

master class

One of the great things about woodworking is that becoming proficient in one technique opens the door to more advanced techniques. The dovetail joint is a great example. After you've mastered the basic version, you can attempt more complicated variations. I'll illustrate how to make compound-angle dovetails, like the ones that join the sloped sides of this chest.

Making a compound-angle dovetail joint is not much different from making a standard dovetail joint. You cut to the line and clean out the waste, which really isn't difficult. The challenge lies in the layout, especially the first time you do it. But no worries. I'll show you a great trick for laying out the tails, and another one for paring to the angled baseline.

I know you can make a dovetail joint with power tools, but in this instance, hand tools are the best option. Because of the



Compound-angle dovetails

SIMPLE JIGS EASE THE LEARNING CURVE OF THIS CHALLENGING JOINT

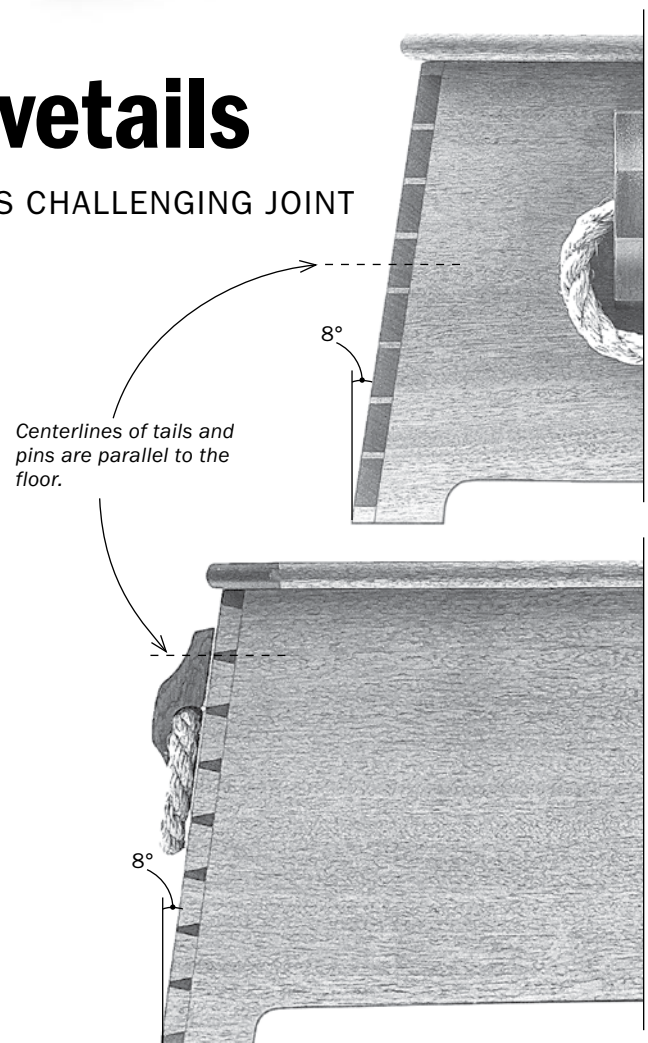
BY CHRIS GOCHNOUR

compound angles involved, setting up a machine or power tool for the work would be tedious and too time-consuming.

Start with a compound-angle butt joint

All dovetail joints begin as butt joints. On this chest, because the case sides slope inward 8° , the ends of all four sides are angled across their width and thickness. So when you cut the sides to length on the tablesaw, both the blade and miter gauge must be angled. Determining the correct angles can be difficult. Fortunately, there is an easy way to set up your saw to cut the ends, a technique I learned from Steve Brown ("Compound Angles Without Math," *FWW* #158). Simply cut the slope angle— 8° in this case—onto one edge and both ends of a block of wood about 2 in. thick by 3 in. wide by 10 in. long. Then set the blade and miter-gauge angles directly from the block.

Before making the compound-angle crosscuts, rip the case sides to final width with the blade set to the slope angle. Keep in mind that the top and bottom edges are parallel to one another. So, if you cut the top edge with the outside face up, cut the bottom edge with the outside face down.



Super trick for compound miters

A simple setup block with beveled edges makes it easy to set up the tablesaw to make the compound-angle cuts.



Bevel the top and bottom edges of each side. Angle the blade to match the slope angle. The top and bottom edges must be parallel to one another, so flip the board over to cut the opposite side.



Now you're ready for the crosscuts. Place the setup block's long angled edge on the sawtable. Raise the blade and put one of the angled ends against the blade's plate (see photos, right). Adjust the blade to the same angle as the setup block's end. You also will need to pivot the block forward and back until it's flat against the plate. Now set the angle of the miter-gauge fence. Hold the block with its end flush against the saw plate. Loosen the miter-gauge head and adjust it so that the fence is against the block. Lock the gauge's head at this angle.

