

MAKING TOOLS: Build Your Own Hand Plane

Popular Woodworking

OCTOBER 2021 | #261



DOVETAILED TOOL CHEST



CIRCLE CUTTING JIG

A Must-Have Bandsaw Jig

SHAKER SEWING TABLE

The Perfect Workstation Build



Woodpeckers®

Precision Woodworking Squares

- One-piece central core machined to exacting tolerance.
- Stainless model includes scribing guides for perfect parallel layout.
- Lip formed by base keeps the square flat on your work.
- Scales engraved to a tolerance of $\pm .004$ " total stack-up error.
- Guaranteed accurate to $\pm .0085^\circ$ for life.
- Available in inch or metric graduations.



Precision Woodworking Square

Includes a Woodpeckers wall-mountable wooden case
12" 1281....\$129.99
12" 1282SS Stainless Steel....\$139.99
 Other Sizes Available on Woodpeck.com

Precision T-Squares

- Precisely spaced 1mm holes machined every $1/16$ ".
- Laser engraved scale accurate to $\pm .004$ ".
- Outer edges machined to a 30° bevel for easy reading.
- 600mm metric version available.



Precision T-Square

Includes a wall-mountable Rack-It™
TS-12 12"....\$89.99
TS-24 24"....\$124.99
TS-32 32"....\$154.99

Paolini Pocket Rules

- Sliding stop simplifies repetitive marking.
- Stop doubles as stand to set router bit & saw blade height.
- Anodized aluminum or stainless steel blade with laser engraved scale accurate to $\pm .004$ ".
- Available individually or as a set.
- Available in inch, metric or combination.



Paolini Pocket Rule

Includes a wall-mountable Rack-It™
6", 8", 12" Set....\$124.99
SS 6", 8", 12" Set....\$149.99
 Other Sizes Available on Woodpeck.com

Saddle T-Squares

- Scribing holes on $1/32$ " centers.
- Milled from solid aluminum billet.
- Mark face and edge at the same time.
- Edges beveled 30° to reduce parallax.
- Scale accurate to $\pm .004$ ".
- Available individually or as a set.
- Available in inch or metric graduations.
- Metric scribing guides on 1mm centers.



Includes a wall-mountable Rack-It™
Saddle T-Square Set....\$299.99

Includes a Systainer case
Saddle T-Square Set....\$369.99
 Other Sizes Available on Woodpeck.com

in-DEXABLE Combination & Double Squares

- Push-button index locks head at any full-inch.
- Laser-cut scribing guides for precision parallel lines.
- Retractable support keeps head aligned to your stock.
- Combination & Double Squares in two sizes.

in-DEXABLE Squares

Includes a wall-mountable Rack-It™
Double 6"....\$129.99
Double XL 12"....\$169.99
Combination 12"....\$169.99
Combination XL 18"....\$199.99
Set w/ MDF Wall Case....\$649.99



EZ Edge Corner Plane

- Plane sole is a perfect 90° to fit your stock.
- 3 radius profiles and 45° chamfer available.
- Hardened blades are easy to re-hone.
- Profile perfectly centered on your stock.



EZ Edge Corner Plane

Includes a wall-mountable Rack-It™
1/8", 3/16", 1/4" Radius
-or- 45° Chamfer....\$159.99
Deluxe Set....\$569.99



Dust Port fits either end!

Drill Press & Hose not included.

DP-PRO Drill Press Table System

- DP-PRO Fence integrates dust collection & delivers accuracy.
- Micro-adjustable DP-PRO Flip Stops.
- DP-PRO Drawer Base simplifies installation on any drill press.
- DP-PRO Tables are full 1" thick with laminate top & bottom.
- Extension Wings for long material support.
- Drawer Base and Fence compatible with all drill press tables.

NEW TOOL

DP-PRO Drill Press Table Master System

36" Table, 24" Fence....\$399.99
36" Table, 36" Fence....\$419.99
48" Table, 36" Fence....\$449.99
48" Table, 48" Fence....\$469.99



AUTO-LINE DRILL GUIDE™

- Drill perfectly perpendicular holes anywhere.
- Fence fits on all 4 sides and works 4 different ways.
- Laser-engraved target lines indicate center of bit.
- Works with nearly all 1/2" and smaller drills.
- 1" capacity inside frame and 2" capacity outboard.
- Optional extensions and stops available.

Auto-Line Drill Guide
Drill Guide....\$259.99
Deluxe Kit....\$369.99



Drill not included.

Offset Base System

Made for Festool® Domino

- Attaches to both Festool Domino DF-500 & DF-700 XL.
- Wider, deeper referencing surface improves stability.
- Precision-milled spacers center mortise on standard dimensions.
- Outtrigger carries stops for accurate repeat spacing.
- Available in inch or metric graduations.

Includes a Systainer case
Offset Base System....\$429.99



Domino not included.

Multi-Function Router Base

- Micrometer adjustment positions cutter perfectly.
- Cut parallel to existing edge or pivot in a perfect arc.
- Wide, stable base improves routing accuracy.
- Works with most routers that have guide rod holes.

Multi-Function Router Base
Includes 1 Pair Extension Rods
w/ 5/16" Guide Rods....\$239.99
w/ 3/8" Guide Rods....\$239.99
w/ 10mm & 1/4" Guide Rods....\$239.99



Router not included.

Parallel Guide System

Made for Festool® Track Saws

- Makes repetitive, parallel cuts with table saw accuracy.
- Maximum rip capacity of 52".
- Narrow stock guides deliver accurate results down to 1/4".

Includes a Systainer case
Parallel Guide System....\$479.99



Saw not included.



RIP-FLIP Fence Stop System™

- Bring your rip fence back to the same spot each and every time you need it.
- Stop drops out of the way when not needed, flips up when you want it.
- Couple two stops together for perfect fitting dados in two cuts.
- Models available for SawStop T-Glide Fences® and Powermatic Accu-Fences®.
- Extra stops and dado couplers available. Add as many as you need!

RIP-FLIP Fence Stop System
36" Capacity - Fits SawStop®....\$209.99
30" Capacity - Fits Powermatic®....\$219.99
52" Capacity - Fits SawStop®....\$219.99
50" Capacity - Fits Powermatic®....\$229.99

EXACT-90 Miter Gauge

- Patent Pending miter bar adapts to most stationary table saws.
- Dual T-washers and 5 leaf springs ensure perfect tracking.
- Fence is engraved with accurate scale.
- Micro-adjustable flip stop works with or without sacrificial fence.
- Fence extends to take stop out to 45" from blade.

EXACT-90
Miter Gauge....\$299.99
25.5" Miter Bar....\$69.99



Woodworkers Edge Rules

- Wraps around the corner of your stock for instant alignment.
- Mark face and edge at the same time.
- Optional stops simplify repetitive marking.
- Easy to use in the middle of a panel, as well.
- Sizes to fit every need...6-inch is perfect in your pocket.
- Available individually or as a set.
- Available in inch or metric graduations.

Woodworkers Edge Rule
Includes wall-mountable Rack-It™.
Edge Rule Kit & 4 Stops....\$109.99
Other Sizes Available on Woodpeck.com



For more sizes & ordering options for these tools plus hundreds more, visit Woodpeck.com

*NOTE: The Festool, DF-500, DF-700 XL, SawStop & Powermatic brand names are the registered trademarks of the respective companies and are not associated with Woodpeckers, LLC.

Contents

OCTOBER 2021 | VOL. 41, NO. 5

Popular
Woodworking

POPULARWOODWORKING.COM

■ Build

24 Shaker-Inspired Sewing Counter

As much as this piece is a homage to Shaker design, it's also quietly a love letter to both hand tools and shared shop spaces.

BY KENAN ORHAN

38 Razee-style Jack Plane

Style and utility converge with this classic wood-bodied hand plane.

BY DILLON BAKER

46 Dovetailed, Curly Maple Tool Chest

Build a tool chest that's worthy of your tools, and customize it to fit exactly what you need.

BY LOGAN WITTMER



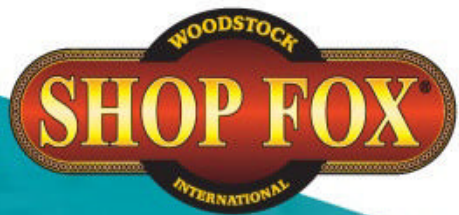
46



38



24



Innovative Products

SINCE 1989!

W1680

17" 1 HP FLOOR MODEL DRILL PRESS

- Motor: 1 HP, 110V, single-phase, 10A
- Drilling capacity: 1" mild steel
- Table tilts: 90° in both directions

⚠ WARNING! †¹

Made in an ISO 9001 Factory



W1685

1 ½ HP DUST COLLECTOR

W1666

2 HP DUST COLLECTOR

- Motor (W1685): 1½ HP, 110V, single phase, 3450 RPM, 16A
- Motor (W1666): 2 HP, 220V, single-phase, 3450 RPM, 12A
- Air suction capacity: 1280 CFM (W1685), 1550 CFM (W1666)
- Height with bags inflated: 78"

⚠ WARNING! †¹

Made in an ISO 9001 Factory



W1764

1/8 HP MINI POWER FEEDER

- Motor: 1/8 HP, 120V, 1.2A
- Max. height of rollers: 6"
- Vertical movement: 10¼"
- Horizontal movement: 10¼"

⚠ WARNING! †¹



Made in an ISO 9001 Factory

W1843

KNIFE BELT SANDER/BUFFER

- Motor: 1 HP, 110V, single-phase, 1725 RPM, 14A
- Belt size: 2" x 72"–76" range
- Left arbor: 1" x 8½" extension with 5/8" arbor

⚠ WARNING! †¹



W1811

10" 5 HP SLIDING TABLE SAW

- Motor: 5 HP, 230V, single-phase, TEFC, 3450 RPM, 19A
- Max. ripping width with standard rip fence: 33"
- Main blade diameter: 10"

⚠ WARNING! †¹



W1852

22" X 42" VARIABLE-SPEED WOOD LATHE

- Motor: 3 HP, 240V, 3-phase (with inverter), 8A
- Distance between centers: 42"
- Spindle threads: 1¼" x 8 TPI RH

⚠ WARNING! †¹



Made In an ISO 9001 Factory



www.woodstockint.com

800-840-8420

SALES@WOODSTOCKINT.COM

WHOLESALE ONLY

AVAILABLE FROM DEALERS NATIONWIDE

Please Visit Our Website Or Call Toll Free To Find An Authorized Dealer Near You

⚠ WARNING! †¹ : Cancer & Reproductive Harm

Some products we sell can expose you to chemicals known to the State of California to cause cancer and/or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov/product



SHOP FOX® machines are backed by a 2-Year Warranty!

SHOP FOX® is a registered trademark of Woodstock® International, Inc.

Contents

OCTOBER 2021 | VOL. 41, NO. 5

Popular
Woodworking

POPULARWOODWORKING.COM



■ Connect

06 From The Editor

The pursuit of perfection.

08 Workshop Tips

Handy tips for finishing, dust collection, and more.

13 New Tools

A look at new products from *Woodpecker* and *ISOtunes*.



■ Craft

16 Hand Tool Technique

Simple steps for hand-cutting beautiful dovetails.

BY LOGAN WITTMER

20 Boutique Toolmakers

Andrew Kimmons' mission is to produce some of the highest quality hand tools around.

BY LOGAN WITTMER

54 Jigs & Fixtures

This circle cutting jig is a must-have jig for any bandsaw.

BY WILLIE SANDRY



62 Spotlight

An in-depth discussion with Alma Villalobos, a Chicago-based woodworker.

INTERVIEW BY COLLIN KNOFF

64 End Grain

One man's journey to reproduce the iconic Studley mallet.

BY LOGAN WITTMER

Number 261, October 2021, *Popular Woodworking* (USPS #752-250) (ISSN 0884-8823) Canadian Agreement No. 40025316 is published 6 times a year, February, April, June, August, October, and December (which may include an occasional special, combined, or expanded issue that may count as two issues, by the Home Group of *Active Interest Media HoldCo, Inc.* The known office of publication is located at 5710 Flatiron Parkway, Suite C, Boulder, CO 80301. Periodicals postage paid at Boulder, CO, and additional mailing offices. **POSTMASTER.** Send address changes to *Popular Woodworking*, P.O. Box 37274, Boone, IA 50037-0274. **PRIVACY STATEMENT:** *Active Interest Media HoldCo, Inc.* is committed to protecting your privacy. For a full copy of our privacy statement, go to aimmedia.com/privacy-policy.

EHK Trigger Clamps

Durability. Strength. Quality.

Engineered to offer a clean design, comfortable handles, up to 600 lbs. of potential clamping force, and the ability to quickly transform from clamping to spreading without using tools.

Well made clamps that work as hard as you do.

A full range of clamping force from 40 lbs to 600 lbs; capacities from 4½" to 50".

BESSEY. Simply better.



besseytools.com



NORTON
SAINT-GOBAIN

ProSand®

Put Productivity
**IN THE PALM
OF YOUR HANDS**

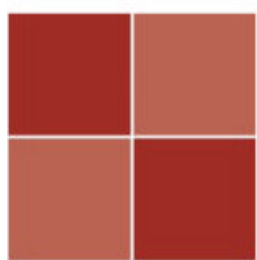


For more information on ProSand visit:
<http://nortonsga.us/pw0518>

GET IT. FINISHED.™

© Saint-Gobain 2020





Connect

■ FROM THE EDITOR

The Pursuit of Perfection

By Logan Wittmer

Throughout my career, I've sat in on a variety of interviews with candidates, trying to fill various positions. The one phrase that always leaves a bad taste in my mouth is "I'm a perfectionist." Now, don't get me wrong. Perfection is a fine goal to have. Heck, I always strive for perfection. But when people ask if I'm a perfectionist, my response is always: "Absolutely not." Hang with me and let me explain where I'm going with this.

As you read through this issue, you'll notice a few different projects with hand-cut dovetails, and I even have an article on hand-cutting them. Jokingly, we started calling this the dovetail issue. For some reason, people always see dovetails, and in particular, hand-cut dovetails, as the epitome of craftsmanship. I don't really agree with that train of thought, but that's fine if you're in that group. What I don't want is for someone to be afraid to try their hand at dovetails on a project because they're afraid they'll be sloppy or have gaps.

Perfection is a fine goal to have, but sometimes it would behoove us to take a step back and put everything into perspective—there are very few times where perfection *actually* matters. I would challenge you to take any handcrafted object and convince me that it's perfect. To me, that's what gives a handmade item its charm. It's part of its story, its uniqueness, and the story of the craftspersons behind it.



Being thick-headed, I need to try something for myself before I fully grasp and understand it. Years ago, whilst learning to cut dovetails, this meant sitting in my shop and working through the process of cutting dovetails on scrap, creating shop fixtures like this bench hook. It meant plenty of blown apart or sloppy joints. But as they say, practice makes perfect... or as close to perfect as you can get.

If you've never hand-cut dovetails before, and you decide to try them, who cares if they have some gaps here or there? Your next ones will be better. If your chamfer isn't completely consistent, does it matter? I know that it might sound like I'm being dismissive and saying that sloppy work is acceptable... I'm not, although sometimes it might be.

What I'm trying to get at is that, if in your shop (or your everyday life for that matter), you're beating yourself up trying to get the perfect joint, step back and recenter yourself. Sometimes, the hardest thing is to know when to stop picking at it.

When I stopped chasing perfection in my woodworking, I ended up with a lot more mental capacity. This extra mental space allowed

me to take a step back and mentally (and physically) slow down. As a result, I became more methodical in my work. In the end, a few things happened. For one, the quality of my work improved. This slower, more relaxed pace allowed me to concentrate on the steps of what I was doing instead of the fear of it not being perfect.

The second thing that happened was a surprise. I have ended up enjoying shop time much more. My shop (and, in turn, me) is much happier when I'm no longer chasing perfection but enjoying the process.

PHOTO BY THE AUTHOR



THE BEST
freud®
USE THE BEST

***The Industry's
Most Complete Range
of Coated CNC Bits***



**UP TO 2x LONGER
CUTTING LIFE**

Item: 87-308
3-Piece Black I.C.E. Fine Detail CNC Set

With over 25 years' experience in developing premium CNC bits, Freud offers the most complete range of finite, yet durable CNC bits that deliver:
UP TO 2X LONGER CUTTING LIFE, UNMATCHED PERFORMANCE AND SUPERIOR QUALITY FINISHES.



Specially formulated with exclusive Freud-made TiCo™ Hi-Density carbide and unique cutting geometries, these solid carbide bits offer an unmatched cutting performance and durability on workshop and small CNC machines.



Featuring the industry's first functional coating, Black I.C.E. (Industrial Cooling Element) protects the solid carbide cutting edge by creating a slick, lubricant like action for less friction, heat and pitch buildup.

Whether you are creating detailed inlays, 3D decorative projects or sign making, Freud's unique, expanded offering of over 100 bits and sets delivers superior cutting performance and quality finish.



@FreudTools



@FreudTools



FreudTools.com/cnc



@Freud_Tools



@FreudTools

©2021 Diablo/Freud Tools. All rights reserved. All specifications subject to change without prior notice.

WORKSHOP TIPS

A True Black

Ebonizing wood isn't as easy as it seems. Black dyes usually leave a bluish or greenish cast, oil stains look washed out, and paint obscures the grain. But a good India ink, which is really a very finely ground pigment, does the job. It's available as a fast-drying waterborne liquid at most art or hobby stores.

As with any waterborne finish, raise the grain before you apply the ink. Dampen the wood with water, let it dry and sand lightly to cut down the swelled fibers. Now, brush on the ink. Once dry, it's compatible under any finish. — *George Riemann (Ann Arbor, MI)*



Unclog Your Paper



When you're scuff-sanding between finish coats, it's not unusual to get some loading on your sandpaper, even when the top coat is good and dry. It's frustrating when you know the grit is still good but those clumps of powered finish ruin its effectiveness. Don't toss it out just yet. Clean the clogged paper with a stiff nylon brush, usually sold as stripping brushes. The bristles knock off these pesky clumps and restore the paper to a usable condition.

Bigger Bends Move More Air

Join two standard 90° elbows together to make one super elbow. Why? For maximum efficiency. The turning radius of a dust collection pipe should be 1.5 to 2 times the diameter of the pipe itself. A standard 90° elbow by itself takes too sharp a turn. Elbows can be twisted to form any angle, so bend two into 45° turns and join them together.



PHOTOS PROVIDED BY THE AUTHORS

Popular Woodworking

OCTOBER 2021, VOL. 41, NO. 5

EDITOR IN CHIEF ■ Logan Wittmer
SENIOR DESIGNER ■ Danielle Lowery
DIGITAL EDITOR ■ Collin Knoff
PROJECTS EDITOR ■ Dillon Baker
TECHNOLOGY EDITOR ■ Chris Fitch
PHOTOGRAPHERS ■ Chris Hennessey, Jack Coyier, Austin Day
COVER PHOTOGRAPHER ■ Austin Day
CONTRIBUTORS ■ Willie Sandry, Kenan Orhan



PRESIDENT, HOME GROUP ■ Peter H. Miller
VP & GENERAL MANAGER ■ Brian Van Heuverswyn
ADVERTISING SALES DIRECTOR ■ Heather Glynn Gniazdowski
CATAPULT CREATIVE LABS ■ Amanda Phillips
DIGITAL PRODUCER ■ Josh Cohn
FINANCE MANAGER ■ Bart A. Hawley
CIRCULATION DIRECTOR ■ Paige Nordmeyer
ADVERTISING SALES COORDINATOR ■ Julie Dillon; jdillon@aimmedia.com
ADVERTISING SALES MANAGER ■ Jack Christiansen; Tel: 847-724-5633 jchristiansen@aimmedia.com



CHAIRMAN ■ Andrew W. Clurman
EVP & CFO ■ Brian Sellstrom
DIRECTOR OF PRODUCTION ■ Phil Graham
SENIOR VP, OPERATIONS ■ Patricia B. Fox
VP, DIGITAL PRODUCTS & PLATFORMS ■ Katie Herrell
CTO ■ Nelson Saenz
CHAIRMAN EMERITUS ■ Efreim Zimbalist III

EDITORIAL CONTACT
 lwittmer@aimmedia.com

SUBSCRIPTIONS: For subscription questions or address changes, visit www.popularwoodworking.com/customerservice or call 877-860-9140 (U.S. only). US subscription rate \$24.95, single price \$6.99. Canadian subscription rate \$34.95 USD. Canadian Agreement No. 40025316.

CUSTOMER SERVICE: P.O. Box 842, Des Moines, IA 50304-0842, subscriptions@aimmedia.com

COPYRIGHT: 2021 by Active Interest Media Holdco, Inc. Boulder, Colorado. This publication may not be reproduced, either in whole or part, in any form without written permission from the publisher.



ENGRAVE | CUT | INLAY

- Laser engrave & cut wood at the touch of a button
- Customize woodworking projects for added value
 - Laser system work areas up to 40" x 28"
 - Wattage configurations up to 120
 - USA made



888.437.4564 | sales@epiloglaser.com | www.epiloglaser.com/popwood



SAW YOUR OWN LOGS INTO LUMBER



15 Sawmill Models
starting with the LX25 at \$3,295*



NEW 2021 Product Brochure!



FOR THE LOVE OF WOOD

*Wood/Rush Cord Chair Milled
and Made by Nino Cocchiarella,
Heltonville, IN.*



©2021 Wood-Mizer LLC
*Price subject to change without notice.

woodmizer.com

866.948.2185

Financing Available!



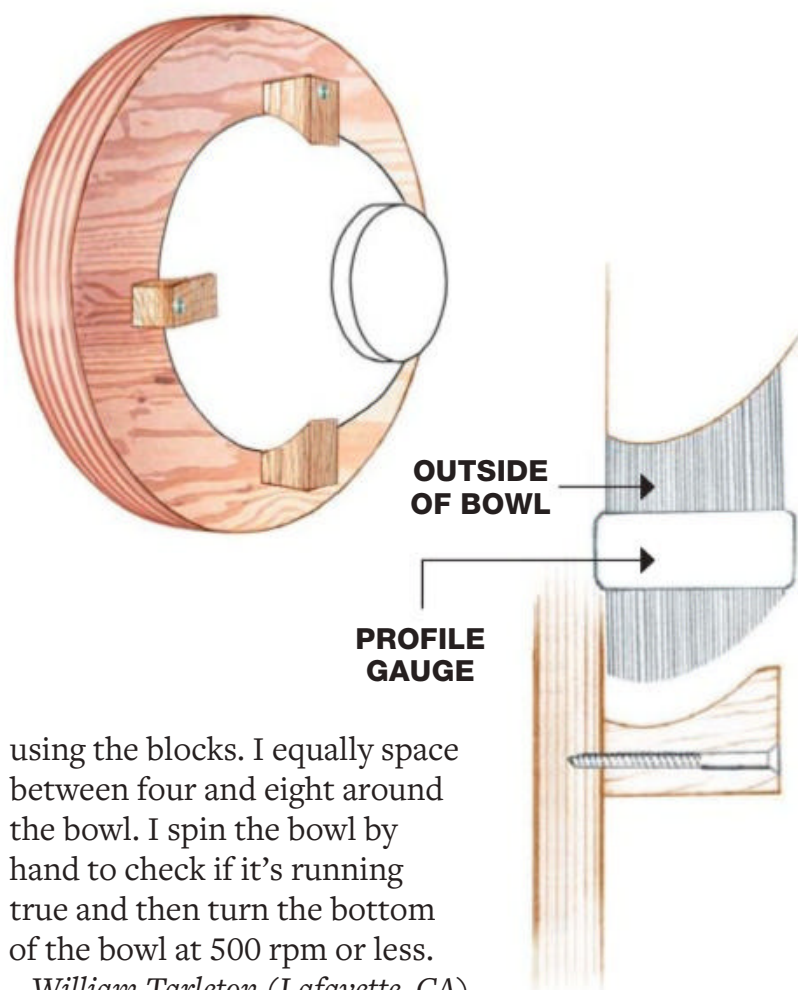
Wood-Mizer
from forest to final form®

WORKSHOP TIPS

Turning Bowl Bottoms

I made a lot of turned “kitchenware” such as bowls and platters. I’ve perfected most of my techniques, but I struggle with turning a smooth foot. I’ve tried many off-the-shelf jigs, like chucks with adjustable jaws, but haven’t been satisfied. The method I’ve come up with allows me to grab any bowl with a top larger than its foot (convex shape) so that the bottom can be easily turned and finished. I start by gluing my bowl blank on a sacrificial plywood disc which in turn is mounted to my lathe’s faceplate. I turn the inside of the bowl and as much of the outside as possible. I then mount a new $\frac{3}{4}$ " plywood disc on the faceplate and scribe onto it a circle the size of the bowl’s top.

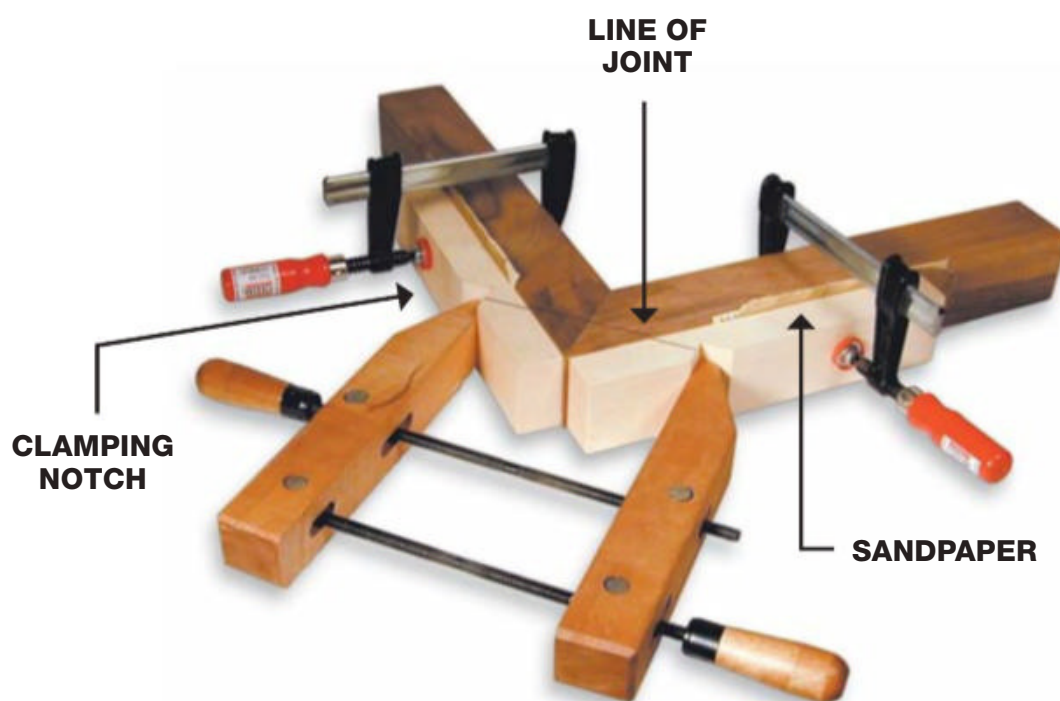
Now, here’s the trick: using a profile gauge (a device made of many small, steel pins sandwiched between two plates; the ends of the pins are pressed against an object to copy its profile), I make four blocks with the same shape as the outside of the bowl. The bowl, centered on the circle, is clamped rim down on the plywood plate



using the blocks. I equally space between four and eight around the bowl. I spin the bowl by hand to check if it’s running true and then turn the bottom of the bowl at 500 rpm or less.

