TAUNTON'S

Fine WoodWorking

Mitered bridle joint by hand, p. 20

Arts & Crafts bed with classic inlay

Precise crosscuts on your tablesaw

Easy angled tenons

Coffee table with curves

Japanese handplanes demystified

Hidden stops for drawers

April 2017 No. 260

$9.99

0 4 >

7 25274 56525 2

www.finewoodworking.com

RIKON

Setting the New Standard in 14” Bandsaws

10-324 14” STANDARD

10-326* 14” DELUXE

10-353* 14” PRO

* Featuring NEW Patent Pending Technology!

* Spring-Loaded Tool-Less Guide System

* Quick Adjust Drift Fence System

13” Cutting Capacity with Reference Scale

* Quick-Lock Cast Iron Trunnion System

Call today for more information **877-884-5167**
or visit **www.rikontools.com** for a dealer near you!

5 YEAR WARRANTY

QUICKSCREWS INTERNATIONAL CORP.

MORE THAN FASTENERS

QUICKSCREWS 19 87 INTERNATIONAL CORPORATION

ORDER ONLINE

www.quickscrews.com

QUESTIONS? CALL 800.743.6916

Fine WoodWorking®
MARCH/APRIL 2017 ■ ISSUE 260

features

The Taunton Press
Inspiration for hands-on living®

Cover photo: Michael Pekovich

joinery. unmatched.™

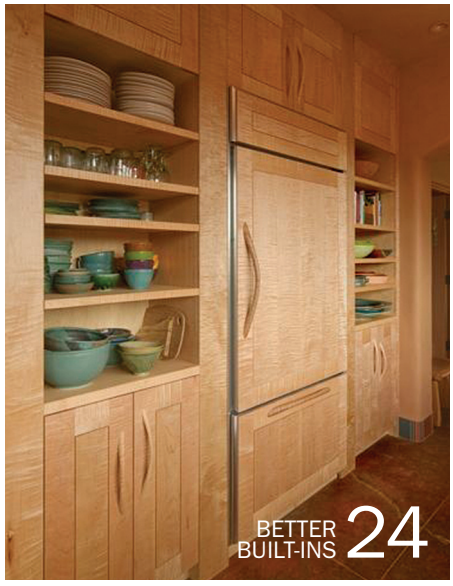
Festool Domino®- Accurate and repeatable mortise and tenon joinery.

FESTOOL®

Tools for the toughest demands

festoolusa.com

in every issue



18
COMPACT
DRILL KIT

Tools for Good Measure

High-quality work starts with accurate measurements, and accurate measurements start with precision tools. To ensure your projects measure up to your expectations, Lee Valley offers a comprehensive selection of rulers and tape measures, with metric or Imperial graduations in increments up to 100ths, including:

- Pocket rules
- Hook rules
- Flexible rules
- Center-finding rules
- Folding rules
- Wooden rules
- Scale rule
- Bench tapes
- Write-on measuring tapes
- Cabinetmaker's tapes
- Carpenter's tapes
- Steel jig tapes

Browse our catalog online or download it to the Lee Valley Library app for iPad®, iPod®, iPhone® or Android™ devices.

1-800-683-8170 leevalley.com

Find us on:

Lee Valley & veritas®

on the web

THIS MONTH ON FineWoodworking.com

Visit FineWoodworking.com/260 for online extras, available Feb. 8. And don't miss the collection of free content on our new website, including tool reviews, an extensive project gallery, and must-read blogs.

VIDEO

Stop Blocks Are Essential

Stop blocks (p. 58) help you cut parts more accurately and more consistently. Bob Van Dyke shows you why you need to use stop blocks more often in your shop.

VIDEO

Tapping Out

Tapping out a Japanese handplane blade (p. 50) may sound scary. Andrew Hunter shows you that it's not such a violent affair.

VIDEO

Two-Trick Pony

Kevin Rodel (p. 30) has come to rely on his Ulmia 1710 sliding tablesaw, which cleverly combines a tablesaw and a slot mortiser. Watch as he shows off the features of one of his all-time favorite tools.

VIDEO

Tim Coleman's Take on a Tip

If you enjoyed this issue's Workshop Tip on drawing bows (p. 16), watch Tim Coleman's shopmade versions in action.

Free eLetter

Get free plans, videos, and articles by signing up for our FREE eLetter at FineWoodworking.com/newsletter.

Members get special benefits

Subscribe to FineWoodworking.com to gain exclusive access to more than 1,000 project and technique videos. You'll also get more than 40 years of magazine archives at your fingertips, including 1,400-plus articles and project plans.

VIDEO WORKSHOP

North Bennet Street Toolbox

This iconic tool chest is the first major project for students studying cabinet and furniture making at Boston's North Bennet Street School. Led by instructor Matt Wajda, you'll learn:

- Proper case construction
- Drawer building and fitting
- Fitting and installing horizontal dividers
- Three types of dovetails

Fine WoodWorking

Editor	Thomas McKenna
Executive Art Director	Michael Pekovich
Special Projects Editor	Matthew Kenney
Senior Editor	Jonathan Binzen
Associate Editor	Anissa Kapsales
Senior Copy/ Production Editor	Elizabeth Healy
Deputy Art Director	John Tetreault
Administrative Assistant	Betsy Engel
Contributing Editors	Christian Becksvoort Garrett Hack Roland Johnson Steve Latta Michael Fortune Chris Gochnour
Executive Editor, Books	Peter Chapman

FineWoodworking.com

Web Producer	Ben Strano
Video Director	Colin Russell
Manager, Video Studio	Jeff Roos

Fine Woodworking: (ISSN: 0361-3453) is published bimonthly, with a special seventh issue in the winter, by The Taunton Press, Inc., Newtown, CT 06470-5506. Telephone 203-426-8171. Periodicals postage paid at Newtown, CT 06470 and at additional mailing offices. GST paid registration #123210981.

Subscription Rates: U.S., $34.95 for one year, $59.95 for two years, $83.95 for three years. Canada, $36.95 for one year, $63.95 for two years, $89.95 for three years (GST included, payable in U.S. funds). Outside the U.S./Canada: $48 for one year, $84 for two years, $120 for three years (payable in U.S. funds). Single copy U.S., $8.99. Single copy Canada, $9.99.

Postmaster: Send all UAA to CFS. (See DMM 707.4.12.5); NON-POSTAL AND MILITARY FACILITIES: Send address corrections to *Fine Woodworking*, PO Box 37610, Boone, IA, 50037-0610.

Canada Post: Return undeliverable Canadian addresses to *Fine Woodworking*, c/o Worldwide Mailers, Inc., 2835 Kew Drive, Windsor, ON N8T 3B7, or email to mnfa@taunton.com.

Printed in the USA

Please Recycle This Magazine
Remove Inserts or Samples Before Recycling

Hammer®

Quality that convinces

Austrian Engineering. Power for any Need. The perfect trio.

Call Now for Special New Year Pricing! 866-792-5288

Outstanding results, innovative developments and impeccable quality standards put wood-working machines from Hammer in a class of their own. If **stability, functionality and durability** are your key decision making criteria, then you won't make a better choice than **Hammer.**

N4400

Bandsaw

Big on performance, easy on the budget.

K3

Sliding table saw

Precise and smooth for discerning woodworkers.

A3-31

Jointer - Planer

Precision and reliability for many years to come.

FELDER GROUP USA

Trusted woodworking solutions since 1956

salesinfo@felderusa.com

www.feldergroupusa.com

contributors

Who says woodworkers are homebodies? Michael Cullen ("Sleek and Shapely Coffee Table"), born in Idaho and raised in California, biked throughout the Northeast during college and later trained at Leeds Design Workshops in Massachusetts before setting up shop in Petaluma, Calif., where he has been producing custom furniture and sculpture since 1989. He has taught workshops and joined collaborative projects around the world, most recently in Tennessee, Saskatchewan, Minnesota, Hawaii, and Nepal. Cullen's Video Workshop, "Make Beautiful Bandsawn Boxes," is available now to FineWoodworking.com members and as a digital download ($19.95).

Over the past five years, **Bob Van Dyke** ("3 Handy Stop Blocks") has written seven articles and a number of departments for *Fine Woodworking* on topics ranging from building an heirloom box to tips, jigs, and techniques for the tablesaw. And that's just his side gig. He is the founder and director of the Connecticut Valley School of Woodworking in Manchester, where he runs the school and teaches classes on a wide variety of woodworking topics. He's also busy working on commission furniture projects.

The studio and workshop where **Kevin Rodel** ("Arts & Crafts Bed") designs and builds furniture is located in a converted 19th-century textile mill in Brunswick, Maine, right on the Androscoggin River. He shares the complex with retail spaces, offices, and even a theater. Rodel has been making custom furniture since 1979, and has run his own shop since 1986, focusing at first on furniture inspired by American Arts and Crafts pieces, and later expanding his designs to include influences from Europe and Asia, and his own interpretations of the style.

When **David Fisher** (Back Cover, How They Did It) isn't carving bowls or teaching history, you might find him reading, drawing, or out on a long walk in the woods, where he finds inspiration for his carvings and artwork. In addition to bowls, he carves spoons and makes shrink-pots. As he did last summer, this June he'll be teaching bowl carving at Greenwood Fest, the green woodworking symposium in Plymouth, Mass. Fisher, his wife Kristin, and their children Emma and Noah live in Greenville, Pa.

We are a reader-written magazine. To learn how to propose an article, go to FineWoodworking.com/submissions.

Fine WoodWorking®

Publisher — Renee Jordan, 800-309-8954, rjordan@taunton.com

Director, Advertising Sales & Marketing — Alex Robertson, 203-304-3590, arobertson@taunton.com

Director of Digital Advertising Operations — John Maher, jmaher@taunton.com

Advertising Sales Assistant — Diana Edwards

Marketing Manager — Matthew Ulland

Member BPA Worldwide

Single Copy Sales — MediaWorks 360

The Taunton Press
Inspiration for hands-on living®
Independent publishers since 1975
Founders, Paul & Jan Roman

President & CEO — Dan McCarthy
CFO — Mark Fernberg
CTO — Brian Magnotta
SVP, Consumer Marketing — Paula Backer
VP, Controller — Robert Caldaroni
VP, Human Resources — Carol Marotti
VP, Fulfillment — Patricia Williamson

SVP, Home & Construction — Renee Jordan
SVP, Fine Cooking — John Boland

Publishers of magazines, books, videos, and online
Fine Woodworking · Fine Homebuilding
Threads · Fine Gardening · Fine Cooking
taunton.com

Made By Craftsmen for Craftsmen.™

We support the best by being the best.

We've supported American craftsmanship with the finest American-made dust collection since 1993, and we have a system for every shop.

We are the creators of the Future Craftsman scholarships and the American Craftsman Showcase competition. For more information, please visit oneida-air.com.

Oneida® Air Systems

Dust Collection Since 1993

See All of Our Products at:
www.oneida-air.com

1.800.732.4065

Made in the USA

letters

Spotlight

ISSUE NO. 258
Tools & Shops 2017
p. 28

A FITTING HOME FOR HAND TOOLS

Dan Smith's tool chest is very impressive. The dovetail joinery, splined miters, and concave drawer fronts all exemplify quality casework. However, what impressed me even more was Dan's pristine collection of fine-quality hand tools.

I walked into my shop this morning and looked at my hodgepodge collection of mismatched tools and felt somewhat depressed. I acquired most of my hand tools from relatives, now deceased, and they're old. Grandpa's handsaws along with his saw-sharpening vise and saw set, Dad's favorite 13-oz. hammer that just "feels right" in my hand, and Uncle Ed's Yankee screwdriver that is missing its spring are a few examples. The majority of my tools are labeled with the names of manufacturers like Disston, Buck, Plumb, Greenlee, Stanley, Starrett, and Marsh. I wonder how many skilled hands guided these tools over the years building homes, staircases, cabinetry, millwork, furniture, and who knows what else.

Suddenly I realized how fortunate I am to be the caretaker of these ragtag tools. They're not worth much more than flea-market value but are irreplaceable as far as I'm concerned. I, too, need to build a tool chest. These old tools deserve one.

—M.J. MAIMAN, Nixa, Mo.

When metric makes sense

I just received my copy of *Tools & Shops* (*FWW* #258) and read it in one sitting, as I usually do. I was particularly taken by the article, "A Small, Sturdy Workbench" (p. 32). The joinery is brilliant, the drawings clear, and the article well written. I do have one complaint. The author used "hard" conversion from metric to imperial, resulting in measurements that are odd, to say the least. Why on earth would anyone design something to be 50½ in. long, and 2⅛ in. thick, and so on? The answer, of course, is that he didn't. Making a "soft" conversion (50 in. long, 2 in. thick, etc.) would have meant recalculating almost all the measurements, to make sure they worked together. It was easier and faster to do the hard conversion.

But why convert at all? In 1988, Congress decreed that federal agencies would use "the metric system of measurement in its procurements, grants, and other business-related activities" by the end of 1992. Any company in the world that hopes to export anything to anywhere uses metric.

I own three tape measures, and they have both metric and imperial measurements. So do my electric calipers, my combination squares (except for the one that's 80 years old), and on and on. And every measuring device in our kitchen is metric, or both. I realize that many Canadians still haven't converted to the metric system, even 40 years after it was officially adopted, but everyone I know has no problem coping with it when need be. So why not move into the 21st century? I'm not suggesting that you start publishing all your plans with metric measurements, but when you have a situation like this one, why not assume that your readers can cope?

—IAN CAMERON, Brentwood Bay, B.C., Canada

Sanding blocks

The sanding block idea shown in *FWW* #258 (Workshop Tips, p. 12) is a great little item and useful, too. I have made a couple already but did not have enough hardwood that was thick enough, so I laminated ¼-in. hardwood to some stud material to make the 1½-in. height and made them from scrap that was around the shop. Thanks for the idea.

—MIKE SHANIN, Waikoloa, Hawaii

Another way to make custom scrapers

Garrett Hack's recent article ("Custom Scrapers for Custom Work," *FWW* #259) prompted me to share what has worked for me for many years. I use machinist's radius gauges as scrapers.

These hardened steel gauges are in standard sets of 24, 1/32-in. radius to ½-in. Each has five versions of the radius: a concave and convex half round; inside and outside corners, and a concave arc. Once I match an appropriate size to a workpiece, the usual honing and burnishing can be done. In the case of the smaller sizes, a small-diameter reamer shank works well for burnishing. Granted, with a complex profile, Hack's method is appropriate, but for the bulk of new work, or refinishing, the gauges do a great job.

—RANDY BALLIN, Brighton, Mich.

Fine WoodWorking

To contact us:
Fine Woodworking
The Taunton Press
63 South Main St.
PO Box 5506
Newtown, CT 06470-5506

Send an email:
fw@taunton.com

Visit:
finewoodworking.com

To submit an article proposal:
Write to *Fine Woodworking*
at the address above or
Call: 800-309-8955
Fax: 203-270-6753
Email: fw@taunton.com

To subscribe or place an order:
Visit finewoodworking.com/fworder
or call: 866-452-5141
9am-9pm ET Mon-Fri; 9am-7pm ET Sat

To find out about *Fine Woodworking* products:
Visit finewoodworking.com/products

To get help with online member services:
Visit finewoodworking.com/customerservice

To find answers to frequently asked questions:
Visit finewoodworking.com/FAQs

To contact *Fine Woodworking* customer service:
Email us at customerservice@finewoodworking.com

To speak directly to a customer service professional:
Call 866-452-5141 9am-9pm ET Mon-Fri;
9am-7pm ET Sat

To sell *Fine Woodworking* in your store:
Call us toll-free at 866-452-5179, or
email us at tradecs@taunton.com

To advertise in *Fine Woodworking*:
Call 800-309-8954, or
email us at fwads@taunton.com

Mailing list:
We make a portion of our mailing list available to reputable firms. If you would prefer that we not include your name, please visit:
finewoodworking.com/privacy
or call: 866-452-5141 9am-9pm ET Mon-Fri;
9am-7pm ET Sat

For employment information:
Visit careers.taunton.com

The Taunton guarantee:
If at any time you're not completely satisfied with *Fine Woodworking*, you can cancel your subscription and receive a full and immediate refund of the entire subscription price. No questions asked.

workshop tips

EDITED BY ASA CHRISTIANA

Best Tip

Jig trims knobs and slots them for wedges

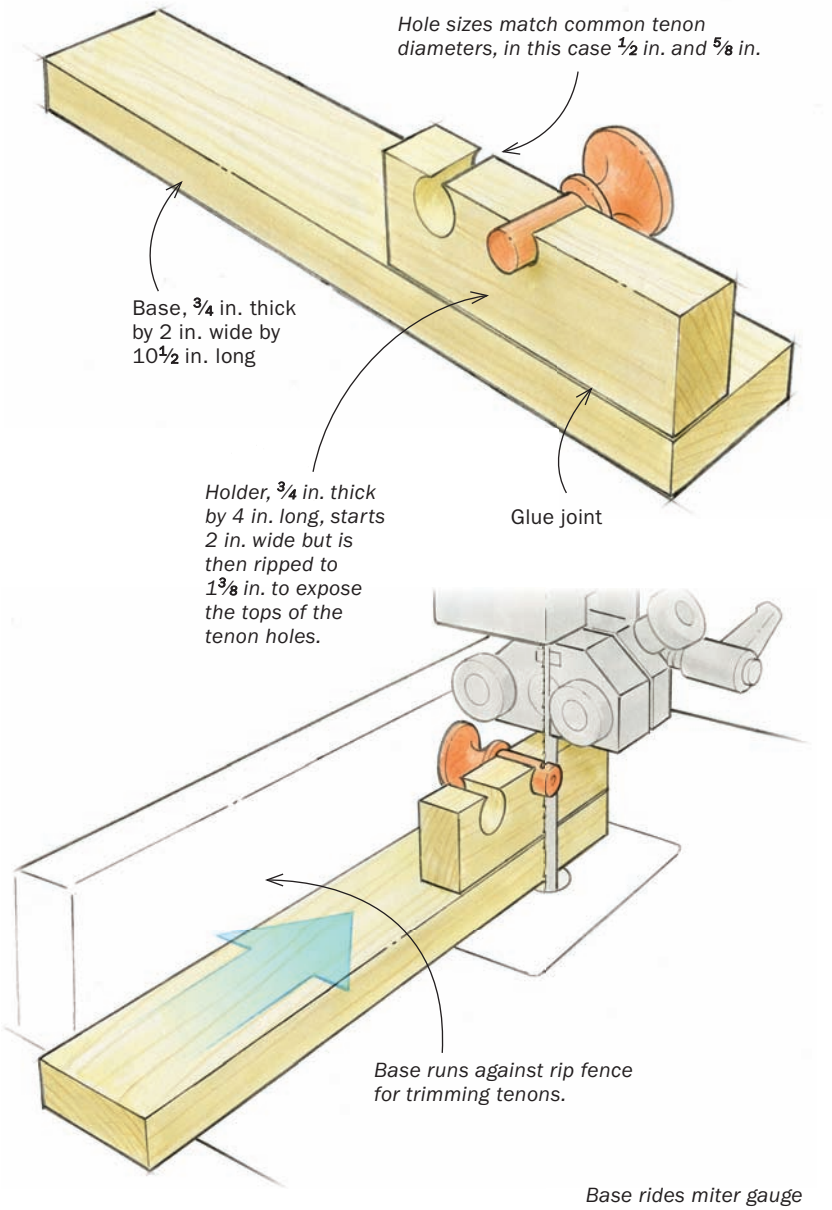
Like many of our readers, Hank Beamer is good at lots of things. Aside from building traditional furniture for his 1936 cobblestone farmhouse, he also built and drives a 1965 Shelby Cobra replica. A mechanical engineer by trade, he is also a pilot.

I recently built a small Shaker side table. Inspired by Christian Becksvoort's article "Authentic Shaker Knobs" (*FWW* #196), I made my own knobs for the drawers. I adapted his bandsaw jig for trimming the round tenons on these unwieldy parts, coming up with a version that is just as simple but does some things his doesn't.

For added holding power, I wedge my tenons after the knobs are installed. So I made my jig work for sawing a slot in the tenons. It also can hold a few different tenon sizes. The jig rides the bandsaw's rip fence for the crosscut, and the miter gauge for the slotting cut.

I made it from a 2-in.-wide piece of ¾-in. poplar. The base is 10½ in. long and the holder is 4 in. long. After drilling holes for different tenons (½ in. and ⅝ in. dia., with room for a third tenon size), I ripped the holder to expose the top of the holes, creating openings that are centered over the tenons and provide easy visual positioning for the slotting cut. The holder and base are simply glued together.

—HANK BEAMER, Middleport, N.Y.



A Reward for the Best Tip

Send your original tips to fwtips@taunton.com. We pay $100 for a published tip with illustration; $50 for one without. The prize for this issue's best tip was a Senco PC1010N air compressor.

