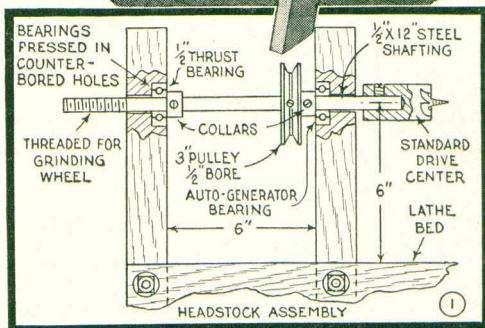
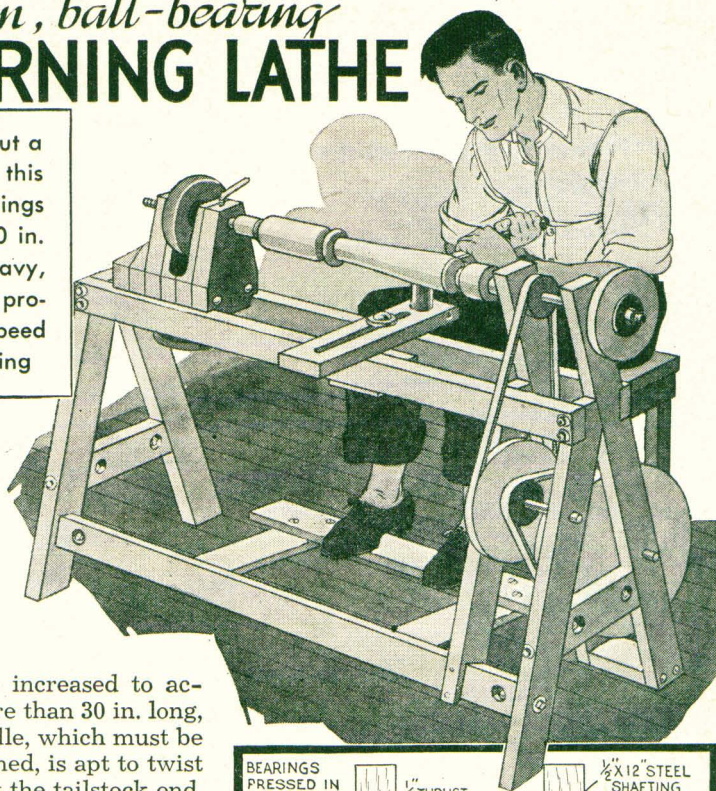


Treadle-driven, ball-bearing WOODTURNING LATHE

You need not go without a lathe as you can make this sturdy one of wood. Swings 12 in. over bed and 30 in. between centers. A heavy, balanced countershaft provides uniform spindle speed with moderate pedaling

By W. C. Leckey

WITH the exception of turned wooden pulleys and the form to cast a flywheel, you can build this efficient treadle lathe with a few hand tools. Distance between centers can be increased to accommodate turnings more than 30 in. long, but in doing so, the treadle, which must be correspondingly lengthened, is apt to twist when pedaling is done at the tailstock end. Spindle height is such to enable one to pedal the lathe from either a standing or sitting position. Approximately 100 downward strokes of the treadle per minute will give a spindle speed recommended for turning. Common 2-by-4-in. fir stock is satisfactory for the stand. Side and front views in Fig. 8 give the correct length to cut each member. Note how the headstock is incorporated in the twin front legs. Except for fastening the bed pieces, the type of assembly shown to the right of Fig. 3 is used throughout, which permits tightening joints that may become loose. The small pin indicated is provided to keep the members in line when drawing up the bolts. Endless V-beltting or round leather

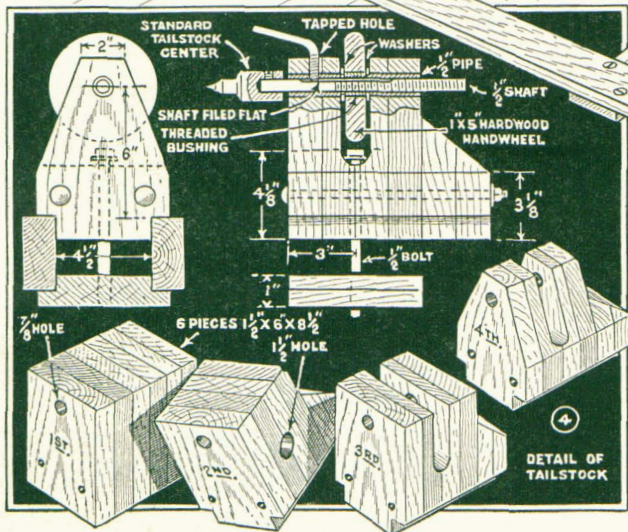
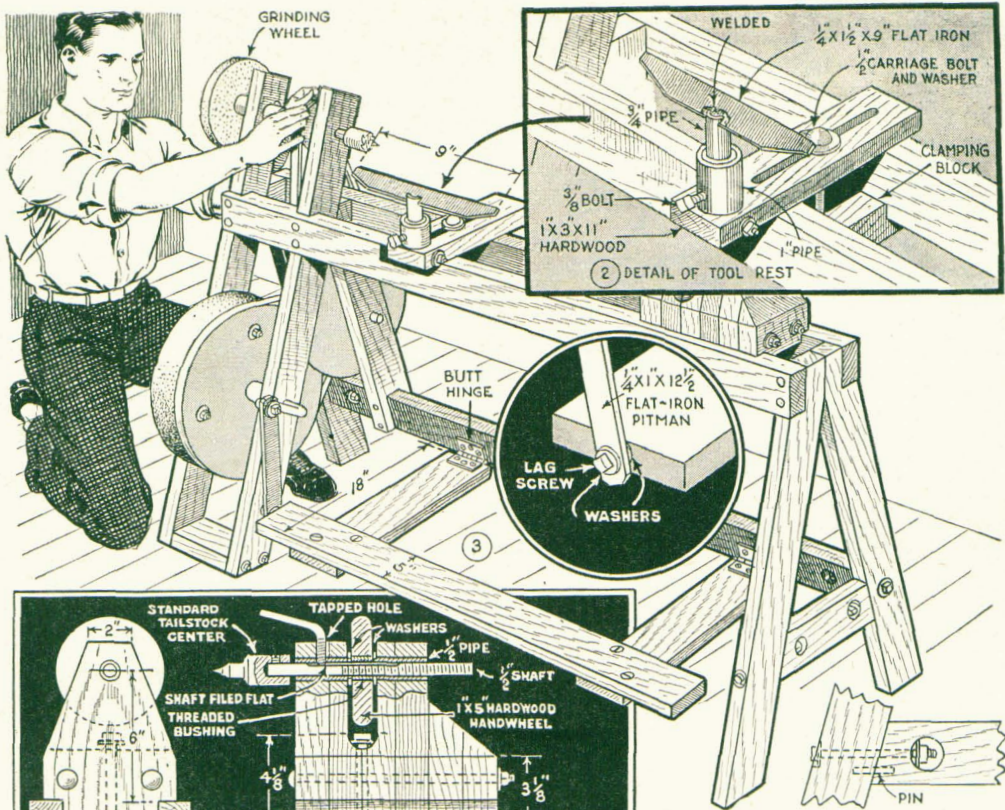