—William Tarleton (Lafayette, CA)

Corner Clamp for Thick Stock



Clamping miters in thick stock is no problem with this quick setup. Cut notches in a pair of cauls. The notches need to line up with the center of the miter. Now, you can clamp the cauls to the workpieces, and use a large handscrew to pull the joint together. For extra grip, add sandpaper between the cauls and the faces of the workpiece.

Pegboard Extenders

Here’s an easy way to expand the capacity of your pegboard hangers. Drill the ends of several 3" long dowels ($\frac{1}{2}$ " diameter works great) and glue them on the metal hangers with epoxy. Now bulky items like extension cords and rolls of tape can join the smaller tools on your wall. —Walt Caluson



PHOTOS PROVIDED BY THE AUTHORS



NEED HELP?
CLAMP DOWN
ON WASTING TIME!

MEET THE SPEED CLAMP ADAPTOR

Provides efficiency and accuracy with less repetitive motion. Made in the USA using rigid material for lasting durability. This tool is designed to attach to a motorized drill driver using a standard 3/8" socket adaptor. Multi-use tool for rapid operation of C-clamps, furniture clamps, corner frames, small vices, wing nuts, screw hooks and more. Great value, purchase two C-Clamp Adaptors for under \$10. Dimensions: 1.35" diameter x 1.70" length.

Visit our website at www.CleverShopTools.com to purchase a pack of C-Clamp Adaptors!

CleverShopTools.com • Made in the USA • CleverShopTools@gmail.com • (714) 651-2673

est. 1978

HIGHLAND

Woodworking
fine tools & education

800-241-6748

Wood Slicer®

Our legendary resaw blade

- Cuts smoother
- Works faster

- Sounds quieter
- Makes veneers

- Stays sharp longer
- Rated #1 by FWW Magazine

W. Osburn
"The cut was so easy, and the wood tracked through the blade straight as an arrow."

D. Petrides
"I didn't think it was possible to get that smooth of a cut out of a bandsaw."

R. Simon
"The cuts were so good I had to look twice to see the cut side from the machine planed face!"

www.highlandwoodworking.com

Popular Woodworking Video

700+
WOODWORKING
VIDEOS.

24/7
ACCESS.

It's a Netflix for makers, where you can binge on projects, techniques and pro tips to advance your craft.

- Full-builds from Frank Klausz, Jeff Miller, Alf Sharp, and more leading woodworkers
- 30+ seasons of the Woodwright's Shop with Roy Underhill
- 60+ episodes of I Can Do That!
- Plans and sketches to build the projects yourself

SIGN UP AT
videos.popular.woodworking.com

Oneida®

Air Systems

The Industry Leader in Dust Collection

V-SYSTEM®

HEPA CYCLONE DUST COLLECTOR

Stacking Sound Filter reduces sound by an additional 6 - 8 dB.

U.S. Patents
8377160
8496719
9370740
7247180
Pat. Pending
ETL Approved

- Industrial U.S. made motor available in 1.5 or 3 HP
- HEPA certified filter media
- High-efficiency molded cyclone separator
- Ultra-quiet (72-74 dBA)
- Dust Sentry - infrared dust bin level sensor
- Durable, lightweight construction for quick and easy installation
- 35 gallon steel dust bin included (larger sizes available)

MINI-GORILLA®

PORTABLE CYCLONE DUST COLLECTOR

U.S. Patents
7824457
7937803
8377160
8491686
8496719
D604464
ETL Approved

Picked as a Top Tool by Fine Woodworking magazine.

- Industrial U.S. made 1.5 HP motor, 110V or 220V
- HEPA certified filter media
- Compact and highly mobile design (64"H x 28"W)
- 22 gallon dust bin with automatic liner bag holder
- Perfect for the small shop

800-732-4065
oneida-air.com

MADE IN USA
SINCE 1993

WORKSHOP TIPS

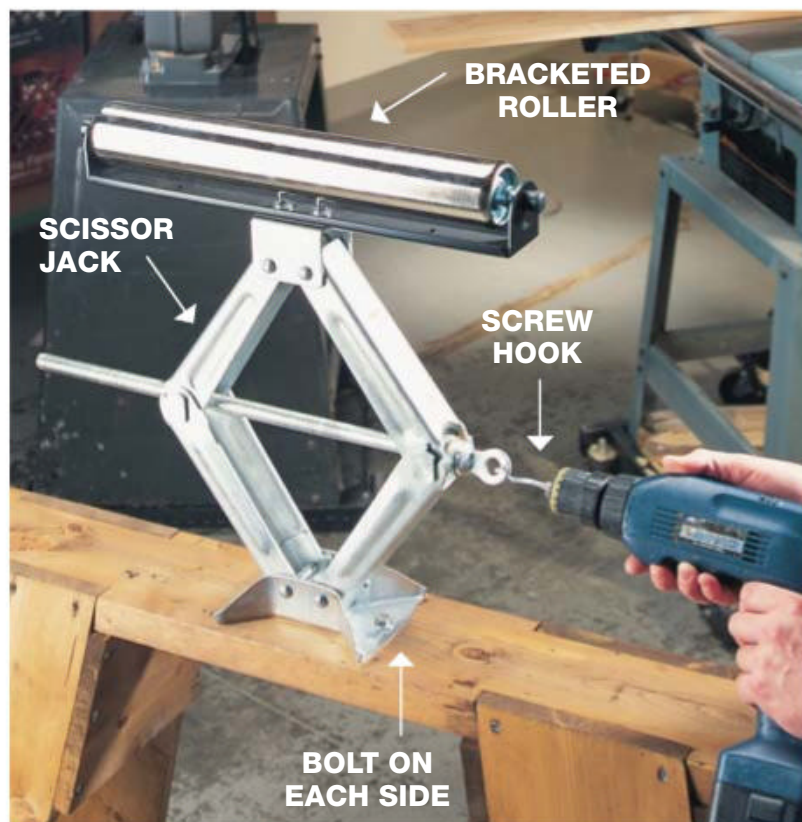
Jacked-Up Outfeed Roller

Adjusting your outfeed support for nearly any workstation is easy to do with this adjustable outfeed roller.

Here's what you need to build it:

- A sawhorse
- A scissor jack (find at your local auto parts store)
- A bracketed roller. (Buy the longest roller available if you want to support wide boards and plywood.)

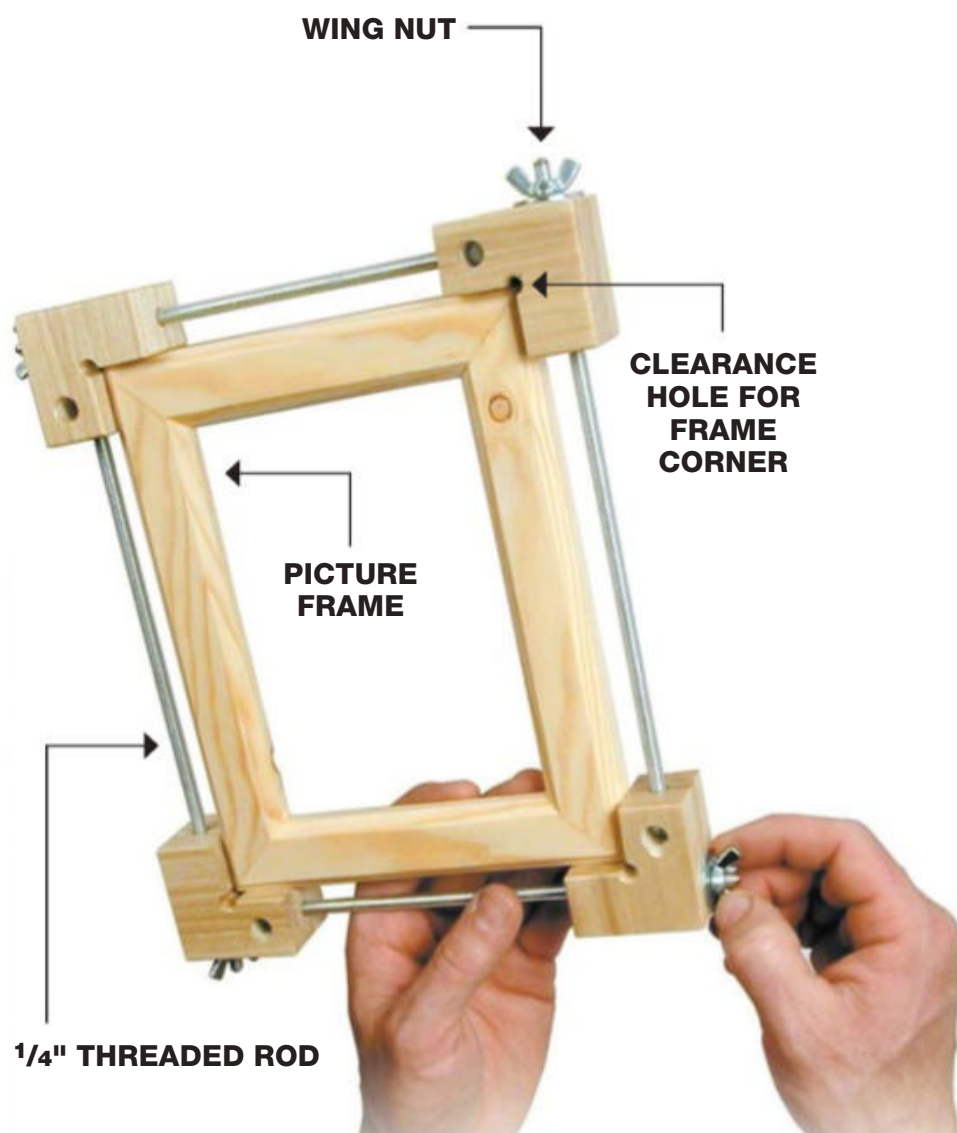
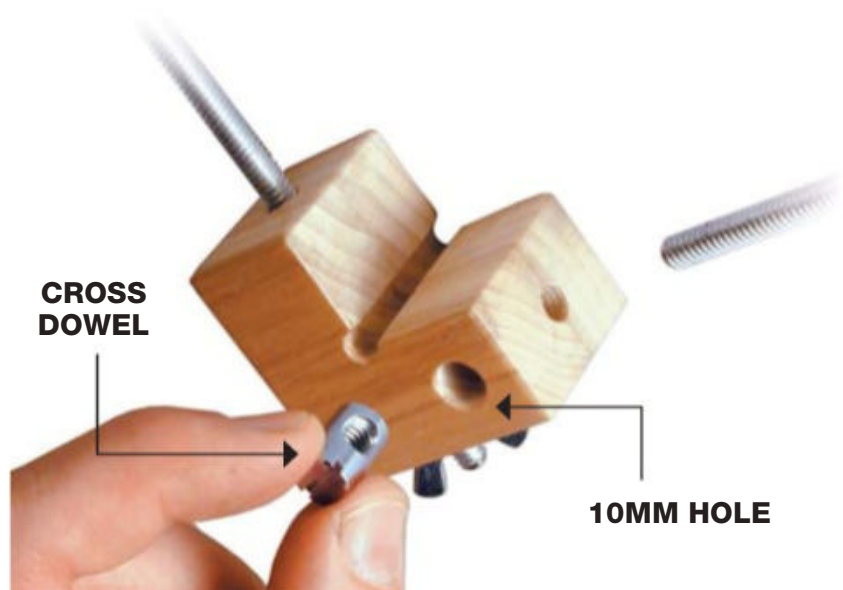
After bolting the roller on the jack, you can quickly adjust the outfeed to fit your tool height. It's easy to crank the jack up and down with the jack handle, but to do it faster, chuck a screw hook in a portable drill, put the hook in the jack's drive hole, and run the drill to raise or lower the jack. By bolting the jack to a heavy sawhorse, you can ensure that the stand won't move as you work. —*Parkis Kennedy (Bristol, VA)*



PHOTOS PROVIDED BY THE AUTHORS

Perfect Frames Every Time

If you make a lot of small picture frames, here's an excellent shop-made clamp. Make the corner blocks from 2" x 2" x 1 1/2" thick stock. Drill a hole for the threaded rod and a 10mm hole for a cross dowel. The four corner blocks all have the same shape and drilling pattern. The threaded rod is held on one end by the cross dowel and by a wing nut on the other. The wing nut is used to tighten the clamp and can be adjusted to pull the frame perfectly square. —*Robert Betterini (Cheshire, CT)*.



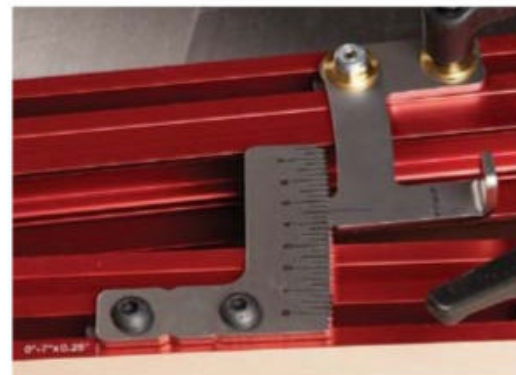
■ NEW TOOLS

Woodpeckers Precision Taper Jig

Most of the Shaker-inspired furniture I build has some form of tapered leg. When *Woodpecker* announced their Precision Taper Jig, I knew it would have a place in my shop. As you can expect from *Woodpecker*, the Precision Taper Jig has some features that make it a sheer joy to use. One of those features is the angle gauges with interlocking teeth. There are two on the jig—one for angles from 0-7° (in 0.25° increments), and a second for 0-15° in 0.5° increments. Another feature that I love is the handles that do double-duty as workpiece hold-downs. A replaceable MDF base keeps the jig zero-clearance for tear-free cuts. The Precision Taper Jig is set to ship in late October 2021. —*Logan Wittmer*



■ **Precision Taper Jig**
Woodpeckers
[Woodpeck.com](https://www.woodpeck.com)
Price: \$279.99 - 399.99



PHOTOS BY THE AUTHOR

ISOtunes PRO Aware

Every once in a while, a new product comes along that's a real game-changer in the workshop, and the new *ISOtunes* PRO Aware headphones is one of those tools. Many of you are familiar now with the *ISOtunes* family of OSHA-compliant hearing protectors with music streaming capabilities. What makes the PRO Aware (and the over-the-ear version, the LINK Aware) stand out is the new Aware situational awareness technology. Basically, the headphones feature a built-in microphone that allows the user to listen to what's going on around them while simultaneously filtering out noise louder than 85db. Once a loud sound is detected—say, a miter saw turning on—the headphones will deactivate the Aware feature in less than two milliseconds to prevent hearing damage. After a brief period, the Aware feature reactivates so you can continue to hear the world around you.

Now that I've gotten used to this feature, I can't imagine going back to standard hearing protection. The uses go beyond just the shop though—the PRO Aware would be perfect for jogging, biking, or any other activity where standard headphones would be potentially dangerous. My only sticking point on the headphones is that they use a micro USB charger when most phones and other technology have moved on to USB-C type chargers.

The in-ear volume of the Aware Technology is adjust-

able, and *ISOtunes* recommends turning off the Aware feature if your environment is consistently above 85db. —*Collin Knoff*

■ **PRO AWARE**
ISOtunes
[ISOtunes.com](https://www.isotunes.com)
Price: \$129



PHOTOS PROVIDED BY THE MANUFACTURER

BEST NEW WOODWORKING

Pocket-Hole Jig 720[®] PRO



The Pocket-Hole Jig 720PRO is the latest innovation in pocket-hole joinery, and it's the premium choice for project builders who want to build smarter and faster than ever. This jig was engineered to take your wood projects to the next level—with features like one-motion Automaxx™ clamping, which automatically clamps and sets the material thickness setting for pieces ½" to 1 ½" thick. It also includes the Kreg® Docking Station, which transforms the Pocket-Hole Jig 720PRO into the ultimate benchtop workstation. Every element of this jig was crafted to maximize the work you do so you can get high-quality results.

Visit KregTool.com
or call 800-447-8638

Auto-Line Drill Guide



Introducing Woodpeckers Auto-Line Drill Guide. This new tool keeps your drill bit perfectly perpendicular while you drill, but it goes further. We added a versatile base and fence system that makes it simple to keep your hole locations right on target. If you want a straight hole in the middle of a large piece of plywood, or in an installed cabinet, or in anything you can't get to your drill press (or you don't have a drill press), you will want and need the Woodpeckers Auto-Line Drill Guide.

Visit Woodpeck.com
or call 800-752-0725

Speed Set Wood Glue

Ideal for High-Volume Woodworking Needs



New Titebond Speed Set Wood glue is an extremely fast-setting, high solids PVA adhesive. It sets in half the time as other PVA wood glues, typically cutting clamp time to just 15 minutes. It provides exceptional gap filling properties developing a bond stronger than the wood itself. This product offers excellent sandability, unaffected by finishes, and increases productivity through its shorter clamp time with no increase in viscosity. Titebond Speed Set is non-toxic and cleans up with water. Available in one-gallon bottles, the 2.15-gallon PROjig, and five-gallon pails.

Visit TiteBond.com
or call 800-347-4583

Optima™ Chisels



Blue Spruce Toolworks new Optima™ Chisels feature a lapped and polished back with flatness measured in light bands (the same system used to measure silicon wafers). This incredible surface results in edge sharpness unlike any other chisel in the world. You will never have to flatten the backs of your Blue Spruce Optima Chisels, ever. And, when you unbox your new Optima Chisels, they're razor sharp and 100% ready to go to work. No sharpening, no honing, no nothing.

Visit BlueSpruceToolworks.com
or call 877-828-0332

COMPASS Router Table System



The newly researched and developed COMPASS Router Table System by Harvey will raise your woodworking to the next level. Especially, the Harvey COMPASS RF-36 Router Table Fence is built with a special "Dual Fine-Tuning" Mechanism to allow for fine adjustments of Fence Inline Position and Outfeed Fence Face Offset Position with high accuracy and ease. The design will tremendously increase the efficiency of a router table tuning and the accuracy of your works.

Visit HarveyWoodworking.com
or call 888-211-0397

Lee Marshall Edition Marquetry Saw



Swivel-on-the-fly blade clamps allow you to cut profiles without shifting the blank. Modular legs available in 12, 18, or 24" lengths.

Visit KnewConcepts.com
or call 831-234-4652

TOOLS & PRODUCTS

Shaping Wheels



The must-have, most versatile angle grinder accessory, Kutzall Shaping Wheels will easily optimize your creative control. Proudly crafted in the USA, they perform with remarkable wear-life and provide a truly unique combination of superior material removal and surface quality. With effortless operation (with or against the grain) and resistance to loading, you'll use them project after project.

**Visit Kutzall.com
or call 855-KUTZALL**

DJ-3 Universal Drilling Jig



The most accurate way to drill a hole is through a drill bushing. Featuring a new and improved stop system, and an adjustable jaw (if off-center drilling is required), the DJ-3 can easily be thought of as a drill press in a box. For many woodworkers that have accurate drilling needs, but have insufficient space in their shop for a drill press, the DJ-3 is the answer.

**Visit BridgeCityTools.com
or call 800-253-3332**

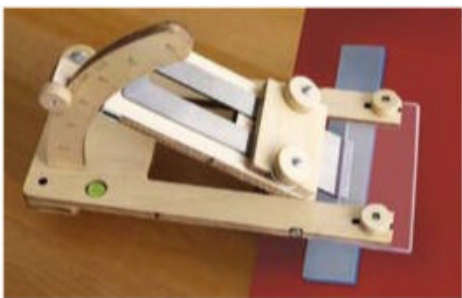
ProMaster® Plus



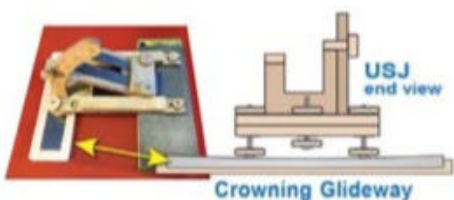
ProMaster Plus patented thread design features cutters built into the thread design. It starts with a Type 17 point and tiny saw blades are formed into the first three or four thread revolutions that cut through wood while displacing a minimum amount of material. These threads help prevent wood from splitting and was developed for the furniture and woodworking industry for its ease of driving while offering optimum holding power.

**Visit McFeelys.com
or call 866-335-2879**

Universal Sharpening



Handplanes and chisels. Square or skewed—straight or crowned. Two new ways to camber (or crown) hand plane edges for no trails... no skill required! Side stroke blade, clamped in Universal Sharpening Jig (USJ), on curved diamond surfaces -OR- Side stroke blade, clamped in USJ, on any flat grit surfaces while USJ rocks on glideaway.



**Visit PlanePerfect.com
or call 781-400-1950**

D4R PRO Dovetail Jig

The World's Most Versatile Dovetail Jig



The Leigh D4R PRO is the most versatile and user-friendly dovetail joinery jig available. Create perfect joinery of all kinds, including through, half-blind and sliding dovetails, box joints (finger joints), and more. In just minutes, you can rout equally or variably spaced through and half-blind dovetails, not possible with template jigs.

**Visit LeighTools.com
or call 800-663-8932**

Wood Slicer Resaw Bandsaw Blade

Best All-Round Performer



Our famous Wood Slicer bandsaw blade's superior cut quality has made it the woodworker's resaw blade of choice for over 25 years. The Wood Slicer cuts smoother and more quietly than any other resawing blade on the market. If you want to mill lumber to custom thickness or generate your own veneers, try a Wood Slicer blade for yourself.

**Visit HighlandWoodworking.com
or call 800-241-6748**

Hand-Cutting Dovetails

Basic steps for beautiful joints.

By Logan Wittmer

Dovetails. They get put on a pedestal as a sign of quality. And while not every project or furniture style warrants them, I enjoy sitting down, listening to an audiobook, and cutting them by hand. Once you break down dovetails into a series of basic steps, I think you'll find that hand-cutting them is easier than you think. Here's my process for hand-cutting through dovetails.

Essential Layout First

Before any thought is given to picking up a saw, you'll want to prep your stock. The front and back parts need to be the same length, as do the sides. Unless you want a twisted case, you'll also want to make sure that the ends are square. The shooting board takes care of squaring everything up

and allows me to sneak parts to final length. Now you can begin some layout. I start by using a marking gauge. Photo 1 below shows the style I like. It's a small gauge that has a razor blade for the marking edge. It leaves a good, crisp line. I'll set the gauge so it's slightly larger than the thickness of my workpiece — about a thirty-second or so.

The next step is to mark all of the parts. This means dragging the marking gauge around all of the faces and edges on each end of the workpieces. You want this line, called the baseline, to be easily visible. Make a hard mark in one pass, as double lines will cause some problems down the road.

The "tails versus pins first" debate is only second to the great "toilet

paper over or under the roll" debate. Without getting into it, I cut my tails first. You have a few ways you can lay the tails out. I step off the tail board with dividers, as you see in Photo 3. You can also measure them, which is slightly harder, in my opinion. Or you can just eyeball them. Take your pick. All three options work well. We have a great video with Megan Fitzpatrick explaining laying out dovetails with dividers on *Popularwoodworking.com* if you'd like more details on that process. The final thing I like to do before picking up a saw is to mark my waste areas. Trust me, as you're getting into a rhythm, it's easy to slip up and accidentally cut something wrong, so I do myself the favor of marking the waste.



- 1 Set a marking gauge so that the distance between the blade and fence is slightly larger than the thickness of your workpiece.
- 2 Scribe a good, visible line all of the way around the end of each workpiece.
- 3 Layout the dovetails with your method of choice. Mine is dividers.

First Cuts

To cut the tails, I prefer to use a pull saw paired with a dovetail guide. This was a combination I picked up from David Barron (I use his 1:6 dovetail guide), and I've found it's the most accurate thing in my hands while cutting dovetails. However, these same techniques apply if you're using a western-style saw, a different guide, or no guide.

I place the workpiece low in my vise. It's important to make sure it's secured tightly and doesn't vibrate as you're sawing. A Moxon style vise is perfect for this, however I'll often use my leg vise as well. Regardless of the holding method, always mark the outside face of your workpiece.

I start by cutting one side of the tails first, all the way across the board. Keep an eye on your baseline and don't cut past it, at least on the face of the workpiece. About halfway down the cut, I'll ditch the guide,

and drop the heel of the saw and sneak right up to the line (Photo 6). On the inside of the joint, it's okay to go over the line slightly. In fact, most antique furniture will have saw cuts well past the line on the inside—when you were working in a cabinet shop, you didn't have time to gently sneak up on the inside of a joint that wasn't visible.

After kissing one line, I'll then lean over the workpiece and drop the toe. As you can see in Photo 7, the saw can get close to the bench, depending on the style of saw and vise you have, but short, quick strokes will bring you to the line. Finally, level the saw back out and bring the kerf down to full depth. After making all of the cuts along one side of each tail, I flip the board around in the vise and cut the other side. This keeps the saw in my dominant hand, and my off-hand holding the dovetail guide.

If you don't use a guide, it's often helpful to angle the tail board in your vise. Align the edge of the board with the angle of the tails. If the tails are 7°, angle the board 7°. This way, you'll always be sawing straight down (perpendicular to the floor). After a bit of practice, your body will get real good at sawing straight down. The only trick then is to make sure your saw kerf is square across the edge of the board.

On that note, a quick word on dovetail angles because I know I will get the question. When it comes to angles, often expressed in ratios such as 1:4, 1:6, etc., I don't get too caught up on a particular angle. I've found that most of the projects I build look good with a 1:6 ratio, which is roughly 9.5°. A couple of degrees each way will change the look of the dovetails, but I've found that, for me, this is a good middle ground in hardwood and softwood.



4



5

4 Marking the waste section will save you a headache later on.

5 Cut one side of each of the tails.

6 Drop the heel of the saw to bring the cut to the baseline.

7 Do the same on the other side, lowering the toe of the saw.



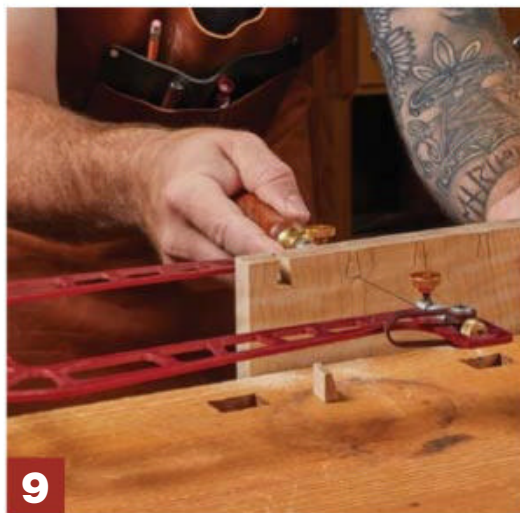
6



7



8



9



10



11



12

8 Cut away the waste on the shoulder of the tail board.

9 A fret saw makes quick and accurate work of the tail waste.

10 Use a chisel to clean up the inside and outside of the shoulder.

11 Stand the board on edge and chisel down the shoulder.

12 Clean up in between the tails with a narrow chisel.

Remove The Waste

Now, with the tails cut, you can get rid of the waste. I do this by first removing the shoulder pieces, as you see in Photo 8. It's a simple straight-down cut with the saw, but make sure to leave the baseline.

Now, I cut away the waste between the tails. I prefer to use a fret saw for this, but a coping saw works as well. You can also chop out the waste with a chisel. I simply like the control I have with a fret saw. Well, that and it's hard to hear my audiobook with a mallet smashing a chisel.

After sawing away the waste, I come in with a chisel to pare down to the baseline — a couple of points here. The first should be pretty obvious but use a chisel that fits between the tails. Second, don't mash up the edges of the tails as you lever out the waste. Bruised tails will show up in the finished joint. Finally, chop the waste out in small steps. For the final cut, drop your chisel down into the base line (that's the reason for

the good, hard mark) and remove the final $\frac{1}{32}$ " of waste. If you try to remove a bunch of waste in one chop, the wedging action of the chisel will push it past the baseline.

