PROS NEVER STOP.

NEW!

JOBSITE SAW PRO: TOUGH PERFORMANCE FOR THE WORKSITE. AND WE STOP ON CONTACT WITH SKIN, SO YOU CAN KEEP GOING.

SawStop
JOBSITE SAW PRO

UPGRADED PRO MODEL FEATURING AN IMPROVED DUST COLLECTION BLADE GUARD, DEEPER TABLE AND VERSATILE LOW FENCE. ARRIVING IN STORES NOW!

FOR MORE INFO, VISIT YOUR LOCAL SAWSTOP DEALER OR SAWSTOP.COM/JOBSITE

PERFECT WEEKEND PROJECT: Build an Arts & Crafts Magazine Cabinet

Popular Woodworking

NOVEMBER 2019 | #249

BUILD A CUSTOM

HIDDEN DOOR BOOKCASE

EXPERT ADVICE
Install Butt Hinges Like a Pro

WOODTURNING
Make Unique Rolling Pins

Grizzly Industrial

Christmas Sale

QUALITY MACHINES, GREAT PRICES!

BENCHTOP ½ HP OSCILLATING SPINDLE SANDER

SPECIFICATIONS

- Motor: ½ HP, 120V, 60Hz, 3.5A
- Oscillations per minute: 58
- Spindle speed: 2000 RPM
- Spindle size: ½"

INCLUDES

- 5 rubber sanding drums: ¾", 1", 1½", 2", 3"
- 6 sanding sleeves: ½", ¾", 1", 1½", 2", 3"
- 6 table inserts: ½", ¾", 1", 1½", 2", 3"
- 3 spindle washers: ⅝", ⅞", 1¾"
- Wrench

G0739 ~~$169.95~~ Sale **$149.95**

10" BENCHTOP TABLE SAW

New!

- Motor: 2HP, 115V, single-phase, 60 Hz, universal motor, 15A
- Table size: 22" x 26⅜"
- Arbor: ⅝", 2000-4000 RPM
- Blade tilt: Left, 45°;
- Max depth of cut: 3⅛" @ 90°, 2⅛" @ 45
- Rip capacity: 28" right
- Dado capacity: 13/16"
- Dust port: 2½"
- Overall size: 27"L x 32"W x 21"H
- Approximate shipping weight: 72 lbs.

WITH RIVING KNIFE

G0869 Only **$349.95**

WITH RIVING KNIFE AND ROLLER STAND

G0870 Only **$439.95**

$99 shipping

THE ULTIMATE 14" BANDSAW

- Motor: 1 HP, 110V/220V, single-phase, 11A/5.5A
- Precision-ground cast-iron table size: 14" sq.
- Table tilt: 15° L, 45° R
- Cutting capacity/throat: 13½"
- Max. cutting height: 6"
- Blade speeds: 1500 & 3200 FPM
- Approximate shipping weight: 188 lbs

G0555 ~~$625.00~~ Sale **$595.00**

$99 shipping

14" RESAW BANDSAW

EXTREME SERIES

New!

- Motor: 1.75 HP, 110V/220V, (prewired 110V), single phase, 15A / 7.5A
- Table size: 16⅛" x 21¾" x 1½"
- Table tilt: 5° left, 45° right
- Floor-to-table height: 44⅝"
- Cutting capacity/throat: 13½"
- Max. cutting height: 12"
- Blade size: 104" to 105" (⅛" to ¾"W)
- Blade speed: 3000 FPM
- Overall size: 26"W x 31"D x 78"H
- Footprint: 16"L x 18"W
- Approximate shipping weight: 337 lbs.

MADE IN AN ISO 9001 FACTORY

G0555XH ~~$1095.00~~ Sale **$995.00**

$119 shipping

17" HEAVY-DUTY EXTREME BANDSAWS

- Motor: 2 HP, 110V/220V, single-phase, 1725 RPM, TEFC
- Precision-ground cast-iron table size: 23⅝" x 17¼" x 1½"
- Max. cutting height: 12"
- Blade size: 131½" L (⅛"–1" W)
- Blade speeds: 1700 & 3500 FPM
- Quick-release blade tension lever
- Approx. shipping weight: 418 lbs. *(G0513X2)*, 434 lbs. *(G0513X2F)*,

EXTREME SERIES

MADE IN AN ISO 9001 FACTORY!

WITH CAST-IRON WHEELS

G0513X2 ~~$1195.00~~ Sale **$1150.00**

WITH FOOT BRAKE

G0513X2F ~~$1399.00~~ Sale **$1295.00**

$119 shipping

19" 3 HP EXTREME BANDSAW

- Motor: 3 HP, 220V, single-phase, 1725 RPM, 12A
- Precision-ground cast-iron table size: 26¾" W x 19" D x 1½" H
- Cutting capacity/throat: 18¼"
- Max. cutting height: 12"
- Blade size: 143" L (⅛"–1¼" wide)
- Blade speeds: 1700 & 3500 FPM
- Approx. shipping weight: 480 lbs.

EXTREME SERIES

MADE IN AN ISO 9001 FACTORY!

G0514X2 ~~$1799.00~~ Sale **$1695.00**

$119 shipping

10" 3 HP 220V CABINET TABLE SAW

WITH LONG RAILS & RIVING KNIFE

- Motor: 3 HP, 220V, single-phase, 12.8A
- Precision-ground cast iron table with wings measures: 27" x 74¾"
- Floor-to-table height: 34"
- Arbor: ⅝"
- Arbor speed: 4300 RPM
- Max. dado width: 13/16"
- Capacity @ 90°: 3⅛", @ 45°: 2 3/16"
- Max. rip capacity: 49"
- Approx. shipping weight: 557 lbs.

MADE IN AN ISO 9001 FACTORY

G0691 ~~$1925.00~~ Sale **$1795.00**

$169 shipping

12" EXTREME TABLE SAWS

PRECISION-GROUND CAST-IRON TABLE

- Motor: 5 HP, 220V, single-phase, 18A (G0605X1), 7½ HP, 220V/440V*, 3-phase, 19.5/10A (G0606X1)
- Floor-to-table height: 35¾"
- Arbor: 1", 3600 RPM
- Max. dado width: ¾"
- Max. rip capacity: 52" • Blade tilt: Left, 45°
- Table size with extension 69½" x 78¾"
- Capacity @ 90°: 4", @ 45°: 2¾"
- Overall dimensions: 91½" W x 79½" D x 42½" H
- Approx. shipping weight: 854 lbs. (G0605X1), 854 lbs. (G0606X1)

WITH CAST-IRON WHEELS

G0605X1 ~~$2850.00~~ Sale **$2650.00**

WITH FOOT BRAKE

G0606X1 ~~$2895.00~~ Sale **$2685.00**

FREE 12" x 60T CARBIDE-TIPPED BLADE

$199 shipping

*To maintain machine warranty, 440V operation requires additional conversion time and a $250 fee. Please contact technical service for complete information before ordering.

PRICING CODE 19POP

MENTION THIS CODE WHEN PLACING YOUR ORDER

20567

1-800-523-4777

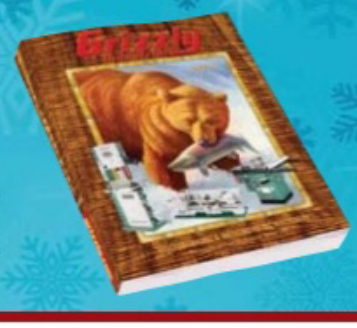
TECHNICAL SERVICE: 570-546-9663

Buy Now Pay Later with affirm

OCT.28TH – DEC.31ST

MOST ORDERS SHIP THE SAME DAY

BUY DIRECT & SAVE!



FREE 2019 CATALOG

OVER 810 PAGES OF HIGH QUALITY MACHINES & TOOLS AT INCREDIBLE PRICES

10" HYBRID TABLE SAW
WITH T-SHAPED FENCE

MADE IN AN ISO 9001 FACTORY

FREE 10" X 40T CARBIDE-TIPPED BLADE

- Motor: 2 HP, 120V/240V, single-phase, 15A/7.5A, prewired 120V
- Precision-ground cast iron table with wings measures: 40½" W x 27" D
- Floor-to-table height: 35⅜"
- Arbor: ⅝"
- Arbor speed: 3450 RPM
- Max. depth of cut at 3¼" @90°, 2¼" @ 45°
- Rip capacity: 31" R, 16¾" L
- Overall size: 64" W x 40¼" D x 35½" H
- Footprint: 21" L x 19½" W
- Approx. shipping weight: 371 lbs.

$119 shipping lower 48 states

G0771Z ~~$895.00~~ Sale **$875.00**

6" x 29" BENCHTOP JOINTER

SHOP FOX

- Motor: 1½" HP, 110V, single-phase, 12A
- Max. width of cut: 6"
- Min. workpiece length: 8"
- Max. depth of cut (per pass): ⅛"
- Cutterhead speed: 10,000 RPM
- Cuts per minute: 20,000
- Cutterhead diameter: 1⅞"
- Knives: 2 (HSS), 6" x ⅞" x 3/32"
- Footprint: 18⅞" x 11"
- Table size: 28½" x 6¼"
- Fence size: 22⅞" x 4¼"
- Dust port: 2½"
- Approximate shipping weight: 82 lbs.

W1829 Only **$379.99**

8" X 72" JOINTER
WITH PARALLELOGRAM BEDS & SPIRAL CUTTERHEAD

CSA C US 175370

- Motor: 3 HP, 230V, single-phase
- Total table size: 8" x 72"
- Fence: 4⅝" x 38", positive stops
- Max depth of cut: ⅛"
- Rabbeting capacity: ½"
- Cutterhead: 5500 RPM, 3⅛" dia.
- Insert size: 15 x 15 x 2.5 mm
- Power transfer: V-belt drive
- Switch: standard push button type switch with large off paddle for safety
- Approx shipping weight: 373 lbs.

FREE Pair of Safety Push Blocks

$169 shipping lower 48 states

G0856 ~~$1595.00~~ Sale **$1495.00**

2 HP DUST COLLECTOR
WITH 2.5 MICRON BAG & ALUMINUM IMPELLER

- Motor: 2 HP, 240V, single-phase, 9A
- Air suction capacity: 1550 CFM
- Static pressure: 11"
- 6" inlet with removable "Y" fitting with two 4" openings
- Bag capacity: 5.7 cubic feet
- Portable base size: 21¼" x 33½"
- Bag size (dia. x depth): 19½" x 33"
- Height with bags inflated: 78"
- Standard bag filtration: 2.5 micron
- Approx. shipping weight: 122 lbs.

MADE IN AN ISO 9001 FACTORY

CSA C US 247570

$99 shipping lower 48 states

G1029Z2P ~~$395.00~~ Sale **$375.00**

1 HP CANISTER DUST COLLECTOR

Z SERIES

- Motor: 1 HP, 120V/240V, single-phase, prewired 120V
- Motor amp draw: 9A/4.5A
- Air suction capacity: 640 CFM with elbow, 800 CFM without elbow
- Maximum static pressure: 3.3"
- Lower bag capacity: 2.1 cubic feet
- Number of 4" intake holes: 1
- Impeller: 10", balanced steel, radial fin
- Portable base size: 15¼" x 26"
- Lower bag size: 14½" x 22"
- Overall height: 59"
- Approximate shipping weight: 74 lbs.

CSA C US 247570

$99 shipping lower 48 states

G0583Z ~~$398.00~~ Sale **$375.00**

1½ HP 2 STAGE CYCLONE DUST COLLECTOR

- Motor: 1½ HP, 110V/220V, single-phase, TEFC, 3450 RPM, prewired 110V
- Amps: 18.8A at 110V, 9.4A at 220V
- Airflow performance: 775 CFM at 10" SP
- Intake port: 6" with included 5" optional port
- Impeller: 13½" steel radial fin
- Included remote control magnetic switch
- Overall dimensions: 38¼"W x 23¼"D x 68"H
- Approx. shipping weight: 210 lbs.

MADE IN AN ISO 9001 FACTORY!

$99 shipping lower 48 states

G0703 ~~$925.00~~ Sale **$895.00**

12½" LEAN & MEAN PLANER

- Motor: 2 HP, 110V, single-phase, 15A
- Max. cutting dimensions: 12½" (width), 6" height, 3/32" depth
- Min. board thickness: 13/64"
- Feed rate: 32 FPM
- Number of knives: (2) HSS reversible
- Knife size: 12½" x 23/32" x ⅛"
- Cutterhead speed: 10,000 RPM
- Number of cuts per inch: 52
- ON/OFF toggle switch with safety lock
- Thermal overload protection
- Top-mounted return rollers
- Includes knife setting jig and wrench
- Approx. shipping weight: 78 lbs.

WITH DOUBLE-SIDED KNIVES!

$49 shipping lower 48 states

G0505 ~~$395.00~~ Sale **$350.00**

20" PLANERS

NOW WITH CAST-IRON WINGS!

MADE IN AN ISO 9001 FACTORY!

- Motor: 3 HP *(G1033)* or 5 HP *(G1033Z)*, 220V, single-phase
- Table size w/ wings: 20" x 58" *(G1033)* or 55¾ *(G1033Z)*
- Max. cutting size: 20" wide, 8" high, ⅛" deep
- Min. length of stock: 7" • Knife size: 20" x 1" x ⅛"
- Number of knives: 4 HSS;
- Feed rates: 16 FPM and 20 FPM
- Cutterhead diameter: 3¼"
- Cutterhead speed: 5,000 RPM
- Overall size: 39" wide, 58" deep (w/ extensions), 41" high
- Approx. shipping weight: 820 lbs.

CSA C US 175370

3 HP
G1033 Only **$1950.00**

5 HP
G1033Z Only **$2050.00**

$199 shipping lower 48 states

Due to rapidly changing market conditions and tariffs, our advertised prices may be increased at any time without prior notice.

VIEW VIDEOS AT grizzly.com

grizzly.com®

DON'T JUST

Finish IT.

Varathane IT.

SINCE 1958

Available at

THE HOME DEPOT

varathanemasters.com © 2019 Rust-Oleum Corporation

Contents

NOVEMBER 2019 | VOL. 39, NO.6

Popular Woodworking

POPULARWOODWORKING.COM

Build

Popular Woodworking presents

BEST NEW WOODWORKING

SUPERJAWS SJA100E

Super Tough, Super Grip, Super Jaws

In 1992, Triton changed the way the world clamped with the release of the original SuperJaws. The iconic SuperJaws acts as an invaluable extra pair of hands whether indoors, outdoors or on the workshop floor and weighs in at a portable 32 lb. An evolution of the original, the versatile SuperJaws SJA100E provides fast, hands-free clamping of material up to 37 1/2" and offers a massive clamping force of up to 2,205 lb.

Visit TritonTools.com
or call 855-227-3478

STRATUS

The Modern Solution to Dust

The new STRATUS by Axiom is a truly innovative air cleaner. It pulls dust and debris downward from the work surface where it naturally wants to fall. Once filtered, clean air is propelled upward into the shop environment where you breathe. The STRATUS features nearly 15X more filter media than a ceiling-mounted unit, a wide base, 360° handle, patented Twist-and-Lift filter access, and 16-foot power cord. With no chains to hold it back, the STRATUS is rugged and portable, so it's always nearby, right where you need it.

Visit AxiomStratus.com
or call 844-624-4902

Large Panel Squares

The Woodpeckers Family is Still Growing. Introducing the 2616SS and 1812SS — large panel squares with the same exclusive features and guaranteed accuracy found in all Woodpeckers squares. All stainless-steel squares, including the new ones, feature a blade just 1/16" thick, perfect for precise measurement and lay out. The scribing notches in the blade make striking lines parallel to an edge a cinch. They're guaranteed accurate and guaranteed to stay that way.

Visit Woodpeck.com
or call 800-752-0725

Timbermate Water-based Wood Filler

Now available at Highland Woodworking

Timbermate Wood Filler is without equal in the world of interior grade wood fillers and nail-hole putties. Their proprietary blend is made without solvents and contains no acrylic or latex. This allows it to be freeze proof and heat proof. Should it dry out because you left the lid off overnight, simply add a little water, stir and it's reconstituted back to as good as new. You'll never throw out unused wood putty again!

Visit HighlandWoodworking.com
or call 800-241-6748

ChopMaster Blades

Produce Perfectly Cut Miter Joints Without Bottom Splinters

ChopMaster saw blades produce tight, extra-smooth, perfectly cut miter joints **without** bottom splinters. They are specially designed to work on **all makes** of chop, sliding compound miter, and radial arm saws. A heavier than normal steel plate maximizes stability for the best cut and a 5-degree negative face hook adds optimum rigidity when cutting. This design minimizes grabbing and throwing of scrap cut-offs. The 10" Diameter x 80-Teeth size retails for $175.00.

Visit ForrestBlades.com
or call 800-733-7111

The New BESSEY GearKlamp

The first of its kind in the world, the BESSEY GearKlamp works "BIG" in small spaces to provide a unique solution for cramped locations, up against another object or, when reaching across something to clamp. The patented gear mechanism separates the spindle from the rail-mounted handle for greater clearance and is fully enclosed to keep out dust and debris. Available in 6, 12, 18 & 24-Inch capacities with 450 lbs. of nominal clamping force!

Visit BesseyTools.com
or call 800-828-1004

TOOLS & PRODUCTS

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 & 24" lengths.

Visit KnewConcepts.com or call 831-234-4652

TSPSP650 Portable Oscillating Spindle Sander

Portable Power, Benchtop Precision

Our Portable Oscillating Spindle Sander provides the flexibility of a portable handheld edge sander and the stability and precision of a bench-mounted spindle sander. Lightweight and powerful, the 5A motor provides 1800-3200rpm and oscillates at 50-90opm. The dual-action rotating and vertical oscillation enables fast sanding and improved work rate. Enjoy controlled, burn-free edge sanding for cabinetry, sign making, sink openings, and general woodworking. The kit also includes the inverted bench-mounting set.

Visit TritonTools.com or call 855-227-3478

Adaptive Cutting System Master Kit

When you're building wood projects, you need a cutting system that can adapt to your needs, whether you're crosscutting boards to length, ripping them to width, cutting mitered angles, or even cutting plywood sheets and large panels down to size. The Adaptive Cutting System makes it all possible, and more, by combining the advantages guided cutting with the unparalleled versatility of a Project Table that supports and positions materials precisely.

Visit KregTool.com or call 800-447-8638

NEW! True Wireless Noise-Isolating Earbuds

Cut the cables with the new truly wireless Bluetooth hearing protector, ISOtunes FREE. OSHA compliant with all-day battery life, these small, lightweight earplug headphones are built to protect your ears from harmful noise levels in the shop, on the job and beyond. Block noise, take calls and stream music without interruption so you can stay connected and protected in the loudest environments. Comes with portable charging case. Full details at ISOtunes.com.

Visit ISOtunes.com or call 800-371-4909

Angle Set Knife and Tool Sharpener

Kitchen knives, pocket knives, carving knives and any other knives are all designed to be sharpened. The Work Sharp Angle Set puts you in control to sharpen your knife at 15°, 17.5°, 20°, 22.5° or 25°. The three-sided sharpening rods provide fast set up time and quick indexing between grits. This Angle Set folds into a compact carry case and includes a tapered ceramic rod for sharpening serrated blades. Sharpen Every Knife You Own!

Visit WorkSharpTools.com or call 800-597-6170

Pure RASPture

Kutzall Hand Rasps are engineered to be the ultimate man-powered, hand-shaping instrument. These unique tools strike a fascinating balance between the shaping and smoothing function of a conventional file and the aggressive stock removal of a wood rasp. Kutzall Rasps provide you with a multi-directional rasp that will cut efficiently, resist loading, and stay sharp project after project, even under some of the most punishing applications. Each rasp is made with a rugged and long-lasting tungsten-carbide coating.

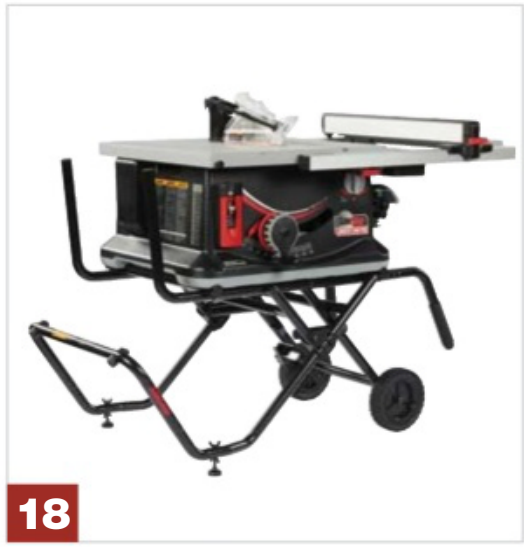
Visit Kutzall.com or call 810-765-1000

Contents

NOVEMBER 2019 | VOL. 39, NO.6

Popular Woodworking

POPULARWOODWORKING.COM



Connect

Craft

Number 249, November 2019, Popular Woodworking Magazine (ISSN 0884-8823, USPS 752-250) is published 7 times a year, February, April, June August, October, November, and December, which may include an occasional special, combined, or expanded issue that may count as two issues, by Cruz Bay Publishing, an Active Interest Media company, 5720 Flatiron Parkway, Boulder, CO 80301. Editorial and advertising offices are located at 2200 Grand Ave, Des Moines, IA 50312. Unsolicited manuscripts, photographs and artwork should include ample postage on a self-addressed, stamped envelope (SASE); otherwise they will not be returned. Subscription rates: A year's subscription (7 issues) is $24.95; Outside of the U.S. add $7/year. Canadian Publications Mail Agreement No. 40025316. Canadian return address: 2835 Kew Drive, Windsor, ON N8T 3B7.
Copyright 2019 by Cruz Bay Publishing.
Periodicals postage paid at Boulder, CO, and at additional mailing offices. Postmaster: Send address changes to Popular Woodworking, P.O. Box 420235, Palm Coast, FL 32142-1751.

RIKON®

Pro Tools for Tool Pros®

Bandsaws **Lathes** **Sanders** **Planers** **Jointers** **Table Saws** **Drill Presses**

Grinders **Buffers** **Dust Collectors** **Air Filtration** **Scroll Saw** **Mortisers**

Machine Accessories and More!

www.rikontools.com

Or call today for more information **877-884-5167**

Connect

FROM THE EDITOR

’Tis the Season

By Andrew Zoellner

Some of the presents I’ve received from years past: painting on an offcut by my grandpa, a pair of Shaker bench brooms (one for everyday use and one for special occasions) by my uncle, and a 20"-wide barn board from my grandma’s stash.

As the leaves turn and the nights get cooler, I know woodworking season is approaching. Yes, I do spend as much time in the shop as I can, but the warmer summer months mean mowing, trips to the cabin and preparing my house for the onslaught of Minnesota winter. But once those leaves are raked, it’s prime woodworking time. And it’s a good thing, too, because there are gifts to make.

My mom’s side of the family exchanges homemade gifts, and it’s one of our longest-standing family traditions. I’m not entirely sure of the origin, but I know that each Christmas, after dinner, everyone gathers in a big circle and exchanges homemade presents. Or at least that’s how it’s happened for the last 34 years. Three generations of family give and get handmade presents.

There are choruses of “Oh my! You made that?” And gasps of “Oooh, that’s *so* cute!” Followed by “I hope she gets my name next year.” It’s a fun tradition and a couple hours of surprise and delight. Then almost immediately, names are drawn for the exchange next year. The thought is, you take off between Christmas and New Years, then January 1, you start working on your gift for next year’s exchange. At least that’s what I’m told.

It helps to come from a crafty family—there’s plenty of knitting, sewing, baking, weaving, basketry and lots of “cools things I found in the woods.” Not to mention my favorite: woodworking.

The matriarch of the family, my grandma, loves woodworking. She has a penchant for barn boards in particular (going back at least seven decades), and she keeps an ample stash in her shop. I love hearing her stories about the things she’s made, where they ended up, how she got the materials, what went wrong and the hijinks that happened along the way. Even though she’s now well into her 90s and her doctors have advised against wielding mallets and chisels, she still has the stories.

