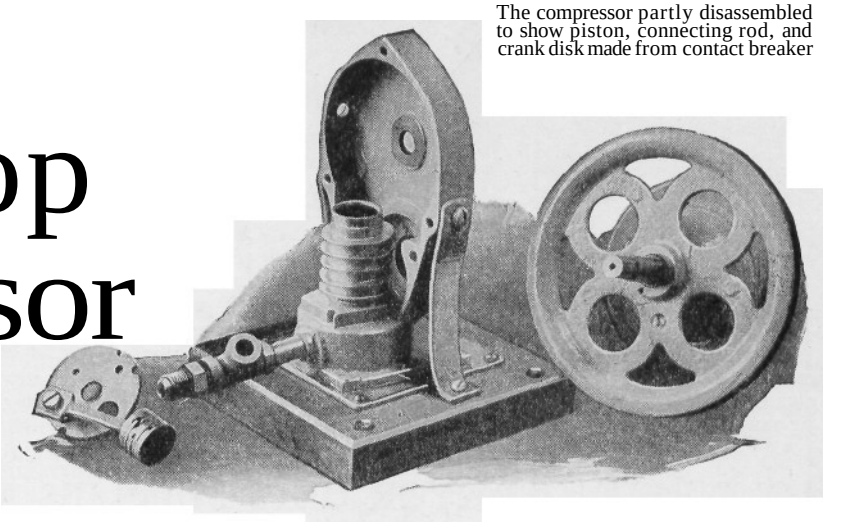
OLD MAGNETO PROVIDES PARTS FOR BUILDING

Small Workshop Compressor



The compressor partly disassembled to show piston, connecting rod, and crank disk made from contact breaker

MADE entirely out of scrap materials, the small compressor illustrated will raise a pressure of 25 lb. per sq. in. in a 6-cu. ft. tank in 25 minutes, which is ample for the average small gas torch. The consumption of line-shaft power is very small, an important consideration in many small shops.

Construction of the compressor is clearly shown in the photograph and large drawing below. Simplicity is the keynote of its construction throughout. The magneto which supplied most of the larger parts was purchased for fifty cents.

The method of procedure will be governed to some extent by the type of magneto available. Assuming the gear housing to be of cast iron and the end bearings to be of brass, it is a simple matter to saw and file out the gear housing to fit on the end bearing housing as shown. The two are fastened by a machine screw after being sweated together with soft solder. To do this successfully, the cast iron must be thoroughly cleaned and well tinned. The axis of the shaft hole in the gear housing must be kept parallel with the finished face of the brass base, Do not fasten these parts together permanently at this stage.

Chuck the base in the lathe and bore for the cylinder. The size depends upon the bushing used for a cylinder, but the drawing indicates the proportionate allowances to be made for shoulders and the like.

The next step is to turn, bore, and lap the cylinder to an inside diameter of 7/8 in., with other dimensions to suit the actual bushing available.

The cylinder bottom is soldered into place after fitting the simple ball valve. Make the valve seat very narrow, use a new ball, and tap the ball lightly on its seat before assembling to insure a tight valve.