As you're chiseling, you can slightly undercut the inside of the joint. Start with the chisel at 90° , but after a hit of the mallet, I'll lean the chisel a couple of degrees. Doing this from both sides leaves the middle of the joint slightly hollow, and it helps in getting a tight joint.

Pins Next

Now, place your pin board in your vise and lay your tailboard over the top, as you see in Photo 13. Make sure everything is aligned and square, and use a thin, sharp marking knife to transfer the tail locations to the pin board. A thin knife can be pressed tight against the inside of the tails and leaves an accurate line.

Now, the process is pretty much the same, but at a slightly different angle. The important thing here is to

make sure to cut on the waste side of the knife line. A dovetail guide allows you to position the saw kerf in exactly the right position. Again, mark the appropriate waste areas before starting to cut.

Removing the waste is pretty much the same process as before, but as you can see in Photo 16, you'll need to angle the fret saw to match the angle of the pins. Likewise, when you're chopping the waste, the outside of the joint is wider than the inside, so you'll want to angle your chisel as you work through the joint.

The final thing I like to do before putting glue on and pounding the joint together is to chamfer the inside of each joint. By staying away from the exposed edges of the joint, you can help ease the joint together without affecting its look.

Usually, following these steps, I can get a good, tight joint right off the saw. Occasionally, you'll have an off day and as you're testing a joint, it will start to split the pin or tail



13



14

13 Hold the tail board in place while transferring the tail locations.

14 A flexible knife helps accurately transfer the marks across boards.

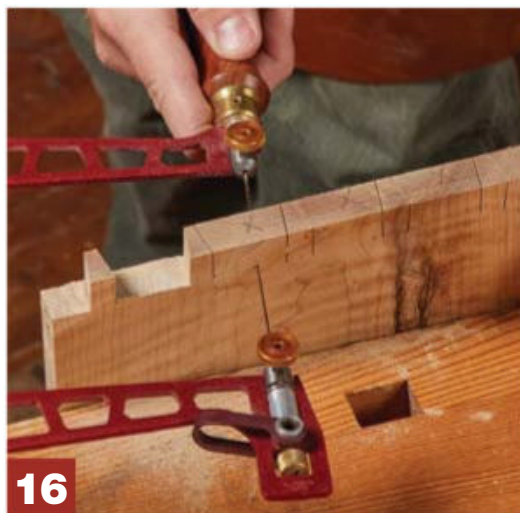
15 A dovetail guide keeps a consistent angle between tails and pins.

16 Angle the fret saw to remove the pin waste.

17 Chamfering the inside edges of the joints helps avoid corners snagging and keeping the joint apart.



15



16



17



18

18 Use hide glue to glue the joints together. Depending on the joint fit and wood used, it's often best to cover the tails with a piece of scrap while pounding the joint together, to avoid denting the outside of the workpiece.

board. When that's the case, stop and take the joint apart. In these instances, I'll use a soft-leaded pencil and rub the inside of the tails. Then, as you work the joint back together, it will transfer the tight area to the pin board. With the problem areas highlighted, you can either pare them down with a chisel or use a flat float to fine-tune the joint.

When I'm ready to put the joint together with glue, I prefer to use hide glue. It helps lubricate the joint a bit and slips together a little easier. The finished joint should protrude just a little bit. Once the glue is dry, you can either plane or sand everything flush. After sanding and applying some finish, I think you'll amaze yourself with how good they look. And the beautiful part is that your dovetails will keep getting better each time you cut them. **PW**

Logan Wittmer is Popular Woodworking's Editor in Chief and an avid hand tool user.

Kimmons Hand Tools

One man's journey to produce some of the highest quality tools around.

By Logan Wittmer



It's not often that I see a new boutique toolmaker pop up on the woodworking scene. Usually, I see some form of press release or article in a publication. Over the last year, however, I've been closely following the journey of one small toolmaker from Ohio. Andrew Kimmons started selling his chisels on his *Etsy* store, and I had seen a handful of reviews that were showering Andrew with praise on his handmade chisels. So, I reached out to Andrew to see what the buzz was about.

After receiving the set of chisels from Andrew, my first impressions

were pretty striking. They were flawless. The curly maple handles were very nicely turned, and I knew immediately that they are made with a hand tool user in mind. It nearly felt like the handle was reaching out to shake my hand. Personally, I usually favor a slimmer handle on my chisels, but the thicker handle on the Kimmons Chisels *just fits*.

Working down from the handles, the ferrules are made from stainless steel. If I had one wish for the chisels, I think the lead edge of the ferrules could be chamfered slightly to soften it. It's a minor detail that

you only notice when you choke up on the chisel handle.

With a background in metallurgy and fabrication, Andrew machines all of his chisel blades in-house. And I will tell you—they come sharp. The thin, tapered edges of the chisels fit well into the corners of dovetails. I used this set while working on the tool chest on page 46. I flipped back and forth between my *Blue Spruce* chisels and this set from Andrew. Being made from A2 steel, they held an edge longer than my *Blue Spruce*, but took just a little longer to touch up on my oil stones. As an O1 tool steel fan, I was glad to see Andrew also offers his chisels made of O1, even though O1 tends to be a little more temperamental during heat treating.

Overall, my impressions of the Kimmons Chisels were beyond favorable. The quality is exactly what I like to see from a small maker, and I always prefer to “buy local” so to speak—someone from the woodworking community that is doing what they love, and doing it well. If you need a quality set of chisels, these rank among the “big dogs” like *Lie-Nielsen*, *Blue Spruce*, and *Veritas*.

Part of the joy that I find in boutique toolmakers is that they almost always have an interesting back story. So, I fired off a few questions to Andrew, so he could share what the driving factor behind producing these chisels were.

How did you get into tool making?

I have always loved tools in general. I started collecting tools at the age of 8 when my grandfather bought



1 Kimmons chisels have a standard sizing of 1", 3/4", 1/2", and 1/4". Expanded sizing in 1/8" increments should be available soon.

2 In the hand, the chisels are extremely comfortable and are ideal for paring tasks. Out of the box, they're sharp enough for end grain paring on maple.



FOR THE PRO IN YOU

Expect professional results. Choose Titebond wood glues.



Titebond wood glues are preferred by pros more than 7 to 1. Whatever your project, you can trust us to help you achieve the best results each and every time.

Titebond.

titebond.com | 1-800-347-4583

01105_552716

Maximum Strength
Maximum Control



Get Control with the Strongest,
Stiffest Fret Saws on Earth

Available in
Titanium or Aluminum

www.knewconcepts.com

Moisture Meters

From Lignomat - Pin and Pinless

Accurate and Durable for a
life-time of Woodworking



Buy a Lignomat meter!
Spend money only once!

No
Shrinking
Warping
Cracking
Cupping

Lignomat the
Woodworker's Choice

800-227-2105
Call today for more info.
www.Lignomat.com



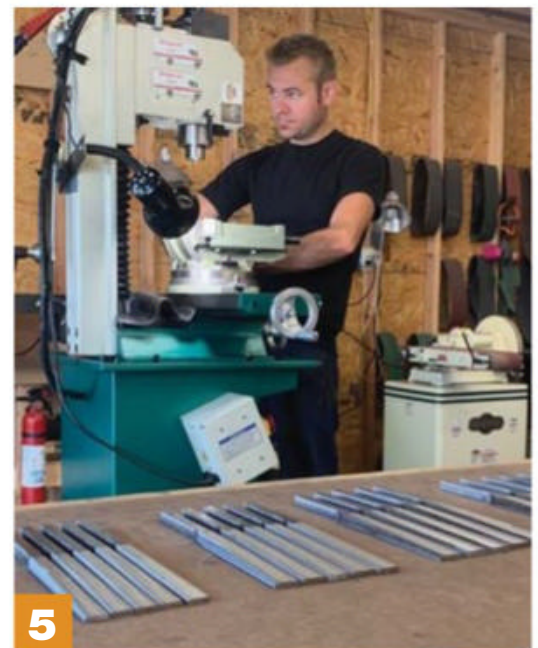
PopularWoodworking.com/subscribe



3 Milling the edges of the chisel.



4 Removing scale from heat treating.



5 All chisels are produced in small batches.

me a small starter set of tools. I saw the tools for the possibility of what they can accomplish rather than being simply what they are. I felt it was very natural for me to follow the tool making path.

What need did you see in the tool market?

As a woodworker, hand tool enthusiast, and being very particular about tools in general, I desired a chisel with three key details:

1. I wanted a chisel that was slightly longer. This makes it feel like a cutting tool yet fits naturally in my hand.
2. Designed for fine cutting tasks and precision joinery
3. Holds an edge for an extremely long time

I found that most chisels on the market are oriented toward carpentry-like tasks, such as chopping, rather than fine woodworking, like slicing and paring. Therefore, I felt the world needed a highly ergonomic and flawlessly executed chisel that featured all 3 of

these aspects. I also have a broad background across many different technical fields. I gained a vast variety of experience in the pipeline industry. My focus was specifically in the electrical and electrochemical aspects of corrosion relating to submerged structures. No matter what I've done and where I've gone, metal and metallurgical science have always been my main focus of interest professionally. With my hand tool desire and my professional interest, I felt I could be the one to bring this tool set to the world.

What tools are you making?

I currently have several pairing chisels for sale but plan to be producing mortise chisels soon. A few carving tools may be produced later this year if I have time! More importantly, I will continue to apply my three key details to my future tools along with an unrivaled fit and finish.

I WANT A SET. HOW DO I ORDER?

WEBSITE: KimmonsHandTools.com
 ETSY: [Etsy.com/shop/KimmonsHandTools](https://www.etsy.com/shop/KimmonsHandTools)
 EMAIL ME: Andrew@KimmonsHandTools.com
 FACEBOOK: [Kimmons Hand Tools](https://www.facebook.com/KimmonsHandTools)
 INSTAGRAM: [@Kimmons_Hand_Tools](https://www.instagram.com/Kimmons_Hand_Tools)

I encourage everyone to follow me on social media. It will be the first place to hear about new products and ideas. Plus, I love input! My customers sort of move me along based on their needs and input! It is the reason why my next product will be mortise chisels. My customers asked for it and they are who I make tools for.

Tell me a little bit more about yourself.

I spent the majority of my life in Arizona and New Mexico but recently moved in 2016 to my wife's hometown in Ohio. We moved after my father passed away, and my daughter was born prematurely. Both events happened in the same year, and we felt like we drastically needed a change in scenery. My daughter was in the hospital for 123 days and endured many surgeries and medical procedures including eye surgery, heart surgery, a brain bleed, and multiple spinal taps. There have been many complications with her due to prematurity and we still battle some of them daily. But thankfully, many issues have improved. Our little girl is our primary focus in life, and I've been able to spend more time with her as I transitioned to making tools full time. I'm thankful to have a supportive wife and family that have encouraged me to pursue this path and do what I love to do. **PW**

The Best is Now Even Better...

Woodpeckers®

Slab Flattening Mill•PRO

NEW
TOOL



Wider, Thinner, Thicker & Cleaner...

Woodpeckers Slab Flattening Mill•PRO has all the best features of our original Slab Flattening Mill, but with a new router carriage that has an amazing range of adjustment, working with stock as thin as 3/4" and up over 3" without spacers or shims. Dust collection is now built right into the carriage with twin collection ports that collect equally well on push or pull cuts. We reinforced the frame of the router carriage for even better surface flatness and finish.

Like the original, the Slab Flattening Mill•PRO and your router can surface irregularly shaped and twisted slabs into stunning table, counter and shelf surfaces. With a standard width capacity of 48-1/2" and optional extensions available, there's no slab project you can't master.

Learn more about Woodpeckers Slab Flattening Mill•PRO at woodpeck.com





■ Shaker-Inspired Sewing Counter

As much as this piece is a homage to Shaker design, it is also quietly a love letter to both hand tools and shared shops.

By Kenan Orhan

PROJECT #2113

Skill Level:

Intermediate

Time: 10 Days

Cost: \$500

PHOTOS BY THE AUTHOR

I work in the Kansas City

Woodworker's Guild, a shared shop with a fleet of *Sawstops*, band-saws, jointers, planers, drill presses, mortising machines, wide-belt sanders, lathes, a panel saw, router tables, CNC machines, and innumerable handheld power tools. The entire lot of equipment would rival any commercial shop (all for the low membership due of about \$100/year!). For me, the most stunning feature is the hand tool cabinet containing all of the *Lie-Nielsen* hand planes and saws in production, even the special joinery planes. I'd trade all the machines (except maybe the bandsaw) for that cabinet. The cabinet is the bench room, a space designated specifically for hand work and separate from the machine area.

The swipe of a plane, the shush of a saw, the tapping of a chisel. I find happiness in these quiet, pleasing sounds of work at the bench, where sawdust gathers in soft piles and shavings thinner than paper roll along the floor. I find happiness in my tools that facilitate the desire to do good work by their very existence. Far away from the buzzing, shouting, and biting machines of the shop, this calm setting has, at its heart, an intuited expectation of precision and craft, leaving my head clear and ready to do work worth putting my name on.

I prefer to work as far from machines as I can. Most of the time, it's too loud, dusty, and distressing for me to justify setting up and using a machine across the shop when there's a beautiful handsaw right there. Besides, as I mentioned, the guild is a shared shop which can, on busy days, mean a line to get to the chop saw or one of the jointers.

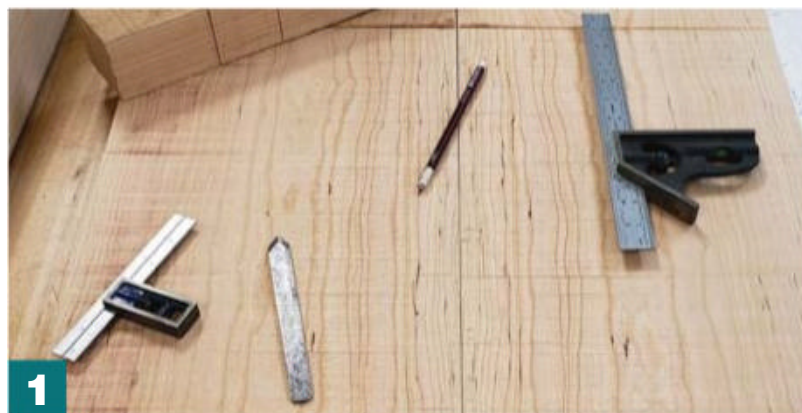
If my reservations about working in a shared shop sound a little harsh, it's only because they easily illuminate the virtues of hand tool work. In truth, there is a great sense of camaraderie among the guild members. The shop is volunteer operated and hosts members from across the skill spectrum. The members are friendly and helpful, especially during large, multi-person glue-ups. I've learned almost everything I know by just being at the guild, asking a question or two, and watching how others might approach situations similar to my own projects.

Being a guild member has also introduced me to all sorts of styles and methods I might not have learned about otherwise. Before joining the guild, Shaker was just a style of kitchen cabinet to me, but thanks to my friend Dave (a foreman at the guild and absolute expert on American Colonial, Shaker, Amish, Mennonite, and

vernacular furniture), it has become my favorite style to emulate. This piece takes Shaker sewing counters as its inspiration but cleans up the lines around the frame and panels, reduces the size of the pulls, and adds a little flair to the drawer fronts with tiger maple and rosewood. So while it maintains its Shaker soul, it's updated, a little more spacious, and a perfect project to pay respects to my greatest influence.

Choosing Stock

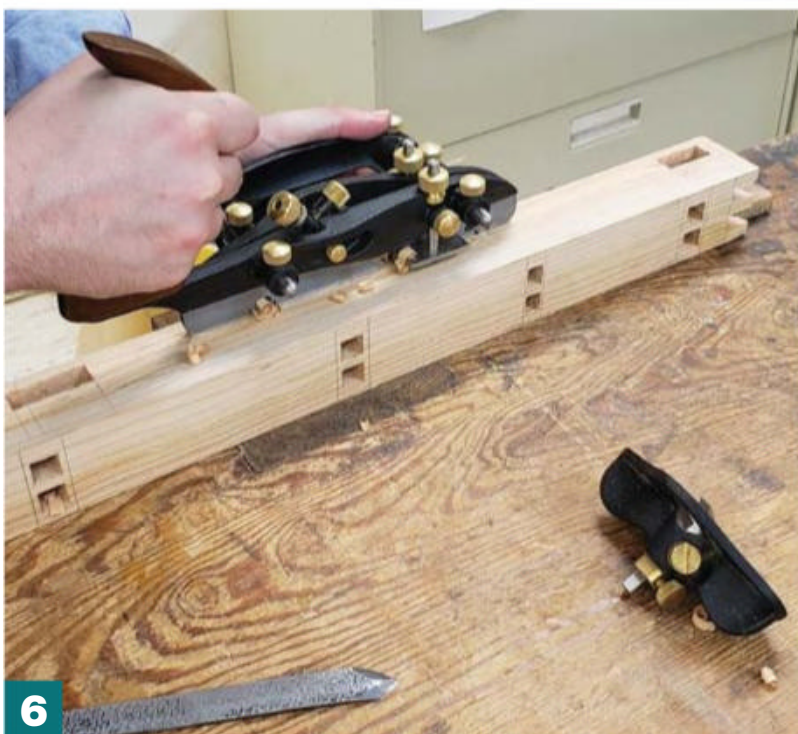
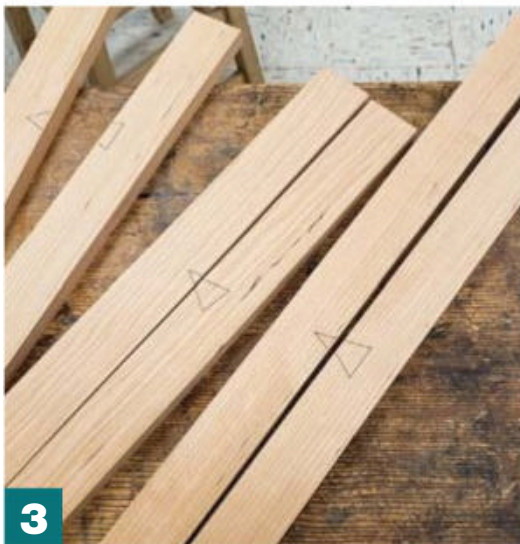
After I have all my lumber cut to rough dimensions, I start with the top and the legs because these are the pieces with the largest dimensions and must be selected based on both appearance and grain for a good layout. If possible, I book-match stock for my tops. With the legs, I pull knot-free stock from the edges of my board where the end grain is diagonal to ensure straight grain all the way down the leg and on all four faces (rift sawn). If you're milling the drawer lumber at the same time, it's worth noting that nice straight grain is excellent drawer side material, but depending on the wood you're using, it isn't always necessary. Maple is stable enough that you can use regular flat-sawn stock but try to at least select visually pleasing grain patterns and definitely avoid knots, voids, checks, and other defects.



1 Bookmatching for tops works best with tight, straight grain. Continuous grain helps create a seamless gluejoint.

2 Glue up the spring joint using even pressure.





3 Reference faces are marked using a carpenter's triangle.

4 Remove most of the waste with a slightly undersized auger bit.

5 Chisel to your scribe lines.

6 Plow the stopped grooves for the panels.

7 Begin at the base of the leg. As you're planing, start cuts further up the leg until you've created a line parallel to your taper layout. Then plane to your marked line.

Spring Joint

Having selected my stock, I glue up the panels that make the top and the work shelf. I avoid using dominos or biscuits because I find them unnecessary. In order to achieve a nice, gap-free panel, I use a spring joint, which is really just an edge joint that has a very shallow hollow in the center of the stock. I fold my two pieces with their faces against each other and the joining edges flush, then plane one or two swipes across the whole surface to remove any machine marks. Taking very thin shaving, I make two or three short, stopped passes in the center, then I make two more passes extending both before and past the center, and maybe one more full-length pass. This ensures that the ends of

the spring joint will have no gaps, and the clamping pressure and glue will close the very slim gap in the middle. These panels are left a little thick and set aside for later.

Leg Joinery

Next, I prepare the legs for the joinery. This cabinet uses frame and panel construction. On both the sides and the back of the legs, there are mortises for the aprons and grooves running between them. The grooves house the tongues of the panels. I lay out all my mortises from the reference surface, which in this case is the top of the leg and the outside faces. This ensures that the joinery will all line up. This is more important than getting perfectly accurate mea-

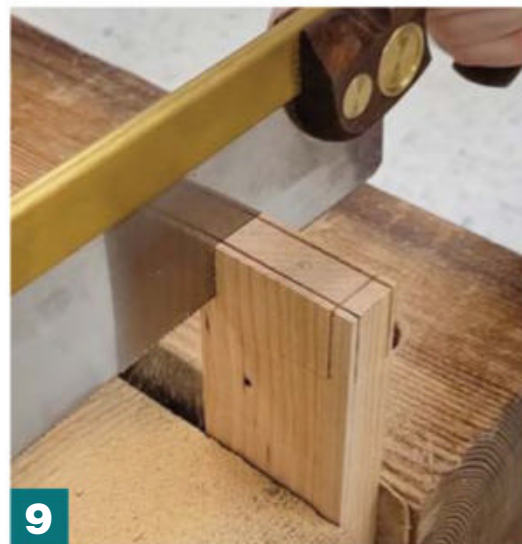
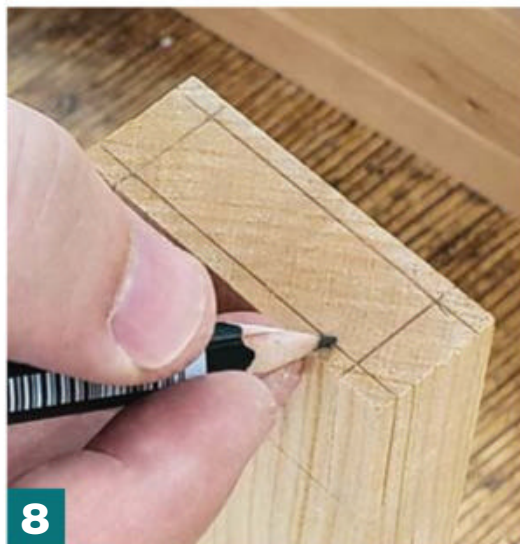
surements. In fact, when it comes to hand tool work, I often will only get my measurements right for the frame of a piece and then adjust all measurements accordingly. Since I'm not working with machines and batch-producing components, each piece will have some variation away from the ideal perfect measurements of the plan. I account for this by transferring layout lines rather than measuring them. Or, I take measurements for pieces as I go, such as the drawer construction (though I aim for the drawers to be a certain size after I glue up the case I simply take the sizes from their pockets). This, I think, is a great expedite to a process that doesn't allow for batch work. Measurements are guides and nothing more.

Using a brace and bit with a Sharpie mark for a depth stop, I drill holes to remove most of the waste from the leg mortises. I don't have to drill perfectly perpendicular because I use a slightly undersized bit and then I square everything lines with a chisel. If you don't trust yourself, you can set a square on the leg next to your bit to check. If you want to make your joints by hand but don't have a brace and set of auger bits, you can either use a mortise chisel for the whole process or a drill press and then use a chisel to make everything square.

The mortises for the front of the piece will house the drawer rails. I use double mortises to increase the glue surface since the rail tenons are smaller than the apron tenons.

To finish the leg joinery, I plow stopped grooves between the frame mortises. I start with my combination plane just to get the groove established. If I kept up like this, I would have a bowed bottom groove since the skates of the plane are lifted by the leg beyond the mortise. To finish the groove, I use a router plane. Unfortunately, the guild's router planes don't have fences, or else I would just use the router plane for the entire groove. If you have a router plane with a fence, I highly recommend that method instead. Otherwise, there are some plow planes with relatively short noses that you could use. Of course, you could use a power router with a fence or a router table.

The legs are tapered on the inside faces. I use a hand plane to add that taper. I first lay out the angle as well as the starting point. Then I remove the material at the foot by slowly planing, moving up the leg as the angle is achieved. If this sounds time-consuming or if you don't trust yourself to get the angle started, you can remove most of the waste at the bandsaw or at the table saw with a tapering jig, then finish it with a hand plane. But I must say, nice long shavings from a sharp plane are the best part of hand tool work!



8 Fill knife lines with pencil lead for better visibility.

9 Saw lines for the tenon cheeks.

10 Use a bench hook to hold the workpiece as you saw away the cheek waste.

11 Chisel to the scribed line for a tight fit.

12 Use a router plane to make the cheeks parallel to the faces of the rail.

Frame and Panel Joinery

The rails are the next part. I tenon and groove the rails for the back and sides. A handsaw removes most of the waste from the tenons, but I clean up the tenon cheeks to the layout lines with a router plane. A shoulder plane works here as well, but I find my hand wanders a little and I can end up with tapered tenons. Using the router plane with lots of pressure on the handle over the rail face allows you to dial in the fit

and keep the cheeks perfectly parallel to the rail faces. After checking the fit, I transfer the groove layout with a knife to make sure they line up. Then I groove the rails with the combination plane. If you have a dado stack, you could cut the $\frac{1}{4}$ " groove there since it goes all the way across the rail. The stiles are made similarly to the rails but with shorter tenons. They fit into shallow mortises cut in the grooves of the rails. Both edges of the stiles are grooved.

The panels in this frame and panel construction are an opportunity for experimentation if you like. You could pick a complimentary wood for the frame. Or, if you're like me, you could add different woods to the front. Since that is my plan, I decided to add a shadow gap along the edge of the panels. It's a nice, refined look without the formality of a raised panel with a defined field. To achieve this, it's a matter of adjusting the fence on the combination



13 With the tenon fit to the mortise, transfer the groove location to the inside edge of the rail.

14 Plow grooves all the way across the rails and stiles.



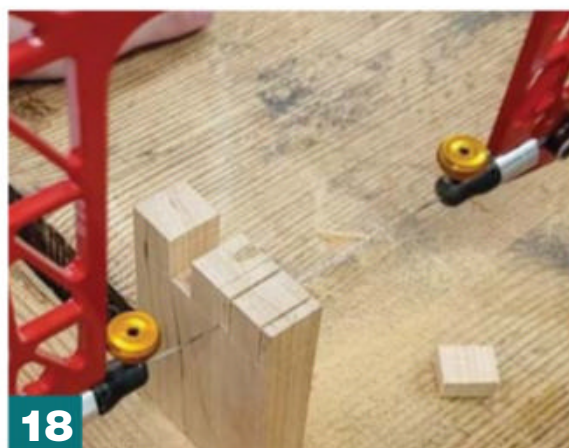
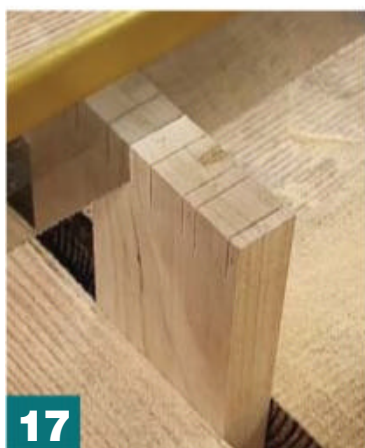
15 Cut the half-blind dovetails for the top rail.

16 With the case semi-constructed, transfer the layout to the tops of the front legs.

17 Saw the double tenons.

18 Remove the waste from between the tenons.

19 Deepen the scribe line.





20



21

20 Create a small trench against the scribe line to prevent tear-out while paring.

21 Pare waste to fit the tenons.

plane to cut the tongue a fraction longer than the groove is deep. I left a $\frac{1}{16}$ " gap, so the rabbet of the panel is $\frac{5}{16}$ " wide to fit $\frac{1}{4}$ " into the groove with the gap left over. You may have to finesse these gaps. I use a block plane to remove any excess tongue width and shorten the gap.

