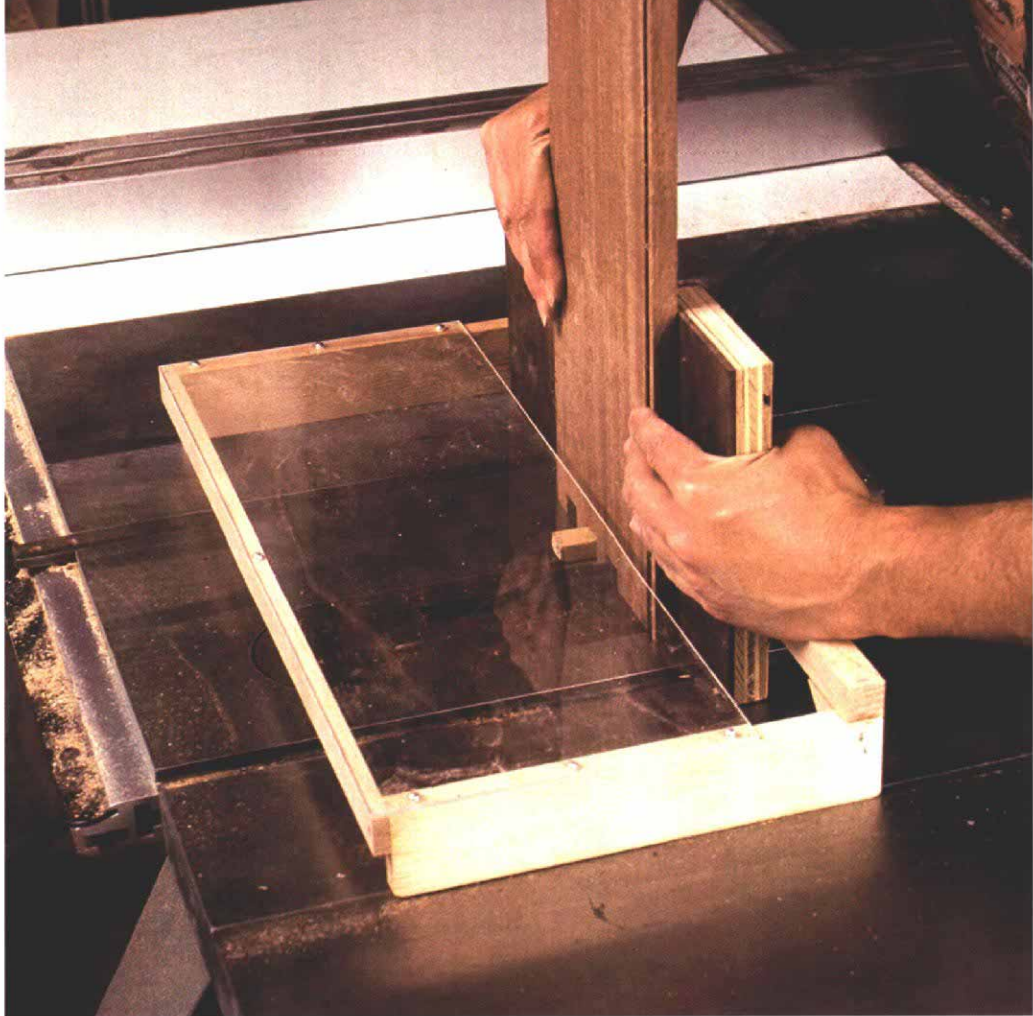


Shopmade Tablesaw Guards

*Building safety
into your jigs*

by Sandor Nagyszalanczy



Safety without sacrifice—A Plexiglas shield keeps hands safely away from the blade without compromising visibility on the author's box-joint jig.

"**B**lade guard removed for photo clarity." How many times have you been watching a home-improvement show or woodworking video and seen those words appear across the bottom of the television screen? Well, I want to know: *what* blade guard? In almost all the cases I've seen, a stock table-saw guard wouldn't have worked in the applications shown.

What's a woodworker to do? Must we continually expose ourselves to unreasonable risks when we perform operations that require removal of the table-saw's standard blade guard—jobs like sawing tenons, cutting box joints and cove cutting? I suppose we can hope our luck holds out, or we can wait for some kind of sensational all-purpose saw guard to hit the market. But I advocate another alternative: to design safer table-saw jigs and setups by adding guards and safety devices that prevent accidental contact with the sawblade. I think any woodworker bright enough to design innovative jigs for complicated woodworking tasks could make those same jigs a lot safer without investing too much extra time or material. After all, how much is a finger worth?