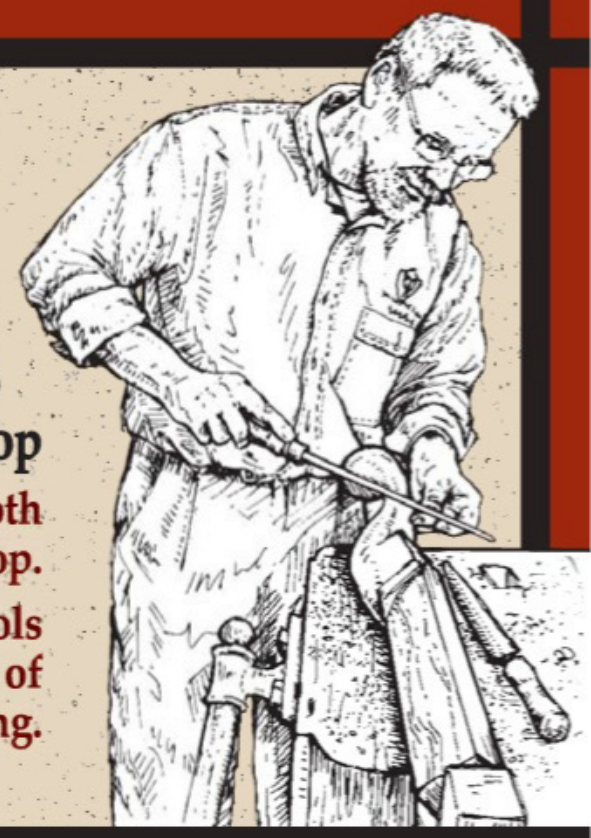
For me, that’s one of the best parts about making things for other people. It’s not just an object. It’s a vehicle for sharing and telling a story. It’s a way to show someone just how much you care about them.

So I’m looking forward to spending the next couple months in the shop, starting my finishing up my gift for the Christmas exchange, and sharing the experience and trials and tribulations with my family.

est. 1978

HIGHLAND Woodworking
fine tools & education

800-241-6748
Atlanta, Georgia



Use These Tools to Increase Productivity & Improve Safety in Your Shop

The tools shown here are among our bestsellers because they bring both premium quality & lasting value to your workshop.

Visit our website for access to thousands of the finest woodworking tools as well as hundreds of articles & videos to help you get the most out of your woodworking.

Watch our entertaining TV show, The Highland Woodworker, at highlandwoodworker.com

HIGHLANDWOODWORKING.COM

FESTOOL
Faster. Easier. Smarter.

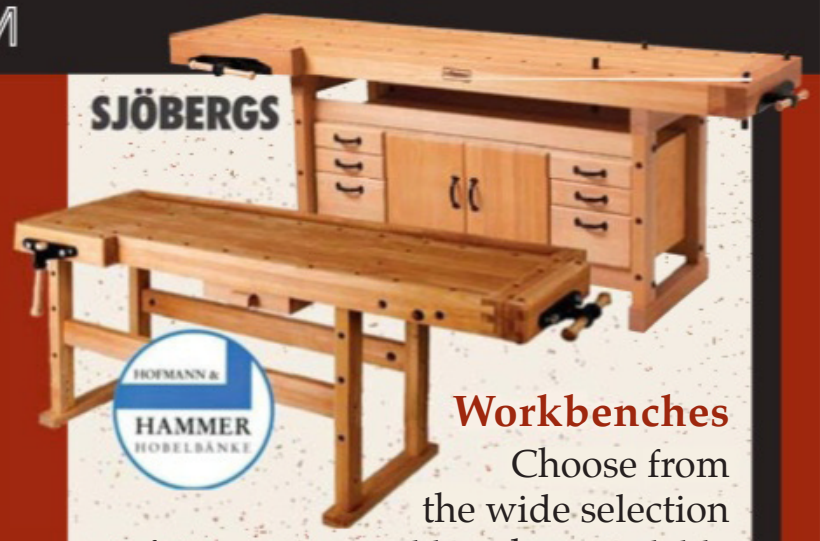
Dust Extractors
These highly innovative, full-featured shop vacuums help complete the Festool system.

Dust Masks
The Elipse P100 is smaller, lighter & less restrictive than other reusable dust masks.

DUST COLLECTION

Air Filtration
RIKON

This system is an ideal air filtration solution for the space-challenged workshop.

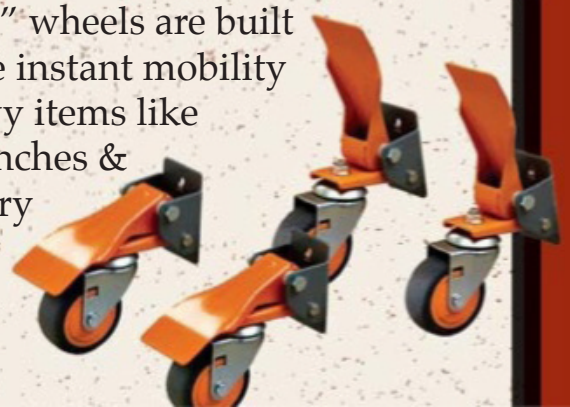


Workbenches
Choose from the wide selection of European workbenches available at Highland Woodworking.

WORKBENCHES

Benchcrafted
Benchcrafted vises' ergonomic design & solid construction have made them the workholding choice of professionals.

Workbench Casters
These extra heavy-duty casters with sturdy 3" wheels are built to create instant mobility for heavy items like workbenches & stationary tools.

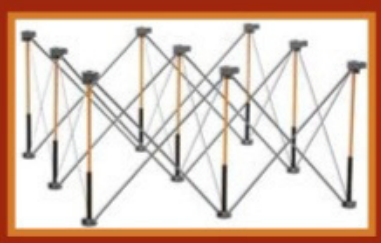


SERVING FINE WOODWORKERS FOR OVER 40 YEARS

Improved Parallel Clamps
Pivoting handles, large jaws and generous clamping depth capacity make these clamps superior for woodworkers.

SHOP STORAGE & SAFETY

Bora Centipede Workstand
A versatile work support system for use in the shop or on the jobsite.

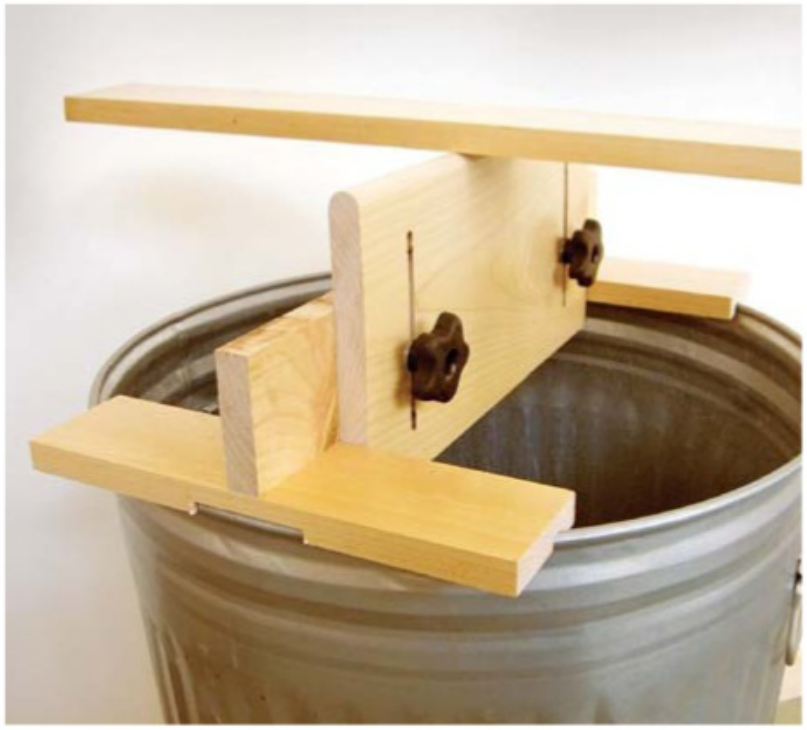


Portamate Lumber Rack
Efficient storage capacity for up to 600 lbs. of lumber or other long materials. Mount it inside your workshop or out.

Micro Jig GRR-Ripper
This stock control system is serious about making it safe to do your work close to a spinning blade.

Connect

WORKSHOP TIPS



Trash Can Outfeed

To save space, my trash can doubles as a work support. I made a dolly with locking casters to fit the can's bottom, so I can roll the unit to wherever it's needed.

The work support is adjustable in height. It's just a round-nosed board with two 1/4" x 6" slots, held in place with 1/4" bolts and jig knobs. I routed curved grooves in the support's feet to match the trash can's rim, so the sup- port doesn't slide off the can. When I want to empty the trash, I just lift off the support. I've made reference marks on the support for the correct height of each tool.—*Jay McClellan*

Tenon Preview

A tenon should be 1/3 the thickness of a rail — at least, that's what an old rule of thumb recommends. A 3/4" board should have 1/4" tenons, for example. But what about a 7/8" board? What's one- third of that?

I use my dial caliper to help solve this type of prob- lem. I usually make a tenon the same size as one of my mortising bits, not some in-between fraction. So, for a 7/8" thick board, should the tenon be 1/4" or 5/16" thick? If I could "see" the tenon on the board, I'd know which one to pick. That's easy: I just place the dial caliper on the board and open it to 1/4". Now I can instantly tell what a 1/4" tenon will look like — and its shoulders, too. Then I open the caliper to 5/16", make a mental note of what that tenon looks like and decide.—*John English*

Popular Woodworking

NOVEMBER 2019, VOL. 39, NO. 6

GENERAL MANAGER ■ Peter Miller
PUBLISHER ■ Steven Nordmeyer
EDITOR IN CHIEF ■ Andrew Zoellner
SENIOR DESIGNER ■ Danielle Lowery
DIGITAL EDITOR ■ Collin Knoff
CONTRIBUTING EDITOR ■ Bob Flexner
EDITORIAL CONTACT
pweditors@aimmedia.com

ACTIVE INTEREST MEDIA

PRESIDENT & CEO ■ Andrew W. Clurman
SENIOR VP, CFO, COO & TREASURER ■ Michael Henry
CHIEF INNOVATION OFFICER ■ Jonathan Dorn
VP OF AUDIENCE DEVELOPMENT ■ Tom Masterson
VP, PRODUCTION & MANUFACTURING ■ Barbara Van Sickle
VP, PEOPLE & PLACES ■ JoAnn Thomas
VP, DIGITAL PRODUCTS & PLATFORMS ■ Katie Herrell
VP, IT ■ Nelson Saenz
AIM BOARD CHAIR ■ Efrem Zimbalist III

ADVERTISING

VP, ADVERTISING SALES ■ Kevin Smith

ADVERTISING DIRECTOR ■ Don Schroder
331 N. Arch St., Allentown, PA 18104
tel. 610-821-4425; fax. 610-821-7884
d.schroder@verizon.net

ADVERTISING SALES COORDINATOR ■
Julie Dillon; jdillon@aimmedia.com

NEWSSTAND SALES
Scott T. Hill; scott.hill@pubworx.com

SUBSCRIPTION SERVICES
For subscription inquiries, orders and address changes go to:
www.popularwoodworking.com/customerservice
U.S. Subscribers: 877-860-9140
International Subscribers: 386-246-3369
popularwoodworking@emailcustomerservice.com

NEWSSTAND DISTRIBUTION
Curtis Circulation Co., 730 River Road,
New Milford, NJ 07646
tel. 201-634-7400; fax 201-634-7499

POPULARWOODWORKING.COM
Visit popularwoodworking.com/store for woodworking books, projects, plans and back issues of this magazine.

Copyright ©2019 by Active Interest Media. All rights reserved.
Popular Woodworking is a registered trademark
of Active Interest Media.

Maximum Strength
Maximum Control

KNEW CONCEPTS

Get Control with the Strongest, Stiffest Fret Saws on Earth
Available in
Titanium or Aluminum

www.knewconcepts.com

WEST PENN HARDWOODS, INC.

THE LARGEST IMPORTER OF EXOTIC HARDWOODS FROM PEN BLANKS TO THE WHOLE LOG!

We have expanded our inventory of unique slabs/flitches to include: African Mahogany, African Teak, Bocote, Granadillo, Guanacaste, Madre Cacao, Olivewood, Primavera, Purpleheart, Sapele and Waterfall Bubinga

1405 Deborah Herman Rd SW, Conover, NC 28613
Phone: 828-322-WOOD (9663)
Email: support@westpennhardwoods.com
Visit our Website: www.westpennhardwoods.com

Some tools surprise you with their looks, some with their function, some with their convenience. The MT-1 does all three.

The Multi-Tool (MT-1) is destined to become the most versatile, accurate and durable layout tool in your workshop.

- Sliding T-bevel for transferring critical angles with .002" accuracy.
- Bead-blasted stainless steel blade is tough enough to use as a layout gage with a marking knife.
- Pencil notch lets you make parallel lines with the edge of your work.
- Finely anodized, aircraft aluminum handle will take years of hard use.
- Dual saddle gages in the handle allow you to transfer a straight line around a corner.
- Dovetail cutout in the blade (8:1) to add dovetail layouts to curved pieces.
- Blade cam lock lets you set a 90° for use as a try square or double square.

BRIDGE CITY TOOL WORKS

bridgecitytools.com

EST 1928
WOODCRAFT®

QUALITY WOODWORKING TOOLS • SUPPLIES • ADVICE®

Cutting Boards – Easy-To-Make Custom Gifts

Looking for a handcrafted gift idea this holiday season? A Cutting Board is the perfect gift to make food prep easier in the kitchen or at the grill, plus it can double as a serving tray for entertaining. Purchase a precut kit, or check out our wood selection and make yours unique. Don't forget Howard Butcher Block Conditioner, Oil and Cleaner products to prep, protect and clean your board.

For A Free Catalog Or To Find Your Local Woodcraft Store, Visit woodcraft.com Or Call 800-225-1153. For Information On Woodcraft Retail Franchise Opportunities, Visit woodcraftfranchise.com. Follow Us: 19PW10H

Connect

Long Stock, Short Fence

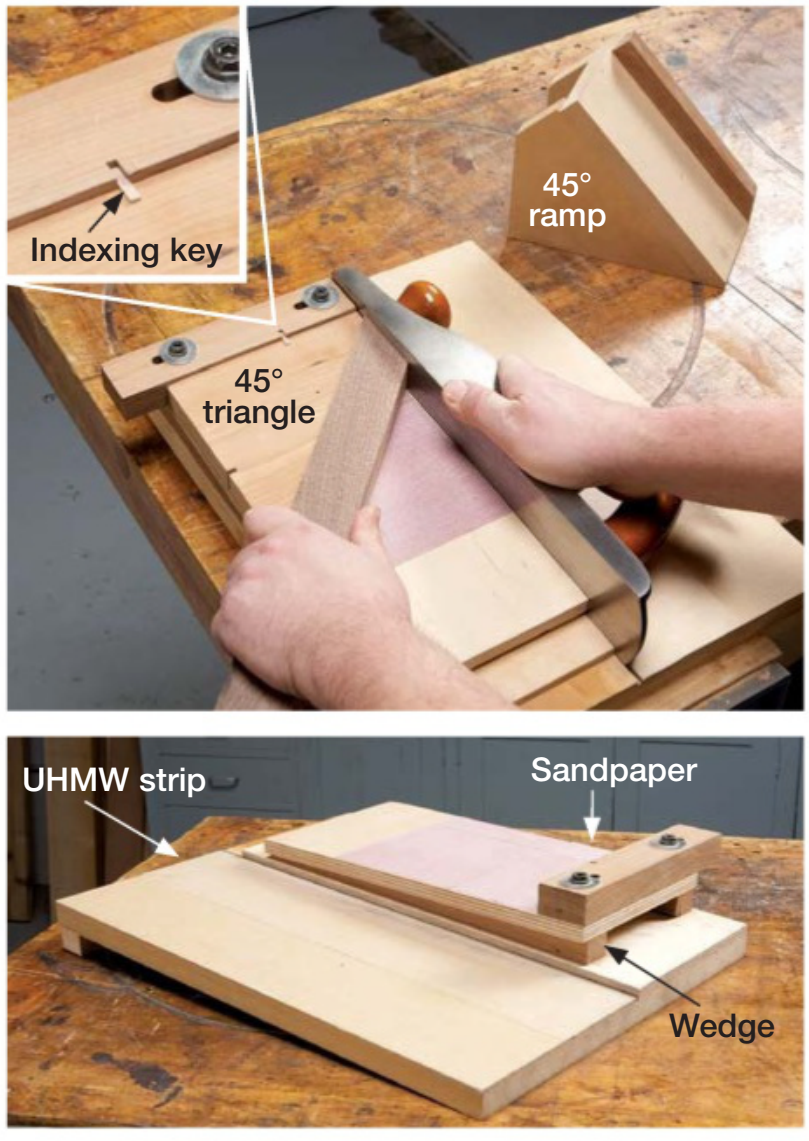
Routing long, stiff pieces such as handrails, presents a couple of problems. First, it's very hard to get (or make) stock that's extremely straight and 12' to 14' long. Second, a piece that thick won't flex, so a featherboard isn't going to keep it tight against your fence.

The solution? Use two short fences, each about 5" long. If your workpiece is slightly curved, the bend won't affect the shape of the profile very much.

I also use short fences on my tablesaw in some situations. When ripping a board, internal forces may cause it to spread apart as it is cut. The right-hand side of the board then binds against the fence and the blade. Dimensional softwood lum- ber is much more prone to this problem than kiln-dried hard- wood, but you never know.

You should always use a splitter or riving knife on your saw to prevent kickback from this kind of binding, but you'll probably get burn marks on the board's edges. The binding may get so bad that you can't push the board the rest of the way through the cut.

A short fence solves both problems. If I'm ripping cedar for an outdoor project, for example, I clamp a short sub-fence to the saw that stops right at the point where the workpiece clears the blade. If the board starts to warp, it has nothing to push against.—*Cliff Thornton*



Universal Shooting Board

I used to have three shooting boards for planing end grain: one for 90° cuts, one for 45° horizontal miters and one for 45° vertical miters. Now I've combined them all into one.

The jig's main body is a typical shooting board for trimming pieces at 90°, except that it has long wedges to tilt the bed. (As a part is planed, the bed's tilt creates a shearing action that makes the plane easier to push. Tilting the bed also results in a cleaner cut.) A cleat fastened under the shooting board's front edge allows me to clamp the device in my face vise. Slotted screw holes in the stop block allow me to move the block over when it gets worn. PSA- backed sandpaper helps hold the stock in place. A PSA-backed strip of UHMW plastic creates a slick surface for sliding the plane.

Two 45° attachments go on top of the shooting board, up against the stop block. The horizontal mitering attachment is simply a 45° triangle. The vertical mitering attachment is a 45° ramp with a fence. Each attachment has a small tab that engages in a 1/8" x 1/4" slot in the middle of the stop block. The tabs lock the attach- ments in place, so they won't slide.—*Doug Perlick*

Source: Woodcraft, woodcraft.com, 1-800-535-1153, WoodRiver Slick Strips, 0.020" T x 3" W x 10' L, Item #16L65, $23.99

Subscribe & Save

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

popularwoodworking.com/subscribe

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.wallumber.com

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

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

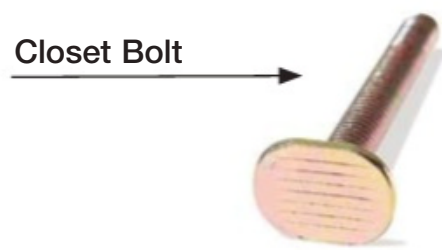
Connect

Hardware Store "T-Bolts"

Specialty hardware can be really annoying. Take the T-bolt—it's essential for attaching anything to a T-track, but where can you buy one at a moment's notice? Hardware stores don't carry T-bolts, but I've found that they always have a good substitute in stock: closet bolts.

Closet bolts are used to fasten a toilet to the floor. (The prissy name must come from describing a batroom as a "water closet." I call them toilet bolts.) Closet bolts are slightly cheaper than T-bolts, but don't expect to save a bundle. You may have to file their heads a bit narrower to fit in the track, but this is no big deal.

Why not just use hex-head bolts, you may ask? Fine and good—if your T-track accepts them. Many types don't. But even if yours does, I recommend using closet bolts. Their heads are rounded and thinner in cross-section, so it's easy to insert them into the end of the T-track. They'll slide better, too. Closet bolts come in either 1/4" or 5/16" diameters, and lengths from 2 1/4" to 3". —*Jon Nowlin*

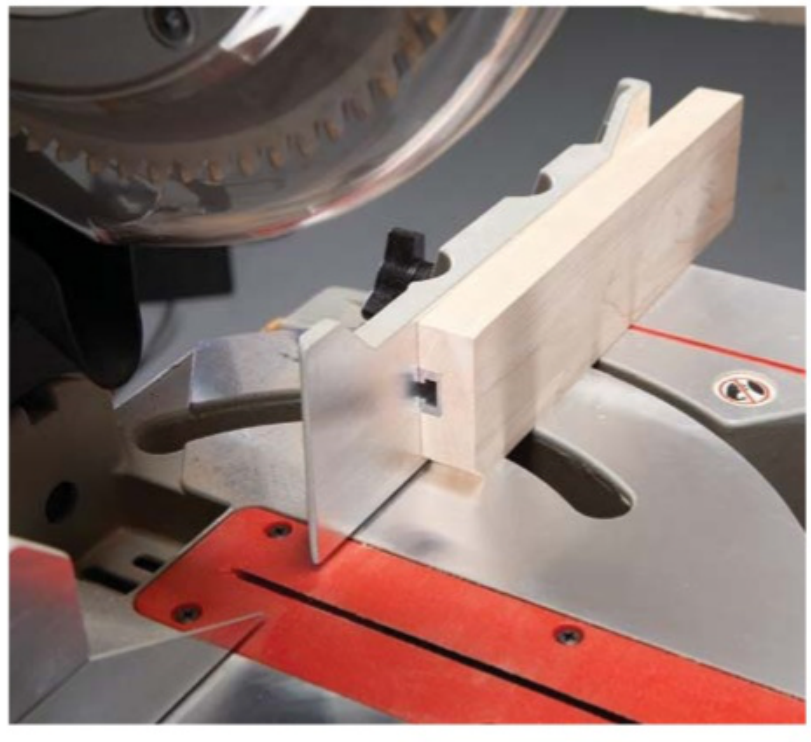


Tablesaw Storage

Pegboard isn't just for walls—it's perfect for organizing stuff wherever you need to store it. I've bolted a piece of perfboard to the end of my tablesaw's extension table to hold all the accessories I turn to each day in the shop. Choosing from a wide variety of hooks makes it possible to hang just about anything.—*John Cusimano*

Stop Block that Stays Put

When making repetitive cuts, I found that my stop block would shift. With a hardwood cutoff, a leftover piece of T-track, a 1/4–20 hex head bolt and a jig knob, I constructed a stop block that doesn't move and is super easy to adjust. First, drill a hole in the saw's fence, then groove the block for the T-track. —*Ira Penn*



Woodsmith PLANS

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

Titebond®
THE PRO'S ADVANTAGE™

The Experts Trust Titebond®

"I trust the performance of Titebond Wood Glues for all my custom indoor or outdoor projects."

George Vondriska
WoodWorkers Guild of America
Vondriska Woodworks

Titebond offers the most comprehensive assortment of glues for bonding wood.
Visit titebond.com or call 1.800.347.4583.