The front rails are a little different. The top rail connects to the top of the legs with half-blind dovetails. This locks the sides into position and helps prevent racking.

Meanwhile, the drawer rails are a little thicker than their double tenons, but they have fingers that wrap around the legs and will house the drawer webbing. So, when sizing the double tenons, I use a pairing chisel instead of a saw and remove waste to the layout line. A router plane works as well, but not a table saw. The blade would cut into the finger in the back. Careful work at a router table should suffice but consider this an excellent point to practice your pairing skills!

Drawer Webbing

Now it's time to pull out your secondary woods. Depending on where you are in the world, your seconds may be pine, fir, poplar, or any other inexpensive wood. If you don't mind the extra cost and weight, maple works well and is stable. I generally recommend poplar. It's easy to work, light, cheap, and relatively stable. I'm using fir here, but I have promised myself it's the last time, as it splinters so easily.

The drawer webbing is simple mortise and tenon construction. There are two places that differ and need some careful layout. The middle



22



23



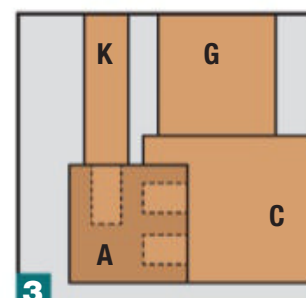
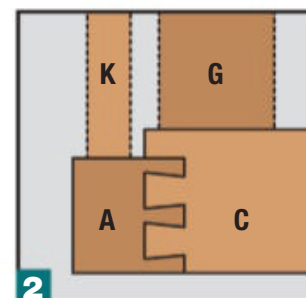
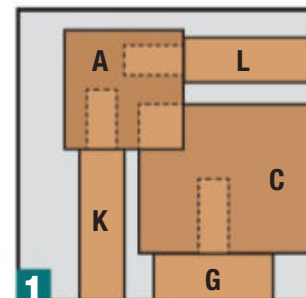
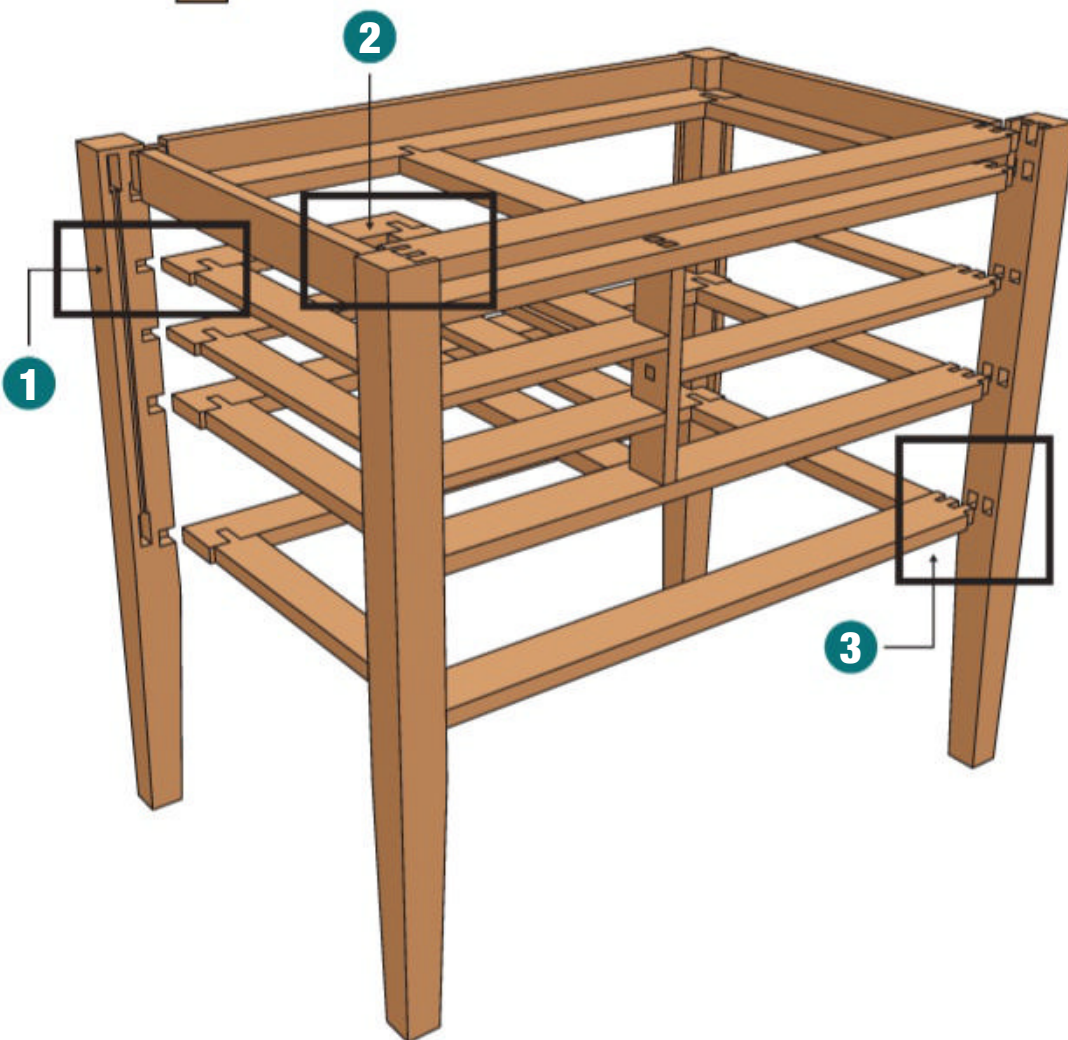
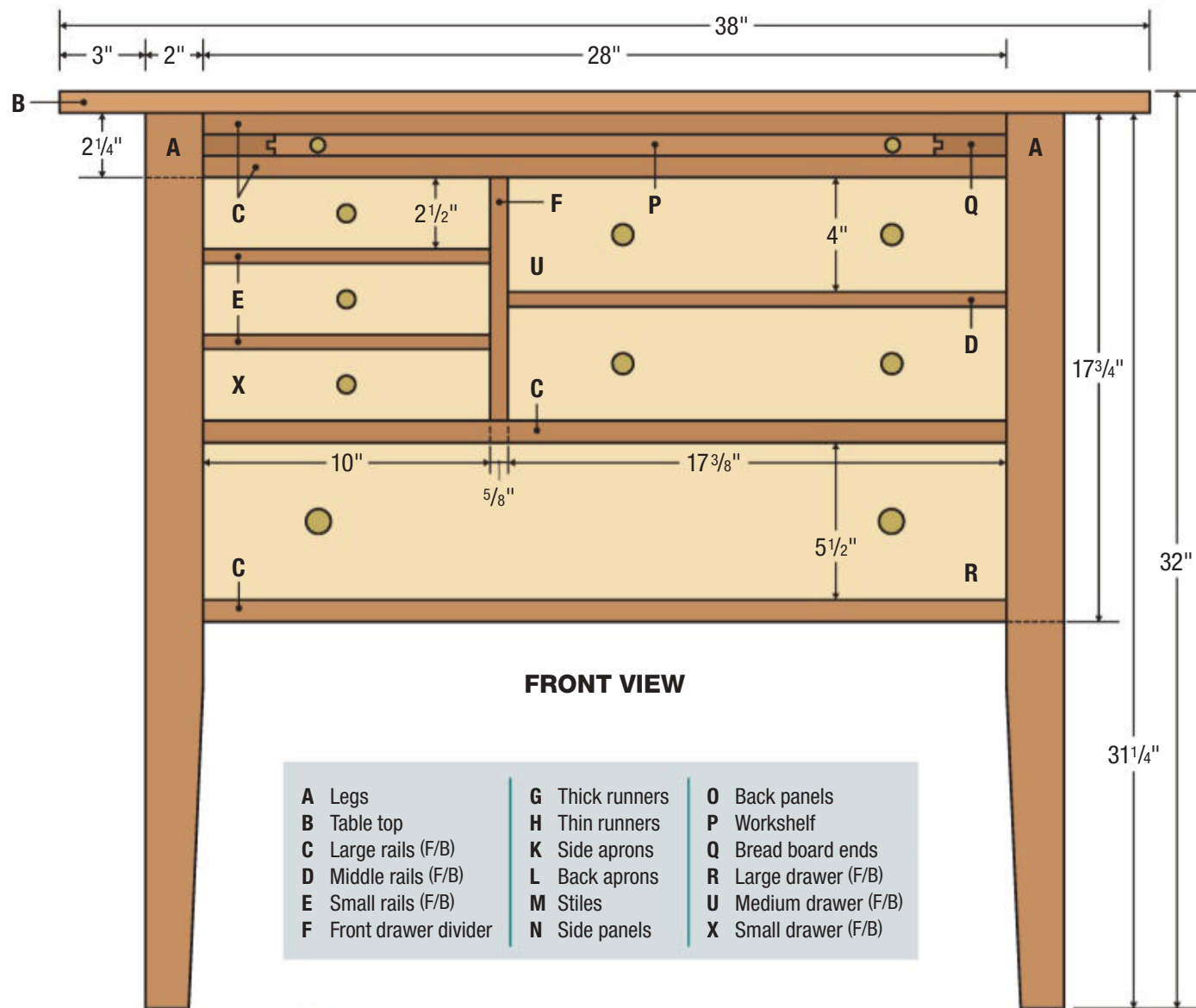
24

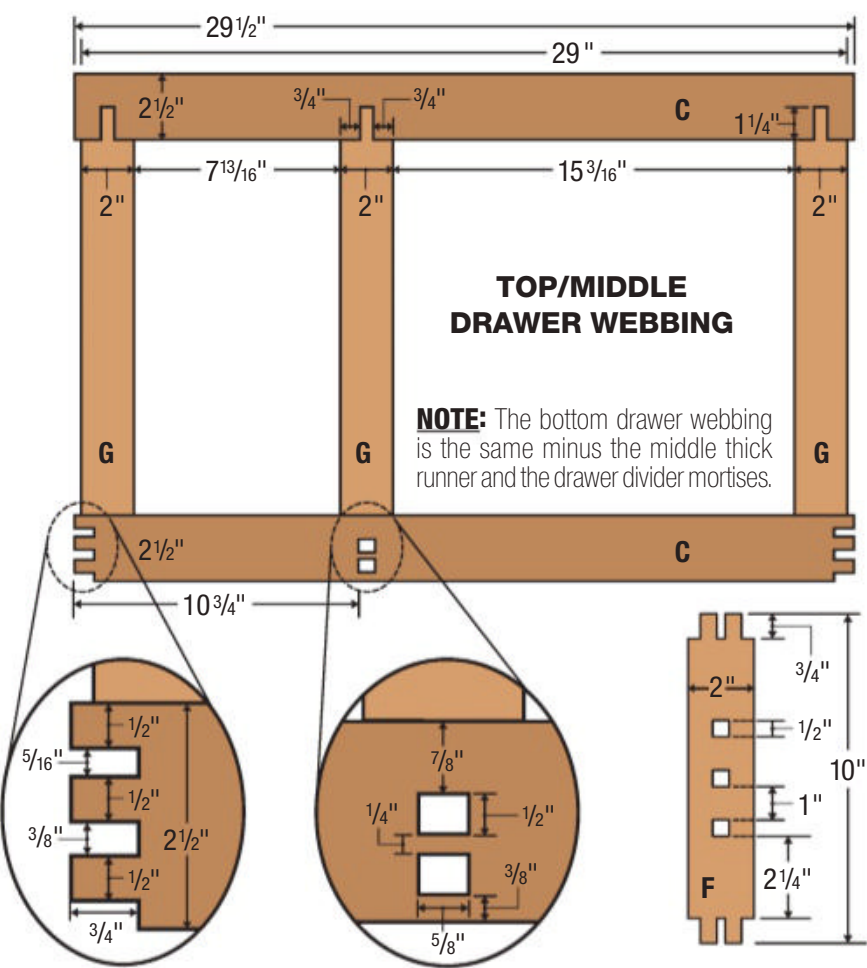
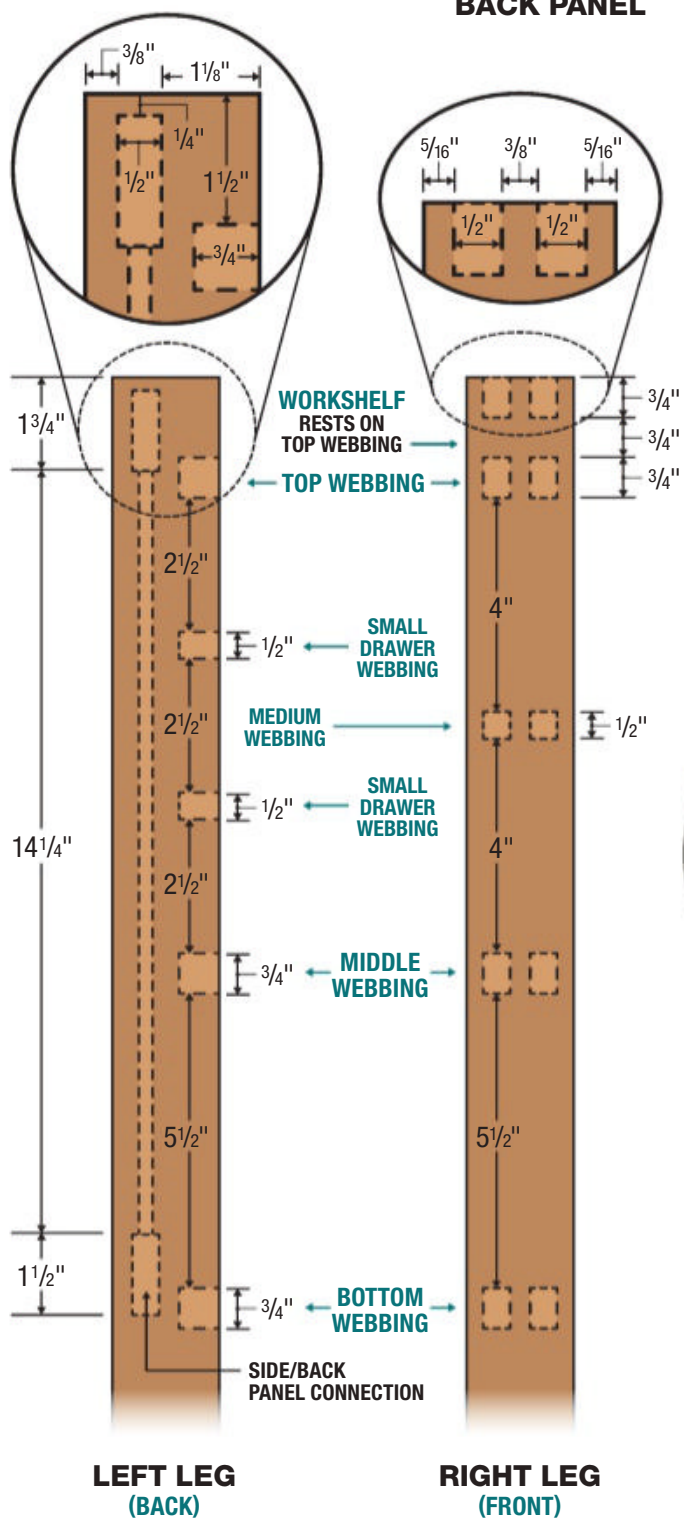
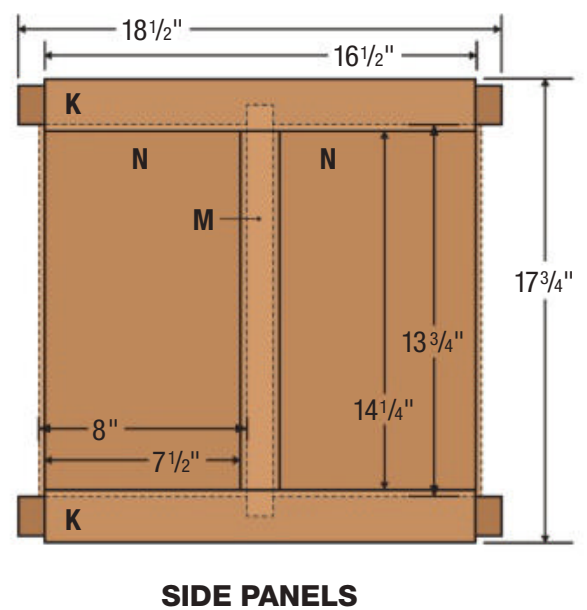
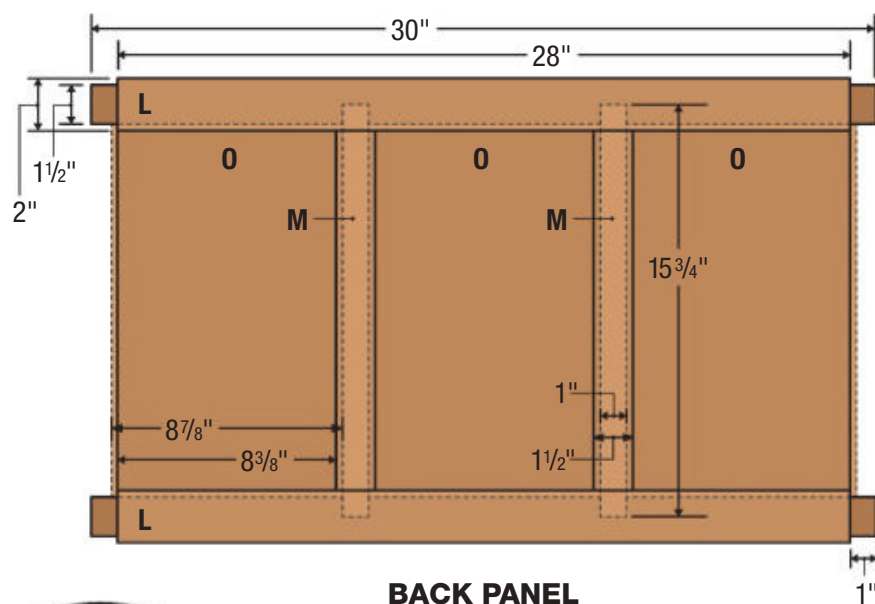
22 Drawer webbing is fully assembled and ready to go.

23 Layout for the notches is made easy by transferring the marks from the front leg.

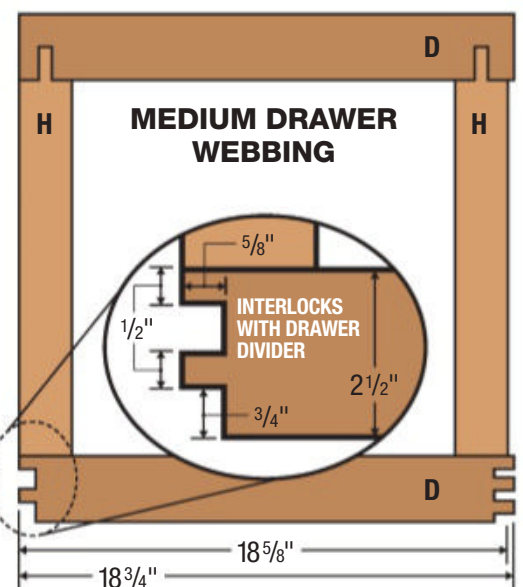
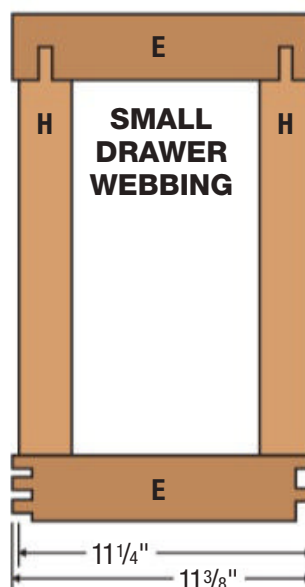
24 Establishing knife lines in the notch layout makes chopping out smooth and easy.

Shaker Sewing Counter



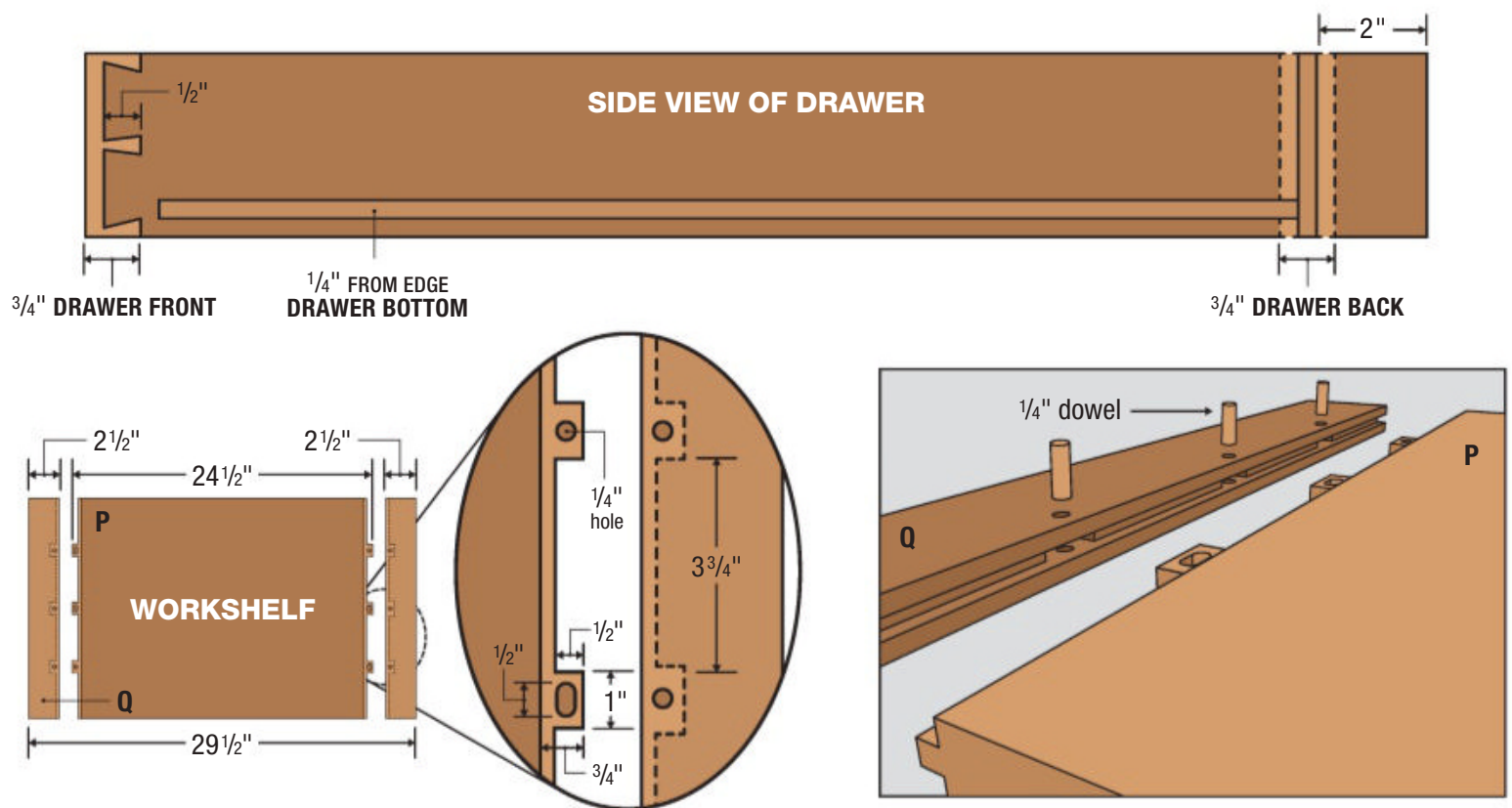


DRAWER DIVIDER



NOTE: The top/middle/bottom webbings and 2 small webbings interlock into the left legs. The top/middle/bottom webbings and the medium webbing interlocks into the right legs.

Workshelf & Drawers



Cut List

No.	Item	Dimensions (inches)			Materials/Comments
		T	W	L	
4	A Legs	2	2	31 1/4	Cherry
1	B Table top	3/4	22	38	Cherry
7	C Large rails (F/B)	3/4	2 1/2	29 1/2	4 cherry fronts, 3 fir backs
2	D Middle rails (F/B)	1/2	2 1/2	18 3/4	1 cherry front, 1 fir back
4	E Small rails (F/B)	1/2	2 1/2	11 3/8	2 cherry fronts, 2 fir backs
1	F Front drawer divider	5/8	2	10	Cherry
8	G Thick runners *	3/4	2	15 1/2	Fir
6	H Thin runners *	1/2	2	15 1/2	Fir
11	I Workshelf guides **	1/2	5/8	16	Fir
2	J Drawer guides **	1/2	5/8	16	Fir
4	K Side aprons	3/4	2	18 1/2	Cherry (2 for each side)
2	L Back aprons	3/4	2	30	Cherry
4	M Stiles	3/4	1 1/2	15 3/4	Cherry (1 for each side, 2 for back)
4	N Side panels	1/2	8	14 1/4	Figured cherry (2 for each side)
3	O Back panels	1/2	8 7/8	14 1/4	Figured cherry
WORKSHELF AND DRAWERS					
1	P Workshelf	3/4	18	24 1/2	Cherry
2	Q Bread board ends	3/4	2 1/2	18	Cherry
2	R Large drawer (F/B)	3/4	5 1/2	28	Maple
2	S Large drawer (sides)	3/4	5 1/2	18	Maple
1	T Large drawer (bottom)	1/4	27	15 1/2	Maple
4	U Medium drawer (F/B)	3/4	4	17 3/8	Maple
4	V Medium drawer (sides)	1/2	4	18	Maple
2	W Medium drawer (bottoms)	1/4	16 7/8	16	Maple
6	X Small drawer (F/B)	3/4	2 1/2	10	Maple
6	Y Small drawer (sides)	1/2	2 1/2	18	Maple
3	Z Small drawer (bottoms)	1/4	9	15 3/4	Maple

*Use thick runners (**G**) with large rails (**C**) to create large drawer webbings. Use thin runners (**H**) with medium rails (**D**) & small rails (**E**) to create small and medium drawer webbings.

Rub-joint workshelf and drawer guides (I/J**) flush to the slots.

Supplies List

- Horton Brass H-42 **interior desk knobs**
 - Two 1/2" knobs for workshelf
 - Three 5/8" knobs for small drawers
 - Four 3/4" knobs for medium drawers
 - Two 7/8" knobs for large drawers
- Rockler **desktop fasteners** (8pk)
(contains 8 figure-8 fasteners and 16 #6 x 5/8" L flat head screws)
*use to attach case to table top
- 4 screws** (~1 1/4" long)
*countersink through top-most large rail (**C**) to table top (**B**)
- Misc. **1/4" dowel** scrap pieces
*use to attach workshelf (**P**) to bread board ends (**Q**)

ONLINE EXTRAS

Looking for the drawer dimensions?
Find these dimensions and more online.

Does the glue-up intimidate you?
Not to worry. I'll work you through the process with as much detail as possible so you can feel confident during your glue-up.

PopularWoodworking.com/
Shaker-Sewing-Extra

divider is dadoed into place from the back (it will be locked there by the middle runners), and it houses three sets of through mortises. In the back of the case, the divider is

dadoed into place similarly, but I cut dados in its sides to house the incoming drawer runners allowing them to telescope with seasonal changes. Through dados are easy.



25

25 Prefinishing components, such as this side assembly, not only makes it easier to get a good finish, but also makes squeeze out easier to remove. The glue doesn't stick to the finished surfaces.

