Juice Up Your Joinery

Artistic tenons pack structural power with visual punch

BY HANK GILPIN

I was seduced into the woodworking field when I walked into a college class in 1973 and watched Tage Frid tie a piece of steamed ash in a knot. But it was my enchantment with joinery that sealed the deal. I quickly discovered that if I worked with solid wood and traditional joinery I could make simple, strong, practical pieces fairly quickly and get a thrill out of doing it. I became Mr. Mortise-and-Tenon. The more I used the joint, the more variations I discovered. Forty years later, I'm still experimenting with the mortise-and-tenon, finding new ways to add a little more strength and visual zing to the piece of furniture and a little more delight to the process of making it.

Hank Gilpin's first article for Fine Woodworking *ran in issue #6. Special thanks to Hank's stellar assistant Matt Giossi for his help with this article.*

DOUBLE TENONS

SHAPED TENONS

TUSK TENONS

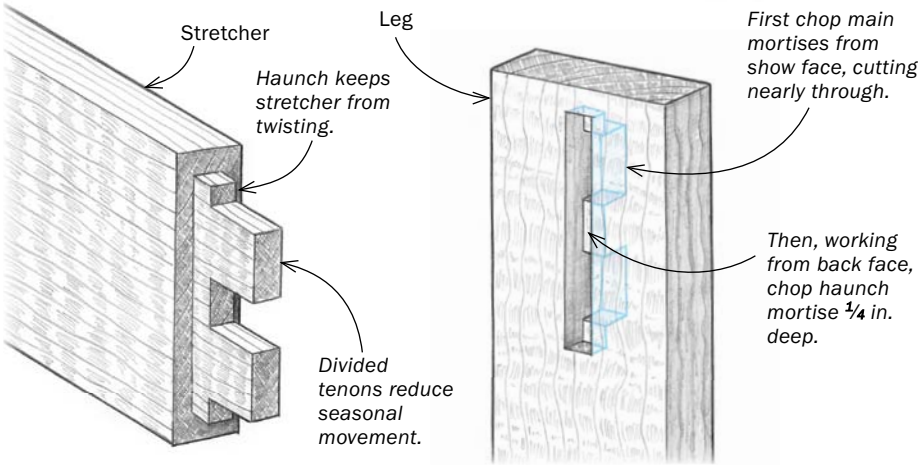
Multiple tenons multiply the impact

Through-tenons bring something special even to an otherwise simple piece, adding visual appeal and a good deal of strength. Soon after I made my first ones, I began doubling the tenons where it made sense structurally. I looked everywhere for ideas, and I found the vertically stacked and haunched tenons in an old English book on door-making. Separated tenons reduce problems with wood movement and take less meat out of the mortised member. As a bonus, they're beautiful. And if you cut the tenons in contrasting wood—poof!—they're as dramatic as inlay.

STACKED

Split vertically. *Dividing a large tenon into two or more smaller ones is beneficial when the stretcher is wide.*

CREATING MULTIPLE THROUGH-TENONS

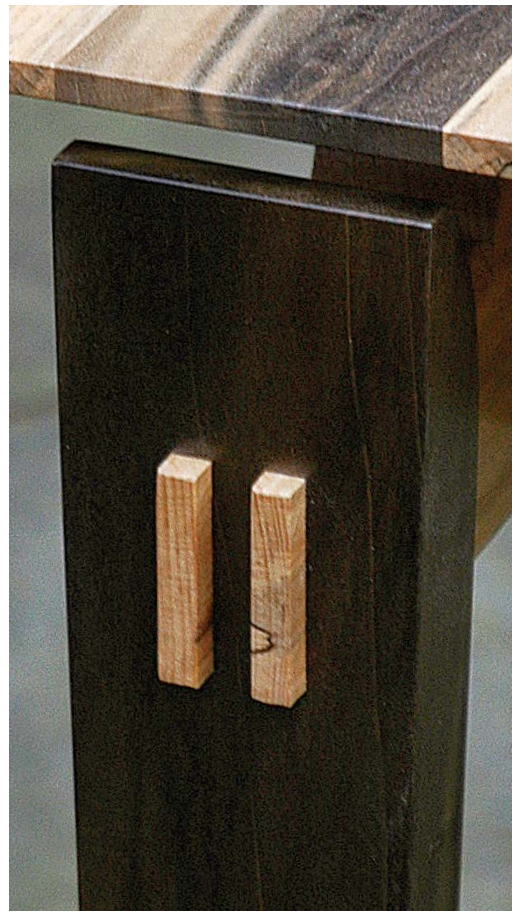


Outside in. *Start chopping the through-mortises from the show face of the board, and stop the cut ⅛ in. before going through.*