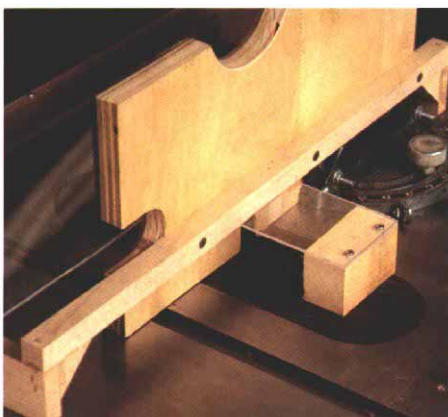
In this article, I'll show you some of my solutions for making common table-saw jigs and setups much safer. One thing I aim for in modifying my jigs is to reduce the degree to which safety relies on judgment. It's a given that, as you work, especially at repetitive tasks, there will be times when your attention flags or is diverted. A safe jig protects you during these lapses. The very best safety feature is one that eliminates the possibility of contacting the blade with

anything but the stock. I try to get as close as possible to this ideal in all my jigs.

In many cases, I've retrofitted existing jigs with guards to show that you don't have to build all new devices to add safety to your woodworking. Because jigs are, by definition, custom-made, the safety measures you take will also have to be individualized. So I haven't tried to cover all the bases here, only to share a few specific solutions and underscore the general idea that safety and guarding features ought to be built into every jig you make.

Clear guards for sliding jigs

Carriages that slide in the table-saw's miter slots almost always require that the stock guard be removed. Whether you want to use a sliding crosscutting box or a jig for cutting tenons, dovetails or box joints, you can easily retrofit clear blade guards that allow you to see what's going on but keep you from getting cut.



Rear guard action—The simple outrigger behind the box-joint jig lets you complete the cut without exposing the blade.

Box-joint-jig guard—I made the guard for my box-joint jig shown in the top photo in about a half-hour from a few scraps of wood and a Plexiglas cutoff purchased from a local plastics store. (Glass shops

and hardware stores often carry clear plastic sheet goods.) The guard is a low box with wood sides and a Plexiglas top that mounts directly over the box-joint jig and provides protection ahead of and after the cut. As an added bonus, I've noticed that it deflects chips and makes dust-collection more efficient.

I made the guard's frame 21 in. wide by 10 in. long, which is wide enough to handle 10-in. drawer sides. I drilled holes in the 1/8-in.-thick Plexiglas sheet so that it could be screwed to the top of the frame (leave the protective paper on the Plexiglas during cutting and drilling to protect it from scratches). When attaching the plastic, I left it about an inch shy of the face of the jig, creating a slot for the workpiece. The 2-in.-high sides provide plenty of clearance between the plastic and the blade. I chamfered and waxed the lower edges of the sides to keep them gliding smoothly. Then I attached the guard to the back side of the box-joint jig with screws through the rear frame member.

To provide blade protection behind the jig, I added a second guard made from a block of wood and a 3-in. by 4-in. piece of Plexiglas, screwed to the underside of the rear frame member (see the bottom photo on the facing page). Even if you don't want to make the entire guard frame, adding a rear guard is an excellent idea. It protects you after the jig has been pushed through the cut when you're reaching over the saw table and are probably the most vulnerable to blade contact.

This type of exit guard is a good addition to any sliding jig. And you can make using it even safer by clamping a stop block to the rip fence or right to the table that will limit the forward travel of the jig—allowing a complete cut through the workpiece but stopping the blade short of the exit guard's rear block.