26 Shown here is the initial case glue-up with just the major drawer webbing. This allows you to position the top and mark the place for 4 countersunk screws.



26

It's all about sawing down to the bottom of the trench and then cleaning out the waste with a chisel and a router plane. A stopped dado requires careful sawing and chopping with a chisel before switching to the router plane. The back legs get notches cut into their inside corners to house the drawer webbing. I lay these out by simply transferring the front leg mortises across to the back legs.

Table Top

Now you can grab the panel that will be the top and smooth it flat. I added a chamfer to the top the old-fashioned way—by drawing a 45° line at the corners and, using a low-angle jack plane, plane to the line. Start with the end grain so that any chip out at the end will be removed when chamfering the edge grain. Once I've got it nice and consistent all the way around, I sand the end grain up to 400 to help ensure it gets sealed up with the finish. I finish the top in a few coats of shellac and then a few coats of furniture wax. This is my go-to finish. It's reversible, repairable, non-toxic, and traditional.

Glue-Up

Preparation for glue-up involves installing the fasteners for the top, drilling pilot holes in the top rail, pre-finishing the case components and ensuring the drawer webbing is level and fits well. Attaching the top was the trickiest part of the design. The work shelf placement prevents most forms of buttons so metal fasteners were the best option. I highly recommend using very short fasteners, like figure-8 fasteners so that you can fit your screwdriver between the apron side and the drawer runner. Place them at regular intervals along the sides and back, trace their shapes into the top of the aprons, and remove the waste. Go ahead and install them to the aprons.

The front rail has no space to fit screws and a screwdriver, so it will need to be attached to the

top before glue-up. At four equal distances, I drilled holes through the rail and counter-sunk them on the bottom to allow the screws to sit well inside the rail and not scratch the work shelf. Next, I dry fit the case (minus a few of the rails) and get the top rail hammered into its dovetail housing. Then, I positioned the top to its final place and with a center punch marked all the pilot holes for the front rail and the figure-8 fasteners. With that done, I screwed the top rail into the bottom of the table top. Essentially, the top is now just a rail with a large growth over it and it will be hammered into place during glue-up as normal but without having to worry over driving the screws.

This is the trickiest part of the glue up, but that doesn't mean the rest is easy. Though everything is straightforward to put together, it helps to have a friend around. I start by assembling and gluing up the sides of the case and leave them to dry overnight. Meanwhile, I glue the webbing into the front rails but

leave the back rails friction fit to allow for telescoping.

Once these are set, I insert all the rails, webbing, back aprons, and panels into one side of the case as seen in Photo 27, add glue to the remaining tenons (not the webbing that fits into the notches) and ask a friendly guild member to help me fit the opposite side. With two sets of eyes and hands at work, we ensure everything is fit snug and then hammer it all home before driving the top rail (with the top attached) into the dovetails. I set clamps spanning the rails and back aprons.

Lastly, with the cabinet set upside down, I finagle my way to the figure-8 fasteners and with a special ratchet screwdriver for tight spaces, I drive the screws that hold the top in place. It took me three complete dry fits to ensure that everything was just right. It may be fussy, but with so many points of contact, it's necessary. The worst thing is spread glue and running into a snag. Don't forget to thank your friends for their help!



27

27 Luckily, at the guild, I can enlist help from others while gluing up large components.



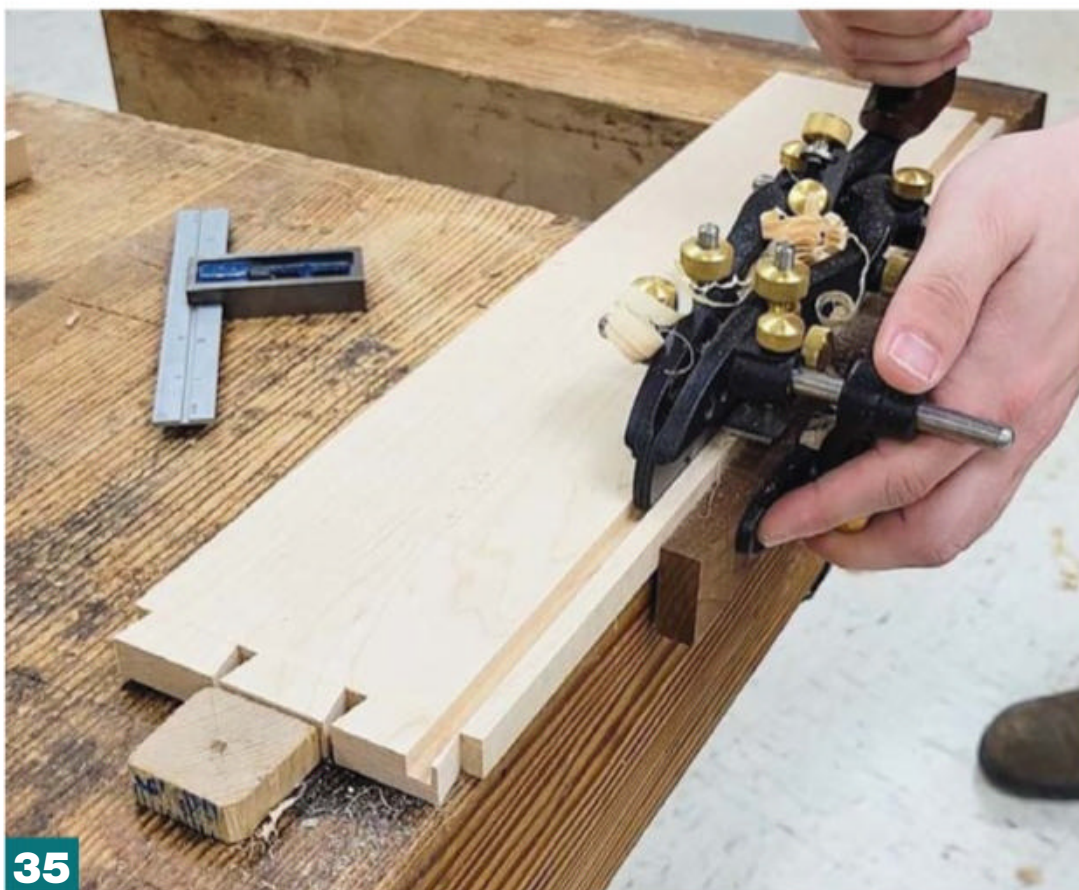
28



29

28 There's a lot of information out there about cutting dovetails. I will say only two tips. One, it is easier to gang-cut the tails when working with narrow stock.

29 Secondly, I tilt my boards to make my cut more perpendicular to the floor, helping me keep my kerf straight.



30 Using an angled guide, cut the walls of the sliding dovetail.

31 Chisel out the waste.

32 Transfer the dado thickness to the end of the back board.

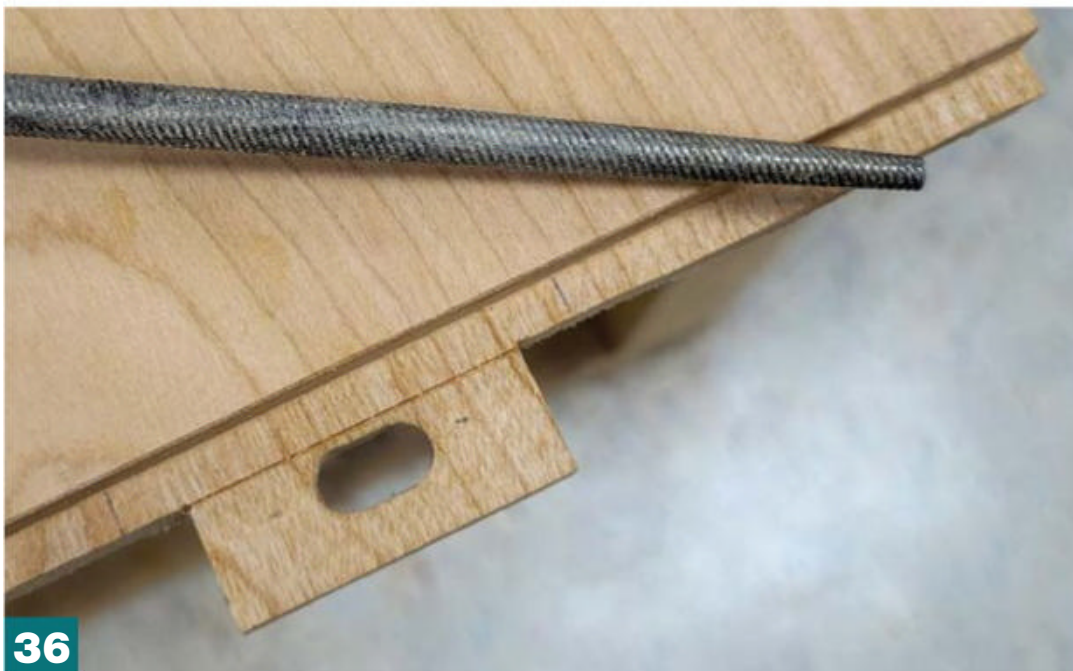
33 Sever fibers at the end of dovetail.

34 Plane to the transferred line.

35 Groove for the bottom.

Drawer Construction

The drawers are simple half-blind dovetails for the front, allowing the groove that holds the bottoms to be hidden from view. While laying out, I make sure to leave the sides a little proud of the drawer face so that I can plane them flush when cleaning up the joint. Also, when you select the orientation of your side boards,

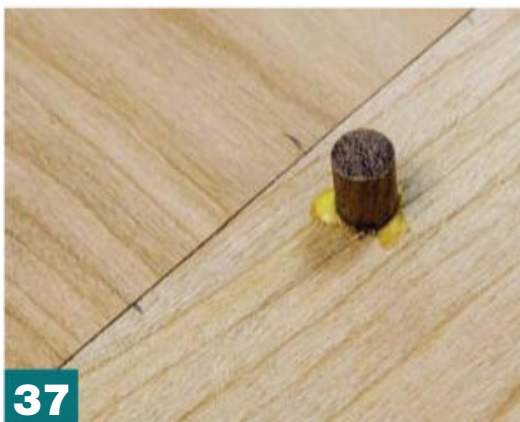


36

36 Using a round file, elongate the hole in the middle and back tenon.

37 Remove the excess dowel with the flush-cut saw.

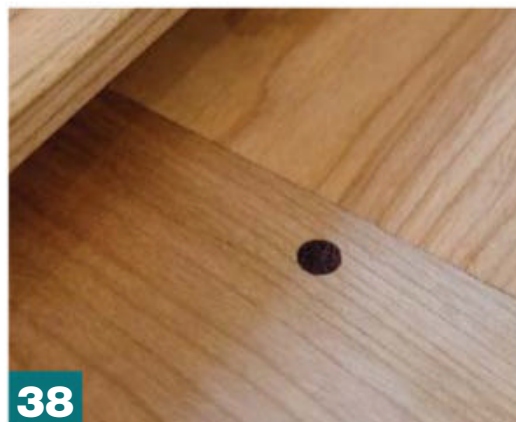
38 A few coats of shellac and then a coat of wax gives everything a soft shine while making all the drawers run smoothly.



37

be sure the grain is best suited for this planning direction otherwise you'll get tear-out. Even worse, it will force you to plane toward the drawer fronts and risk chipping it.

I use a sliding, half-dovetail joint to connect the back of the drawers. This allows for the sides of the drawers to extend beyond the back so that the finished drawer can be fully extended. The back is cut narrower than the sides, so the bottom panel can slide under it into its groove. Cutting a sliding dovetail is as easy as cutting a dado. I have a strip of scrap that has one side ripped to 80° in order to match the angle on my dovetail plane. I cut one wall of the dado at 90°. I then use the strip as a guide



38

and run my tenon saw at that angle. Next, I transfer the thickness of the dado to the back and plane away until it slides into place. I recommend sawing a small cut along the gauge line at the back of the planning path so that you don't have chipout.

Work Shelf

Lastly, the work shelf is a simple panel with breadboard ends. Layout for this is similar to laying out dovetails or finger joints, but first, I cut a groove in the ends and create a large tenon in the board. Next, lay out three smaller tenons and cut away the waste. Transfer their locations and chop corresponding mortises in the ends, leaving them a little

wide in the middle and back. When drilling for the pegs, I chose to make the front tenon fixed instead of the middle one. This directs all seasonal movement toward the back of the case — same as the fasteners for the table top.

Having played around with ways to wedge the workshelf as it nears full extension, I've decided to leave it floating with no stops or wedges so that if the shelf is damaged, it will be easy to remove and repair it. If you want, you could screw a narrow stop into the bottom of the worksurface after it has been inserted past the front rail. Of course, the drawers will have to be removed to access the stop, but it's at least reversible and prevents pulling the worksurface all the way out.

Finish

All that's left is to install the drawer guides and stops. I do this with hide glue and a rub joint, so no clamps are necessary. Then fit the drawers, finish with wax, and install the pulls. For pulls, I went with top-notch knobs from *Horton Brasses*. Whatever you choose, just make sure to graduate them with the drawer sizes.

I generally finish parts of the piece as they get glued up. It makes mopping up squeeze-out easier, and I don't have little blotches in the nooks and corners of a piece. I use shellac and wax for most furniture. After the first coat of shellac, I sand and then use a Scotch-Brite pad to remove bumps after subsequent coats. If you anticipate the higher amount of wear, I like *Tried and True* varnish or *General Finishes* Arm-R-Seal. I hand-rub all finishes since I don't have a spray booth, and I avoid polyurethanes as in my experience, they add a plasticky look to a piece. No matter what finish you choose, I am sure you will love your new sewing counter as much as I do! **PW**

Kenan Orhan is an author and woodworker. He lives in Kansas City.



EST 1928

WOODCRAFT®

We take wood dust in the shop seriously.

TOGETHER, WE CAN CREATE ANYTHING®

Learn more at woodcraft.com/dustcollection

To Find Your Local Woodcraft Store, Visit Woodcraft.com Or Call 800-225-1153.



**TEK
BOND**
SAINT-GOBAIN

SEALANTS & ADHESIVES

FOR PROs AND DIYers

NOW AVAILABLE AT YOUR LOCAL RETAILER

Since 2002, Tekbond has been producing Adhesives and Sealants for the Professional and DIYers alike. Checkout Tekbonds assortment of silicone or acrylic caulking products for a wide range of applications, including kitchen and bath, painters, all-purpose, and window & door. Available in 10.1 oz. cartridges with attachable/detachable nozzles and caps for an accurate bead, easy cleaning, and storage.

KEEP IT TOGETHER.

For more information on Tekbond products and displays including; Silicone, Acrylic, Construction, PVA + Super Glue, Automotive or Super Glue call 1-800-982-0237 or email TEKBOND@saint-gobain.com Or check out : <https://nortonsga.us/tekbond>



Razee-style Jack Plane

By Dillon Baker

Style and utility converge with this classic wood-bodied hand plane.



PROJECT #2114

Skill Level:

Intermediate

Time: 2 Days

Cost: \$180

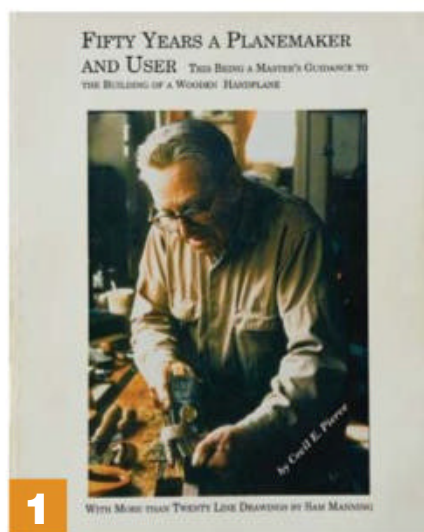
PHOTOS BY CHRIS HENNESSEY & AUSTIN DAY



Building a wood-bodied hand plane should be on every woodworker's bucket list. I have been entertaining the idea for years, however always falling short on the execution.

It wasn't until recently that a colleague of mine left a book on my desk by Cecil E. Pierce called *Fifty Years a Planemaker & User*. I was instantly hooked after reading the preface. What strikes me about Cecil (other than his irrefutable passion for woodworking) is the language he uses to describe his affinity for the craft of creating hand planes. His old-world metaphors combined with his *unique* sense of prose are luring and oftentimes comical. This part autobiography, part instructional guide, takes you through (step-by-step) the process of building a Razee-style Jack plane.

If you are unable to snag yourself a now-out-of-print copy, have no fear! As a recent "Piercian" convert, I write this article to further promote the intrinsic value of creating with your hands as well as a tribute to the man who has almost single-handedly guided his craft while inspiring so many.



1 This is the book that this article pays homage to. If you are lucky enough to come across a copy — snag it! You won't be disappointed.

2 Align the grain direction in the sole and body for consistent wood movement.



Body, Mind and Sole

There are 3 species that were used in the construction of this plane: European beech for the body, Goncalo Alves for the sole, and cherry for the handle. The originals were constructed from a single blank of exotic wood but breaking up the plane body into two parts provides a more diverse range of material options, as the availability of exotic woods are difficult to find in thicker stock.

Now, the tenets of woodworking would tell you to glue up your pieces first and then mill them down to their final dimensions. I went ahead and cut the blank as well as the sole to thickness and width and then left the length oversized. This contrarian order was implemented to ensure the thickness of the sole was "true" and that the joinery remained centered on the blank. To create the sliding dovetail on the sole, use a 7°



3 Templates allow for efficiency of layout as well as repeatability.

4 Use the mouth location to lay out the bed and escapement position.

5 Continue by laying out the bed and escapement locations on the top of the blank.



Jack Plane

dovetail bit over at the router table. This will provide a smooth and accurate joint when gluing up the blank.

Keep it Square

With the blank glued up, crosscut it to final length and begin to lay out the spacing for the “mouth” as well as the escapement. Hog out the bulk of the waste using the drill press, and then pare down the walls using a combination of bench and mortise chisels. For the iron bed, I create a guide block with an angle cut on each side. This helped assist with creating an accurate 45° slope for which the iron can rest. Proceed to fine-tune the escapement as well as the iron bed using a series of needle files.

Once the “pocket” has been completed, head back over to the drill press. With the table set to 45°, begin by creating a $\frac{3}{4}$ " diameter recess to accommodate for the cap iron screw. Swap out the bit and begin to drill a $\frac{25}{32}$ " diameter hole to house the threaded insert. Then, finish up by creating a third hole that holds the pressure screw for the toggle. Follow up by extending the original $\frac{3}{4}$ " diameter hole up the back slope of the pocket using a chisel. This groove provides lateral adjustment for the iron.

With the blank still square, layout the location of the mortise for the plane handle. Begin by removing the waste with a series

6 Here, a Forstner bit was used to waste out the excess material for the iron bed.

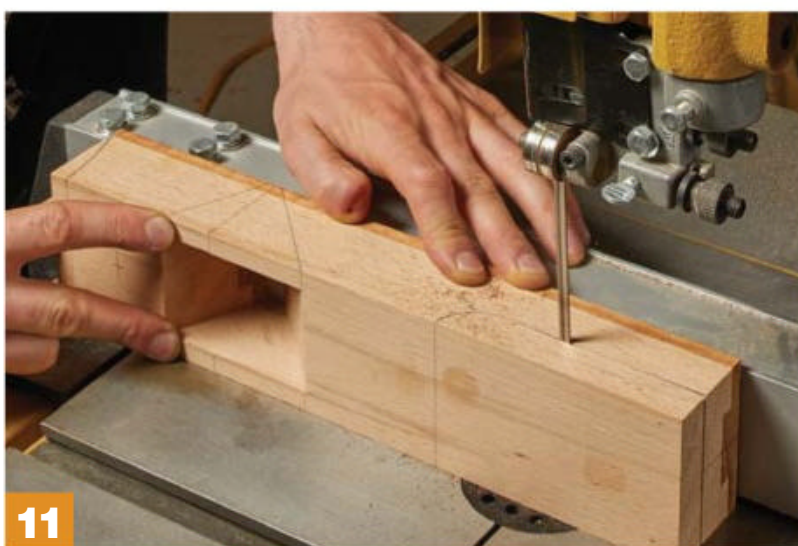
7 Readjust the drill press table to accommodate for the angle of the escapement and continue your waste-removal process.

8 I like using a drill bit about $\frac{1}{16}$ " smaller in diameter than the opening I am trying to create. This allows me to fine-tune the mouth using a chisel.

9-10 An angled guide block was used to help ensure the accuracy of the iron bed. First use a mortise chisel, followed by a bench chisel.

of stopped holes using a $\frac{3}{4}$ " Forstner bit. Clean up the walls and finish off the mortise for the handle using





a bench chisel. You will notice the “bury” of the mortise has sloped walls and that the mortise was left slightly undersized. This was implemented to achieve a tight slip fit once the handle is applied.

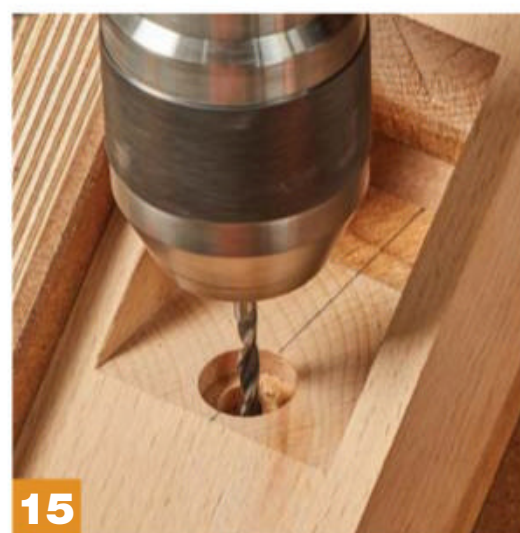
Lastly, create the two $\frac{1}{16}$ "-deep counterbores that will receive the low-profile thumbscrews which serve as the strike buttons.

11 Utilize the fence to cut the face of the razee profile.

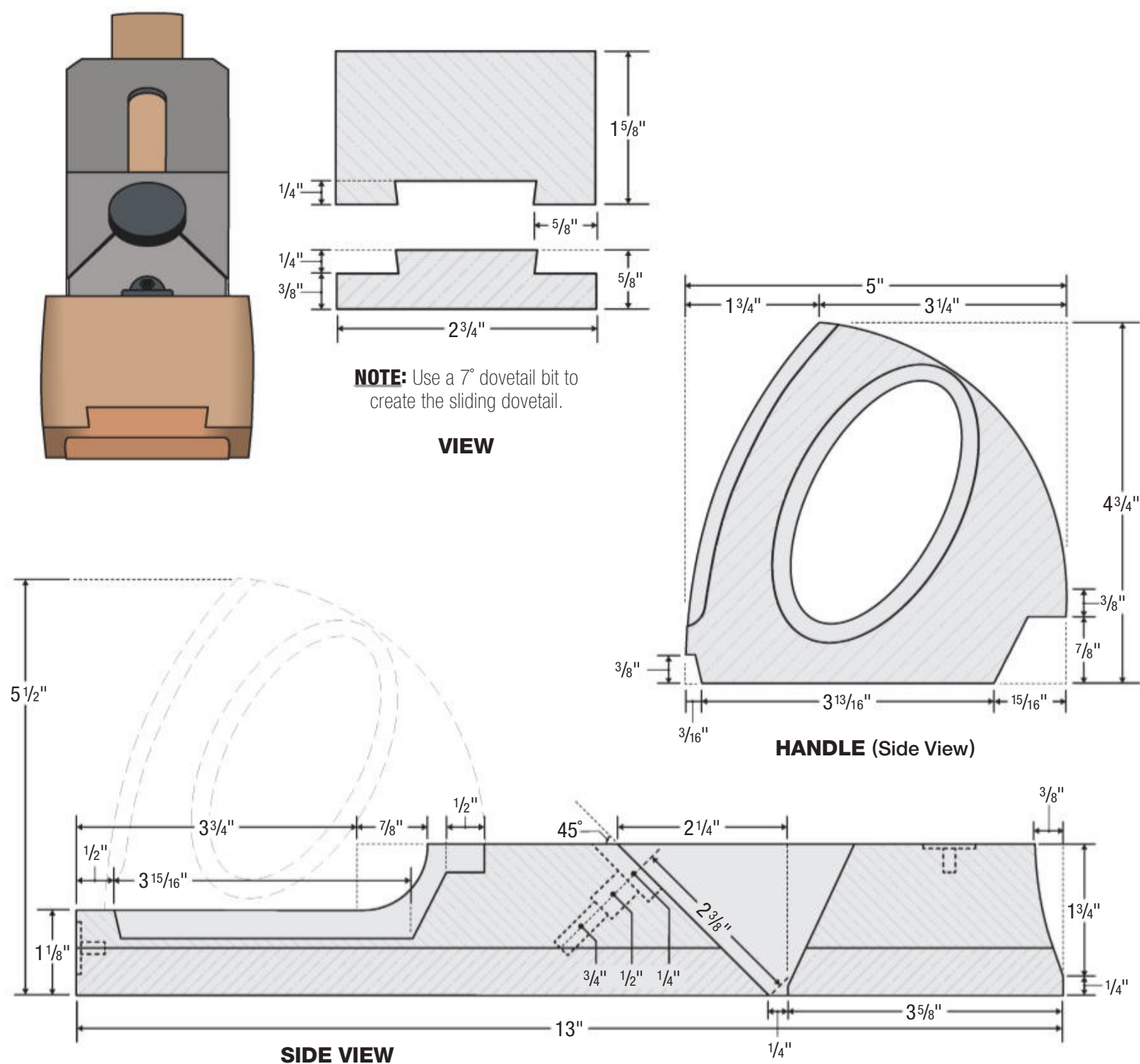
12 Cut about $\frac{1}{32}$ " from your layout line, then, clean up the curve using a sanding block or an edge sander.

13-15 Set the height of the drill press table to allow enough room for all three bits to be interchanged without depth readjustment. This simple consideration helps ensure your center-point for each cut.

16-17 Set the angle guide a $\frac{1}{4}$ " back from the iron bed and create a channel for the cap iron screw. Clean up any score lines left behind from the Forstner bit using a needle file.



