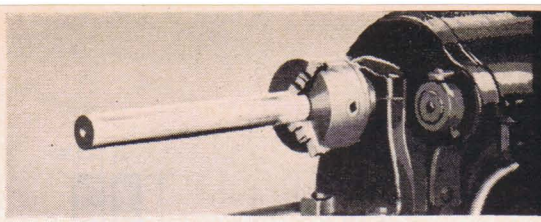
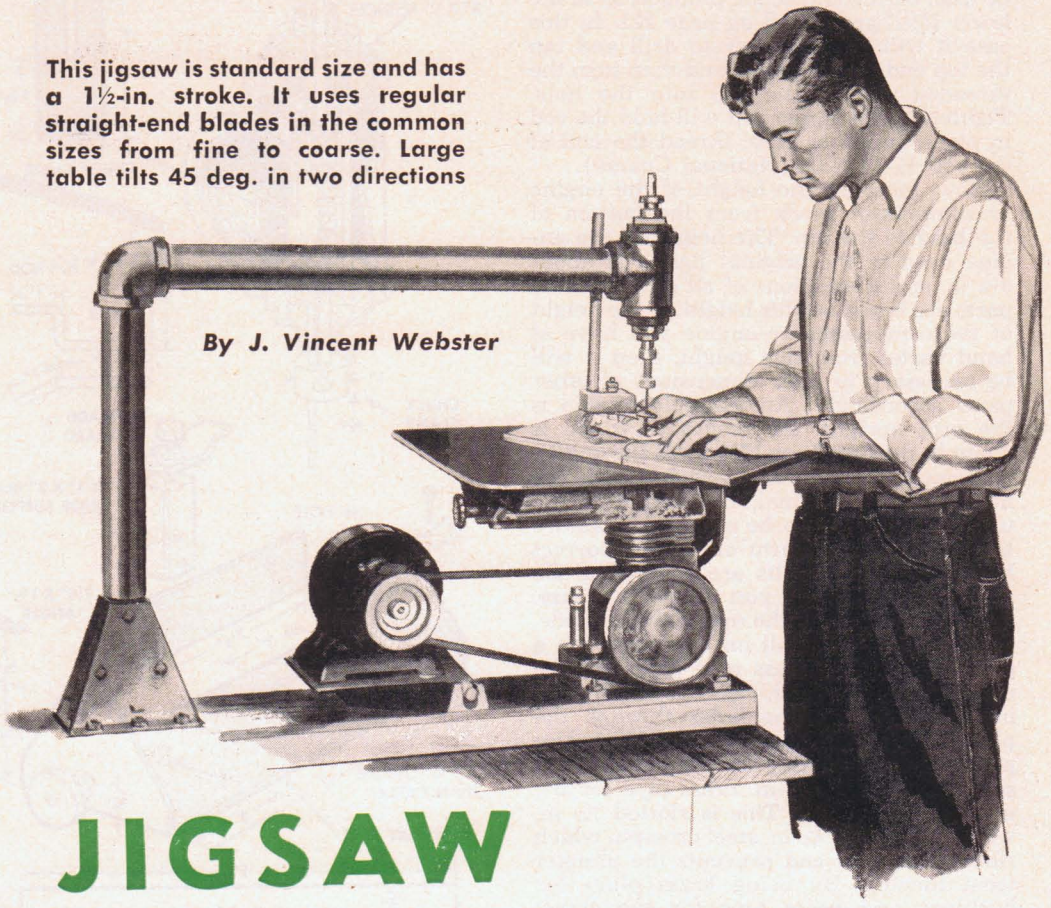


SHOP NOTES

This jigsaw is standard size and has a 1½-in. stroke. It uses regular straight-end blades in the common sizes from fine to coarse. Large table tilts 45 deg. in two directions



By J. Vincent Webster

JIGSAW
FROM SMALL ENGINE BLOCK

A SMALL GASOLINE engine stripped down to the block and crankshaft assembly becomes the sturdy driving mechanism of this 24-in. jigsaw. Any engine of the vertical air-cooled type having a 1½-in. stroke can be utilized. Also it is possible to use an old single-cylinder refrigerator or air compressor of the vertical type. All other parts are made from stock materials. The overarm is assembled from 2-in. pipe and fittings, the pipe tee at the outer end of the arm serving as a housing for the spring-tension mechanism and upper blade guide.