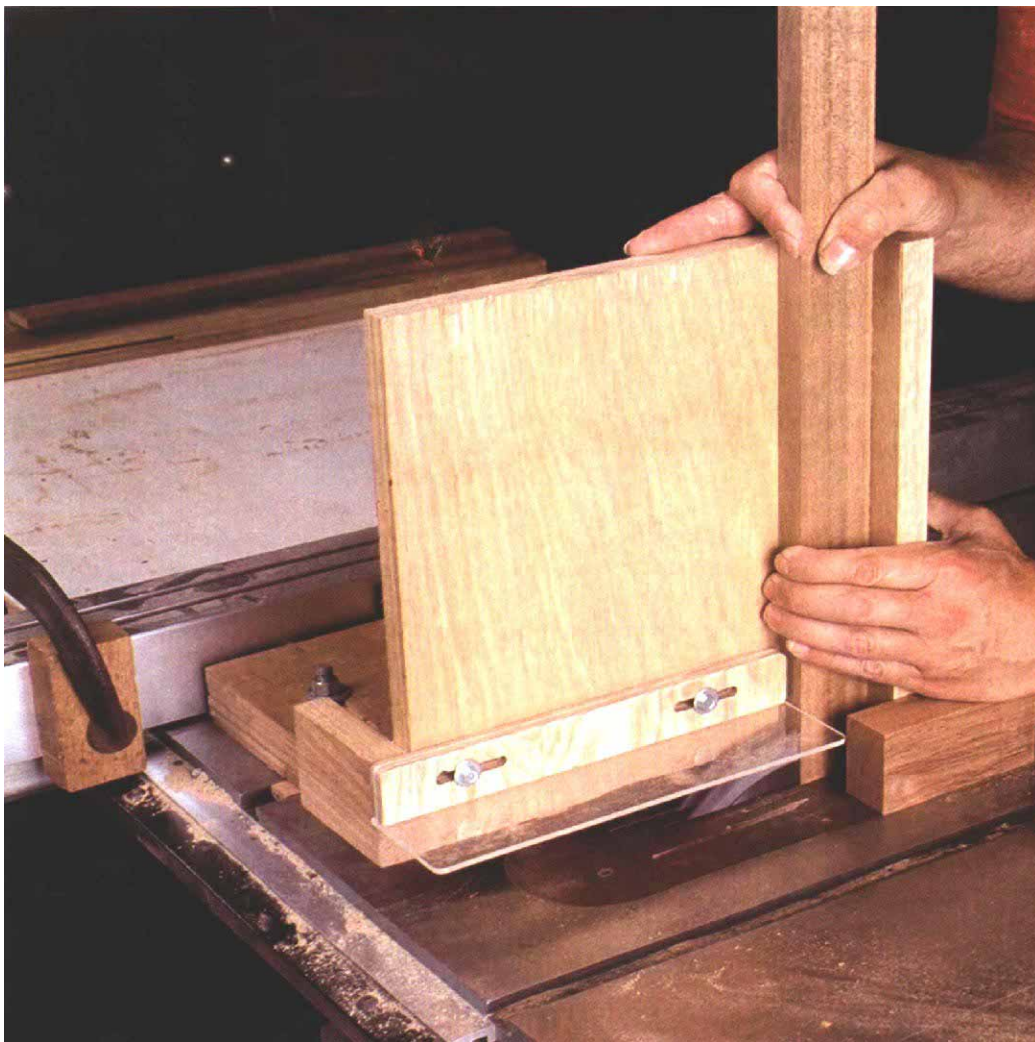
Tenoning-jig guard—Protecting my hands from the blade involved the addition of three components to my sliding tenoning jig: a clear plastic shield ahead of the cut, an exit block to cover the blade behind the cut and a hand rest to prevent my left hand, which holds the workpiece against the jig, from sliding down into harm's way, as shown in the photo at right. The clear shield is nothing more than a 10-in.-long, 2½-in.-wide piece of 1/8-in.-thick Plexiglas screwed to the edge of a wood strip. This strip mounts to the face of the tenoning jig via slotted holes I made using a straight bit in the plunge router. The slotted holes allow me to shift the shield in or out depending on the width

of the workpiece. I glued and screwed a 2½x2x1½ wood exit block to the back of the jig. I used a brass screw just in case it's accidentally hit by one of the two sawblades used during tenoning. A larger block would provide more protection, but as long as you use the jig in conjunction with a stop block, this size is fine. The final component, the hand rest, is a 4x2x1½ block glued to the edge of the tenoning jig's fence. You could position this block higher, if you find it more comfortable.

