



Machine Dovetails by Eye

*Cut perfect pins on a simple tablesaw jig;
finish up with a bandsaw*

by Jeff Miller

I like cutting dovetails by hand, but the nature of my business doesn't let me stay in practice. And I admit, I tend to lose a little accuracy when I'm out of shape. I've tried router jigs, but I've never found one I like. I find them fussy to set up, and to my eye, router-cut dovetails never look as good as those cut by hand.

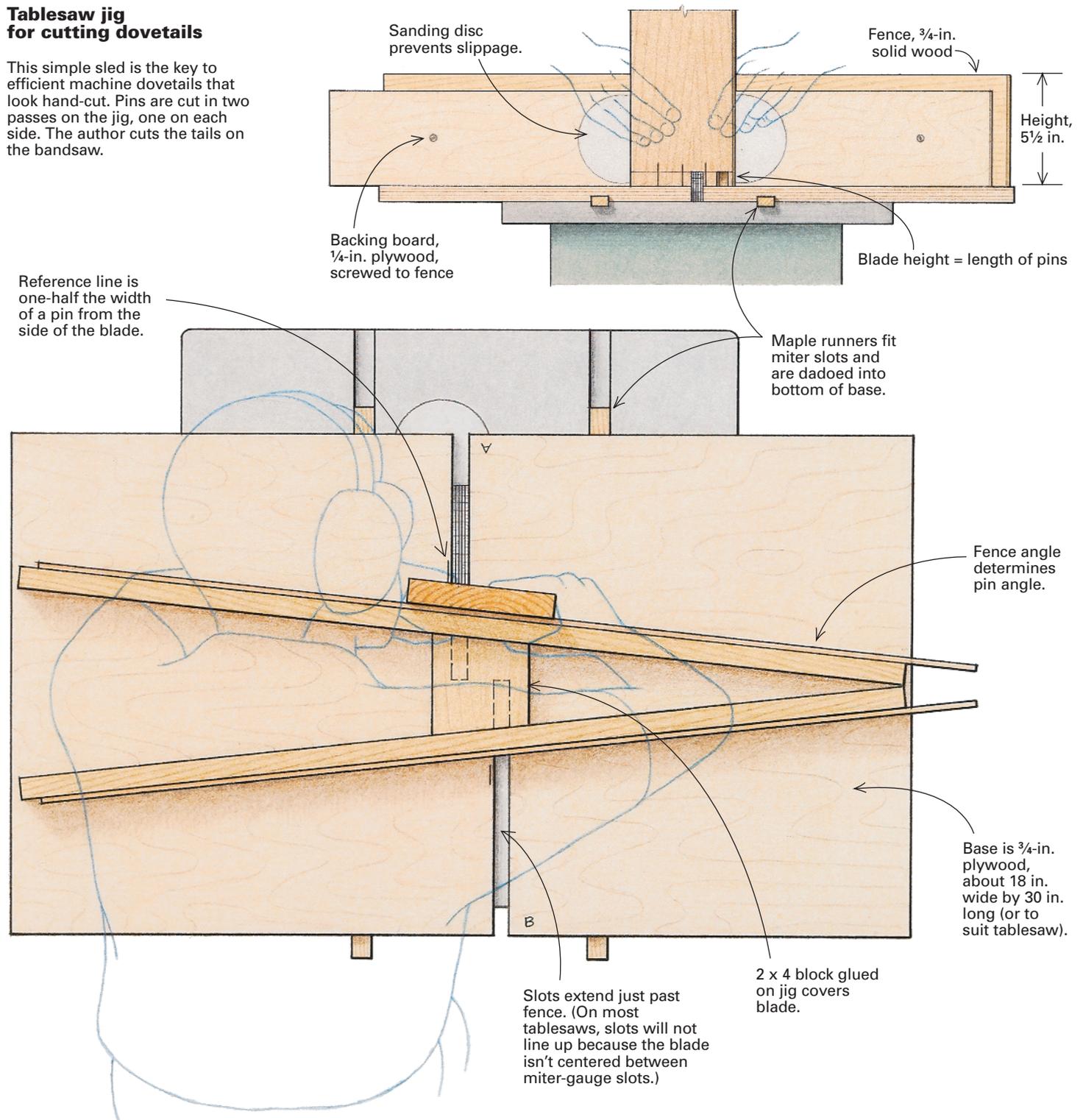
Some years ago, a friend showed me a way to use my tablesaw and bandsaw to



make dovetails that look hand-cut. The jig is surprisingly fast to set up, and it lets me cut dovetails of any size and spacing. It's not a production jig, but it's fast enough to use in a professional shop, and it works well in limited production situations. Disadvantages? The quality of the fit will depend on your ability to cut accurately to a line. But I like that; I find it far more satisfying than using a dovetail jig. In some ways,