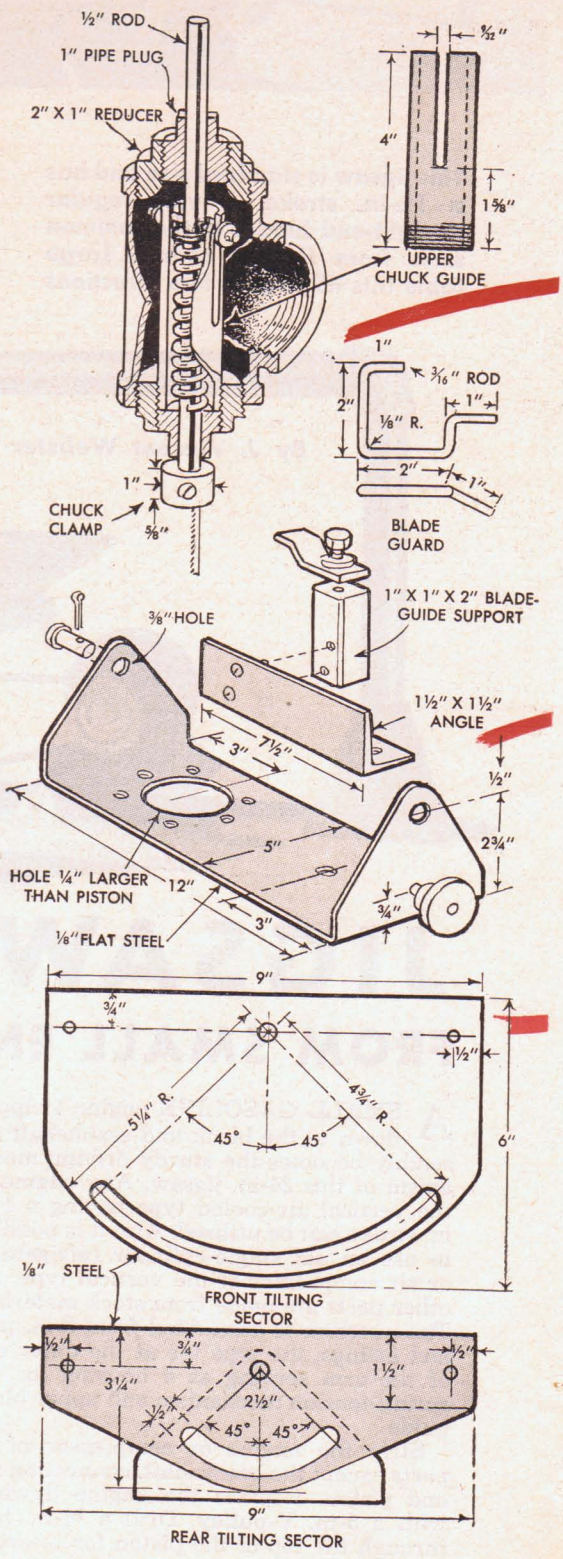
Strip the engine or compressor of all parts except the crankshaft, connecting rod and piston. Replace the engine flywheel with a 5-in. V-pulley. Drill a ½-in. hole through the top of the piston for insertion of the ½-in. rod on which the lower blade chuck is mounted. Both upper and lower blade chucks can be purchased ready-made as repair parts for commercial jigsaws. The lower end of the ready-made chuck is drilled so that it can be slipped over the end of the rod, or plunger, and locked in place with a setscrew. In some cases it may be necessary to shoulder the upper end of the ½-in. rod so the chuck can be fitted. It also is possible to make a suitable blade chuck by simply slotting the end of the ½-in. rod with a fine hacksaw blade to a depth of about ½ in. Then sweat-solder or weld a ½-in. shaft collar to the upper end of the rod. Drill and tap straight through the shaft and collar at right angles to the slot for ¼-in. setscrews. Hollow setscrews turned into the holes will hold the blade