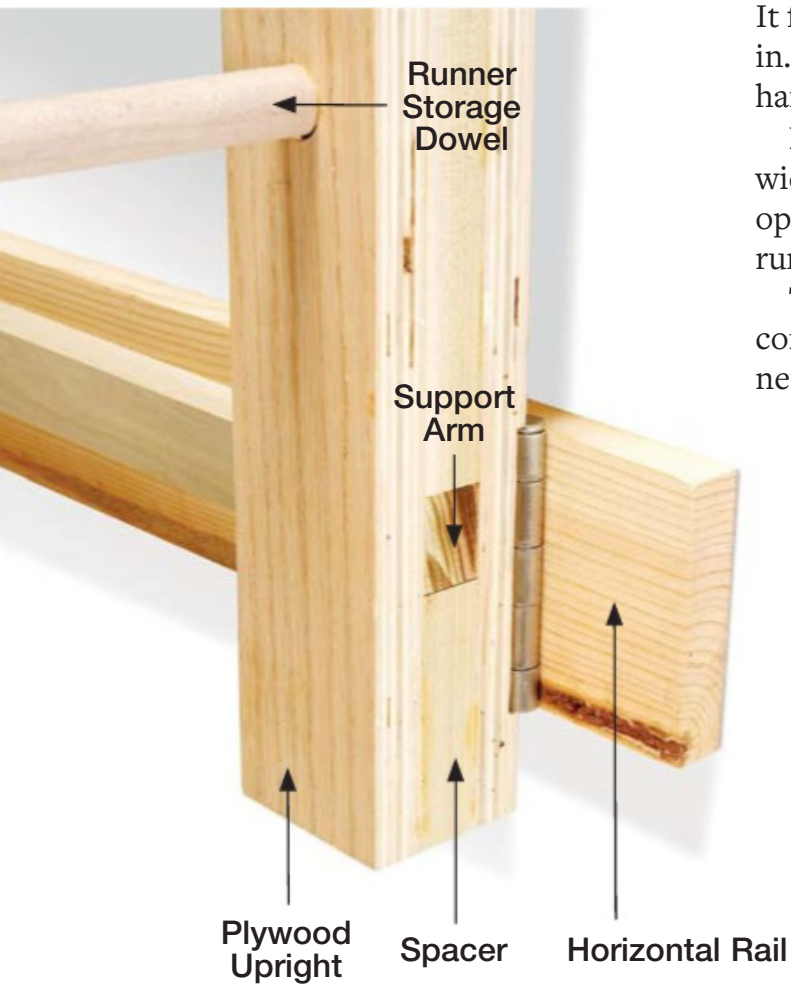
Connect

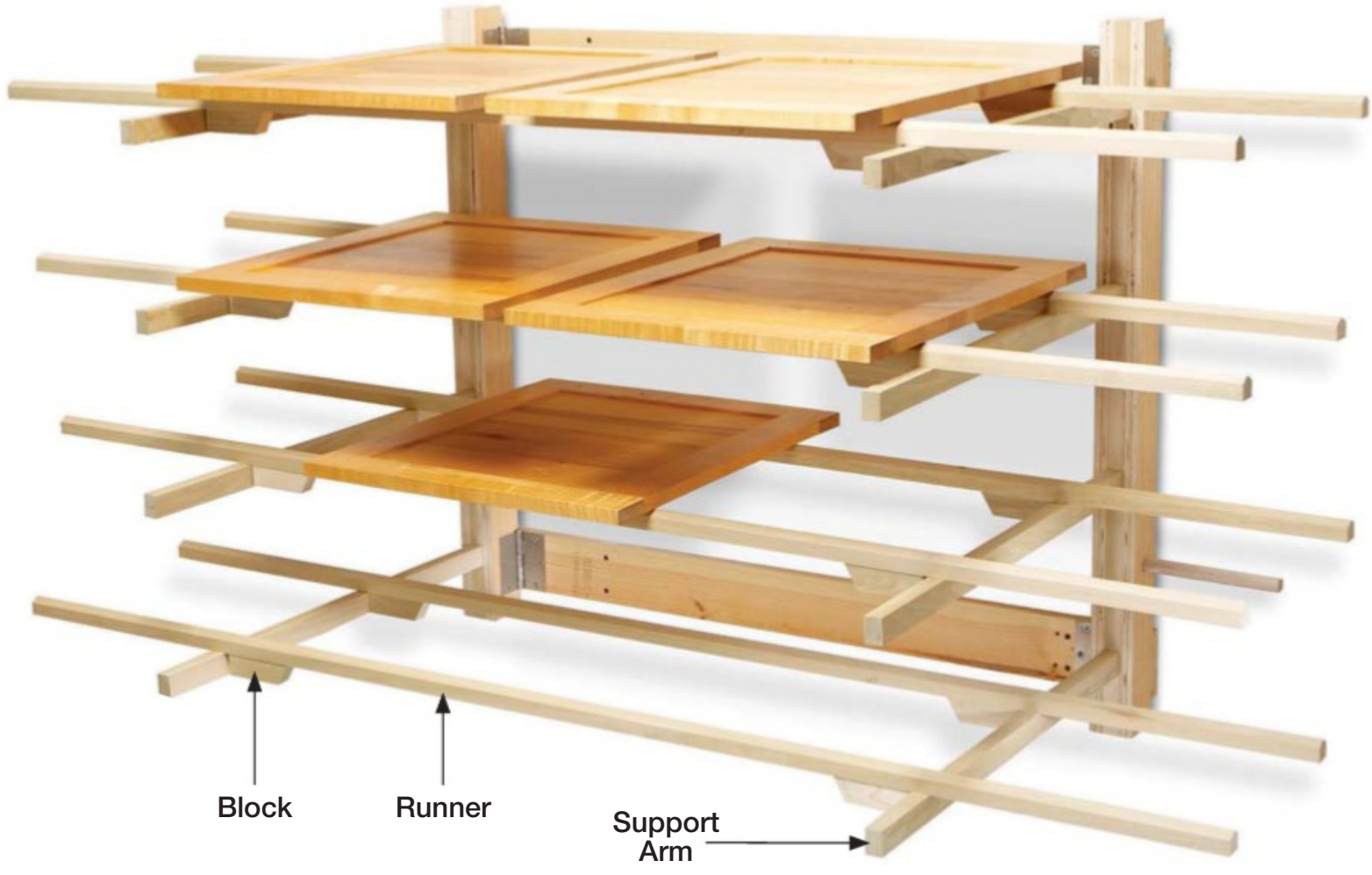
Collapsible Drying Rack

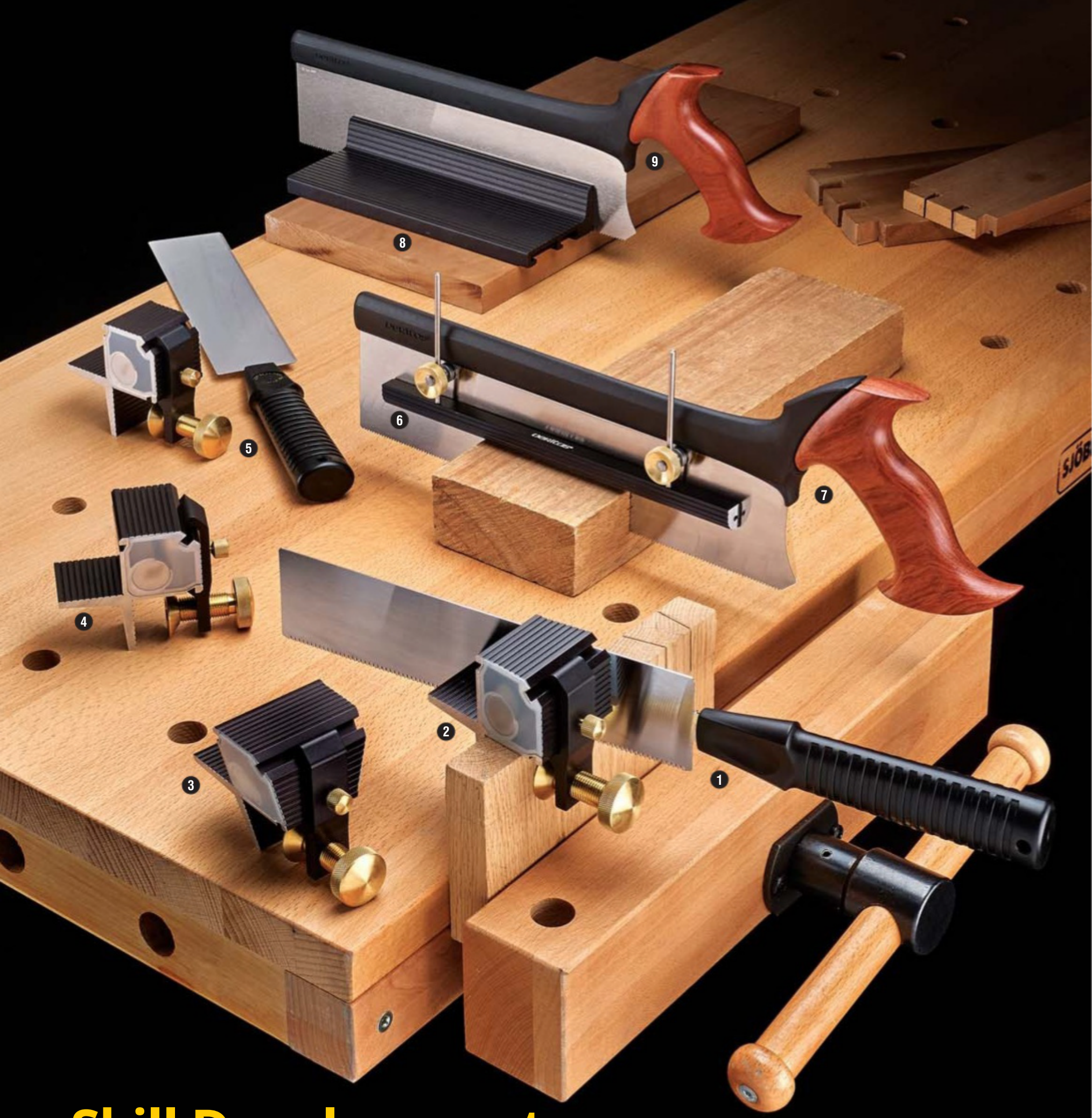
Sturdy yet collapsible is easier said than done, but this drying rack is both. It folds flat against the wall to save space until I need it. I made my rack 36 in. tall, with 8" between levels. Each side of the rack is made by sandwiching hardwood support arms between plywood uprights.

Each arm measures $^{13}/_{16}$" x 1 $^{1}/_{8}$" x 28". The uprights and spacers are 2 $^{1}/_{2}$" wide. The uprights hinge on horizontal rails fastened to the wall. When open, $^{3}/_{4}$" x 1" hardwood runners lay across the arms. Blocks attached to the runners keep the arms spread.

The runners' top edges are beveled to minimize the amount of surface contacting the finished pieces to be laid on them. When not in use, the runners store on dowels attached to the rack's hinged uprights.—*Gerry Tetrault*







Skill Development

To help beginners build confidence while they learn straightforward hand-cut joinery techniques, such as dovetails and finger joints, Veritas® has developed a number of magnetic saw guides that hold a saw at the correct place and the correct angle for a perfect cut.

Browse our catalog online or download it to the Lee Valley app on your mobile device.

leevalley.com 1-800-683-8170

1. Veritas® Dovetail Saw 05T02.03
2. Veritas® 14° Dovetail Guide 05T02.05
3. Veritas® 1:8 Dovetail Guide 05T02.12
4. Veritas® 1:6 Dovetail Guide 05T02.11
5. Veritas® Right-Angle Guide with Saw 05T04.05
6. Veritas® Saw Depth Stop 05G45.10
7. Veritas® Crosscut Carcass Saw, 14 tpi 05T07.01
8. Veritas® Magnetic Saw Guide, 8" 05T20.01
9. Veritas® Rip Carcass Saw, 12 tpi 05T07.05

Lee Valley

Connect

TOOLS

SawStop Jobsite Saw Pro

SawStop released the first version of their portable table saw about five years ago. Packaging their flesh-sensing blade brake technlogy in a smaller, more affordable format made it more attainable for a larger portion of woodworkers and folks on jobsites. This upgraded version of their jobsite saw (the Jobsite Saw Pro) is a pretty nice piece of kit. Right out of the gate, the unboxing and assembly was one of the easiest portable table saw assemblies I've been a part of. Just six bolts (two for the wheels and four for the handles) and it was fully assembled. (That does mean it arrives in a giant box.)

JOBSITE SAW PRO
SawStop
sawstop.com
Price: $1400

The motor is rated at 1.5 HP continuous load and up to 4 HP max. I'm not exactly sure what that spec means, but I do know it's plenty strong. I was cutting 8/4 ash, 4/4 maple, plywood, MDF and it performed admirably. With the 8/4 ash, I could tell the motor was working harder, but nothing a little adjusting of the feed rate wouldn't fix.

The fence locks down solidly and was dialed in perfectly out of the box. The table expands to the right for 25 1/2" rip capacity (and also unveils onboard storage). The table also has a full 8" in front of the blade (versus 6" on Sawstop's regular jobsite saw). One thing that's immediately noticeable is the blade height adjustment and bevel adjustment. The blade goes from completely retracted to full height with just one crank of the handle. The bevel of the blade is adjusted by squeezing the crank handle (which isn't very intuitive if you're used to other table saws, but makes a ton of sense especially with a portable saw and limited space). There's a separate fine bevel adjustment to really dial in the angle.

Dust collection was surprisingly good with a shop vacuum, especially using the blade guard and below the blade ports in tandem. The blade guard is easy to remove and reinstall (so there's no reason it shouldn't be on the saw as much as possible), and the included riving knife stores onboard to swap for non-through cuts. The saw can also run an 8" dado stack (though you'll need a separate throat plate and brake cartridge). The saw handled cutting dadoes in plywood just fine, but I could tell I was taxing the motor trying to do a full 1/2" deep, 13/16" wide cut in hardwood. Again, adjusting the feed rate helped.

The mobile stand is solid and quickly folds down to wheel the saw around. At about 100 lbs., the saw and stand is well-balanced and can maneuver through a standard doorway. For the space challenged or portable woodworker, it's one hell of a saw on its own. With the blade brake technology, it's a no-brainer (if it's in your budget).—*Andrew Zoellner*

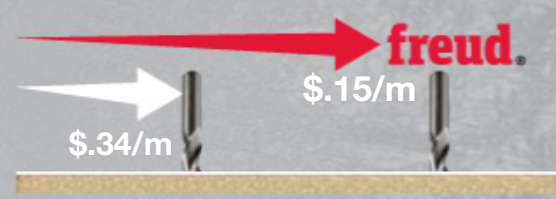
freud®

BLACK I.C.E.™ ROUTER BITS

THE SLICKEST TECHNOLOGY IN SOLID CARBIDE ROUTER BITS

BLACK I.C.E.™ (INDUSTRIAL COOLING ELEMENT)
protects solid carbide cutting edge by creating a slick, lubricant like action for a cool cutting edge and superior chip evacuation.

EXCLUSIVE FREUD TICO™ HI-DENSITY CARBIDE
provides a sharper edge and flawless finish for less wear and up to ***2X longer cutting life***.



2X CUTTING LIFE = 2X THE PRODUCTIVITY

#77-510

ANOTHER INDUSTRY 1st BY FREUD

UP TO 2X THE PERFORMACE. 2X THE PRODUCTIVITY.

vs. standard uncoated bits

For more information visit: www.freudtools.com/BlackICE • 1.800.334.4107

BESSEY GearKlamp

We moved the handle for easier clamping.

With the new GearKlamp, BESSEY® moved the handle to make clamping easier. The rail-mounted handle is now offset from the point of contact and allows a wider variety of assembly applications in comparison to more traditional clamps.

BESSEY. Simply better.

AWFS Visionary Awards Winner

besseytools.com

Connect

DeWalt Cordless Compact Router

DCW600 ROUTER
DeWalt
dewalt.com
Price: $179 (bare tool)

As power tools all go cordless, it's especially nice to be able to lose the cord on a router. Going cordless really is a step forward—as long as the tool doesn't sacrifice power and productivity that is. For all-day production output, I'd still look to a corded model, but I was impressed with the power of DeWalt's DCW600 cordless router throughout my testing. It's larger than a laminate trim router, it's part of a step-up class of compact, more powerful routers.

The basic features of this tool include variable speed settings from 16,000 to 25,500 rpm, dual LED headlights, and a brushless motor with a soft-start feature and a near-instant motor brake. Two other features I appreciated in use are the tool's D-shaped subbase that provides a little extra support and doesn't have to be centered on the bit for the flat side to work accurately along a straightedge, and the battery mount surface that lets the inverted tool sit flat and stable when changing bits or setting the cut depth.

The DCW600 compact router runs on all of the brand's 20V Max and 60V Max Flexvolt battery packs, and I tested it with their popular 2.0 amp-hour (Ah) and 5.0 Ah packs. Throughout a variety of jobs from edge profiles to inlays to dadoes and grooves, it handled everything without compromise. While really pushing the tool cutting 1/2" by 1/2" dadoes in ash, I couldn't discern any difference between the performance of the 2.0 Ah and 5.0 Ah packs, but I know that sustained high current draw can really tax a compact battery compared to a full size pack with more battery cells to share the load. With varying loads on the motor, and a fair amount of no-load idling time, it was difficult to measure the router's runtime, but I'd say that I got most of an hour's use out of a 5.0 Ah battery pack.

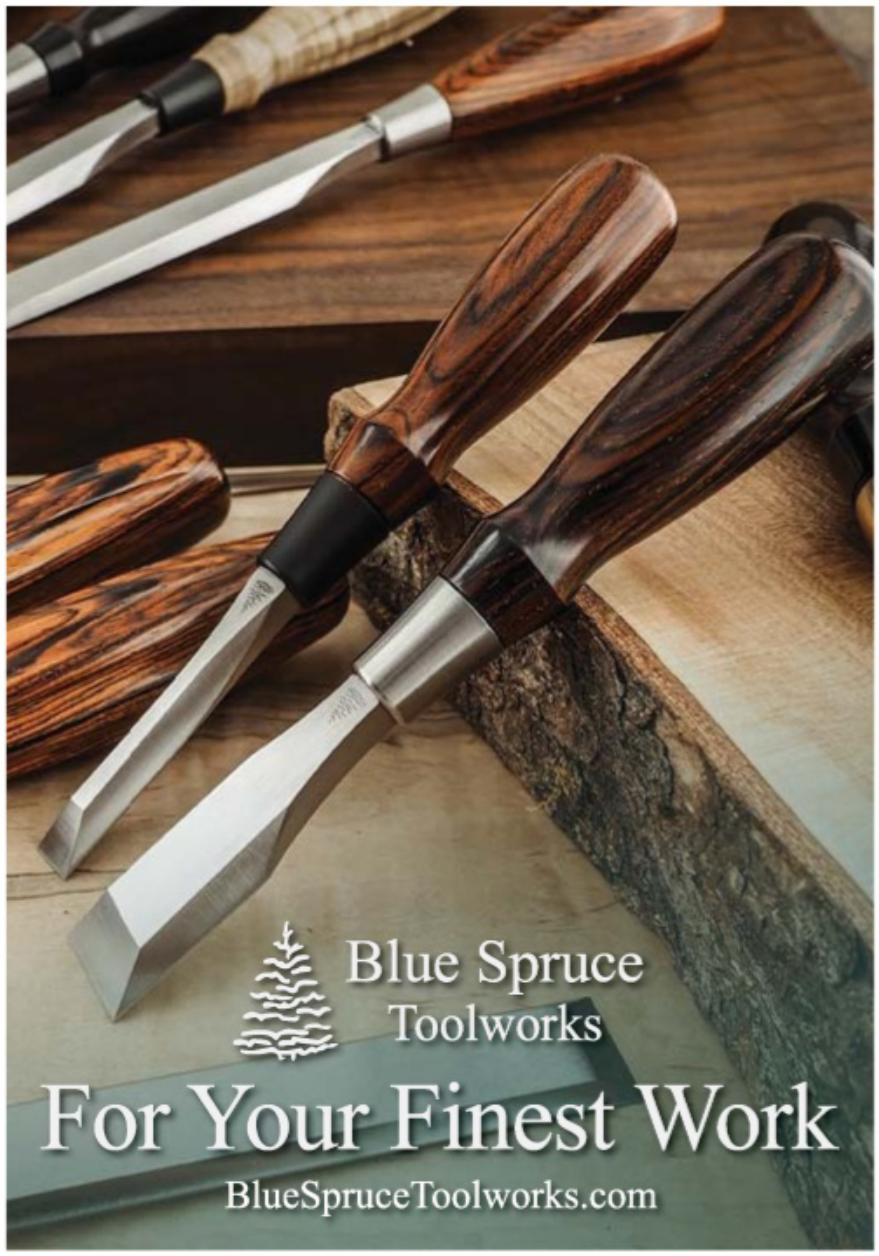
The DCW600 is a close copy body-wise of DeWalt's DWP611 corded compact router, and works with all of the same accessories (including the very useful plunge base, a round sub-base that accepts template guides, and dust collection shrouds for both fixed and plunge bases). One improvement the new cordless model boasts is the rubber surface around the base for improved grip. Other than that, the components and operation of both are largely the same. The corded DWP611 is one of my favorite routers, and I'm happy to report that the capable cordless DCW600 is a real (wood)chip off the old block.—*Michael Springer*

Fisch Wave Cutter Forstner Bits

WAVE CUTTER FORSTNER BITS
Fisch Tools
fisch-tools.com
Price: $300 (16-piece set)

My collection of Forstner bits was cobbled together over the years. I started with inexpensive multipacks. Then I bought a few specific sizes for projects and even sprung for some premium one-offs. And I've tried just about every style and brand of Forstner bit. They all worked, but none of them really impressed me until I got my hands on these Forstner bits from Fisch.

To put it simply, the Fisch Wave Cutter Forstner bits are by far the best I've used. They drilled faster, cleaner and had better chip ejection than every bit I put them up against, even other premium brands. I promptly gathered all the other forster bits in my shop and put them in my giveaway pile and bought the 16-piece set. They're also sold individually and in smaller sets. You do pay a premium for these bits, but if you're tired of compromising or you're planning on drilling a bunch of holes, they're definitely worth checking out. —*Andrew Zoellner*



Woodpeckers®
Woodworkers Edge Rule

Our Edge Rules simplify your life by wrapping around the edge of your stock and giving you an accurate scale on both sides. The rule supports itself and makes it simple to mark both the face and the edge at the same time. Available in lengths from 6"-36", individually or as a set.

Find out more about the Woodworkers Edge Rules at **woodpeck.com**

Woodpeckers, LLC • Strongsville, Ohio • 800.752.0725 MADE IN USA

Oneida® Air Systems

The Industry Leader in Dust Collection

V-SYSTEM®

HEPA CYCLONE DUST COLLECTORS

- *Industrial U.S. made motor available in 1.5 or 3HP*
- *HEPA filtration*
- *High-efficiency molded cyclone separator*
- *Steel angle bracket stand*
- *Dust Sentry - infrared dust bin level sensor*
- *Stacking Sound Filter*
- *35 gallon steel dust bin included (larger sizes available)*

U.S. Patents
#8377160
#8496719

MINI-GORILLA®

PORTABLE CYCLONE DUST COLLECTOR

Picked as a Top Tool of 2017 by Fine Woodworking magazine.

- *HEPA filtration*
- *Industrial U.S. made 1.5 HP motor, 110V or 220V*
- *Compact and portable design (64"H x 36"W)*
- *22 gallon dust bin included*
- *Perfect for the small shop*

U.S. Patents
#7,824,457B2
#7,937,803B2
#8,377,160B2
#8,491,686B2
#8,496,719B2

1-800-732-4065 • oneida-air.com

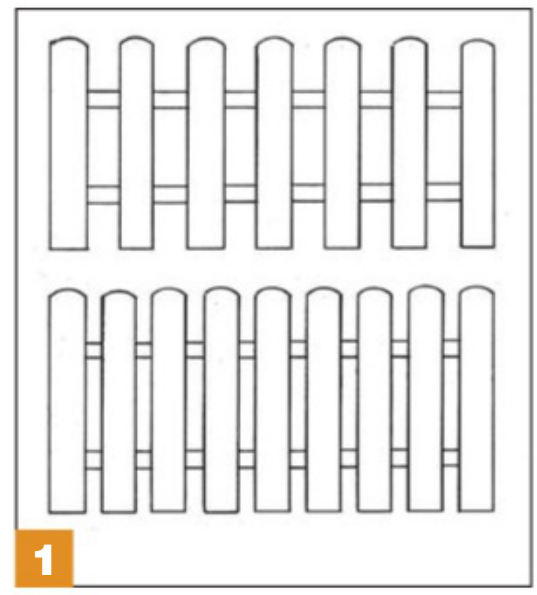
MADE IN THE USA SINCE 1993

Spice It Up With Rhythm

Subtle use of patterns and repeating motifs please the eye.

By George Walker

This Gustav Stickley credenza (in the collection of the Art Institute of Chicago) creates a simple rhythm by varying the width of the cabinets.



1

2

1 The picket fence at the top has equal spaces and pickets or a pattern of 1:1:1:1. The one below it breaks it up, which does your eye prefer?

2 Architectural moldings are good places to look for rhythms in the wild.

I was waiting on a phone call so I didn't think twice when my phone rang. Two words in and I hung up the call. Why do telemarketers manage to get through when I least want to talk to them (which is never). Perhaps a bigger question is how do I know in two seconds it's an artificial voice, some pre-recorded zombie trying to lure me down a rat hole? Granted, technology has come a long way. The early versions of electronic speech sounded like a drunk talking through the whirling blades of an electric fan. Now days, artificial speech is only slightly annoying, like a child trying to recite memorized lines. But my point is that our ears are finely tuned to pick up small nuances in human speech.

