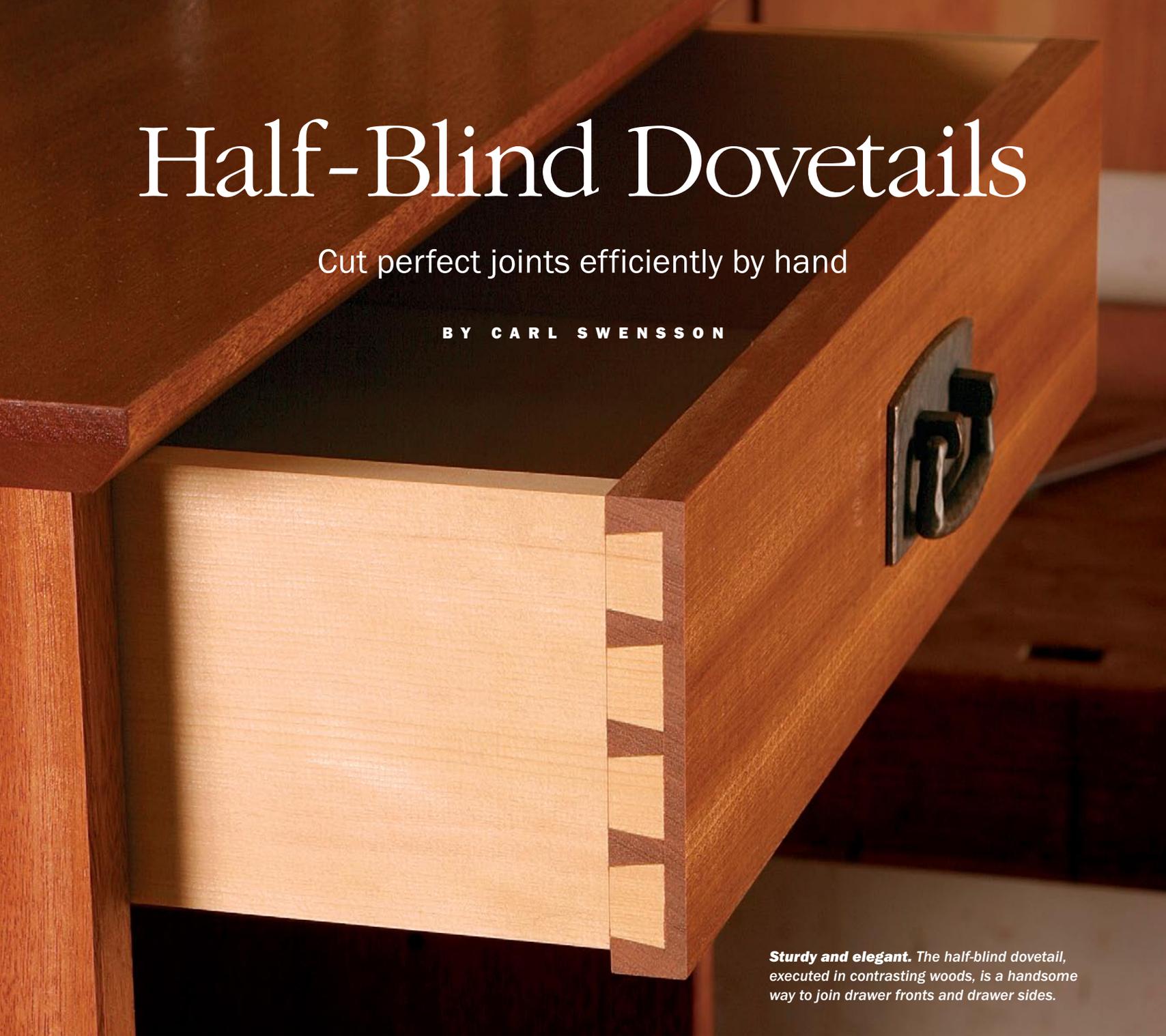


Half-Blind Dovetails

Cut perfect joints efficiently by hand

BY CARL SWENSSON



Sturdy and elegant. The half-blind dovetail, executed in contrasting woods, is a handsome way to join drawer fronts and drawer sides.

