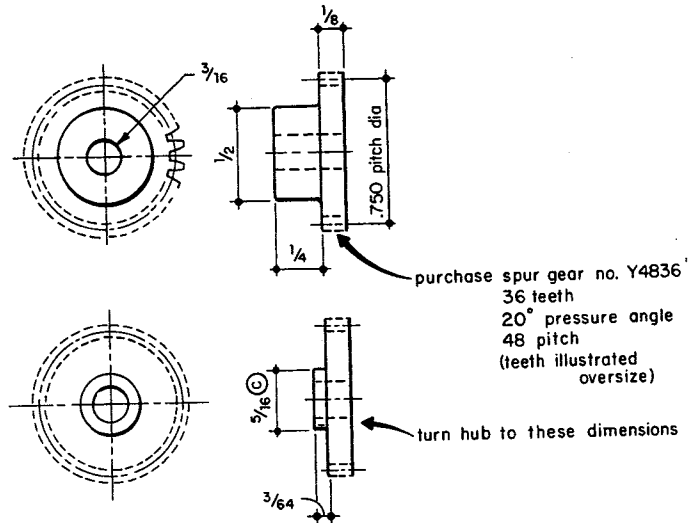
**FOOT**  
Aluminum



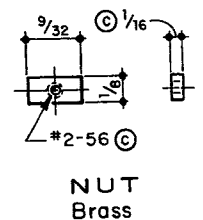
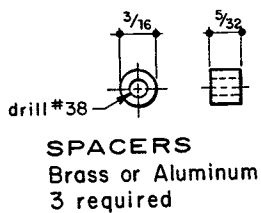
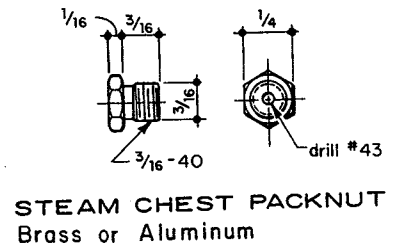
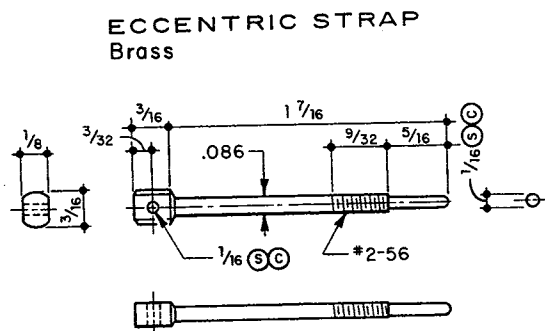
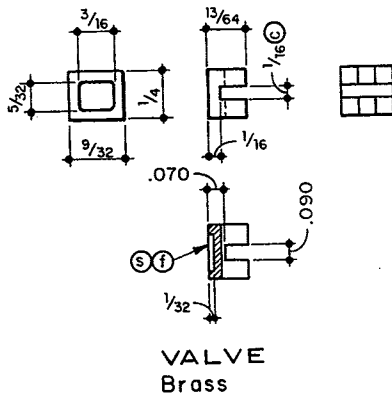
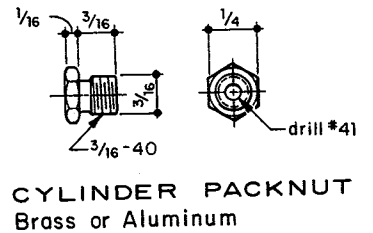
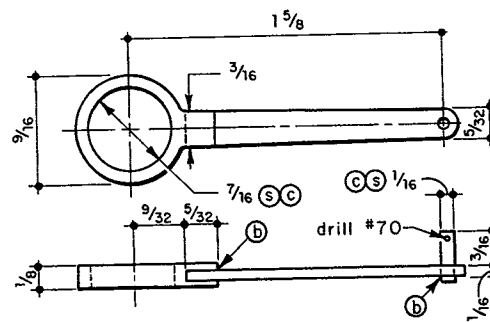
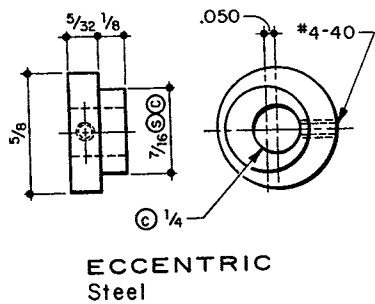
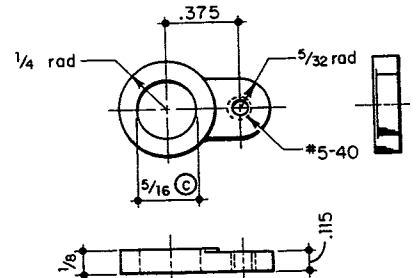
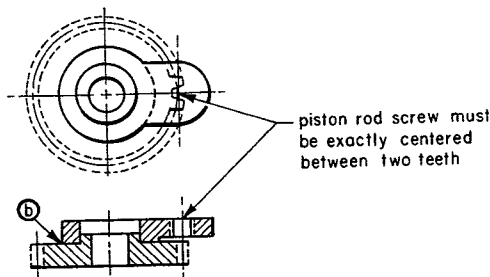
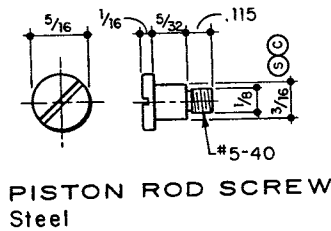
**SHAFT**  
Steel