Perhaps it's an important defense mechanism we developed to quickly determine friend or foe. When we hear that artificial voice we know in just a word or two that it lacks the rhythm and emphasis of a live person. It comes across as mechanical and dead. That's an important concept that we can apply to design. I'm convinced that those things that grate on us, like an artificial voice, may hold deeper clues about how we respond to the world around us. Let's take a look at how rhythm and emphasis can make a design come alive.

Picket Fence

Our senses, especially our hearing and sight are highly adept at picking up patterns. Individuals may vary but taken as a whole; we have similar responses to certain types of patterns. In general, when presented with a monotonous or single note pattern, we respond with apathy or distain. A picket fence is a good example of a pattern.

To many folks, a picket fence is a negative thing because it represents a life with everything charted out and no room for surprises or spontaneity. That may be true but the horizontal pattern played out by the pickets and the spaces between them creates a rhythm. Note that even the monotony of a picket fence is greatly improved by making the empty spaces noticeably narrower than the width of the pickets. Look at the play of rhythm on this stone dentil molding. The empty spaces separating the lower dentil molding

LEAD PHOTO BY SAILKO/3.0; ALL OTHER PHOTOS BY THE AUTHOR

WOODLINE USA

800-472-6950

What can we help you make today?

WOODLINE'S 30PC ESSENTIALS COLLECTION

Includes:
- 5 Straight Bits
- 3 Dovetail Bits
- 3 Core Box Bits
- 3 Flush Trim Bits
- 1 Chamfer Bit
- 1 Pattern Bit
- 1 V Groove Bit
- 3 Cove Bits
- 2 Rabbeting Bits
- 6 Roundover Bits
- 2 Roman Ogee Bits

We revised our best selling 30 piece Professional Set to give you THE most popular and useful bits. Makes a great gift for both seasoned and novice woodworkers.

WL-2010 ½" Shank Only $109

Yes, we have gift cards and they never expire!

TRISTAR™ 3 WING CABINET SET

Ogee or Roundover 3pc Sets $89

Designed for 3/4" material. Make raised panel doors for kitchen and bath cabinets, grandfather clocks, and other furniture.

WOODLINE'S DADORIGHT™ JIG

DRC Video

Starting at $59.95!

Use our DadoRight™ jig and your router for the simplest way to make perfect-fitting dados and grooves every time. Fits most brands of clamps. If you already have the Festool™ or TrueTrac™ System, we have a version just for you! Check out our video to see how easily it's done!

Request or view our catalog online or shop at

www.woodline.com

THE ALL-NEW SEASON IS HERE!

Woodsmith Shop Season 13!

All-New Episodes **NOW AIRING** on Public Television.

If the show isn't available in your area, contact your public TV station manager.
You'll find contact info for your public TV station at **WoodsmithShop.com**

are half the width of the adjoining teeth while above it on the larger brackets, the empty spaces are twice as wide as the brackets. The designer flipped the patterns and changed the scale creating layers of rhythm to provide visual interest. This tells us something important.

A pattern with a single note is visually dead. In proportional terms it's a pattern of 1:1:1:1 etc. It changes dramatically simply by setting up a pattern that goes 1:2:1:2:1:2 or 2:5:2:5:2:5 etc. Look at examples decorative carvings like the egg and dart. Although it's a pattern that repeats, it flows visually because it has a bit of rhythm. It alternates between the egg and dart with a major minor, major minor pattern. This applies to small parts like carvings and inlays but also to larger components in case furniture.

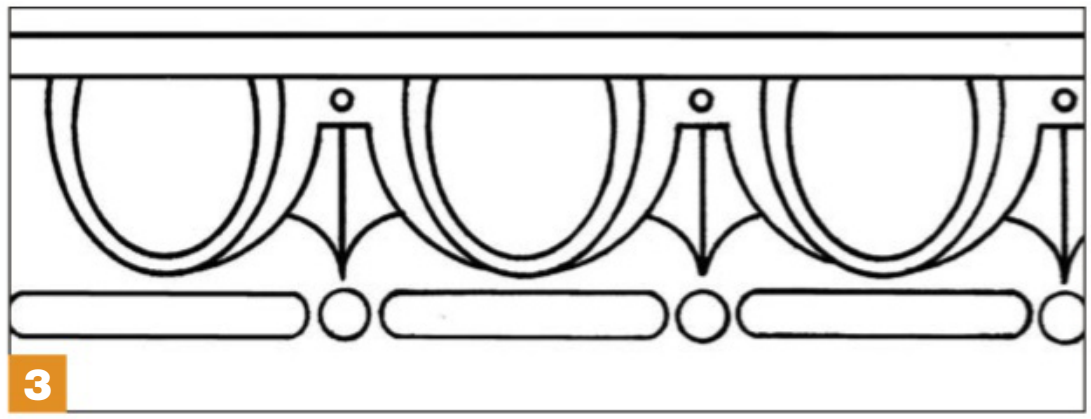
Storage Wars

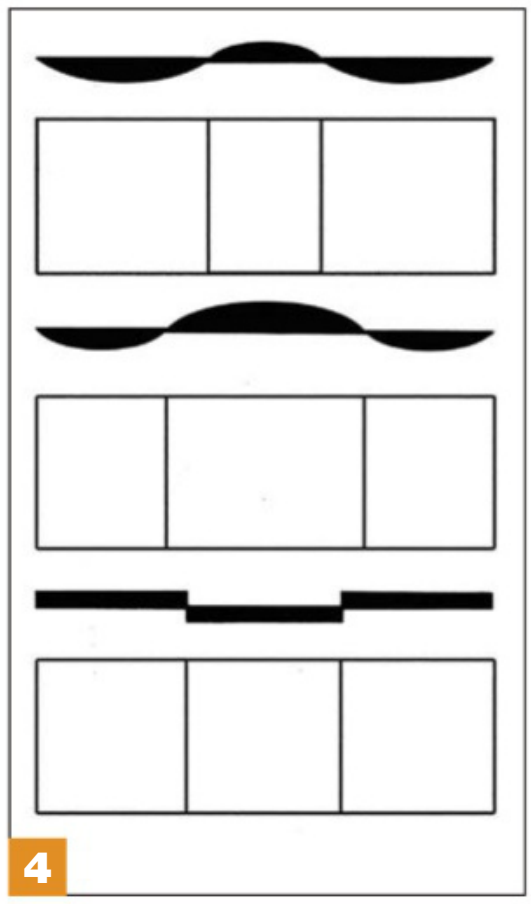
If the goal is efficiency, a row of identical boxes is the best way to get the most out of a space. We see this in office cubicles, hotel rooms, and apartment buildings. The problem is that those layouts tend to grate on us. We chafe at being warehoused.

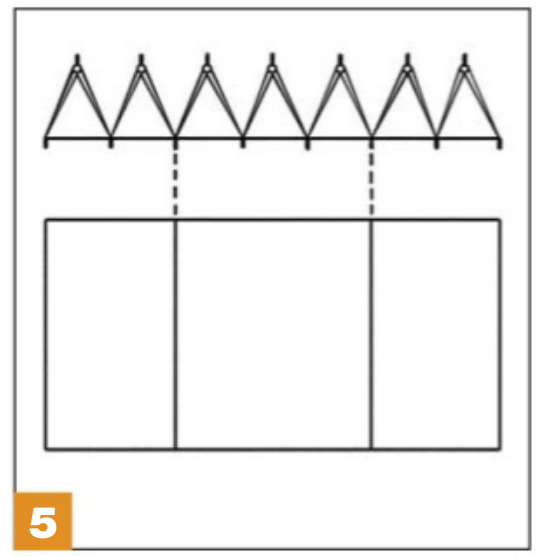
On a similar level, case furniture can benefit by breaking up the monotony of a grid like layout. Often cases are broken into three spaces across the width with the center portion narrower or wider than the two flanking outer spaces. This does two things. First it sets up symmetry with a mirror image on either side which tends to lead the eye to the center. It also creates a bit of rhythm between the flanking spaces and the center.

Simple Rhythms

You don't need to be musically inclined to work these proportional rhythms into your designs. All these patterns, whether on a small running carving or the spacing on a large cabinet make use of simple proportions. Forget your ruler and


3


4


5

3 Although the spacings repeat, there are several proportional patterns woven into this egg and dart design.

4 Same case with different patterns across their width, which do you prefer?

5 Look ma, no ruler! Just step off simple rhythms with your dividers.

instead use dividers to step off whole number simple proportions. It's not complicated at all. In the case of a layout for a three bay case carcase, the layout might be 2:3:2 with the center case wider than the two flanking cases.

To work out the size of the actual spacing of the parts, first add up the simple proportions. In the case of a layout of 2:3:2, simply add those numbers together 2+3+2=7. Then use your dividers to step off the entire width of the case into seven equal parts using trial and error. (figure five) Once you've stepped it off into seven equal parts, that's your module to lay out the breaks between cases. Starting on one end, step over twice for the first opening, the next three steps mark the center portion, you should be left with two spaces for the third opening–2:3:2.

Look For It

Once you realize how these rhythms add to the visual interest in furniture designs and architecture, take note of examples you see in the wild. What simple combinations seem pleasing or which could be made more alive by breaking up the spaces? This will help inform you as you learn to apply this to your own designs. **PW**

George Walker is the co-author of two design books and writer of the By Hand & Eye *blog with Jim Tolpin. Read more at byhandandeye.com.*

The hottest trend in interior design these days is

LIVE *Edge* SLABS

And, why not? Natural curves, crazy grain patterns, and eye-catching burls give live edge slab designs loads of appeal.

Woodpeckers®
Slab Flattening Mill

Along with your router, puts the power to accurately and easily flatten oddly shaped and oversized slabs right in your own shop.

Heavily ribbed extruded aluminum rails guide your router over the slab on a carefully controlled plane. Warps, twists and mill marks are machined away leaving a flat, smooth surface that needs only light sanding afterwards.

Don't put off tackling your live edge slab project any longer. Find out more about Woodpeckers Slab Flattening Mill at ***woodpeck.com*** or your local Woodcraft retail store.

Woodpeckers, LLC • Strongsville, Ohio • 800.752.0725 • ***woodpeck.com***

MADE IN USA
of Domestic & German Materials

Hidden Door Bookcase

Turn a closet into a hiding place with a basic bookcase, trimmed to match the room.

By Nathan Rinne

PROJECT #1919

Skill Level: Intermediate
Time: 2 Days
Cost: $500

PHOTOS BY THE AUTHOR

The alluring nature of secret rooms has captivated my imagination for as long as I can remember. Growing up, my mind would race with possibilities, as I'd watch someone unlock a bookcase by tilting a book or some other secretive method on television. As an adult, their mystique is still appealing, though having built several of them now their functionality is no longer a mystery to me. Whether a person wants to hide a safe, have a safe room or just find a creative way to hide a utility room, a bookcase door is a fairly easy way to go about doing it.

The secret to making a bookcase door function is in the hinges. Fo r an in-swing door, you can use regular door hinges placed on the back of the case but I don't recommend it. Even though the tendency to sag can be mitigated some with a caster on the strike side, eventually those hinges will become loose and falter. So for both in- and out-swing doors, I use what's called a pivot hinge. With a pivot hinge, the load is transferred from the jam to the threshold and the header, alleviating the stress of the traditional jam hinge configuration. The hinge I found to work best for my needs is the Invisi-Door Hinge kit ($139) from CS Hardware. With its 500-pound load capacity and the fact that it surface mounts with no mortising required, it's a great solution for both pros and homeowners alike. The kit comes with easy-to-follow instructions for a 36" door, including frame and case dimensions (which, if the same overhangs and reveals are used, can be adapted to about any width opening).

Prepare the Opening

The opening that your door will pivot in needs to be jammed and

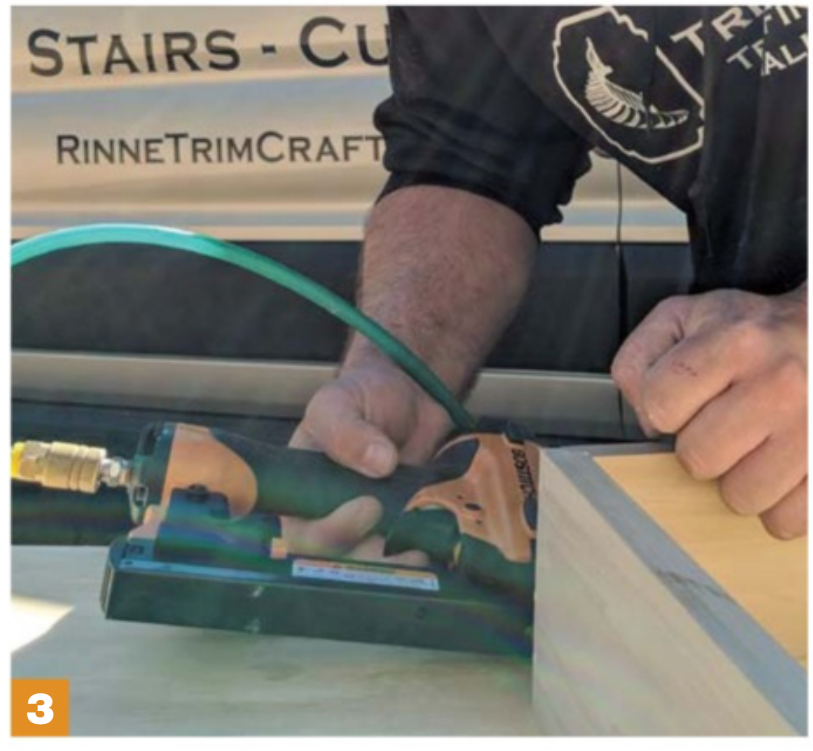
1

1 Start with trimming out the door jamb. Being accurate here is key to hiding the opening. Cut your jambs to length.

2 The jambs are joined to the header with rabbets. The rabbets are cut with a rabbeting bit in the router.

3 I assemble the jambs and header with staples to get it ready to install in the opening.

2



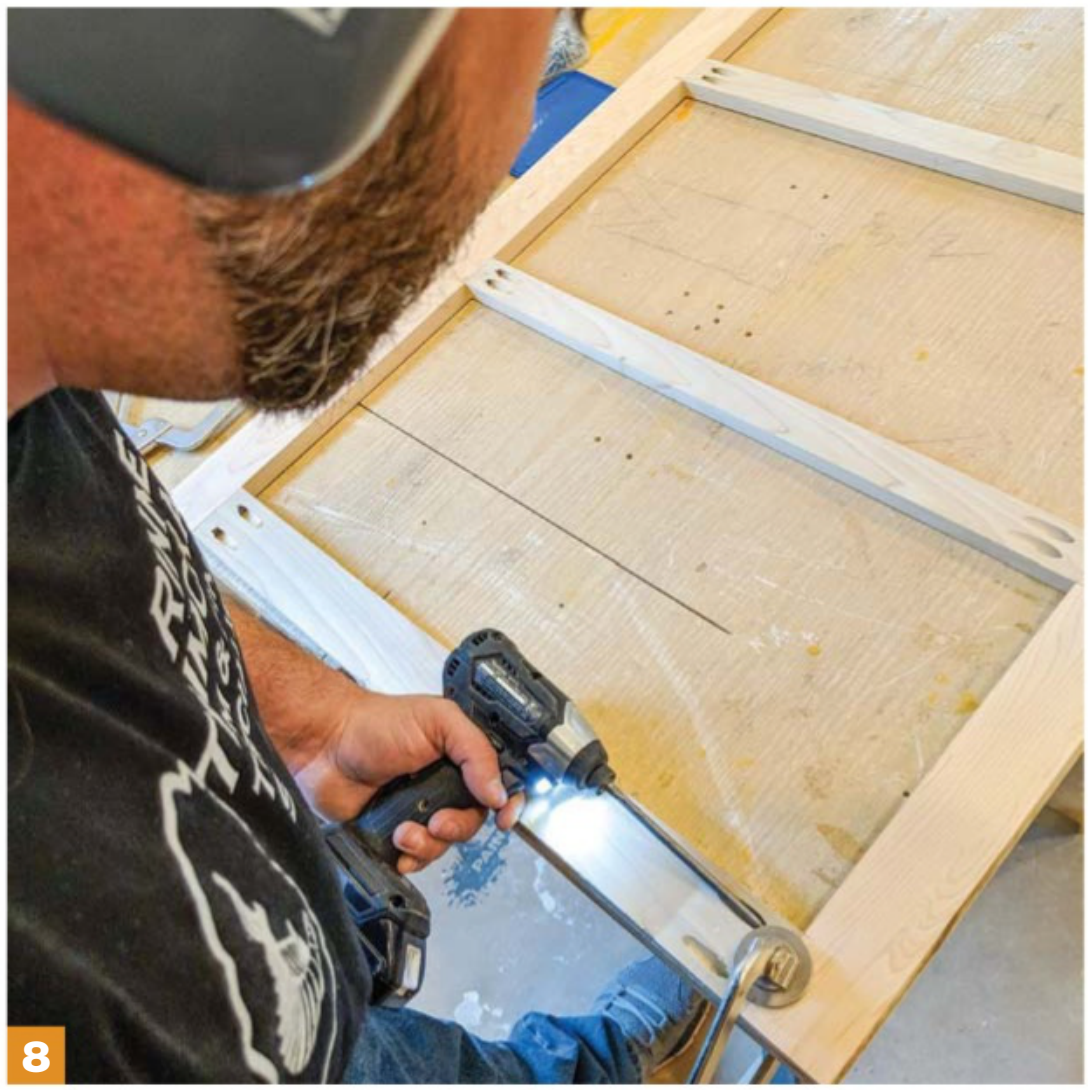
3

4 Getting a perfectly square and plumb door frame is critical to making the rest of the process go smoothly. Here, I use a shim to figure out how I need to cope my jamb.

5 I use the shim to lay out my cut line on the jamb.

6 I miter the first layer of trim for installation, to match the rest of the house.

7 The face frame is made up of 3-1/2", 2-1/4" and 1-1/2" wide stock. I start the face frame by ripping boards to width on the table saw.



8 The face frame is assembled using pocket hole joinery. It's fast and strong for installation in the field. I add a little glue for peace of mind.

cased with flat stock (3.5") as you would a pass-through opening. It is absolutely imperative that your jams are set both level and plumb to keep your reveals even. You'll also be measuring off the top and bottom of the hinge side jamb leg to set your hinges on the threshold and header and as such, keeping your jamb leg plumb is critical to insuring they are parallel to one another. Once this is done, measure your opening and subtract 1" from the width and 1 1/8" from the height. This will be the dimension of your face frame.

Make the Face Frame

Start by cutting your two 1 1/2" wide stiles to length. Place them on a flat surface, face to face, backside up and aligned with one another. Make a mark 2 1/4" from the top and 3 1/2" from the bottom. These marks represent your top and bottom rails. Next, make a mark at 31 1/2" from the bottom of the stile. Draw an x below this line to remind you which side the rail goes on when assembling. This rail is wider because it will have a door resting on it with a 3/4" overlay, which in turn will leave 1 1/2" showing so that it matches all of your other 1 1/2" rails.

Next, measure the distance from the top of your stile and the mark you made at 31 1/2". Subtract from this number the 2 1/4" being allowed for the top rail. The difference will be what you use to determine the layout of the rest of your shelf rails evenly. Once you have their locations figured, make marks for them along the face edge of one stile. Transfer these marks across both stiles remembering to place an x to the side each rail as you go. To find the width of your rails, take the overall with of the frame and subtract 4 1/2". Next, drill pocket holes in all of the rail ends. Assemble the frame placing each rail on its respective mark with glue and pocket screws clamping them as you work. Once your face frame is assembled, you're ready to build your case.

Build the Case

The sides of the cabinet cannot exceed 7" as the overall depth including a 3/4" face frame and 1/4" back must be 8" or less. This ensures you will have the proper clearances specified by the manufacturer so that your door functions with the recommended hardware placement. Cut the case sides 1 3/8" less than the height of your face frame. The top of the case will be recessed 3/4" below the top of your face frame.

Using a combination square, draw a line on the back of your face frame 3/4" from the top. At this time, I also make reveal lines on the stiles 15/16" from the outsides on the back and 3/4" from the outsides on the front. The lines on the back represent the overall width of your case whereas the lines on the front will be the reveal marks for your trim boards later.

Now place one cabinet side on edge and flush with the 3/4" reveal line on the frame. Make a mark on the cabinet side between 1/16"- 1/8" below the top of each shelf rail with an x placed on the side the shelf board will go. This slight reveal will prevent any seams from showing and save you a bit of filling and sanding of seams. The top shelf board, which is the ceiling of the case, will be flush with the sides. The very lowest board will sit 1/2" below the top of your bottom rail. Once you've made all of these marks, place the two cabinet sides face to face and transfer them using a large square to draw them as continuous lines.

Dado joints are a must for these bookcases. The added strength of a mechanical joint is needed to prevent sagging and racking. I start

9

by making a squared router jig the width of the sides plus $^1/_{16}$" to allow easy sliding of the material. I add a hold down clamp to the out-feed side of the jig and use a wedge to shim between the jig and work for extra stability. I plow my dadoes $^3/_8$" deep in one pass using my router.

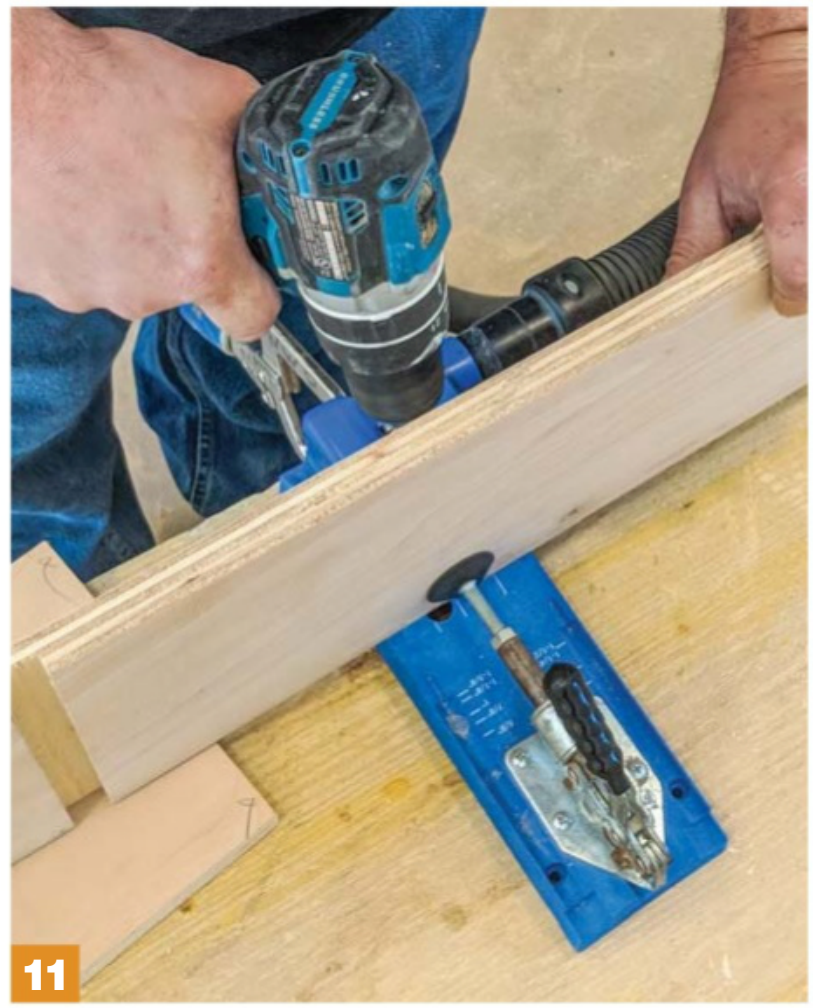
Make your first dado in a piece of scrap so that you will have a referencing mark on both sides of the work. I find that if you do not plow all the way through the jig on the outside of the cut, your dust collection will work substantially better as this creates a dam of sorts to prevent the debris from flying all over the room.

9 Dadoed shelves give the case rigidity. I cut the dadoes with a router and simple dado jig.

10 The dado jig is just two sets of fences, sized to fit my router base that fit over the 7" wide bookcase sides.

11 The face frame is attached to the case with pocket hole joinery (pockets on the exterior of the case).

10



11

Once all of your dadoes are plowed, drill pocket holes between them on the opposite face of each case side. These will hold the frame to the case much better than glue alone. Now you are ready to cut your shelves.