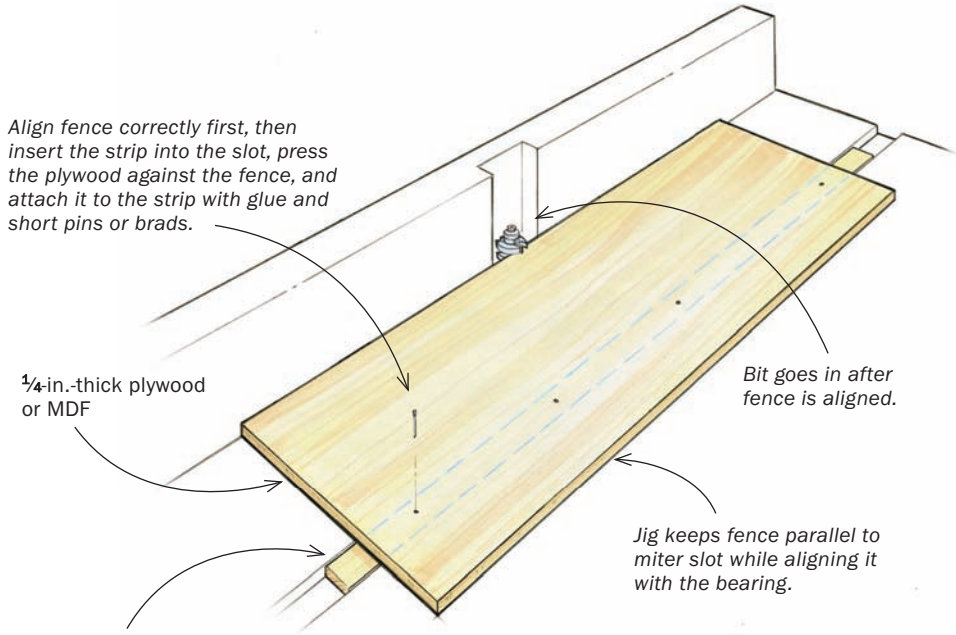
Drawings: Dan Thornton

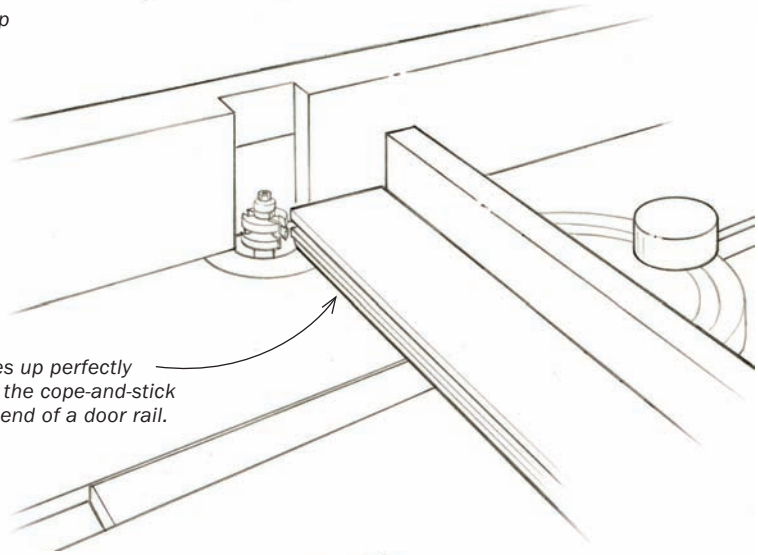
Cut perfect cope-and-stick joints at the router table

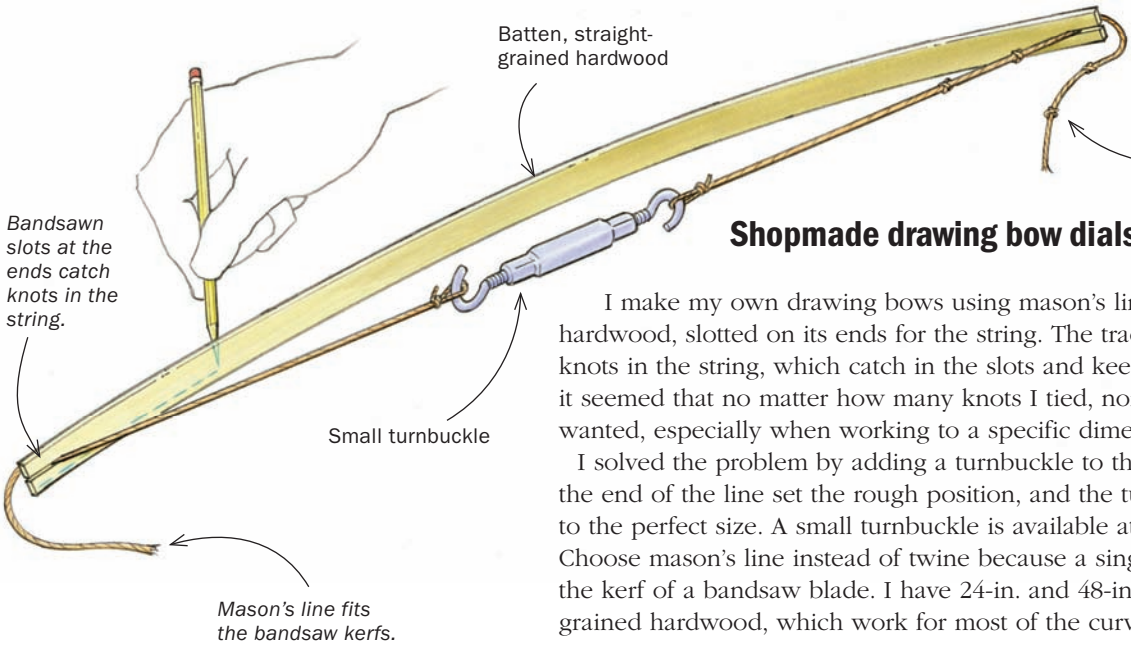
I make a lot of doors with cope-and-stick joints. You have to have the fence aligned with the bearing on the bit for all of the operations, and when you are routing the ends of the rails the setup gets even trickier. For that operation, with both the miter gauge and fence guiding the workpiece, the fence not only must be lined up with the bearing but also has to be parallel to the miter slot. To get the fence set up precisely I've always had to make a series of tedious adjustments on each end.

One day, after getting the fence aligned, I had a brainstorm. I sized a hardwood runner to fit the miter slot, applied a bead of glue to the top, dropped a thin piece of plywood onto it with its edge against the fence, and popped a few pins down into the strip with my nail gun. I had just created an instant alignment guide, which works for all of the cope-and-stick operations, plus other molding bits too. Now I just put the jig in place and push the fence against it while locking it down. It works for any router bits with the same size bearing. I don't insert the bit until after the router fence is aligned, but if your fence won't let you do that, just make a cutout in the jig so it will fit around the bit.

—JOE CARRETTO, Corsicana, Texas







Shopmade drawing bow dials in precise curves

I make my own drawing bows using mason's line and a thin strip of hardwood, slotted on its ends for the string. The traditional method is to then tie knots in the string, which catch in the slots and keep the bow curved. Sometimes it seemed that no matter how many knots I tied, none yielded the exact curve I wanted, especially when working to a specific dimension.

I solved the problem by adding a turnbuckle to the string. Now the knots in the end of the line set the rough position, and the turnbuckle fine-tunes the arch to the perfect size. A small turnbuckle is available at any local hardwood store. Choose mason's line instead of twine because a single knot catches nicely in the kerf of a bandsaw blade. I have 24-in. and 48-in. bows, made from straight-grained hardwood, which work for most of the curves I use in my work.

—WILLIE SANDRY, Camas, Wash.

tools & materials

POWER TOOLS

Compact drills have lots of muscle

Drill and impact driver kit by Makita
Model: CX200RB
$229

I'VE HAD A MAKITA 18-VOLT drill/driver for many years. It was one of the first cordless tools I bought, and I loved it. So I was eager to try Makita's new 18-volt sub-compact drill and impact driver kit. The drill weighs just 2.8 lb., and the impact driver 2.6 lb. It's amazing how much power Makita has managed to pack into these small and light tools. I've been using them for general carpentry work and to make furniture and cabinets, and they've been more than robust enough for every job.

Because of their diminutive size, these tools fit easily into tight spaces, like inside furniture and cabinets, making them perfect for shop use. The grip is comfortable, and both have a spotlight that improves visibility around the work area. I found it helpful when driving small screws for drawer slides. Overall, there's been nothing to complain about, and I think the price is right, too.

—Kelly Dunton is a furniture maker in Terryville, Conn.

One-handed wonder. *The clamp and jig come together like a sliding dovetail, so it doesn't rotate or fall when you loosen it. Your other hand can hold the workpiece, so it doesn't fall either.*

ACCESSORIES

Ideal clamps for jigs and sacrificial fences

Matchfit dovetail clamps by Micro Jig
$40 for two

I've been using the new Matchfit dovetail clamps by Micro Jig for the past few months and have been very happy with them. They look like an F-style clamp, but the fixed jaw does not have a clamp pad. Instead, it's shaped like the male half of a sliding dovetail, and fits into a dovetail groove. This makes them the perfect clamp for auxiliary fences and jigs. I've even used them as hold-downs at my bench.

The clamps apply an incredible amount of torque but do not shift or twist the workpiece when pressure is applied. Also, they can be operated with one hand, because the dovetail arm holds the clamp securely in the jig or fence. That the arm holds the clamp in place is a true boon when I use them with my mortising jig. I can switch out workpieces, leave the clamp in place, and not worry about it falling to the floor.

To use the clamps, you must rout a dovetail slot into your fence or jig, but I found that by following the instructions included with the clamps there is plenty of room for the clamp to slide into the groove.

—Philip Morley is a professional furniture maker in Wimberley, Texas.

Photos, except where noted: staff

ACCESSORIES

A plunge base for rotary tools

Plunge base for rotary tools by Veritas

$169 for complete kit

VERITAS'S NEW ROTARY TOOL plunge base is designed for fine detail work such as inlay. The base and its accessories are well made, and fit nicely together. The plunge mechanism works smoothly, free of any side play, and can be locked in place for a continuous cut. Although I rarely, if ever, plunge for inlay work, I found it worked great as a microadjust for accurately setting the depth of cut.

On its own, the base works smoothly for setting inlays such as bellflowers or medallions, as well as small hinges and similar hardware applications. A cutaway on one side of the base offers great visibility and facilitates chip removal. The contours of the base make it easy to hold and maneuver while keeping a safe distance between fingers and cutter.

The plunge base by itself weighs 1 lb. Add the extension rods, fence, and precision adjuster, and the assembly comes in at just under 2 lb., a weight I find cumbersome for detail work. With the fence removed, a pair of curved guides works well to track the router along an outside curved edge. The circle head attachment came with three options for setting the center point, a sharp pin, a ¼-in. post, and a flat disk. I found these extremely awkward and hard to use. Because of this, the base performed poorly when used to rout channels for intersecting arc stringing.

—Steve Latta is a contributing editor.

Angle-setting jigs by MiterSet

$70 each, or $130 for both

ACCESSORIES

Help for setting miter-gauge angles

SETTING A MITER GAUGE to a precise angle can be difficult, but a pair of jigs from MiterSet take the hassle out of the job, allowing you to quickly set the gauge accurately. One jig is for angles between ½° and 50½°. The other is designed for segmented turners, who can dial in the angle based on the number of segments needed. You can buy them individually or as a set. The angle jig is pretty easy to use, relying on two pins to set the angle. For whole degree angles, one pin goes in a "zero" hole and the other in a hole for the needed angle. The gauge's fence is then registered against the pins. For angles in between, a stepped bar offsets the gauge's fence the correct angle from the pins. Using the bar is a bit tricky at first, because it's hard to keep track of which step results in which offset, but after using it for a while, I got the hang of it.

The segmented turning gauge is easier to use. Again, two pins are used. One goes in a "zero" hole and the other in a hole marked with the number of segments needed for the turning. It's dead accurate and simple.

—Roland Johnson is a contributing editor.

Simple and accurate. *Pins inserted into a plate are a precision reference for the miter gauge's fence. It takes no time to set up the jig, slide the gauge into place, and lock in the fence's angle.*

Photos; Philip Morley (center photo, opposite page); Roland Johnson (this page, bottom right)

handwork

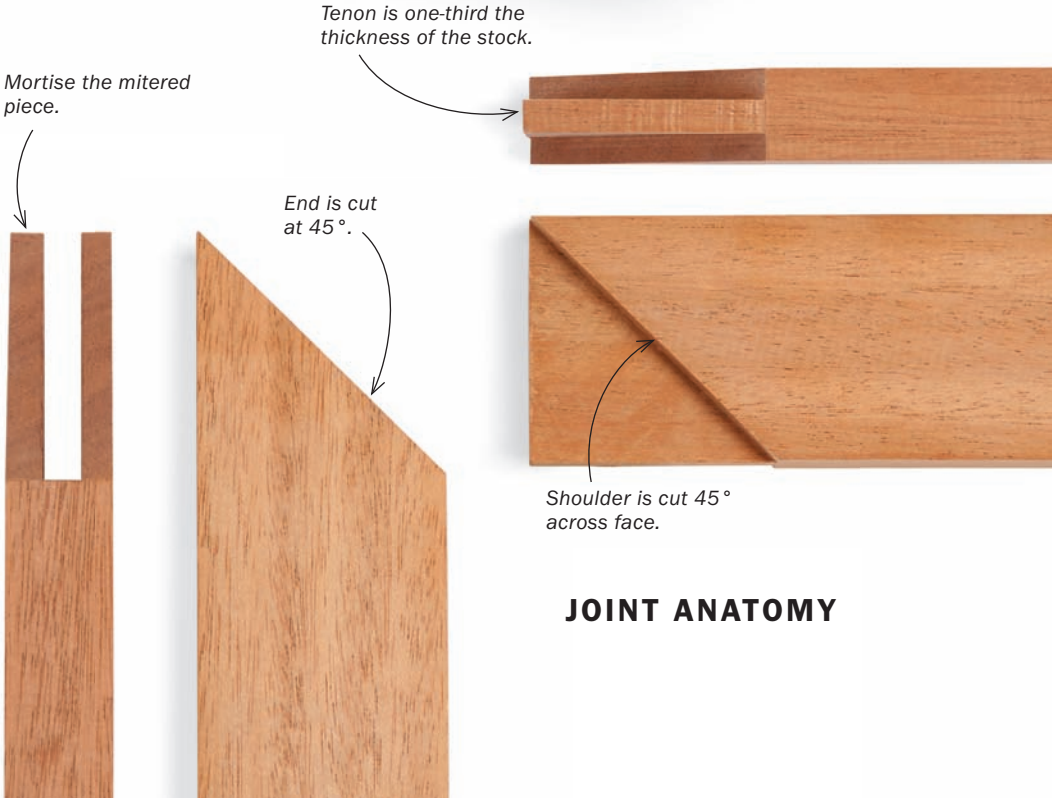
Cutting the mitered bridle joint

BY CHRIS GOCHNOUR

Combining the beauty of a miter joint with the strength of a bridle joint, the mitered bridle joint is a great choice for any frame—a door, for example—that needs both robust joinery and a clean look.

Cutting a mitered bridle joint with hand tools is not much different from cutting a standard bridle joint, which I demonstrated in a previous Handwork (*FWW* #257, p. 80). There's still a tenon on the end of the rail that fits into the stile's open-ended mortise. The difference is that the tenon's shoulder is angled 45° across the rail's front and back faces. This means that the end of the stile must be mitered to match. It's not as complicated as it might sound. I'll demonstrate how to lay out and cut the joint, starting with the mortise in the stile.

Chris Gochnour is a contributing editor.



JOINT ANATOMY

Cut the mortise

Creating an accurate miter with hand tools begins with careful layout. Remove the waste with a backsaw, and then trim to the layout lines with a block plane.

Lay out a miter. *With a miter (or combo) square aligned with one corner, strike a knife line across the face of the stile.*

Knife across the inside edge. *To align the square, place the knife in the line cut into the face and slide the square up to it. Mark the edge, then mark the second face.*

Remove waste with a backsaw. *This cut is for roughing out the angle, so be close to the line, but not on it.*

True the miter. *The low-angle, bevel-up blade of a block plane severs the end-grain fibers cleanly. Keep an eye on the layout lines on both faces.*

Check for square. *Use a small square to check across the miter, then pull out a combination square and check the miter's angle. Refine as needed.*

Mark the outside edge. *Don't use a knife here, because the severed fibers would be visible.*

Lay out the mortise. *A mortise gauge works best for this, because it marks both sides at once. Cut along the end grain, then down the outside edge. Do not change the gauge's setup.*

Cut the cheeks with a backsaw. *Then remove the waste with a coping saw.*

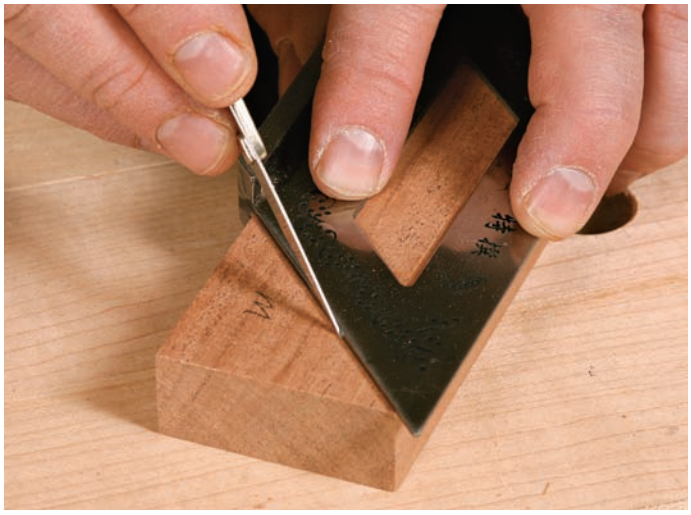
Pare the bottom. *Work into the center from both edges. The knife line cut earlier on the inside edge allows the fibers to break off cleanly rather than tear out.*

Photos: Matt Kenney

Tenon cheeks are mitered

Don't let the angled shoulders throw you. Good layout and careful sawing gets you most of the way there. Judicious paring brings you home.

Locate the tenon's shoulder and knife across the inside edge. *With the stile sitting on edge and the rail standing on end, cut a tick mark into the rail. Place the knife in the tick mark, slide the square up to the blade (far right), and then cut a line into the edge.*



On the face, the shoulder is angled. *Use a miter or combo square to carry the line from the edge onto the face. Repeat for the other face.*

Use the mortise gauge again for the cheeks. *To ensure that the tenon aligns with the mortise, register the fence against the same face on the rail as you did on the stile.*

Cut the cheeks first. *Start at the top corner of the inside edge and hold the saw at a roughly 45° angle.*

Then cut the shoulders. *Don't rely on the saw for accuracy. Cut rough and then pare to perfection.*

Beautiful and strong. *After fitting the cheeks, the joint should come together snugly, with a tight miter where the parts meet.*

Better built-ins

SQUARE BOXES WITH SCULPTURAL PRESENCE

BY DEAN PULVER

Some woodworkers lament doing kitchens, which can seem like so much utilitarian drudgery. But to me a kitchen represents an irresistible opportunity—I think of it as a chance to design and build a large sculptural object while being paid a fair salary. Just because I'm creating a room with lots of built-ins doesn't mean I have to succumb to an overly symmetrical and standardized arrangement. It's true that I build a lot of utilitarian plywood boxes along the way, but I relish the challenge of making those boxes add up to a space that, while functioning like a skillfully engineered machine, has a flowing, organic feeling to it and has plenty of shapes, tones, and textures to please your eye and attract your touch.

I built this kitchen, the adjoining office space, and a pool-house bathroom for a house in Oregon. As I do in all my work, I aimed to balance straight lines with curves, harder shapes with softer ones, and smooth planes with textured surfaces. I built the rooms for a client who grew up in an old house with excellent woodwork, and with that in mind I chose traditional frame-and-panel as the foundation of the kitchen design. To lighten the effect of all that frame-and-panel, I used flat panels with minimal reveals and built them of maple.

The kitchen is a long, narrow space, so I punctuated the main wall of cabinets with two sets of open shelving. By introducing open space and a splash of bright color from the ceramics stored there, I brought variation and visual punch to a wall of cabinets that might otherwise have seemed overlong and monotonous. I used shelving at both ends of the sink counter in a similar way, adding open space, color, and a couple of curves to balance out the row of closed cabinets below.

I often use areas of carved texture in my built-ins to give them personality and approachability, and to create a lively interaction as light changes during the day. This client didn't want carving, however, so I left the cabinets untextured. To capture some of that responsiveness to changing light that carving offers, I chose maple that had a very vibrant curl.

Add curves where you can. *To give even the most functional kitchen a lively personality, Pulver balances the straight lines and flat planes with curved and shaped elements. In this kitchen, where shaping the cabinets was not an option, he injected an organic touch and a bit of asymmetry by carving handles for the drawers and doors.*

Photos: Alan Brandt Photography

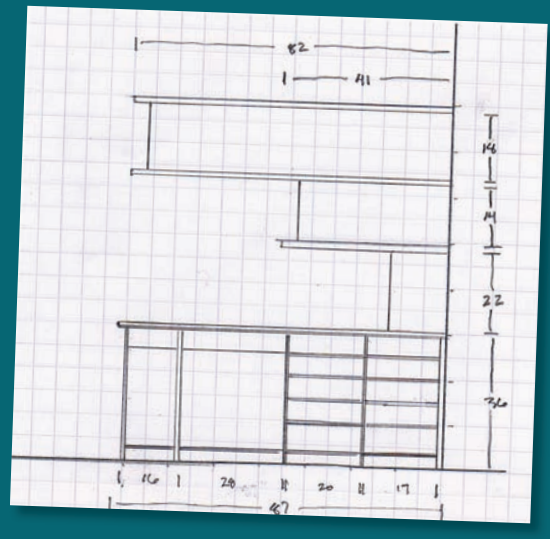
I'm also partial to including curved counters and cabinet faces in my built-ins to avoid too many straight lines. But there was no room for curving the cabinets in this kitchen. Instead, I relied on hand-shaped pulls to provide the curves, the asymmetry, and the seductive tactile appeal that I find vital to a successful set of built-ins. I varied the pulls in size and offset them in height.

The office next to the kitchen was roomier, and I took advantage of that to create curving cabinets and counters. These too were free of carving, but they

> I balance straight lines with curves, harder shapes with softer ones, and smooth planes with textured surfaces.

had a softer, more organic feeling and flow. I built them all of cherry to add warmth to the space.

I decided to partially define the desk area with a large set of upper shelves. To keep the look of the room airy and to provide a wide, unbroken desk surface, which the client needed for reading blueprints, I cantilevered the shelving from the wall. I built the unit like an



Drawings can be decisive. *Pulver wants his clients to see in his drawings the handmade touch they'll find in his finished work. With a few strokes of an artist's marker, he can give even a no-frills shop drawing like this one of the office cabinets and shelves a feeling of depth and character. Although he does many concept sketches by hand, Pulver often finalizes designs in SketchUp. The resulting drawings are stiff, however, so if he wants to show them to a client he'll trace them freehand.*

“I AM A DESIGNER

I take my craft seriously. For over a decade I have attended AWFS®Fair. It has provided me the perfect venue for finding woodworking machinery, tools, techniques and materials for my shop. The live demos from top manufacturers give me the inspiration I need to create. Like no other show, AWFS Fair gives me the opportunity to learn from today's most forward thinking industry experts.”

- Alan Harp, Owner Alan Harp Design

AWFS® FAIR VEGAS

July 19-22, 2017

Las Vegas Convention Center

Las Vegas, Nevada

If woodworking is your passion then your passion is here.

#AWFSFair COMMUNITY

SAVE $5 off your pass with promo code: **10EX1**

For more information and to purchase tickets log on to AWFSFair.org

I-beam—it has a plywood back that acts as a stiffening spine and open, solid cherry shelves on both sides. To make this improbable arrangement work, I drilled right through the exterior wall and bolted into the shelving unit from outside.

For the bathroom, I paired a set of curly maple cabinets with the pebbled floor and shower. Evoking the origin of the river-washed stones, I used some maple that has an almost liquid ripple to it, and I gave the cabinets a swelling front line. Here, as with the cabinets in the office, I was able to create a curving front face on the bathroom unit simply by angling the fronts of the cases and cutting curves into the solid-wood drawer fronts. And to avoid interrupting the flowing lines of the cabinet's face, I carved finger pulls into the ends of the drawer fronts. □

Dean Pulver builds custom furniture, built-ins, and sculpture in El Prado, N.M.