Tablesaw jig for cutting dovetails

This simple sled is the key to efficient machine dovetails that look hand-cut. Pins are cut in two passes on the jig, one on each side. The author cuts the tails on the bandsaw.



this is still a hand-cut procedure (I can hear the traditionalists howl). The finished joint certainly looks as if it's been hand-cut (see the bottom photo on the facing page).

A simple jig cuts the pins

The key to this method is a tablesaw jig for cutting the pins. Two fences angled to a narrow V-shape are mounted on a sled that runs in the miter-gauge slots of my table-

saw. I make the pins in two passes over a 1/2-in. dado cutter (see the top photo on p. 56). With the first pass, I cut one side of each pin. Then I rotate the sled and cut the other side. I use the pins to mark the tails before cutting them on the bandsaw.

The base of the sled is made of 3/4-in. plywood, 18 in. wide by 30 in. long (see the drawing). The runners for the miter slots are glued into shallow dadoes on the bot-

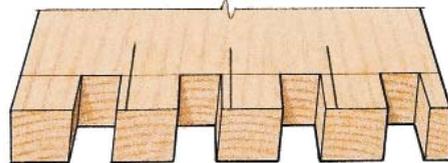
tom of the sled. To ensure the dadoes are parallel to one another, I run the same edge against the fence while cutting each dado.

The fences are set at 6° off a line drawn perpendicular to the blade, which gives a pin angle of 6°. This is a 9:1 ratio. I picked that angle simply because I think it looks best. I recently discovered the jig I had been using for years had one fence set at 6°, the other at 8°. I never noticed until I

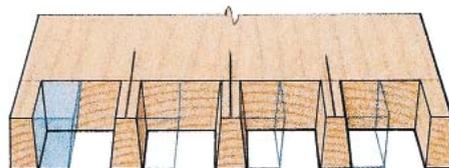
CUTTING PINS WITH THE JIG



Make the pins in two passes over a dado cutter. The first pass cuts one side of each pin. The author aligns the centers of the pins with the pencil mark on one side of the sled.



The second set of cuts finishes the pins. After cutting one side of each pin, rotate the jig 180°, and cut the angle on the other side. Align the centers of the pins with the reference mark on the other side of the sled.



measured it for drawings. The lesson: Don't worry too much about the angle.

The fences are made of 3/4-in. solid wood, 5 3/4 in. high and fastened from below with screws. Because the blade cuts through the sled between the fences, I glued a block into the space as a guard. After cutting a few dados of different widths and heights, the fence was chewed up in the area of the blade. So I mounted 1/4-in. plywood backing boards on the fences to prevent tearout. I move the backing boards each time I change the dovetail profile and replace them when necessary. Sanding discs glued to the backing boards keep the pin board from slipping. Just make sure that the discs are not in the path of the cut or sparks will fly.

Jig setup is based on pin width

Laying out the dovetails is simple. As I do with hand-cut dovetails, I use a marking knife to scribe a line on both faces of the board to locate the bottoms of the pins and to help prevent tearout on the waste portion. I set the dado cutter so the depth of cut just touches the scribed line. On the outside face of the board, I mark the centerlines of the pins. I space them evenly, but you can space them any way you like. The angle of the cut is set by the angle of the fences; the width of the pins is up to you.

I made a pencil line on each side of the jig (see the drawing on p. 55) to determine pin width. The distance from the pencil lines to the cutter is half the width of the pins. When cutting, I align each layout line on the pin board with the pencil line on the jig.