Razee-style Jack Plane



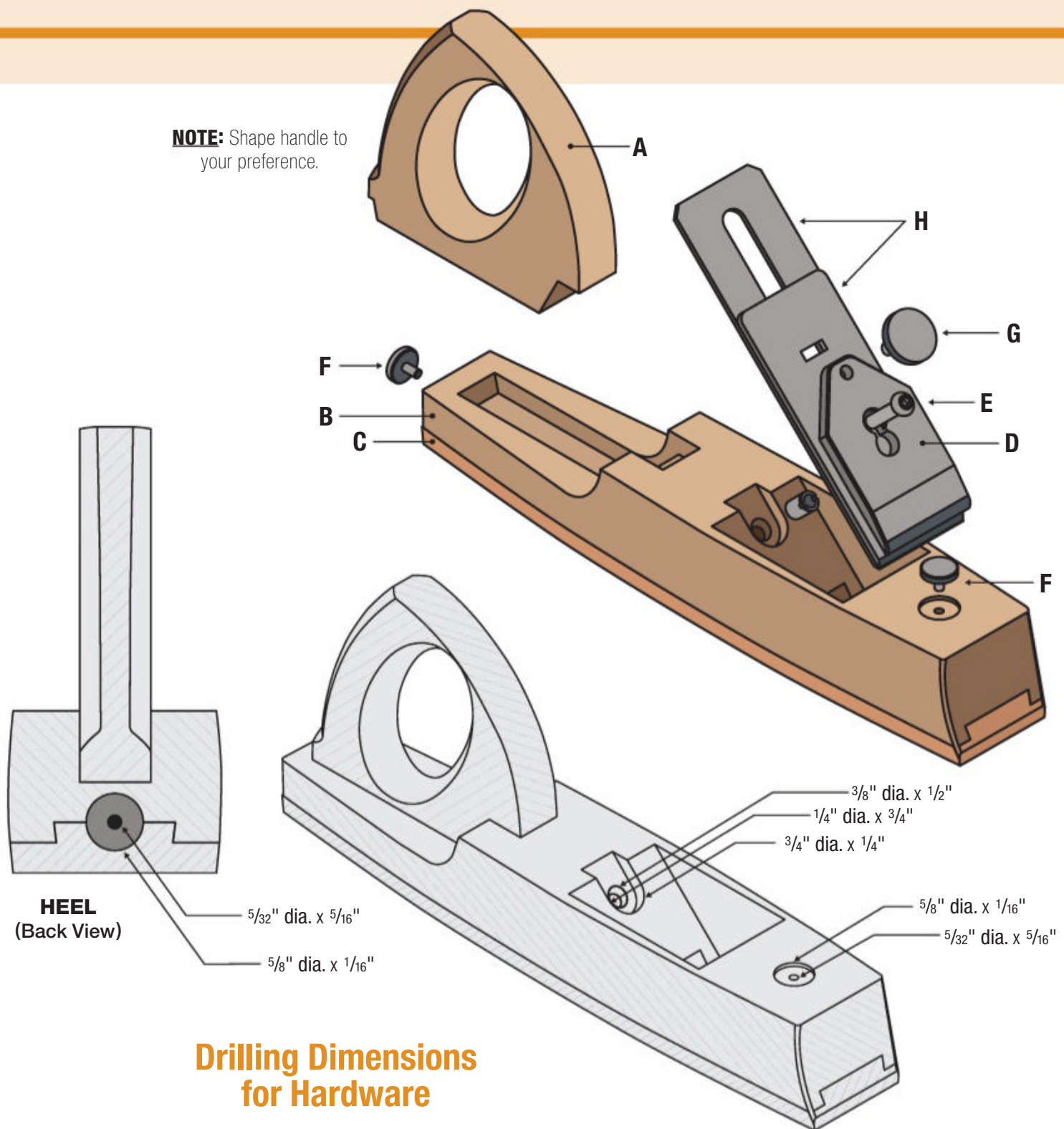
Shape the Profile

Now that the precision element is behind us, it's time to establish some curves. To execute this process, I created a couple of profile templates constructed from 1/4" pressed hard-board. Once you have transferred the profiles, start cutting away the rear or "razeed" shape along with the contour of the nose. With the blank still square, clean up your cuts with a spindle sander. Continue by flipping the piece on its top and cut the aerial (overview) profile out—clean up any irregularities using an edge sander.

18-19 I started with a coarse half-round rasp to establish the lateral profile. Refine the shape by following up with a medium-fine flat rasp.

With the general shape formed, reach for your rasps and files, and begin to sculpt the contour of the two sides. I went ahead and drew a reference line, approximately 3/32", from all four top and bottom edges. Then, draw a centerline that extends from the nose to the heel on both sides of the plane. Work your





19

Materials & Supplies List

No.	Item	Materials/Comments
1	A Handle	5/4 Cherry
1	B Body	8/4 European Beech
1	C Sole	4/4 Goncalo Alves
1	D Toggle	Tight-tolerance low-carbon steel; <i>McMaster Carr #9517K442</i>
1	E Tensioning screw	M6 low-profile thumbscrew; <i>McMaster Carr #92552A456</i>
2	F Strike buttons	M4 low-profile thumbscrews; <i>McMaster Carr #92552A423</i>
1	G Pressure/toggle screw	M6 button head drive screw; <i>McMaster Carr #91239A336</i>
1	H A2 blade and cap iron	Cryogenically treated steel; <i>Hock Tools #BAS200</i>

Jack Plane

way from the edges towards the center using the rasp until you have reached a balanced curve on both sides. Continue to refine the shape using a series of files and various grits of sandpaper.

Create the Toggle

While still in the handmade state of mind, let's turn our attention towards the toggle. For this step I purchased a $\frac{1}{4}$ " thick piece of tight-tolerance low-carbon steel from McMaster Carr. The benefit of this steel is that it's easy to machine and work without the requirement of specialty tools. The flat stock was ordered to thickness as well as width, so the only preparation needed is cutting it to length.

20-21 Double-check the pre-drill bit to tap conversion before execution. Slowly rotate the tap and back out to remove loose chips. The alternative could result in vexing results — don't ask me how I know.

22 Flatten the back of the toggle using a sanding block with 100-grit sandpaper.

23 Refine the edges of the toggle using a needle file.



20



21



22



23



24



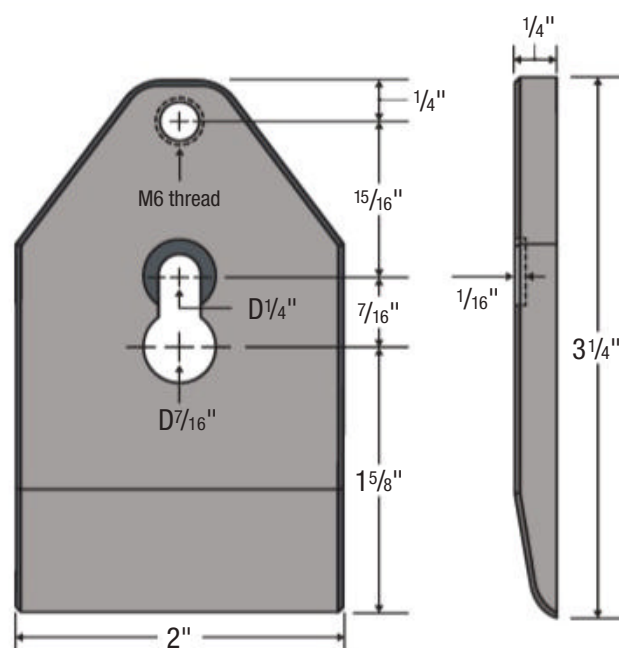
25

24 After surfacing them, use a solvent to clean the parts.

25 Provide enough clearance between the iron bed and the tensioning screwhead for the toggle to be removed.

Toggle

Made with tight-tolerance low-carbon steel from McMaster Carr #9517K442.



FRONT VIEW



26 With multiples in mind, another hardboard template was created for the outline of the handle.

27 Most of the shaping done on the handle is free-form — let your eye be the guide.

28 Check the fit of the handle before committing to adhesion.

29 Now that handle is applied, finish up with some light sanding. With any leftover epoxy, attach the strike buttons as well as the tensioning screw insert.



Once this is done, create the center mark locations for the toggle adjustment and pressure screw. Drill the counterbored seat first (for the pressure screw head) followed by the hole for the shaft. This allows for fine adjustment of the plane blade and keeps it from slipping.

Make the adjustment thumbscrew hole using a 5 mm bit followed by a 6 mm tap. Just remember, twist slow and back the tap out to clear the chips. The bevel of the toggle along with the two shoulders are cut using a hacksaw and fine-tuned using a set of files.

Can You Handle It?

Utilizing a full-scale template (like the ones used in the plane body), trace the shape of the handle onto your wood choice — here, cherry was used. With the blank still square, I went ahead and cut the tenon for the “bury” first, followed by the outside profile. To waste out the opening for the handle, drill a couple

of auger holes to allow access for your coping saw.

With the general outline established, shape the remainder of the handle with any combination of rasps, files, scrapers, and sandpaper. You will notice that the handle has a natural forward slant and that the interior contours are more exaggerated. This was done to accommodate for personal aesthetics as well as comfort preferences. Yours may deviate, which is encouraged.

As you finalize the shaping, go ahead and bed the handle into the mortise using some epoxy.

Surface and Finish

Now that your hand plane is mostly complete, take this time to ensure the bottom is plumb. Using a pencil, draw a series of lines across the sole of the plane. Then, attach a piece of adhesive-backed sandpaper to a flat surface (table saws work great for this) and begin to work the plane back-and-forth. Be sure to continue

to check the bottom until all the lines are removed.

Wood-bodied hand planes do not necessarily require a finish, as this may potentially impede its performance. However, if you must, a paste wax finish can be applied to accentuate its natural luster while simultaneously creating a friction-free surface. Plus, it’s always easy to re-apply once worn.

Set your plane iron, attach the toggle, and make the necessary adjustments utilizing the two strike buttons — it’s time for take-off.

Lastly: Word to the Wise

Whether you fall short on expectation, or hit the bullseye every time, Cecil offers some words of advice: “Never be satisfied” (Pierce, 1992, page 7). **PW**

Dillon is a regular contributor to Popular Woodworking magazine, as well as the design editor for Woodsmith Magazine.



PROJECT #2115

Skill Level:

Intermediate

Time: 4 days

Cost: \$250

■ Dovetailed, Curly Maple Tool Chest

Build a tool chest that's worthy of your tools. Customize it to fit exactly the tools you want.

By Logan Wittmer

I have a confession. I like nice tools. There's something about boutique tool makers that I love. I'm guessing it's the combination of high-quality tools and the maker's backstory that speaks to me. Understandably, most of the time, the tools from these types of companies are pretty pricey. With that being said, I've been tossing a lot of my tools into a tool tote over the last few years as I travel to give demonstrations or teach classes. Every time they rattle and bang together, I cringe. So, that's what drove me to build myself a little nicer toolbox that would keep my tools protected.

The style of this tool chest is based on one that I saw in a David Barron video years ago. Mine is a bit bigger, and once it's loaded with tools, it's decently heavy. However, it's still fairly easy to carry to and from demonstrations, and it keeps everything safe and organized.

Customization is Key

Now, this project is probably a little different than past *Popular Woodworking* projects. The reason is that I'm fully expecting if someone builds a chest of this style, it will be completely different than mine. And that's the point. I want to show you the process, but the sizing and customization is up to you, your tools, and what you want to store in your tool chest. To be honest, it doesn't even have to be a tool chest. It could be a hope chest, sewing chest, or anything else you could imagine.

From a sizing standpoint, the first thing I want to do is figure out exactly what tools will ride in it and divide them up into different groups. Of course, the heaviest items should always go in the bottom. As you can see below in Photo 1, that ends up being a low-angle jack plane, a smoothing plane, my miter plane, a few oil stones, and my oil can.

I suggest nesting your tools in a group and playing with the arrangement. It's important to see how they fit together. The layout I settled on can be seen below. I used a few strips of painter's tape to rough in the box size. I had planned on my tool chest having a tray. Quite obviously, the tray will be about the same size as the box. Technically, it's a little smaller but close enough. Using the same painter's tape outline, I made sure that a vast majority of the tools I need were going to fit within the tray.

The third and final layer of my chest is the inside of the lid. This are going to be the longer items that don't really fit in the tray once I included a chisel case. My pull saw, coping saw, paring chisel, and square pretty much filled this out. Technically, I could probably squeeze a few more tools into the inside of the lid, but this is good for now.



1 BOTTOM OF CHEST — The heaviest tools live here. Just because the chest will hold these does not mean they will all make every journey with me.

2 TRAY — The contents of the tray will shift as job or demonstrations change. To be honest, I know that it will probably be a catch-all, so the only organization that it will get will be a chisel tray to protect the edges.

3 INSIDE OF LID — Finally, this is the valuable real estate for some of the lighter, longer items. As needs evolve, I could see myself changing the tools and holders that are located inside the lid. Always keep your options open.





Case Construction

The carcass of the tool chest consists of the front, back, sides and bottom. Here, I'll talk about building the carcass, but the lid and tray are pretty much identical, just a different size.

I start by breaking apart my stock into the necessary parts. For this chest, I chose some nicely figured soft maple. Something like pine or fir would work as well and be lighter, but I liked the look of this maple.

Because this is for my hand tools, I felt it would be bad ju-ju not to use as many hand tools as I could. A carcass saw rough cuts parts easily, and I used my shooting board and low angle jack to make sure everything was square with equal lengths.

After sizing the parts, the majority of the work on the tool chest is cutting the dovetail joints. You could go with some fancy dovetails here if you want, but I chose tried and true through dovetails. If you've never hand-cut dovetails, this is a great

4 A carcass saw makes quick work of breaking down rough stock into parts.

5 A shooting board is an essential tool for squaring up boards and sizing parts in any hand tool shop.

6 A David Barron dovetail saw guide is my go-to system for cutting dovetails.

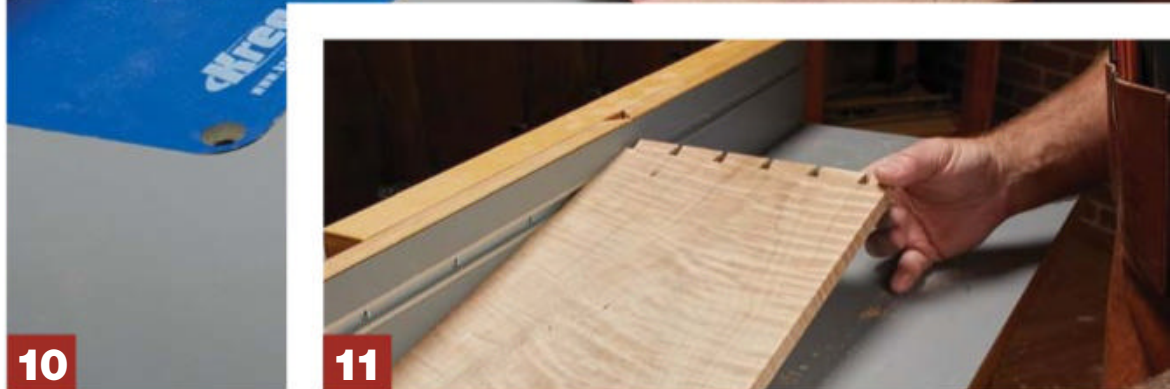
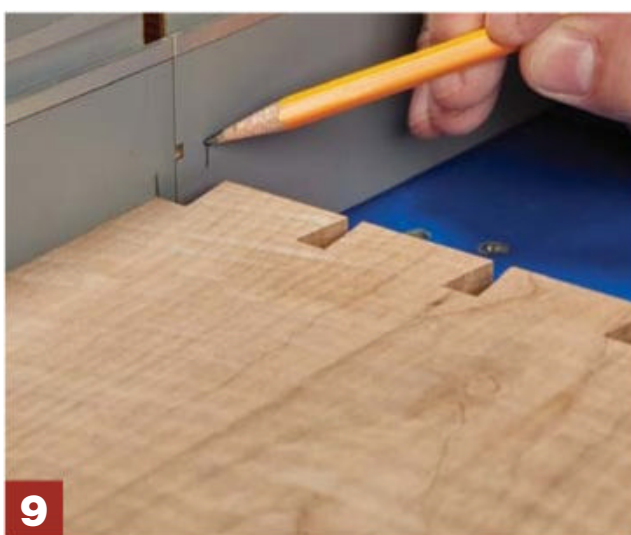
7 After starting the kerf with the guide, I'll often pull the guide away and sneak down to the baseline.

little project to try them out on. A step-by-step for cutting dovetails can be found on page 16.

After cutting the joinery on all of the parts, you now have to rout a groove along the bottom edge of the inside of the box. This will be for the solid wood bottom. Routing this groove can be a little tricky, as you don't want to rout through the end of the tails—it would be visible on the finished box. Instead, I mark a line on my router fence where I will plunge the front of the workpiece onto the bit (Photo 8). Likewise, I mark a stopping point where I will stop the workpiece and shut off the

router (Photo 9). Then, it's a simple matter of lining up the workpiece with the starting mark and lowering the workpiece over the running router bit. As I reach the stopping mark, I shut off the router and raise the workpiece off the bit. The groove falls between the pins on the sides, so you can just rout straight through the workpiece as seen in Photo 12.

After gluing up a pair of panels, one for the top and one for the bottom of the chest, cut them to size. The top and bottom will get a rabbet cut along the four edges. This forms a tongue that will fit in the groove you just made inside the



8 Mark the lead edge of the workpiece on the router table fence.

9 Mark the ending position of the workpiece on the fence.

10-11 Lower the workpiece onto the spinning bit and rout right to left. Then, as you reach your stop mark, raise the workpiece off the bit.

12 The groove in the sides is positioned between the pins, and can be routed straight through.

case. A rabbet plane can take care of this quickly, however, I already had a dado blade loaded up in my table saw, so I buried it in an auxiliary fence and cut the rabbet there (Photo 13). Any fine-tuning to get it to fit nicely into the groove in the case parts can be done with a rabbeting block plane.

Glue it Up

With the parts in hand, you can now assemble the carcass. When it comes to an assembly like this, slow and

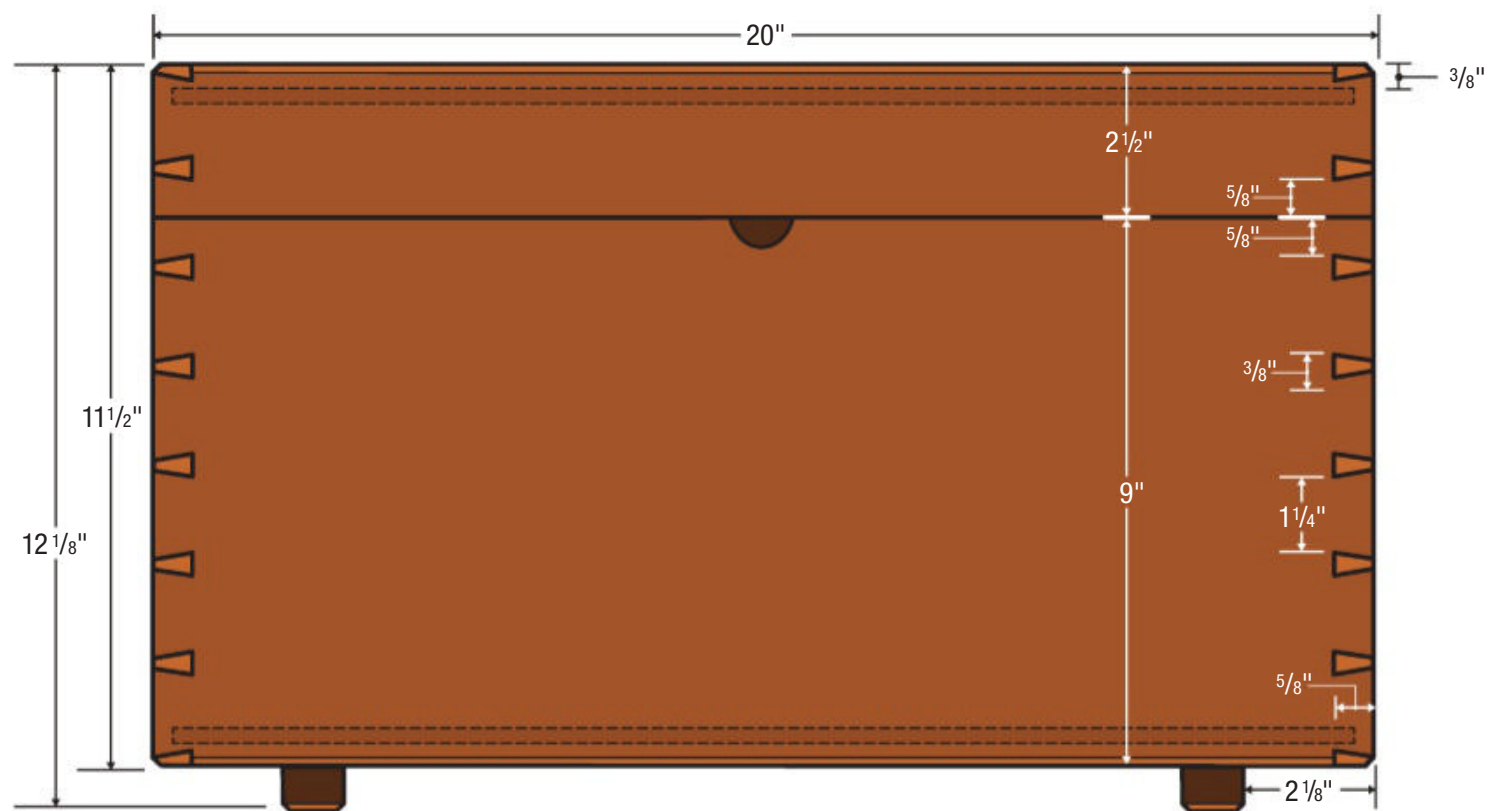
easy seems to work better for me. This means using a long open time glue, like epoxy or hide glue. I spread a little bit of glue on the inside of each tail and pin, as you see in photo 14, and get the front and sides assembled. Then, slip the bottom into place and drive the back home.

You can clamp the case together using specially made spacers to put pressure on each tail, but I'll usually just grab medium F-style clamps and put one across every other tail

or so. If you've laid everything out accurately, the case should be pretty self squaring, but I always check and make any adjustments with a clamp strung corner-to-corner.

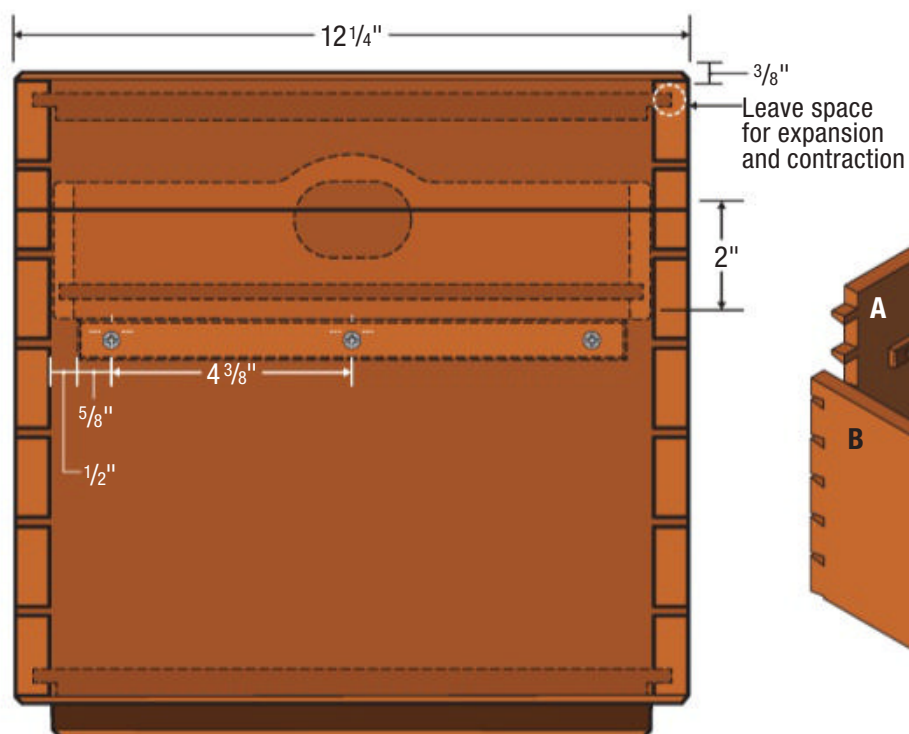
With the case drying, it's a good time to get working on the tray if you're including one. I made mine with some swooping handles on them — making a template out of hardboard then using it to flush-trim the handles to size seems to work the best. Before dovetailing,

Dovetailed Tool Chest

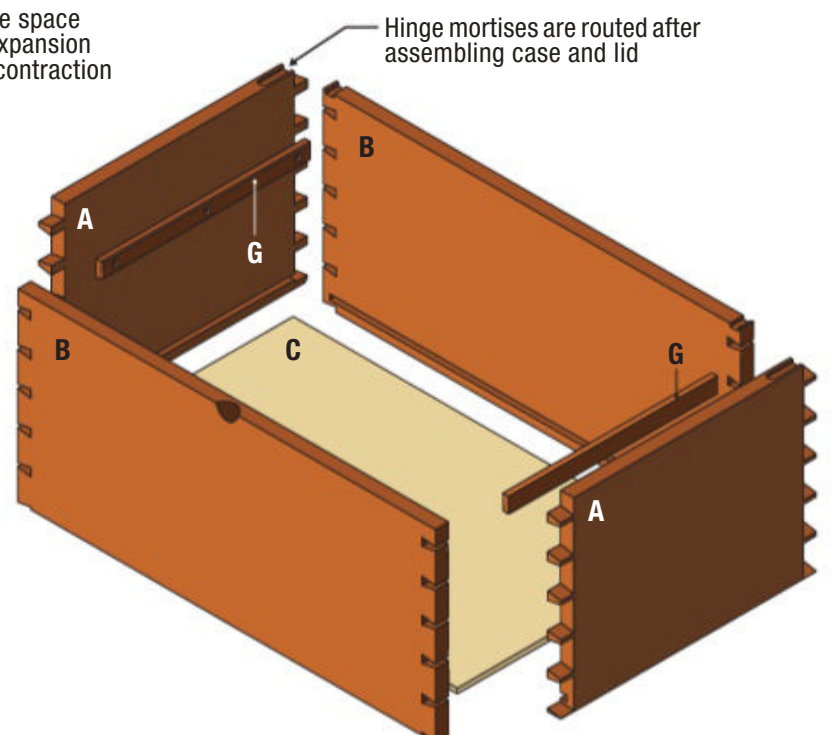


CHEST FRONT VIEW

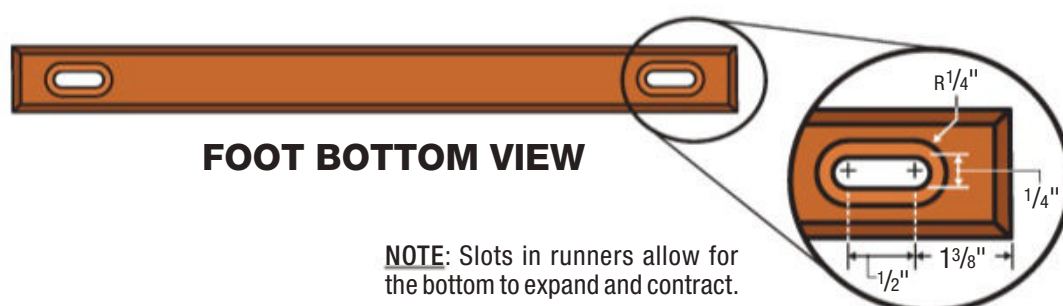
NOTE: Groove for top and bottom is $\frac{5}{16}$ " wide and $\frac{3}{8}$ "-deep.