belting, joined, will do to rig the countershaft. As no tension adjustment is provided, it will be necessary, if an endless belt is used to drive the headstock spindle, to vary the position of the rear countershaft pulley to be able to stretch the belt snugly

Inexpensive Sanding Disks Made From Plywood and Tin

Small sanding disks for a lathe are made easily from plywood disks. After cutting to size, make a sheet-metal disk to match. Drill one wood disk and countersink the hole to take a nail. Then

punch the metal disk for the nail and solder the two together. Drill screw holes through both metal and wood disks for attachment of second wood disk to which abrasive paper is glued.



over it. Belt dressing can be used if slippage develops.

Ball bearings in both the headstock and countershaft make the lathe exceptionally smooth running and are preferred to bronze bearings, although Ford model-T spindle body bushings can be used if you are unable to secure ball bearings. Fig. 1 details the headstock. The holes for the bearings must be centered an equal distance above the bed and counterbored on facing sides to provide a press fit for the bearings. An auto-generator bearing will do for the inner bearing, but the outer one should be of the type to take end thrust when pressure is applied by the tailstock.

The 3-in. pulley, besides the drive and tail centers, are standard and come fitted with setscrews for attaching them to a 1/2-in. shaft. A 6- or 8-in. grinding wheel fitted to the outer end of the spindle serves a double purpose in providing a means for sharpening your lathe tools and at the same time contributing to the momentum. Collars are used against each bearing to take up end play.

The flywheel detailed in Figs. 5 and 6 provides the necessary momentum to keep the spindle turning at a uniform speed. Extra care must be used in centering the hub to have the flywheel run fairly true. About the easiest way to do this is to first mark a 17-in. circle on the plywood bottom of the form by which it can be centered when fastening it in place with screws. Then a hole is drilled in the exact center to take the 1/2-in. pipe hub snugly. A cleat across the top of the form holds the upper end of the pipe in position, while at the bottom a small block and a coupling

are used. The pipe should extend about $\frac{1}{2}$ in. above the top of the form. As the drive pulley is fastened directly to the flywheel, greased dowels are placed in the form to provide bolt holes for this in the casting. Use a fairly rich aggregate consisting of cement, 1 part, sharp sand, 3 parts, and place pieces of wire mesh in the form as the pouring progresses to reinforce the work. Allow the concrete to set several days until fully cured. The flywheel is fastened to the pitman crank by a setscrew tapped in the coupling. Note in Fig. 8 that the point of fastening the pitman to the treadle should be directly in line with the flywheel shaft. Bearings for the countershaft assembly are fitted the same as those in the headstock. Plywood is best for the countershaft pulleys, the two rear ones being turned and grooved separately, screwed together and pinned to their shaft. Here collars are used as before to take up end play.

Fig. 4 details the tailstock and shows the progressive steps to follow in shaping the glued-up block. The spindle hole, which is bored while the block is still square, is bushed on each side of the handwheel opening with a $\frac{1}{2}$ -in. pipe nipple to receive a $\frac{1}{2}$ -in. threaded shaft. Note that one side of the shaft is filed flat for the end of the lock lever which keeps the spindle from turning when being advanced or withdrawn by the handwheel. The latter is of wood and has a threaded bushing imbedded in its center to fit the spindle. Washers center it in the opening. Both tailstock and tool rest clamp in place by handwheels fitted below the bed as shown in Figs. 7 and 8. The tool rest and holder are made according to Fig. 2. The post socket, which consists of a 1-in. pipe nipple inside a coupling, is anchored to the base by boring a hole in the latter to take the coupling snugly and then drilling crosswise through both for a $3\frac{1}{2}$ -in. carriage bolt.

