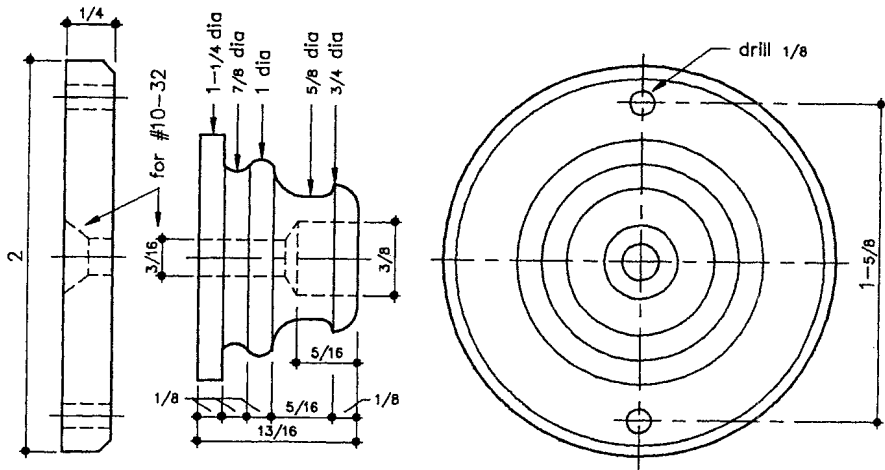


Back in January, 1981, plans for a small engine which we called *Fancy* were published. It was a popular engine among those who like lathe work. *Fancy II* is similar but larger and horizontal.

For the engine **BODY**, chuck about 5-1/2" to 6" length of 1" round stock in the 3-jaw with about 4-3/4" projecting. Make a center hole for tailstock support and turn the O.D. until it is a uniform diameter and bright. It can be a bit under size. Paint a band of layout dye the full length and scribe

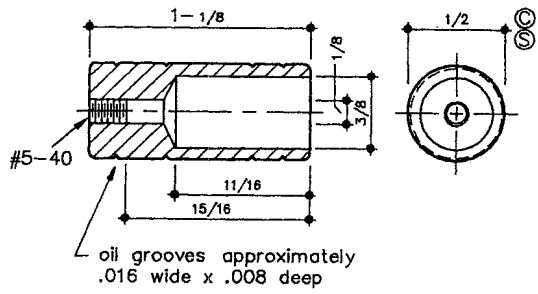
lines for all the major shoulders and ball center. Turn the various diameters and shape the ball by eye, filing until round and to your satisfaction. Other shapes can be used instead of the ball shape. Don't hesitate to try your own ideas. The small knob on the Bearing end was to be an oil cup but the oil did not flow. It was left as an ornament and an oil hole drilled from the top down through the Bushing. You can omit the 3/8" projection and the ornament if you wish. Mount in the cross-slide, mill and cut away

the shaded portion down to the 13/16" dimension. In this case the vise was removable and, with the Body still in the jaws, moved to the bench and the centers for the Shaft Bushing and Cylinder Pivot laid out. Return to the mill and pick up these two centers with a wiggler, and bore and ream to size. This way the holes are sure to be perpendicular to the flats you just made. Grip squarely in a vise, lay out and make the 3/8" hole for the **CENTER POST**. Counter-drill 5/16" for the spring.

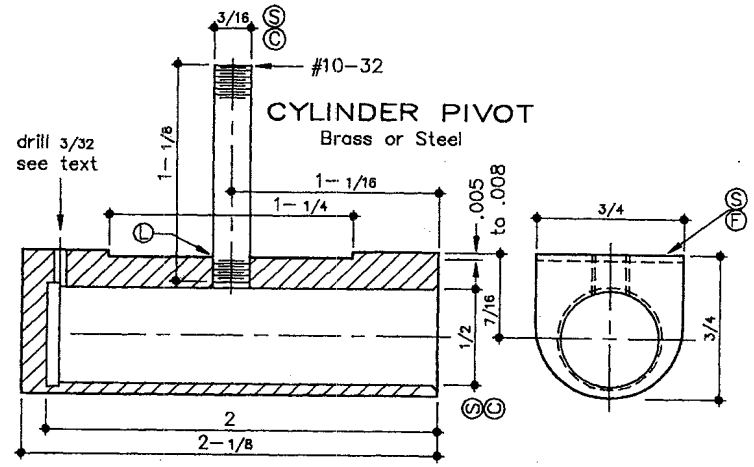


Ⓢ	close fit
Ⓞ	smooth
Ⓜ	braze or solder
Ⓟ	press fit or "loctite"
Ⓣ	flat
Ⓢ	"loctite"