To find the width of your shelves, you will subtract $2\frac{5}{8}$" from your frame width. $1\frac{7}{8}$" for both outside reveals and another $\frac{3}{4}$" for the material thickness of the sides left over after your dadoes. Cut all of your shelves to the same length and inspect them for any discrepancies. Next, place glue in each dado, insert the shelves and shoot $1\frac{3}{8}$" staples into them from the outside. I do this even on stain grade shelves as this portion is hidden until the door is opened. Continue these steps until the case is assembled.

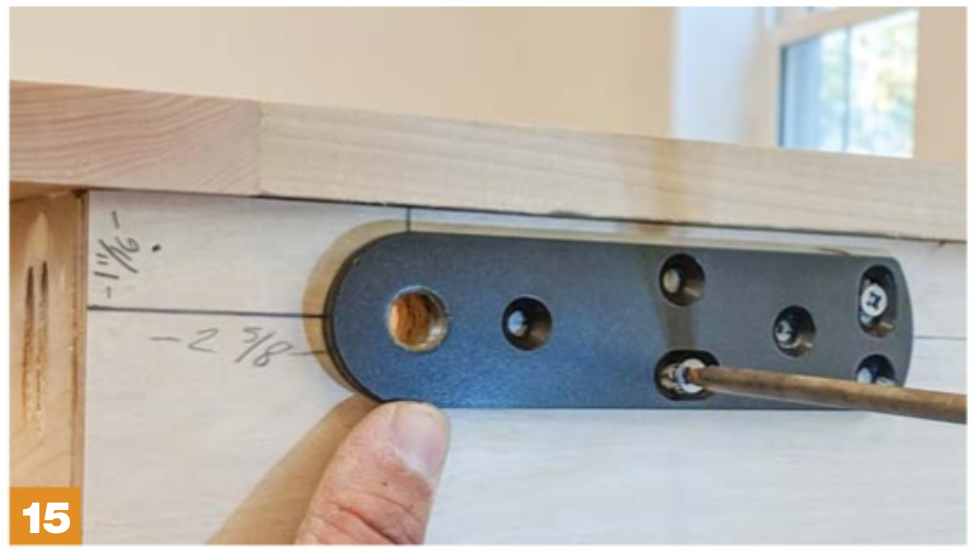
Attach the Frame

First, test fit the face frame making sure to line up both the top and sides of the case with the reveal marks on the back of the frame. You will likely need to rack the case one way or the other to ensure square alignment. Once this is done, put a bead of glue on all edges of the carcass that come in contact with the face frame. Place the face frame back onto the carcass, again paying attention to you reveal marks, and tack a few 16 gauge nails along the sides to hold the frame in place. If building a stain grade door, clamp both sides and every rail accordingly to avoid exposed nail holes. Working quickly within the glue's open time, clamp the frame to the carcass at each pocket hole location, and proceed to screwing the frame down. For

12 I use screws about every 12" to attach the face frame to the bookcase. This makes the piece feel really solid it.

13 I reinforce the top and bottom of the bookcase for the hardware with another layer of plywood attached with glue and staples.

14



15


16


17

14-15 I mark, check, and recheck mounting the hardware and drilling through-holes for the pivot pins.

16 Attach the top part of the upper pivot hinge to the header, paying particlar attention to alignment and the offsets indicated in the directions.

17 Do the same thing with the floor hinge plate. I used a hammer drill to attach it to the concrete here, and I also drilled out a little extra room where the pivot point attaches.

paint grade work, I will shoot about three nails evenly spaced through the face frame and into each shelf just for extra hold until the glue dries. After attaching the face, cut the back out of 1/4" plywood then glue and staple it on.

Mount the Hinges

Mounting the hinges is critical to a good-fitting door. If you've never done this before, it's a good idea to make a working mockup to test placement. To mount the hinges on the case, you'll need to shim the top with a 1/2" block, and the bottom with a 3/4". I use scrap pieces and cut blocks about 10" x 7" and place them directly in the corners where the hinges will mount. Glue and nail them on and then install your hinges as shown in the diagram at left (follow the manufacturers instructions). Pay attention to the individual components as one blade of the pivot hinge is threaded and must be installed on top of your case. You will drill a 5/8" hole through the top and into your case to allow access to the Allen screw that threads into this blade and acts as the upper pivot pin.

Install the Door

First start your Allen screw through the top hinge and add the supplied washers to the threshold hinge pin. Place the door into the opening hinge

A Hidden Lock

To me, the book-opener is what puts the magic into a hidden door bookcase. When I ask a client to pick a book to use as the opening mechanism, they will undoubtedly pick a well-known or vintage title, or perhaps a book with a pleasant color scheme. Whatever book you choose, ensuring that it has ample height clearance to fully open hinging outward and that the page thickness is a number that can be divided in quarter inches will save you some headaches later on.

A book with a page thickness of 1 1/2" is ideal for use as the hidden means of opening the door. This is because, you will be cutting out some pages to use solid stock or make a glue blank to fill them back with. This keeps things disguised while creating a sturdy place to mount your hinge and anchor your cable out of sight below.

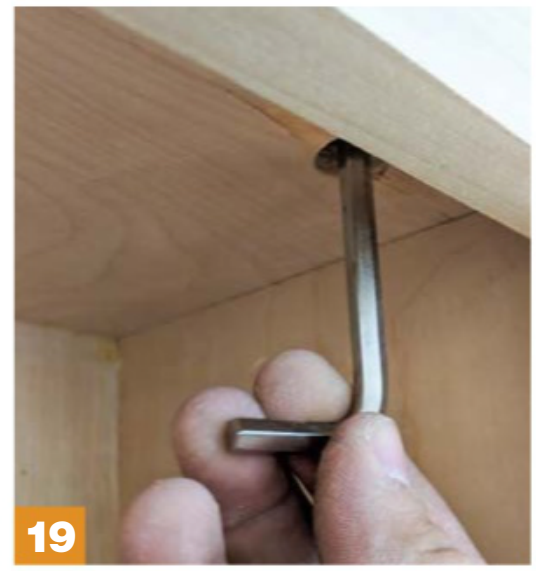
A

A Using a square, make a mark across the pages a little over half way up. With painters tape, tape all edges of the pages together along with one cover to keep them from flying apart when cut. Leave the other cover free for holding while cutting. With the book next to the blade as a depth gauge and using your adjustable depth stop, set your sliding miter saw to make a cut that is shy of touching the back cover by 10 or so pages. Place a sacrificial board of about 3" wide between the book and fence so that you can creep up on the line and complete the exit cut on the backside of the book Next, lay the book open with the cover bent towards you to hold onto and make the first cut across the pages. Turn the book 90° and make your second cut about 1/2" or so from the spine. Then finish both cuts making scoring passes with a utility knife.

B-C Make a block to fill the void (minus an inch or so in width to hide hardware) using either solid stock or a combination of solid stock and 1/4" plywood. Apply PVA glue liberally to both faces and all edges except the bottom and the outside facing edge of the block and clamp the assembly overnight.


B


C



18 I set the door into place, first aligning the bottom pivot hinge and checking my gaps.

19 A pin is inserted through the top hinge plates from inside the bookcase, then rotated with a hex key to lock it in place.

20 Finally, I test the door for any flex or rub along the floor. With the door in place, you can move on to the second layer of trim.

side first with the top tilted slightly outward. Maneuver the door until the bottom hinge is engaged with the threshold hinge-pin. Then tilt the door into the hole while threading the Allen screw up and into the head jamb hinge. The door should now be in place and functioning.

Disguise the Opening

Using 3 1/2" flat stock, you will now trim the bookcase door to hide gaps as well as disguise it's presence. The head trim needs to be down as close to the top rail of the bookcase as possible while still allowing free movement. I take a scrap piece and hold it across the top while opening the door back and forth until I find this position. Make a mark beneath it on both the right and left hand side casings. This mark represents the height of both side trim boards as they will butt the to the bottom of the top trim.

Trim on the hinge side and top of the case will be attached only

Mounting the Book

A Predrill a hole in the face and screw the eyehook into your glue block. Attach the hinge to the bottom of the block as close to the spine of the book as possible. Hold the book in place and carefully tilt it back it to mark the screw locations of the hinge on your shelf. Using a hammer and an awl, make a starter hole for them.

B Attach the hinge to the shelf using the #8 5/8" wood screws. Tilt the book up and drill a hole through the back of the case straight in line with the eyehook.

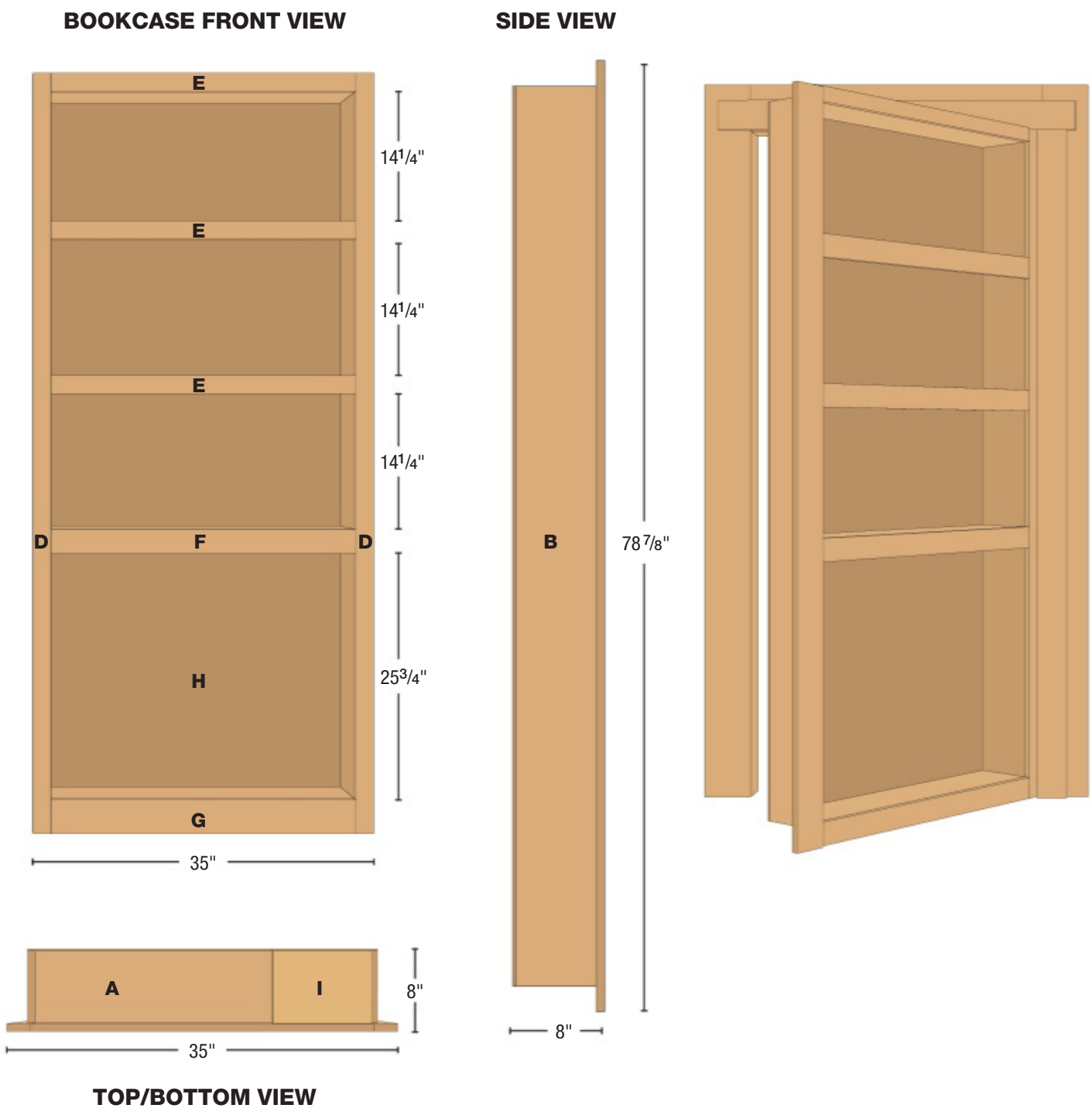
C Using a set of crimpers, crimp a loop of aircraft cable around the quick link and attach the quick link to the eye hook. Attach the small pulley to a 3/4" block to give the cable a bit of straight run before turning down. Pull the cable through the back of the case and line up the small pulley with it. Attach the pulley block to the back of the bookcase using PVA and staples, making sure the staples are aligned with a shelf (so they don't go through the back of the case). Determine where you want the gate latch and mount the receiving portion to the back of the case. Pull the cable taught and crimp a loop the end of which is about 5"from the pulley. To this loop you will attach the jack chain using another quick link. The chain is then attached to the gate latch release lever. The gate strike is then shimmed back off the casing of the opening until it is in plane with the latch, giving a snug fit when the door is closed.

to the wall (or in this instance the casing of the opening). The trim on the non-hinged, or strike side, will be attached to the face frame of the bookcase and act as a stop. Allow 1/8" of clearance initially so that the door can swing freely from the upper piece of trim as well as the floor. You may find you need to plane or sand a little bit to fine-tune this clearance.

Place your hinge side trim on first aligning it with the three quarter reveal mark you made earlier on the outside of your case's face. Nail it only on the portion that makes contact with the casing of

21 I mark 3/4" in on the bookcase trim to help keep an even reveal during install. Some of the trim is attached to the bookcase and some is attached to the frame.

Hidden Door Bookcase

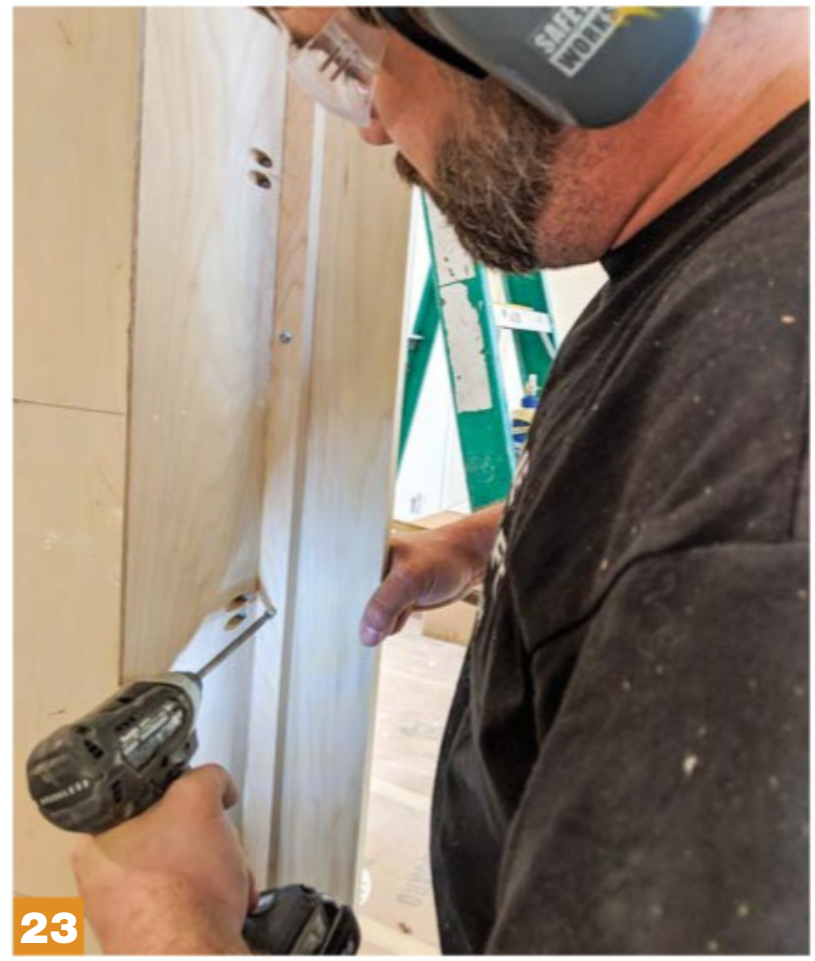


Cut List

No.	Item	Dimensions (inches) T	W	L
1	**A** Top/Bottom	¾	7	32
1	**B** Sides	¾	7	77⅜
5	**C** Shelves	¾	7	32¾
1	**D** Stiles	¾	1½	78⅞
1	**E** Rails	¾	1½	33
4	**F** Middle Rail	¾	2¼	33
1	**G** Bottom Rail	¾	3½	33
1	**H** Back	¼	34½	77⅜
2	**I** Reinforcing Blocks	¾	7	8

Hardware

- Invisidoor Hinge Kit from Custom Service Hardware (cshardware.com); $139.00; includes hinge kit for one bookcase door, support foot/stop; and all fasteners



22-23 I align and attach the trim to the bookcase and front of the opening with a couple staples, then reinforce it with trim screws from the back.

24 The last step of installing the door is adding the adjustable foot and stop. The plastic foot glides on the floor to keep the door from sagging and nests into a stop so you get perfect reveal every time the door is closed.

the opening. Next, place a scrap on the reveal line of the strike side and mark the outside of the trim there. Measure from that mark to the outside of the hinge side trim and add 1". This is the length of your head trim allowing 1/2" of overhang beyond each side trim. Now, I hang the head trim (nailing it only to the head casing of the opening) so that I can get an exact measurement for the strike side trim. I then glue and tack the strike side trim to the face frame of the bookcase at my 3/4" reveal line using 1 1/4" Brad nails. Finally, I run 1 1/4" screws from the backside of the face frame into the trim for extra stability as this is going to act as the doorstop and need to withstand some abuse.

Once the trim is mounted, I like to embed rare earth magnets in the backside of the strike trim and the face of the casing it abuts to act as closers. I make marks on the outside edge of the strike trim and on the casing showing the edge of the trim as well as a reference mark showing the elevation of my magnets. I then open the door and transfer these lines inward about an inch, which becomes the center points of my magnets. I drill recesses using a Forstner bit, then hot glue and place a screw in the center of each magnet.

Install the Stop

The hinge kit comes with a threaded bracket and bolt that together, act as an adjustable foot to help keep the door from sagging when closed. It also functions as a catch with the included tapered stop that mounts on the floor. You will need to install the bracket close enough to the face frame to allow clearance to swing past the jam. Once you have the foot installed, align the round indention in the tapered stop to the location of the bolt when the door is closed. Fasten the stop with the supplied tape, epoxy or a screw depending on the surface you're mounting it to. All that's left is to apply the paint. **PW**

Nathan Rinne is a professional trim carpenter in Missouri. Follow him on Instagram @rinnetrimcraft.

CRAFTSMAN *STYLE* MAGAZINE CABINET

A useful, beautiful thing.

By Jim McConnell

PROJECT #1920

Skill Level: Advanced

Time: 2 Days

Cost: $200

PHOTOS BY THE AUTHOR

In 1905, Gustav Stickley published plans for this magazine cabinet in *The Craftsman* magazine as part of an ongoing home training course in cabinetwork. He claims this to be a useful piece in any living room where loose papers and magazines are apt to accumulate. Having built several now myself, I couldn't agree more. It's the perfect piece of furniture to sit beside a favorite reading chair or to showcase a few treasures in the living room, and it is far more capable of wrangling the stuff of everyday life than any end table or magazine rack I've ever had.

Almost any wood will work. Oak is a classic craftsman choice, but maple or walnut would also look great. Stickley specifically suggests in his original plans that a softwood may be desirable which prompted me to build a version of this piece a few years ago from home store pine. For this iteration I chose mahogany with blackwood keys as a subtle nod to Greene and Greene furniture — another branch of the arts and crafts tradition.

Just One Jig

Every crucial angle in this project is 3° off of 90° and to keep all of that straight, begin by making a simple jig with two strips of 1/2" MDF and two scraps of 3/4" pine. Clamp the two pieces of pine together. Mark and plane an identical 3° slope into the boards and then glue or screw them to the MDF strips leaving a 1" slot between the strips for a router template bushing that can be used later to rout the shelf dados. You don't want any play here, so use the guide to get this spacing right. Double check the angles with a bevel gauge during assembly. If you get this jig dialed in, the rest of the build is easy.

Start with the Sides

Begin by preparing the stock for legs and rails. The legs are 2" x 1 1/4" x 44" long. If you are mortising with a chisel, be sure to leave the legs overlong until the mortises are made to avoid end grain blowout. Choose leg stock carefully, for straight grain and process it so that the grain runs diagonally through the leg (bastard cut) to present

1 First, make a jig. All of the crucial angles in this build are 3° off of 90°. I used scraps of pine and MDF to make the jig. Get this jig dialed in perfectly, and the rest of the build is much easier.

2 I'm using a router for most of the mortises. I use a 3/8" straight bit with a fence to cut the long mortises in the legs.

even grain on all four sides.

Take care that everything is flat, square, and properly thicknessed because these eight pieces will provide the structural bones for the rest of the piece. It's also never too early in this project to begin thinking of components in relation to their final orientation, so arrange the legs as they will be positioned in the final construction (front, back, left and right) paying attention to grain, pattern and chatoyance. Mark the four legs with a marriage mark. Lay the legs side by side and mark the top, bottom and mortise locations across all four pieces.

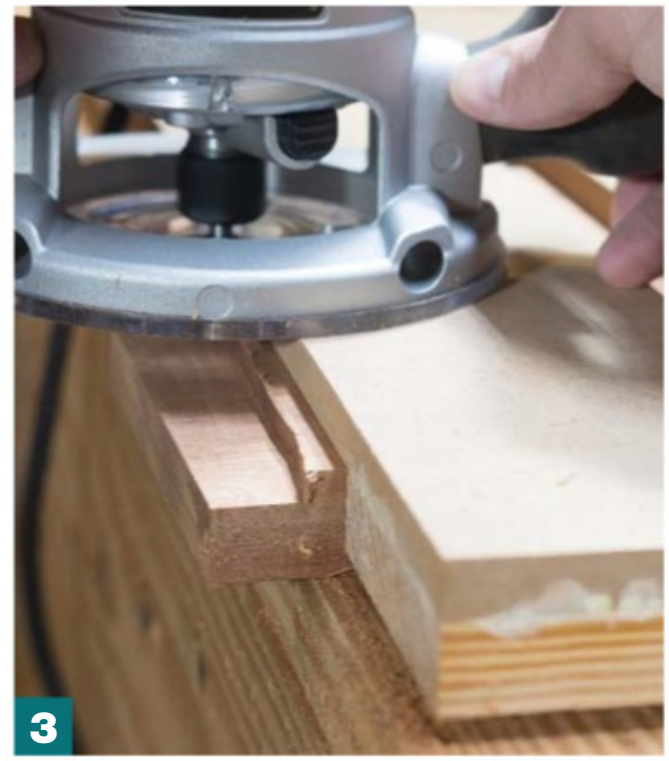
Mark and rout mortises in the legs with a plunge router and edge guide. Each of these mortises will be 1 1/4" deep, 3/8" wide and 4" long with the top mortise beginning 1 1/2" from the top of the leg and the lower mortise beginning 35" from the top of the leg. The mortises are centered on the leg but, when routing, be sure to reference the guide on the same face (outside or inside) to eliminate any discrepancy.

Mark the tenon locations from the bottom edge of the side rails starting 1" in from each end. Using a square and a bevel gauge set to 87° carry the line around the rail with a marking knife. The trapezoidal shape of the rails should be clear. Mark the ends for a centered 3/8" tenon. Using a shallow 1/2" pattern bit, line the routing jig up with the baselines of the tenons and clear the cheeks of the tenons with a router using climb cuts until the final baseline pass. Flip the rails over and clear off the other cheek. Mark and saw 1/2" shoulders on the top and bottom of each tenon. These cuts will need to be angled in at 93° (from the top of the rail) and the end of the tenon angled to match the shoulder so that the tenons seat in the mortises squarely at 90°. Round the edges of the tenons with a chisel or rasp to match the routed mortises. The resulting tenons should be roughly 3/8" x 1" x 4". Fit the tenons to the legs and make any

3 Mark out the angled tenons. Then, use a router and your jig to hog out the waste for the tenons

4 Then, cut your tenons to fit the mortises. You'll need to round the ends of the tenons to fit the mortises – a chisel makes quick work of it.