CHEST SIDE VIEW



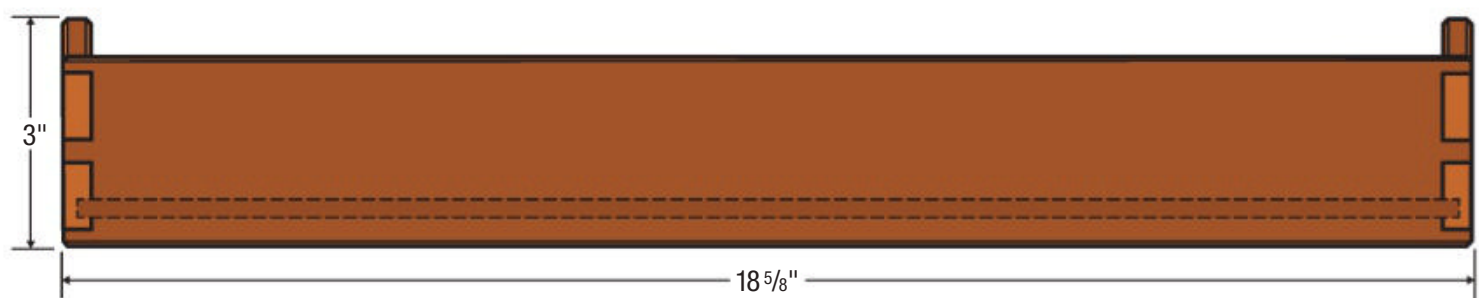
FOOT SIDE VIEW



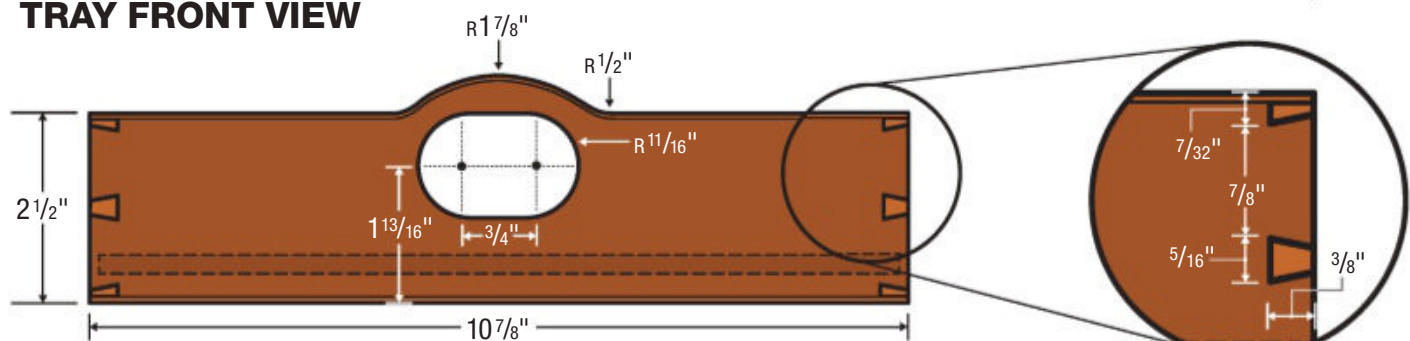
FOOT BOTTOM VIEW

Supplies List

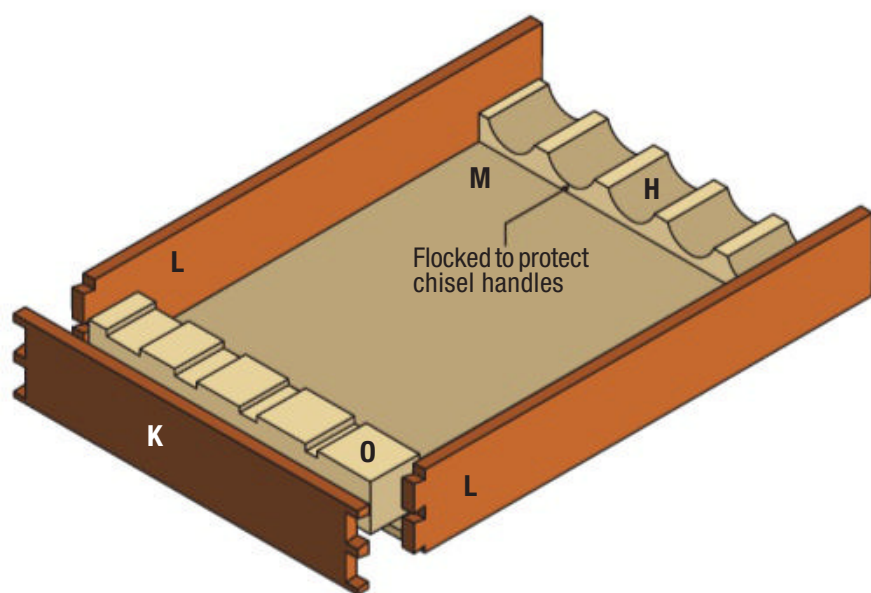
- Four #8 x 1" **pan-head wood screws**
*use to attach feet to tool chest
- Six #6 x $\frac{5}{8}$ " **brass screws**
*use to attach tray cleats
- 2 **large brass jewelry box hinges**
I recommend purchasing from www.fineboxhardware.com



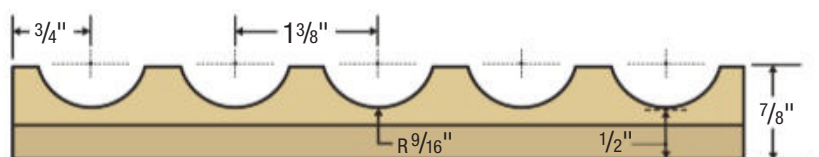
TRAY FRONT VIEW



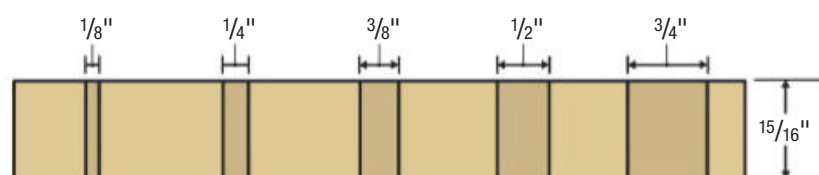
TRAY SIDE VIEW



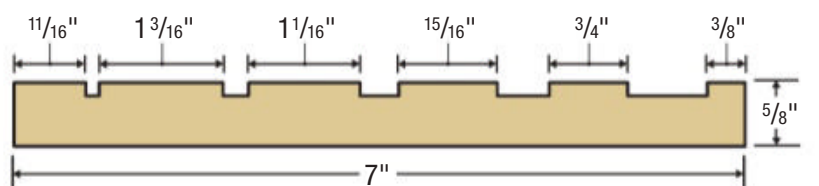
HANDLE BLOCK TOP VIEW



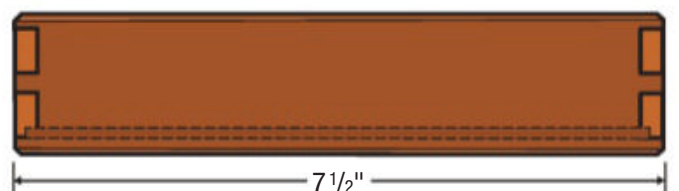
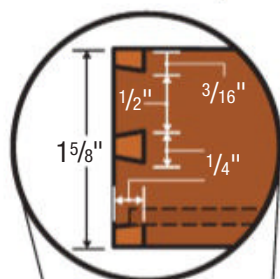
HANDLE BLOCK SIDE VIEW



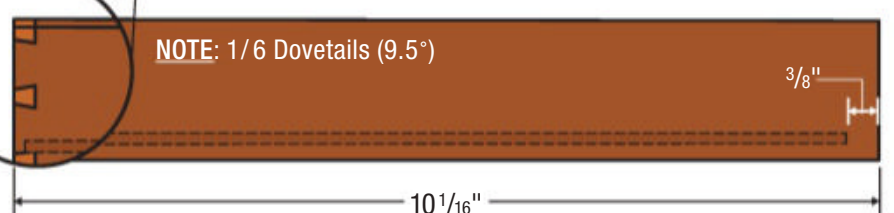
BLADE BLOCK TOP VIEW



BLADE BLOCK SIDE VIEW



CHISEL TRAY SIDE VIEW



CHISEL TRAY FRONT VIEW

Cut List

No.	Item	Dimensions (in.)		
TOOL CHEST		T	W	L
2	A Front/back	5/8	19 5/8	9
2	B Sides	5/8	12 1/4	9
2	C Bottom/lid panel	5/8	19 3/8	11 1/2
2	D Runners	3/4	10 7/8	1
2	E Lid front/back	5/8	19 3/8	2 1/2
2	F Lid sides	5/8	12 1/4	2 1/2
2	G Tray cleats	5/16	3/4	10
CHEST TRAY				
2	H Sides	3/8	18 3/8	2 1/2
2	I Ends	3/8	3	10 7/8
1	J Bottom	1/4	18 1/8	10 5/8
CHISEL RACK				
1	K Front	1/4	7 1/2	1 5/8
2	L Sides	1/4	10 1/16	1 5/8
1	M Bottom	1/8	9 1/2	7 1/4
1	N Handle block	7/8	1 3/8	7
1	O Blade block	5/8	15/16	7

All parts are curly maple except the tray and chisel rack bottoms which are plywood.



13



14



15

13 Cut a rabbet around the top and bottom panel.

14 Start assembling the dovetail joints, then spread glue inside the tails and pins.

15 Remember to apply even clamping pressure against the joints.

16-17 After cutting the parts at the band saw, use a pattern bit to flush trim them to a hard-board template.

18 The best way to determine if the tray is square is to use the carcass.

I shot all the parts so they just slipped into the case, and then I cut the joinery. During the clamp-up, I fit it inside the carcass to make sure they were both equally square. After a little sanding, the tray slipped into the carcass, slowly lowering on a small cushion of air. A perfect fit!

The lid to the box follows the same steps as the base, just a shallower version. Once the lid is complete, I attached the two using some side rail hinges. The groove for the hinges can be routed easily at the router table. You could just as easily use butt hinges for the same effect. The final steps before adding tool storage are to add a pair of runners on the bottom to lift the chest off the bench, add some cleats to the inside for the tray to sit on, and to chamfer the top and bottom edges.



16



17



18



19



20

Customization

Now is where you can really tailor this tool chest to fit your needs. For mine, I divided the inside of the carcass with cleats. These keep my planes in place, and I even made a cleat for my router plane to sit on.

I know that my tray is going to be a catch-all, so the only storage I made on this was a small chisel

19 The finished box houses the tools that I most use while demonstrating, but has plenty of room to add extra tools, or change out cleats as necessary.

20 The inside of the case has cleats for the tray to sit on, as well as cleats screwed into the bottom to position planes. By using screws, the cleats can be removed and changed as tools change.

holder. It's just a three-sided box that cradles the chisels.

The lid was the trickiest storage of them all. Here, you'll need to get creative with your tool holders. Mine uses a combination of cleats, magnets, and toggles to lock everything in place. The biggest thing is to keep the perimeter of the lid clear as the tray projects slightly into the lid.

A few things you might want to think about are hardware items. I chose not to put handles on the side of my chest. Instead, I plan to pick it up from the bottom of the box. However, you could easily install handles on the side.

For the lid, it's easy to lift with the rabbet around the top, but I also added a small thumb notch to help

lift it up. I cut this in with a carving gouge. A screw-on style handle would work as well.

When it comes to finishing the tool chest, you can take your pick. Paint, varnish, polyurethane, etc. would all be great choices. For a fancy wood like this, I use a two-step finishing method involving tinted shellac and Danish oil. You can read about that method on *PopularWoodworking.com*. Once the finish is dry, a quick coat of paste wax allows the tray to slip into place, and then it's ready to report for duty. **PW**

Logan Wittmer is a collector and user of fine hand tools. Apart from his duties as Editor, he often does demonstrations and classes for aspiring woodworkers.

Bandsaw Circle Cutting Jig

Make this sturdy circle cutting jig in a day, with readily available hardware, and you'll be cutting perfect circles at the bandsaw.

By Willie Sandry



I delayed, stalled, and put off a circle cutting jig for the bandsaw. After all, I had a small trammel for cutting circles with a router, so I was not sure how much I would use it. Now that I made one, it's surprising how often it comes in handy. Plus, there are added benefits of cutting circles on the bandsaw... dust is well controlled, and delicate plywood veneers are preserved on the top side.

With this jig, you will get accurate results which are comparable to a router jig. I built this circle cutting jig for my Laguna 1412 bandsaw, but it can be easily modified to work on any steel frame bandsaw.

Start with Plywood Base

Size a $\frac{3}{4}$ " thick by 18" square piece of plywood and mark a radius on each corner. Trim the corners to

your line at the bandsaw and sand them smooth.

Laminate the Jig Surface

I like jigs that are rugged and durable, so I laminated the top surface and add T-molding to protect the edges. Plastic laminate can be cut right on the table saw, but make sure the thin material can't slip under your fence.

PHOTOS BY THE AUTHOR

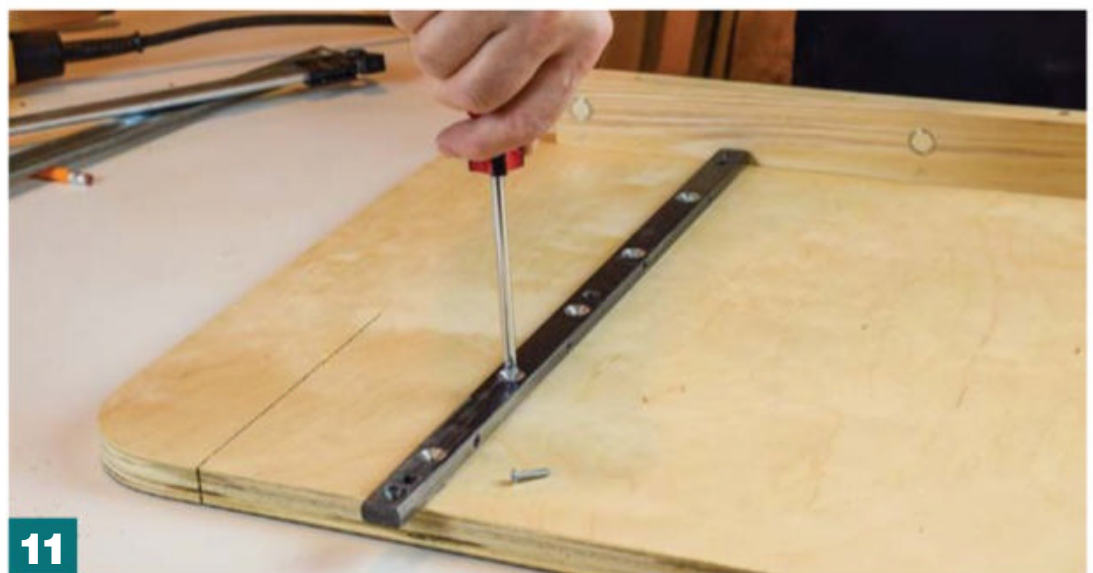
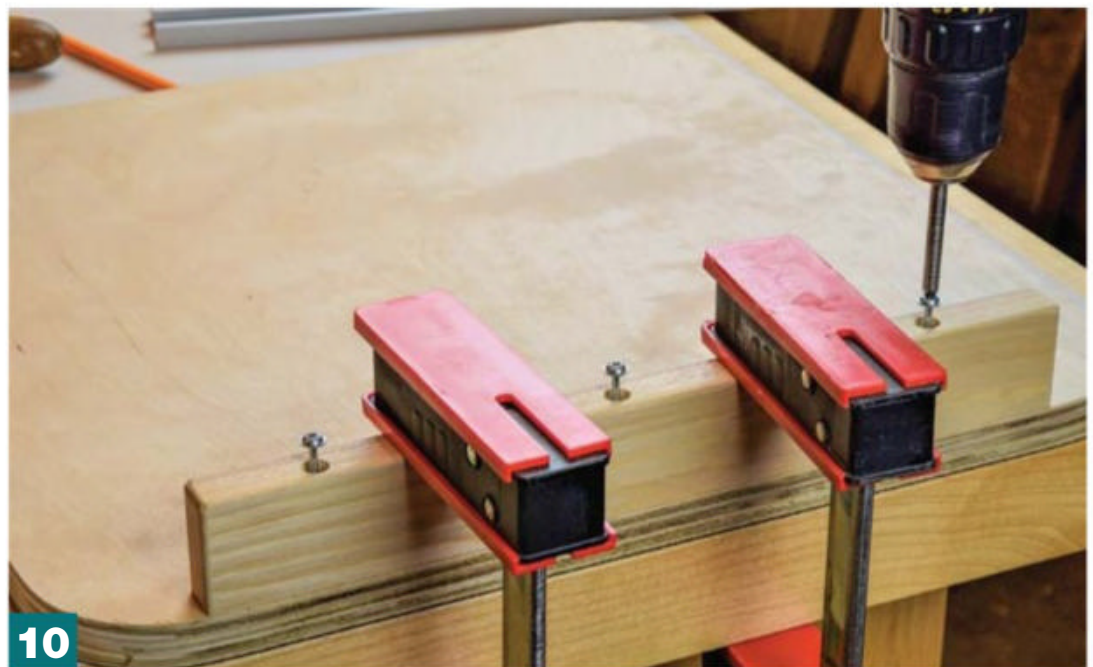
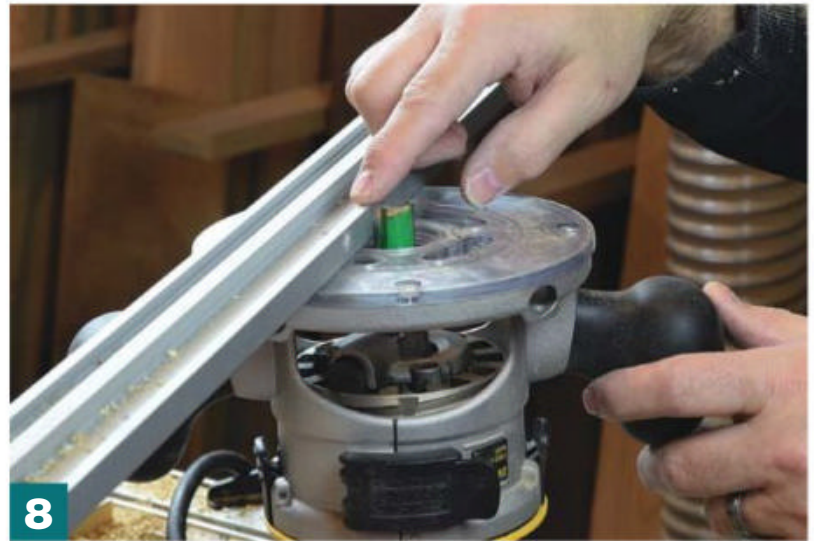
Circle Cutting Jig



- 1 Size your plywood and mark a radius on each corner.
- 2 Trim the corners at the bandsaw and sand smooth.
- 3 Cut plastic laminate slightly oversized at the tablesaw.
- 4 Apply a thin coat of contact cement to both the laminate and substrate. Be sure to wait until the cement tacks over before applying the laminate to the jig base.
- 5 Use scrap wood strips to temporarily position the laminate over the plywood.
- 6 Then, trim the laminate flush with a bearing-guided laminate trimming bit.



Circle Cutting Jig



Magnets and Hardware

The heart of the jig is an aluminum combination track, so you'll need a groove to accept the track. Rout in two passes until the track sits flush with the laminate surface.

Now add a fence to one edge of the jig. Drill recesses for a pair of rare earth magnets in the fence and secure them with magnet cups or epoxy. Then screw the fence to the jig with three screws. Two more pieces of hardware are needed on the bottom of the jig — a miter bar and a heavy steel bracket. I sourced the bracket from a farm-type hardware store, but any flat stock or plate metal would work.

Once the underside of the jig is more or less complete, rout a slot for the T-molding. Most products will specify what size router bit to use, but typically it will be 0.080" or 1/16" thick slot-cutting bit. Cut the groove around the entire perimeter of the jig and use a mallet to tap the T-molding in place.

7-8 Rout a slot for the hardware.

9 A good circle cutting jig should slide forward and stop at a predetermined location and stay put while in use. To that end, first mount steel cups for magnets in a hardwood fence.

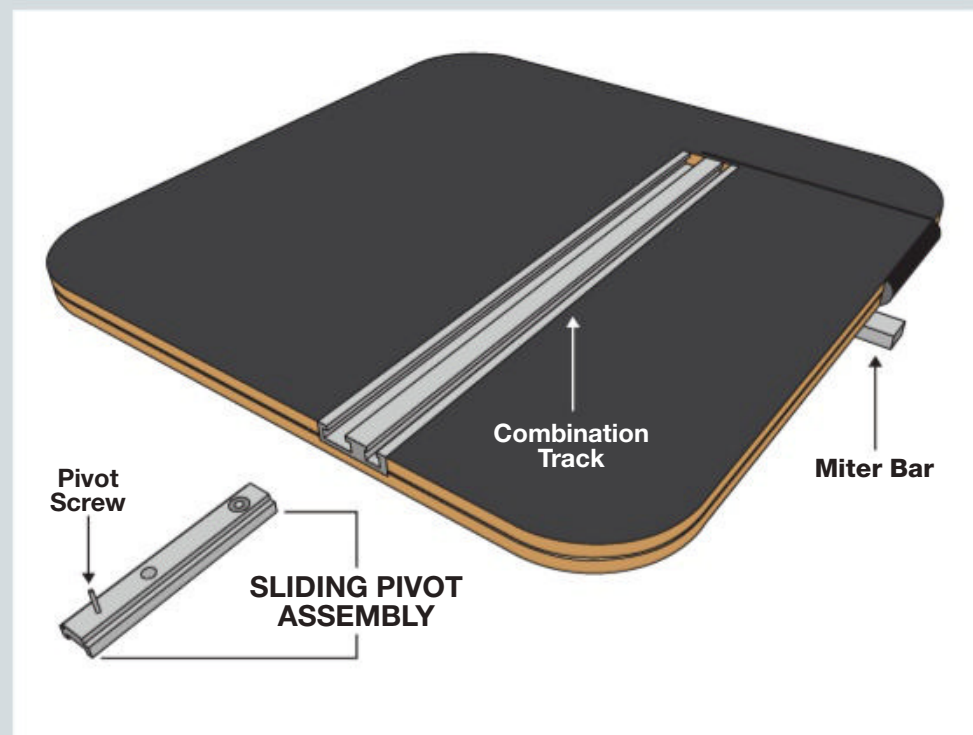
10 Now, screw the hardwood fence to the jig.

11 Lastly, mount a miter bar under the jig to ride in the bandsaw miter slot.

Supplies Needed:

- 3/4" T x 18" square piece of plywood
- Scrap piece of maple sized to bandsaw (other suitable hardwoods would do)
- Three #8 square drive screws to mount fence (Length varies based on your bandsaw)
- 3/4" W T-molding, 7' long
- Slot cutting bit for your T-molding (I needed a 1/16" thick bit.)
- Rockler® Bench Dog® dual track
- Measuring tape scale for dual track
- Woodcraft® WoodRiver® miter mounting track
- Sliding stop hardware: #6 x 1/2" screw, 1/4" shortened bolt, T-track threaded nut
- 18" standard miter bar and mounting hardware
- Quick set epoxy
- Two 1/2" diameter rare earth magnets
- Mounting cups for magnets (optional)
- 1/8" thick steel bracket and mounting screws (various size brackets will work)

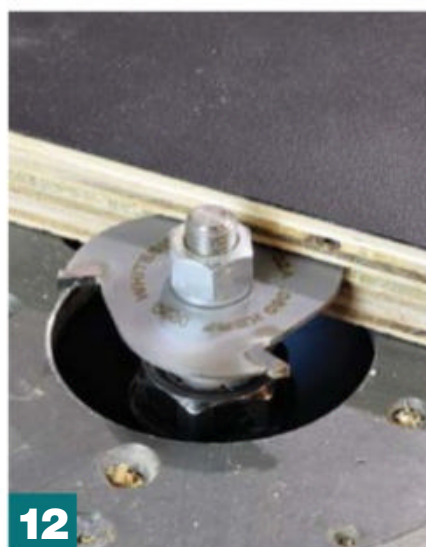
Bandsaw Circle Cutting Jig



12 Rout a groove for the T-molding around the entire perimeter of the jig.

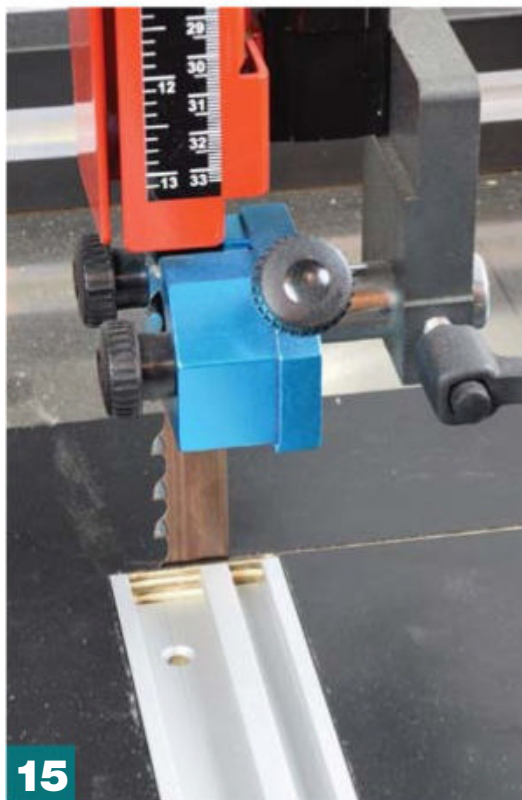
13 Use a mallet to tap the T-molding in place.

14 Quick-set epoxy works great to attach the combination track to the jig. Install the track and clamp it in place. You'll also need to trim the T-molding away from the entrance to the track.

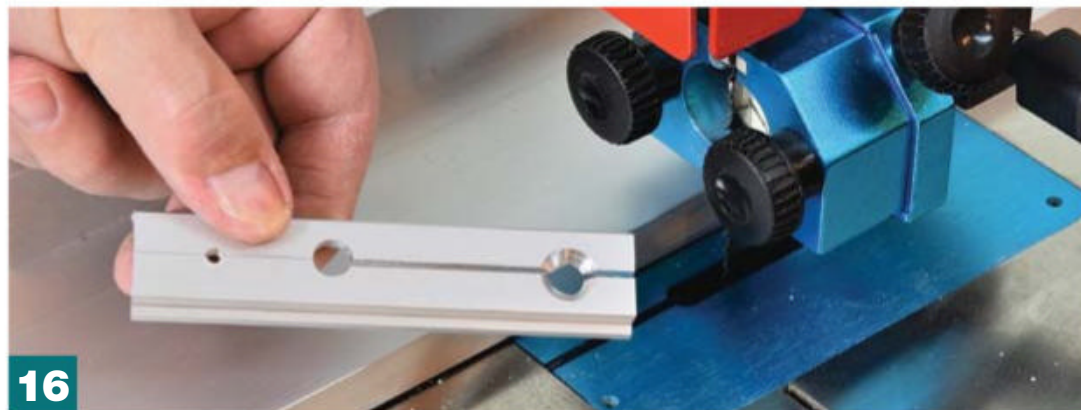


Build a Sliding Pivot

Most circle jigs rely on a simple series of holes to set the radius. I wanted a jig with infinitely variable spacing, so a sliding stop was required. Since there isn't one on the market installed flush with the surface, I made my own by slotting a 4" length of mounting track and installing a bolt and screw. Now, the stop can be positioned anywhere along the track. The stop is also reversible, which allows the pivot screw to be positioned where needed for circles ranging from 1" to 30" in diameter. Just tighten the screw to expand the stop and lock it in place.



15



16



17



18



19



20

15 With the combination track in place, advance the jig into the blade and create a kerf slot.

16 Start with a length of miter mounting track (item no. 172006 at Woodcraft) and drill a pair of 1/4" holes, spaced 2" apart. Then slot between the holes at the bandsaw.

17 To finish the assembly, add a shortened 1/4" bolt and T-track nut. Also add a #6 x 1/2" screw and epoxy the head in place.

18 Add a scale using plastic inserts and self-adhesive tapes, which are widely available. Lastly, place a pencil eraser over the pivot screw to cover the sharp point and prevent injuries.

19 Screw a heavy metal bracket to the fence located under the jig.

20 Time to put your jig to work!

Adding Final Touches

Only a few bits of hardware remain to complete the jig: a scale and a heavy metal bracket. Let's start by adding a scale. The beauty of using a combination track is the ability to add a measuring tape to the jig. Plastic inserts and self-adhesive tapes are widely available and make the jig even easier to use.