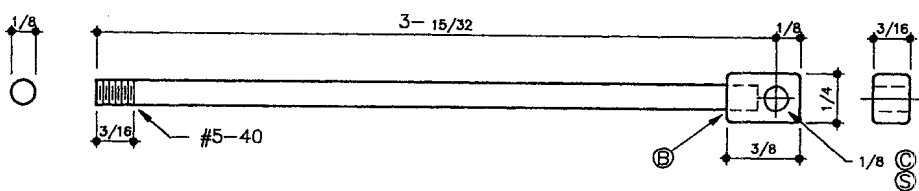
BASE
Aluminum or Steel



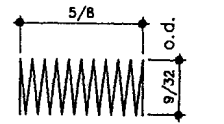
PISTON
Brass or Aluminum



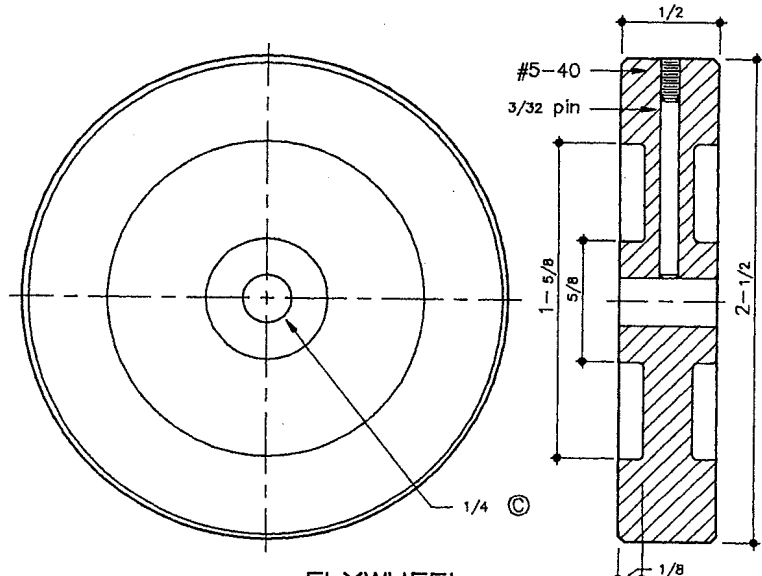
CYLINDER
Aluminum or Brass



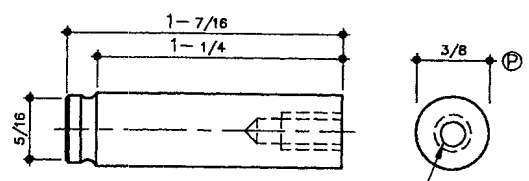
CONNECTING ROD
Brass or Steel



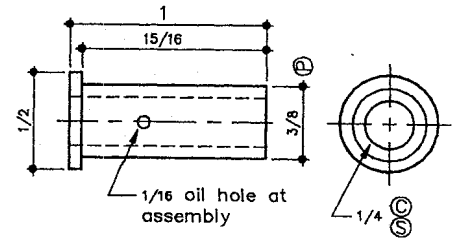
SPRING
Bronze
.036 wire diameter
approximately 8 coils