Cut one end on each side with this setup. For the opposite ends, move the miter gauge to the other side of the blade and adjust the angle of the head. Save offcuts to use as clamping cauls.

Lay out and cut the tails

With all of the parts cut, lay out the tails. Begin by scribing baselines on all four sides. Then clamp one tail board in a bench vise with its outside face toward you. Lay out the tail spacing on the end grain, marking it with a small dot, rather than lines. Set a bevel gauge to 82° (to match the edges) and use it to draw a line across the end grain at each layout point.

The angled sides of the tails on the face of the board must be laid out relative to the side's top and bottom edges, not to the angled end. First, I make a 6-in.-square template from ¼-in.-thick MDF. Two opposing edges of the template are angled to match the slope of the tails. I then clamp a fence to the side 3 in. from the end and perpendicular to the edges. Butt the template against this fence and finish laying out the tails.

MAKE A SETUP BLOCK



Bevel the block. With the blade still set to the slope angle, bevel each end of the block (left). Then bevel one edge (below left).



Online Extra

To learn how this setup block makes compound angles easier, go to FineWoodworking.com/extras.

PUT IT TO USE



Reset the blade. Set the block's beveled edge on the table and adjust the blade flush to the block's end grain.



Angle the miter gauge. Bring it tight against the block's back edge.



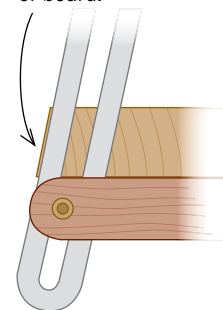
Cut the sides to length. Cut one end on each side. To cut the other sides, move to the other side of the blade. You have to reset the miter gauge and flip the side, so the opposite edge is against the gauge.

Two jigs tackle the tails

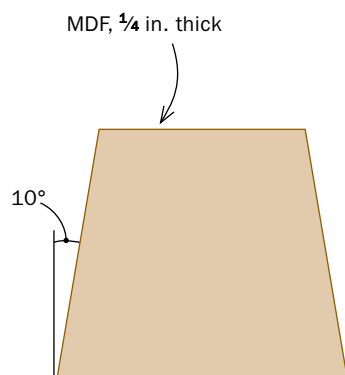
Lay out the tails' shaped sides with a shopmade dovetail marker. And use a guide to help pare the baseline parallel to the end grain, which is necessary for a gap-free joint.

Lay out the tail spacing on the end grain. Use a bevel gauge set to the same angle as the top and bottom edges of the side.

Set bevel gauge parallel to edge of board.



DOVETAIL MARKER



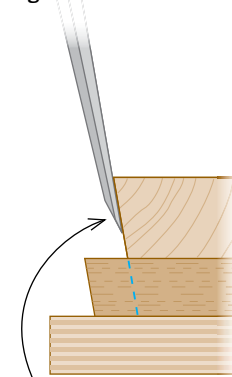
Use a jig for the sloped sides. After clamping a straightedge perpendicular to the top and bottom edges, butt a shopmade dovetail marker against the straightedge and mark one side of every tail (above left). Flip it for the second side (above right). This gives you the opposing angle needed to complete the layout.



Cut tails one board at a time. Because of the angles involved, you can't gang the tail boards. When you clean out the waste, be careful that you don't cut into the high side of the angled baselines.



Clean up the baseline. Use a chisel guide with a beveled edge (should be parallel to the end grain) to maintain the correct angle on the baseline.



Edge of chisel guide is beveled 8°.