Lastly, attach a steel plate under the jig, screwed to the fence. This bracket is 9 1/2" long and 3" wide plate steel and keeps the jig from tipping after it's fully pushed into the bandsaw. The plate could be different dimensions and still work well. I used 1/8" thick steel plate, but 1/4" thick aluminum plate would work fine as well. Do not use a 1/8" aluminum plate because the bracket needs to be sturdy enough to prevent the jig from tipping in normal operation.

Put Your New Jig to Work

Now it's time to test out your newly finished circle cutting jig. You'll be surprised how simple it is to use! Just drill a small hole in the underside of your workpiece and set it in place over the pivot screw. Slide the jig forward until the magnets contact the saw and click into place. Once the magnets catch, you can focus on turning the workpiece steadily into the blade for perfect circles time after time. The sliding pivot point and scale allow for fine adjustment of circle size. **PW**

See the video in action on Willie's YouTube channel, *the Thoughtful Woodworker*. (<https://youtu.be/3GcqzgzkDo>)

Woodworker's Marketplace

The Beall Pen Wizard
Raises the art of pen turning to a new level

THE BEALL TOOL CO.

541 Swans Road N.E. Newark Ohio
1-800-331-4718 www.bealltool.com Dept. PW

www.whitechapel-ltd.com 1(800) 468-5534

WHITECHAPEL LTD
est. 1987
Fine Brass and Iron Hardware



WOOD FILLER
SUPER MET-AL Fill Holes on Cabinets, Wood Floors & Surfaces.

For: Wood Concrete Laminate Vinyl Floors

FOR FREE SAMPLES
AVAILABLE IN: ANTIQUE WHITE - NATURAL - BROWN - RED MAHOGANY - ESPRESSO BLACK - NUTMEG

1-800-851-8464
www.skmproducts.com



Shellac.net Wood Finish Supply
MeritIndustries.com



Authorized Mohawk & H. Behlen Distributor
Products for Traditional Furniture Finishing,
Touch-Up, Repair & Maintenance
home of: www.mohawkfinishsupply.com
BehlenSupply.com - 877-245-5611

Connecticut Valley School of Woodworking Bob Van Dyke - Director

Featuring hands-on classes for all skill levels taught by nationally known craftsmen including Steve Latta, Will Neptune, Peter Follansbee, Mary May, Mike Pekovich and more!

249 Spencer St., Manchester, CT 06040 • 860.647.0303
www.schoolofwoodworking.com



Subscribe & Save

Get **Popular Woodworking** delivered right to your **mailbox** or **inbox**.

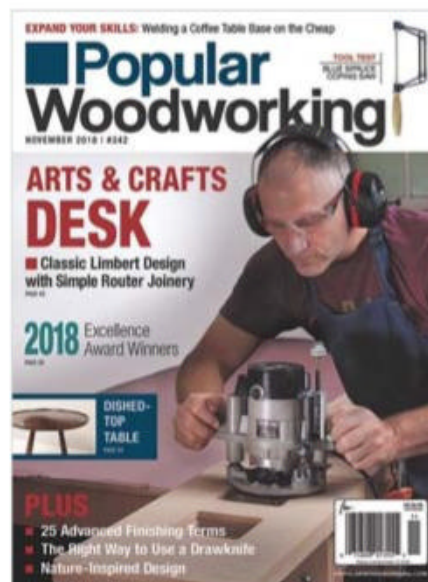
EXPAND YOUR SKILLS: Welding a Coffee Table Base on the Cheap

Popular Woodworking
NOVEMBER 2018 | #242

ARTS & CRAFTS DESK
Classic Limbert Design with Simple Router Joinery

2018 Excellence Award Winners

PLUS: 25 Advanced Finishing Terms, The Right Way to Use a Drawknife, Nature-Inspired Design



FULL PROJECT PLANS INSIDE: Build Outdoor Furniture to Last

Popular Woodworking
JUNE 2019 | #246

MAKE YOUR OWN **WINDSOR CHAIR**

WEEKEND PROJECT: Walnut Table With Router Inlay
BUILD IT: Japanese Writing Box



MASTER CLASS: Build an Heirloom Sculpted Side Table

Popular Woodworking
DECEMBER 2018 | #243

MAKE IT IN A WEEKEND **Traveling Tool Case**

SLIDING DOORS With Easy Router Joinery
WHY YOU NEED A HATCHET

WORKSHOP TOUR: Harps, Dulcimers & More

PLUS: Tips for the Best Bench Hooks, How to Banish Fear of Failure, Why Multiples Matter



Classified

Finishing Supplies and Equipment

BLOXYGEN SAVES LEFTOVER FINISHES – Inert gas preservation system.
www.bloxygen.com or (888) 810-8311.

Kits and Plans

WE HAVE A WIDE VARIETY of plans, projects, advice, back issues and all things woodworking in our online store. Please visit our website at PopularWoodworking.com/Shop

Schools/Instruction

JOHN C. CAMPBELL FOLK SCHOOL, Brasstown, NC. Courses for all skill levels. Week and weekend classes year-round, taught by nationally known instructors. Friendly, supportive environment. Comfortable, on-campus housing. Delicious meals served three times a day.
www.folkschool.org or (800) 365-5724.

Seat Weaving Supplies

CHAIR CANE & SPLINT, Shaker tape, fiber and natural rush. Complete line of basketweaving supplies. Royalwood Ltd., 517-WW Woodville Rd, Mansfield, OH 44907. (800) 526-1630.
www.royalwoodltd.com

Classified rate is \$6.00 per word, 15-word minimum. Order must be accompanied by payment; ads are non-commissionable. Send to: Popular Woodworking Magazine, 5225 Joerns Dr, Suite 2, Stevens Point, WI 54481 or Jack Christiansen, jchristiansen@aimmedia.com Phone: (847) 724-5633

Popular Woodworking

popularwoodworking.com/subscribe

Woodsmith PLANS

Woodsmith PLANS

PANEL SAW



Woodsmith PLANS

COMBINATION ROUTER TABLE



Woodsmith PLANS

ARCHED-STRETCHER SOFA TABLE



**DOWNLOAD & PRINT
YOUR PLANS AT
HOME!**

Hundreds to choose from
for home, gift and shop!

PLUS VIDEO PLANS!

Each video plan includes
a 26-minute video and
a detailed printable plan.

Go to:
WoodsmithPlans.com

STEVE WALL LUMBER CO.

Quality Hardwoods and Plywood For The
Craftsmen and Educational Institutions

Alder	4/4	Select	3.30	\$ 90.00
Ash	4/4	Select	2.60	\$101.00
Basswood	4/4	Select	1.95	\$ 91.00
Birch	4/4	Select	3.50	\$115.00
Butternut	4/4	1C	3.25	\$ 98.00
Cedar	4/4	1C+Btr.	2.00	\$ 85.00
Cherry	4/4	Select	4.90	\$129.00
Cypress	4/4	Select	2.75	\$ 97.00
Hickory - Pecan	4/4	Select	3.00	\$108.00
Mahogany (Genuine)	4/4	Select	5.10	\$122.00
Maple (Hard)	4/4	Select	3.65	\$116.00
Maple (Soft)	4/4	Select	2.60	\$ 95.00
Oak (Red)	4/4	Select	2.80	\$105.00
Oak (White)	4/4	QS	2.90	\$105.00
Poplar	4/4	Select	1.80	\$ 85.00
Walnut	4/4	Select	5.75	\$125.00
White Pine (Soft)	4/4	F.G.	1.40	\$ 78.00
Yellow Pine (Soft)	4/4	Clear	2.20	\$ 90.00

Above prices are for 100' quantities of kiln
dried rough lumber sold by the Bd. Ft. FOB
Mayodan, NC. Call for quantity discounts.
Other sizes and grades available.

**SEE OUR CATALOG
ON THE WEB!**

UPS Specials
Above prices are 20 bd. ft.
bundles of clear kiln dried
lumber 3"-10" wide • 3'-5' long
(Random widths & lengths)
Surfaced 2 sides or rough.
Delivered Ground prepaid in
the Continental U.S.

OLIVER MACHINERY DEALER

HARDWOOD PLYWOOD

CUSTOM RAISED PANEL DOORS

CUSTOM PLANK HARDWOOD FLOORING

THIN CRAFTWOOD

EXOTIC LUMBER

STEVE H. WALL LUMBER CO.

BOX 287, MAYODAN, NC 27027
336-427-0637 • 1-800-633-4062 • FAX: 336-427-7588
Email: woodsales@walllumber.com
Website: www.walllumber.com

Send \$1.00 For Lumber Catalog
Prices Subject to Change Without Notice

WOODWORKING MAGAZINE

Is Back in Print



Get Yours at

**popularwoodworking.com/
woodworking-magazine**

SPEED. EFFICIENCY. VERSATILITY.

IT'S A NEW ERA OF KREG® TOOLS.

Introducing a whole new line of Kreg® joining and cutting solutions.

An entirely reimagined series of pocket-hole jigs set a new standard in joinery. They bring speed and efficiency to your projects as you create strong, long-lasting joints.

Three brand-new cutting guides are designed to position your saw precisely every time. Whether making miter cuts, rip cuts, or crosscuts, these guides show exactly where your saw will cut so you can work quickly and confidently.

When you buy Kreg, you always get simple, accurate, and efficient tools for high-quality wood projects.

**Pocket-Hole Jig
520PRO**



**Straight Edge
Guide**



**Crosscut
Station**



**Portable
Crosscut**



**Pocket-Hole Jig
720PRO**

Learn more at kregtool.com



Alma Villalobos

Interview by Collin Knoff

How did you get started woodworking? Who were your mentors?

For as long as I can remember, I've always been a maker. My grandfather was a professional DIYer. He always said he could make anything. So, I guess I got that from him. When my son was born (he's 8 now), was when I really started to focus more on the woodworking craft. I wanted to build furniture and make wooden toys for him. It was also a way for me to relax, learn, and create when the baby was asleep. I started to really enjoy the process and slowly upgraded most of my "weekend warrior" tools for more professional type tools and brands. And I'm now trying to add more hand tools and attempt more complicated joinery techniques. I am always trying to learn more and get better at this craft.

What is your favorite piece? What kind of work do you do the most?

My favorite work is probably the Record Storage Cabinet (shown at the right) that I built in 2019. It's super simple with clean lines but the wow feature is the way I made the drawers. I used common hardware to create a slider so that the records always stood forward. (Plans are available at pinksoulstudios.com/shop.) Most of the work I do is with my CNC. The one I have is an AVID machine. I guess I'm kind of known for making custom push sticks for other makers. And that sort of spilled into other custom shop-made tools, such as custom squares and mallets. (These are also available for sale on Alma's website.) It's a lot of fun working with other makers. I'm a big advocate for branding all the things.

Any advice for new woodworkers?

I think the obvious answer is to say, just go for it and don't be afraid to make mistakes. That is true, but I would add that it's important to find a community that you can ask questions and learn from. For me that was Instagram. The woodworking community on Instagram has always been so supportive.

Any hands-on tips or woodworking techniques?

I'm a big fan of using a story stick or making a quick template, versus using a tape measure. I've been able to get just a bit more accurate results that way. Plus, math... yuck! Oh, and the tape measure should have Imperial and Metric on it. Learn metric! **PW**

See more of Alma Villalobos' work at pinksoulstudios.com or on Instagram @pinksoulstudios.



■ Instagram Shout-Outs

@Siosidesign

I love seeing what beautiful furniture this female duo is making. They live in Indiana. I would love to one day own one of their pieces, but I would also love to learn how to design and build something similar to their style.

@House.of.Esperanza

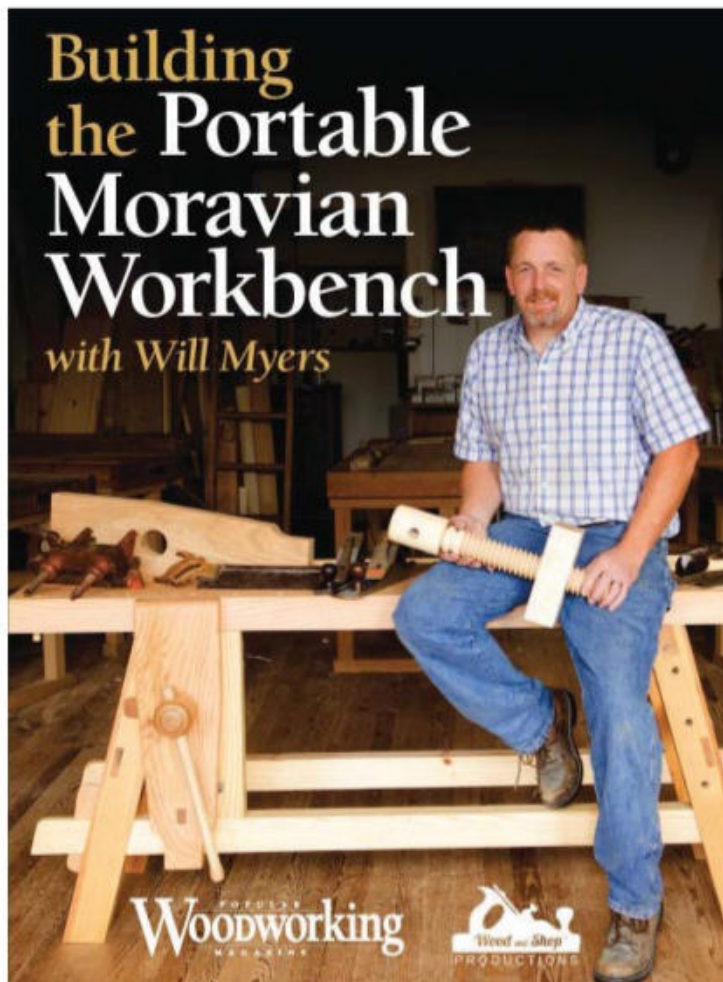
I've been super inspired by Monica lately. I love what Monica shares in her stories and her decorating style is really bold and fresh. Monica and her husband make some pretty cool DIY builds.



PHOTOS COURTESY OF THE AUTHOR

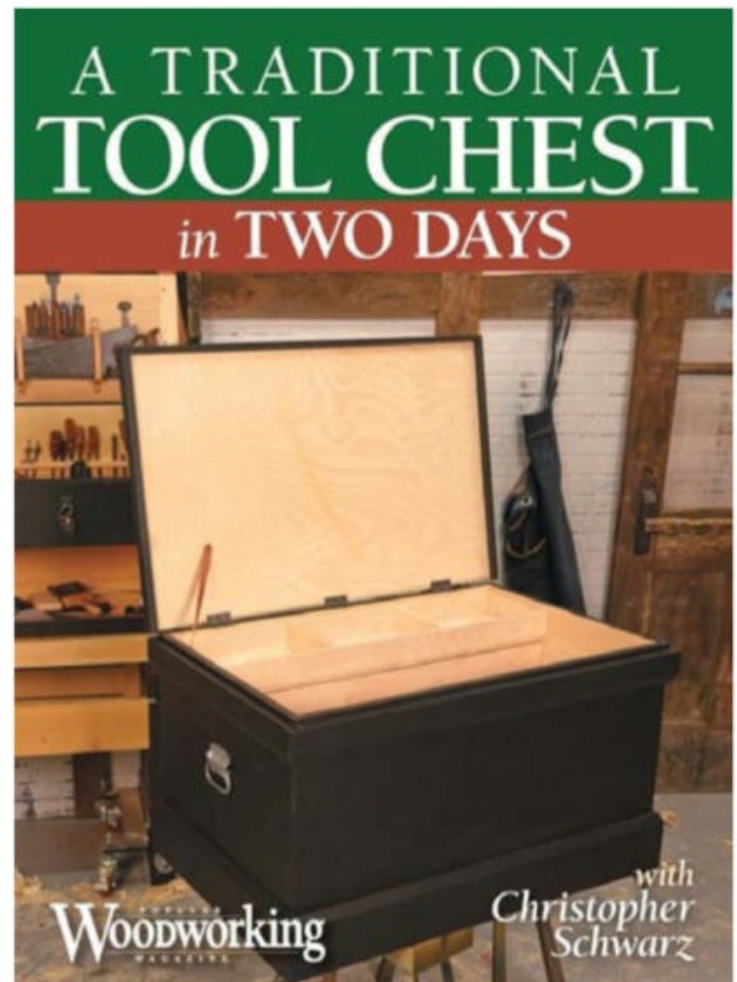
Popular Woodworking Shop

STORE PROJECTS TECHNIQUES TOOLS VIDEOS BLOG SUBSCRIBE MY ACCOUNT



Building the Portable Moravian Workbench

Video Download featuring Will Myers



A Traditional Tool Chest in Two Days

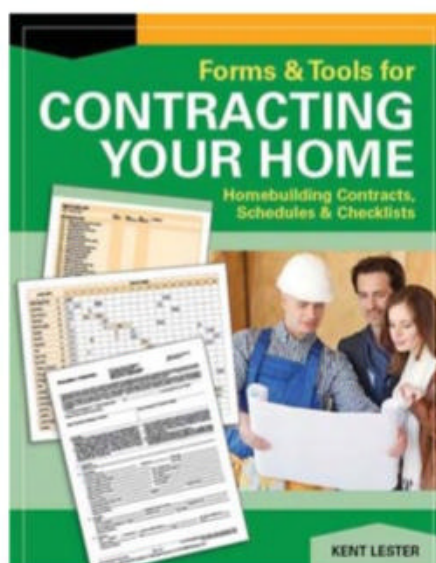
Video Download featuring Christopher Schwarz

popularwoodworking.com/store



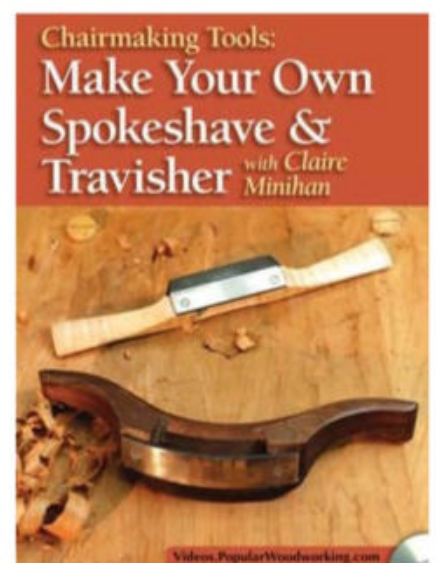
Six Tool Chests Large & Small

Project Download



Forms & Tools for Contracting Your Home

eBook by Kent Lester



Make Your Own Spokeshave & Travisher

Video Download with Claire Minihan

Studley Mallet

A reproduction of one of the most iconic mallets in woodworking.

By Logan Wittmer

Even if you don't recognize the name, you've probably seen a picture of Henry Studley's tool chest. All of the tools nestled together are awe-inspiring. Rewind back to 2015, and my father-in-law bought a pair of tickets for us to see the chest when it was on display in Cedar Rapids, Iowa. It was an amazing experience, and any hand tool user couldn't help but drool over the tools nested within its mahogany case. In my opinion, the crown jewel of the toolbox is nestled on the top of the right-hand side — the Studley mallet.

The beautiful infill mallet is made of bronze or gunmetal and believed to either have been cast by Henry, or modified from another tool maker. No identification mark is visible. It's such a nice-looking mallet, that I figured it would only

be a matter of time before someone undertook the task of reproducing it. The man who took that quest is named William Marley.

Bill, being a retired pattern maker, undertook the challenge after talking to a friend. He was introduced to the Studley Tool Chest after a friend showed him Don Williams' book, *Virtuoso: The Tool Cabinet and Workbench of Henry O. Studley*. (The book is available from *Lost Art Press*). After examining the mallet, mainly from pictures available on the internet, Bill whipped up a pattern. Bill told me it was a tricky little mold to make, mainly because it's curved on all four faces, not to mention the cove details and the core box (interior) of the head.

Even with all of these challenges, I believe Bill hit it out of the park.

According to Bill, even Don Williams was impressed by how close he got. Bill has his mallets casting at a foundry right down the street from his home.

The heads are cast out of gunmetal, and weigh in between 16 and 17oz. each. There is a little bit of work to do with the head before you stuff it and add a handle. The outside faces and edges of the mallet areas are milled flat, however, the sand casting texture is present along the top and cove edges. So be prepared for a little cleanup when you get it. Obviously, you'll also have to make the handle and the infill if you obtain one of these little gems. If you're interested in purchasing a mallet casting from Bill, the ordering information is located below. **PW** — Logan Wittmer



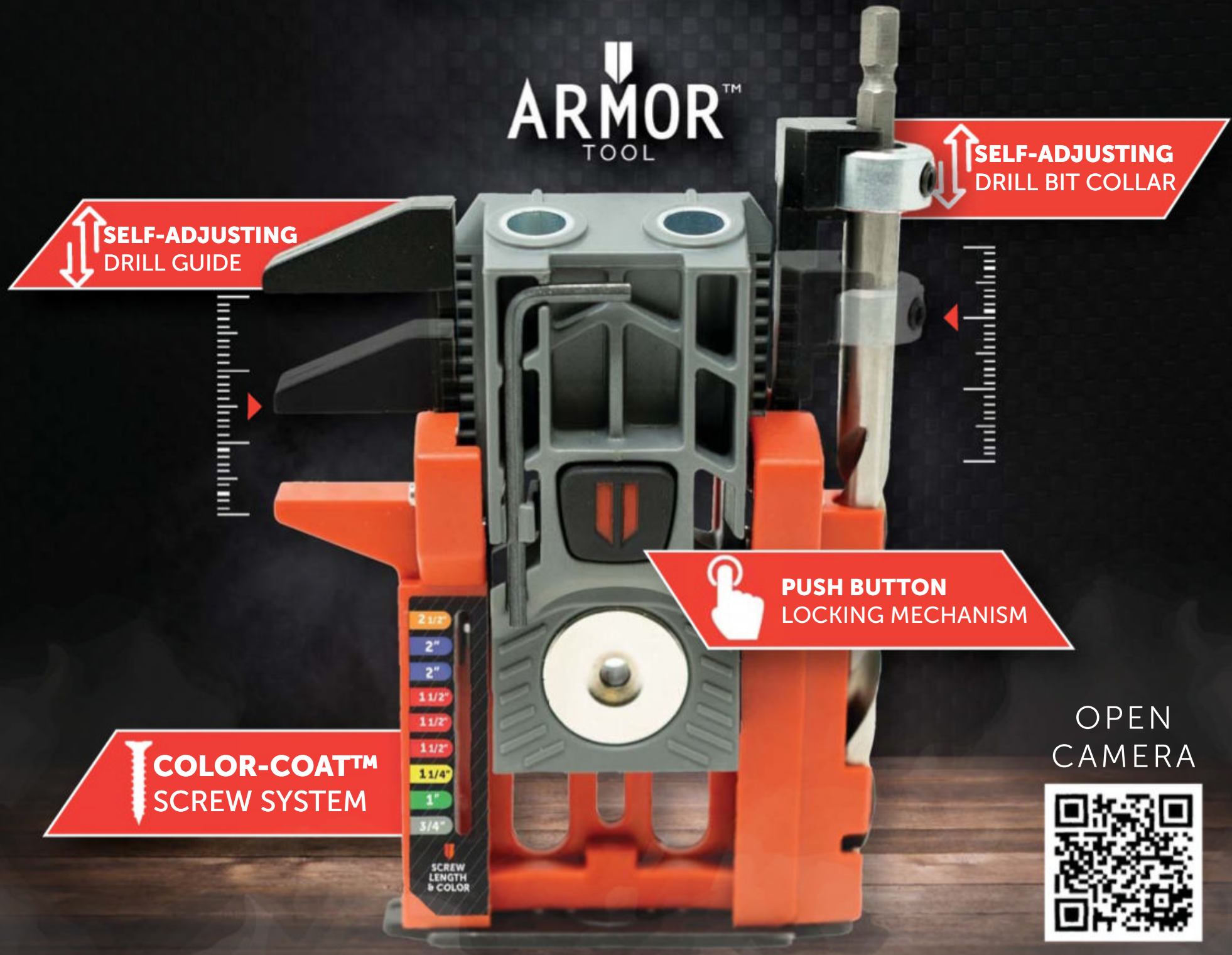
■ PURCHASING INFO

EMAIL: WilliamMartley@aol.com

INSTAGRAM: [@Mystic_Pickers](https://www.instagram.com/Mystic_Pickers)

Mallet heads are priced at \$69, with shipping included. For shipping outside the continental United States, add \$20.

GET A FREE FACE CLAMP WITH PURCHASE!
AVAILABLE SEPTEMBER.



THE NEW SELF-ADJUSTING MINI-JIG

The new Mini-Jig offers One-Step Setup and Optimal Portability. By simply grabbing the material with the caliper, the Mini-Jig will automatically adjust the Drill Guide Block and Drill Bit Collar to the correct depth based off the material thickness, while matching the perfect screw length with our Color-Coat™ System.

1. PUSH THE BUTTON

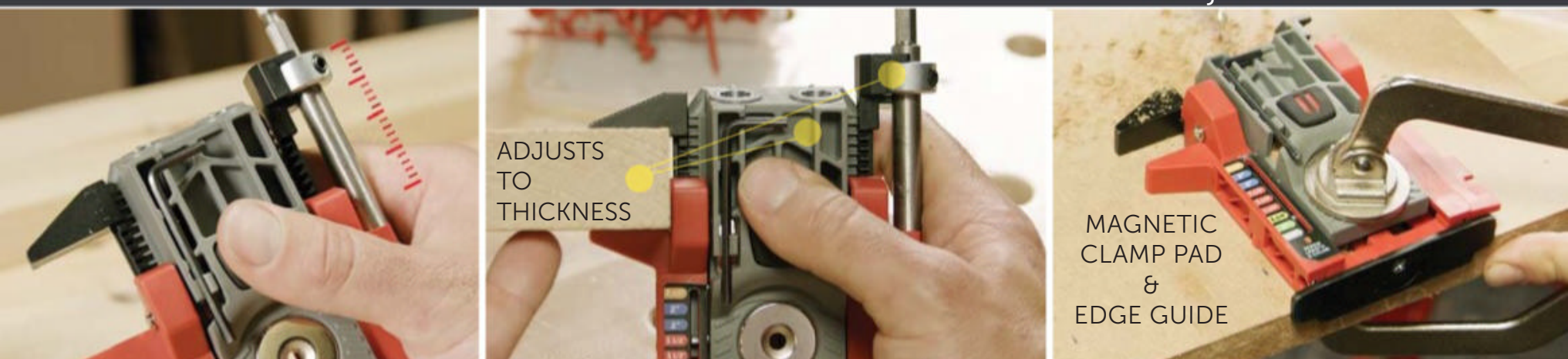
Grab Your Material.

2. AUTOMATIC ADJUSTMENTS

Based On Material Thickness.

3. CLAMP & DRILL

No Adjustments Needed.



For More Information Visit: ARMOR-TOOL.COM

@armortool

@armor_tool

armor tool

RIKON

EXPANDING

← The → Possibilities

2021
WOOD
MAGAZINE
INNOVATE
AWARD

40"
Expandable
Sliding Bed

Up To
30" Swing

RIKON 70-3040

5
YEAR WARRANTY

Expandable Bed Lathe | 40" Between Centers | Beefy | 3 HP VSR Motor



Beefy 3HP motor delivers ample power to turn large diameter projects in forward or reverse modes.



Control Box has a magnetic back so that it can be set anywhere along the lathe for quick access when turning.



1-1/4" x 8 TPI threaded spindle is supported by 4 heavy-duty bearings for precise and dependable turning.



Tailstock's quill extends out to a generous 4-3/4" RAM travel with precision Acme threading.

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