Flip and finish. *Registering the same edge against the fence, flip the workpiece end for end and chop the housing from the inside face.*

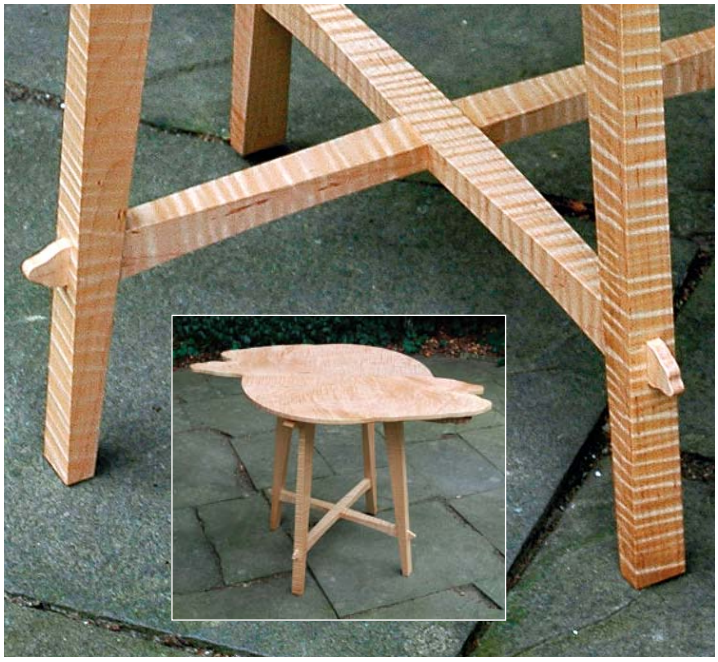
SIDE BY SIDE

Split sideways. *Two tenons side by side create more glue surface than a single large tenon. The visual pop is doubled, too—unless it's quadrupled with contrasting woods, as it is here in this table made of spalted maple and tulip poplar.*



Finished furniture photos courtesy of Hank Gilpin; process photos: Jonathan Binzen

Through-tenons with extra sizzle



Very proud tenons. *Leave the through-tenon long and you can give it nearly any shape. On Gilpin's curly maple table, the extended stretcher tenons are profiled in response to the table's cloud-shaped top.*

SHAPED TENONS MAKE A SHOWPIECE

Once you start using through-tenons, and then proud through-tenons, you open up a whole new realm—why not make really proud tenons? Then you can shape them any way you want. I typically give them a shape that picks up another detail in the piece. There are no rules. On the little curly maple table at left, I designed different shapes for each tenon. That makes it more fun to look at and more fun to make.

Tenon template. *If the shaping on the tenons will be alike, a quick template can be used to transfer the design from the drawing to the workpiece.*

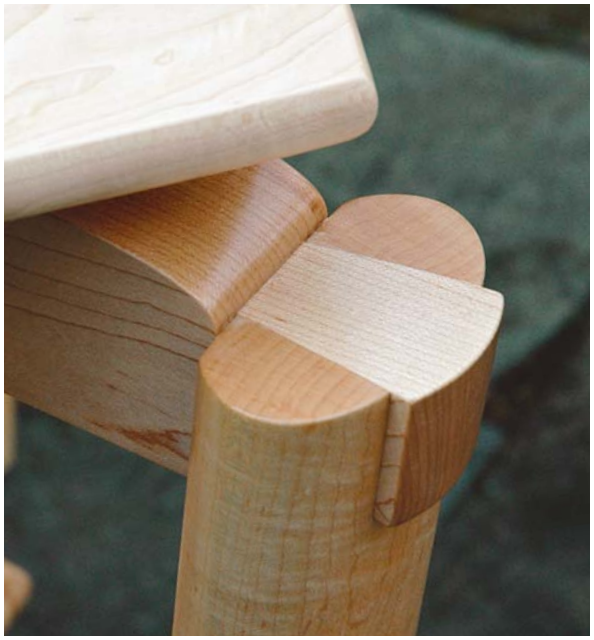
Hand tools refine the shape. *After bandsawing to the line, use files, rasps, scrapers, and sandpaper to achieve the final shape.*