A tightly fitting half-blind dovetail is easy to find and easy to admire. Locating one can be as simple as opening the nearest drawer, because the technique most often is used to join drawer fronts to drawer sides. When made with contrasting woods, the hand-cut joint, with its narrow pins and variable spacing, is especially attractive.

Many a woodworker uses a router and jig to cut snug half-blind dovetails with relative ease. But the joint also can be cut

efficiently by hand. In fact, with careful attention to sawing and chiseling techniques, I can cut a snug pair of half-blinds in about an hour. Here's how I do it.

Start with the tails

Cutting the tails first helps me to lay out the pins accurately and get a tight-fitting joint. The finished tails act as a template that is traced easily onto the pin board.

Start the layout with a marking gauge, using one setting to scribe the length of

the tails on the end grain of the drawer front and on the drawer side.

Before continuing with the tail layout, reset the gauge to about $\frac{1}{32}$ in. wider than the thickness of the drawer side. Scribe a line on the inside face of the drawer front, marking the length of the pins. The extra $\frac{1}{32}$ in. lets the pins stand slightly proud of the assembled joint, so that they can be planed flush.

I allow for this excess material in advance, because I will be cutting stock

A perfect fit begins with accurate layout



1

Determine the length of the tails. In the end grain of the drawer front, scribe a baseline for the sockets that will house the tails. The tails should penetrate about two-thirds of the way into the drawer front for heavy-duty applications, four-fifths of the way for more delicate work.