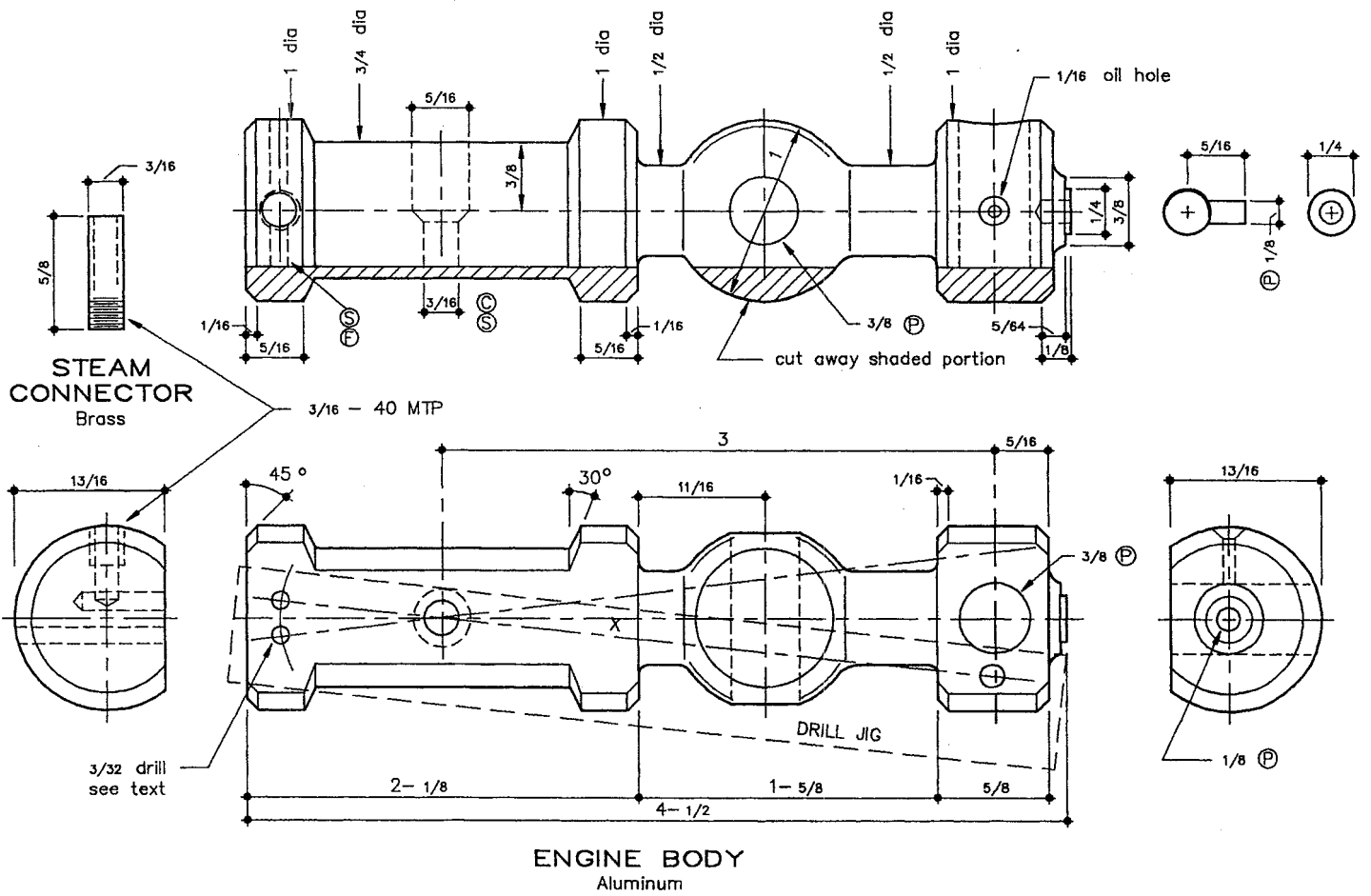
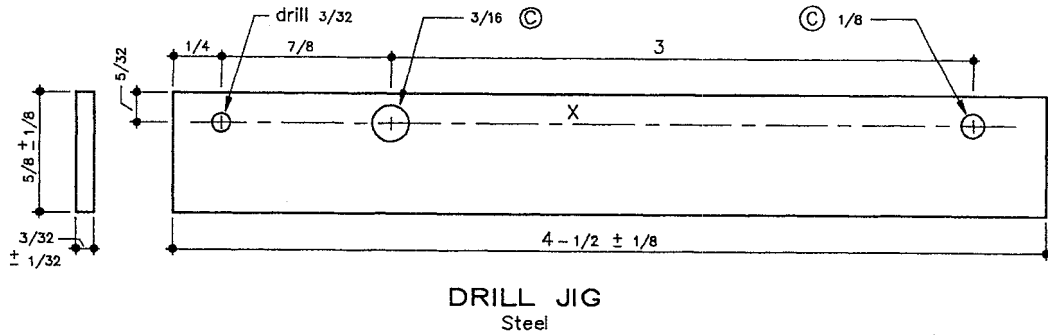
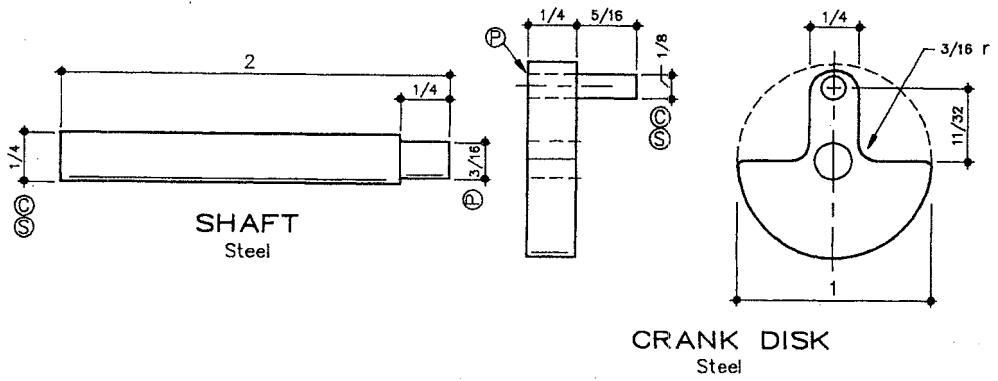
FLYWHEEL
Any metal