Carved to a curve. *On his walnut and cypress table (left), Gilpin curved both the leg and the through-tenon to complement the circular tabletop. On his oak table (above), the through-tenon echoes the rounded bumps on the leg.*

Drawings: John Tetreault

THE OPEN APPROACH

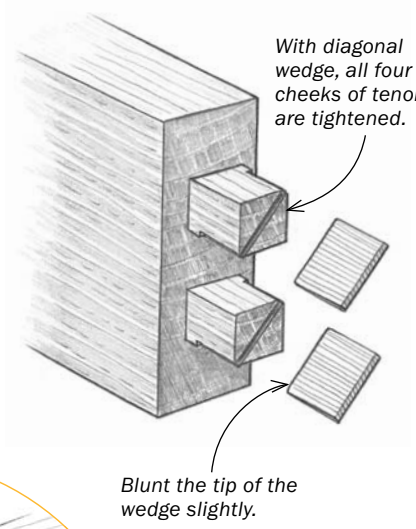
Having the top of a table rest on the leg is an ancient habit that I like to break. I often lift the top a smidge, which draws attention to the structure below. When I do, I'll often use an open-topped mortise. It gives me a good amount of glue surface and strength even while exposing the tenon on two edges.



Taking the bridle path. *On tables with tops raised off their legs, Gilpin often uses bridle joints, leaving the tenons proud and pinning them for insurance (top). A similar open-topped joint can be made in a dovetail version (above).*

WEDGES ADD SPICE AND STRENGTH

Wedge a tenon and you instantly have a stronger joint—and a cooler looking one. If the wedge is on the diagonal in a square tenon, it will tighten all four cheeks of the joint. I sometimes use contrasting wood for the wedge. In the curly ash chair below, I used walnut wedges to echo the small walnut spacers in the doubled crest rail and side stretchers.