5 Dry fit the parts for the sides of the magazine cabinet. The goal is to have two perfectly identical sides.


3

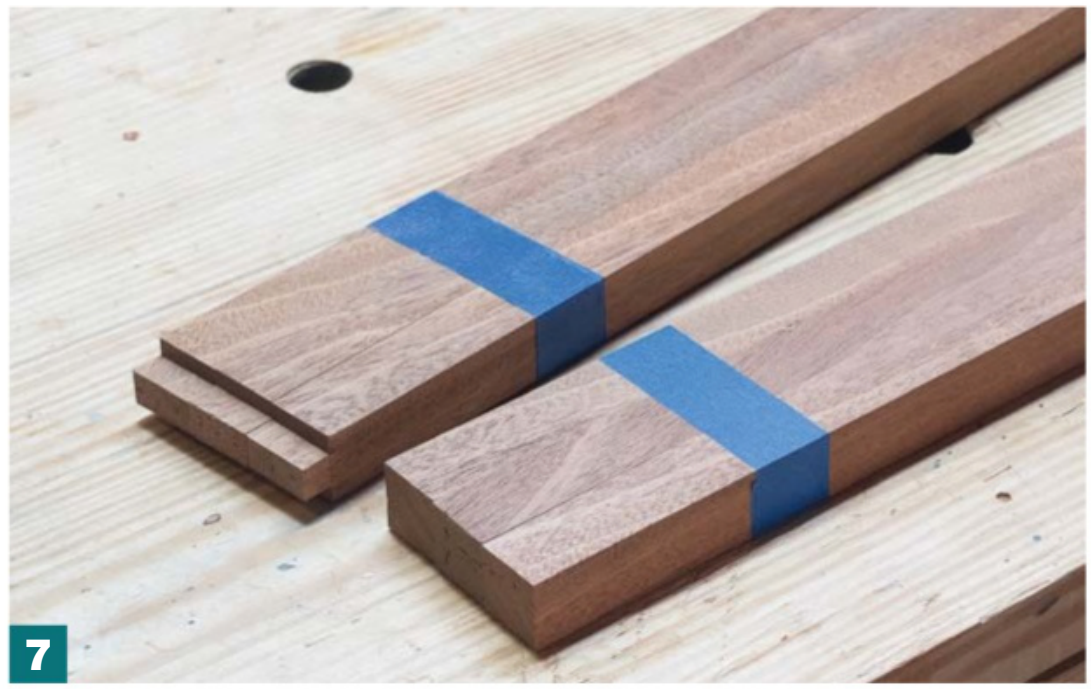

4


5

necessary adjustments. Repeat for the other side and dry fit all of the components to make sure that both sides match and that both sides lay perfectly flat on one another.

Prepare stock for balusters (7/8" x 7/8" x 30" overlong) and tape them together with blue tape in groups of three. Using a marking knife and square, mark tenon shoulders around the three balusters 3/8" from the bottom. Clamp the routing jig square across the baseline. Using the same shallow pattern bit, remove 1/4" from the top and bottom of the baluster tenons. Place the tenons against the assembled side and mark for the top tenon. Repeat the tenon routing removing any material in excess of the 3/8" length needed for the tenon. Un-tape the legs, rotate each leg 90° and re-tape. Using the jig and router again, remove 1/8" from the shoulders. The resulting tenons should be 3/8" x 3/8" x 5/8". Round the ends of the tenons.


6

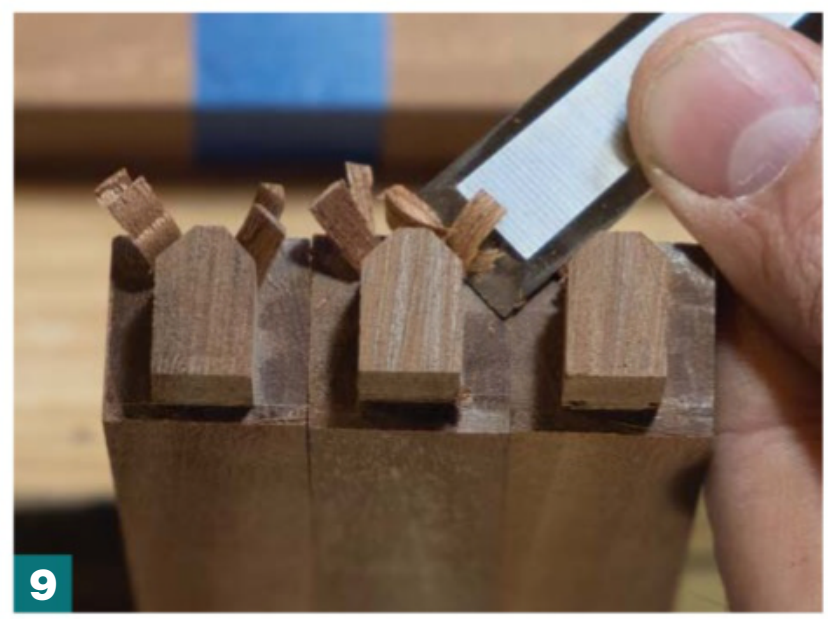

7

6 Use the fitted sides of the magazine stand to mark the tenon shoulders on your balusters.

7 A straight edge from your jig on the tenon shoulder line, and use a 1/2" pattern bit to remove 1/4" of material from two sides of the tenon.

8-9 Rotate the balusters and remove the rest of the waste. Then knock off the corners with a chisel to fit the rounded mortises in the rails.


8

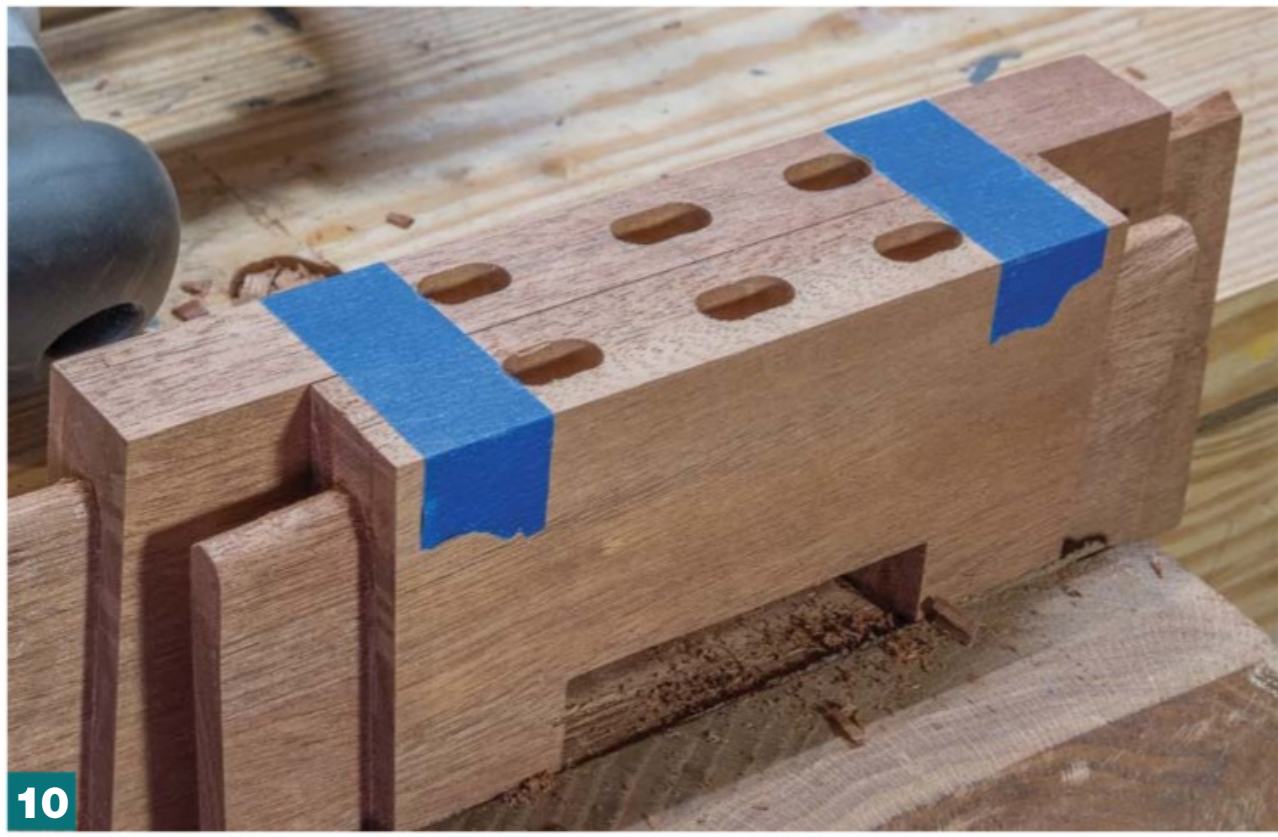

9

Clamp the two sets of rails together so that the bottoms of the top rails and the tops of the bottom rails are both facing up (the outsides are facing one another). Then, mark the rails for mortises. The first mortise is centered and the other two are located on 1 1/2" centers on either side. Rout centered 5/8" thick x 3/8" wide x 3/8" long mortises with a plunge router.

Mark mortises for the keyed tenons in the side rails. The mortises are 3" x 3/4" and centered on the rails. Hog out waste on the drill press and clean up with a chisel. Because this is a knock-down design and all parts will be finished before final assembly, the keyed tenons on the top and bottom shelves should move freely, though not sloppily, through the mortises in the rails. Keep a scrap the same thickness as the shelves handy for testing.

After the balusters are fit and the rail mortises are cleaned up, Dry fit the entire side assembly to spot any potential adjustments that need to be made before glue-up. At this point the two sides should be identical. Disassemble and break all edges of the legs, rails and balusters with an apron plane.

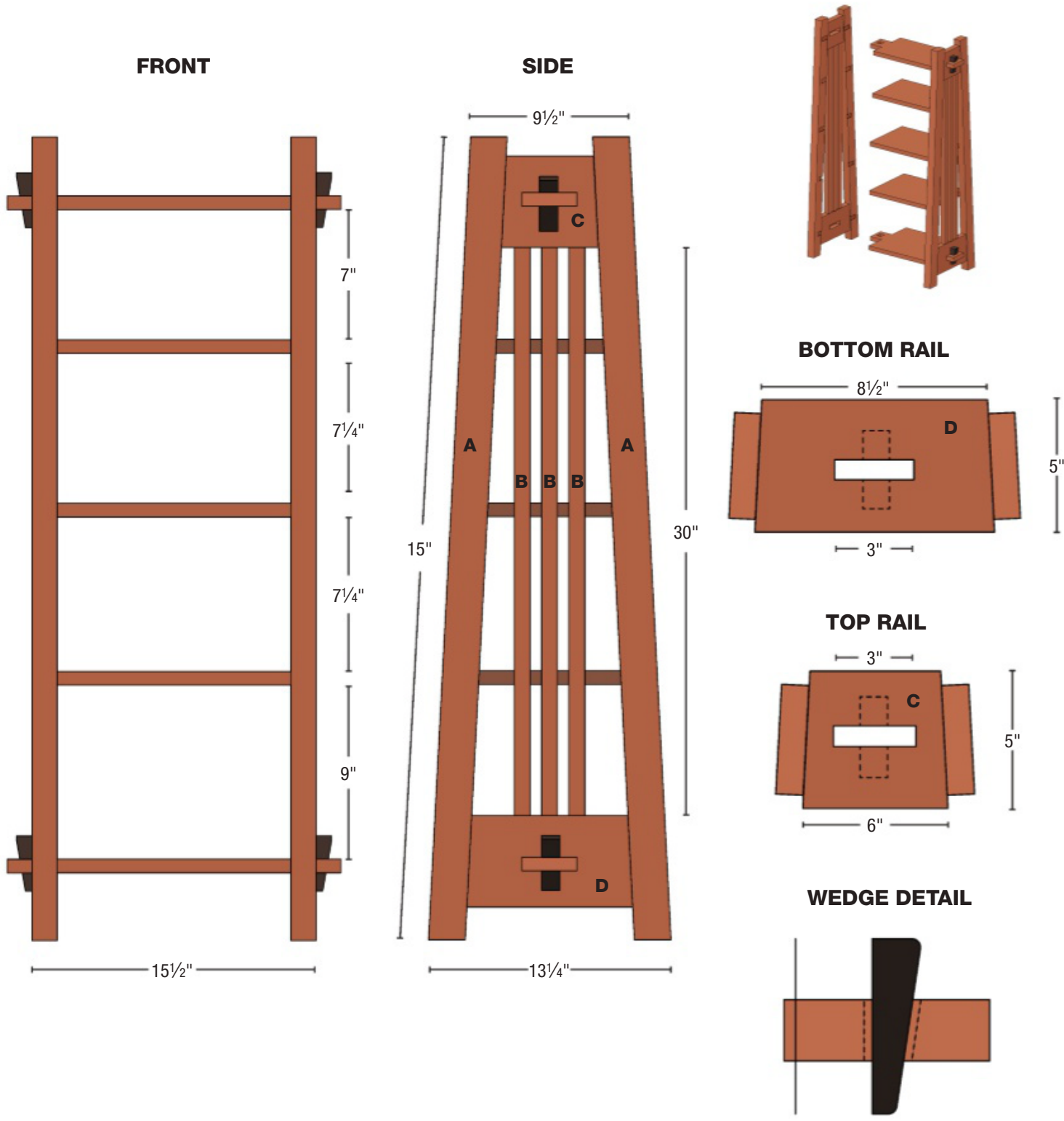
Before glue-up, lay out all parts in a logical order as they will go together. Start with the balusters. Apply glue to the baluster mortises and fit them between the side rails. Apply glue to the rail mortises and the cheeks of the tenons before sliding the central assembly into the mortises in the leg. Add glue to the mortises in the second leg and slide it on top. Check for alignment before adding clamps. Measure from the top rail to the bottom against both legs to assure they are parallel, and make sure that tenon shoulders pull up tight. A long clamp across the top and bottom rail spanning the length of the balusters keeps everything in place as final clamping pressure is applied. Glue up the other side in the same manner and set aside to dry.



10 The mortises for the balusters are routed in pairs (one top rail and one bottom rail).

11-12 With all of the mortises cut for the cabinet sides, add glue and assemble, starting with the balusters.

Arts & Crafts Magazine Cabinet



Cutting List

No.	Item		Dimensions (inches) T	W	L
4	**A**	Legs	1⅜	2	44
6	**B**	Balusters	⅞	⅞	32
2	**C**	Top Rails	1	5	8
2	**D**	Bottom Rails	1	5	11
4	**E**	Wedges	¾	2	3

No.	Item		Dimensions (inches) T	W	L
1	**F**	Top Shelf	¾	8	18
1	**G**	Shelf	¾	8¾	13⅛
1	**H**	Shelf	¾	9½	13⅛
1	**I**	Shelf	¾	10¼	13⅛
1	**J**	Bottom Shelf	¾	11	18

All dimensions listed are before cutting joinery. Adjust to fit as you make your parts.

13 Cut the tenons for the top and bottom shelves, then make your mortise. Drill out the bulk of the waste, then square the mortise with a chisel.

14 Use the router jig, spaced to fit the thickness of the shelves, to rout the stopped dadoes for the five shelves.

15 Square up the ends of each stopped dado with a chisel.

Fool-Proof Angled Dadoes

Once the glue has fully set, rout the dadoes for the shelves. Each dado ends 7/8" in from the outside edge of the front and back legs. The top and bottom dado are in line with the mortises for the keyed tenons. The bottoms of the others are located 9", 17", and 25" above the top of the bottom mortise. The height of the shelves slowly increases toward the bottom, and though the difference may seem minimal, these incremental changes in tandem with the wider base creates a more visually balanced piece.

Align the jig with the front leg and rout the shelf dados on the inside of each side assembly. Square the ends of each dado with a chisel. The dados for the bottom and top shelf are about 3/16" deep and routed flush with the side rail. Set the router a hair shallow and bring them to depth with a router plane or chisel. The other dados are 5/16" deep in the legs, just inside the balusters. Use a sharp chisel to break all the dado edges so they don't chip out when the shelves are inserted and removed.

Slip in the Shelves

Plane the shelf material to 3/4" thick. Cut it to rough length (18" for the top and bottom, 13 1/4" for middle shelves). Shoot both ends of the top and bottom shelves and one end of the middle shelves (you will bring these to length later). Notch and fit the top and bottom shelves to the mortises in the rails. Clean up any saw marks on the tenons. With the top and bottom shelves fitted and clamped tight, use a marking gauge to make a baseline for the key mortise. Disassemble and mark for the key mortises.

The mortises for the keys are 3/4" wide but they are also angled on the inside of the outer wall creating a mortise that angles in toward the sides. They are also offset 1/16" in toward the rails so that the inside of the key mortise sits inside the rail mortise allowing the keys to pull ev-

erything up tight. Hog out the waste with a Forstner bit and clean up the mortises with a chisel.

The keys are simple wedges made to fit the mortises. Start with thicker keys (front to back) and plane them down so that when they are driven an equal amount of the key sits above and below the mortise. Shape the bottom and top any way you like. A round-over is appropriate, but I rather fancied the band-sawn look on the African blackwood, so I broke the edges with an apron plane and left the texture on the top and bottom. Per Stickley's original instructions, don't drive the keys so hard that it breaks out the end grain of the tenon. A few taps past finger tight is sufficient.

Measure the exact depth and length of the other shelves from the dados and trim them to fit. The end grain will be visible, so shoot or sand the grain to a finished state.

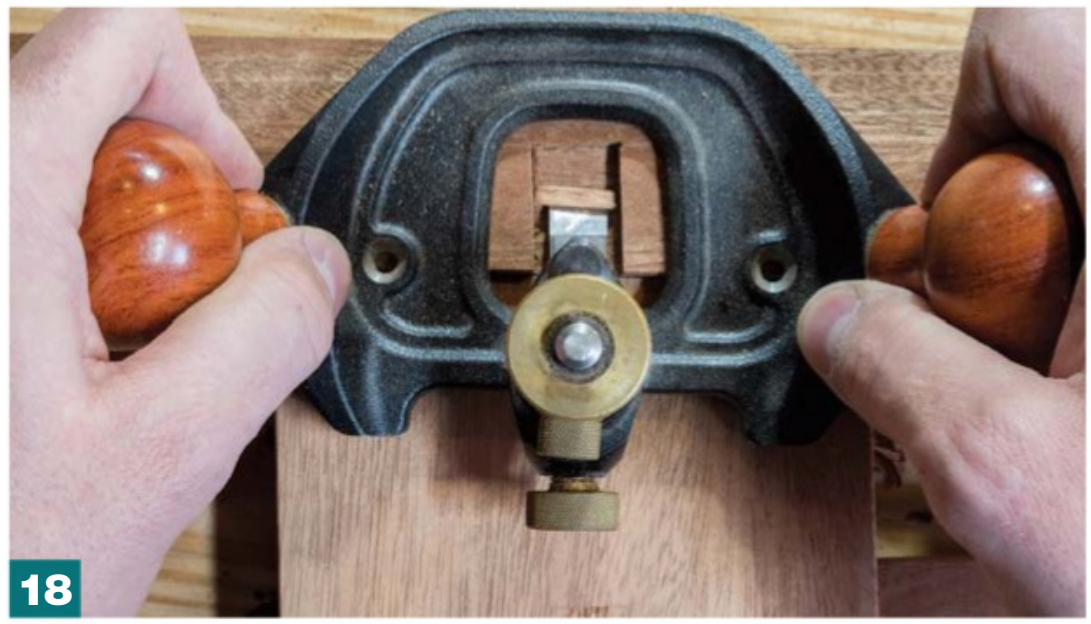
The routing jig comes in handy one last time. Clamp the guide firmly to the posts and use a handsaw to trim the tops and bottoms of the posts to length and parallel with the floor. Trim one side and then use that to mark the other. Chamfer the edges and clean up the saw marks with a sharp block plane.

Do any necessary fine-tuning and break all the outer edges with a block plane. Go over all the surfaces again with 220 sandpaper and apply finish. There's no reason to strive for a mirror film finish here. I suggest a varnish or oil finish that will wear well if you intend to disassemble and reassemble the piece. Tung oil or Danish oil built up over several coats is a wonderful choice.

And that's it! Find a place for this magazine cabinet in your house where life is apt to accumulate and then get on with living. **PW**

James McConnell is a writer, photographer and hand-tool enthusiast based in North Carolina.


17


18

17 Use a chisel to square up the stopped dadoes for the shelves.

18 A router plane helps clean up and fine-tune the depth of the stopped dadoes.

19 Do a dry fit with the top and bottom shelves and make final measurements so you can cut the rest of the shelves to size.


19

Adjusting Non-Adjustable Butt Hinges

Working with these traditional hinges takes a bit of old-fashioned ingenuity.

By Nancy Hiller

Two types of butt hinge: a solid drawn brass butt with fixed pin (left) and a loose-pin version with ball tips.

High-quality butt hinges are handsome and durable for furniture and built-in cabinet doors. If you're in the business of built-in cabinetry and sometimes work in houses constructed between the late 1800s and the 1930s, you're almost certainly familiar with butt hinges, which were widely used for doors over these decades.

Among the most common hinges, at least in the United States, are 2 1/2" ball-tip butts with removable pins. These are still available in the original proportions from several vendors. An alternative type of butt hinge widely used in the UK is the solid-drawn brass butt hinge with a fixed pin. Both types consist of two leaves and a center barrel fitted with a pin that ties the leaves together. Loose-pin butt hinges allow the pin to be removed while the leaves remain on the door stile and cabinet respectively, which facilitates the fitting of doors. Fixed-pin butt hinges do not offer this option.

While some applications call for mortising only the door stile and simply screwing the second leaf to the surface of the cabinet side, butt hinges traditionally have one leaf mortised into the door stile and the other mortised into the cabinet. The layout and cutting of the mortises must be precise, and there is no obvious way to adjust the fit once the door is hung. Not surprisingly, then, many cabinetmakers avoid these hinges in favor of a modern varia-

1 The elongated mounting holes in this non-mortised hinge give some adjustability after installation.

PHOTOS BY THE AUTHOR

tion that does not require mortising and is made with slots that allow the door to be adjusted up or down, as well as in or out of the cabinet relative to the face frame.

While these surface-mounted butts are inexpensive, quick to install, and easy to adjust, I've never overcome the sense that they are a kind of cheat. One of the joys of using butt hinges is seeing them cleanly fitted to their mortises. Cutting mortises takes just a few minutes when you've mastered the technique. It's also a satisfying job.

No matter how meticulous you are with your layout and mortising, some doors are going to need adjustment. That's where a few tricks of the trade come in.

Hedge Your Bets

When installing doors with butt hinges, start by inserting only as many screws as you need to hold the door firmly in place while checking the fit. I usually put the door leaf on with two screws—one in the top hole, one in the bottom, leaving the center hole to be drilled later on. This way, if I have to alter the position of the hinge, I can drill a hole in just the right place, then fill the original holes and re-insert those screws later.

For the second leaf—the one that goes on the cabinet—I usually use just one screw per hinge to start. I drill and insert the top screw for the top hinge and the bottom screw for the bottom hinge. If there's a third hinge (as there often is with doors 48" and taller), I use one of the holes (any one of them will do).

Adjusting a Door Up or Down

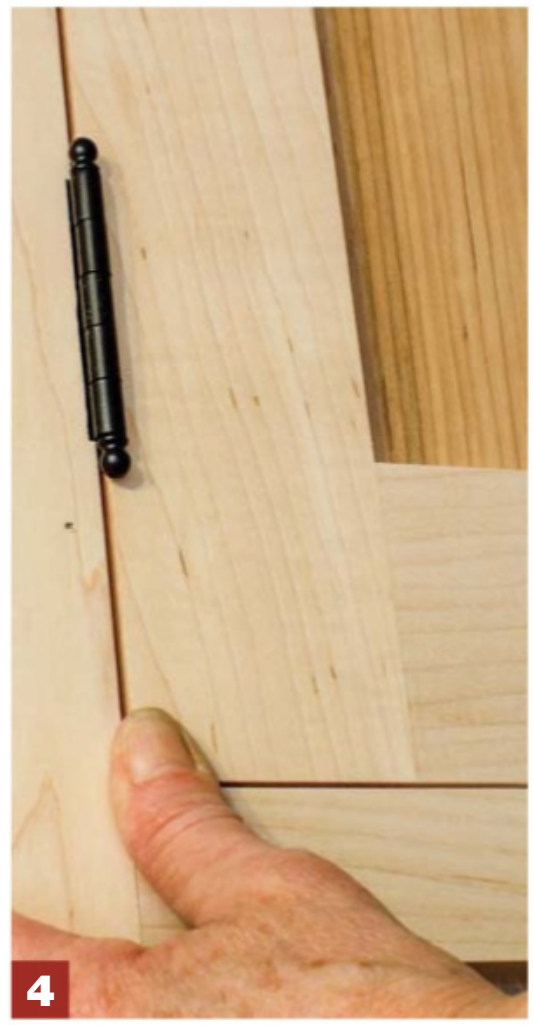
Warning: the faint of heart should skip this paragraph. If a door needs minor adjustment, a good rap with a hammer will often do the trick. To move the door down a hair, open the door fully and hit the top of the hinge stile; to move it up, hit the hinge stile at the bottom. Depending on the type of wood you're using and the hardness of the metal screws (brass being softer than steel), you should see a little shift in the position as the wood below (or above) the screws compresses slightly, the screws bend a tiny bit, or both. Obviously this trick demands care. If you hit the door too hard you may damage the door or the cabinet, break screws, or damage the hinge. That said, it is often just the ticket. To keep the door in its new position, drill a second hole for each leaf on the cabinet and insert those screws.

