

Angled Tenons on the Tablesaw

Sliding table, crossfeed box and wedges ensure accuracy, ease and repeatability

by William Krase



Angled tenons can be difficult to cut—especially if they're compound. Krase's system greatly simplifies the process. The workpiece seats securely against the wedges at the juncture of the crossfeed and sliding table, while the sliding table guides the whole affair through the blade.

Lots of furniture—especially pieces intended to accommodate the human body—require joints that are not square. Chairs may have as many as 16 such joints, some of which are compound (angled in two planes). That's why chairs can be difficult. They don't have to be.

With my addition of a crossfeed box to Kelly Mehler's sliding table (FWW #89, p. 72) and the use of purpose-made wedges, you can cut even compound-angled tenons quickly, accurately, time after time (see the photo at left). The wedges establish the tenon angle while the crossfeed box positions the workpiece to get the correct length, width and thickness of tenon.

I arrived at this method of cutting angled tenons because I wanted to make the stool in the photo below. Since then, I've used it on four more pieces of furniture—over 60 angled joints in all. Though now I wish I'd made the sliding table and crossfeed box of a better material, I've been completely satisfied with both the apparatus and the results.

I used regular particleboard (the kind often used for floor underlayment) for the sliding table's base and for the crossfeed box (see the drawing for critical dimensions and construction information). Particleboard is what I had handy, but if I were to build another, I'd use medium-density fiberboard (MDF) or a good-quality birch plywood instead. Particleboard seems to be susceptible to changes in humidity, resulting in some binding whenever the humidity becomes extreme.

I make wedges for projects as I need them. They must be long enough to support the workpiece securely in the upright position. I've found that 1-ft. sections of 2x stock work well.

To make the thumbscrews that fasten the crossfeed box to the sliding table, I bought a length of 1/16-in. by 1/2-in. brass strip (from a hobby shop), cut pieces to size and soldered them into the head

slots of slotted brass machine screws. The resulting homemade thumbscrews are oversized, so it's easy to tighten the crossfeed box in place. I use large washers beneath the thumbscrews to prevent them from digging into the crossfeed box.

Cutting tenons

Generally, the first thing I do when cutting angled tenons is to cut the end of the workpiece parallel to what will be the shoulder of the tenon, using the sliding table and wedges. Then, when I position the wedge (or wedges), I make sure the end of the workpiece flushes up against the crossfeed box (for cutting shoulders) or the base of the sliding table (for the cheeks). This helps orient the workpiece and minimizes the chance of my ending up with an expensive piece of kindling. That's happened only once using this jig, when I measured to the wrong side of the sawblade.

Tenons angled in one plane require one wedge; compound-angled tenons require two. I use the same wedges for cutting both the shoulders and cheeks. The wedges just have to be manipulated to reposition the workpiece properly with respect to the

blade—in practice the orientation is obvious. As a rule, I cut the shoulders first and then the cheeks. This creates a crisp shoulder, makes cutting the cheeks easier and minimizes the chance of pinching the blade with the small offcuts,

With the workpiece bearing against two surfaces oriented 90° to each other and with the force of the blade only serving to seat the workpiece more securely, I'm comfortable handholding the workpiece. If it makes you feel safer or more secure, by all means, use a clamp, but just be sure the clamp doesn't vibrate loose and fall into the blade. □



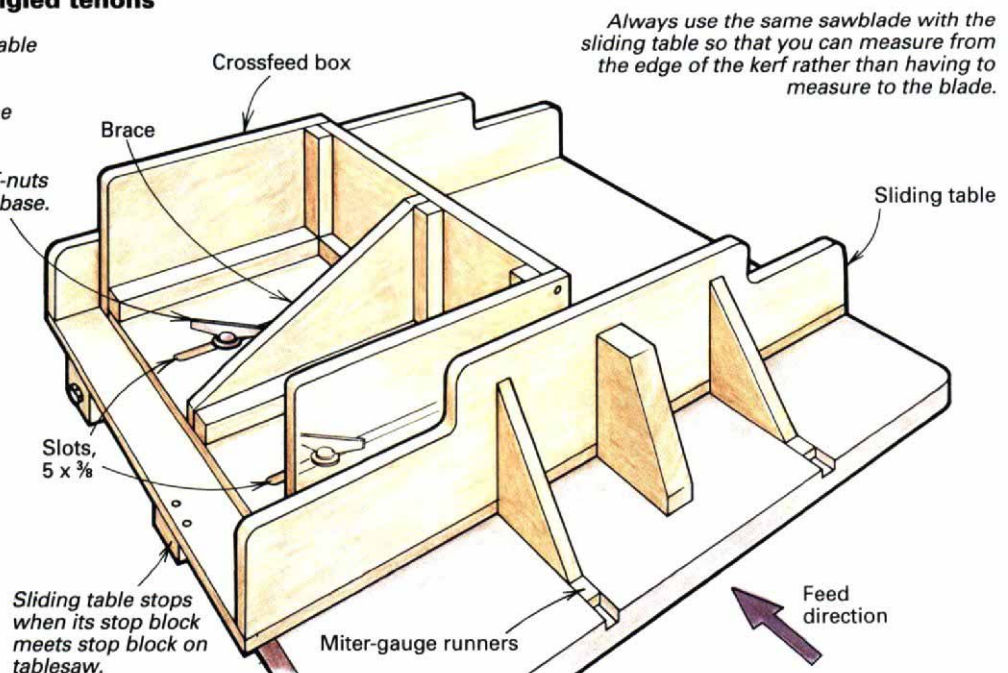
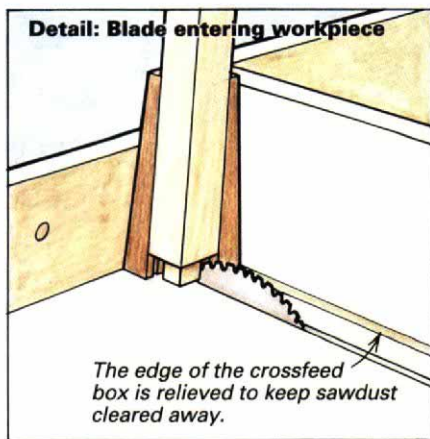
Angled tenons—some compound—were used almost exclusively in the construction of this walnut chair, stool and side table. Legs on two of these pieces splay in two directions, requiring slightly angled tenons at both ends of apron pieces, stretchers and seat supports.

Bill Krase is a retired aerospace engineer who builds furniture and boats in Mendocino, Calif.

Sliding table system for cutting angled tenons

The addition of a crossfeed box to a sliding table along with the use of purpose-made wedges make it possible to cut accurate, repeatable angled tenons on a tablesaw in very little time and with a minimum of effort.

Homemade thumbscrews screw into T-nuts inset into bottom of sliding table base.



Always use the same sawblade with the sliding table so that you can measure from the edge of the kerf rather than having to measure to the blade.