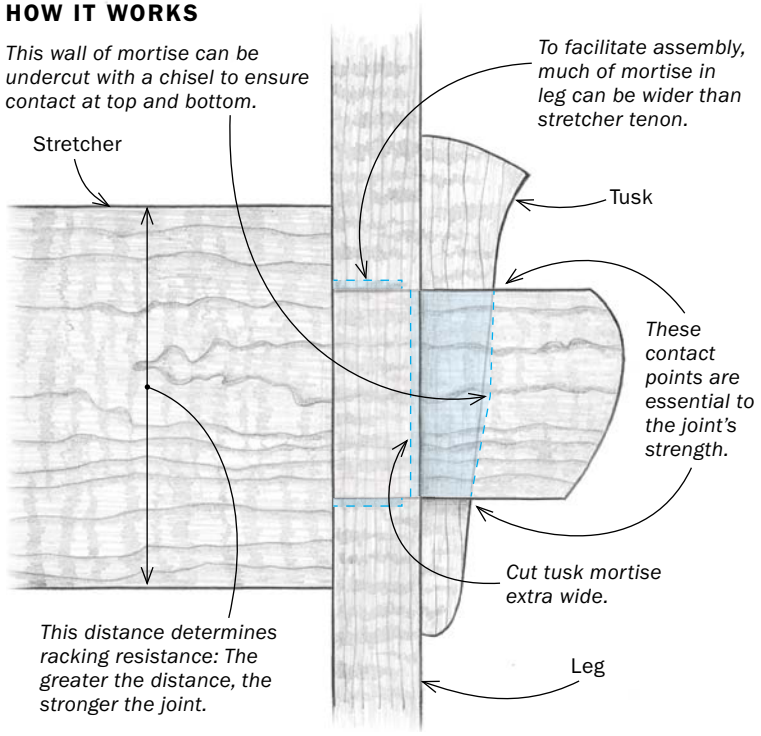


Tusk tenons: stylish and strong

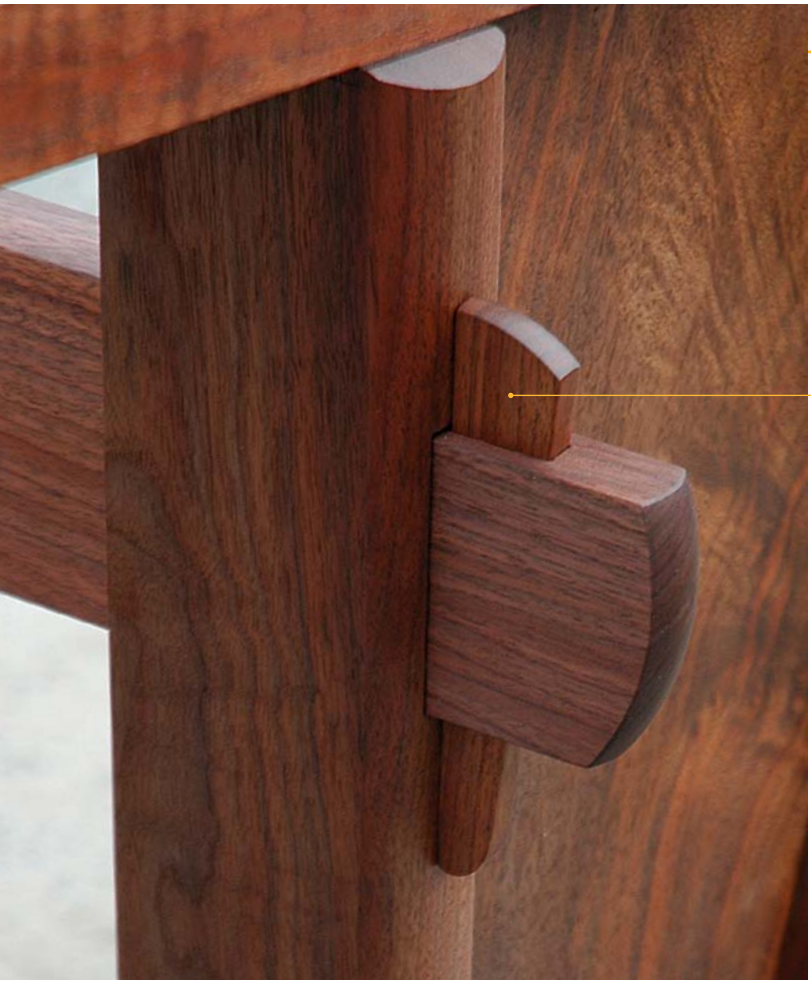
Tusk tenons—they're a miracle, aren't they? Structurally, they create a perfectly rigid connection with a little wedge and not a drop of glue. You can knock them apart with the tap of a hammer and tighten them up the same way. And if you decide to spice things up a bit, you can make the tenons and wedges in limitless variations.

One important thing to note about making them is that the stretcher tenon should slide very easily into the leg mortise, so the whole assembly is rather loose until the wedge goes home—tap—and it's suddenly rock solid.