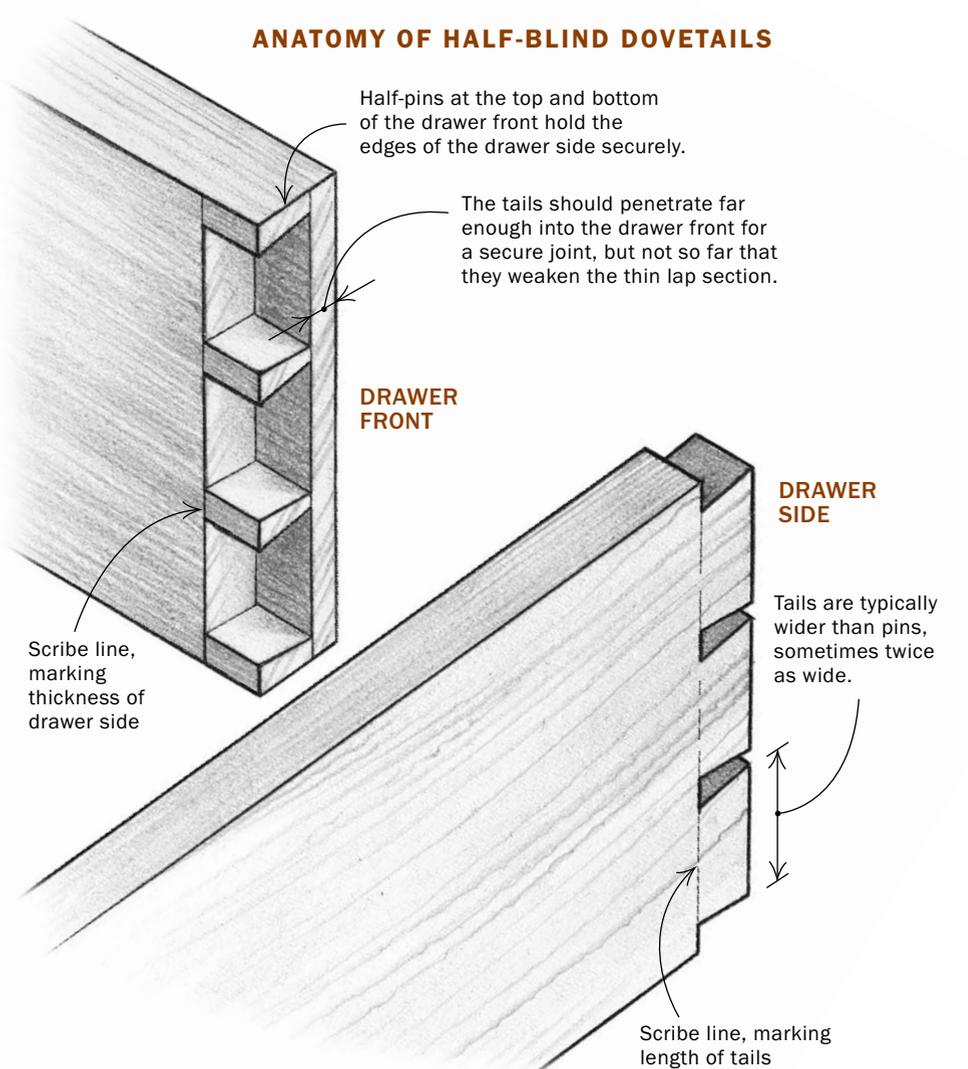
2

Mark the mating piece. Use the same gauge setting to scribe a corresponding line on the drawer side, again marking the length of the tails.

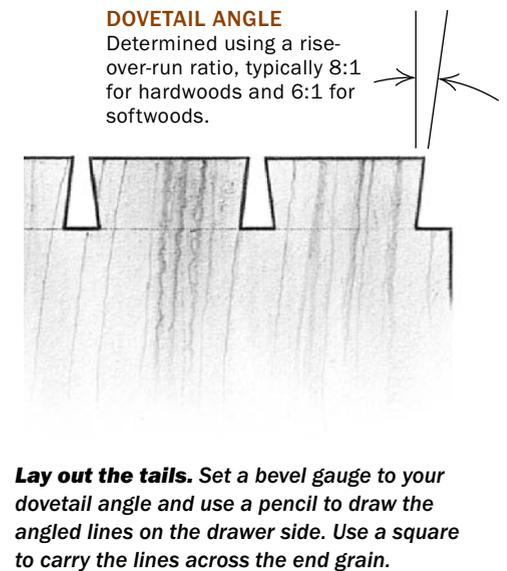


3

Set the socket depth. On the inside face of the drawer front, scribe a line to match the thickness of the drawer side, plus $\frac{1}{32}$ in. or so.



4



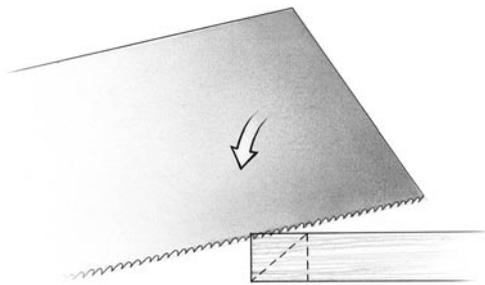
Cut the tails first

1

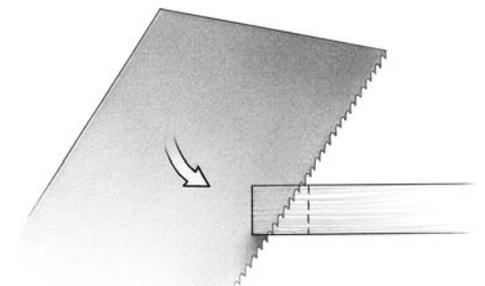
Start the saw at a low angle. This helps establish the kerf over the full length of the cut. Swensson secures the drawer side flat on the benchtop with the end grain facing him.

SAWING TECHNIQUE

1. Start the cut at a very low angle to help establish the kerf. Steadily steepen to a 45° angle with the goal of reaching the bottom corner and the scribed line at the same time.



2. Steepen the angle to vertical as you finish the cut, taking care not to lift the saw out of the kerf or overcut the scribed line.



2

Steadily steepen the cut. Alter the angle slightly with each stroke, bringing the blade vertical as you finish. When finished, you might be down on one knee.

for my drawer fronts to fit the drawer openings.

Next, lay out the angled sides of the tails using a pencil and a bevel gauge. I like to set the angle at a 1:8 ratio, or about 7°. Slightly smaller or larger angles will work, but I find this one offers a good balance between visual effect and structural strength. Finally, use a square to continue the layout lines across the end grain.

For all of this work, keep your pencil extremely sharp. I sharpen mine to a chisel edge by pressing the point flat on a sanding block and working it vigorously back and forth. Others prefer marking with a knife for accuracy, but I've learned I can cut just as precisely to a pencil line, and I can see it much more easily.