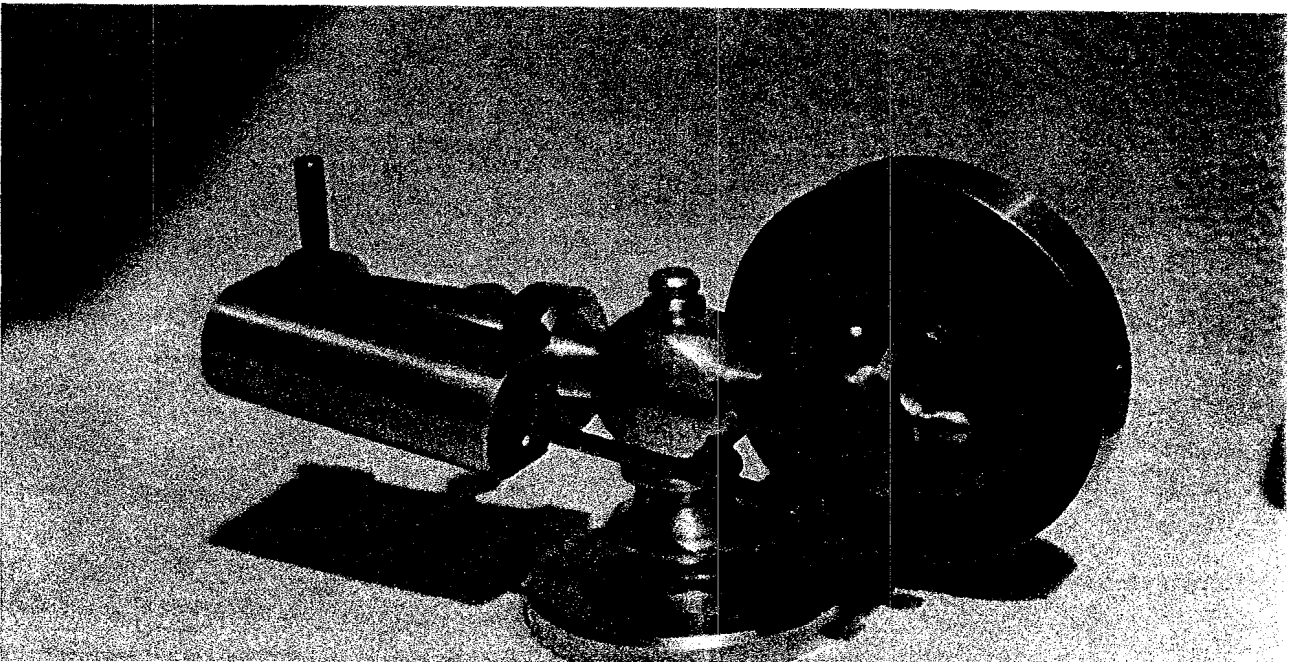
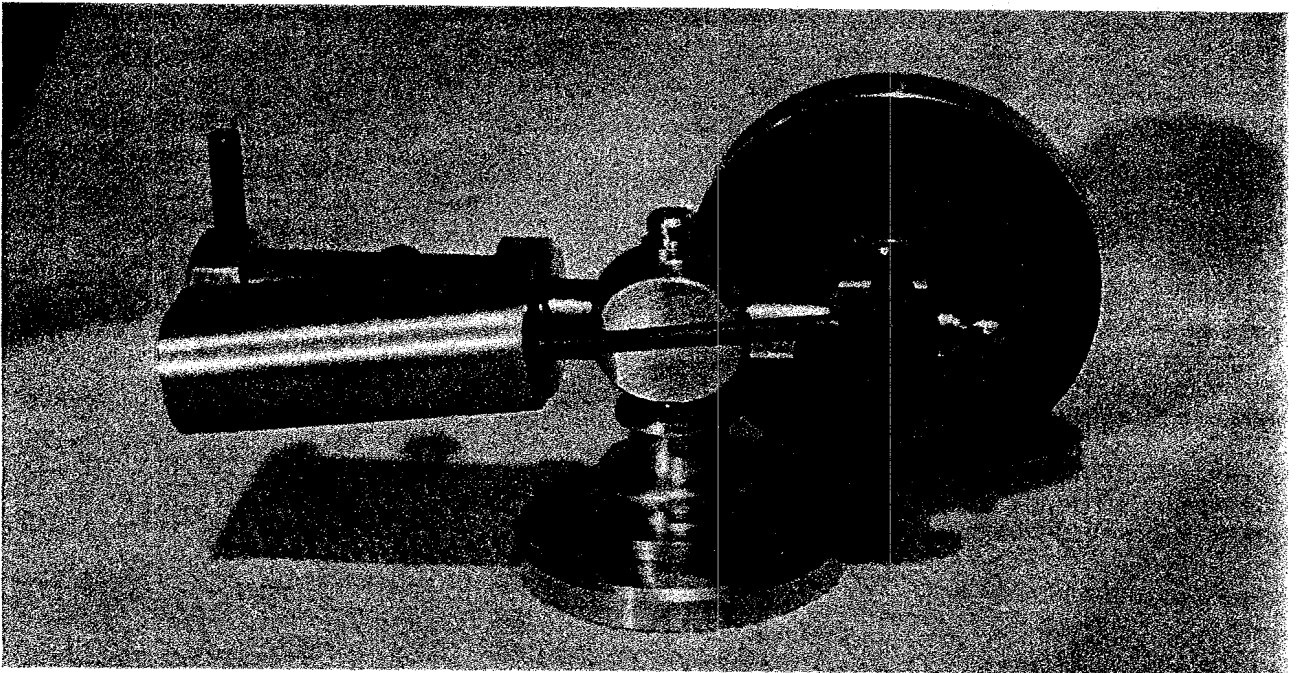