HOW IT WORKS



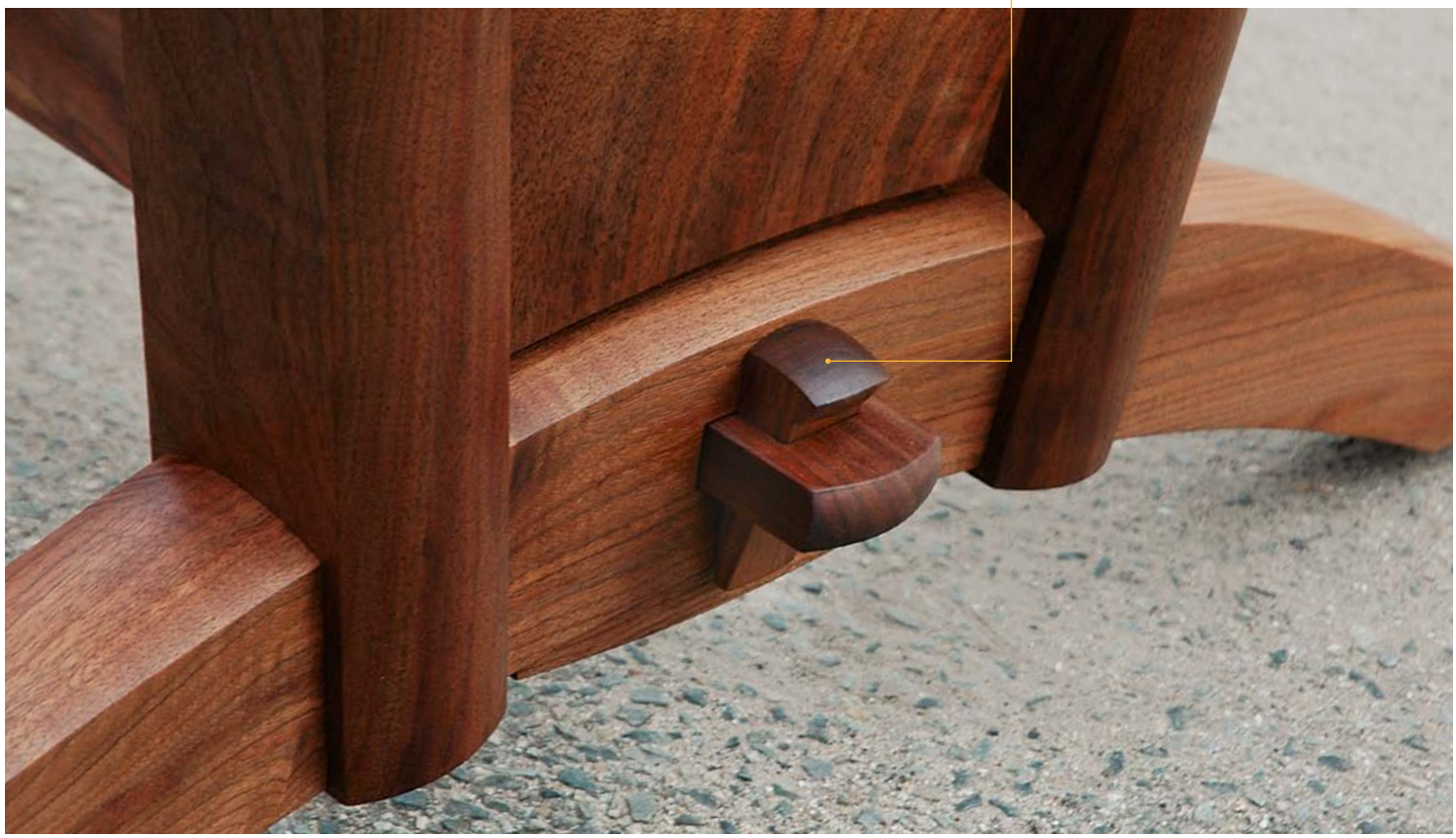
Versatile and very strong. *Tusk tenons can be used on tables of all sizes and styles. They provide a powerful connection without glue that can be disassembled for shipping and tightened with a tap.*



VARY THE FORMAT

Tusk tenons are perfectly suited to trestle tables, and typically one stretcher will do the trick. On this dining table, though, which was quite wide, I made framed end panels and used a pair of upper stretchers, along with a lower stretcher that lies flat. The upper stretchers lock the table up tight, so the lower one isn't essential structurally. But it adds a nice lateral line to the design and also gave me the chance to make some short, stout tusks to fit it.

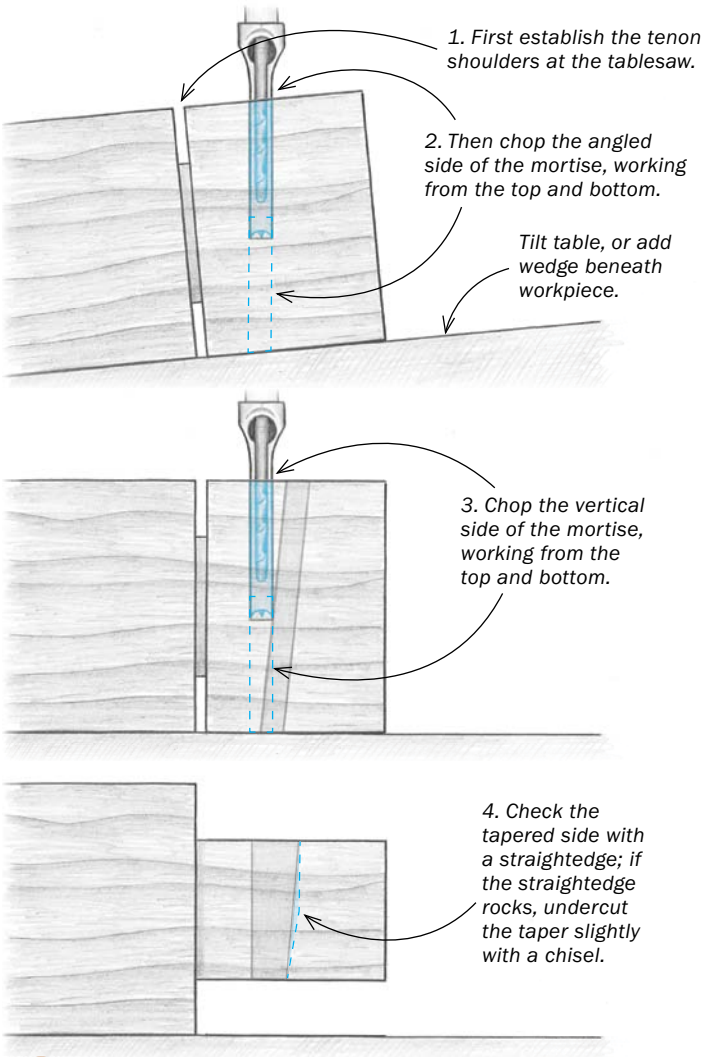
One table, two types of tusk. *Tusk tenons are strongest—and most commonly used—with a stretcher oriented with its width vertical (left). But a stretcher lying flat and fitted with a wide tusk makes a sound connection too.*