The first round of tablesaw cuts puts the angle on one side of the pins. I line up the reference marks, as shown in the top photo at left, run the sled through the blade and repeat at the next mark. I like the half-pins at each end to be close to full width, so I align the edge of the board with an imaginary line that's twice as far from the blade as the reference mark. When I've cut one side of all the pins, I turn off the saw and rotate the jig 180° to cut the other side of the pins at the opposing angle (see the photo at left). If there's any waste left between the two cuts, I scoot the board over and make another pass.

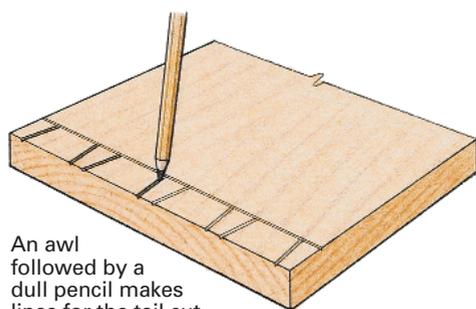
A bandsaw cuts the tails

The first step in laying out the tails is to scribe a baseline across both sides of the end of the board with a marking knife.

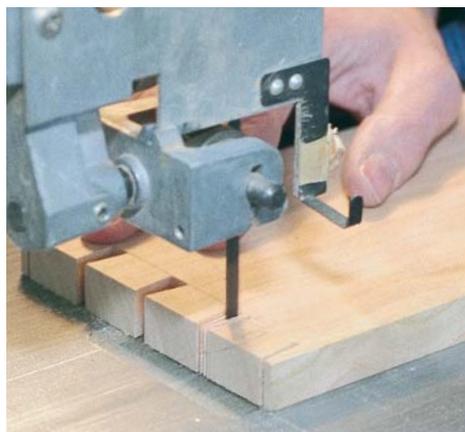
TAILS ON THE BANDSAW



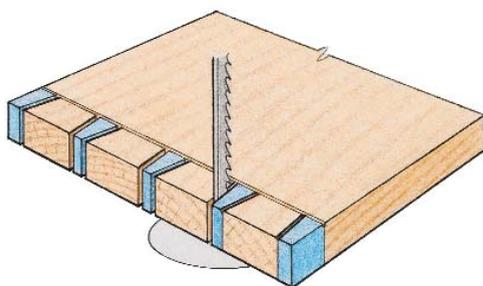
Use an awl to mark the tails from the pins. The author supports the pieces on his jointer as he scribes the marks for the tail cuts.



An awl followed by a dull pencil makes lines for the tail cut.



A bandsaw completes the job. Cut to the lines on each side of the tails, and then nibble away the waste. Take care not to cut beyond the scribed baseline.



The author gets an almost perfect mallet-tight fit right off the bandsaw. With a little practice, anyone can have the same results.

Then the tails are scribed with a sharp awl. I do the marking on my jointer because it has a handy right-angle surface (see the top left photo). The outside face of the tail-board goes down on the jointer table, and the pin board stands on it with the marked face (outside) against the fence. Before I go any further, I label all the mating pieces to avoid confusion.

Cutting the tails is nothing more than cutting to the line on the bandsaw. And this is the crucial task here. In the woodworking classes I teach, many beginners have trouble cutting to a line. There are three things that go into cutting to a line accurately: sharpening the perception of the line, sharpening the perception of the cut and practicing to get the two to meet.

Consider the line first. I like a scribed line because it makes a precise mark, as long as the scribe is made with consistent pressure. A scribed line is actually a little canyon cut into the wood. To make this clearer, I have students trace the scribed lines with a dull pencil (see the top drawing). The result is two pencil lines, one on

either side of the impression left by the scribe. Cut away one of the pencil lines, and you've cut to the line.

I cut sides of the tails to the line and use the blade to nibble away the rest of the waste, being careful to stop at the scribed baseline (see the bottom left photo). I rotate the piece 90° and cut along the scribed line for the bottoms of the half-pins at the ends. Slightly ragged bottoms on the tail can be cleaned up with a chisel. After some practice, you can dispense with this step.

The moment of truth

The first few times I cut dovetails this way, the fit was a little tight, and I had to pare the high spots with a chisel. If one section is loose, a small wedge glued in place can make an almost invisible repair. Sanding dust mixed with finish can make a good joint look almost perfect. □

Jeff Miller's Chicago studio serves as shop, showroom and classroom for his woodworking courses. The Taunton Press will publish his book on chairmaking next year.