Function is foremost. *Pulver always aims to elicit feelings of warmth, flow, and visual excitement with his work, but he is also tightly focused on function. He designed the legs of his trestle table to have a hand-shaped, organic feeling, but also equipped them with low-profile casters, so the table can easily be moved for access to the deep drawers built into the banquette. In the pebble bathroom, the open shelving on the left offers effortless access to towels, but also provides a visual counterpoint to the closed, curved cabinets on the right.*

Photo, this page: Michael Pekovich

Arts & Crafts Bed

White-oak bed is loaded with Stickley style and topped off with traditional inlay

BY KEVIN RODEL

This bed design is a close copy of an original Gustav Stickley bed. My only changes were to stretch it out to a queen size and add a Glasgow-style inlay embellishment to the head- and footboards. Now, you all know that mattress sizes are standardized for length and width: designated as full through king sizes. However, the thickness of mattresses and box springs varies considerably, too, meaning the distance from the mattress top to the floor can be different. I always recommend a floor-to-mattress height of 26 in. to 28 in., as that works well with most bedside furnishings, which are usually 27 in. to 30 in. high. You may wish to change the post mortise locations given in the plans to accommodate the mattress height that you prefer. But I believe these plans, as drawn, will work with about 80% of available mattress and box spring thicknesses.

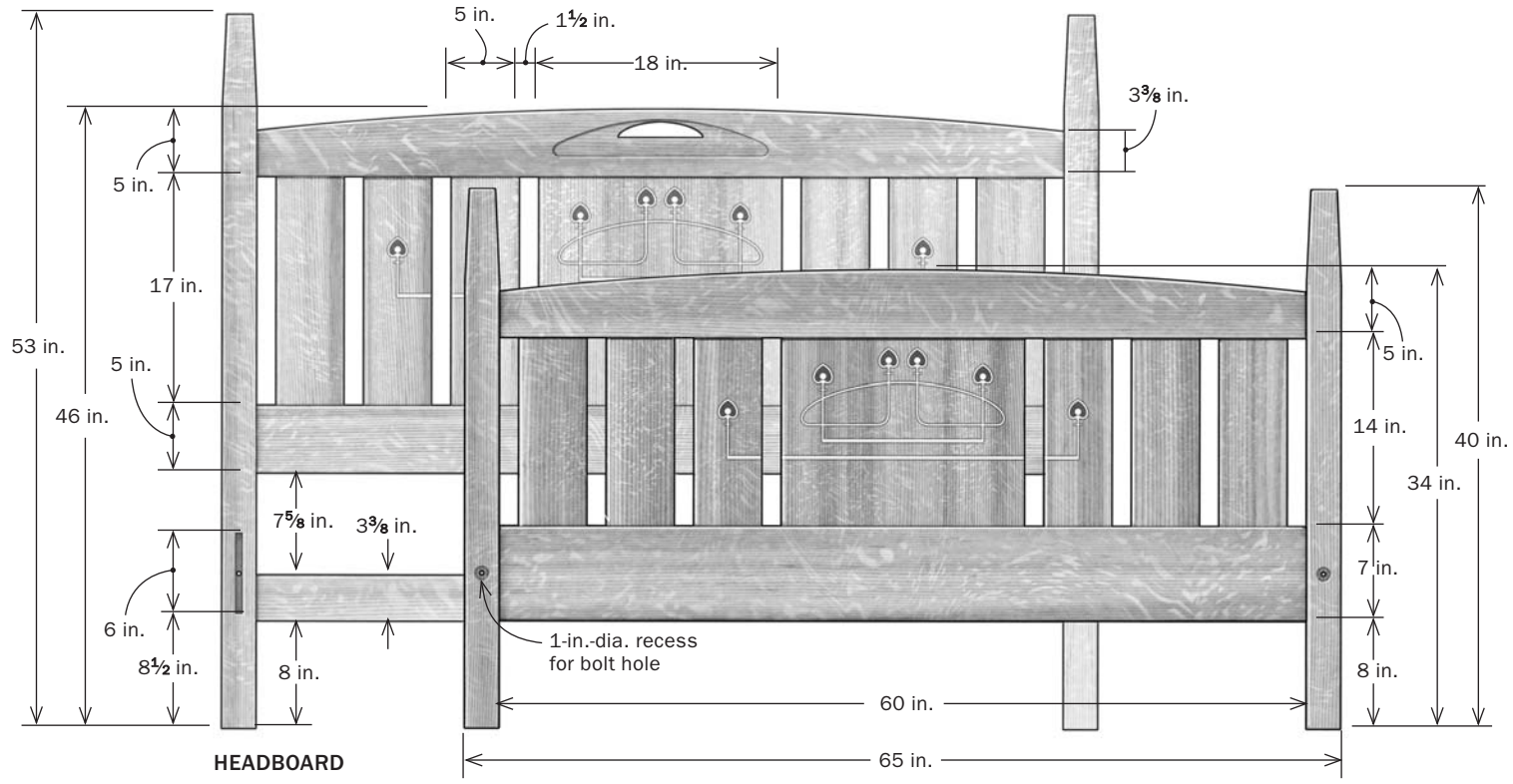
Make the posts first

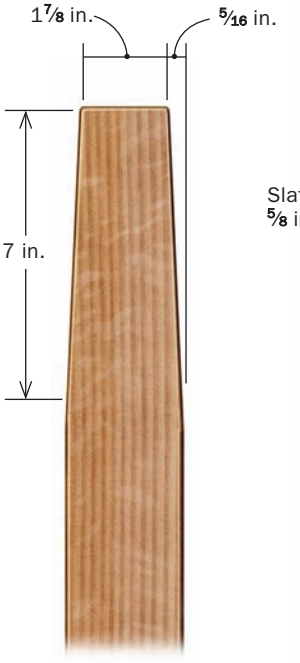
Mill the posts to 2½ in. square and cut them to length. If you must glue them up from 6/4 or 8/4 stock, I suggest orienting the glue seam from side to side so it will be less noticeable. Lay all four posts on a flat surface, bottoms flush, and lay out the side rail mortises. Now take the two footboard posts and lay out the footboard rail mortises, four mortises in all. Do the same for the headboard posts, laying out six mortises, as there are three headboard rails. All of the mortises are centered on the posts and ½ in. wide. Except for the 9/16-in.-deep side rail mortises, all other mortises are 1¼ in. deep.

Once the mortises have been cut, taper the posts. For consistent tapers from post to post, I used a ¼-in. Masonite template of the post's top with the desired curve shaped on it. Place it over each post, draw on the curve, then bandsaw and sand to the pencil line.

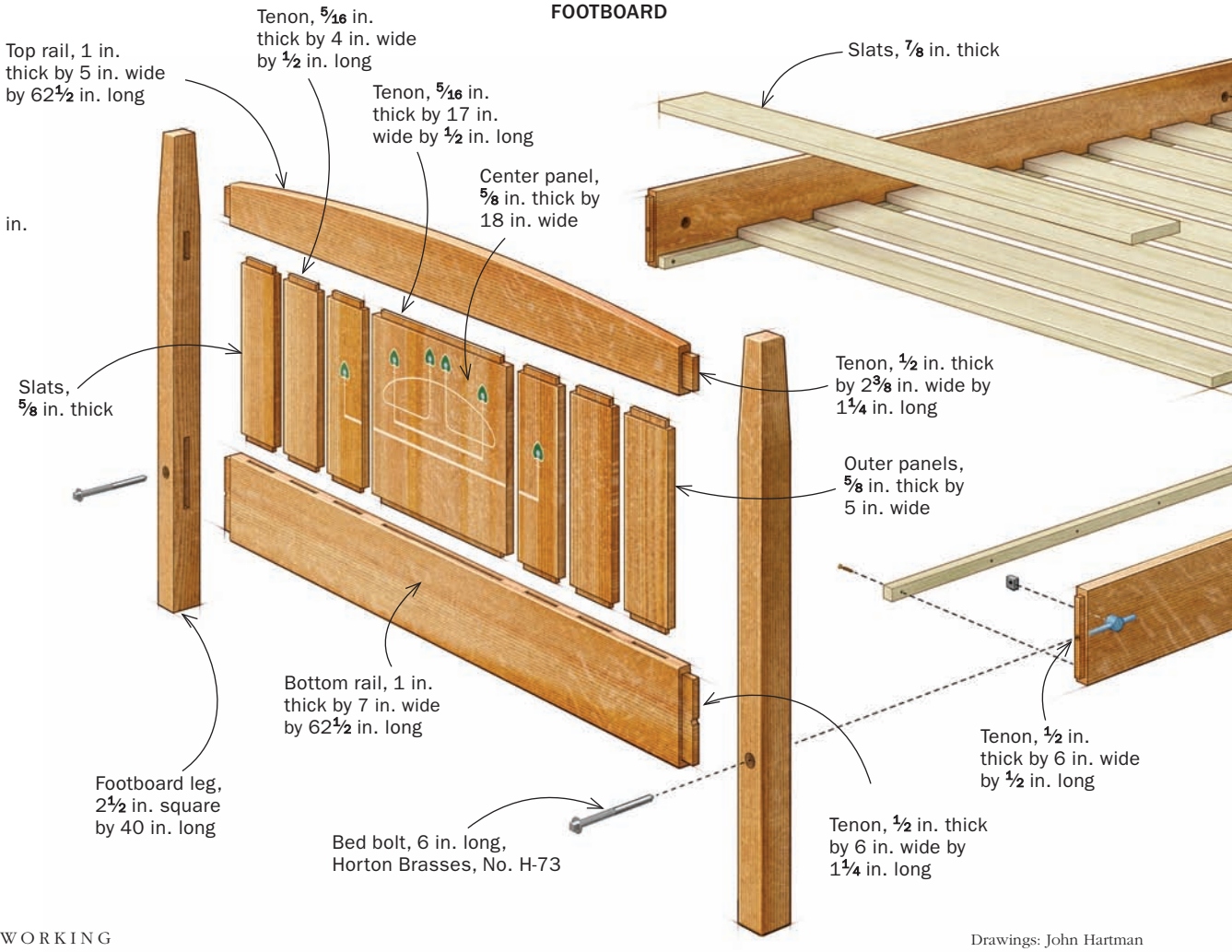
Adaptable design

The dimensions shown here will work with about 80% of queen-size mattresses, but the post mortise locations may need to be moved for different mattress heights.

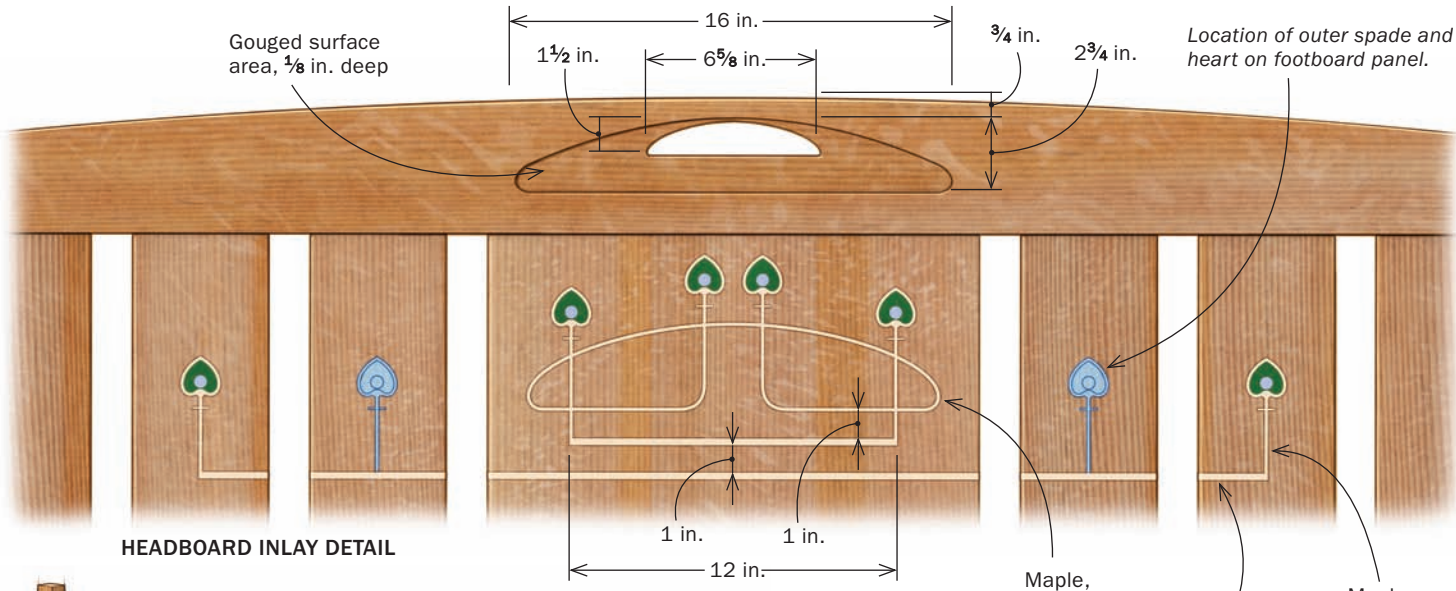




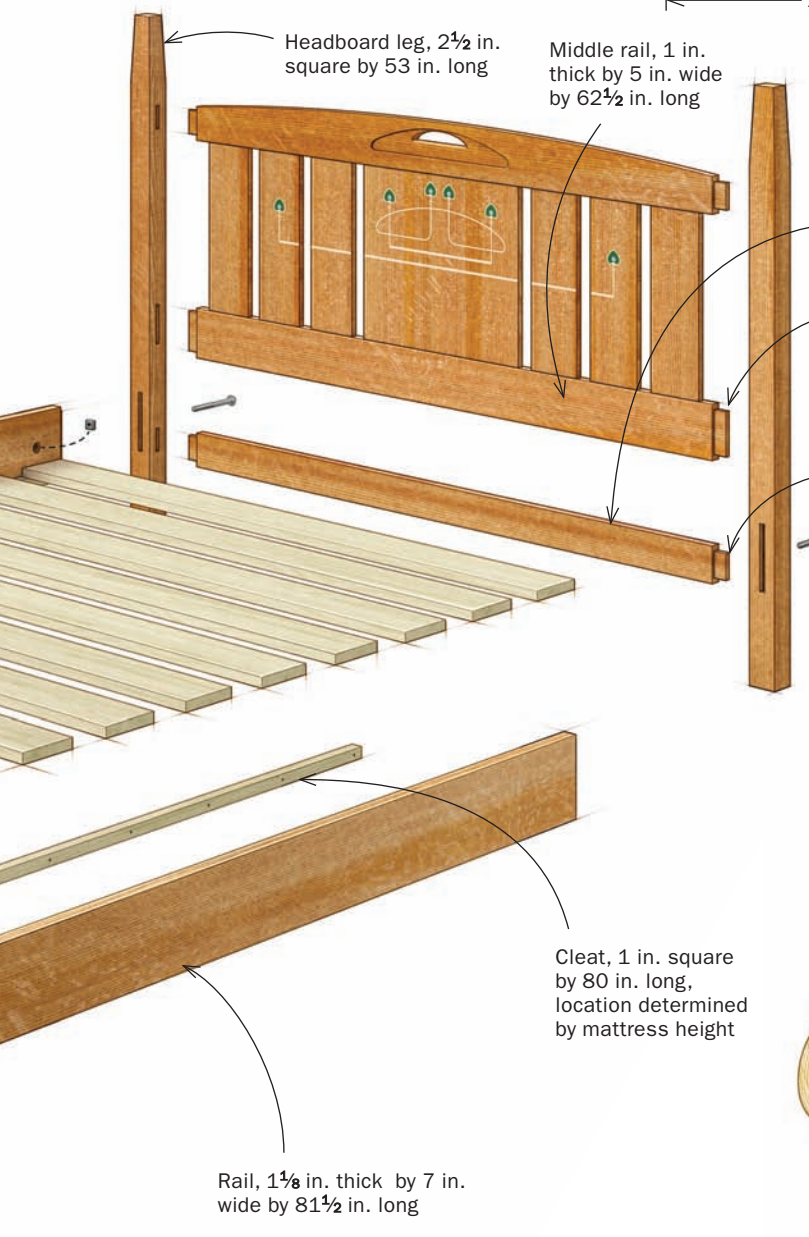
LEG DETAIL

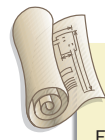


Drawings: John Hartman

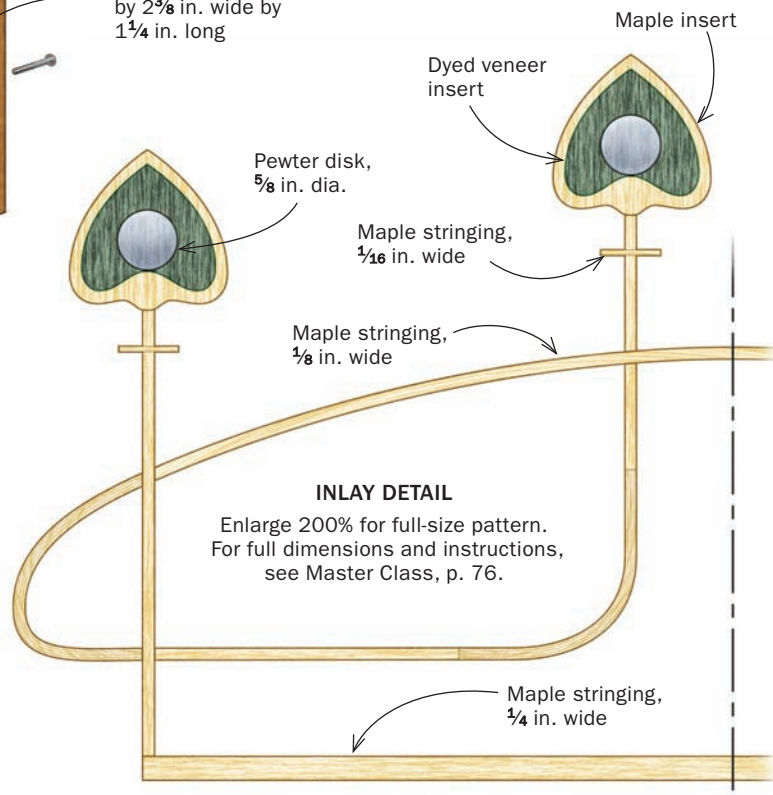


HEADBOARD INLAY DETAIL





To purchase expanded plans and a complete cutlist for this bed and other projects, go to FineWoodworking.com/PlanStore.



INLAY DETAIL

Enlarge 200% for full-size pattern.
For full dimensions and instructions, see Master Class, p. 76.

Start with the posts

Taper the tops. *It's not a straight taper but rather one with a slight curve. To ensure consistency from post to post, Rodel laid out each taper using a thin MDF template. The tops are bandsawn to rough shape, then refined and smoothed with a handplane and sandpaper.*

Make room for the bed bolts. *Cut the wide mortise first, then drill a 1/16-in.-dia. through-hole at the center (top). Turn the post over and use a 1-in. Forstner bit to drill a 3/4-in.-deep hole at that mark (center). Drill a 3/8-in. hole in the center, using the dimple from the Forstner's tip as a guide (bottom). Don't go all the way through. Instead, flip the post and finish from the other side to avoid blowout.*

Shape and carve the rails

Cut the arc after the joinery is finished. *Rodel uses a template to draw the arc on the top rails of the head- and footboard. He cuts the arc using his bandsaw, then cleans up the cut using the template and a router with a flush-trimming bit.*

That gives two opposite curves. Now reposition the template, draw on the curves as needed, and bandsaw and sand to these lines for the final two curves. Add a slight chamfer to the top.

The last thing to do on the posts is to make a recess and through-hole for the 6-in. by 3/8-in. bed bolts. Mark the center point of the side rail mortises with an awl. Using the drill press, drill a 1/16-in. through-hole at the awl mark. This locates the centerline of the hole on the opposite face of the post. Now with a 1-in. Forstner or similar bit, drill a 3/4-in.-deep hole in this face. Use a drill press, of course. Next change to a 3/8-in. brad-point bit, set the bit to start in the center of the 1-in. hole, and drill almost all the way through. Flip the post over and finish the hole from this side. This avoids drill-bit blowout. Now the posts are ready for sanding.

Photos, except where noted: Anissa Kapsales

First template. *Use a ¼-in.-thick Masonite template to lay out the through-cut. Then rough it out with a jigsaw (above). Use the template and router with a flush-trimming bit to finish the work (right).*

Second template. *Align the centerline of the second template with the centerline of the rail. Then use a router and short flush-trimming bit to relieve the area down to a depth of about ⅛ in. (above). Add the texture using a carving gouge (right).*

Build the head- and footboards

The five horizontal rails for the head- and footboards are all the same length and thickness. The first thing to do is cut the tenons on all of them. The tenons are all 1¼ in. long by ½ in. thick with widths corresponding to their mortises. I cut tenons on my tablesaw, which is equipped with a sliding crosscut table.

Now move on to the mortises for the head- and footboard panels. There are a lot of mortises but they go quickly. They are all centered on the 1-in.-thick rails and are 5/16 in. wide and only ½ in. deep. Using the plans, lay out for the mortise locations on the appropriate upper and lower edges of the rails. The outer panels get 4-in.-long mortises; the two center panels get 17-in.-long mortises.

With these mortises cut, shape the arcs along the upper edges of the head- and footboard rails. To make these arcs consistent I use a ¼-in.-thick Masonite template. You want a smooth arc that flows from 5 in. at its center to 3⅜ in. at each end. Use the template to draw the arc on both rails and then cut them on the bandsaw. Then clamp the template back in place on the rail and use a router and bearing-guided flush-trimming template bit to clean up the arcs.

Headboard decoration is next

The top rail of the headboard features a textured decorative detail in a relieved area. To make this, I use two templates, one to make the smaller through-cut and one for the shallow textured area. Mark a centerline on both templates and on the arched rail.

Start with the through-cut. Center the template on the rail and mark out the shape. Drill ½-in.-dia. holes at each end, then use a

Assembly

Glue up the headboard and footboard. *Do this after adding the decorative inlay (see Master Class, p. 76). Glue the panels to the rails first, dry-fitting the posts for alignment purposes (above). Once the glue dries, you can glue the posts to the rails (right).*

jigsaw to rough out the shape. Next, clamp the template back in place, and use a router and flush-trimming bit to rout to the lines.

Next clamp on the second template, aligning it with the centerline and with the top edge of the arched shape just flush with the apex of the cutout. Using a short template-guided straight bit in the router, relieve this area to ⅛ in. deep. It's best to start in the center and work outward. Once the area is relieved to a consistent depth, apply the texture using a small gouge. You can create any texture you'd like here, but I'd recommend practicing before committing to the design in the finished piece.

