

# FINGER JOINT JIG



best-built  
jigs & fixtures



## variably spaced Finger Joint Jig

The flexibility of this unique jig makes it easy to add eye-catching elements to your next project.

The right detail can really turn a ho-hum project into something special. But these details can also create a challenge when trying to execute the idea. The problem is that when you step out of the norm of typical furniture design, you have to establish new methods for realizing your vision.

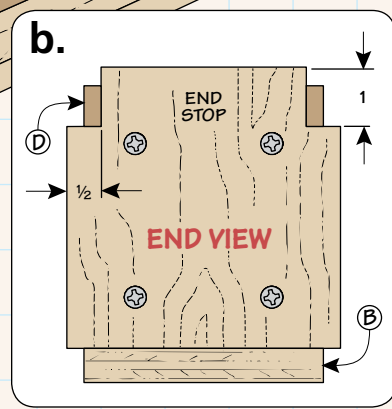
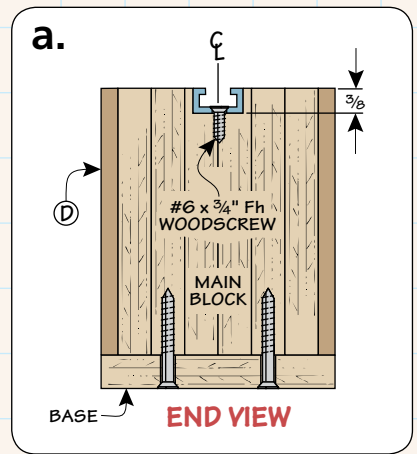
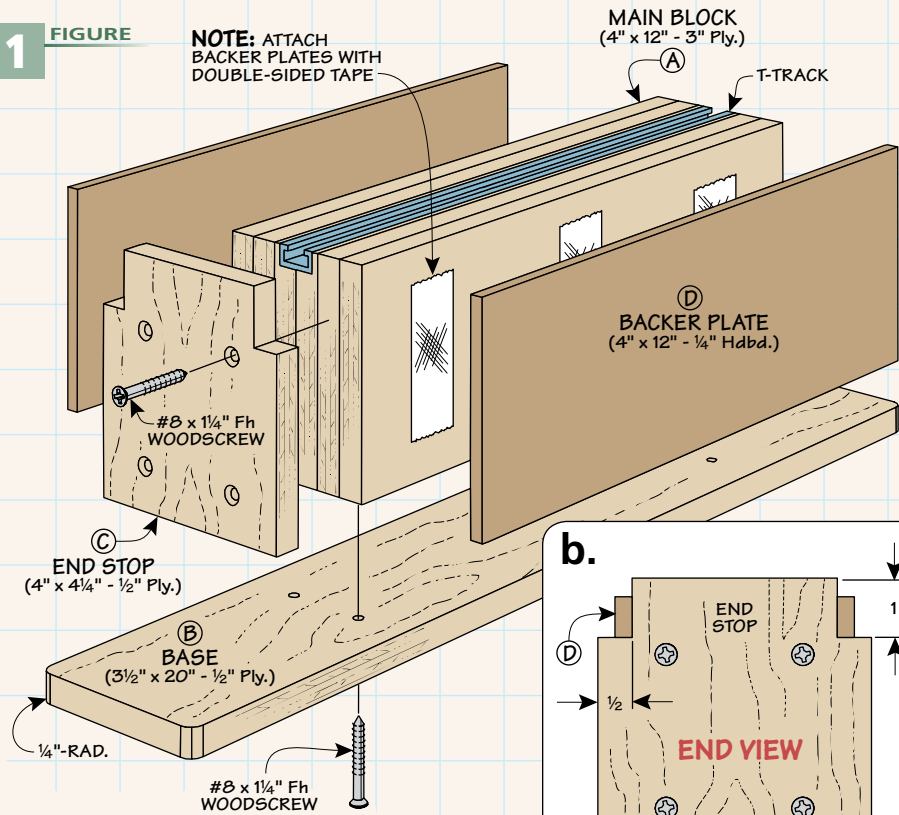
That was the case with an end table I recently designed and built. The style of the drawer front called for finger joints. But instead of all the fingers being the same size, they varied in size from the

top to the bottom. This made it difficult to use a typical finger joint jig. You can see the completed joint in the photo on the next page.