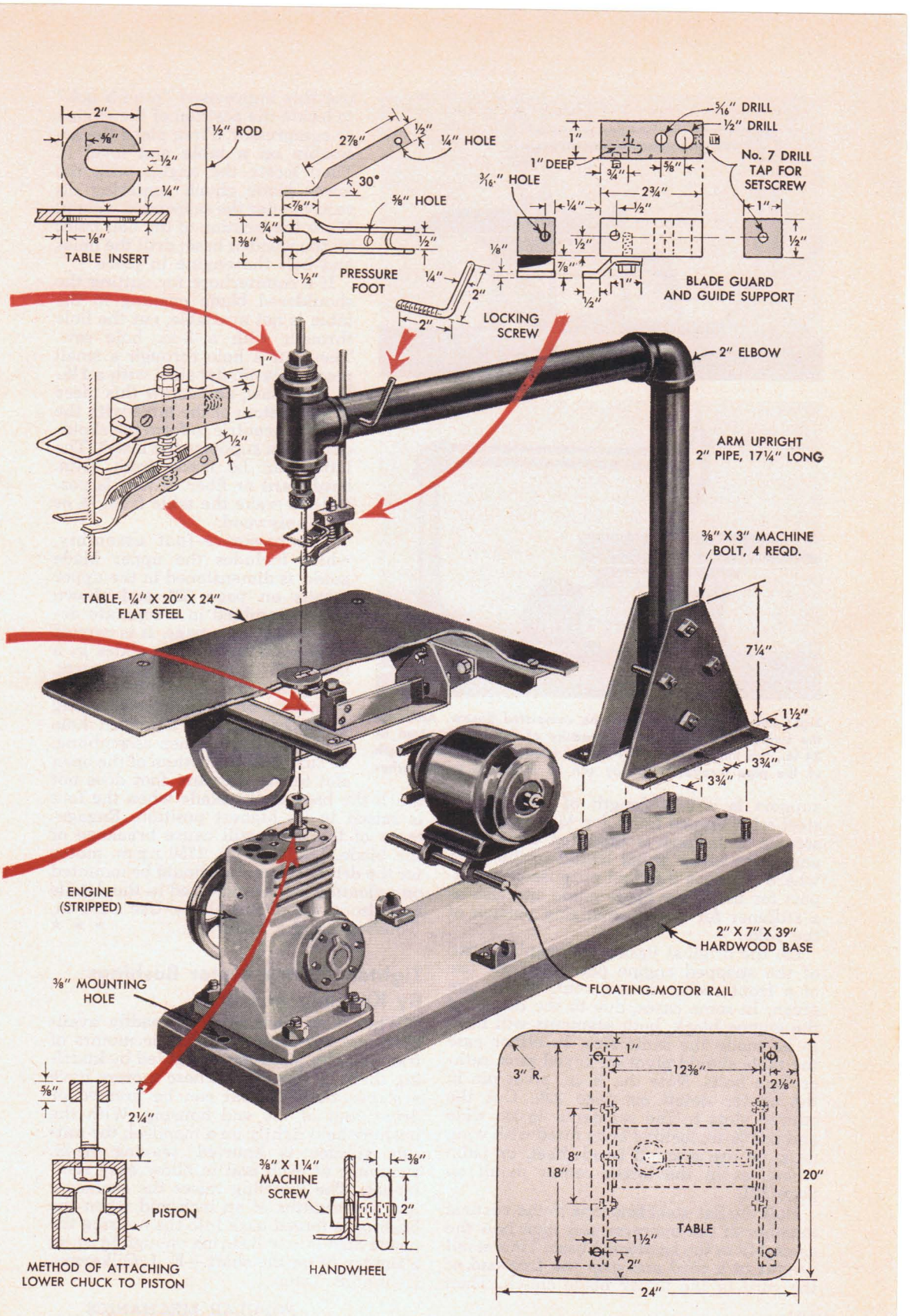
securely in position. The upper blade chuck also can be made in this manner if desired. On some engines and compressors the top end of the piston will not permit a nut to be used on the end of the plunger, as in the lower left-hand detail on page 221. In this case it will be necessary to drill and tap the top end of the piston, and then turn the threaded end of the rod into the hole. Tightening the upper nut will hold the rod in place. In either case, thread the end of the rod ½-13 N.C. (National Coarse).