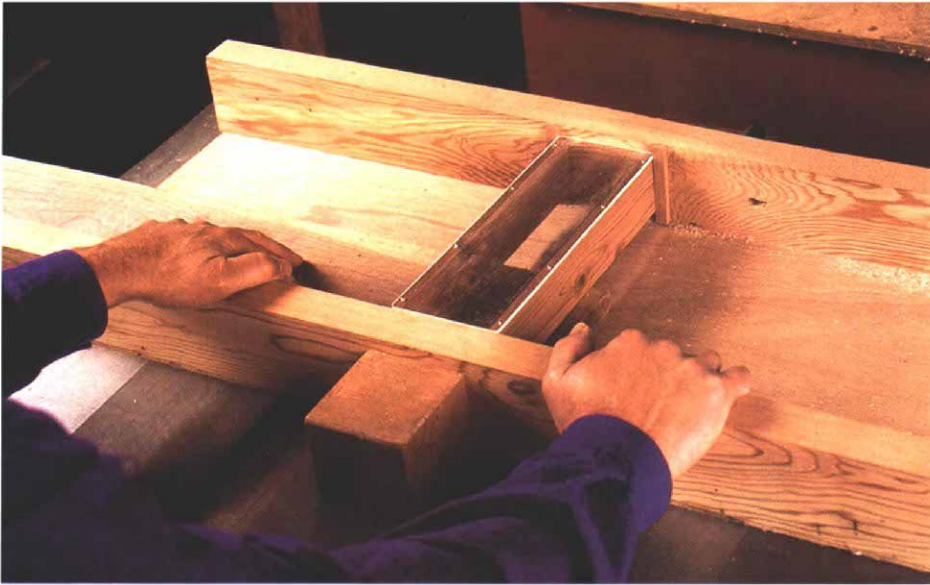
Crosscut-box guard—A shopmade sliding crosscut box that rides in the table-saw's miter slots is great for trimming and crosscutting long boards or moldings. And adding a guard is the perfect way to make this sliding jig safer to use. The guard that I made for my crosscut box, as shown in the top photo on p. 58, is basically an inverted U-shaped channel that rests on top of the stock over the line of cut, prevent-

ing hands from reaching into the blade. This design is very similar to the clear plastic guard that Kelly Mehler built in his article in *FWW* #89, except that mine was made as a retrofit and has wood sides—I don't miss being able to look through the sides of the guard.

I started building the guard by cutting two 2¼-in.-wide, 3/8-in.-thick wood sides and a 3½-in.-wide, 1/8-in.-thick Plexiglas top, all slightly shorter than the front-to-back dimension inside my crosscut box. I then nailed sides and top together with #16 brass escutcheon pins through holes drilled in the plastic. Because the guard was retrofitted to my crosscut box, I couldn't cut grooves for the ends of the guard to slide in, as in Mehler's design. But for a smaller (12-in. capacity) box like mine, two narrow guide strips tacked on the inside of the box's front support are adequate to keep the guard in place and let it ride up and down. Chamfering and



Untouchable tenoning jig—An adjustable Plexiglas blade guard and a hand rest combine to keep your exposure to the blade near zero on this tenoning jig. The block that's clamped to the rip fence provides a positive stop and prevents the blade from cutting through the exit block at the back of the jig.



Crosscuts safe and simple—A three-sided box over the line of the cut reduces the chance of accidental blade contact on the author's crosscut jig. The box, with $\frac{3}{8}$ -in. wood sides and a $\frac{1}{8}$ -in. Plexiglas top, is held in place at one end by two cleats and rides up and down between them. An exit block guards the blade at the end of the cut.

rounding the ends and edges of the wood sides makes the guard slide up and down easily. To shield the blade where it exits the crosscut box, I added a rear guard that is a variation on the one for the box-joint jig described previously. In this case, I simply glued and screwed on a wood block to sheathe the blade.

Sliding miter-carriage guard—Many woodworkers like to cut miters on the ends of moldings, picture frames and other trim using a carriage with twin 45° fences, which slides in the table saw's miter-gauge slots. When you use this type of jig, you hold the workpiece against the fence during the cut, and your fingers often come close to the blade. And as you finish the cut, the blade exits between the fences, not far from where your thumbs are wrapped over the top of the fences. It's an operation that begs for a guard.

