Tapered sliding dovetails

HAND-CUT METHOD IS FAST AND SIMPLE

BY GEORGE HURON

Building a set of wall shelves recently, I wanted them to be strong enough to hold some real weight and yet appear delicate.

A face frame or back would add strength but spoil the look. Simple glued dado joints weren't certain to hold the carcase together. Instead I chose tapered sliding dovetails.

This project requires well-developed hand-tool skills, but part of the tapered joint's beauty lies in its forgiving nature. You don't have to be a surgeon with the backsaw and chisel to get a tight fit.

The standard sliding dovetail—like all dovetails—is sturdy because its structure locks the pieces together. Cutting and fitting a straight sliding dovetail, though, can lead to repeatedly paring wood from a too-snug joint only to find that you've made the fit too loose. And a very tight fit tends to bind during glue-up.

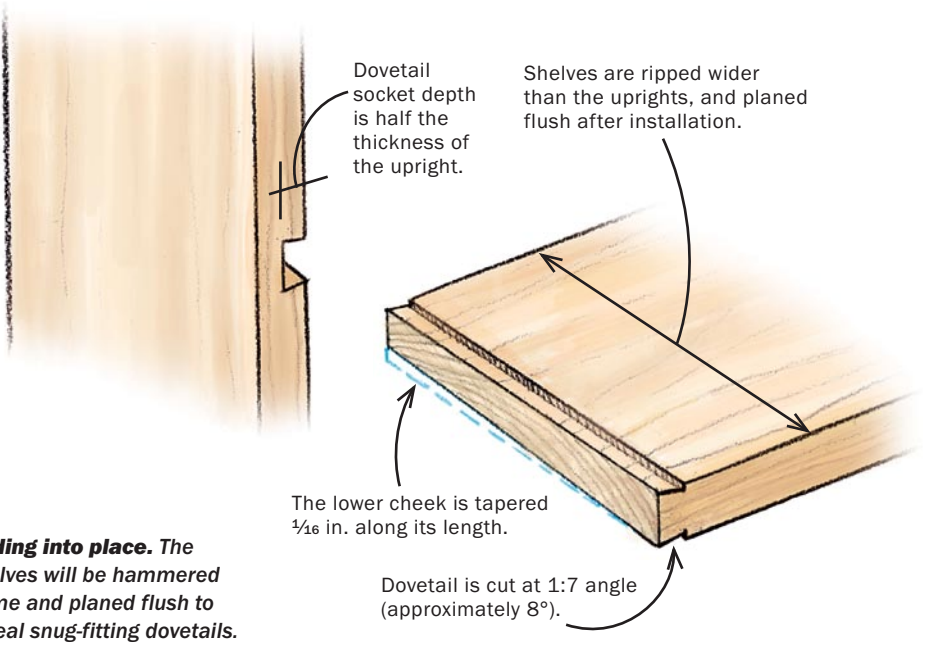
This tapered joint is easier to fit and assemble. The socket and tail have one straight and one tapered dovetail cheek each. The dovetails on the end of each shelf are driven into the sockets like wedges, and the surfaces mate despite small errors in cutting the joinery. The

Lightweight and strong. *Tapered sliding dovetails help create a backless case that's rigid and sturdy.*

Sliding into place. *The shelves will be hammered home and planed flush to reveal snug-fitting dovetails.*

Anatomy of a locking joint

This sliding dovetail is tapered on one side, so the joint can be driven until it fits like a wedge. In this case, the bottom cheek of the tail is tapered, along with the bottom shoulder of the socket. The top facets are cut straight.



Start by cutting the socket

LAY OUT AND DEFINE THE SHOULDERS

After locating the shelves on the uprights, use a square to mark the straight shoulder and a bevel gauge for the tapered shoulder (left). Scribe both lines with a marking knife (center). Chisel a narrow channel along the knife lines to create a starting place for the backsaw (right).

shelves, ripped slightly wider than the uprights, stand proud in front or back. Plane them flush and you're left with clean looks and very sound joints. Structurally, it makes no difference which shoulder is tapered, but be consistent. I taper the shoulder on the underside of the shelves.

Lay out and cut the sockets

These shelves are made of ½-in.-thick cherry, with the uprights ripped to 4⅝ in. wide and the shelves 5⅜ in. wide.

Use a sharp pencil to lay out the shelf locations on the front, rear, and inside face of each upright. Then set a cutting gauge to half the thickness of the uprights and cut vertical lines on the front and back edges to mark the socket's depth.

The tapered side doesn't need to taper much to work. You'll want the wide end of the socket a little narrower than the shelf stock itself, to make a snug fit for the tail. The narrow end should be wide enough to allow you to pare out the waste. For these shelves, I made the socket 1⁄16 in. narrower at the back.

