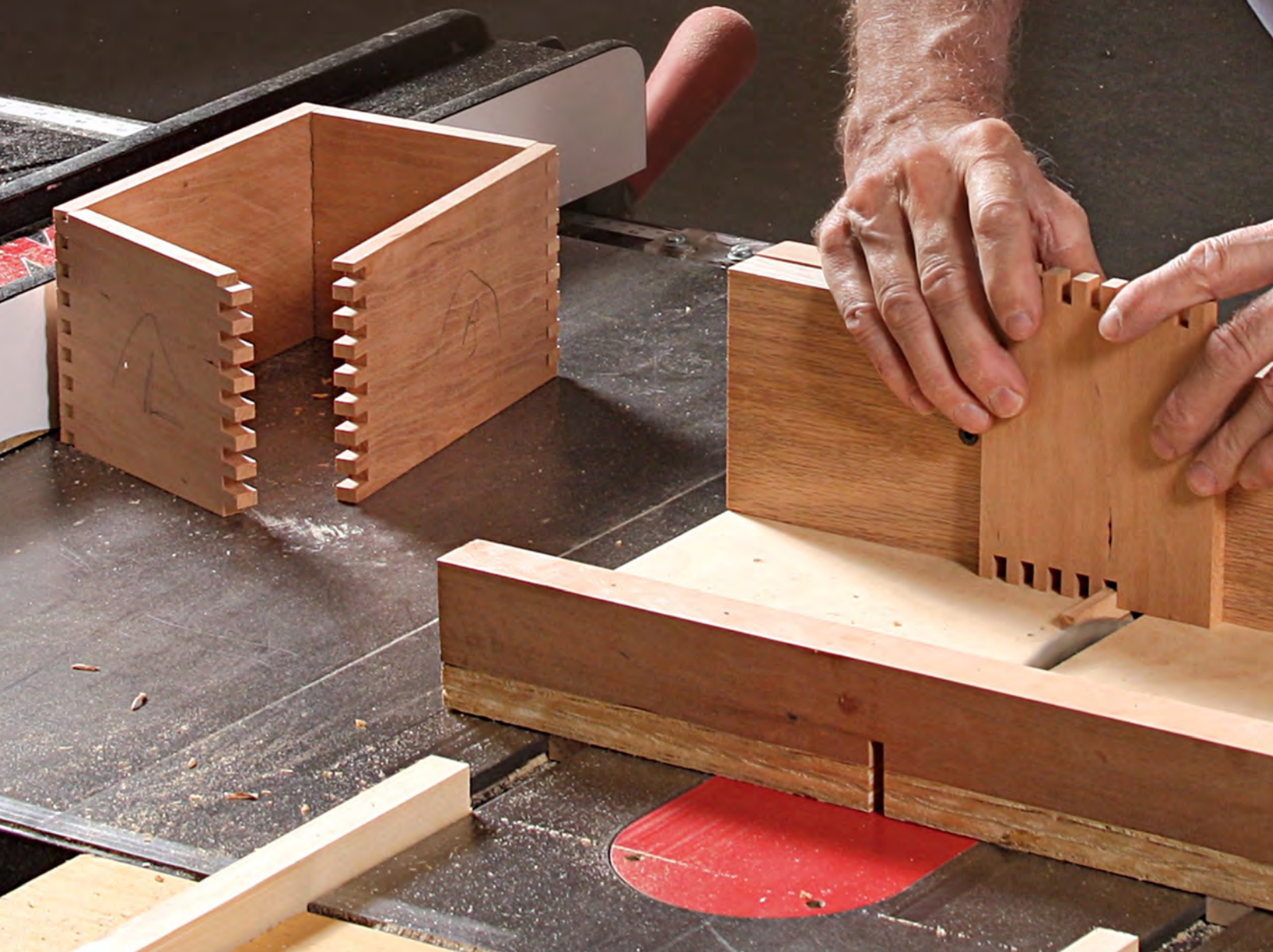


Simple Box-Joint Sled



The strength and style of finger joints come easy with this straightforward sled

BY DOUG STOWE

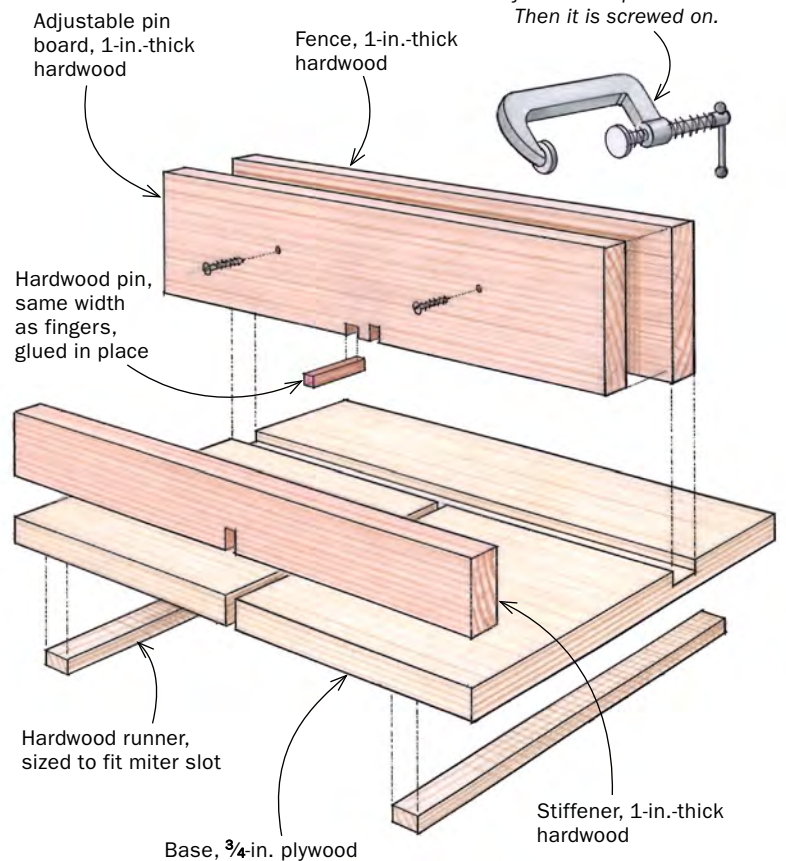
Finger joints, also called box joints, are incredibly strong thanks to all their long-grain glue surface interlocking finger by finger. But these joints have distinct advantages beyond strength. Once you have a jig set up, they are quite quick to make. And the pattern of end grain vs. side grain at the corners creates a pleasing visual rhythm. The joint also can be scaled up, as in some Greene and Greene pieces. Luckily, finger joints offer all this while being very easy to cut.

Soup up a crosscut sled

While you can make finger joints using a jig clamped to the miter gauge of your table saw, a dedicated sled is the better choice.



FINGER-JOINT SLED



Because it has two runners instead of the gauge's one, it provides a more stable and reliable platform.