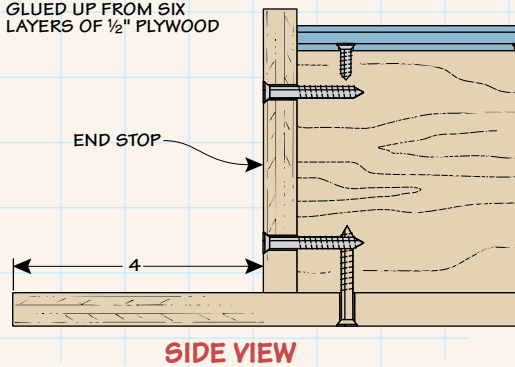
To ensure that both halves of the joint fit together perfectly, I designed the jig you see above. The simple design creates a hassle-free setup for perfectly sized and aligned joints. The keys on top of the jig are sized to match the fingers of the joint, ensuring a perfect fit. And there's only one setup to complete both sides of the joint.

**1** **FIGURE**

**NOTE:** ATTACH BACKER PLATES WITH DOUBLE-SIDED TAPE



**NOTE:** MAIN BLOCK GLUED UP FROM SIX LAYERS OF 1/2" PLYWOOD



**CONSTRUCTION**

The core of the jig is a glued-up block of plywood. Since all the other parts of the jig get attached to this main block, it makes sense to start here. It's just six layers of 1/2" Baltic birch plywood laminated together and cut to size.

A groove centered in the top of the block secures a section of T-track cut to the same length as the block. The track will be used to add and secure the keys you'll make later.

**Base.** I added a long plywood base so that you can easily clamp the jig to your workbench. Keep in mind that you'll be adding a sacrificial hardboard backer to each side of the main block. So when cutting the base, size

it to match the overall finished width as shown in Figure 1a. Then you can center it on the bottom of the main block and attach the two together.

**End Stop.** One of the critical components of the jig is the end stop. It's a piece of plywood that is notched and attached to the end of the main block. Its purpose is to register both the keys and your workpiece so they align.

You can see in Figure 1b that the end stop is wider than the main block and that it also extends above the top of the block. The reason for the notches in the upper corners of the stop is to provide clearance for the

router bit to cut right to the edge of the workpiece.

**Backer Plates.** I also wanted to limit the possibility of tearout while routing. So I added replaceable plates to each face of the main block. They're just pieces of 1/4" hardboard attached with double-sided tape.