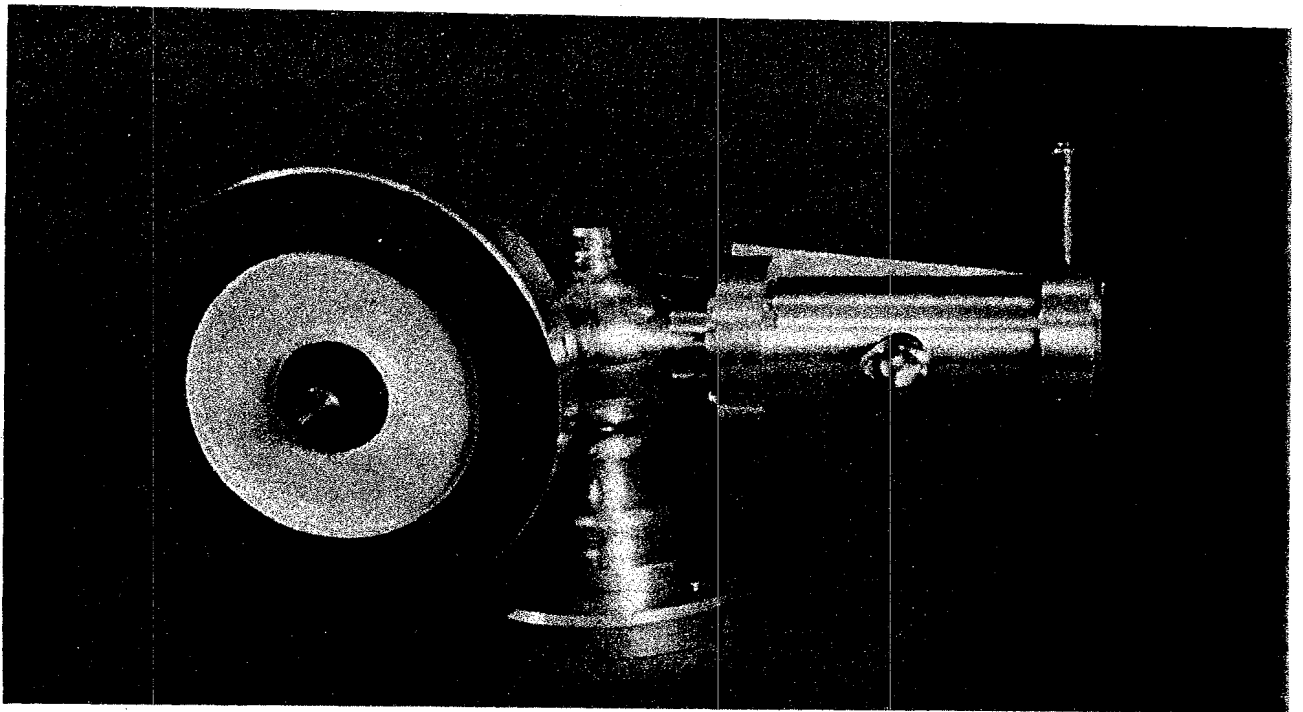