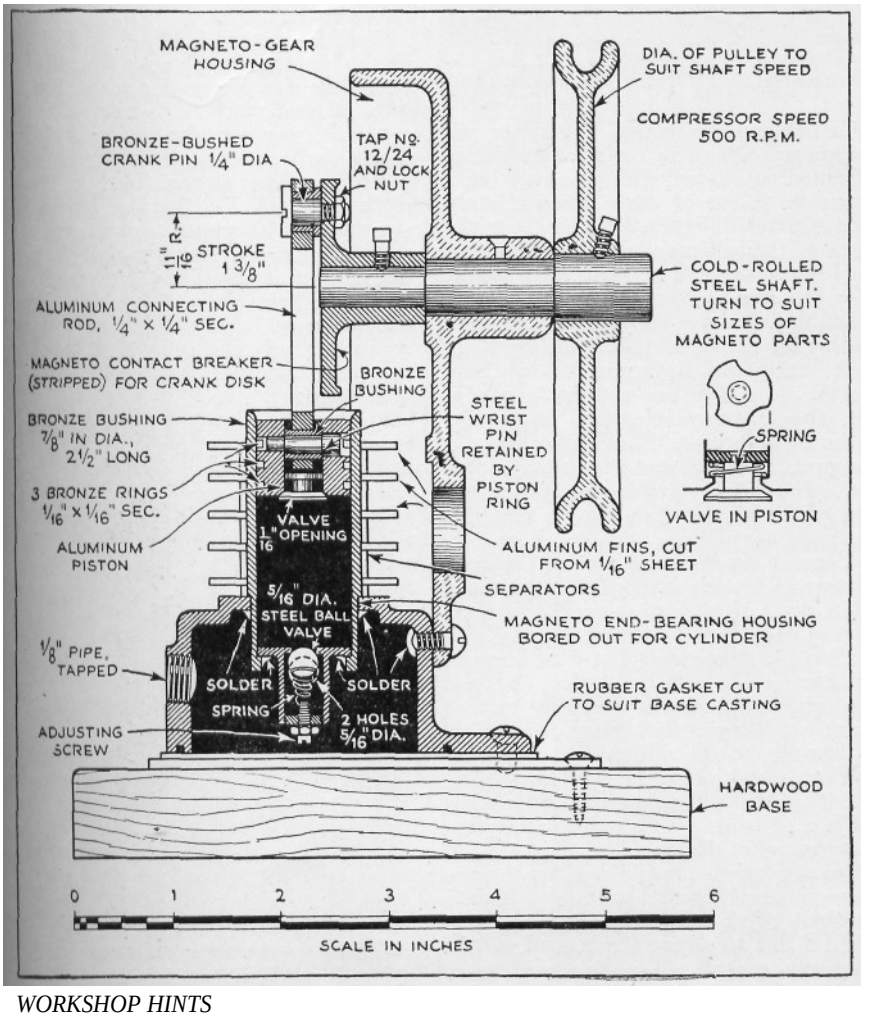
Mount the cylinder in the base and solder as shown. Care must be taken to see that the bore is at right angles to the finished face of the base. Note the aluminum cooling fins, which can be turned in the form of washers and threaded on the cylinder before mounting, with aluminum separators between them.

