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For a simple stationary engine, try this

Twin Vertical Wobbler

This is a simple Twin Vertical Wobbler made from scrapbox material. It features extended guides to reduce wear on the pistons.

The **BASE** and **COLUMN** need no explanation except for the porting in the Column. Lay out, drill and ream the two 1/8" Shaft holes. This is a good job for the lathe milling attachment. Pick up the hole center with a drill chuck and wiggler in the headstock. Set up one hole on center and zero the collar. Feed across 1-5/8" for the second hole.

Make a **DRILL JIG** from 1/16" steel. Calculations show the centerline through the Pivot and Valve holes at maximum throw to be 3/16" from the O.D. of the Crankshaft. 1/64" was added to gain a few thousandths more seal between the port holes. In use, the Jig is put over the Pivot Shaft and against the Crankshaft as shown. Turn the Jig over to get the other port hole. Please note that on the through hole for the intake, you should drill from each side of the Column. Do not go all the way through from one side. This is the reason for the Jig; to guarantee the location of the hole on the face of the Column. Pick up the centerline of these port holes and transfer them to the 1-1/4" faces of the Column and drill the 3/32" exhaust holes and the 3/16" intake.

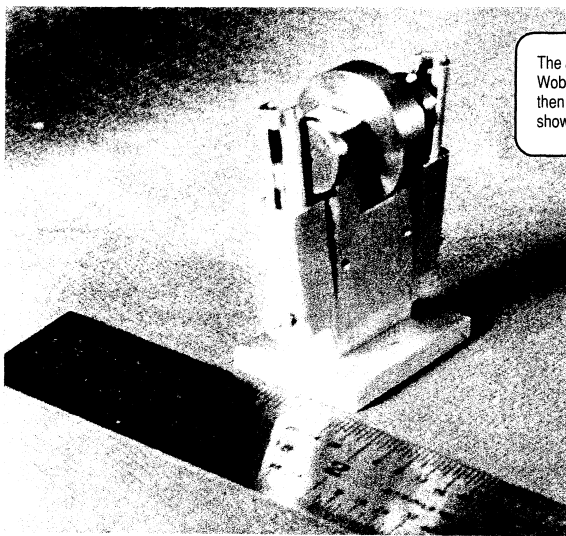
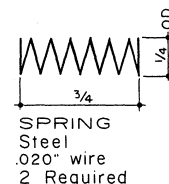
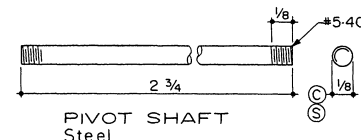
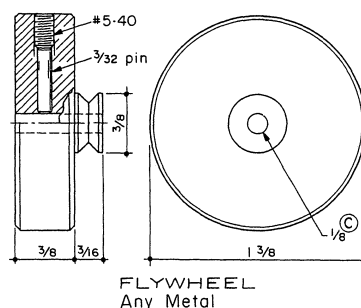
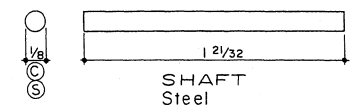
The two **CYLINDERS** are made from 1/2" square stock. First, lay out the 1/4" bore 1/16" off center and center punch. Chuck in a four-jaw and center the bore with a center test indicator. Turn the 3/8" diameter portion and bore and ream 1/4". File or mill the 3/8" diameter projection to form the **A** and **B** sections. Drill and ream the 1/8" pivot hole and counterdrill for the Spring.

Next, let's proceed with making the two **PISTONS**. Mark or stamp them so they can always be assembled in their own Cylinder the way they were fitted and worn in. Insert the Pivot Pin through the Cylinder and Jig. Insert the Piston for this Cylinder. Run a 1/16" pin through the Jig and the Crankpin hole in the Piston. The other 1/16" jig hole locates the steam port.

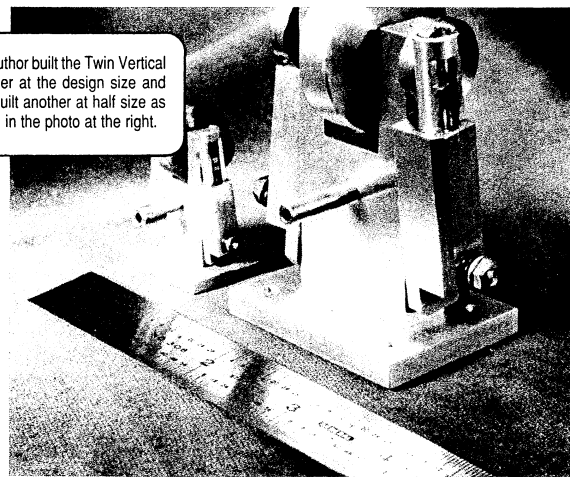
The **CRANK SHAFT** and **PIVOT SHAFT**, 3/16" STEAM CONNECTION, the **CRANK DISKS** and **FLYWHEEL** and the **CRANK DISKS** need no explanation.