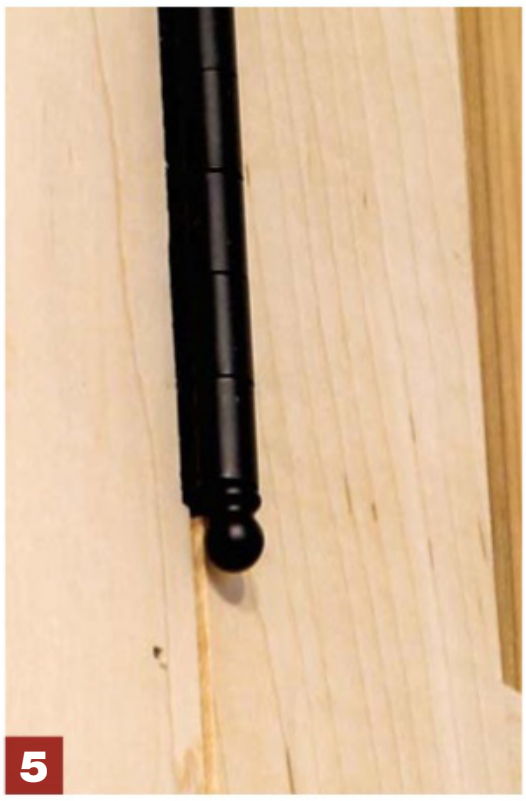
If you need more than slight vertical adjustment, you will probably have to lengthen the mortise of each leaf. Decide where the resulting small gap will be less visible—on the cabinet or on the door—then mark the amount to be removed with a square and marking knife, and trim with a chisel. Note that if you want to move the door up and are going to lengthen the mortises on the cabinet, you will remove stock at the top of each mortise. If you're going to adjust the length of the mortises

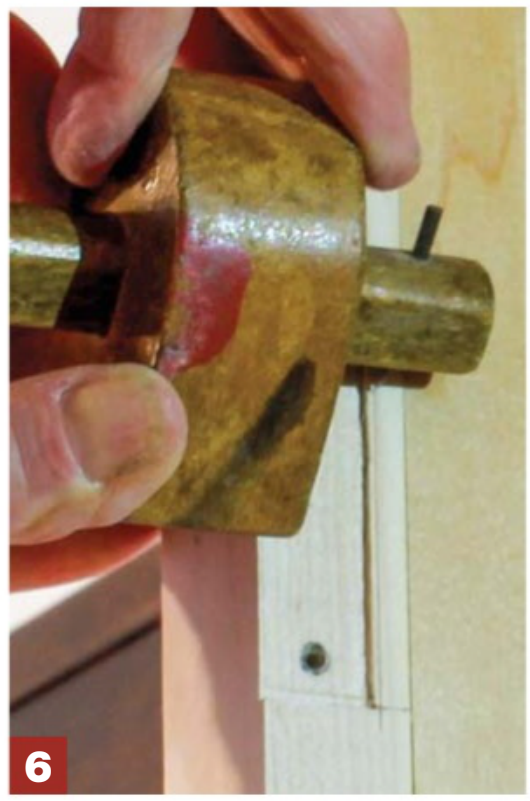
2 A Vix, or centering, drill bit ensures your screw holes will be centered.

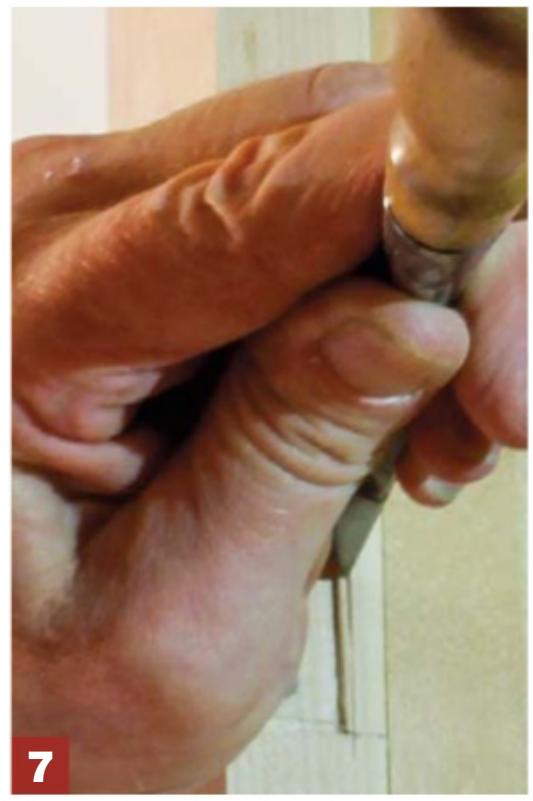
3 The door needs to move up slightly in order for the bottom gap to equal that of the side gap.

4 There's a small cavity at the bottom of the hinge mortise now, as I lengthened the mortise at the top.




5


6


7

on the door, you will remove stock at the bottom of each mortise.

Adjusting a Door Relative to the Cabinet's Face

In most cases, a cabinet door should hang flush with the face of the cabinet. If it's slightly behind the cabinet face, you can move it out by removing one screw from one of the leaves on the cabinet, pulling the door toward you just a hair, and drilling a new hole. Then insert the screw. Repeat with the other hinge(s) until the door hangs flush.

If the face of the door is protruding from the cabinet, you'll need to widen the leaf mortise on the cabinet. Remove the door from the cabinet and set a marking gauge to the width of the leaf plus the amount by which you need the door to move back. Mark this on the cabinet, score the wood fibers at the top and bottom of the mortise with a knife and square, then chisel out the waste. Drill new holes as necessary, insert screws, and check the fit.

If for some reason you cannot widen the mortises on the cabinet, you can fall back on Plan C: planing the excess from the door's face. But this is a last resort.

Fixing the Gap Between Door and Cabinet

If you made your mortises too deep, the door will likely bind instead of opening. We call such doors "hinge-bound." The fix for this is to shim the hinge out. The material you use for this may vary depending on the amount of shimming you need, the final finish, and (to be brutally honest) the materials you have available.

The crudest trick to shim a hinge by just a hair is to cut a piece of masking tape as long as the mortise and stick it in. If you need more thickness, add a second piece. This surprisingly simple fix will often do the trick.

A common material for slightly thicker shimming is cardboard. People generally advise against using cardboard because it can compress, but if you use dense stock, such as the flaps of screw boxes, you can often solve the problem. A dab of glue will help hold the shim in

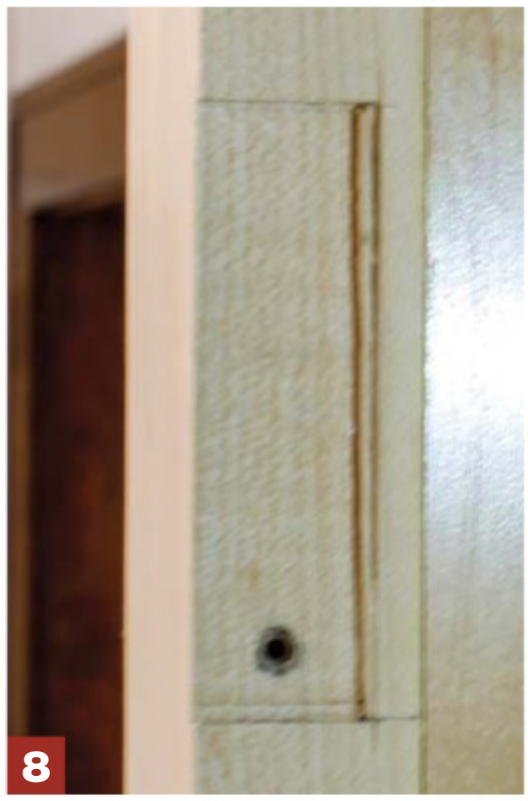
Choosing Butt Hinges

FIXED OR LOOSE PIN? In many cases the choice will depend on the style in which you're working, but generally speaking, a loose-pin hinge makes it easier to fit large doors: You can remove the pin and take the door off for planing without the need to unscrew the hinge leaf from the cabinet.

SIZE When ordering hinges, take the width of the leaves into account along with the length. Otherwise you may find the leaves exceed the thickness of your door. It's best to leave as much meat as possible at the back of the door stile, behind the hinge, to avoid break-out.

BRASS OR STEEL? Many hinges are available with different metal plating, and sometimes with a variety of finish options such as antique brass or oiled bronze.

QUALITY Technically speaking, a good butt hinge will have a pin that fits snugly between the leaves. Any sloppiness in this fit will complicate your job of getting a door to fit precisely in its opening.



place; once the screws are in, they will clamp it. Often, though, I don't use any adhesive; I just rely on the screws. (This is why you'll often find little bits of folded paper or card stock behind the doors in old houses. It's an age-old carpenter's trick.)

The cleanest solution, if you have time for it, is to make a shim just the right thickness out of the same stock as the cabinet and door, glue and clamp it in place (using tape and a piece of scrap the length of the hinge

5 The face of the door is protruding slightly from the face frame, so I'm going to increase the width of the mortise on the side of the cabinet.

6 Use a marking gauge to scribe the position where the back of the mortise needs to be. (The distance between this new line and the original back of the mortise will equal the distance by which the door is protruding from the face frame.)

7 First chop the top and bottom, then chop the back line.

8 The perimeter has been cut. Time to finish up by paring with the chisel held flat.

9 Pare the bottom of the mortise with a chisel.

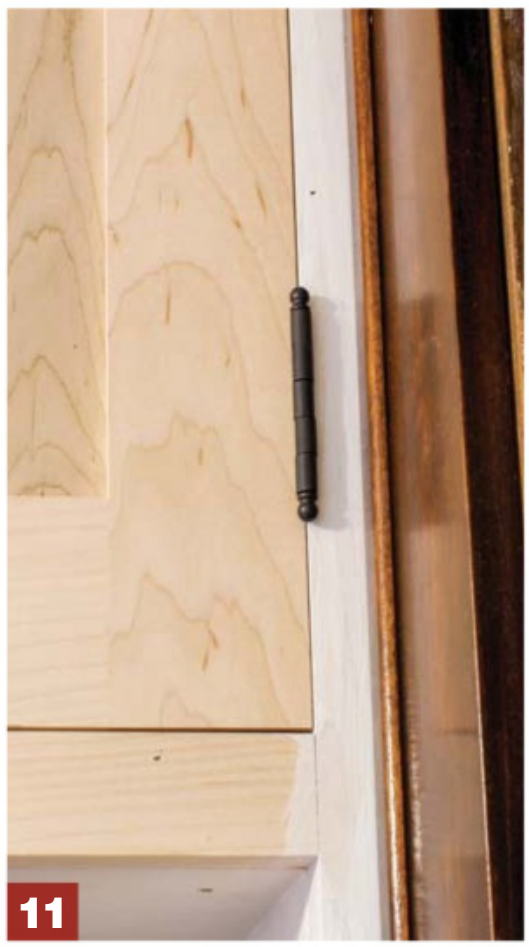
10 The faces are level now.

Filling Screw Holes

A-B I keep safety matches in my tool box for handy filling of screw holes. Apply a dab of glue and tap the stick in with a mallet. Break or cut the match close to the base, then pare flush. Once the glue has dried, you can redrill the hole in the new position.

C Quick-curing wood fillers offer structural integrity.

Adjusting Butt Hinges



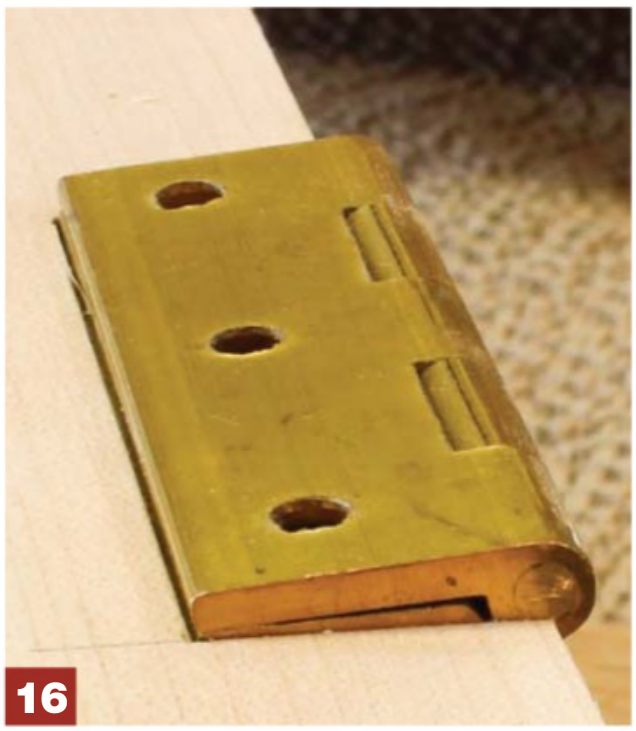
11 The gap between the door and the face frame needs to be bigger. I must have made one of the mortises a little too deep.

12 Yet another use for blue tape. In a pinch, masking tape works wonders to decrease the depth of a mortise.

13 The thin, dense cardboard from a screw box is often ideal for shimming.

14 Cut the cardboard to length, then trim to width.

15 To keep the cardboard in place, add a dab of glue or use a thin strip of masking tape, then reinstall the hinge and check the fit.



16

17

18

16 This mortise needed to be deepened so that the full thickness of the leaf would fit.

17 With a marking gauge set to the correct depth, make a small mark just above and below the hinge mortise. Use light pressure to avoid marring the door face.

18 Holding a straightedge precisely on the gauge marks, score a line between them. Use light pressure for the first cut, then repeat until the line is deep enough to feel with the tip of your chisel.

leaf as a caul), then proceed as above.

If the gap between the door and the cabinet is too large, you'll need to deepen the mortise in one of those parts. The door is usually the easier to deal with, as you can remove it from the cabinet and put it in a vise (whether in the shop or on a jobsite workbench). Marking out the cut is tricky because your gauge may want to lean into the mortise, which will give you an inaccurate position. I use a steel straightedge and a marking knife to make a line on the door face parallel to the existing one.

While it's certainly true that traditional butt hinges take more care and skill than the non-mortised type, these tricks should help your doors hang flush, with uniform gaps. **PW**

Nancy designs and builds custom furniture at her shop in Indiana. See more at nrhillerdesign.com.

Sources

HORTON BRASSES, INC.
Horton-brasses.com

WHITECHAPEL BRASSES
Whitechapel-ltd.com

BRUSSO
Brusso.com

PAXTON HARDWARE
Paxtonhardware.com

REJUVENATION
Rejuvenation.com

Turned Rolling Pins

Even an ordinary kitchen tool can be beautiful.

By Tim Heil

If you're looking for an easy-to-make gift for someone who loves to cook, here it is: a custom-made rolling pin. There's something about this humble tool that really appeals to the imagination. Once I got started making rolling pins, I couldn't stop. I took a dozen different ones to a charity auction, and guess what outsold everything else?

While you could make a rolling pin from one long chunk of wood, my rolling pins have separate handles. When you grip the handles, the body of the rolling pin is free to rotate. Of course, that's not a new design, but I've played around with handles quite a bit. Sometimes I make them from different species than the body or add ferrules just for show. I like to make the rolling pin's body from a visually striking wood and the handles from wood with less figure or a more subdued color. All of my handles are made in the same, simple way. An ordinary carriage bolt passes all the way through them, and the carriage bolt is epoxied into the rolling pin's body. You might ask, "How do you keep the epoxy from squeezing out and gluing the handle, too?" Well, I've got an elegant solution for that—as you'll see later on.

PROJECT #1921

Skill Level: Intermediate
Time: One day
Cost: $25

PHOTOS BY JASON ZENTER

Lesson in Centering Holes

You don't need advanced turning skills to make a rolling pin, but you may learn a valuable lesson: how to center a turning on a drilled hole.

If you're new to turning, you might think that's easy. You just turn a part, such as the handle, then drill a hole all the way through it. But that's not the turner's way.

A turner aims for precisely centered holes (in this case, to make a handle that doesn't wobble). Here's how it's done. You turn the parts to rough size first, then drill the holes on the lathe—not a drill press. Then you insert conical centers in both holes and turn the part to completion. That's how the holes end up being perfectly centered.

You'll need three accessories to make perfectly centered holes: a scroll chuck, a Jacobs chuck and a live center with a large, conical tip. Many types of these items are available in wood-turning catalogs.

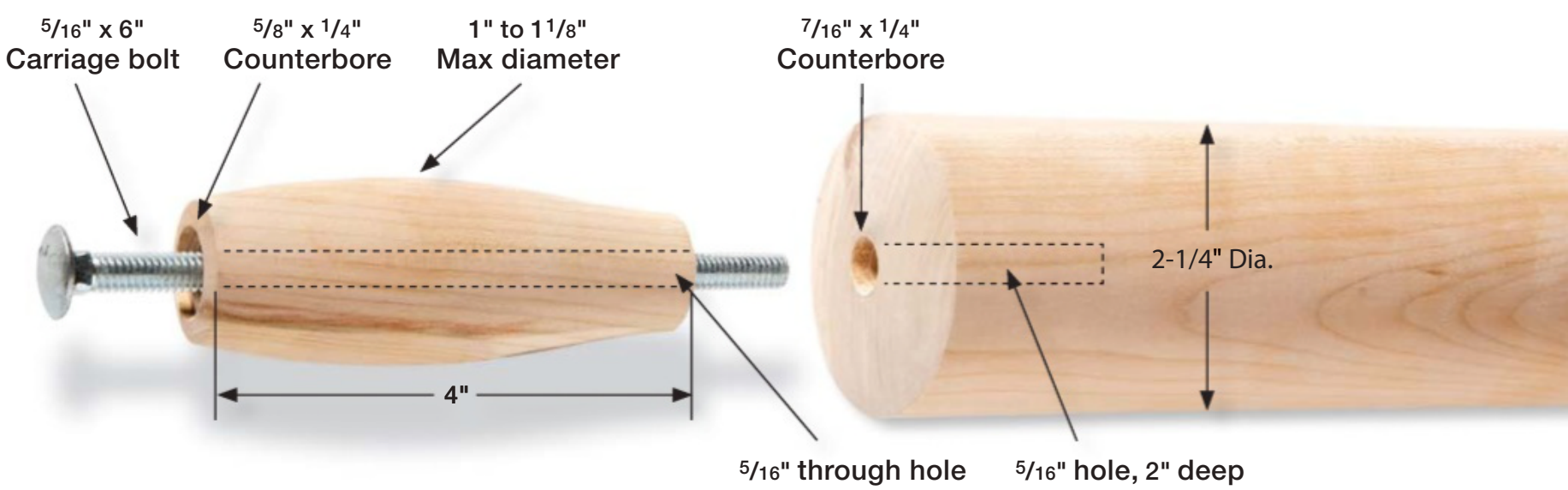
Make the Body

Start by making the body of the rolling pin. You'll need a chunk of wood that's 10" to 12" long and at least 2 1/2" square. Turn it into a rough cylinder (Image 1).

Mount one end of the body into the jaws of a scroll chuck and install a Jacobs chuck in your tailstock. Put a 7/16" dia. bit in the chuck (I use a spade bit and cut

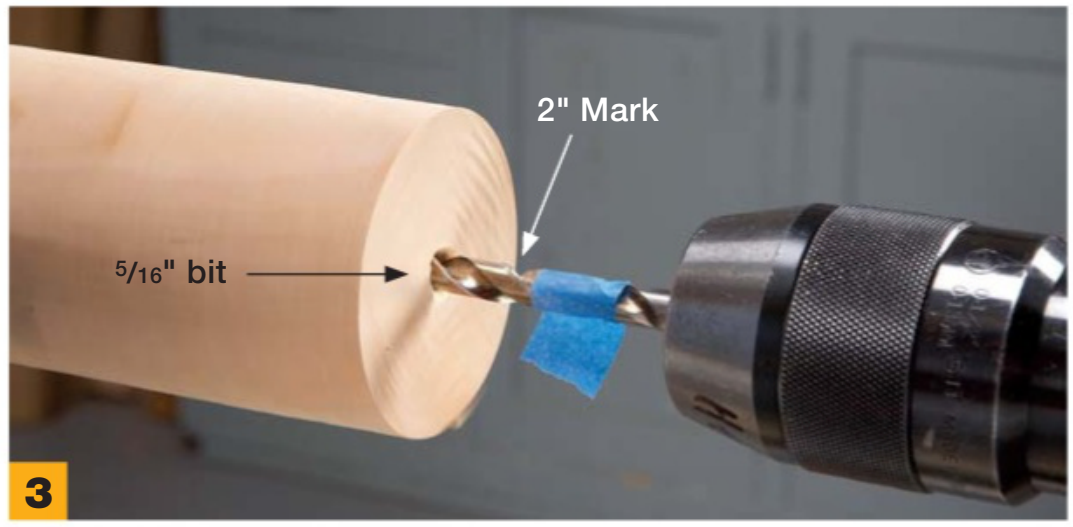
1 Begin by roughing out the body of the rolling pin, slightly oversize. Next, mount the blank in a scroll chunk and install a Jacobs chunk in the tailstock.

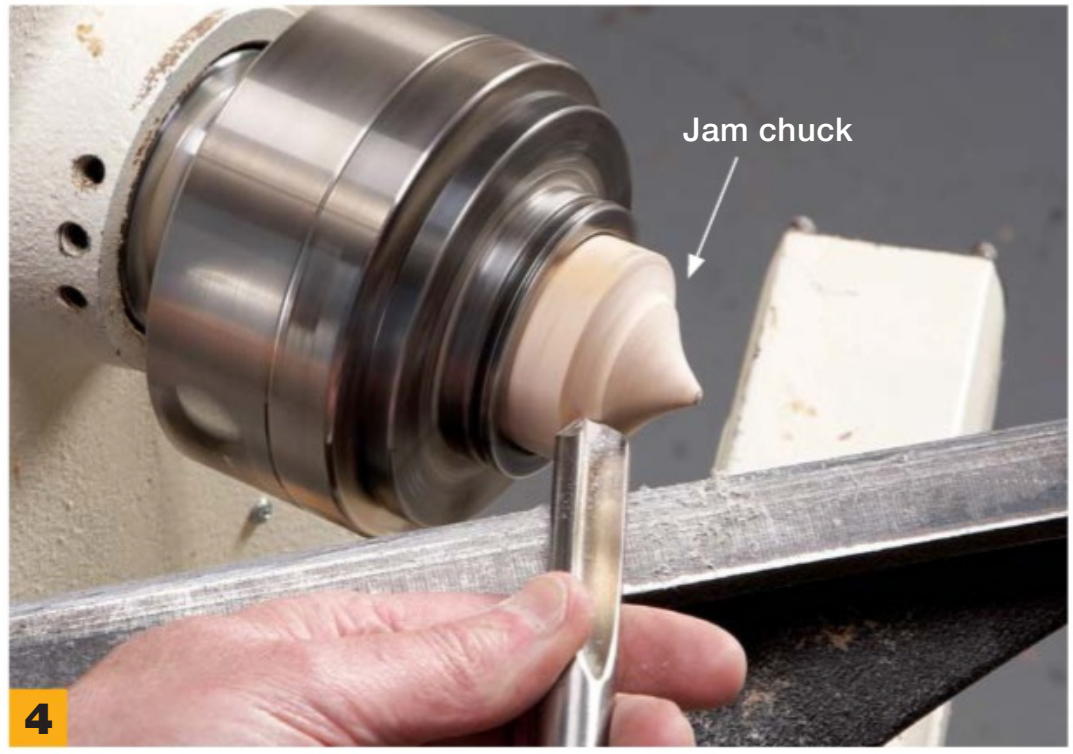
2 Drill a 7/16" hole approximately 1/4" deep into the end of the blank. I use a short spade bit for this operation.



short its shank). Drill a hole about 1/4" deep (Image 2). Using a 5/16" bit, drill a second hole exactly 2" deep (Image 3). Turn the wood around and drill the same holes in the other end of the body.