Making tusk tenons

CUT THE MORTISE

Table stretchers tend to be too wide to be through-mortised from one side, so most tusk mortises are chopped from the top and bottom to the middle. Gilpin's hollow-chisel mortiser has a tilting table, but on a fixed table you could insert a wedge beneath the workpiece. These mortises also could be chopped by hand or cut on a drill press and squared up with a chisel.



TIP

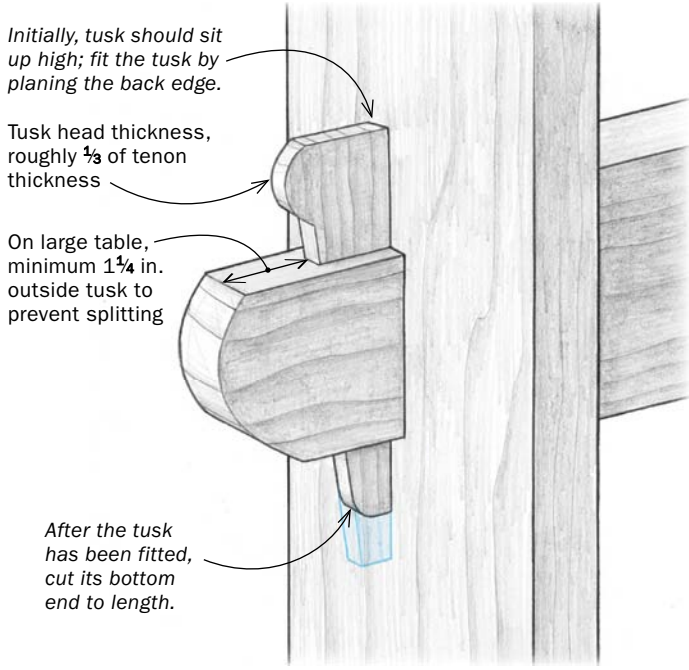
MORTISING NARROW STRETCHERS

Chop from the top. *On stretchers narrow enough, you can chop the tusk mortise from one direction. Stop the cut before going through.*

Saw off the bottom. *With the mortise chopped nearly through, saw the bottom cheek to reveal a clean mortise opening.*

FIT THE TUSK

After cutting and smoothing the tapered edge of the tusk, assemble the joint. At this point the tusk should sit above its final height by an inch or more. Fit the tusk to its final position by handplaning its back edge; proceed carefully, as it will drop down quickly. After fitting, label each tusk and tenon with permanent marker on a non-show face.



Stop the taper. *To make a tusk with a head, you need a stopped taper. First make a relief cut below the head, then use an angled jig to bandsaw the taper.*

Back adjustment. *Off the saw, the tusk should be over width by ⅛ in. or more. Final fitting is done by trimming the back edge of the tusk with a handplane.*

SHAPE THE HEAD

You'd think a wedge would be a simple thing to make—and it can be. But once you start exploring the possibilities with tusks, you can wind up making some quite sophisticated shapes. The shaping may not make the joint stronger, but it can make the table sing. It's a little like car design—they all have four wheels, but it's the doo-dads and spangles that separate one from the rest.

Heads of note. *Twin tusks share a shapely head design on Gilpin's oval table, demonstrating the breadth of design possibilities offered by tusk tenons.*

ROUND-EDGE VERSION

Rounding the tusk for a softer look. *Gilpin sometimes gives the tapered side of his tusks a radiused edge and fits them in mortises with a front wall rounded to match.*