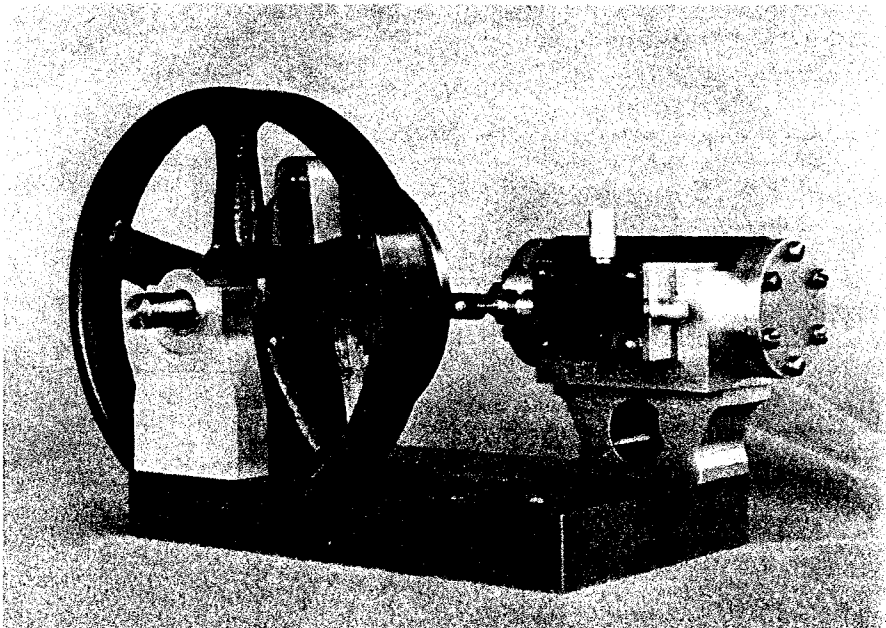
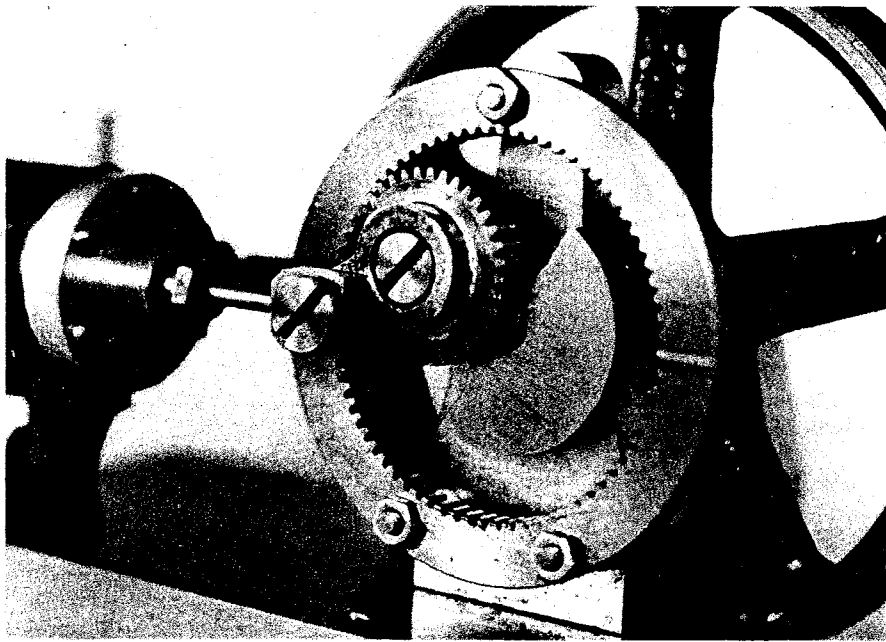
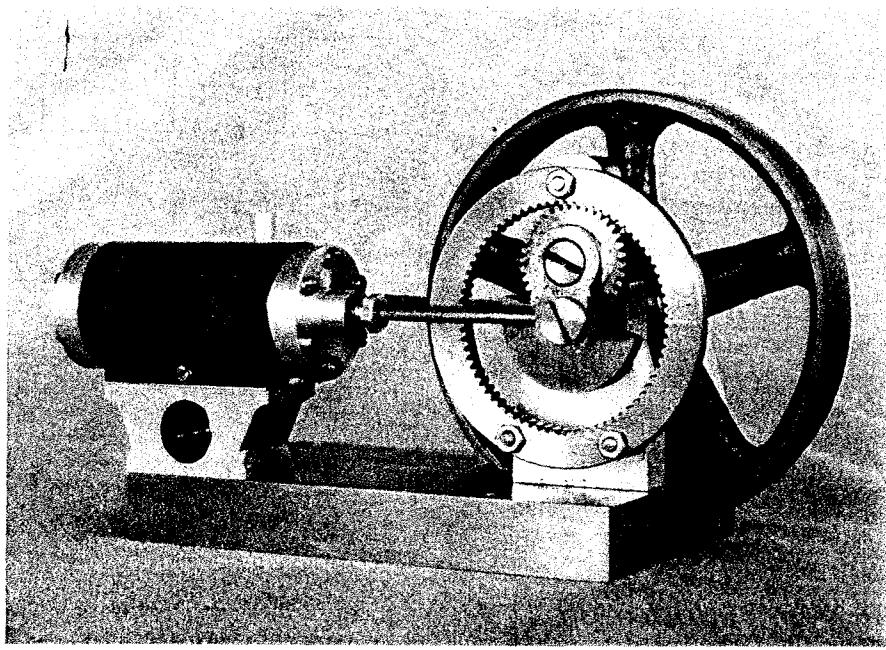