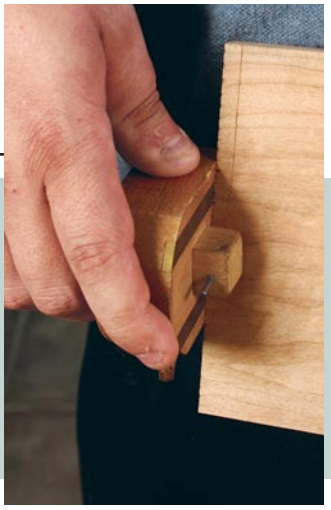
To lay out the tapered shoulder, start on the inside face at the front of the upright, making a mark 3⁄32 in. from the bottom shelf line. Then mark the face at the back 5⁄32 in. from the bottom shelf line and use a bevel gauge to draw a line connecting the two marks. I keep this setting on my

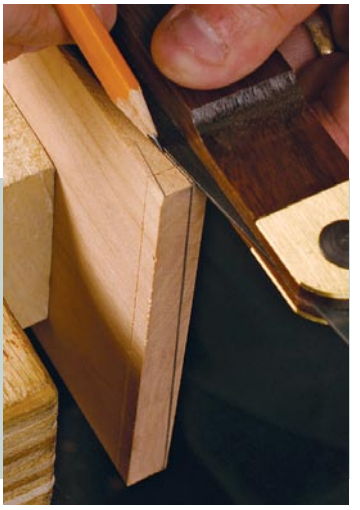
SAW AND REMOVE THE WASTE

Use a guide block to set the saw angle. After sawing the sides, pare away the waste, working from both ends, with a narrow chisel that has a dead-flat back. A router plane also can be used to remove the waste and cut a flat bottom, or simply to clean up your chisel work.

Photos: Steve Scott; drawings: Michael Pekovich

Cut the tapered tail





LAY OUT THE SHELF DOVETAIL

Scribe the shoulders (left) and transfer the taper angle of the socket to the shelf end (center). A piece of thicker stock clamped beside the shelf helps support the bevel gauge for marking the tapered cheek. Use a bevel gauge set to the 1:7 angle to mark the front and back of the shelf (right).

gauge so that I can reproduce the angle when I lay out the tail. For the straight shoulder, I simply mark the face 3⁄32 in. from the top shelf line and use a square to draw my saw line.

Begin cutting the sockets with a wide chisel, creating a groove to guide the backsaw. I support my saw with a 1:7 angled guide block (approximately 8°), and cut to the depth line on the board's edge. Start chopping out the waste by driving a chisel from the center toward the sawkerfs. Then pare from the ends for a flat bottom, making sure to remove all fuzz from the corners.

Use a marking gauge to match the socket depth around the ends of each shelf. Next, use the angle set previously on the bevel gauge to mark the end grain for the tapered cheeks of the tail. You won't need a line for the straight cheek.

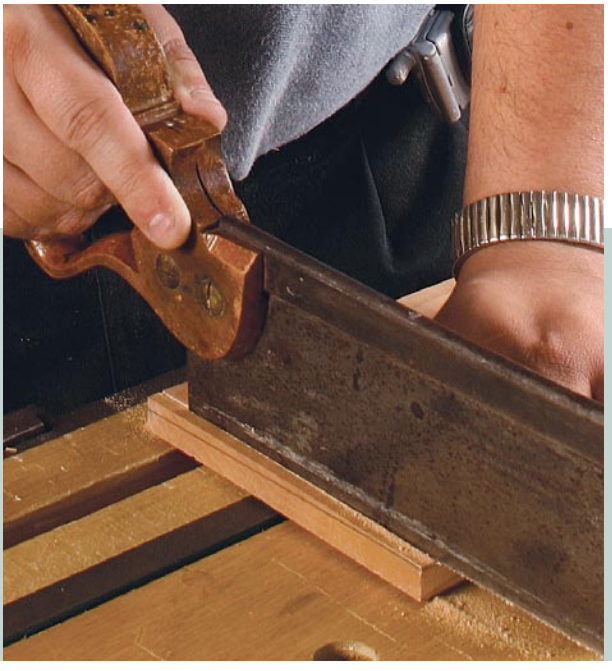
Pencil mark the front and back edges of the shelf, using a dovetail gauge or a bevel gauge set to a 1:7 angle. Carry these marks beyond the gauge line to use as a reference when paring.

To cut the shoulders, first chisel a groove for your backsaw and saw down to the marks on the front and back of the shelf. Use a ½-in. chisel with a dead-flat back to pare the cheeks. Take care to keep the chisel at the proper angle.

Test-fit and assemble

Use only light hand pressure to test the fit. The joint should close to within an inch of the back of the uprights. If the fit is too snug, scribe a new line just inside the original knife line for the tapered cheek, and trim the tail. If you take one or two shavings too many, simply drive the shelf a little farther into the uprights.

The only glue you'll need is a dab covering about ¾ in. near the back of each socket. Use a hammer and a wooden block to bring the joints together, starting with the top and bottom shelves. Set the uprights on wooden risers so that you can drive the shelves past the back of the case if needed. When the glue dries, trim each shelf with a jack plane until flush with the uprights. □



SAW AND PARE THE CHEEKS

After chiseling a channel along the marking-gauge lines (above), saw down to the marks for the cheeks (right). When taking waste from the tail, light pressure on the front of the chisel helps register its back against the flat surface created by the initial cut (far right).