CENTER POST
Aluminum



BEARING BUSHING
Brass or Bronze





Make the **DRILL JIG**. Insert close-fitting pins in the 3/16" and 3/8" holes in the Body. Place the Jig over the 3/16" pin and hold the Jig against the 3/8" pin while drilling a 3/32" port hole. Turn the Jig over to make the other 3/32" port hole. Drill the Steam Passages and tap the Steam Connection.

Make and set the **CENTER POST** into the Body with Loctite.

Square up the end of a piece of 3/4" x 3/4" stock for the **CYLINDER**. Prick punch 7/16" from one face and center in the 4-jaw using a center test indicator and bore 1/2". Chuck in the 4-jaw, lightly true up and undercut the sealing surface. Tap #10-32 as square and true as possible.

Make the **CYLINDER PIVOT** and set squarely with loctite.

The **PISTON** is made a bit long since there are no guides. Assemble the Piston and **CONNECTING ROD** and insert in the Cylinder. Mount the Drill Jig over the pivot and run a close-fitting 1/8" pin through the Jig and crank pin hole in the Connecting Rod. Drill the 3/32" port hole in the Cylinder.

The outside surface of the Cylinder can be rounded as shown. It improves the appearance of the engine. This can be shaped or milled and given a final fine finish with file and emery.

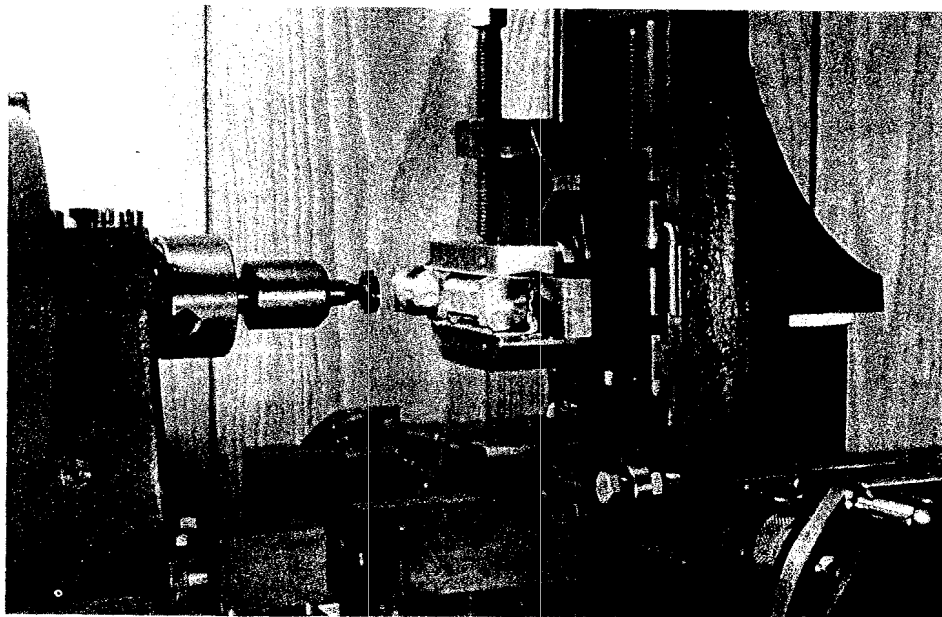
The **SPRING** used here came from the odds-and-ends department and has the proportions shown. Go over your spring collection and try for one near these dimensions and give it a try. You can tell from the effort it takes to rock the Cylinder. It should hold snug without too much drag. This surface is a good place for light "Moly" lube.