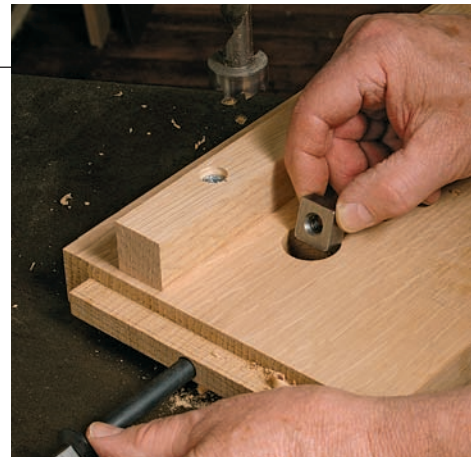
Mill up the panels and cut their tenons

For the panels, I use quartersawn material. I mill it all to 11⁄16 in. thick, and then glue up the 18-in.-wide center panels. After the glue has set, all of the panels can be thickness-sanded to ⅝ in. thick at the same time. When it's all sanded to at least 120 grit,

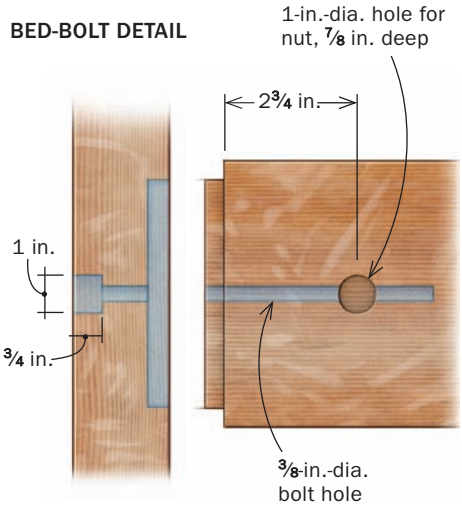
Drill for the bed bolts

Make way for the bed bolt. *Guided by the ⅜-in. hole you've drilled through the post, use a ⅜-in. bit to drill into the end grain of the side rail.*

Finish the rail hole. *Using the same ⅜-in. bit, drill into the tenon, going as deep as necessary to prevent the bolt from bottoming out.*



Make a hole for the nut. *Drill a 1-in.-dia. hole and add the bed-bolt nut. Go as deep as you need to in order to engage the bolt threads.*



Final assembly. *Once you have all the holes done for the bed bolts, the bed is ready to be assembled and finished.*

cut the parts to length, then cut the tenons. Before gluing the end assemblies together, add the decorative inlay (see Master Class, p. 76).

After the inlay is completed, I glue up the headboard and footboard. I glue the panels to the rails first, just dry-fitting the posts at that point. When those assemblies are dry, I glue them (and the lower rail of the headboard) to the posts.

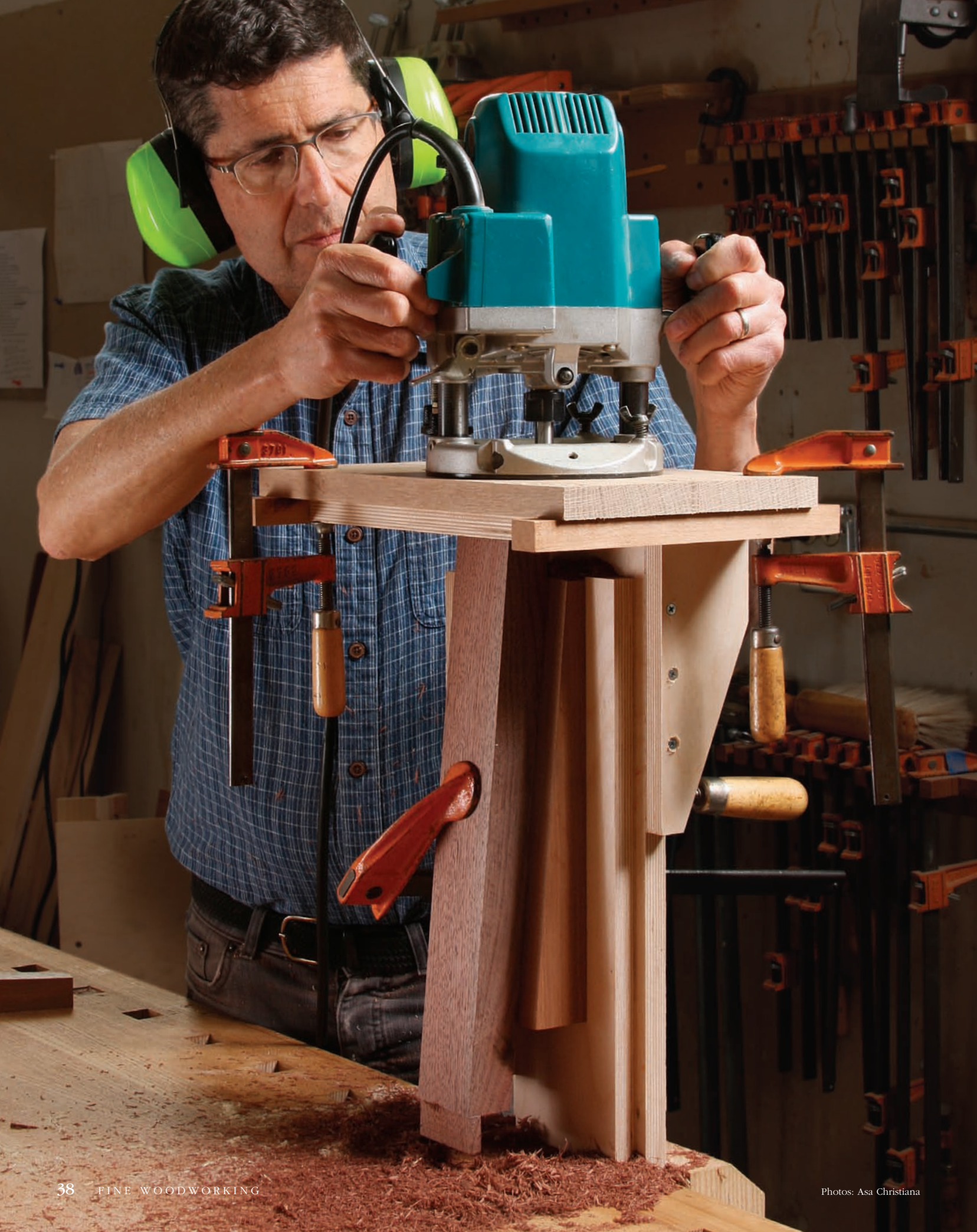
Make and fit the side rails

Cut the bed side rails to dimension and make the ½-in.-long stub tenons on each end. For such heavy, long pieces I just nibble off the tenon cheek material with the rails lying flat. This is not a glued mortise-and-tenon so it need not be too snug; the bed bolt and nut hold the bed together. Now is the time to attach the cleats that support the mattress slats. If you are using a box spring, you may want to substitute box-spring brackets—L-shaped iron hangers—for the cleats and slats.

With the stub tenons fitted and the cleats attached, clamp the bed together with long pipe clamps. Then fit a ⅜-in. drill bit through the ⅜-in. hole in the posts and drill into the end grain of the rails. Do the same at each post location.

Take apart the bed and extend the ⅜-in. holes as far as is necessary to keep the 6-in. bolt from bottoming out when inserted. Then drill for the nut, deep enough that the bolt aligns with it. Put the bed back together and secure it with the four bed bolts, using the special wrench that fits the bolt heads. □

Kevin Rodel will be a featured presenter at Fine Woodworking Live 2017 this April. His bed project will be a Video Workshop this spring on FineWoodworking.com.



Photos: Asa Christiana

Easy Angled Tenons

Router jig simplifies complex chair joinery

BY JEFF MILLER

Chair joinery is a challenge. Many of the joints are angled, and all of them are subjected to powerful stresses when the chair is in use. To contend with these issues, I almost always choose the mortise-and-tenon joint. If the joints are angled, I prefer to cut straight mortises and then angle the tenons.

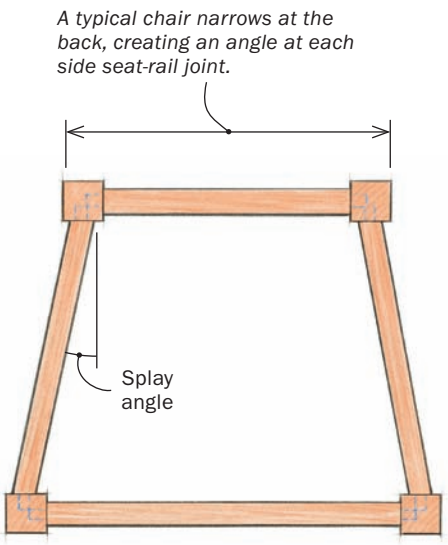
The tricky part is cutting the angled tenons. But the jig presented here, used with a plunge router fitted with a straight bit and guide bushing, greatly simplifies the task. With an upright that clamps in your vise, a platform that supports the router, and a template that guides the bushing, the jig enables you to cut the two main cheeks and shoulders of an angled tenon in a single, stable setup. Then, using the routed shoulders as a reference, you can finish the tenon with a bit of simple chisel work. The jig works equally well for straight tenons.

The template is removable, and you'll want to make separate templates for tenons of different thicknesses. The wedge that holds the workpiece at the correct angle is also removable, so you can use different wedges depending on the tenon angle you want.

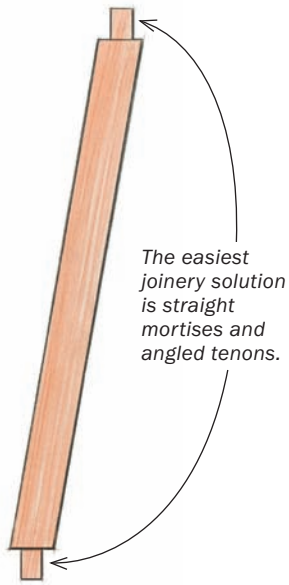
Take care with the template

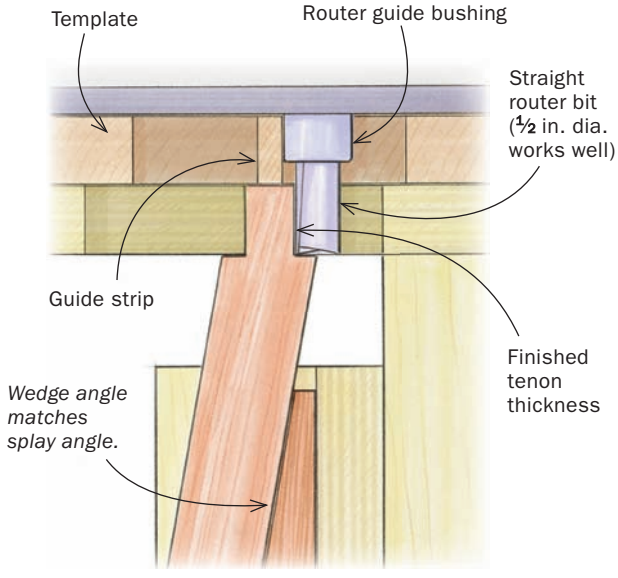
The base of the jig is straightforward and quick to build, but slow down when you get to the template. I glue it up from three parts—two notched side pieces and a guide strip between them. The router's bushing will ride on both sides of the guide strip to produce the tenon, so the strip must be sized accurately. To determine its thickness, start with the thickness of the tenon you want and subtract the difference between the

HOW THE JIG WORKS



CHAIR GEOMETRY





WEDGE HANDLES THE ANGLED TENONS

Drawings: Dan Thornton

Simple router jig for tenons

Easy to make and simple to use, this router jig will crank out perfect-fitting tenons (angled or straight) with perfectly aligned shoulders.

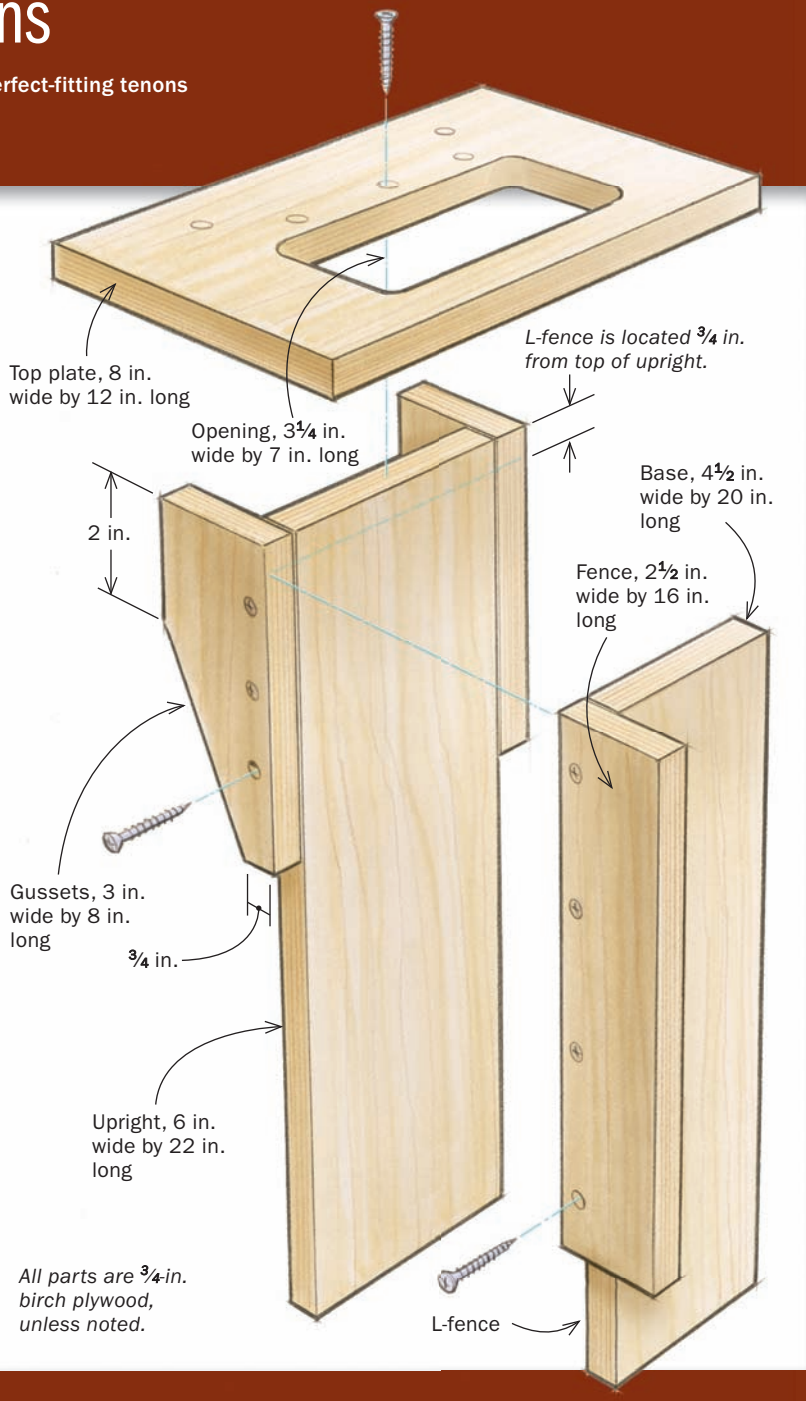
A STURDY SUPPORT

The top plate supports the router and orients the template (opposite page). If the top plate is aligned with the L-fence below, the tenons will be square and accurate.

Gussets go on flush. *If the gussets are square and you attach them flush to the upright, the top plate will go on square. Clamp the gussets as you screw them on.*

Square the top plate side to side. *Drive a single screw in the middle, square the edges of the top plate with the upright below, and then clamp and add the remaining screws.*

Now the L-fence. *Screw the L-fence together and then attach it to the upright, squaring it to the top plate before clamping and screwing it down. Be sure the L-fence sits well below the top for router-bit clearance.*



guide bushing and router bit. For example, if you're using a ⅝-in.-dia. bushing with a ½-in.-dia. bit (a difference of ⅛ in.) and want a ½-in.-thick tenon, make the guide strip ⅜ in. thick.

Start by notching the two side pieces, and then mill the strip. To dial in the thickness of the guide strip, dry-clamp the template and use it to cut a test tenon. If the tenon doesn't fit the mortise perfectly, either plane the strip a bit thinner or make a new, slightly thicker one. When the tenon fits the mortise perfectly, glue the strip permanently into the template.

Once the template is glued up, add the rails, which register the template square to the workpiece. To attach the rails accurately, clamp an alignment board into the jig, sticking up past the top, and clamp the guide strip tight to the board. Then screw the rails to the template so they fit snugly against the top plate.

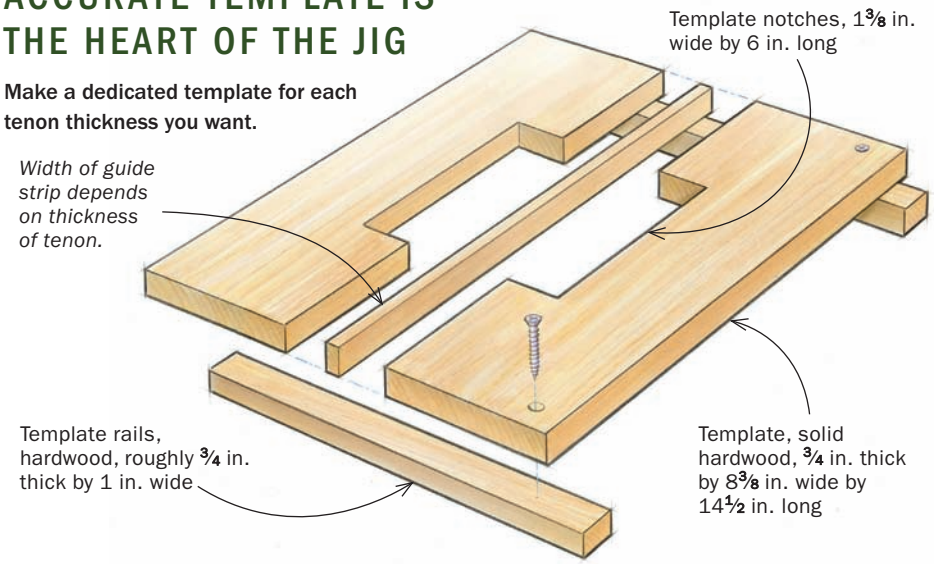
Practice with a straight tenon

To get the hang of the jig I recommend cutting a straight tenon first. Lay out the tenon in pencil, both cheeks and shoulders. Now clamp the workpiece in place, with the top end against the underside of the template. Adjust the template so the guide strip is centered on the layout lines, and then clamp it in place. Last, set the plunge depth on the router so the bottom of the bit lines up with the shoulder line.

Start the router in the raised position and then plunge to full depth without touching the workpiece. Make a light climb cut first, to avoid tearout at the shoulder, and then make conventional cuts to finish the job.

ACCURATE TEMPLATE IS THE HEART OF THE JIG

Make a dedicated template for each tenon thickness you want.



Dial in the strip. *To size the guide strip, take the difference in size between the bit and bushing, and subtract that from the desired tenon thickness. Plane the guide strip to that dimension or just a bit over.*

Give the template a dry run. *Clamp the template parts together dry, attach the template to the jig, insert a workpiece, and cut a tenon (1). Test the tenon in its mortise (2). If you are happy with the fit, glue the parts together and run the template through the planer to clean it up. To align the template and attach the rails, clamp a board into the jig and clamp the guide strip to it (3). Then clamp the rails snug to the top plate below, and screw them to the template.*

I trim the tenon to width by hand, and it goes quickly. Using a chisel wider than the tenon is thick, I make a shallow chop at the shoulder line, using the pencil line and the existing shoulders to line up the chisel. Then I pare away a small chip (see p. 43). Now I can chop deeper at the shoulder and pare off a longer chip, repeating the process until the tenon is done.

Angled tenon is just a wedge away

For angled tenons, I draw a full-size top view of the seat to determine the angle of

Using the jig for angled tenons

Make a plan view of the seat to figure out the tenon angle, and then make a wedge at that angle, at least 12 in. long. The wedge works on both the tablesaw and the router jig.

Ends first. *Use the wedge with a miter gauge on the tablesaw to cut off the ends of the workpiece at the correct angle.*

Lay out just one workpiece. *Lay out the cheeks and shoulders for one tenon with a sharp pencil. The other tenons need only rough marks to make sure you cut them in the right orientation.*

Add the wedge. *After cutting off a small piece for the back side of the jig, screw the long wedge to the L-fence.*

Load in the workpiece. *With the workpiece butted against the bottom of the template, clamp it in place. The tip cut from the wedge serves as a clamping block.*

Locate the template. *Slide it sideways until the guide strip is centered on the tenon layout below.*

the tenons, and make a long wedge that will go into the router jig. Make the wedge about the same width as the workpiece, and at least 12 in. long. Cut off a short piece of the wedge to go on the back side of the jig to provide purchase for the clamp.

Before screwing the long wedge in place, use it at the tablesaw to help crosscut the ends of the side seat rails. Now screw the wedge securely to the router jig, clamp a side rail in place, and rout these angled tenons just as you did the straight ones.

Compound angles are easy, too

For compound-angled tenons, add a second wedge, this one screwed to the jig's fence. Use both wedges together at the tablesaw to cut the end of the rail, then mount them on the jig to rout the tenons.

One last tip: For minor adjustments to the tenons, use tape to shim the jig. □

Jeff Miller builds furniture and teaches woodworking in Chicago.

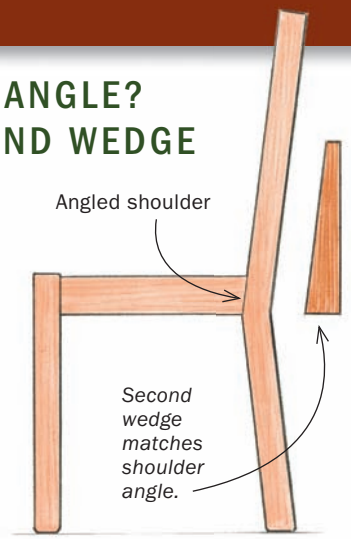
Rout one side at a time. *Plunge the router fully, then start with a light climb cut to prevent tearout at the shoulder. Then make a series of light normal cuts until the guide bushing reaches the guide strip. Now do the same to form the other side of the tenon.*

Cut the ends by hand. *Use a chisel that is wider than the tenon but narrower than the workpiece to trim the top and bottom of the tenon. Then use a file to round the tenon to match the routed mortises.*

Perfect fit on an angled tenon. *If the cheeks are a bit fat, trim them with a shoulder or rabbet plane. Then test-fit the tenon and watch the four shoulders close perfectly, with no gaps.*

COMPOUND ANGLE? ADD A SECOND WEDGE

On many chairs the seat slopes backward for comfort. On others the back legs are splayed. Do another full-size drawing to determine the angle between the rails and legs.



