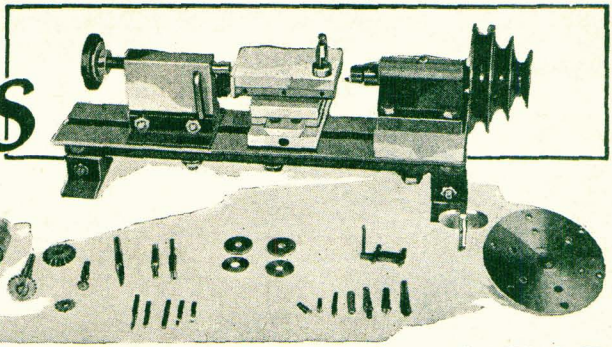


Tools and Fittings



for the MODEL MAKER'S LATHE

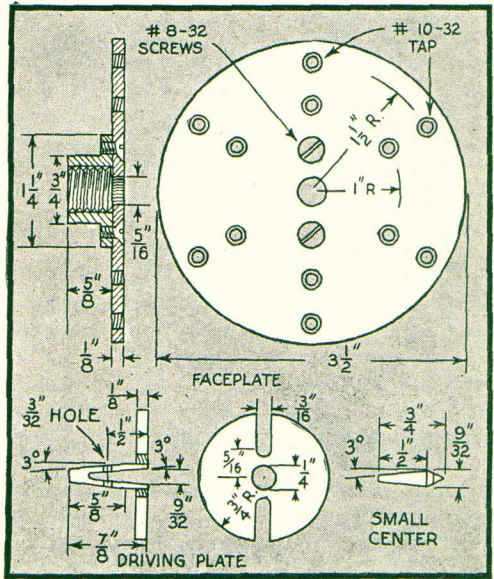
By W. R. Bell

Part II

AFTER building the small model maker's lathe, previously described, you will need tools and equipment. The first essential is the cutting bit. For a general-use tool, it is best to have a clearance angle of 10° , a back slope of 5° and side slope of 10° . Experience will teach just how much to vary these for different kinds of work. Material for these bits can be purchased in the form of high-speed steel bars, already hardened and ready to grind, from supply houses handling jewelers' equipment. The rough bit for the lathe described should be $\frac{1}{8}$ in. square and about 1 in. long. Of course, boring tools will have to be longer to suit each case.

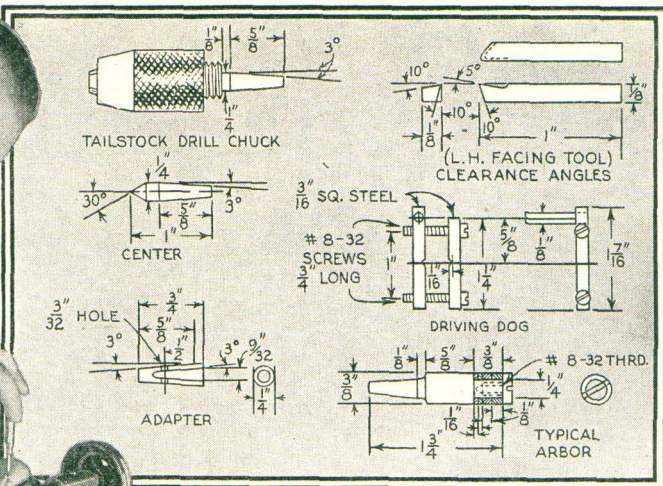
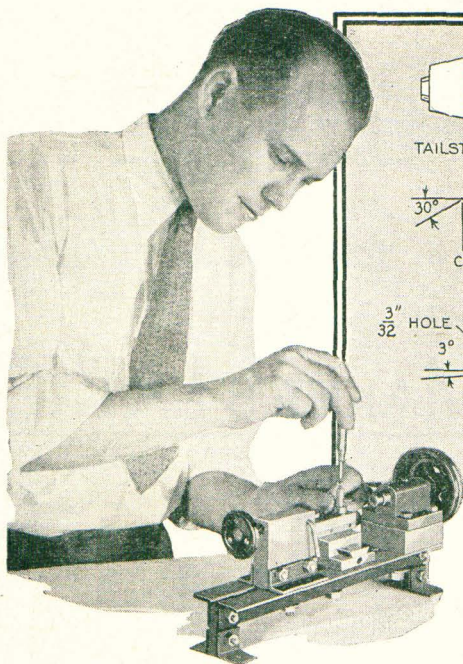
Next in importance, from the standpoint of frequent use, is a small drill chuck for the tailstock. This will be used whenever holes are drilled in a piece held in the headstock chuck. Any type chuck of $\frac{1}{4}$ -in. capacity will suffice. Only enough of the inside threaded shaft is required to cover the full range of chuck adjustments, and a small taper shank is turned up and pressed into a hole drilled in the chuck. The taper must fit the hole in the spindle.

The faceplate is another part used frequently. This is best made in two pieces. The hub can be made from a nut, or from a similar piece, a hole being threaded to fit the shaft. The plate is laid out for the holes, and these are drilled and tapped before being mounted on the hub. Although the illustration shows the use of screws in



mounting, pressing, riveting or soldering are equally good. True up the plate by facing and turning the diameter.

Centers are made from drill rod hardened after turning. They are polished with fine emery cloth after hardening. Two sizes are shown, together with an adapter, to make the small ones fit the large taper. The larger fit the spindles, and the lesser ones are used in the small driving plates and centers. At this time a taper hole is drilled and reamed in the headstock spindle, as you now have the tailstock chuck to hold the drill and reamer for this operation. This hole is identical with that in the tailstock, so that all tapers will be interchangeable.



The driving plate and dog are used when small diameters are turned between centers. It is well to have more than one size, to suit your own conditions. The smaller size fits in the tapered hole, while the larger is screwed on like the faceplate. Arbors are used in innumerable ways, and for this reason it is advisable to have quite a range of sizes. They make good mountings for saws, small emery wheels and cutters, and may be used to hold small pieces

for turning when these have a concentric hole in them. Collars or spacers are included with each arbor to accommodate varying thicknesses to be held on them. Light milling or slotting can be done with the saws and cutters by clamping the work to the slide-rest top, with the toolpost removed; a few tapered holes in the rest top will aid in clamping. The tailstock makes a fine drillpress if provided with a plate having a taper shank. Make the plate of brass and solder the shank in. Face it true, and you will have a good surface to drill against. You are now equipped to do all kinds of ordinary metal-turning jobs of small size, and in special cases extra accessories can be made to suit.

This Simple Jig for Cutting Tenons Fits Any Circular Saw

Here's a jig for safely cutting tenons on your circular saw. It consists of three blocks; one is the base and the other two are fastened together at right angles as indicated. The underside of the base is slotted for an oak runner, which slides in the miter-gauge groove of the saw table. The upper surface of the base and the lower surface of the horizontal block that fits on the base, are each grooved at right angles to the first groove, to fit a runner which permits lateral adjustment. The horizontal block is fastened to the base with bolts which slide in slots to permit adjusting the jig for cutting tenons of different thicknesses. A C-clamp will hold the work.