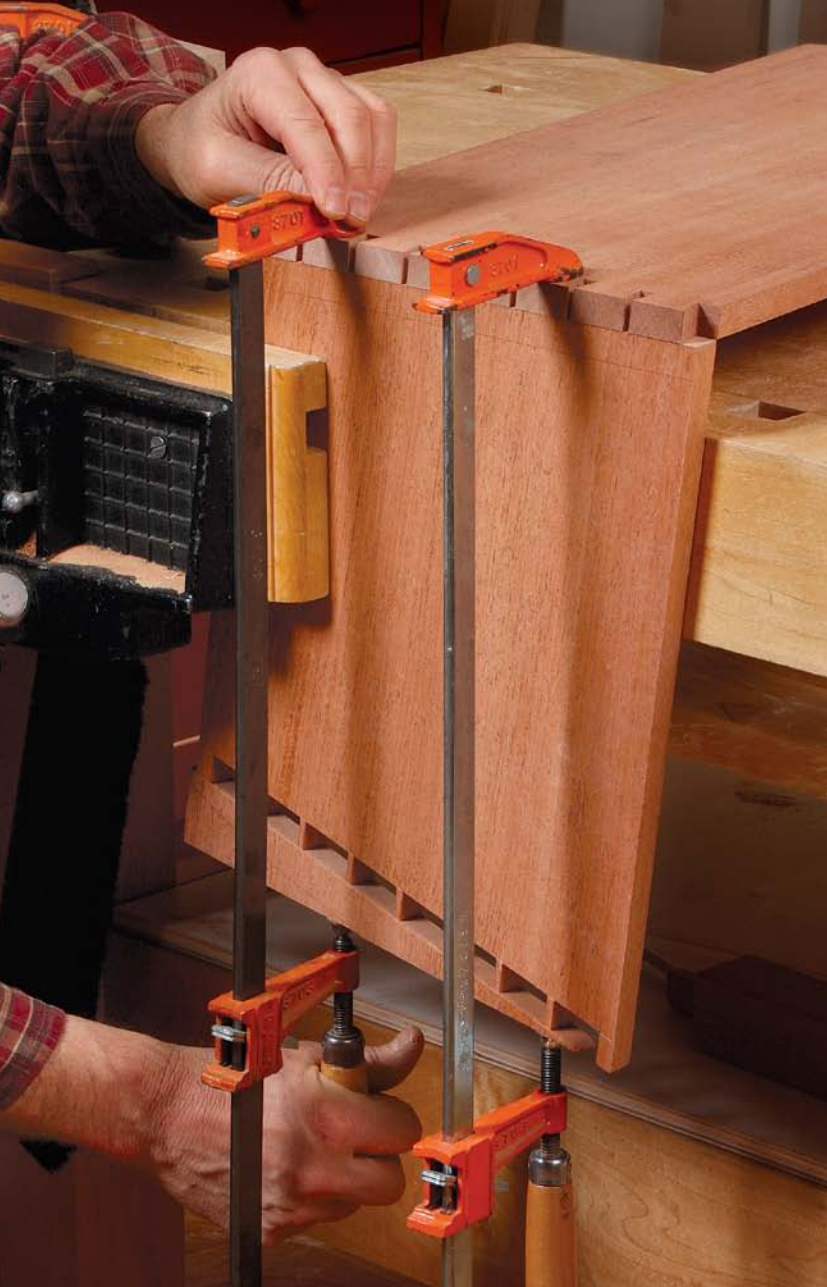
Clamp the tail board in a vise, and cut along the waste side of the lines. Remove the waste with a coping saw. Remember that the baseline is angled slightly. So, when defining the tails and cutting out the waste, don't cut into the high side. Pare to the baseline (see photos, left).

Lay out and cut the pins

After you've cleaned up the tails, you can transfer them to the pin board. Put a spacer board on your benchtop, just behind and parallel to the vise jaws. Position the pin board in the bench vise with its angled end up and face

Pins are a snap

The pin board's end grain is slightly beveled, so getting the tail board to rest flat on it can be tricky. But once it's there, you can transfer the tails and cut the pins as you normally do.



Clamp the boards to transfer the tails. An offcut between the pin board and clamp creates a square surface for clamping (above). Arrange the clamp heads so that they sit on the tails and don't interfere with the transfer (right).



Mark the pins on the face, too. The lines are parallel to the top and bottom edges. To set the gauge angle, put the gauge's body on the side's face (top photo, opposite).



Use the chisel guide again. For the cabinet to come together square, the baseline must be parallel to the end grain, as it is on the tail board.



Side offcuts are perfect clamping cauls. Gochnour tapes strips of pine to the cauls, which are soft enough to deform when clamped over the protruding pins.

out, flush with the spacer. Now move the spacer board back 18 in. Rest the tail board, outside face up, on top of the pin board and spacer. Align the tail and pin boards, and clamp the tail board in place. Now, transfer the tails to the pin board with a marking knife. Remove the tail board and extend the knife marks down the board face with a sharp pencil. These lines should be parallel to the pin board's edges, so mark them with a bevel gauge set to 82°.

Cut and clean up the pins just as you did the tails. When that's done, begin the assembly with a dry-fit to verify the fit is right. Get clamps and angled cauls (use the angled cutoffs you saved) ready for the glue-up. Tape a piece of soft pine to the edge of each caul so that it can compress around slightly protruding pins. Use a slow-setting glue. Assemble the joint, clamp it, and check for square by measuring diagonally. □

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