Add the second wedge. *The second wedge is screwed to the side of the L-fence (left), and the two wedges work together to create the compound angle. Mark the parts carefully to be sure you position them correctly in the jig (below) and rout as usual.*

1 SIDE-HUNG DRAWERS STOP THEMSELVES

Side-hung drawers eliminate the need for traditional runners, kickers, and dividers. Instead, they rely on a groove in the drawer side and a runner attached to the inside of the case. When the runner hits the end of the groove, the drawer stops. The trick, of course, is to position the end of the groove and the front of the runner so that the drawer is perfectly flush in front.

Photos, except where noted: Anissa Kapsales

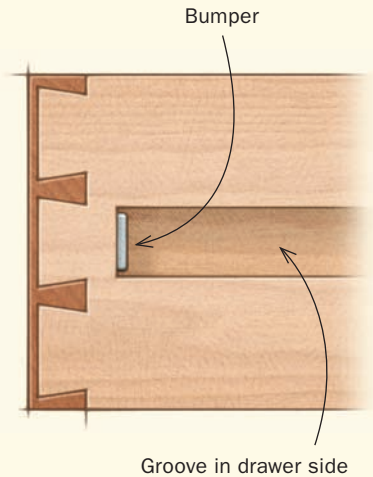
Stop Those Drawers

6 techniques to keep drawers flush year-round

BY CHRISTIAN BECKSVOORT

It's common knowledge among woodworkers that your drawers are an indicator of your craftsmanship. A close examination will reveal if the dovetails are well cut and if the drawer fits the pocket snugly and glides smoothly. But a quick glance is all you need to see if the drawers look good and are stopping in the right place. I prefer the look of flush-front drawers, but keeping drawers consistently flush with the front of a case can be tricky. We've all seen drawers that are slightly inset in the summer and a bit too proud in the winter. This is a particular problem when building solid-wood slab cases, as opposed to frame-and-panel or plywood furniture. However, there are several stop options available. Here are a few methods that I've seen and used for many years.

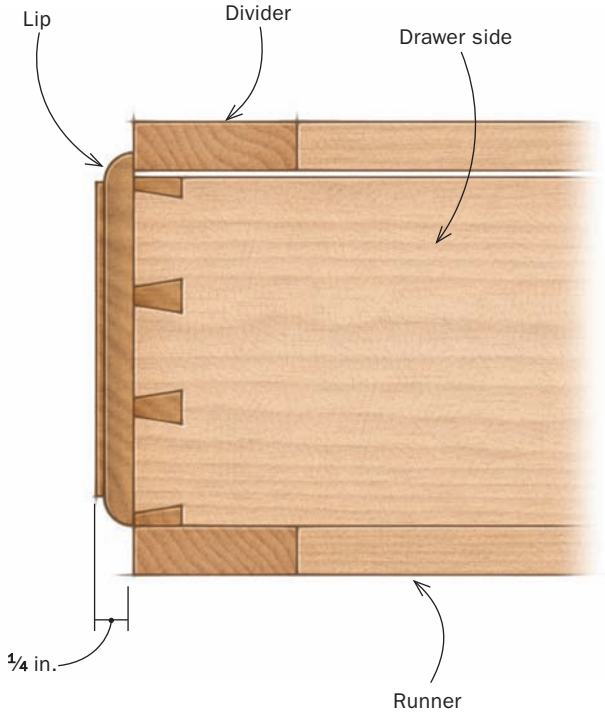
Contributing editor Christian Becksvoort will be a featured presenter at Fine Woodworking Live 2017 this April.



Square the groove and attach the runner. *Set a marking gauge to the end of the groove in the drawer side. Use that setting to mark the runner's location from the front of the case. Square the groove with a chisel and attach a self-adhesive polyurethane bumper—allow for the thickness of the bumper when you set your marking gauge. The runners sit in dadoes and are nailed in place with brads.*

2 LIPPED DRAWERS DON'T NEED STOPS

This type of drawer is constructed with a lip on the sides and top (the bottom traditionally has the same profile, but no lip). As the lip hits the carcase, the drawer can go no farther. The lip remains proud of the case year-round, no matter how much the case itself expands and contracts. As foolproof as this method is, building the drawer itself is a bit more work. The lipped drawer front has to be rabbeted and profiled. Fitting the drawer is also more involved. A flush drawer can be planed, sanded, or scraped across the end of the front, the dovetails, and the drawer side, while a lipped drawer precludes such simplicity. Lightly proud dovetails must be pared, scraped, or sanded to make them flush with the drawer side. If the drawer is slightly oversize, that can mean a lot of additional planing, paring, or sanding.

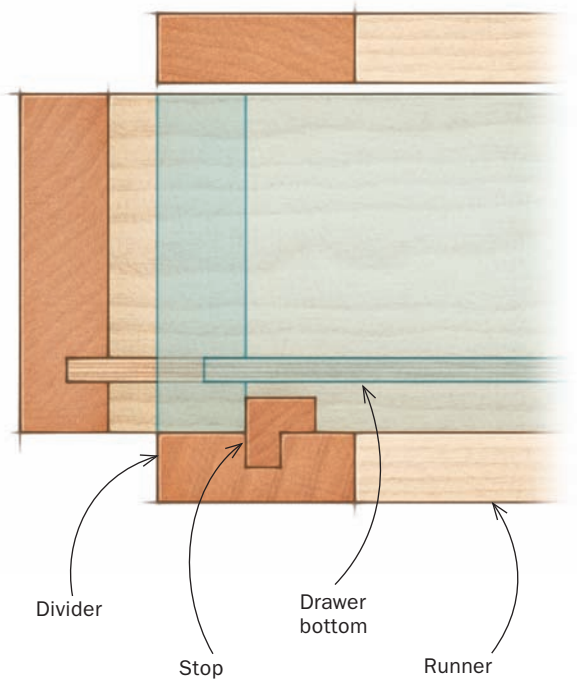


Creating the lip. *A rabbet is cut on three sides (left), and a profile is routed (above), planed, or scratched into the lip.*

Drawings: Christopher Mills

3 FRONT STOPS ARE TRADITIONAL

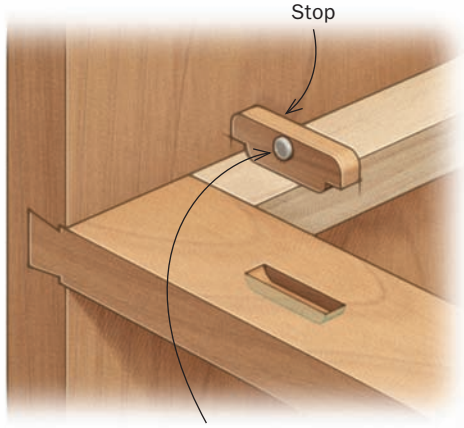
These are the most traditional method, and Becksvoort's personal favorite, perfect for flush drawers. Because the groove for the drawer bottom is usually about 5⁄16 in. to 3⁄8 in., or even 1⁄2 in., above the bottom edge of the drawer side (this allows room at the bottom for a half dovetail and also gives support to the drawer bottom), there is a space of about 1⁄4 in. between the drawer bottom and the runners and front side-to-side divider housing the drawer. A small scrap can be glued parallel with the front, the thickness of the drawer front from the edge.



Add stops for a flush front. *Set a marking gauge to the drawer front thickness. Rout a 1⁄4-in.-deep groove behind that mark and cut an L-profiled scrap, with the leg of the L fitting snugly into the groove. That mechanical fastening plus the glue will ensure years of foolproof drawer slamming.*

A QUIET DRAWER CLOSING

Set the stop back 1⁄16 in. and glue a leather or polyurethane bumper onto the front.

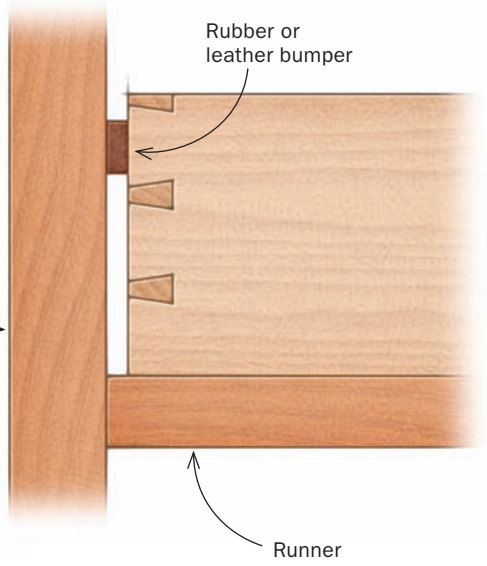


Photo, this page (top right): Dennis Griggs

4 BACK STOPS WORK FOR FRAME-AND-PANEL CASES

When constructing frame-and-panel cases (as opposed to solid-wood panels), back stops are ideal. The grain of the drawer sides runs front to back and the horizontal rails of the frame run front to back, meaning that wood movement is not an issue in keeping the drawers flush.

The back is the stop. *Whether you stop your drawer by butting it directly against the back or add small spacers or bumpers, you will ensure that the fronts are flush.*



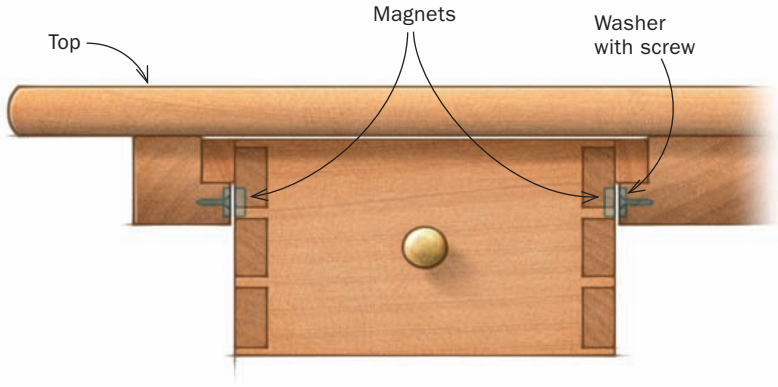
5 PROTRUDING BOTTOM STOPS ARE SIMPLE

Protruding drawer bottoms are seen frequently on period and antique cases. This method works best if the wood for the case is the same as the wood used for the drawer bottom. If you are building an oak case and use quartersawn pine for a drawer bottom, this method will not work because the coefficient of expansion of the two woods is so different. Using the same wood, it is the fastest and easiest of all the methods mentioned.

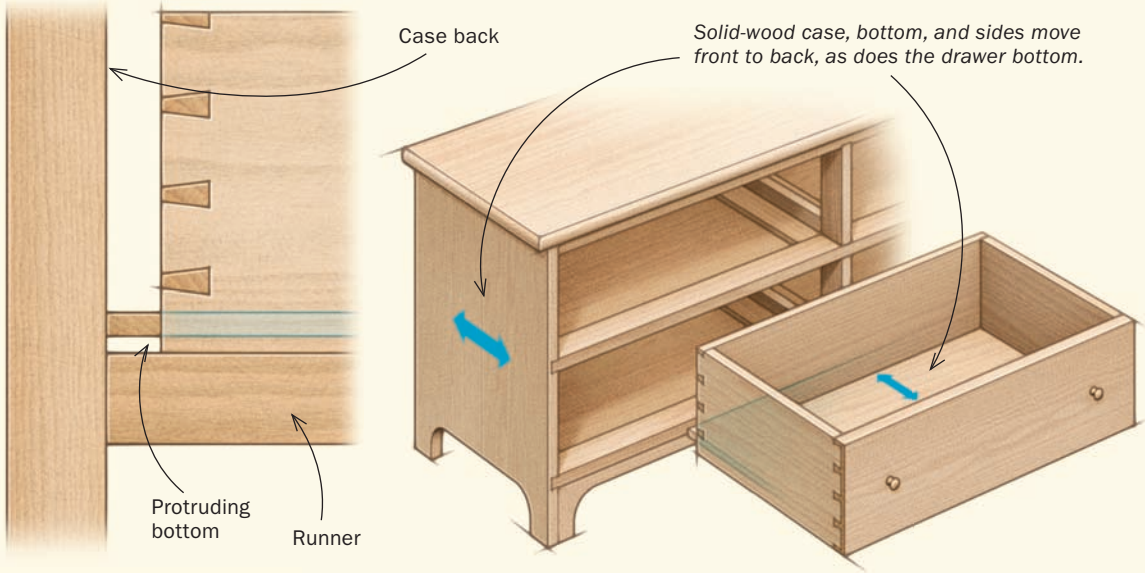
Photos, this page: Dennis Griggs

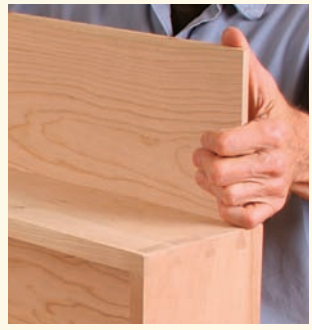
6 MAGNET STOPS ARE CATCHY

Some drawers are impossible to stop mechanically, such as drawers that open to both sides, as are found on some Shaker sewing stands. Most have no stops, relying merely on the user to push it to the correct location. Becksvoort ran across one that had a small notch across the bottom of the drawer sides, and what appeared to be a small lip glued to the case bottom. Obviously the drawer had to be lifted a bit to clear the lip, and it was well worn. Magnets on the drawer side that catch on metal in the case side are an elegant solution. They are invisible or hardly noticeable, and they stop the drawer softly where it belongs.



A modern stop. *Incorporate rare-earth magnets into the drawer side and screw a metal washer into the case side in the corresponding position. The magnet is unobtrusive, but you can cover it with veneer or a nylon dot if you choose. The washers in the case side aren't visible. With this method, the drawer just wants to stop in the correct, flush position.*





The bottom is a stop. *If the drawer is shorter than the inside of the case, and the bottom protrudes by the same amount, then as the case side expands and contracts, so does the drawer bottom.*

Photo, this page (top): Michael Pekovich

Get to Know Japanese Handplanes

A guide to setting up and using these rewarding tools

BY ANDREW HUNTER

I first took the plunge into the unfamiliar waters of the *kanna*, or Japanese handplane, more than 15 years ago. Learning to use one took time and dedication, but the reward of the shimmering surface it leaves was well worth it. There is more to Japanese handplanes than can be expressed in a single article, but my aim here is to provide a kind of diving board for anyone else interested in taking the plunge. I promise the water is delightful.

What makes these planes different

Japanese planes cut on the pull stroke, and it can take a while to adapt to this, though when you do you'll discover it gives you both more power and more control. But the first challenge with a Japanese plane is that it isn't ready to use out of the box. You get great ingredients, but it is up to you to make the tool perform well. This responsibility might seem daunting at first, but as you grow more comfortable with your plane you will be glad for the control.

The heart and soul of the Japanese plane is its massive tapered blade. A descendant of the samurai sword, the blade has a thin layer of superhard steel laminated to a thick layer of softer mild steel or iron. The hard steel provides a cutting edge of unparalleled sharpness, while the softer backing metal dampens the heat and vibration of the cut. The flat face of the blade—the hard steel side—comes hollowed at the center. So when you lay it on a stone for flattening, only a small amount of metal at the edges contacts the stone, greatly speeding the process.

The blade fits snugly into angled grooves on either side of the body, or block of the plane. On a typical

Photos: Anissa Kapsales

Prepare the blade

Start by cleaning up the bevel. *The thick Japanese blade makes for a wide bevel and easier freehand sharpening. Honing guides made for Japanese blades are another option. The sharpening goes quickly, as most of the bevel is soft metal.*

Flatten the back. *The hard steel back of a new blade comes hollowed, leaving only narrow areas around the perimeter to be polished during flattening. The narrower you keep these flats, the more efficient your sharpening will be.*

Japanese plane, the blade, which is inserted bevel down, is bedded at around 39°. All of my blades are in this range except a 45° finish plane I use on difficult grain. You can order blocks with specific bedding angles or make your own.

The blade is adjusted with light hammer blows. To advance the blade, strike its blunt back edge, favoring the left or right to effect skew adjustment. To withdraw the blade, strike the plane block on its chamfered back edge, alternating taps left and right.

The chipbreaker is wedged in place beneath a removable pin. Like the blade, the chipbreaker is adjusted with a hammer. Its purpose is twofold. It exerts pressure on the blade, stabilizing it and helping reduce chatter. But also its steep secondary bevel contacts the shaving right after it is cut, bending it back and greatly reducing the chance of tearout.

Setup starts with the blade

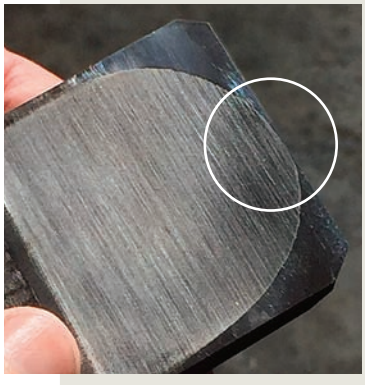
There are five steps in setting up a new Japanese plane: shaping the blade, fitting the blade into the block, fitting the chipbreaker, tuning the sole, and adjusting the mouth opening.

Begin shaping the blade by addressing the bevel. Most blades come with a bevel of about 28°, a good standard angle. If you're happy with that, you can move on to the back; if you want to change it, do so now. Next, flatten the back of the blade. Rub it on a flat, medium-grit stone and then read the scratch pattern. You are looking for consis-

Online Extra

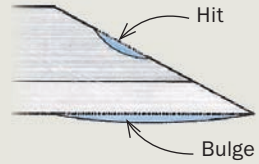
To watch Andrew Hunter tap out a blade, go to **FineWoodworking.com/260.**

Tapping out the blade



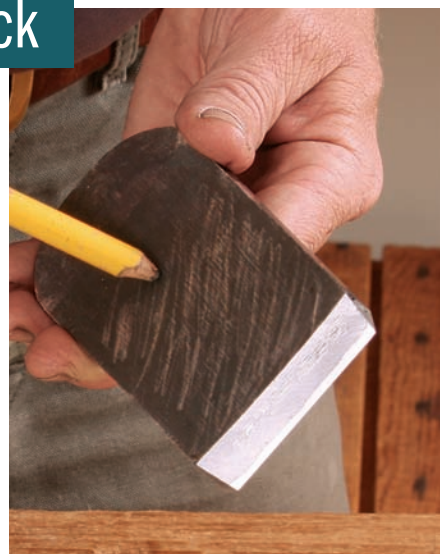
Through repeated sharpening of the bevel, the front flat on the back of a Japanese blade will begin to disappear (left). The solution is to tap the layer of soft steel above the cutting edge to press the hard steel downward slightly, which presents more hard steel at the edge for flattening. This particular blade has been ground flat too often without tapping out, and now has wide side flats that slow the flattening process.

Tap, then flatten the back. *When tapping the blade, be careful not to crack the hard steel. Strike the upper half of the bevel with light blows, backing them up from below with a block or anvil.*



Seat the blade in the block

Remove the pin. *With the plane over a dog hole, grip the retaining pin with padded pliers and tap to remove it.*



Look for high spots. *Cover the face and the side edges of the blade with a graphite and light oil slurry. Tap the blade into the block and remove. Black marks reveal high spots.*

Pare high spots and repeat. *Lightly scrape and pare away black marks on the ramp (above) and at the sides (right). Continue this process until the blade fits just shy of protruding.*

tent scratches across the entire front edge. If there is a spot with no scratches it may be tempting to grind the whole surface on a coarse stone, but each time you do you'll widen the side flats and shrink the hollow, increasing the amount of hard steel you have to flatten with each sharpening. Instead, Japanese blades are usually "tapped out"—struck on the bevel with light hammer blows so the blade bulges slightly on the back, presenting a little more hard steel for flattening.

With each sharpening of the bevel, the front flat on the back gets slightly narrower. Over time, it will disappear altogether; when it does, instead of grinding the whole back you can tap out the blade again and grind briefly to reestablish the front flat. In this way the narrow flats can be maintained for the life of the blade.

When this preliminary shaping is done, the blade is ready to be fitted to the block. Final sharpening will happen in the end.

Fit the blade into the block

A new plane blade will not perfectly fit its block. It is up to you to get the fit just right. As you insert the blade, flat side up and bevel down, it is captured in two shallow, angled grooves. The upper shoulder of these grooves, against which the flattened face of the blade presses, is the bedding angle for the blade and should not be adjusted. Instead, you'll shape the broad ramp the blade rests on. The better the fit of blade to ramp, the less the blade will vibrate.

To begin, remove the pin and cover the front face of the blade with a graphite slurry. Tap the blade into the block until

The goal is dark and even. *The ramp should be covered with graphite. It's most important to have black along the edges and front.*

Fit the chipbreaker

Preparing the chipbreaker. *After flattening the back (above) and working a primary bevel, Hunter creates a steep secondary bevel (right). To do so he holds the chipbreaker still and moves the stone, guided by a bevel gauge.*

Breaking point. *The chipbreaker's secondary bevel, which can be as narrow as 1/32 in., bends the wood fibers back just after they've been cut for a very clean shave.*

Eliminate wobble. *Rest the chipbreaker in place on the blade. There should be no gaps across the front edge, and the back corners, or ears, should sit on the blade without rocking. Make adjustments by bending an ear down with a hammer or filing it back.*

it's snug. Then remove the blade and study the black marks left on the ramp where the fit was tight. Lightly pare these spots and reinsert the blade, repeating the process until the blade is just shy of protruding. I like the fit to be tight; it will ease up with time. If the fit becomes too loose either from age or overzealous tuning, glue a paper or veneer shim to the ramp.

Shape and fit the chipbreaker

Now it's time to work on the chipbreaker. First, sharpen it like a blade, with a flat back and a straight bevel. Then create a narrow secondary bevel of around 60°. This steep surface is what bends the chip back. The chipbreaker has two ears at the top end that bend downward to contact the blade; don't flatten these.

Next, with the blade out of the block, rest the chipbreaker in position on it and check for wobble. If there is any, you'll adjust the ears, either hammering one ear down to make it protrude farther or filing the other back to make it protrude less. The choice depends on the fit of the blade and chipbreaker in the block. So tap the blade into the block just shy of protruding, then press the chipbreaker under the pin with your fingers. A few light taps with a

Tune the sole

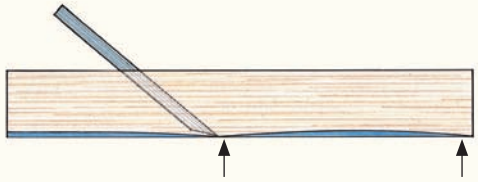
Get your landings in the same plane. *Start by flattening the whole sole. Then, once you've hollowed it, leaving only narrow landings to contact the workpiece, use winding sticks to be certain the landings are in the same plane.*

hammer should bring it to the front edge of the blade. Adjust the ears until the fit is snug. Then remove the blade and chipbreaker from the block to be sure they fit together without wobbling.