To add protection to my sliding miter jig shown in the bottom photo on the facing page, I cut a triangular block from some scrap 2x4 I had around the shop and glued and screwed it to the jig's baseplate just behind the intersection of the fences. This block acts as an exit guard and a mounting surface for a clear blade guard. The back end of this blade guard, a 5-in. by 12-in. piece of $\frac{1}{8}$ -in. Plexiglas, is screwed to the top of the block, and the front end is screwed to a wood strip nailed to the miter jig's front cross support. To complete the safety treatment, I clamp a stop block to the saw table to prevent the blade from cutting through the exit block.

Two resawing guards

Probably one of the most dangerous operations to perform on an unguarded table saw is resawing, for two reasons: First, the blade is usually raised to or near its full height. If there's a slipup, you are exposed to more harm than with any other table-saw operation. Second, there is maximum surface area contact between the wood and the blade. If the wood distorts and binds between the fence and blade (or the kerf closes up and pinches the blade), the workpiece is kicked back with the full force of the saw. These are two excellent reasons to invest a few minutes and a couple of pieces of wood to protect yourself against disaster.

I've come up with a pair of guarding devices for resawing. Both are simple, but effective. These jigs serve two purposes: They keep the board upright during the cut, and they keep your hands from coming anywhere near the blade.

The first is a clamp-on guard, as shown in the photo at right. It consists of a 12-in.-long block of 4x4 lumber with a 2x2 stick screwed to one side. At $3\frac{1}{2}$ in., the 4x4 is thicker than the depth of cut of most 10-in. tablesaws (if your sawblade rises higher, use a thicker block). The block is positioned over the throat plate, just far enough to the left of the blade to allow the stock to feed past. Because the resawn stock will have to be planed anyway, you can set the guard for a fractionally loose fit to account for the distortion caused when the workpiece is cut. The 2x2 stick should be made long enough to center the

4x4 with respect to the blade arbor.

To use the clamp-on resaw guard, set the rip fence, lower the blade into the table and put a piece of stock in place above the blade. Then position the block so it's over the throat plate and snugged up to the workpiece. Secure the end of the stick to the saw table with a C-clamp.

If you do a lot of resawing, you might want to make the second style of guard, which incorporates a dedicated throat plate. On this device, the wood block is attached directly to a replacement throat plate. In addition to providing protection like the clamp-on guard, this version enables you to raise the sawblade through the blank plate for a close fit that supports narrow workpieces right next to the blade. And it prevents the leading edge of the work from hanging up.

Make the replacement throat plate from plywood, particleboard or Masonite that's the same thickness as the original plate. The easiest way I've found to shape the new plate is to use the factory throat plate as a template. I cut out a slightly oversized blank on the bandsaw, attach the factory plate to it with Scotch brand 924 Adhesive Transfer Tape (available in $\frac{1}{2}$ in. and $\frac{3}{4}$ in. widths from University Products, 517 Main St., Holyoke, Mass. 01041; 800-628-1912) and then trim the new one to size using a piloted, flush-trimming router bit. Once the new plate fits snugly in your saw, screw on the block from below. I keep a couple



Resawing reconsidered—A chunk of 4x4 screwed to a stick is all that it takes to keep the stock vertical and the blade safely hidden while resawing. If you resaw often, you can screw the guard block directly to a dedicated throat plate.

of these dedicated throat plates handy—one for resawing 4/4 stock and one for 8/4. You can cut slots instead of holes for the screws through the replacement blank to permit adjustment for resawing boards of various thicknesses.

When working with either style of resaw guard, use a push stick to feed the end of the stock through the gap between block and fence—even if the blade is buried in the wood. If resawing must be done in two passes, set the blade height to slightly less than half the width of the board. The board is easily snapped apart after the second pass, and the small unsawn strip down the center of each resawn half can then be planed off. Incidentally, you can also use a similar guard—with a block that's not as high—when ripping narrow strips to width.

Hold-down cove-cutting guard

Passing your hands directly over the blade is dangerous, even if the blade is buried in a thick workpiece—the stock might be kicked back, suddenly exposing the blade. In tablesaw cove cutting, you have to keep constant downward pressure on the workpiece to get good results, so this danger is always present.

My cove-cutting guard, as shown in the photo above, is attached directly to a clamp-on fence, which guides the workpiece across the blade. The guard employs a featherboard-style hold-down over the



Wide featherboards are excellent for coving—They exert downward pressure over the cutting area while keeping hands from coming near the blade.