A standard combination blade will work, but if using a single blade, I prefer rip blades because of their flat top, which leaves a cleaner joint than a combo blade's alternate top bevel. Similarly, for fingers wider than a standard sawblade's $\frac{1}{8}$ -in. kerf, you can use a regular dado stack, but I like box-joint blade sets, which come with a pair of blades that leave a flat-topped kerf in two fixed widths. Alternatively, you can send a typical dado stack to a saw sharpener to have the teeth ground flat on top.

Start by building a small crosscut sled, making sure the fence is square to the blade. Clamp a board to its fence and cut a kerf in

MAKE THE JIG

First cut. With the adjustable pin board clamped to the fence of a crosscut sled, saw a kerf through it. Stowe fits scrapwood stops into his miter slots to limit the jig's travel so he doesn't expose too much of the blade at the end of the cut.



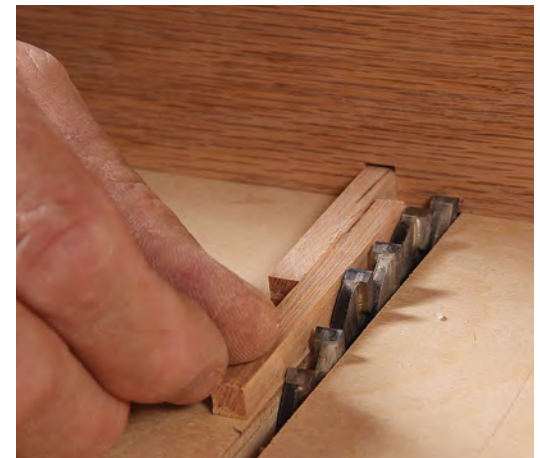
TIP SPECIALTY BLADE FOR BOX JOINTS



For finger joints wider than the standard $\frac{1}{8}$ -in. kerf, you can use a specialty box-joint blade set. These cut a flat-topped kerf and work by stacking two blades, either inside to inside or outside to outside, for a pair of fixed widths.