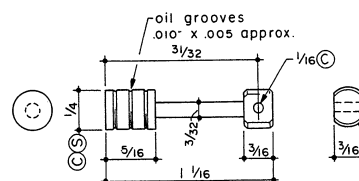
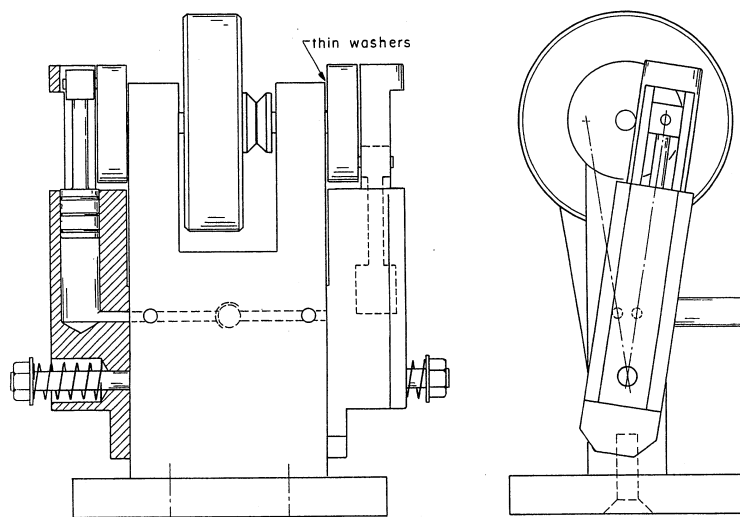
The **SPRINGS** were found in the salvage box. The one chosen measured 1-1/2" long and, when cut in two, each piece was about right for the job.

This engine performs quite well on as little as 5 to 10 psi air. It was a pleasure to build and a continuing pleasure to operate.

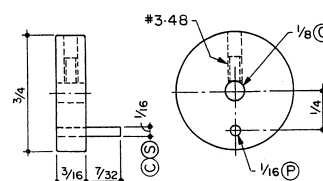


The author built the Twin Vertical Wobbler at the design size and then built another at half size as shown in the photo at the right.



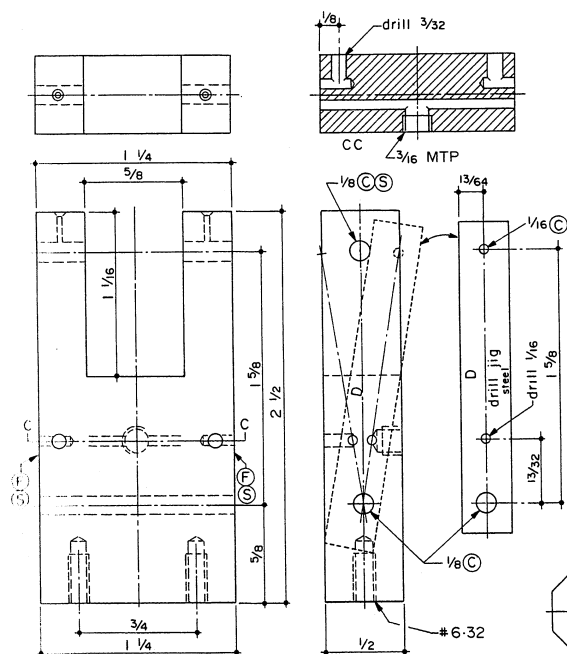


PISTON
Brass
2 Required

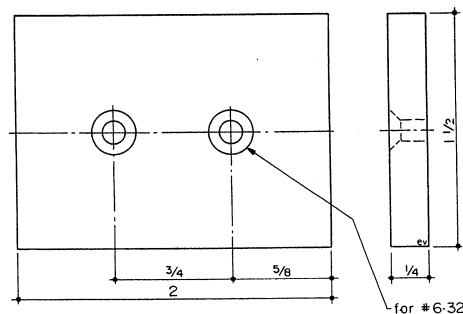


CRANK
Steel
2 Required

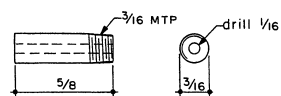
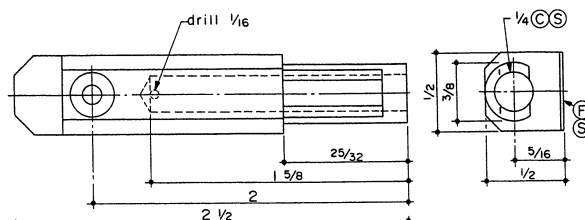
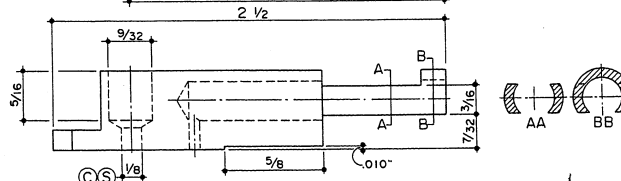
TWIN VERTICAL WOBBLER



COLUMN
Aluminum



BASE
Any Metal

STEAM CON.
Brass

CYLINDER
Hard Aluminum
2 Required