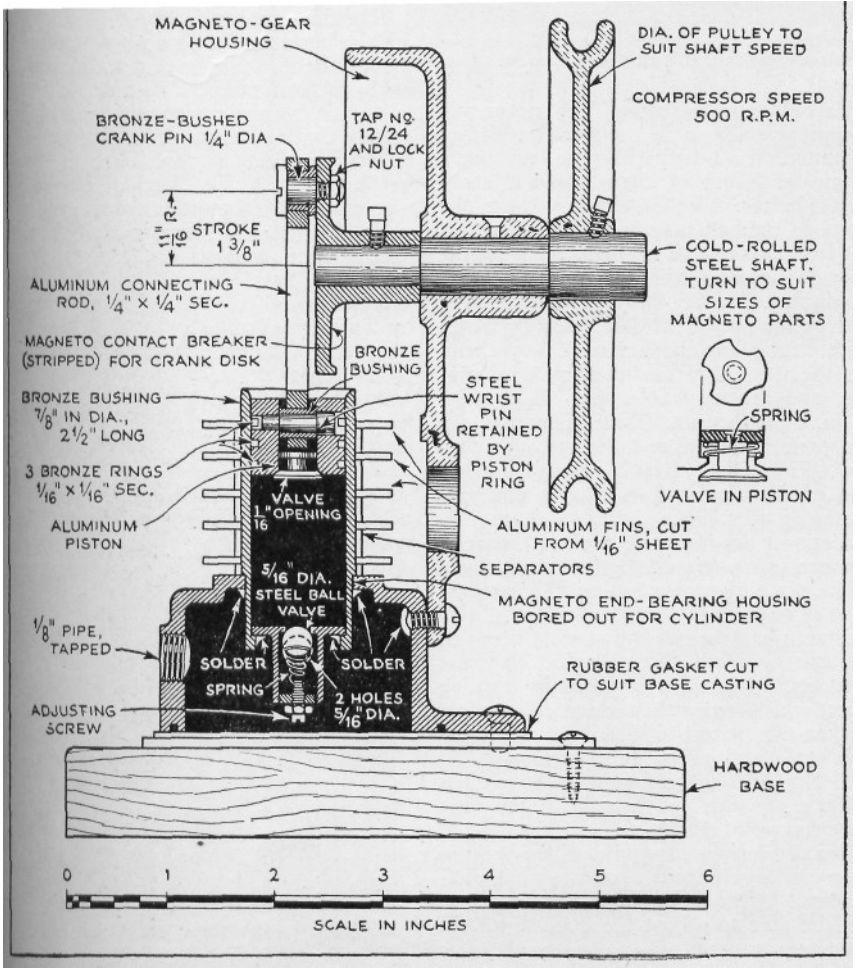
The piston is built up from 1/8 in. sheet aluminum cut into disks 7/8 in. in diameter and riveted together. The rivets must be so placed that they will not interfere with the ring grooves or the piston-pin hole. The inlet valve in the base of the piston is retained with two turns of very light steel spring sprung into a groove just above the valve seat. The ring grooves are turned 1/16 in. wide and 1/16 in. plus .002 in. deep. The rings are 7/8 in. in diameter and 1/16 in. thick, split at an angle of 45 deg. and sprung over the body into place, care being taken not to deform them.

The connecting rod is also built up out of the 1/8-in. aluminum sheet, two pieces being riveted together through the center section. The ends are left square in section as shown in the photograph and are fitted with bronze bushings for suitable pins, as indicated in the drawing.

Care is necessary to insure that all joints are air-tight, because with such a small displacement a very small leak will seriously cut down the efficiency of the compressor. The best running speed is about 500 r.p.m.

The lightness of the oscillating parts and the comparatively heavy driving pulley, acting as a flywheel, reduce vibration to a minimum, but the braces shown are necessary to give general lateral stiffness. They are bent out of 5/8-in. flat steel 1/8 in. thick, and fitted into place.




MAGNETO-GEAR HOUSING
DIA. OF PULLEY TO SUIT SHAFT SPEED
COMPRESSOR SPEED 500 R.P.M.
BRONZE-BUSHED CRANK PIN 1/4" DIA
TAP NO. 12/24 AND LOCK NUT
R. 11/16" STROKE 1 3/8"
COLD-ROLLED STEEL SHAFT. TURN TO SUIT SIZES OF MAGNETO PARTS
ALUMINUM CONNECTING ROD, 1/4" X 1/4" SEC.
MAGNETO CONTACT BREAKER (STRIPPED) FOR CRANK DISK
BRONZE BUSHING
BRONZE BUSHING 7/8" IN DIA., 2 1/2" LONG
STEEL WRIST PIN RETAINED BY PISTON RING
SPRING
VALVE IN PISTON
3 BRONZE RINGS 1/16" X 1/16" SEC.
VALVE 1/16" OPENING
ALUMINUM PISTON
ALUMINUM FINS, CUT FROM 1/16" SHEET
5/16" DIA. STEEL BALL VALVE
SEPARATORS
MAGNETO END-BEARING HOUSING BORED OUT FOR CYLINDER
1/8" PIPE, TAPPED
SOLDER
SOLDER
SPRING
2 HOLES 5/16" DIA.
RUBBER GASKET CUT TO SUIT BASE CASTING
ADJUSTING SCREW
HARDWOOD BASE
0 1 2 3 4 5 6
SCALE IN INCHES