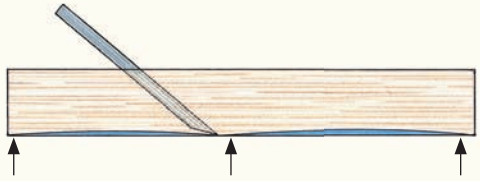
Create landings on the sole

For best performance, any bench plane needs to have a bearing surface that is true and applies pressure to the wood fibers just before they are cut. With Japanese planes this is cleverly accomplished by relieving the sole so that only a few gliding strips, or landings, contact the workpiece. Not only do these narrow landings magnify the pressure applied by the user and deliver it just where it's needed, they are easily adjusted true to one another.

SOLE LANDINGS
Relieve the sole so only narrow strips, or landings, contact the workpiece



Smoothing planes have two landings, one at the leading edge and one just ahead of the blade. This ensures maximum pressure right ahead of the cut.



For a jointer plane, used to make a board perfectly flat, an additional landing at the trailing end of the body is necessary.

The hollows shouldn't be deep. *Check the sole with a straightedge. You should see only a hair of light. Tune the sole with the blade and breaker in place, but retracted slightly.*

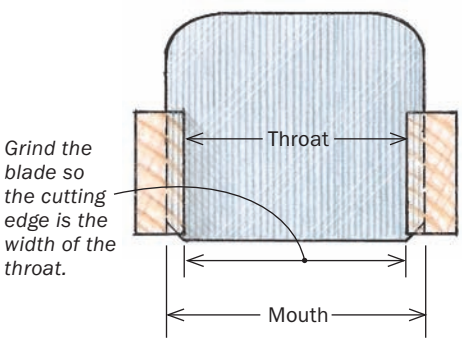
Create the sole profile. *With a Japanese scraper plane Hunter creates long, shallow reliefs, leaving ½-in.-wide landings across the sole. A card scraper also works fine.*

Focused attention. *The area behind the mouth can bulge due to pressure from the blade and breaker. Relieve it with a chisel.*

Address each side of the mouth. *Shallow relief cuts eliminate having to work this area when shaping the sole.*

Drawings: Vince Babak

Adjust the blade width and mouth



Limit the width of the blade's cutting edge. *It should not be more than the width of the throat, or shavings will jam. Reduce its width by grinding back the bevels at the front corners of the blade.*

Adjust the opening. *The gap between blade and body should be just wide enough to allow shavings through. Use a chisel and guide block to adjust it.*

To work on the sole, keep the blade and breaker in place, since the pressure they exert slightly distorts the block. Start by making the whole sole true so that the landings start out in plane with one another. This can be done using winding sticks and planes or with sandpaper and a dead-flat surface.

The hollowing is best done with scrapers. Once that's done, check to be sure the landing ahead of the blade is flat. Then use winding sticks to see if the other landings are in plane with it and adjust accordingly. Finally, use a straightedge along the length of the block to be sure the hollows are sufficiently relieved. Periodically the condition of the sole should be checked.

Adjust the mouth and throat

You want the mouth open just enough to admit shavings, but not so much that the benefits of exerting pressure ahead of the cut are lost. Adjust the opening with a chisel. Also, be sure the blade's cutting edge is not wider than the throat, or shavings will jam. Reduce the width by grinding back the two bevels at the front corners of the blade. These adjustments will need to be periodically maintained.

Give the blade a final sharpening and have at it. On flat stock, your plane should pull a thin, consistent shaving with only moderate effort. The plane should be very sensitive now and the blade only needs to protrude a hair. If the blade is protruding but you are not getting a cut, recheck the landings and hollows. □

Andrew Hunter builds furniture in Accord, N.Y. He'll be a featured presenter at Fine Woodworking Live 2017 this April.

Using a Japanese plane: The potent pull stroke

Using a Japanese plane is similar to using a Japanese saw in that they both cut with a pull stroke. The plane gives you greater control as it is drawn in. Your hands should be strong but relaxed. Keep the energy out of your shoulders and elbows and draw back with your legs and abdomen. You are not aiming for an explosive power but a controlled, steady strength.

For short strokes, keep the plane close to your center where you have the most control. For longer cuts, reach out to the end of your balance and draw back in to your center. Your body should be like a spring that is straightened and then recoils, using the power from the large muscles of your back and core. Sink into your legs; they provide the stability to counter the pulling force. Without lifting the plane, reposition your feet and repeat. With practice you will be able to walk backward while keeping the connection to the cut with your center. There is a lot to take in when first learning to use a kanna. Hang in there; it will become second nature and your boards will be shining in no time.

Get a grip. *Hold the plane with your dominant hand about halfway between the blade and the leading edge, favoring the blade. Most of the pressure is applied with this hand and care must be given to distribute it equally across the block. The other hand supports the blade and helps with the pulling.*

Short strokes or long. *On shorter boards, keep the plane close to your center, where you have the most control. For long cuts, reach out to the end of your balance and draw back in to your center.*

SETTING THE BLADE

Advance the blade by tapping on its blunt back edge. Withdraw it by tapping the chamfered back upper corner of the plane block. Adjust for skew with taps to the blade's back corners.

3 Handy Stop Blocks


FLIP STOP


SCREW STOP


SLIDING STOP

Increase the precision of crosscuts and tablesawn joinery

BY BOB VAN DYKE

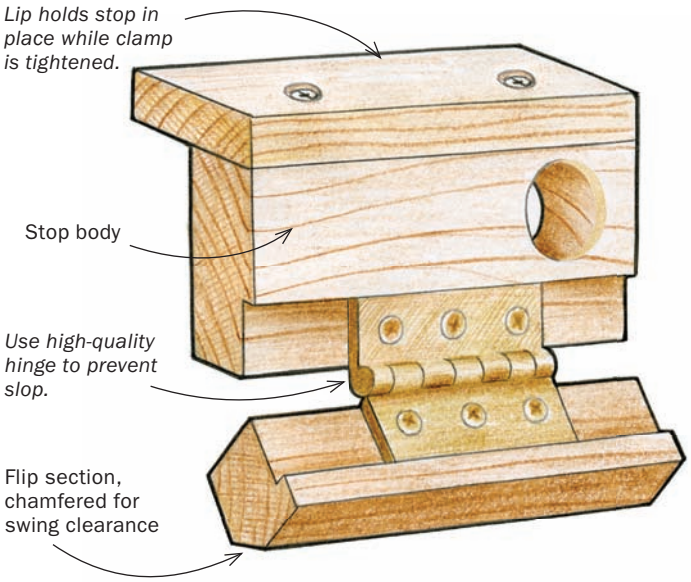
We've all heard the old adage "Measure twice, cut once," but when it comes to cutting parts to length on the tablesaw, it's better to measure once, then use a stop block. Stops ensure that identical parts end up at identical lengths, and that corresponding joinery ends up in the right spots. Instead of measuring individual parts, you measure once to locate the stop block and then use the block as a registration point when cutting the parts to size.

I use three stops pretty much every day at the tablesaw. The one that gets the heaviest use is a flip stop made from two blocks of wood and a quality butt hinge. It's perfect for cutting multiple parts to final length. For tenons and notches, I use an adjustable stop made from a block of wood with a screw in the end. It's great because you can turn the screw to make fine adjustments to the stop. The third stop, which I picked up from my friend, *FWW* contributing editor Steve Latta, is a two-part stop. It has a sliding arm that can be pulled out of the way before you make the cut. It's ideal for cutting anything less than 3 in. long. I'll show you how to set up and use these blocks. They're so simple to make and use, you'll find yourself reaching for them all the time, and you'll see an improvement in the accuracy of your work as a result.

Bob Van Dyke, director of the Connecticut Valley School of Woodworking, will be a featured presenter at Fine Woodworking Live 2017 this April.

Photos: Matt Kenney

Flip stop is the perfect crosscut companion



Measure from the kerf. *For this to work, the kerf must be zero-clearance. To set the length of cut, Van Dyke props up the rule so that it's high enough to butt against the stop's swinging block.*

My favorite stop is the flip stop, which I first saw years ago in a *FWW* article by Tage Frid. It works so well because you can clamp it to a sled's fence or to a miter gauge and both square the first end and cut the part to length without the stop getting in the way. First you set the stop to cut the part to length. Then simply slide the part under the stop and make the first squaring cut. Pull the part out, let the stop flip down, and then put the square end against the stop to cut it to length.

There are two advantages to the flip stop that make it way better than a simple block of wood clamped to the fence. First, because the stop swings above the surface, sawdust won't build up between it and the workpiece. Also, because the first cut is made with the workpiece slid under the flip section, it is impossible to cut the part too short. With a block clamped to the fence, you are forced to square the first end holding the workpiece on the opposite side of the sled, and then slide the squared end down to the stop. Trust me, with that technique it's easy to cut the part too short when squaring the first end.

I use the flip stop every day in my shop, and I often use two at once so that I can cut more than one part to length without moving the stop.

Go under the stop to square one end. *As long as the workpiece is even a hair under the stop, you know that you're not cutting it too short.*

Drop the stop. *Set the freshly cut square end against the swinging block, and cut the part to length. For a second part the same length, slide the offcut down to the stop and cut again.*

Drawings: John Tetreault

LONG PARTS NEED A LONG FENCE

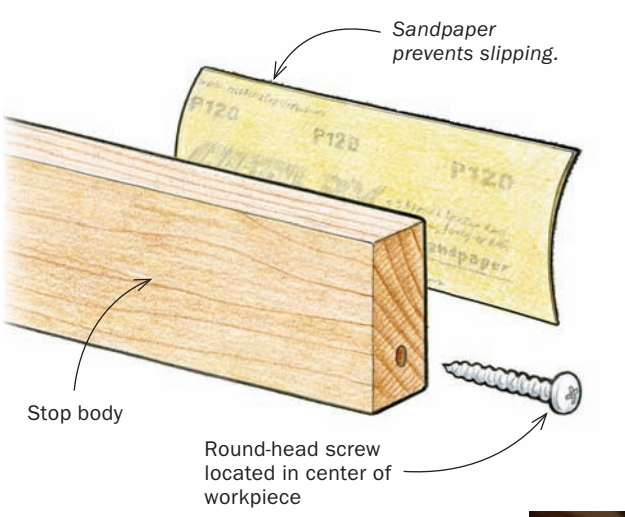
Some furniture parts, such as aprons or legs, can be quite long, and the everyday fence on your sled might be too short to clamp on a stop. The solution? Screw a longer fence to the sled so that you can still use a flip stop.

TWO STOPS ARE BETTER THAN ONE

When you need to make multiples of more than one part—such as the rails and stiles for a set of cabinet doors—you'll get through the cuts more quickly and accurately if you use two stops instead of moving one stop. Use one for the longer part, and another for the shorter one.

Go under to get around. *Because the flip section of the stop swings up and out of the way, you can slide long workpieces under it to make use of a second stop. This allows you to cut multiple parts to length without having to move a stop.*

Pinpoint accuracy with an adjustable stop



Get in the ballpark. *After aligning a layout line on the workpiece with the sled's zero-clearance kerf, Van Dyke clamps the stop to the fence. The screw's head is against the end of the workpiece.*

You can make any stop block micro-adjustable simply by driving a screw into the end of the block. The screw adds amazing precision when cutting joinery like tenon shoulders. Use a round-head screw so that there is a single point of contact, even if the screw isn't driven in straight. It should be about ⅜ in. above the block's bottom edge, creating a space for sawdust. Without the screw, sawdust tends to get trapped between the stop and the workpiece. And because you can drive the screw farther in and back it out, you can easily dial in the stop without unclamping it from the fence.

The exact location of the screw is usually not important, but I try to install it so that the crown of the head is near the center of the workpiece's thickness. Also, I attach some sandpaper to the back of the stop to prevent it from slipping when clamping it to the fence. And the best way to adjust the screw is with a small ratcheting driver equipped with a screw bit.

This is a tremendously versatile and accurate stop. Through the years, I've accumulated a box of them, and I think you will, too.

Adjust and cut. *Make a test cut to check the stop's placement, then turn the screw in or out as needed to bring the workpiece's layout line in perfect alignment with the blade (left). Set the part against the screw and make the cut. Here, Van Dyke is cutting a tenon shoulder (right).*

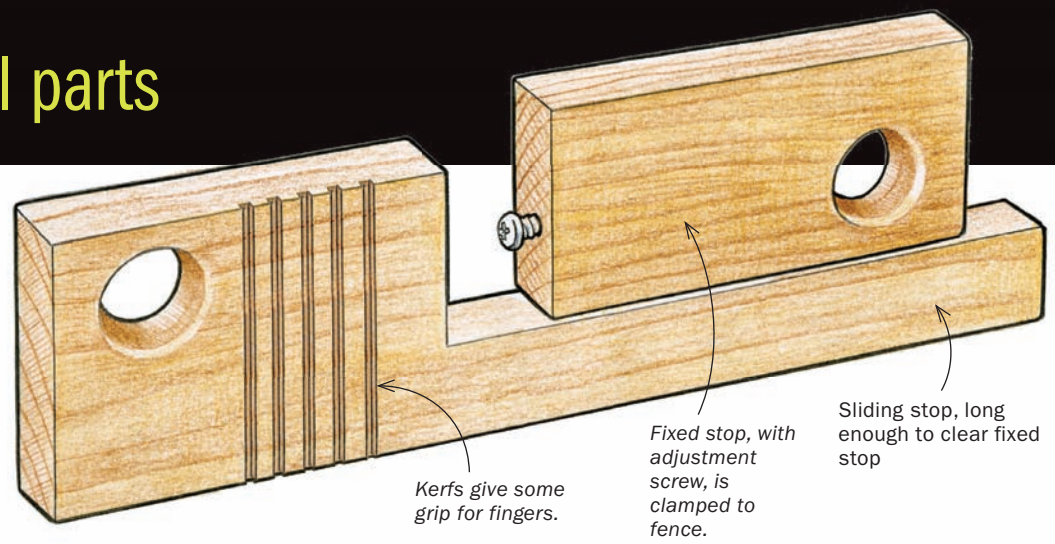
DOUBLE UP FOR NOTCHES

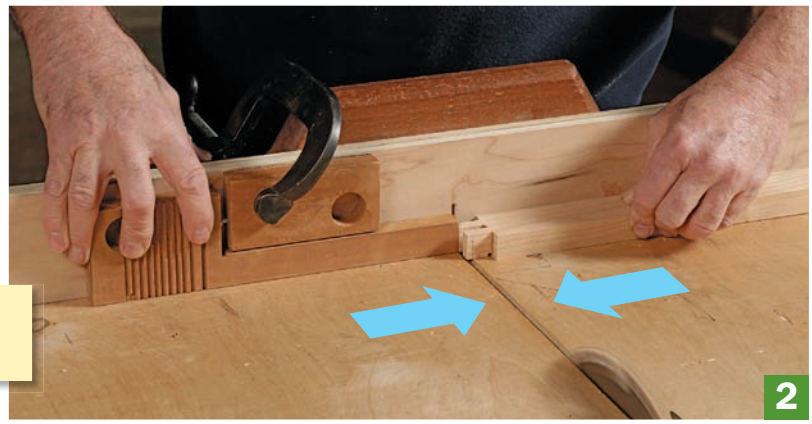
Setting stops precisely to cut the two ends of a notch can be tough, but the small adjustments afforded by the screw make the job much easier.

A stop for small parts

I use this sliding stop to cut parts that are too short to cut safely with any standard stop. Very short pieces can't be held safely between the stop and blade, but if they can't be held securely, you run the risk of kickback. This stop overcomes that problem because it slides out of the way after it locates and registers the workpiece in the correct location for the cut. It's perfect for trimming a small amount from a workpiece, like when shortening a tenon, where the offcut would get caught between the blade and a standard stop.

There are two parts to this stop. The fixed stop, which is a variation on the adjustable screw stop, is clamped to the sled's fence with the screw on the back end. The sliding stop is shaped like an L. The long leg slides under the fixed stop. It extends out past the stop, toward the blade. The short leg stands up and hits the screw head.

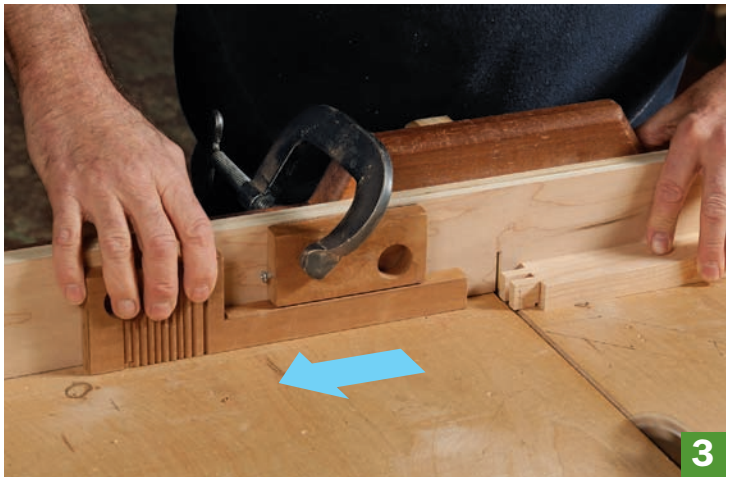




Using a sliding stop. *Start by clamping the fixed stop to the fence. Place a rule or other removable spacer between the fixed stop and sliding stop to create a space that lets you move the sliding stop in and out smoothly (1). The screw on the block allows fine adjustments. To make a cut, bring the sliding stop against the fixed stop and push the workpiece against it (2). Then pull back the sliding stop holding the workpiece in place with the opposite hand (3). Because the offcut isn't trapped between the blade and stop, it won't get thrown by the blade during the cut (4).*

Online Extra

To watch Van Dyke use stop blocks and explain why you should, too, go to **FineWoodworking.com/260.**



Sleek and Shapely Coffee Table

Hand-shaping brings out the beauty in this elemental piece

BY MICHAEL CULLEN

At the time I first made this table, in 1995, I had been building a lot of complex furniture full of veneering and fussy inlay. The new table was a real departure, elemental instead of elaborate, relying on graceful curves and sheer planes without a hint of ornament. Building it marked a return for me to working solid wood, and a rekindling of my interest in working with simple tools such as planes, spokeshaves, and handsaws to execute a piece. In retrospect, I see I was returning to my Arts and Crafts training and to the philosophy that went along with it—the idea that sound handwork is the foundation of good furniture making.

I've had the pleasure of building a number of these tables since that first one, and I now tend to combine machines with hand tools in the process. Machines execute the milling and joinery flawlessly, and hand tools shine during the shaping.

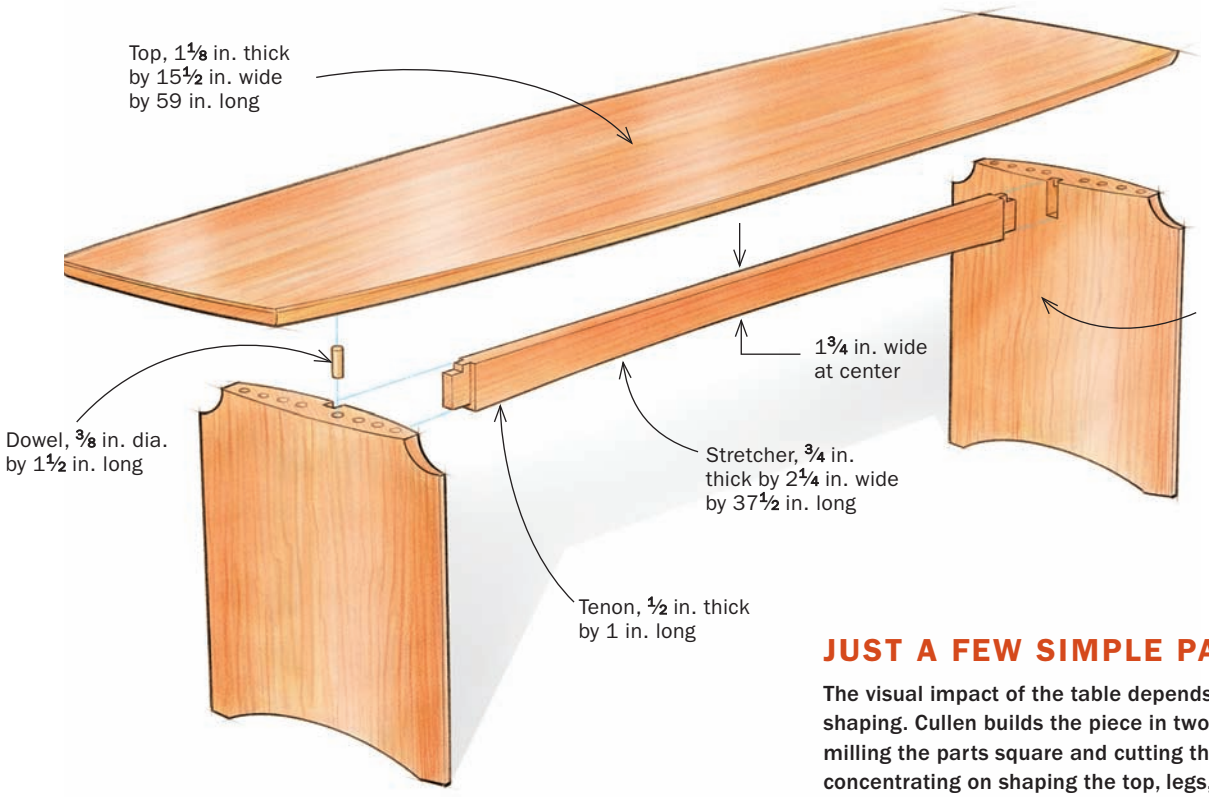
The table can be made from almost any type of wood. I'm using mahogany here, but I've used a number of other species, including ash, cherry, walnut, and even zebrawood. Whatever wood you choose, be sure to pick boards for the legs that are a good match in color and grain. And cut the top from a single plank, if possible. If you have to edge-glue two boards to make the top, plan the grain so the joint is close to undetectable. Keep in mind, too, that the more dramatic the figure in the wood, the more attention will be drawn away from the subtle curves of the piece.