**INTERNAL GEAR**  
Brass



**ORBITING GEAR**  
Brass





reduce pounding at the Valve.

The **ECCENTRIC STRAP** is a machined bearing end soldered to flat stock. Solder a close-fitting pin in the other end.

The **PACKING** is 1/16" strands unraveled from braided asbestos graphite packing. Do not snug up the Packing Nuts too tight but turn them lightly with the fingers.

Chuck 5/8" diameter stock in the 4-jaw for the **ECCENTRIC**. Brighten up the O.D. and bore 1/4" for the shaft. Offset .050" and turn the 7/16" diameter. One method is to mount a square-ended bar in the tool post and bring it up against the stock. "Zero" the cross-slide collar. Turn the chuck so two jaws are horizontal. Ease off the vertical jaws slightly and back up the rear jaw about 1/16". Push the stock back to the rear jaw, using the front jaw. Advance the cross-slide .050" and ease the stock back against the bar, using the rear jaw. Snug up all jaws. Now, when the high spot just kisses the bar and then the chuck is rotated 180 degrees, a .100" diameter rod should just pass between the bar and the stock in the chuck.

The **FLYWHEEL** can be made from 1/2" flat stock. Lay out and drill twelve 1/8" and six 3/16" holes as shown. Chuck in the 4-jaw, gripping about 1/8" of the stock thickness. Center and turn the outside diameter 11/64" x 2-1/4", recess and bore for the shaft. Reverse and mount in a 3-jaw, gripping on the rim I.D., then finish the O.D. and the 2-1/4" recess. Apply layout dye to one entire web face and scribe lines tangent to the holes as shown. Saw and file spokes to shape.

The **LAGGING** shape is transferred from a heavy paper pattern made by the cut-and-try method.

The mounting holes in the **INTERNAL GEAR** are critical and must match the bracket holes. Misalignment here can cause binding. Count the teeth very carefully so the two center lines can be accurately established. A small vise, square on all faces, a surface plate and height gauge are a big help here. The three holes may be enlarged slightly if needed to line up.

At the **FINAL ASSEMBLY**, turn the Crank to one dead-center position and tighten the Eccentric with its axis 90° from the centerline through the Crank. Temporarily hold the Steam Chest in place while adjusting the Valve to equally expose the Valve holes at each end of the stroke.

Oil all Bearings and sliding surfaces and load the gear teeth with light grease.

At first glance, it is a mystery why the rod travels in a straight line, making this engine fun to show off.