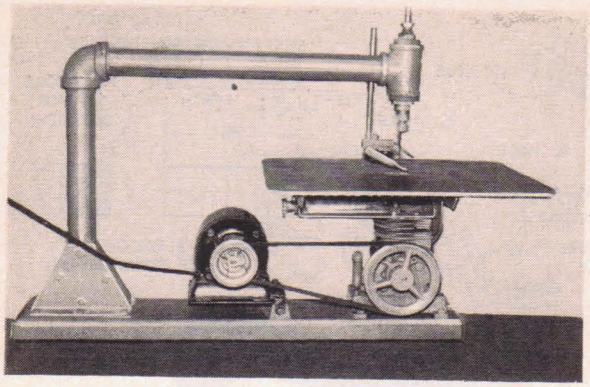
Now, measure the height of the engine or compressor block from the bottom of the base to the top. The height of the engine used in the original jigsaw is about 9⅛ in. and dimensions of all other related parts are based on this height. If the height of the compressor or engine you have at hand varies from this height, then it will be necessary to alter dimensions of other parts accordingly. An example of this is the arm upright, the length of which is given in the details as 17¼ in. If the engine or compressor you have varies from the height of the original, the length of the upright will have to be changed to assure that the table and arm are at the correct height when the units are assembled. Be sure to check before you cut parts to size.

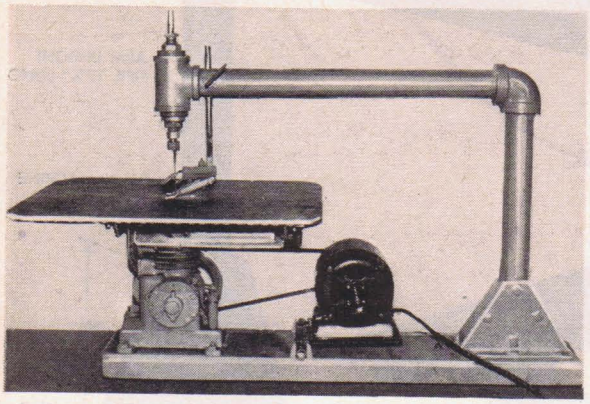
When assembling the upper chuck guide, upper left-hand detail on this page, it's a good idea to use brass pipe plugs for the upper and lower bushings carrying the ½-in. plunger. Drill the holes through the plugs 7/16 in. in dia. and ream to ½ in. Use polished steel shafting for the plunger. Also, it's best to use 1-in. brass pipe for the upper chuck guide. This is slotted 9/32 in. wide to clear the ¼-in. steel crosspin which rides in the slot and prevents the plunger from turning. By using brass plugs for bushings and brass pipe for the chuck guide, compatible wear surfaces will be provided for both the plunger and pin.

The sector, or trunnion yoke, center detail at the right, is made by cold-bending ⅛-in. flat steel. Note the assembly of these parts in the cutaway view on the opposite page. The complete assembly consists of the front and rear sectors, or segments, the yoke, the lower blade guide and its angle-steel support, and two angle-steel brackets to which the segments are bolted. As will be noted, the table is bolted to the brackets when the assembly is complete. Again it is necessary to carefully check the dimensions before cutting parts. Bolt holes in the yoke should be located from the cylinder head of the engine or compressor. The clearance hole, which must be at least ¼ in. larger in dia. than the piston, should be located likewise. The latter can be cut through with a plumber's hole saw if no circle cutter is available. The blade-guide