The project proceeds in two stages. The first stage is milling all the parts square, cutting the joinery, and dry-assembling the piece. The second stage is the shaping: creating the curved faces and

Photo, this page: Don Russel

ARCS DEFINE THE DESIGN

Cullen makes MDF templates to lay out the curves and cutouts in the table parts. He uses trammel points to swing the broad arcs such as the one for the legs' curved faces (left). After bandsawing to the pencil line, Cullen fairs them with files.

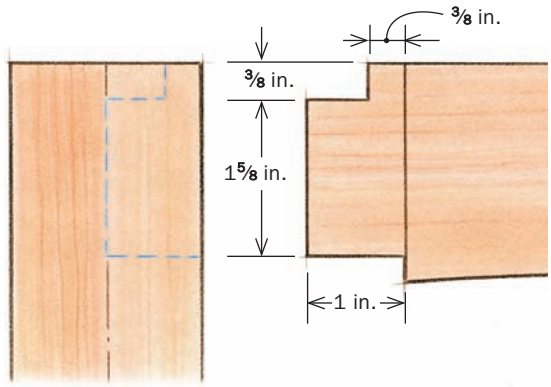


JUST A FEW SIMPLE PARTS

The visual impact of the table depends on flawless shaping. Cullen builds the piece in two steps, first milling the parts square and cutting the joinery, and then concentrating on shaping the top, legs, and stretcher.

Drawings: Dan Thornton

HAUNCHED TENONS FOR THE STRETCHER



Plunge right in. *Cullen begins the haunched mortise by cutting the full-depth section with a plunge router. Then he squares it up, chopping the ends of the full-depth mortise with a chisel before moving on to the haunch.*

Haunch last. *With the full-depth mortise finished and the fence still clamped in place, make a shallower pass with the router to create the haunched section of the mortise.*

Make a mate. *Cut a haunched tenon on the stretcher to fit the mortise. Cullen cuts the cheeks using a shopmade tenoning jig (left), and the shoulders using a miter gauge (above).*

cutouts on the legs, and cutting the arced and profiled edges of the top.

Make templates for layout

I draw the curved layout lines on the legs using templates made from ¼-in. MDF or Masonite. Make one template for the leg cutouts and a second template for the curved faces of the legs. I use trammel points to draw the broad arcs for the foot cutout and the face curve. For the shoulder cutouts, which are elliptical, I trace a French curve.

Cut right to the pencil lines with the bandsaw, then fair the curves with sandpaper on a flexible block. Because the template material is just ¼ in. thick, the work goes quickly.

When you've finished the templates and used them to lay out all the curves on the legs, lay out the joinery—the haunched mortise for the stretcher and the dowel holes where the legs attach to the top.

Cut the joinery

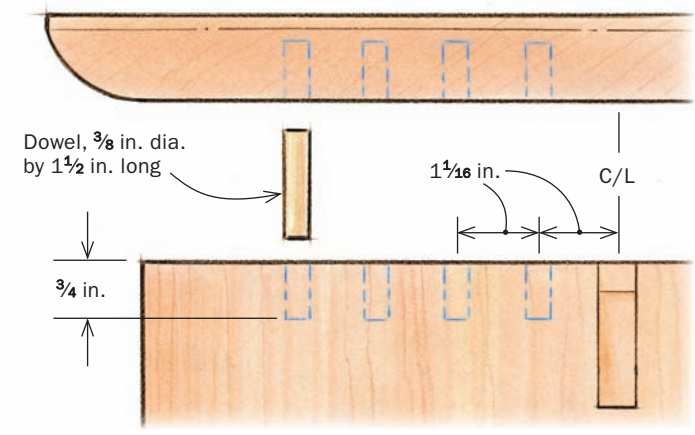
I cut all the joinery at this point, while the parts are still square blanks. I start with the haunched mortise, which I cut in three steps: first plunge-routing the full-depth section, then squaring the ends of that cavity with a chisel, and finally going back with the router to cut the haunch. That done, I cut the mating haunched tenons at the tablesaw.

For the doweling, I create a simple jig by face-gluing two scraps of ¾-in. MDF. I cut guide holes in the jig on the drill press and then use it with a hand drill.

Photos, except where noted: Jonathan Binzen

DOWELS CONNECT THE TOP TO THE LEGS

Rig up a custom doweling jig. *All the drilling for the dowels is done with a handheld drill and guided by a 1½-in.-thick MDF jig. The holes in the jig are made on the drill press.*



Clamp and locate. *Cullen centers the dry-clamped base on the inverted tabletop blank and marks the leg locations (left). A piece of melamine cut to the exact length of the stretcher serves as a spacer as Cullen uses the doweling jig to drill for the dowels (above).*

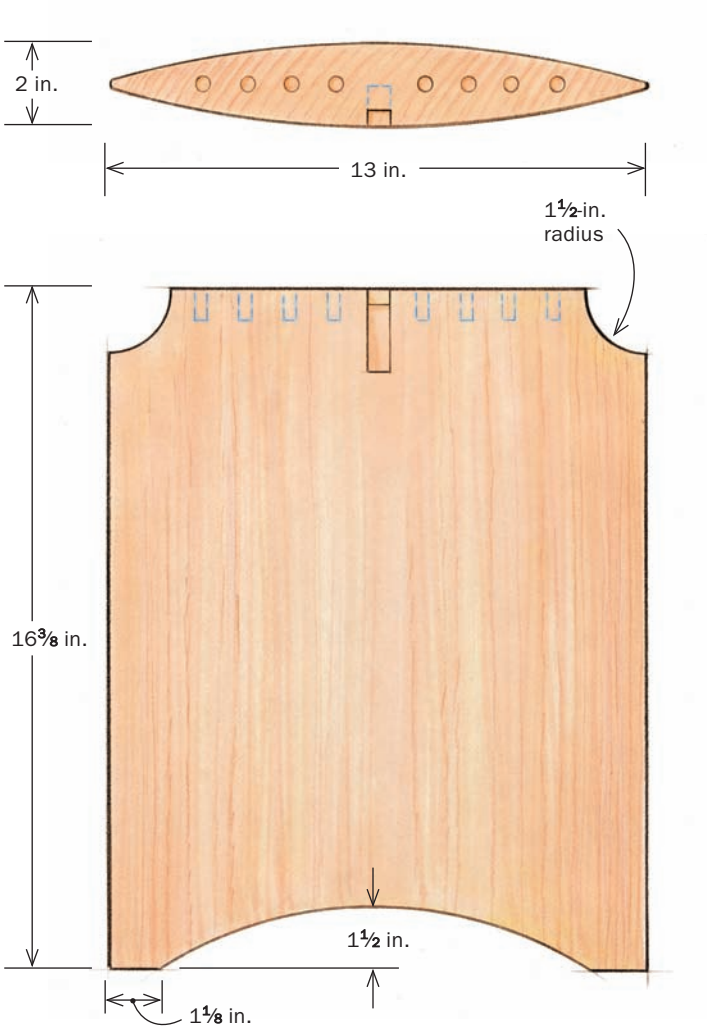
To establish the location of the dowel holes in the tabletop, I dry-assemble the base and center it, inverted, on the underside of the top. Then I make pencil marks along the inside faces of the legs.

Make the leg cutouts

Now that the joinery is cut, I create the cutouts in the leg. These should be carefully cut out on the bandsaw or with a coping saw. The trick is to cut as close to the line and as smoothly as possible. If you're using a handsaw, be aware that it's very important to cut square to the faces along the entire curve. The freshly cut areas should then be smoothed of any inconsistencies with a rasp and file. Follow that with a careful sanding to finalize these details. The best way to test the quality of

Mating holes in the leg. *With the jig clamped flush to the inside face of the leg blank, Cullen drills the mating dowel holes. Tape on the drill bit acts as a visual depth stop.*

SAW AND SHAPE THE LEGS



Saw out the foot scoop. *The bandsaw makes quick work of cutting the curved cutout at the base of the leg.*

Filed fair. *Files and sandpaper combine to fair the bandsawn curve (above). A half-round file and handheld sandpaper smooth out the tight cutout at the shoulder of the leg (left).*

the surface is to run a finger along the curve. It should feel smooth and free of any bumps or jogs.

Shape the leg's curved faces

You've now arrived at the most fun and most important passage in the project: shaping the broad, curved faces of the legs. The shape is simple, but that doesn't mean it's easy to execute; the utmost care must be taken so that the final curving surface appears flawless.

To start, put the curved waste piece back into the cutout at the bottom of the leg, holding it in place with double-sided tape. You'll need it there throughout the shaping, as it has your layout lines on it.

Set the jointer plane for a deep cut and begin shaping the radius at the outside edges, creating facets from end to end of the blank. Work quickly but with care, first roughly defining the arc then continuing to refine it as you work toward the line. The objective is to split the ridges created by the plane passes into finer and finer facets until they become almost imperceptible. This work is a combination of strength, stamina, and skill. It's important to

Coarse shavings start the curve. *Cullen roughs out the curve quickly with a jointer plane set to take thick shavings (left). Periodically he checks end-to-end flatness with a straightedge. Cullen then fairs the curved surface of the leg and brings it right down to the layout line with a smoothing plane set fine. He checks for fairness of the curve by running his fingers across the face.*

A final shave. *Set to take whisper-thin shavings, Cullen's block plane (left) addresses any slight imperfections. Though he's already reached the layout line, Cullen leaves the foot cutout in place to provide clamping purchase. After planing both faces of the leg, Cullen hand-sands to 220 grit (above).*

use your whole body and not just your arms for the task. As the shavings get deeper on the floor and you begin to get closer to the final shape, continue to adjust the iron in the plane for finer and finer cuts.

Be sure to check periodically with a straightedge along the length of the leg to make sure that your passes are flat, not diving down at either end. Switch to a smoothing plane set for fine shavings as you approach the layout lines, and take some passes at 45° across the surface to fair the curve. Take your final strokes with the grain, going right to the layout lines. A razor-sharp block plane can be useful to resolve any issues with reversing grain.

Follow up with 220-grit sandpaper on a cork or felt block, slightly angling over the curve and the fine facets left by planing. Check for inconsistencies or ridges by running your fingertips across the curve. Last, eliminate any cross scratches by sanding along the grain. Then finish-sand with 320-grit paper.

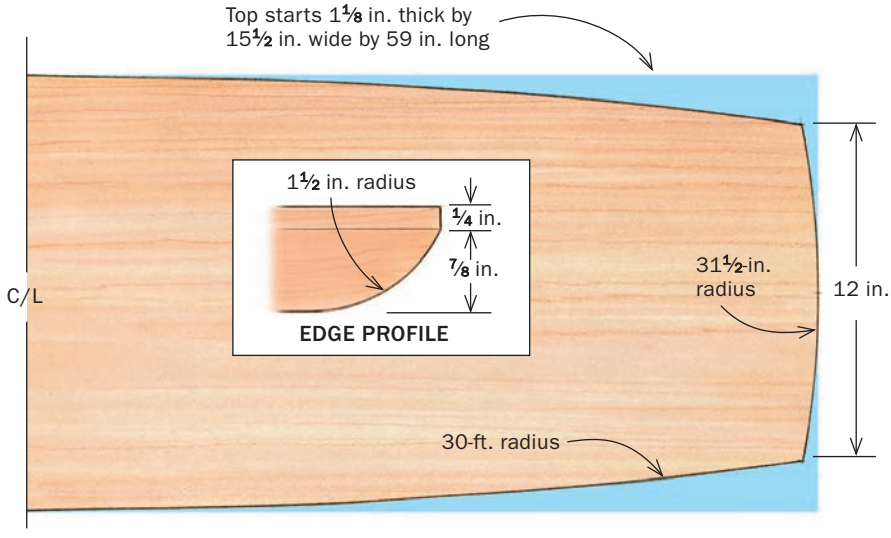
When you've finished shaping the second face, create the small radius along the sides, where the inside and outside faces meet, with a combination of block planing and sanding.

Rounding the corner. *Guided by layout lines on either side of the edge, Cullen uses a block plane to create a carefully rounded corner.*

SUBTLE CURVES ENLIVEN THE TOP

Saw and smooth. *At the bandsaw, cut the four arcs that form the perimeter of the top. Then smooth these cuts with a handplane, checking to be sure the edges are square to the top.*

Shape the edges. *Use a pencil to lay out the limits of the top's underturned edge profile, marking one line on the edge and another on the underside (top). Then use a smoother followed by a block plane to cut the curved profile, working from a faceted surface to a smoothly rounded one. Tweak the end and side profiles if necessary to produce a straight line at the corner where they meet (above).*



Now shape the top

I use a pencil and a trammel made of scrap plywood to draw the arcs for the perimeter of the top and then I bandsaw to the lines. After sawing out the shape, place the top in a vise at the bench and begin defining the curves along the length using both a smoothing plane (No. 4) and a block plane. Check the edge periodically to be sure it's square. Careful planing will render a final curve that needs little if any sanding. Repeat the process on the ends.

To lay out the edge profile, use a marking gauge fitted with a pencil to draw lines on the edge and underside. Rough out the rounded profile with a smoothing plane, and then use

a block plane to refine the radius. The trick to this profile is to create a rounded element that has crisp transitions to the flats beside it. Finish up with 220-grit and then 320-grit sand-paper backed with a felt block, breaking all necessary edges.

Put it together

I assemble the table in steps. First dry-fit all the parts, and drill for and drive the screws attaching the stretcher to the top. Then disassemble and glue the legs to the stretcher. When that has cured, commence the final assembly, gluing the stretcher to the legs and then the legs to the top. Finally, with the clamps in place, drive the screws through the stretcher and into the top.

For a finish, I use Wipe-On Poly by Minwax, or pure tung oil wiping varnish from Sutherland Welles. Both are excellent. □

Michael Cullen works wood in Petaluma, Calif., and will be a featured presenter at Fine Woodworking Live 2017 this April.

TWO-STAGE ASSEMBLY

Start with the stretcher. *First glue the legs to the stretcher, measuring to be sure they don't toe in or splay out.*

Try it with dry dowels. *After the first glue-up has cured, test the fit of the base to the top to be sure everything is set for the final assembly. Cullen finds it simplest to do the final assembly with the table upside down. For best clamp purchase, he blocks the table up off the bench and places cauls beneath each leg (left).*

gallery

Inspiration for our readers, from our readers

CINDY GOLDMAN, SPIDER JOHNSON
Austin, Texas

Goldman and Johnson worked together to build this piece and call it "Transitions: Equinoxes" because it goes from raw wood at the bottom to a sculpted tree in the middle to a finished cabinet on top, and also because the outside shows an autumn scene and the inside, spring.

CAMPHOR BURL AND MISCELLANEOUS VENEERS, 10D X 12W X 29H

Photo: Marc Bennett

DANIEL SANTOS
Cummaquid, Mass.

"A tall clock had been on my project bucket list for some time," Santos says, but he got really inspired when given some mahogany with spectacular figure. This clock is a reproduction of one made by Simon Willard of Roxbury, Mass., in the late 18th century. The clockworks were made by David Lindow, the dial painted by Thomas Moberg.

MAHOGANY, 11D X 21W X 92H

Photo: James Goodnough

MAXIME TANGUAY
Mirabel, Que., Canada

When building this Scandinavian cabinet, Tanguay turned to *FWW*'s podcast, *Shop Talk Live*, for advice on how to properly make the joint for the leg and apron. "Mike Pekovich said something about a similar situation in one of his projects, so I went to Instagram to see what he was talking about. I liked his design so much that I decided to integrate it into my project."

WALNUT, MAPLE, AND WHITE OAK, 14D X 60W X 22H

ROBERT STEVENSON
Chula Vista, Calif.

Stevenson's Sheraton-style Federal game table is modeled after one he saw in the Metropolitan Museum of Art in New York City. "This is the second interpretation of this table I have made. The first was done in 1990 and was featured on the back cover of *FWW* #150."

MAHOGANY, PRIMAVERA, SATINWOOD, EBONY, HOLLY
18D X 36W X 30H (CLOSED); 36 SQ. X 30H (OPEN)

Photo: Andrew Patterson

DAVID HUNSTAD
Alden, Mich.

Hidden drawers, inset metalwork, and a tree carving inside the lid are just some of the features of this blanket chest, which Hunstad made for his son's wedding. "I used neodymium magnets in several locations to hold the 'secret' drawers, including a really well-hidden thin document drawer within the rear molding."

CHERRY, MAPLE, AND WHITE ASH, 18⅜D X 43⅞W X 23¼H

BRUCE WILLEY
Nashville, Tenn.

This jewelry armoire was Willey's first furniture project, when he was in the nine-month comprehensive program at the Center for Furniture Craftsmanship in Rockport, Maine. A slender Chinese chest inspired the proportions of the piece, while the influence of Hank Gilpin (Designer's Notebook: "The Gilpinoid Leg," *FWW* #249) can be seen in the narrowed, tapered legs.

MAPLE AND ROSEWOOD, 16D X 20W X 57H

Photo: Chris Pinchbeck

JAMES WATRISS
Arlington, Mass.

When clock maker Bob Shannon developed what he hoped would be a limited production atomic clock, he turned to Watriss to design the case. Watriss made the case with a sculpted interior, which he said "made everything a lot more complicated," especially the three-way compound miters on the top front corners.

WALNUT, 15D X 19W X 62H

Photo: David Schonbron

BILL HEALD
Kennett Square, Pa.

This lap desk was a wedding present for Heald's granddaughter. During the Quaker ceremony, wedding guests signed a certificate as witnesses, and this desk was made to hold it. The top edge contained rare-earth magnets to hold the certificate for signing and was designed to be removed later. A temporary stand held the desk during the ceremony.

WALNUT AND HOLLY, 13½D X 20W X 6½H

ZACH MALCOLM
Portland, Ore.

Malcolm was looking for "a fresh take on a Mid-Century Modern coffee table" with this design. The lower shelf and drawer box are figured walnut, laid out to show continuous grain. Chinquapin keys add strength to the miters, and there is chinquapin inlay throughout. Walnut-capped rods support the glass top.

WALNUT AND CHINQUAPIN, 44D X 20W X 15H

AURELIO BOLOGNESI
Hardwick, Mass.

This revolving wall cabinet is called "Tubular," and was inspired when Bolognesi was looking for unusual ways to open a cabinet. It is a coopered, spiral structure that slides into its own "shell." He designed the hardware as well.

TEAK AND TIGER MAPLE, 20D X 24W X 48H

Photo: Bill Truslow

DANNY KAMERATH
Mason, Texas

Each of Kamerath's carved vessels takes several days to complete. He describes this vessel as "about the size of a soccer ball." Carving kept him busy during a recent transition period when his shop wasn't fully set up, "but in the meantime my sketchbook is filling up with ideas for bigger stuff."

BOX ELDER, APPROX. 8 DIA.

LYMAN EVERETT
Virgin, Utah

Everett's blanket chest was inspired by Adrian McCurdy's chest on the back cover of *FWW* #223. "I love the contrast between the wormy maple and the walnut. The rock on the front came about because I was trying to kick the design up a notch."

MAPLE, WALNUT, AND CEDAR, 22½D X 39W X 28½H

Photo: Alex Santiago

master class

Classic Arts & Crafts inlay

BY KEVIN RODEL

The inlay design that I developed for the head- and footboard of my bed (see pp. 30–37) is based on Glasgow-style motifs that I have adapted to inlay work. I've used some version of this design on several different pieces. Here I'll give you the basic steps so you can try it in your own work.

Templates guide the work

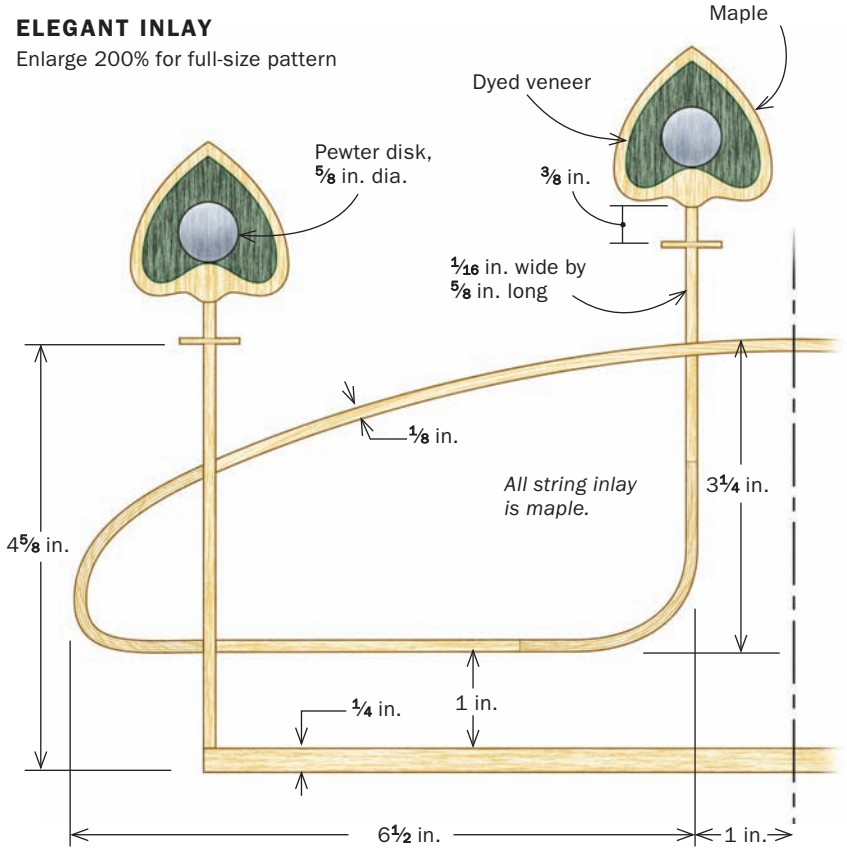
For this design, you'll need several templates made out of ¼-in.-thick Masonite. One is for the curved channels of the pattern and the other two are for the spade and the heart-shaped inserts. These templates will be used several times for each cutting sequence, so they must be "squared" and have a marked centerline for accurate registration.

Rout the channels first

For efficiency and speed, I use two routers for this task. Both have the same size bit, but one is used with a guide bushing and template (for the curved sections); the other with a straightedge for the straight cuts.