Next, begin to saw the tail cheeks. My goal is to produce a finished surface directly from the saw. I use a Japanese rip saw that cuts on the pull stroke. Its thin blade requires less cutting effort than a Western saw. Its long handle helps minimize steering errors, which are easier to correct because of the blade's flexibility.

I hold or clamp the work flat on a bench with the end grain toward me. In this way

the stock is oriented properly for the rip saw, letting the saw work in the direction of the long grain. The pull stroke also lets much of the sawdust fall to the floor, keeping the layout lines clear of debris. I hold the saw roughly midway along the handle. This hand position gives me greater control as I slowly start the cut. With the saw held at a very low angle, start with short, light strokes to split the line, using the small teeth nearest the handle for the greatest control.

If the saw jumps or lurches as you pull, it might mean that your angle is too high and the teeth are catching the corner. You also might be pushing down too hard, trying to cut too aggressively. The saw should slip into the wood.

Once the saw has broken the surface and opened a kerf, I progress gradually from the low angle to about 45°. This puts the saw as deep into the kerf as possible, providing more control and dampening the error from any offline strokes. I then move my grip to the base of the handle and begin to saw with the whole blade.

While sawing, I keep a loose grip on the saw handle. This lets my hand sense



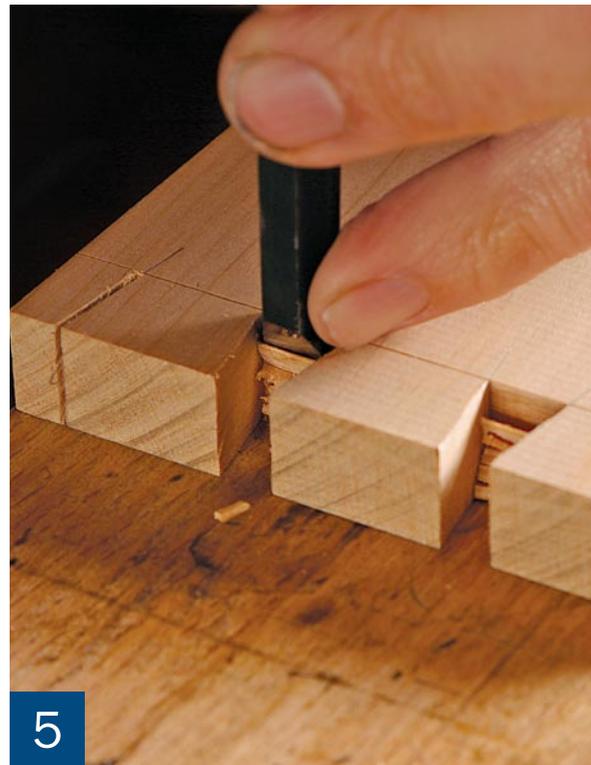
3

Start chopping out the waste. Make a vertical cut about $\frac{1}{32}$ in. on the waste side of the scribed line. If you start in the scribed line, the natural cutting action of the chisel will push it past the line.



4

With the bevel down, cut a trough into the waste. Continue to chop and pare until halfway through the waste. Then work from the other side.



5

Pare to the layout line. Afterward, use a small square to check that the sawn and chiseled surfaces are square to the face of the board. This helps ensure that the finished joint will go together tightly.

and immediately correct any vibration or binding of the saw in the kerf. A tight grip mutes these important sensations.

Accurate hand-sawing yields straight, clean surfaces exactly where you want them, but the skill takes time to develop. Beginners tend to be too careful and to saw too slowly. This results in a rough surface. To cut cleanly, the saw needs momentum through the cut; you would not run your tablesaw at half speed and expect a good result. Your saw stroke should exhibit the confidence of an expert with the open mind of a student.

As I cut, I watch the layout lines on both the face grain and end grain. My goal is to make steady progress toward the scribed depth of the tail and the opposite corner, and I aim to reach both at the same time.

It is an accepted practice at this point to flip the board and repeat the process, sawing this same triangular section and then finishing the cut to the final depth of the tail. This yields a predictably good result with perhaps a little cleanup with the chisel. A risky and more fun method is to keep the board in one position and continue sawing until you have reached the

finished depth. I do this by keeping the front of the blade near the scribed depth and pivoting the handle end downward as I continue sawing. When the sawblade is vertical, I have reached finished depth on both sides of the board.