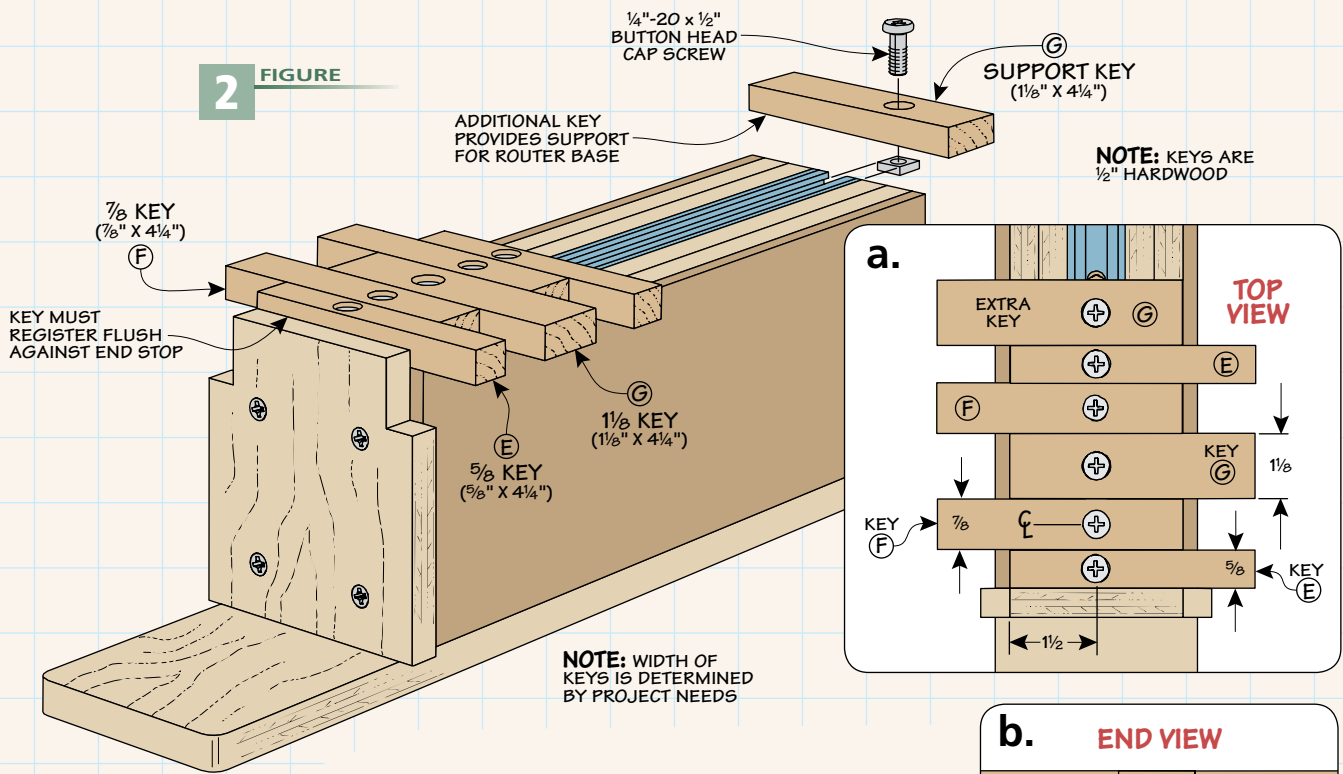


**◀ Proud Fingers.** It's easy to add a design element like a variably spaced finger joint with fingers that extend proud of the mating workpiece.

**Materials & Hardware**

A	Main Block (1)	4 x 12 - 3 Ply.	• (1) 24" T-Track
B	Base (1)	3 1/2 x 20 - 1/2 Ply.	• (3) #6 x 3/4" Fh Woodscrews
C	End Stop (1)	4 x 4 1/4 - 1/2 Ply.	• (8) #8 x 1/4" Fh Woodscrews
D	Backer Plates (2)	4 x 12 - 1/4 Hdbd.	• 1/4"-20 x 1/2" Cap Screws
E	5/8 Keys	5/8 x 1/2 - 4 1/4	• 1/4"-20 Square Nuts
F	7/8 Keys	7/8 x 1/2 - 4 1/4	
G	1 1/8 Keys	1 1/8 x 1/2 - 4 1/4	

**2** FIGURE



**MAKING THE KEYS**

At this point, the bulk of the work is done. But it's the individual keys you attach to the jig that really make it work. They aren't difficult to make, but there are a few considerations worth noting to make sure they turn out right.

As you can see in Figure 2a above, the keys are not all the same width. This is what allows you to make the joints with different size fingers. The widths you make for your jig, and the number you make of each, depend on your needs. But due to the size of the hardware that secures the keys in place, 1/2" is the narrowest key you can use.

When making the keys, it's

simplest to set the rip fence on your table saw to the width you want and rip an extra long blank. Then you can cut the individual keys to length.

The counterbored holes in each key are used to secure the key in place. It's important to locate the holes accurately so that you can rout all the way through your workpiece without cutting into the main block. The goal is for the heel end of each key to line up with the plywood face of the main block (Figure 2a).

**USING THE JIG**

Putting the jig to use is fairly straightforward. But before adding keys to the jig, I like to lay

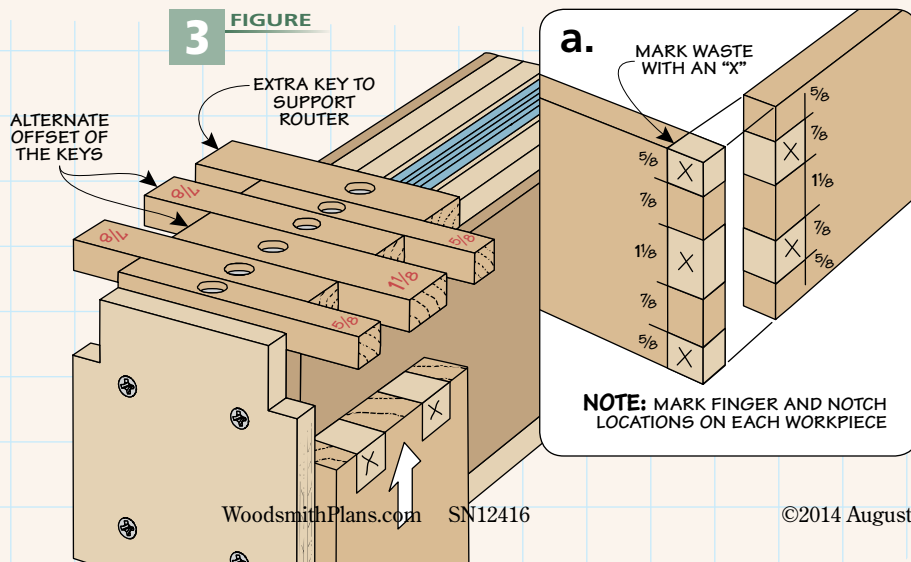
out the finger and notch locations on my workpieces. Then I mark an "X" on the waste to be removed. This helps ensure that you arrange the keys correctly. Figure 3 shows what I mean.