Fit the pin. Remove the pin board and fit a hardwood pin into the kerf. You want a friction fit. Glue the pin to keep it stable.



Offcut approximates spacing. While you'll fine-tune the fit later, placing an offcut from the pin stock between the pin and blade will get you pretty close.



Clamps for now. For your test cuts, the pin board should be clamped to the sled's fence, allowing you to hold things temporarily in position as you home in on a perfect fit for the fingers.

it. Remove the board and fit a hardwood pin into the kerf. A tight fit is best. Glue the pin in place.

Before you clamp the pin board back into place against the fence, grab an offcut from the pin stock. Because the pin's width matches the kerf—and the fingers—this will help you zero in on the joint spacing. Push the offcut against the side of the sawblade, and slide the pin board over until the pin abuts the offcut. Clamp the pin board here.

Dial in the fit

I advise making a run of fingers on two scrap boards to dial in the spacing and make sure the final fit is consistently tight. Align one corner of a board against the pin

and make the first cut. Then fit that first notch over the pin to make the second cut. Continue walking the fingers over until you've finished that edge. Repeat these steps on a second board.

Aim for a friction fit. It's good to have a bit of room for glue, but avoid visible gaps. If you need to tighten the joint, loosen the clamps and tap the pin board so the pin moves away from the blade; to loosen the fit, tap the pin board in the opposite direction. When the joint is just right, screw the pin board in place. As long as you're making boxes with the same joint spacing and using the same blade (or combination of blades), you won't need to readjust the jig.

Making boxes

Compared with making two test boards, building a four-sided box with finger joints requires only a few extra, albeit important,

HOW TO GET THE FIT JUST RIGHT



Form some fingers. Cut fingers on two pieces of scrap stock. Straddle the pin securely. Clear any dust that collects, since it can throw off your accuracy.

steps. First, set the sawblade's height a little higher than the thickness of the stock so the fingers can be sanded flush later. Push the workpiece against the pin to create a full finger with the first cut. Then cut fingers across the rest of the board. The next part's crucial: To cut the fingers on the other end, flip the stock over end for end. If you don't, the joints will not align. Do this for a pair of parts, either the front and back or the two sides.

Whichever pair you tackle second, you'll approach differently, making the first cuts while using an already-cut piece as a spacer. For this, take a just-cut piece and place the first finger between the pin and blade. Slide an uncut piece up to it and make the first cut. This offsets the mating fingers, allowing the two boards to interlock. To keep track of which parts need to start with a spacer, I cut the initial notches for all four ends that require the spacer, then remove the spacer and form the rest of the fingers.

I prefer to cut the fingers while the stock is slightly overwidth, and trim to width only after I know exactly where the final finger falls. This lets me deal with any error that may creep in. For instance, when making a box with $\frac{1}{4}$ -in. fingers, one would expect the dimensions to fall at some exact $\frac{1}{4}$ -in. increment, but they often do not. If the $\frac{1}{4}$ -in. finger fits best in a slot that's an extra $\frac{1}{64}$ in. wide, over the course of 5 in., that would add slightly more than $\frac{1}{16}$ in.



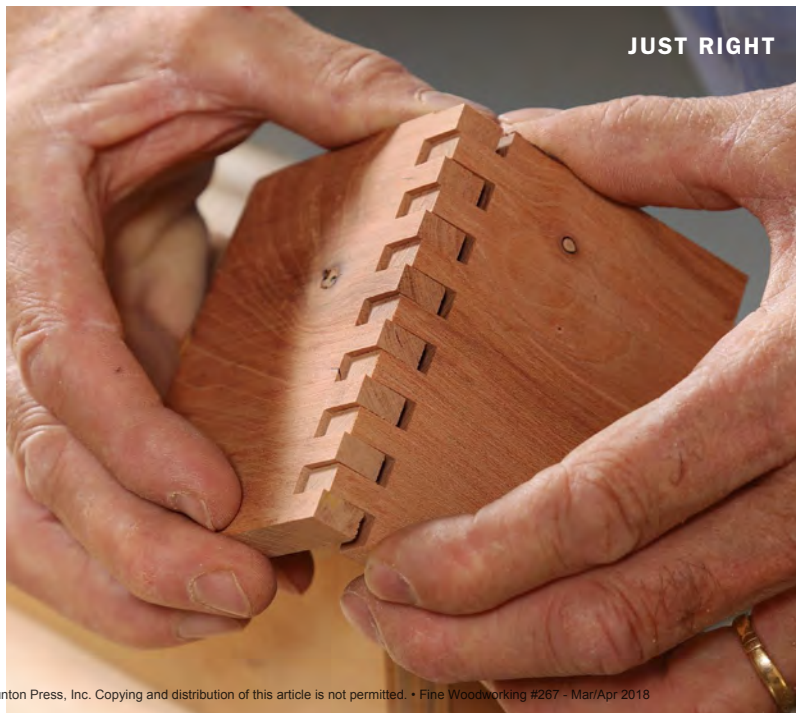
TOO TIGHT

You shouldn't have to force the parts together. To open up the joint, slide the pin toward the blade.