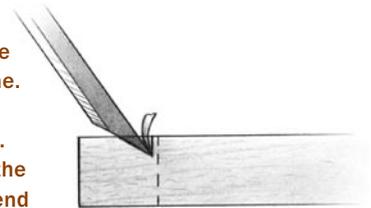
With practice, it's possible to use this technique without seeing where the saw is cutting. How the saw feels as it glides through the kerf tells one if the saw is going straight. If you do it right, the result is excellent. If you do it wrong, the reward is more practice.

Chop out the waste—After sawing all the tail cheeks, begin to remove the waste with a chisel. I choose the largest chisel that will fit in the joint without accidentally marring the sides. Placing the chisel about $\frac{1}{32}$ in. on the waste side of the marked depth of the tail, make a series of firm vertical cuts, each followed by a bevel-down angled cut. The angled cut removes a chip and allows the next vertical cut to go deeper. Stop about halfway through.

I never split off the waste on this side with a chisel cut on the end grain. The wood that remains will support the waste when working from the other side and will

CHISELING TECHNIQUE

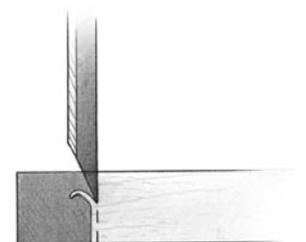
1. Start with a vertical cut on the waste side of the scribed line. Then cut out a V-shaped groove. Do not chip out the waste from the end of the board—yet.



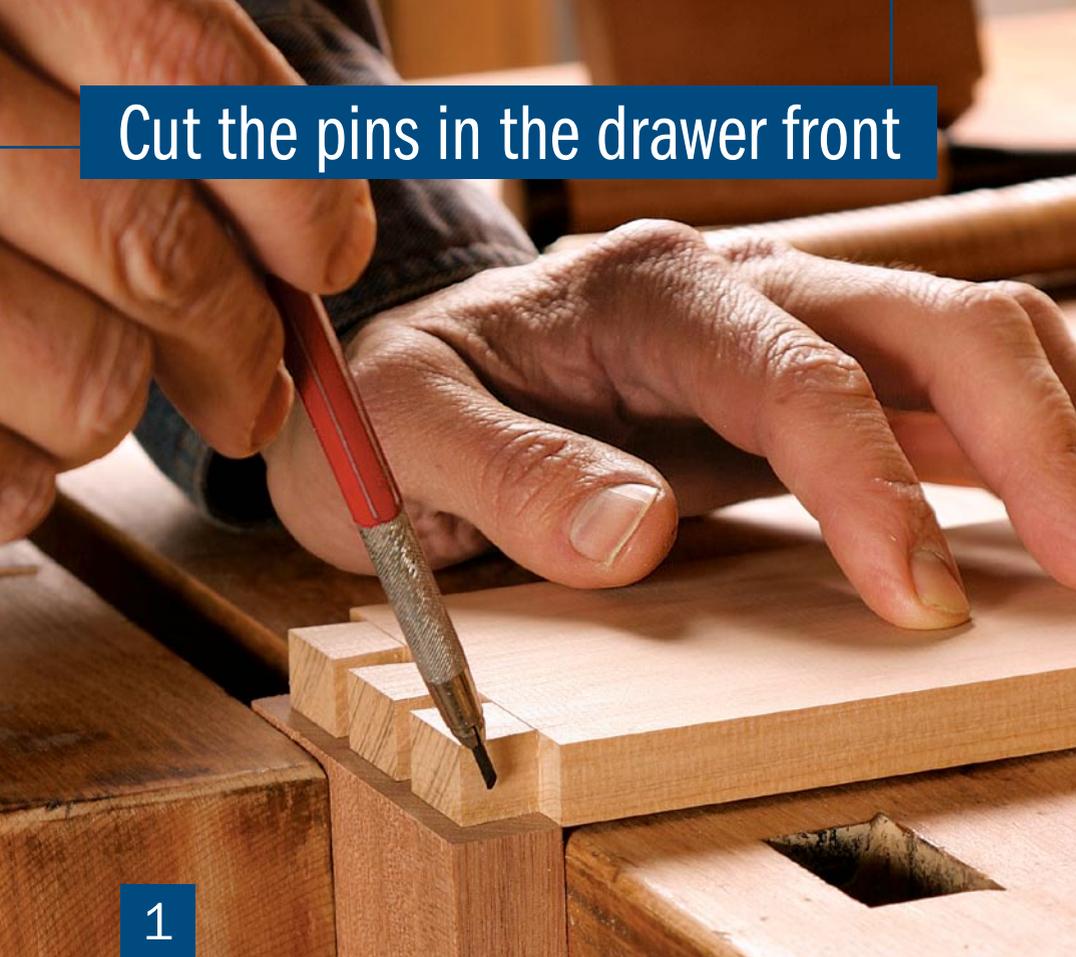
2. Flip the board onto its other side. The remaining shelf of waste will serve as a support that prevents the end grain from tearing out as you chop from the other side.