Since the common tap is too short to thread deep in the **FLYWHEEL**, a pin is used ahead of the setscrew. At final assembly, spot a flat on the **SHAFT** for this pin.

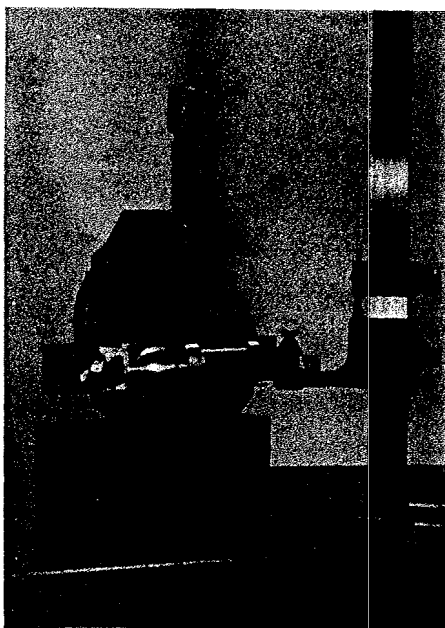
The **BASE** is mostly turning and can be shaped any way you wish. The proportions here looked fairly good when made in metal. Again, don't hesitate to try your own ideas. One lone #10-32 flat head screw holds the Body and Base together.

The **STEAM CONNECTION** is 3/16", so common aquarium tubing can be used, in this case on compressed air. Make the connection to suit your air or steam line.

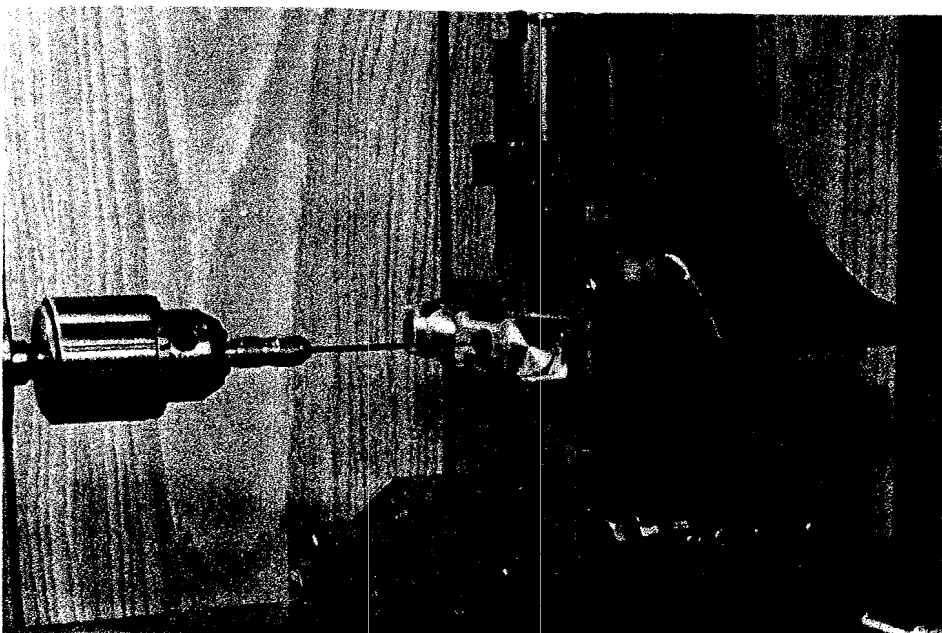
This engine ran good on 5 to 10 psi air and will give pleasure for years.



Above — Milling the flats on the engine body.



Left — Laying out the shaft and pivot centers. The vise was removed without disturbing the body.



Below — Picking up the center for the pivot hole with a wiggler.