TOO LOOSE

Since this joint relies on glue, avoid visible gaps. The fingers are too loose if you pick up two joined pieces and one falls off. To close the gaps, slide the pin away from the blade.



JUST RIGHT

A perfect fit is when the parts slide together without being forced or hammered.

USING THE SLED



Screws set the fence. When you've established the perfect fit, screw the pin board in place. This jig will now work with any box you make using this blade.



Offcut sets the blade height. Raise the blade about $\frac{1}{64}$ in. above the stock to create a cleanup allowance. The fingers can be sanded flush to the box sides following assembly.

FIRST SET

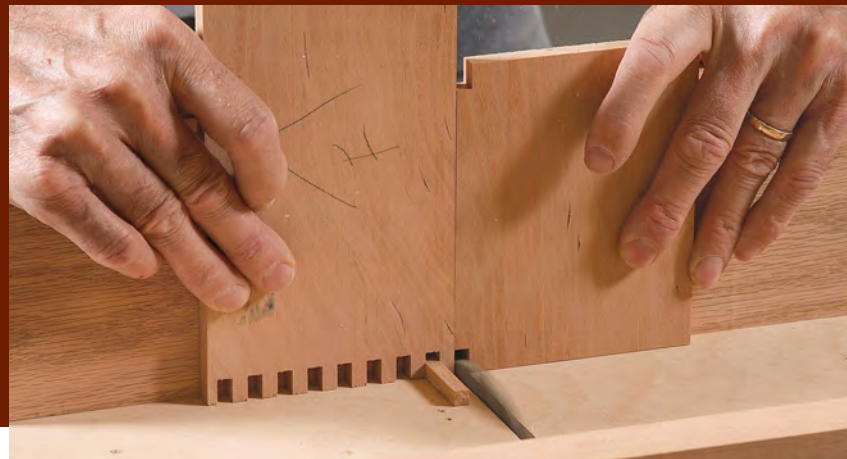


First finger. Align one corner of a board against the pin and make the first cut.



The pin registers the cuts. Complete the kerfs across the end of the board. Stowe starts with the front and back boards.

SECOND SET



Second set needs a spacer. For the first cuts on the second pair of boards, use an already-cut piece as a spacer. Put its first kerf over the pin, and slide an end up to it. Stowe cuts the first notches on each end of both boards, before removing the spacer.



Finish the fingers. Remove the spacer and complete the remaining cuts.



Groove for the bottom. To prepare for a bottom panel, Stowe routs $\frac{1}{8}$ in. above the lower edge. Two parts get a stopped groove, two get a through-groove.



Trim the excess. Stowe cuts the fingers in stock that is a little wide and rips it to width later. This lets him clean up any cumulative error, like the thin finger on the right, that may have crept in.



Glue the fingers. Apply a drop of glue to the edges where the parts slide together. The glue will spread as the fingers interlock.

For all your cuts, make sure the parts are nested carefully over the pin. If the stock isn't placed accurately and held down throughout the cut, the box sides won't come together correctly.

To install a bottom, I use a router table and a $\frac{1}{8}$ -in. bit to run a groove. I generally locate the groove $\frac{1}{8}$ in. from the lower edge when using $\frac{1}{8}$ -in. Baltic-birch plywood for the bottom. Two of the parts will have a finger at the bottom edge, and they get stopped grooves; the other two parts get through-grooves.

One great thing about a box with well-cut finger joints is that clamps are often unnecessary. But keep some handy just in case a corner needs persuasion. If it does, be sure to clamp close to the joints and not at the middle of the box, where the pressure will flex and distort the sides. □

Doug Stowe, based in Eureka Springs, Ark., is a box maker and woodworking instructor.



Online Extra

Expand your design options with mitered finger joints. Learn how to make them at FineWoodworking.com/267.

Wrap up. Assemble the sides around the bottom. If the parts are cut well, clamps may not be needed. Friction is often enough to hold the pieces. Check for square before letting the glue set.