3. Finish by paring the tails to the scribed line and to the saw lines, working inward from both sides.



Cut the pins in the drawer front



1

Trace the tails to lay out the pins. Place the drawer front vertically in a vise. Hold the drawer side firmly in place while tracing the outline of the tails on the end grain. Swensson uses a pencil sharpened to a chisel edge on a sanding block.

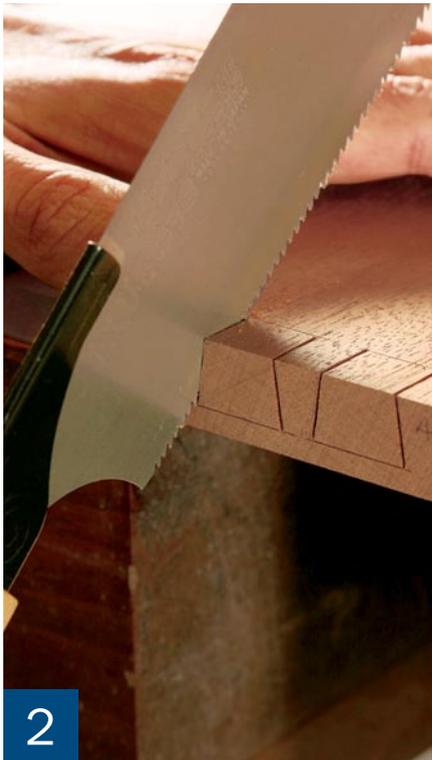
prevent an end-grain chunk of wood from being pulled out of the finished joint.

Flip the board and repeat the process. On this side it's OK to split off the waste from the end grain. With the waste gone, place the chisel in the cut from the marking gauge. Chisel the bottom of the joint square or with a slight undercut, working toward the middle from each side. The approximate $\frac{1}{32}$ in. of waste helps to control the edge of the chisel as it cuts. With good technique very little, if any, paring or fixing of the joint is needed. Think like a joiner, not a wood-carver.

Laying out the pins

Use the finished tails as a template to lay out the angled sides of the pins. I mount the drawer front in a vise, end grain up, and align the tails across it. Holding the drawer side firmly in place, I set my pencil tightly against the tails and trace their outline onto the drawer front.

As you begin to saw the cheeks of the pins, saw tightly to the waste side of the line. This gives the closest fit to the mating surface. I saw the pins with the same technique as the tails, except that the joint geometry does not allow me to saw through.



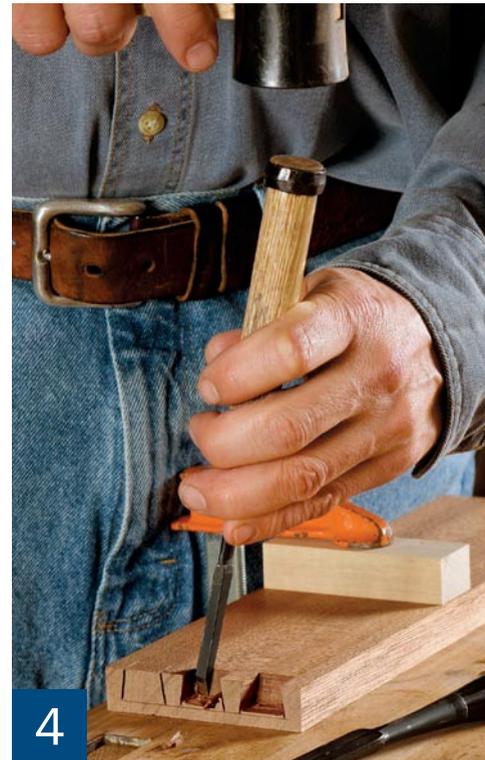
2

Start the kerf with a saw. Again, start at a shallow angle and steadily steepen the cut. Make sure that the saw arrives at both corners simultaneously.