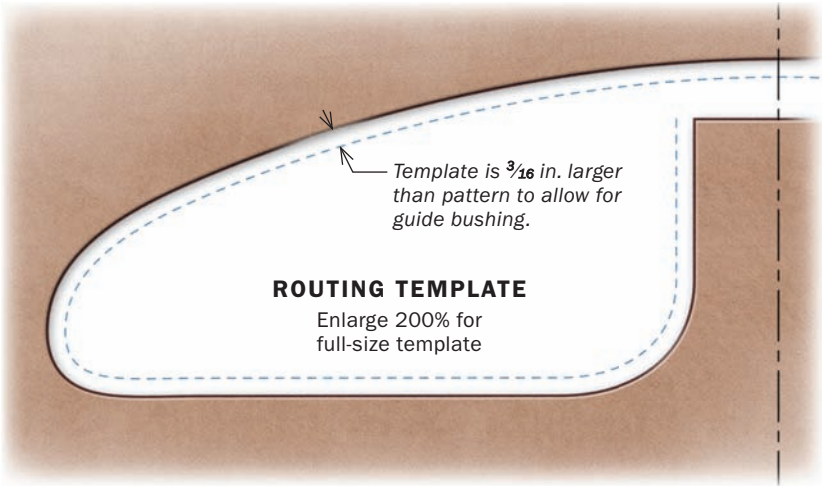
ELEGANT INLAY

Enlarge 200% for full-size pattern

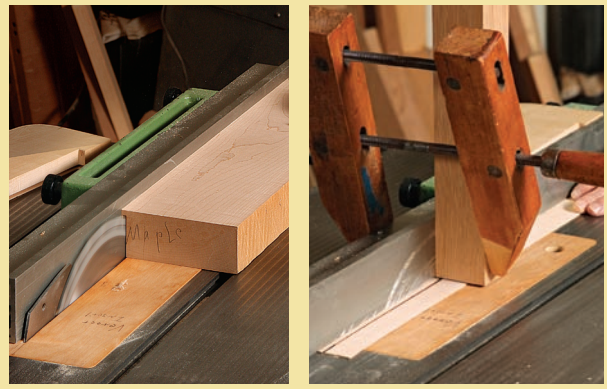


Photos: Anissa Kapsales; drawings: John Hartman

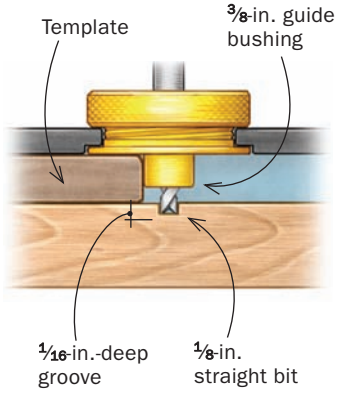
A template for routing



SHOPMADE STRINGING

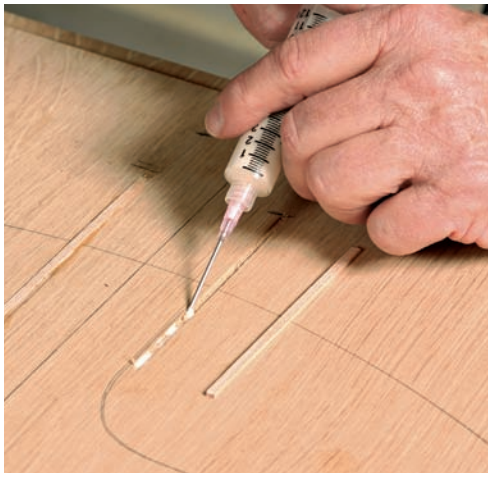


Rodel uses the tablesaw to rip maple strips to thickness, and then he rips them to width. For that job, he clamps a block over the blade to serve as a hold-down.

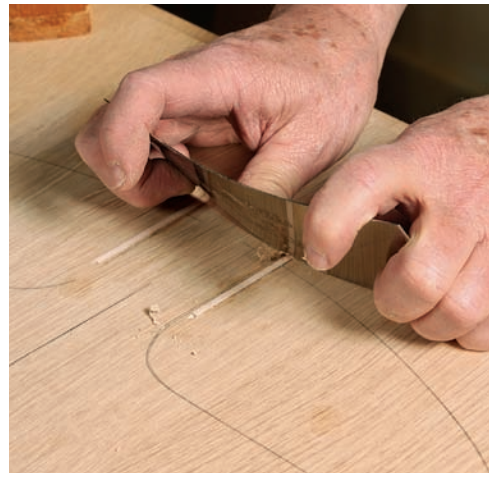


One template, two routers. *Align the centerline of the template with the center of the panel. Rout the vertical, straight sections first, using a router with a guide bushing.*

Ditch the template and add a straightedge. *Using a second router, with no guide bushing, finish the vertical, straight channels. Use a straightedge to guide the work.*



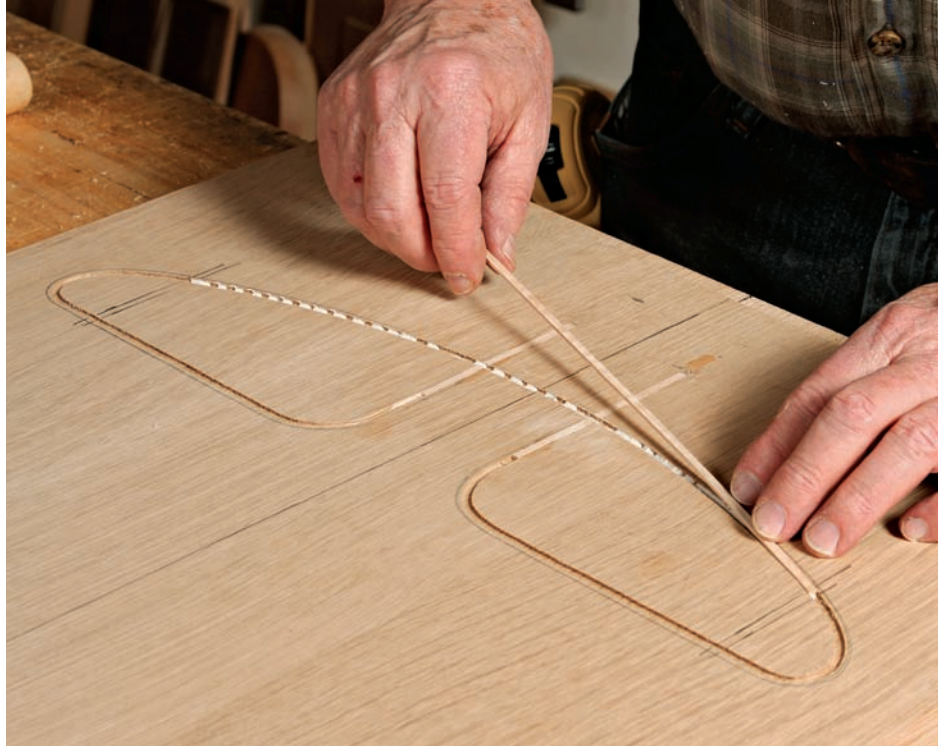
Glue the stringing. *Squeeze glue into the straight sections, then glue in the pieces of inlay. Use a mallet and block to seat the inlay firmly in the channel (right).*



Get it flush. *After the glue dries, plane and scrape the inlay flush.*

Tackle the curves

Rout the remaining design. *Clamp the template back in place, with the centerlines aligned. Then use the router and guide bushing to excavate the remaining parts of the design.*



Gentle curves go in easy. *Trim the lower ends of the straight sections where they meet the curves. Then glue in the gentle-curved sections. Tap it in with a block and mallet, let the glue dry, then flush the inlay to the panel.*

Mini bending form. *To make it easier to install the strips in the sharp bends, Rodel makes a small bending form out of Masonite and laminates six 3⁄128-in. strips of the inlay around the form, using tape to clamp the plies in place (top right). Let the glue dry, clean up the laminates, and install these sections.*

Clamp the main template to the panel, which in this case is the wide slat of the bed's head- or footboard. The top of this template should be flush with the tenon shoulder, with the centerlines of the workpiece and template aligned. Rout the vertical, straight portion of the channels first, using the router with guide bushing and following the template part of the way (see photos, previous page).

Remove the template, then use a spacer or the trim router itself to set up a straight edge for these channels. Finish the cuts with the router and straightedge. Glue in these two inlay strips. When the glue has set, scrape and sand the inlay flush.

Re-clamp the main template, align it carefully, and rout the curved channels. Now you're ready to install the curved strips of inlay. You'll have to square up the lower ends of the straight pieces already installed. Put glue in the channel and press in the strips using a block. To help the strips conform to the tight curves, I actually make a miniature bending form and laminate six of the commercial inlay strips around it.

After the glue dries, plane and sand the inlay flush. Then complete the pattern, routing the rest of the straight components. Once that's done, rout the ¼-in.-wide horizontal channel below

Complete the stringing

Add the last sections. *Cut and fit the rest of the string inlay, then flush the entire pattern to the panel.*

Wide sections are next. *Use a router with a straightedge to cut the channels for the ¼-in.-wide sections of inlay. Then glue in those pieces.*

the main pattern. Use a straightedge to guide the router for these cuts. Glue in the straight pieces and plane and sand them flush. Now you're ready to cut out and add the spade and heart elements.

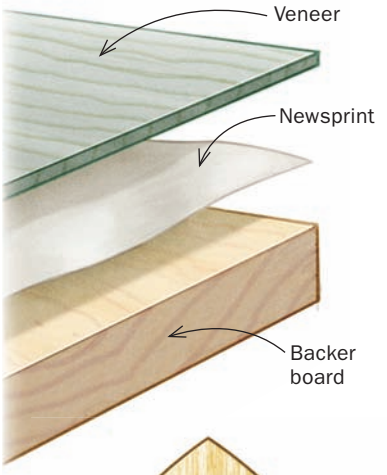
Spades and hearts

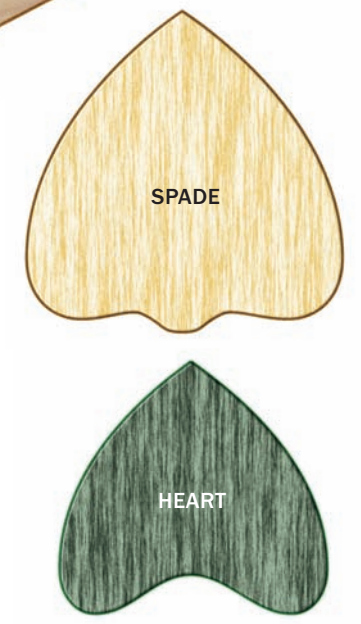
For the spade and heart-shaped inlay, I use maple veneer and a green dyed veneer. Flatten two boards of a scrap of softwood (pine or poplar), coat one face with glue, and apply a sheet of newspaper. Coat the newspaper with glue and apply one of the veneers. Press all this together and let the assembly dry overnight. Make up the same for the other veneer.

When the glue has set, you'll use the spade- and heart-shaped templates with a brass bushing on the plunge router to cut the inserts. Be sure to remove the collar from the bushing for this and set the depth of cut to be slightly more than the veneer thickness. Rout as many insert shapes as you need. When you're finished, pry the pieces away from the backer using a sharp chisel.

To cut the recesses for the inserts, draw a centerline down all the ⅛-in.-wide vertical inlay lines and extend it up beyond the inlay. Now position the spade template where you want the insert to go. Make sure the template's centerline aligns with the centerline you just marked. Put the collar back on the bushing and set the depth of cut to be slightly less than the thickness of the insert. Plunge down and remove all the material. Now glue in the spades and plane or sand them flush. Follow the same process to install the heart inserts. After they have been glued and flushed,

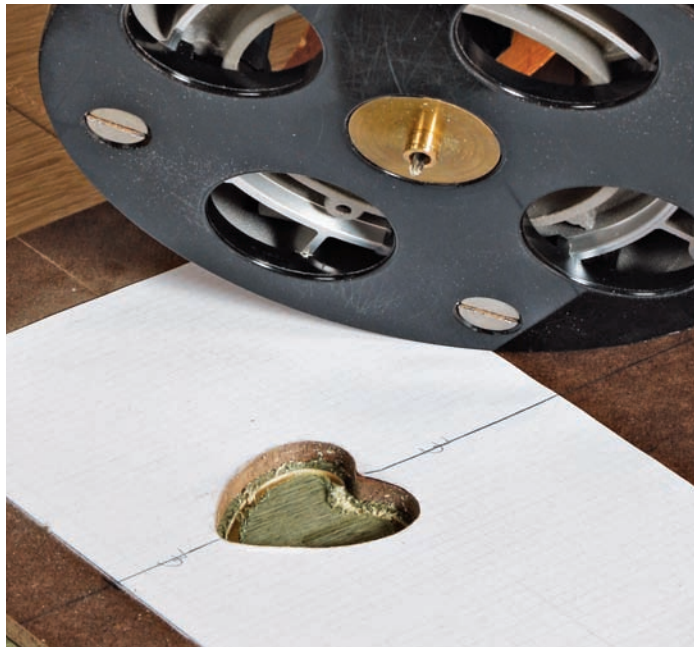
Hearts and spades cap off the design





Actual size

Glue the veneers to a backer. *For the spades and heart inlay, Rodel glued the veneers to a backer board first, with the veneer separated by newsprint.*



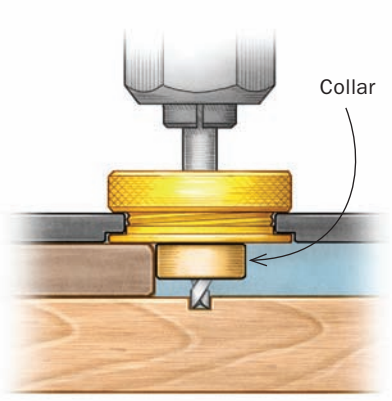
Rout out and free the shapes. *Use a ¼-in.-thick Masonite template and a ⅛-in. straight bit and bushing to cut each shape (above). Then use a chisel to pop the shapes off of the backer board (right).*

I like to insert a metal disk to finish the design. I have mostly used pewter in the past but it is nearly impossible to find in the appropriate sheet thickness anymore. Aluminum will work. The ⅝-in.-diameter disks are punched out using a jeweler's punch set. It works best if the metal sheet is not thicker than 14 gauge. All these supplies can be ordered from jewelrysupply.com. I use a ⅝-in. straight bit on the plunge router to make the recess. No template is needed, just secure the router with a clamp to make the recess accurately. The metal disk must be glued in with epoxy and the closer to the surface the better. Scraping

Punch out the centers. *In the center of the spade and heart inlay, Rodel inserts a ⅝-in.-dia. metal disk. He uses a special punch to make the disks (jewelrysupply.com).*

WOODWORKERS MART

Rout the recesses



Add a collar for the recesses. *To create the recesses for the spades and hearts, use the same template and bit, but add a collar to the bushing.*

Rout for the spades. *The spades go in first. Excavate all of the areas, aligning the centerlines of the template with centers marked on the panel.*

and sanding them flush is difficult. A plane maker's float (see center photo, below) is helpful with removing the excess epoxy and soft metal.

The final step in this inlay design is the narrow 1/16-in.-thick by 5/8-in.-long maple strips just under each spade insert. Lay out the locations, mark for starts and stops, and cut with the trim router against a straightedge. It's easy work after everything else. □

Kevin Rodel will be a featured presenter at Fine Woodworking Live 2017 this April.

Inlay the spades and rout for the hearts. *After gluing in and flushing the spades, install the hearts following the same method.*

Add the centers. *Use a 5/8-in. straight bit and plunge router to make way for the decorative disks. Glue in the disks with epoxy, then scrape away the excess glue.*

Finish off with a cross piece. *The final piece of the puzzle is the narrow straight sections that sit under the spades and hearts. Use a router and straightedge to cut the channels.*

CLASSIFIED

The Classified rate is $9.50 per word, 15 word min. Orders must be accompanied by payment, ads are non-commissionable. The WOOD & TOOL EXCHANGE is for private use by individuals only; the rate is $15/line, min. 3 lines. Send to: Fine Woodworking Classified Ad Dept., PO Box 5506, Newtown, CT 06470-5506. FAX 203-426-3434, Ph. (866) 505-4687. Deadline for the May/June 2017 issue is February 10, 2017.

Hand Tools

USED AND ANTIQUE HAND TOOLS wholesale, retail, authentic parts also (415) 924-8403, pniederber@aol.com always buying.

HIGHLANDWOODWORKING.COM, the world's largest selection of hand planes, plus thousands more fine hand tools.

DIEFENBACHER TOOLS- Fine imported and domestic hand tools for woodworkers. www.diefenbacher.com (720) 502-6687 or ron@diefenbacher.com

Instruction

PENLAND SCHOOL OF CRAFTS, in the spectacular North Carolina mountains, offers one-, two-, and eight-week workshops in woodworking and other media. (828) 765-2359. www.penland.org

Miscellaneous /Accessories

WOODSLICER.COM, re-sawing blade rated best-performing 1/2-in. bandsaw blade by *Fine Woodworking*. 800-241-6748.

Wood

CUBAN MAHOGANY 40 years old storm fall. Great color and figure. 4/4 – 16/4 plus wide boards. (615) 563-2831, asharp@dtccom.net.

NORTH/CENTRAL VIRGINIA: Complete line of premium, kiln-dried hardwoods. Culpeper/Warrenton area. (540) 825-1006. cpjohnsonlumber.com

FIGURED CLARO WALNUT for architectural as well as musical instrument projects. (530) 268-0203. www.woodnut.com

RARE WOODS. Ebony, boxwood, rosewood, satinwood, ivory wood, tulipwood + 120 others. (207) 364-1073. www.rarewoodsusa.com

EISENBRAND EXOTIC HARDWOODS. Over 100 species. Highest quality. Volume discounts. Brochure. 800-258-2587. eisenbrandhardwoods.com

QUALITY NORTHERN APPALACHIAN hardwood. Custom milling. Free delivery. Bundled, surfaced. Satisfaction guarantee. Niagara Lumber. 800-274-0397. www.niagaralumber.com

WOOD AND TOOL EXCHANGE

Limited to use by individuals only.

For Sale

Fine Woodworking issues #1-256 complete, including 19 like-new slipcases. Excellent cond. $350. Pick-up Irvington, VA 22480. (804) 438-5151.

COMPLETE COLLECTION of *Fine Woodworking* issues #1-258 (except #104, 120, 188, 255). $400 plus S/H or P/U NYC area. (212) 580-1216 or nk220@caa.columbia.edu

Fine Woodworking issues nos. 1-192. Brand-new condition. $325.00 plus shipping. From western NY; COD, (716) 307-0081.

Fine Woodworking issues 1-4 and 25-258 plus *Fine Woodworking Techniques* 2- covers issues 8-13. $400 plus shipping from Pittsburgh PA (412) 279-0191.

INDEX TO ADVERTISERS

That's a good line

BY JONATHAN BINZEN

The flowing forms of David Fisher's bowls (see the back cover) are derived as much from the hand tools he uses as from his imagination. "The way the adze is swung, the way a gouge is pushed through the wood, actually aid in creating the lines I'm striving for," he says. "I think it would be much harder to do this with a grinder." He uses the natural sweep of his adze and his gouges to maximum decorative effect, creating the arching flutes and gleaming, faceted surfaces that distinguish his bowls. He often adds incised or chip carving as well, relying on gouges and a penknife for his illustrative carving and lettering. Fisher seeks new shapes as he carves his bowls but his work has roots in traditional bowl forms, and it was particularly inspired by the Swedish bowl carver Bengt Lidstrom. □

Photos:, except where noted: David Fisher; top left: Jonathan Binzen

Woodworking help for disabled Vets

L to R: Greg Hairston (Navy), Rob White (Marine), Brad Madajczyk (Marine), Rick Blair (Army), Phillip Gustavsson (Army), Andy Nichols (Army), Marshall Rommel (Marine)

Meet my new friends! Seven disabled Vets recently joined me for a week of hand tool training. Anonymous donors paid their expenses, travel, hotel, tuition, meals and $2k worth of tools each! As you can see from their quotes, this worked and we are committed to continuing it. We have a staggering number of Vets taking their own lives every day, "we the People" need to do more than just thank a Vet and start helping these Heroes.

The problem: WW2 Vets re-entered a trade based society, and exposure to the creative use of the hand and mind served as a great "distractive therapy" for those suffering from combat-related injuries. Most of today's Vets are unaware of hand tool woodworking benefits, no dust, no danger and no noise!

A solution: My membership-based online workshop broadcasts a daily 30-minute episode for current or future viewing. We offer this FREE to disabled Vets and we need YOU to spread the word! It provides an introduction to hand tool woodworking, motivates, and instructs. For Vets needing tools we created a fund to help as many as we can. We donate 10% of our saw sales to the fund. It's our plan to continue offering hands-on workshops as often as funds permit. Each class of 12 will combine 6 disabled Vets (our guests) and 6 regular folks (paid students). The latter "lucky six" will get to meet society's finest, for me it was a life changing experience to befriend those who stepped in front of danger for others. "Greater love has no one than this, that he lay down his life for his friends." John 15:13

Now is the time, thank you for your support.
Rob Cosman and his team, Jake, Dave and Frick

Andy Nichols: "The best thing that has happened to me in the past 12 years."

Rob White: "Not only did I receive skills to enhance my woodworking tool kit, but I also received some much needed healing inside (emotional, physical and spiritual)."

Phillip Gustavsson: "Before the workshop, I was depressed. Now, not only can I cut perfect dovetails, I am happy and I am able to focus."

Brad Madajczyk: "It's connected me with a community of veterans and woodworkers who made me feel like I belonged."

Marshal Rommel: "I had a life changing experience and I hope more Vets can find pleasure in woodworking."

Richard Blair: "I am able to find a much needed relief and peace as I am woodworking. The best therapy I have experienced."

Gregory Hairston: "Working wood with well-tuned and sharpened tools creates a zone for me where my stress and anxiety cease to exist. Building a piece of furniture is a process. The process is therapeutic for me."

ROB COSMAN
YOUR HAND TOOL COACH

TOOLS: www.robcosman.com
TRAINING: www.robsworkshop.com

Know a disabled Vet Hand Tool Woodworking might help? Direct them to our site:

Robsworkshop.com/vets

Want to help? Go to GoFundMe.com and search Rob Cosman

Carving Class

Any day during the school year you'll likely find David Fisher, chalk in hand, in a classroom at the high school in Greenville, Pa., the small town in the northwest corner of the state where he and his wife grew up and where he has taught history for 24 years. In the evenings, though, Fisher trades teaching for working wood. In the snug, unplugged shop he converted from a one-car, attached garage, he swings axes and adzes, wields gouges and drawknives, as he carves bowls from the log. For Fisher, whose shop contains a brimming bookshelf, learning to work green wood was mostly a matter of "reading and trying, reading and trying." He aims to give his bowls beautiful, flowing lines, and he takes pleasure in the finished piece. But he also finds joy in the process itself: "the smell of the wood as you split the log, the feel of the shavings as they come off the piece, the sound of the tools as they slice the wood."

—Jonathan Binzen

Photos: David Fisher

How They Did It Turn to p. 86 to see a collection of other bowls by David Fisher.

Audio Slide Show To see a wide range of pieces carved by David Fisher and to hear him talk about them, go to FineWoodworking.com/260.