You can then slide the keys onto the jig. Alternate the offset of the keys that match the size of the fingers and notches on your workpiece. The width of the combined keys should equal the width of the workpieces to be cut.

Before securing the keys in place, make sure they are slid all the way to the end stop and that there are no gaps between the keys. I then add one or two additional keys to the jig. These keys help provide support to your router base.

You'll use both sides of the jig to make the joints, but it doesn't matter which you cut first. So go ahead and clamp the base of the jig to the edge of your workbench.

**3** FIGURE



The photo to the right shows what this looks like.

Now you can position your workpiece against the face of the jig. Make sure that the edge of the workpiece is snug against the end stop and that the end is in contact with the underside of the keys. The notches to be cut should be located in the exposed areas between the keys. Have a look at the photos to the right to see what I mean.

**Depth of Cut.** The depth of cut will determine whether the fingers on the mating workpiece sit proud or are flush with the face of the workpiece. The photo on page 2 and the two photos below show a combination of different options.

You'll use a pattern bit ( $\frac{1}{2}$ "-dia. maximum) with a bearing on the shank to make the cuts. To set the bit depth, rest the router on top of the keys with the bit in-between two of the keys. Then use the layout lines on your workpiece to set the depth (upper-right margin photo).

**Make the Cuts.** Create the notches and fingers by removing the waste between the keys. It helps reduce chipout by making shallow passes at first, moving the router from right to left.

With one side of the joint complete, remove the workpiece and unclamp the jig. Rotate the jig 180°, and clamp it along the edge of the workbench so the opposite face of the jig is



▲ **Part A.** Clamp one part of your joint securely against the end stop and the bottom of the keys. Make several passes to remove the waste between each of the fingers.



▲ **Part B.** Rotate the jig end for end and clamp the mating workpiece to the opposite side of the jig. Remove the waste to create accurately sized fingers for a perfect-fitting joint.

facing you. Then clamp the mating workpiece in place and rout the second half of the joint.

Check the fit of the joint. It should be snug, but not difficult to assemble. Add a paper shim between the first two keys only

and recut the notches to loosen the fit if necessary (photo below).

Your projects may not always call for details like these. But with a jig like this, it's nice to know you can create them with confidence when you need to.



▲ **Set Bit Depth.** Use your layout lines to set the depth of the bit.



▲ **Check for Fit.** Test the fit of the joint to ensure a secure connection.



**Proud & Flush**



**Flush & Flush**

◀ **Two Options.**

You can set the bit depth to create fingers that are either proud or flush with the mating workpiece.



▲ **Paper Shim.** If the joint is too tight, add a thin piece of paper between the first two keys to create a looser fit.



**MAIL  
ORDER  
SOURCES**

Woodsmith Store  
800-444-7527

Kreg Tool  
800-447-8638  
kregtool.com

McMaster-Carr  
630-600-3600  
mcmaster.com

## Project Sources

### FINGER JOINT JIG

- **Kreg Tool**  
*Mini-Trak - 24" . . . . .* KMS7507
- **McMaster-Carr**  
*Socket Cap Screw . . . .* 91306A375  
*1/4"-20 Square Nut . . .* 94855A127

Manufacturers and retailers will periodically redesign or discontinue some of their items. So you'll want to gather all the hardware, supplies, and tools you need before you get started. It's easy to adjust dimensions or drill different-sized holes to suit your hardware.