3

Finish it with a scraper. Gently hammer a card scraper into the kerf. This extends the kerf into the corner that the saw can't reach. Make several passes with the scraper, starting near the top of the kerf and working down to the baseline.



4

Clear the waste. After forcefully chopping away the bulk of the waste, use a narrower chisel to gently clear material from the corners.

ASSEMBLY TIP



A chamfer eases the fit. Cut a narrow chamfer on the mating edges of the pins and tails. This protects the corners from crushing or tearing when fitting the joint.

Hammering the edges of a scraper into the kerf extends the kerf to the corner of the joint. I use a scraper as thick as or slightly thinner than the kerf. One end and one side are filed and honed flat and square to the face, as they would be prior to burnishing. (A knife edge might split the wood or stray outside the kerf.)

To remove the waste, place the chisel about halfway between the end of the

board and the scribed layout mark on the inside face. I use as big a chisel and hammer as I dare and power the chisel vertically, stopping just short of the bottom of the joint. Most of the waste will break loose cleanly as I chop, leaving very little material to pare from the end grain. The cuts are actually well controlled by the wood, leaving a fairly clean surface. As before, clean up the end grain of the joint to the layout mark.

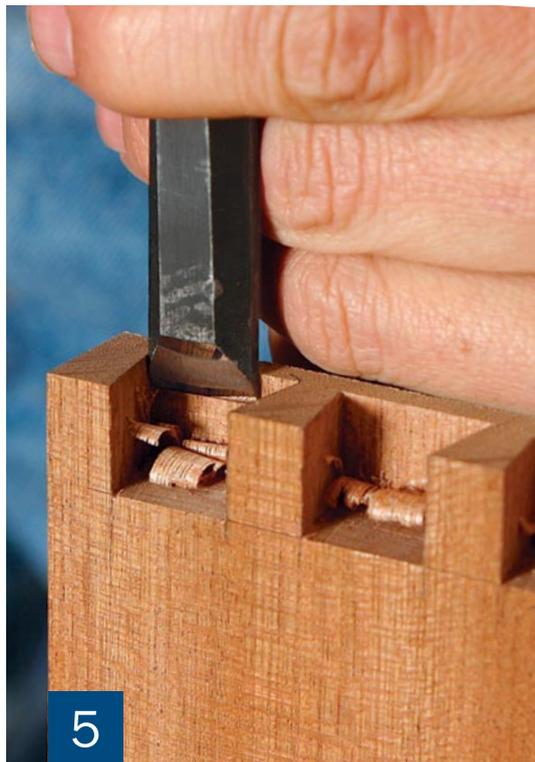
Bringing it all together

To prepare for assembly, cut a small low-angle chamfer on the inside edges of the tails and on the outside edges of the pins. The chamfers on the pins should be on the waste part that will be planed off at the end. These chamfers on the pins and tails will help the joint slide together, will distribute the glue, and will reduce the chances of blowing out the side grain of the tails.

The joint can be hammered together, but pulling it up with clamps offers more control. I use a glue-up block that allows the pins to protrude. This glue-up block should be made of a softer wood than the drawer side so it will not compress the wood of the drawer side. A little shellac or wax will keep it from sticking to the drawer. A well-made joint will not have to stay clamped up while the glue sets. The fit of the joint will do the job. I do not recommend dry-fitting the dovetails, as each fitting loosens the joint.

If you sense that the joint is coming together too tightly, pull it apart and pare any high spots where the pins or tails are rubbing. Look for shiny areas where the friction of fitting has compressed the wood fibers. Also check any suspect areas with a small straightedge. □

Carl Swensson is a furniture maker and designer in Baltimore.



5 **Clean up and check the fit.** Pare to the layout lines (above), again checking the chiseled and sawn surfaces for square. A firm rap with the fist should be enough to get the joint started (right).