2"
⅜"
½"
¼"
⅛"
TABLE INSERT
½" ROD
2⅞"
½"
¼" HOLE
30°
⅞"
⅝" HOLE
¾"
1⅜"
½"
½"
PRESSURE FOOT
¼"
2"
2"
LOCKING SCREW
5/16" DRILL
½" DRILL
1"
1" DEEP
¾"
⅝"
No. 7 DRILL TAP FOR SETSCREW
3/16" HOLE
2¾"
¼"
½"
1"
⅛"
½"
⅞"
1"
½"
½"
BLADE GUARD AND GUIDE SUPPORT
2" ELBOW
1"
½"
ARM UPRIGHT 2" PIPE, 17¼" LONG
⅜" X 3" MACHINE BOLT, 4 REQD.
TABLE, ¼" X 20" X 24" FLAT STEEL
7¼"
1½"
3¾"
3¾"
ENGINE (STRIPPED)
2" X 7" X 39" HARDWOOD BASE
⅜" MOUNTING HOLE
FLOATING-MOTOR RAIL
⅝"
2¼"
PISTON
METHOD OF ATTACHING LOWER CHUCK TO PISTON
⅜" X 1¼" MACHINE SCREW
⅜"
2"
HANDWHEEL
3" R.
1"
12⅜"
2⅛"
8"
18"
20"
TABLE
1½"
2"
24"





Right and left-hand views of the completed jigsaw. Although the swing, or blade-to-frame capacity of the saw is given as 24 in., this may vary slightly due to irregularities in the length of the pipe threads. Capacity can be increased to 30 inches

support is a 2-in. length of 1-in.-square steel with tapped holes for ¼-in. machine screws. This part is mounted on a steel angle, the latter being bolted to the yoke where it serves the dual purpose of a support for the lower blade guide and also as a stiffener for the overhanging portion of the yoke.

On the original jigsaw the manifold pad of the stripped engine permitted the use of a front sector, or segment, of the size given. In some cases, due to the design of the engine block, both segments will have to be made the same size. In either case the table should pivot on keyed pins, rather than bolts. Note the ⅜-in. pivot pin in the center detail on page 220. Cut the curved slots in the segments ½ in. wide and use ⅜-in. locking bolts fitted with wing nuts, or use a small handwheel, or palm wheel, as in the lower center detail on page 221.

Bolt the flat-steel brackets to the vertical member of the overarm and then bolt the assembly to the hardwood base. Tie a small weight to a cord and grip the free end of the cord in the upper blade chuck. Then use this improvised "plumb bob" to locate the position of the engine or compressor. First, place the assembly on a table and level it. Then locate the engine with the lower blade chuck centering directly under the suspended weight. Mark the location of the bolt holes on the wooden base; drill the holes and bolt the engine in place.

If a counterbore for cutting the shouldered blade opening in the table is not available, cut the hole through with a 2-in. hole saw. Then cut a hole through a small piece of ⅛-in. flat steel with a 1½-in. hole saw, and screw this piece to the bottom of the table with the holes concentric to form the shoulder which supports the insert. The latter can be made from ¼-in. hardboard or fiber. It also is possible to make the table from ⅜ or ½-in. plywood.

The pressure-foot assembly, which includes the upper blade guide, is dimensioned in the upper details on page 221 and shown fully assembled in a separate detail on the same page. It is carried on a ½-in. rod which slides in a hole drilled through the overarm. The guide is held in any position by means of an L-shaped locking screw turned into a tapped hole in the overarm. When assembling, be sure that the bottom of the open slot in the pressure foot does not touch the back of the blade when the foot is raised to its highest position. Engagement of the parts will cause breakage of the blade. Use a ¼-hp. 1750 r.p.m. motor for the drive. The motor should be mounted on a floating rail as indicated in the details and also in the photos above. Use a 2½-in. V-pulley on the motor. ★ ★ ★

Tighten Electric Motor Bushings By Knurling in Lathe

When new parts are not readily available, worn bearings on electric motors of fractional hp. sizes can be tighted by knurling them in the lathe. These motors have a sleeve bushing that can be pressed or driven out of the end housing. With the bushing held lightly on a mandrel, the outside surface is knurled, leaving 1/16-in. clearance at each end to allow easy reinsertion. The knurling raises the surface a few thousandths of an inch and when the bushing is forced back into the housing the inside diameter will shrink enough to cause a tighter fit on the shaft.—E. J. Gilkerson, Columbus, Ohio.