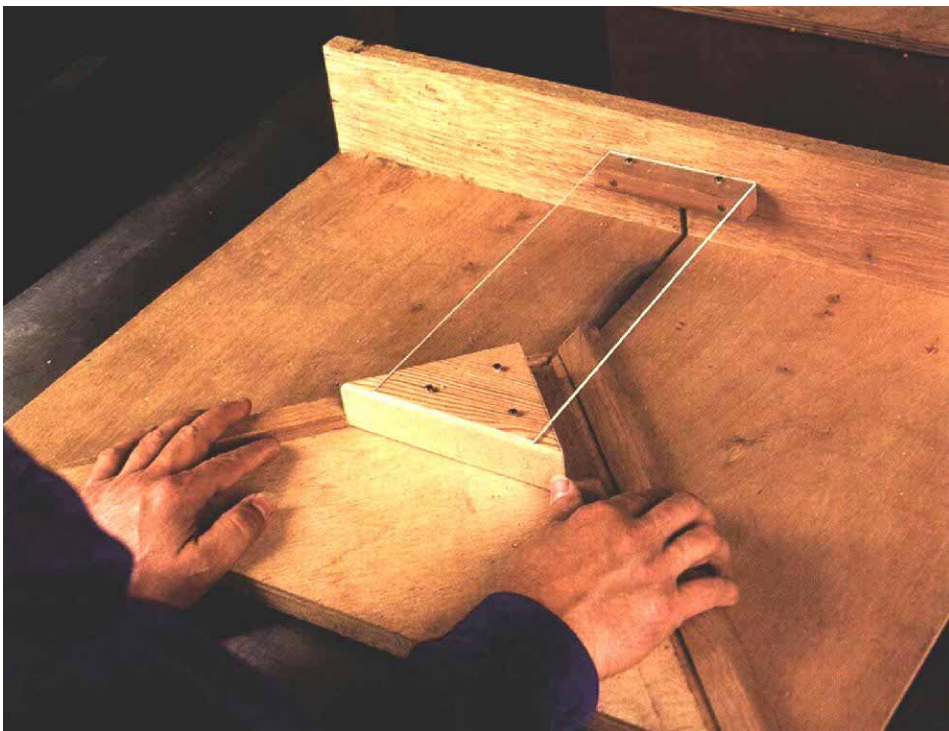
blade. The hold-down prevents fingers from getting near the blade while keeping the stock flat on the table. And because the hold-down is firmly positioned, it does a better job of flattening the stock than your hands can. The only thing better than a guard like this is a power feeder, which will keep the stock flat on the table and your hands safely away from the blade while feeding the piece for you.

I made the cove-cutting fence from

straight-grained stock; I used a 1¾-in.-wide, 1½-in.-thick piece of Douglas fir. A block of wood 1¾x3x4 is screwed to the top of this fence. Its position along the fence varies depending on the angle of the fence, which is determined by the desired cove profile (for more on cove cutting, see "Coves Cut on the Tablesaw," *FWW* #102, p. 82). I cut the featherboard from a 4½-in.-long, 3-in.-wide, 2-in.-thick block and cut the feathers on the bandsaw, making each one about ¾ in. thick. Then I attached the featherboard to the fence block with a ¾-in.-dia. carriage bolt.

To use the device, clamp the fence to the saw table to the right of the sawblade with the guard centered over the blade. With the sawblade lowered into the table, place the workpiece under the featherboard. Pivot the featherboard until it exerts enough pressure on the piece to press it flat, but not so much that the workpiece is difficult to feed. Depending on the thickness of the work, you may have to relocate the hole for the carriage bolt in the fence block. Finally, clamp a secondary fence to the saw table to keep the work from wandering away from the main fence during cove cutting. As you make each pass over the blade (the blade should only cut about ⅛ in. deep each pass), use the next workpiece or a piece of scrapwood the same width as the workpiece to push the end of the work under the featherboard. □

Sandor Nagyszalanczy is a contributing editor to Fine Woodworking and a writer, musician and furniture designer/craftsman in Santa Cruz, Calif.



Miter shield—A triangular piece of 2x stock serves as an exit block as well as a mounting surface for the Plexiglas blade guard on this sliding miter-carriage jig.