Next, make a jam chuck (Image 4). This is simply a short, round piece of wood with a cone turned on one end. Use a hard wood, not a soft wood, so it won't crush in use. Mount the rolling pin's body between the jam chuck and a live center. Turn the body to final diameter—about 2 1/4" (Image 5). As the name implies, a jam chuck drives

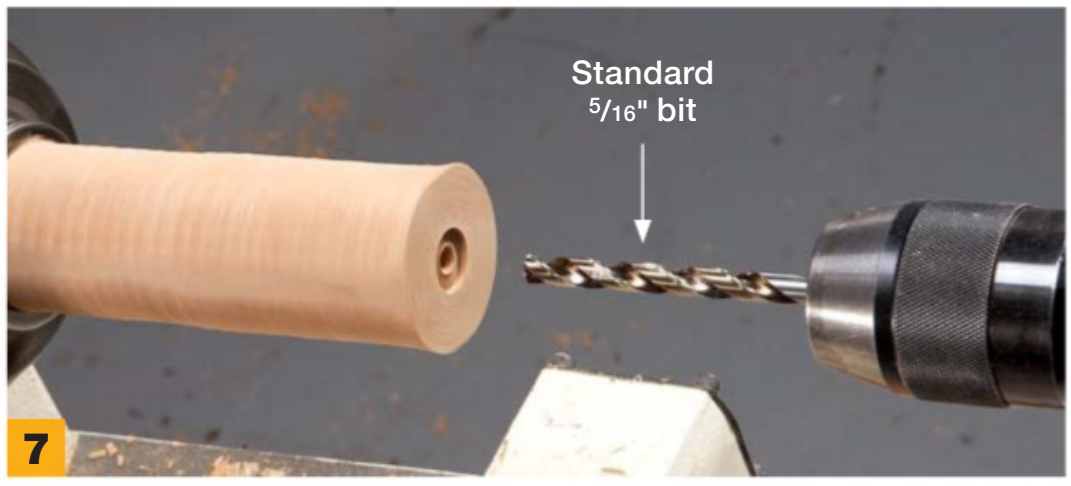


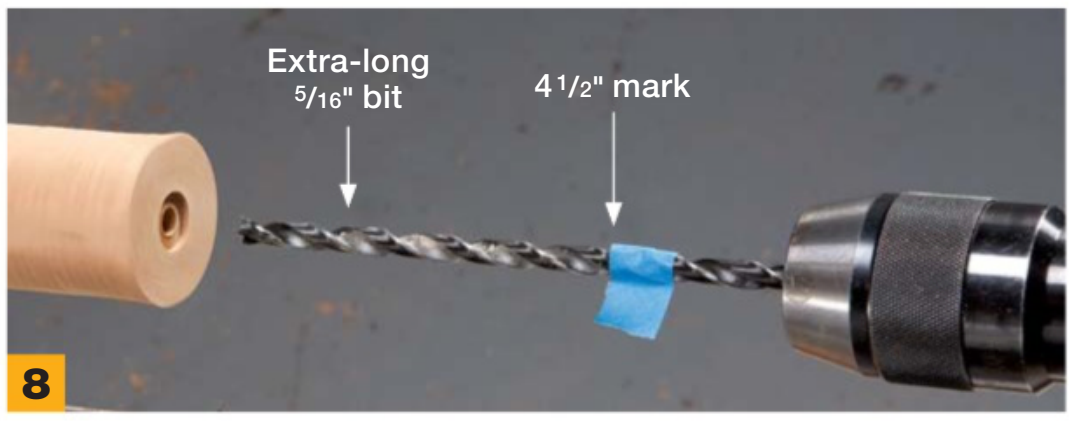


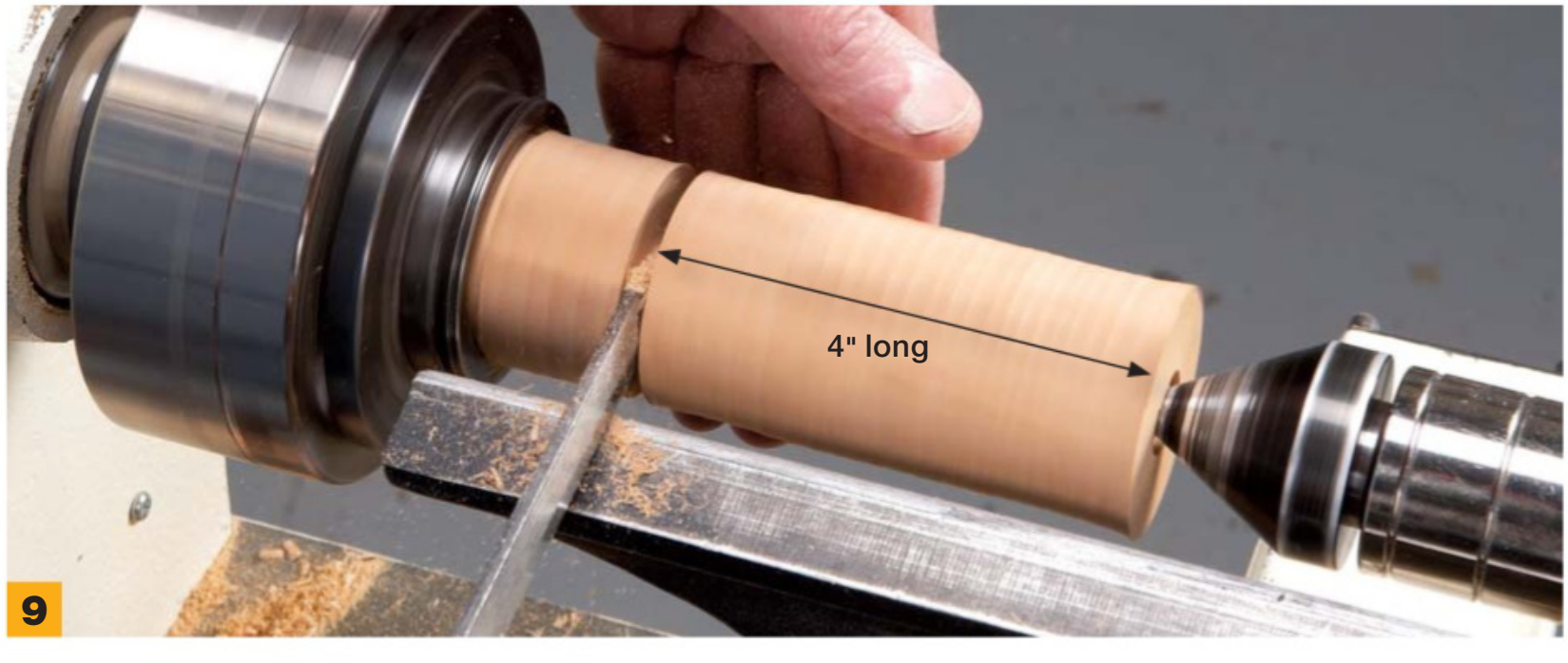
3 Drill a second hole precisely 2" deep with a 5/16" diameter bit. Mark this depth with a piece of tape on the bit. Repeat the same procedure on the opposite end of the blank.

4 Turn a cone-shaped jam chunk larger in diameter than the 7/16" hole you drilled in the end of the blank. Do not remove the jam chunk from the scroll chunk.

5 Mount the blank between the jam chunk and a cone-shaped live center, so it's perfectly centered on the drilled holes. Turn the blank into a true cylinder.







the wood by friction alone, so take light cuts.

On the live center end, use a detail gouge to give the end of the body a dome shape (Image 6). Turn the wood around to shape the other end. Sand and you're done.

Make & Glue the Handles

Rough out two handles from blanks that are 6" long and 1 1/2" square. Shoot for a diameter of about 1 3/8". Mount one handle in the scroll chuck and drill a 5/8" dia. hole about 1/4" deep into its end.

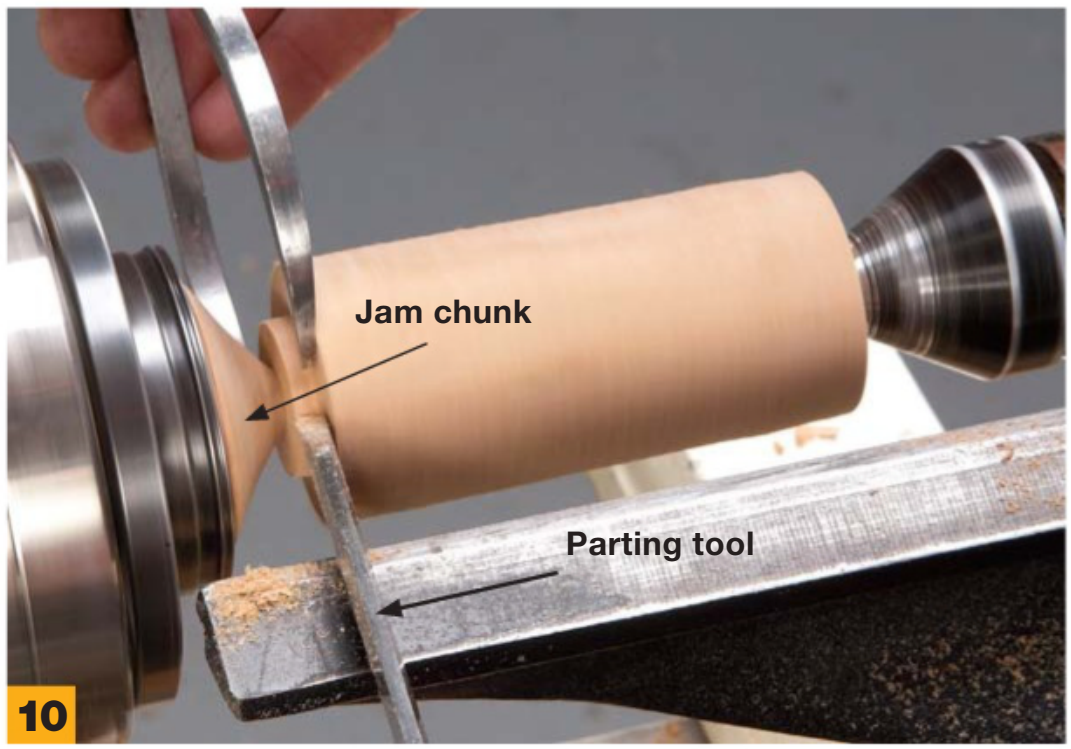
Next, drill a 5/16" hole as deep as your bit will go (Image 7). Replace this bit with an extra-long one and continue drilling the hole at least 4 1/2" deep (Image 8).

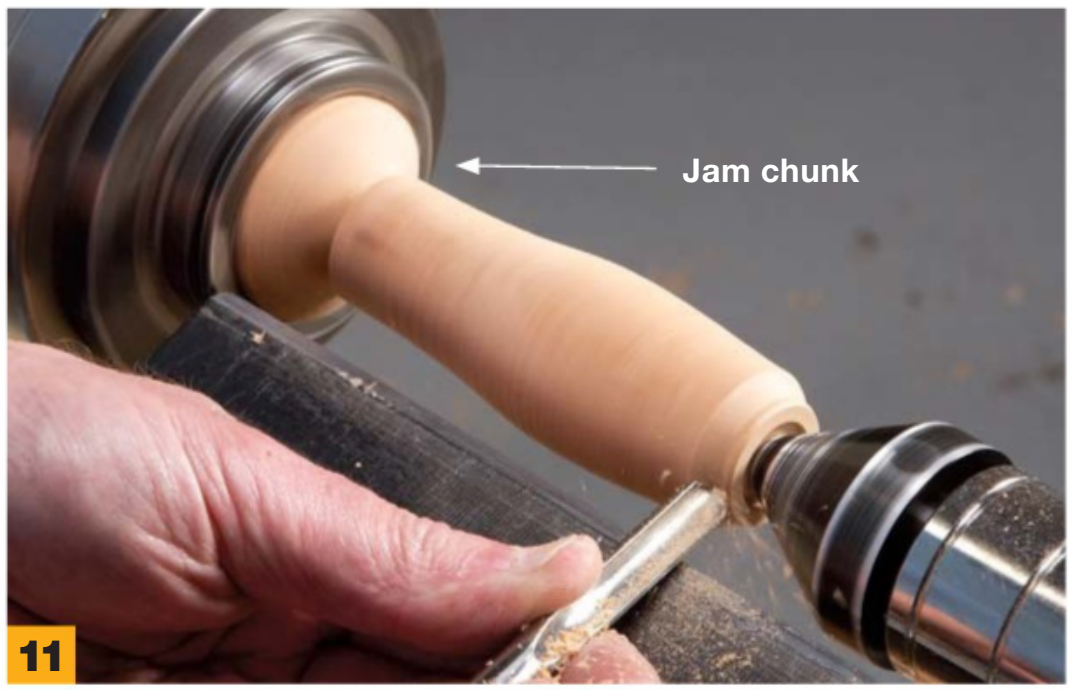
6 Form a dome on both ends of the cylinder. You're done with this part of the rolling pin.

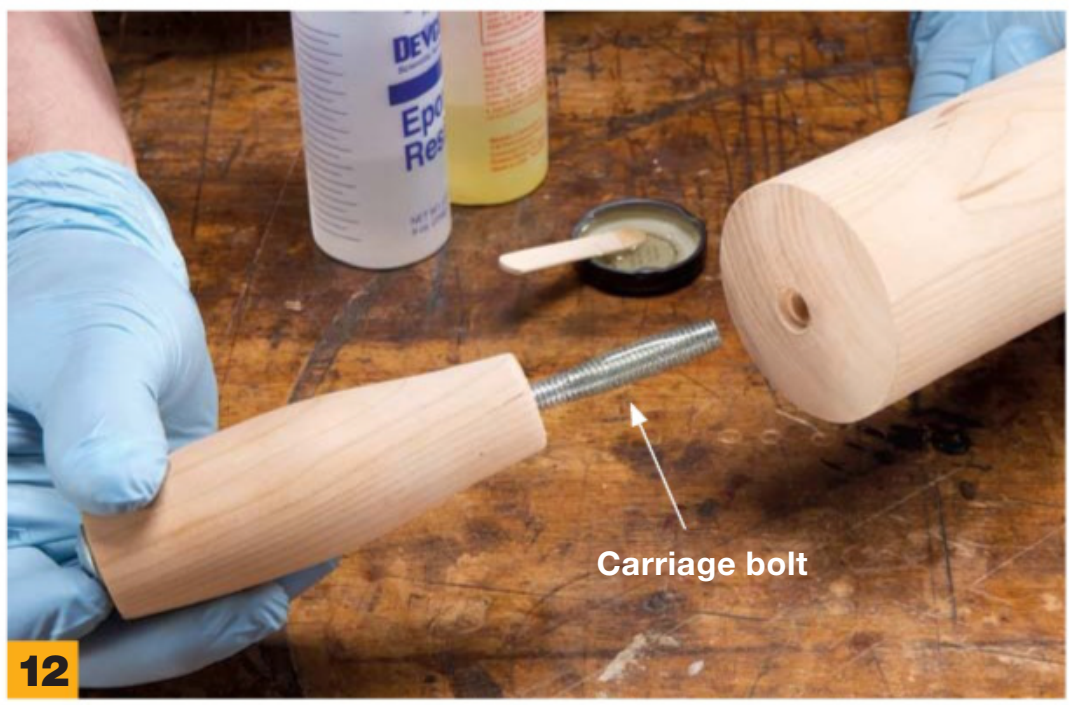
7 Rough out two blanks for the handles, then mount one in a scroll chuck. Drill a 5/8" diameter hole about 1/4" deep, then drill a 5/16" diameter hole as deep as your bit will go.

8 Continue drilling the hole with an extra-long 5/16" bit. Make this hole at least 4 1/2" deep.

9 Use a parting tool to cut the handle 4" long. Repeat the same operations on the second handle.







10 Mount each handle between the jam chuck and the live center. In order to make identical handles, lay out their end diameters with a caliper and a parting tool.

11 Shape the handles any way you want and sand them smooth.

12 Slide a carriage bolt through a handle and coat its threads with epoxy. Push the bolt into the rolling pin. If any glue squeezes out, it will pool in the 7/16" counterbored hole.

Make a mark 4" from the end of the handle, then part off the handle at the mark (Image 9). The deep hole you drilled should have passed all the way through the resulting piece. Repeat the same procedure with the second handle.

To true each handle, mount it between the jam chuck and live center. Both handles should be similar in shape and size, of course, so I use a story stick to mark major and minor diameters, then turn the handle down to these dimensions using a caliper (Image 10). Finish shaping the handle by eye (Image 11).

Use 5-minute epoxy to glue the handles. You won't need much. First, insert a carriage bolt through one handle, then fill the threads of the bolt with epoxy. Push the bolt and handle into the rolling pin's body (Image 12). If all goes well, you shouldn't see any excess glue come out of the joint. If there is any excess, it should well up into the 7/16" hole and stay there. **PW**

Tim Heil is a woodturner and avid cyclist based in Minnesota.

HARBOR FREIGHT
QUALITY TOOLS AT RIDICULOUSLY LOW PRICES

1,000+ Stores Nationwide • HarborFreight.com

NEW U.S. GENERAL BIGGER • STRONGER • MORE STABLE SERIES 2
SUPER COUPON

30", 5 DRAWER MECHANIC'S CARTS
- 15,000 cu. in. of storage
- 700 lb. capacity
- Heavy duty locking casters

Item 56429, 64031, 64033, 64059, 64721, 64722, 64720

Customer Rating

$229.99

YOUR CHOICE OF COLOR $199.99

23133600

COMPARE TO Snap-On BLUE-POINT $830 MODEL: KRBC10TBPES

SAVE $630

LIMIT 1 - Coupon valid through 2/1/20*

SUPER COUPON

OVER 5,000 5 STAR REVIEWS

FREE WITH ANY PURCHASE

SUPER BRIGHT LED /SMD WORK LIGHT/FLASHLIGHT
- Super-Strong, Ultra-Lightweight Composite Plastic
- Magnetic Base & 360° Swivel Hook for Hands-Free Operation
- 3 - AAA Batteries (included)
- 144 Lumens

ALL IN A SINGLE SUPER POWERFUL LIGHT

COMPARE TO PERFORMANCE TOOL $13.52 MODEL: W2364

ITEM 63878/63991 64005/69567/60566 63601/67227 shown

23133304

Cannot be used with other discounts or prior purchases. Original coupon must be presented. Valid through 2/1/20 while supplies last. Limit 1 FREE GIFT per customer per day.

SUPER COUPON

20% OFF ANY SINGLE ITEM*

23133523

Limit 1 coupon per customer per day. Save 20% on any 1 item purchased. *Cannot be used with other discount, coupon or any of the following items or brands: Inside Track Club membership, Extended Service Plan, gift card, open box item, 3 day Parking Lot Sale item, compressors, floor jacks, safes, storage cabinets, chests or carts, trailers, welders, Admiral, Ames, Bauer, Central Machinery, Cobra, CoverPro, Daytona, Diamondback, Earthquake, Fischer, Hercules, Icon, Jupiter, Lynxx, Poulan, Predator, Tailgator, Viking, Vulcan, Zurich. Not valid on prior purchases. Non-transferable. Original coupon must be presented. Valid through 2/1/20.

CENTRAL PNEUMATIC
SUPER COUPON

3 GALLON, 100 PSI OIL-FREE AIR COMPRESSORS
• Air delivery: 0.6 CFM @ 90 PSI

HOT DOG ITEM 69269 97080 shown

PANCAKE ITEM 61615/60637 95275 shown

YOUR CHOICE $39.99

$59.99

Customer Rating

COMPARE TO PORTER-CABLE $98.62 MODEL: PCFP02003

SAVE 59%

23140965

LIMIT 3 - Coupon valid through 2/1/20*

HARDY
SUPER COUPON

Customer Rating

POWDER-FREE NITRILE GLOVES PACK OF 100
• 5 mil thickness

12¢ PER PAIR

SAVE 59%

COMPARE TO VENOM $14.97 MODEL: VEN4145

NOW $5.99

$7.99

ITEM 97581, 37050, 64417, 64418, 61363, 68497, 61360, 61359, 68498, 68496 shown

23155468

LIMIT 4 - Coupon valid through 2/1/20*

GOOD — CHICAGO ELECTRIC POWER TOOLS
SUPER COUPON

12" DUAL-BEVEL SLIDING COMPOUND MITER SAW

Customer Rating

3-1/2" VERTICAL CROWN MOLDING CAPACITY

2-5/8" TALL SLIDING FENCES

LASER GUIDE LIGHT

$144.99 $189.99

SAVE $73 COMPARE TO PROFESSIONAL WOODWORKER $218.71 MODEL: 8637

BLADE SOLD SEPARATELY

Not available in AZ, OH, OK, and VA.

ITEM 56597/69684 56775/61970/61969 shown

23165957

LIMIT 1 - Coupon valid through 2/1/20*

BETTER — ADMIRAL
SUPER COUPON

12" DUAL-BEVEL SLIDING COMPOUND MITER SAW WITH LED AND LASER GUIDE

Customer Rating

6-1/2" VERTICAL CROWN MOLDING CAPACITY

4-1/2" TALL SLIDING FENCES

LASER GUIDE LIGHT & LED WORK LIGHT

$179 $199.99

SAVE $90 COMPARE TO RYOBI $269 MODEL: TSS120L

FREE BLADE INCLUDED $19.99 VALUE

ITEM 64686

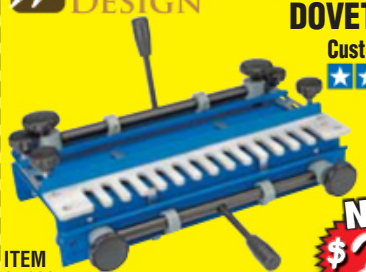
23168180

LIMIT 1 - Coupon valid through 2/1/20*

WINDSOR DESIGN
SUPER COUPON

DOVETAIL JIG

Customer Rating



ITEM 34102

NOW $27.99

COMPARE TO GENERAL TOOLS $47.16 MODEL: 861

SAVE 40%

$37.99

23176011

LIMIT 3 - Coupon valid through 2/1/20*

SUPER COUPON

7 FT. 4" x 9 FT. 6" ALL PURPOSE/WEATHER RESISTANT TARP

Customer Rating

NOW $2.99

$4.99

COMPARE TO BLUE HAWK $8.78 MODEL: BG8X10-Y

SAVE 65%

ITEM 69115/69121/69129/69137/69249/877 shown

23178170

LIMIT 4 - Coupon valid through 2/1/20*

KRAUSE & BECKER
SUPER COUPON

AIRLESS PAINT SPRAYER KIT

Customer Rating

NOW $169.99

$214.99

COMPARE TO GRACO $299 MODEL: 262800

SAVE $129

ITEM 62915/60600 shown

23179662

LIMIT 1 - Coupon valid through 2/1/20*

WARRIOR
SUPER COUPON

29 PIECE TITANIUM DRILL BIT SET

Customer Rating

NOW $10.99

COMPARE TO DEWALT $68.14 MODEL: DW1369

SAVE 83%

$18.99

ITEM 5889/62281/61637 shown

23190157

LIMIT 3 - Coupon valid through 2/1/20*

SUPER COUPON

4 PIECE ANTI-FATIGUE FOAM MAT SET

Customer Rating

• Each pad measures 25" x 25"

$8.99

NOW $6.99

COMPARE TO NORSK $19.99 MODEL: 001119346

SAVE 65%

ITEM 40187/61607/62389/94635 shown

23192340

LIMIT 5 - Coupon valid through 2/1/20*

Bauer
SUPER COUPON

15 AMP, 12-1/2" PORTABLE THICKNESS PLANER

Customer Rating

NOW $269.99

$329.99

ITEM 63445

SAVE $179

COMPARE TO DEWALT $449 MODEL: DW734

23208002

LIMIT 1 - Coupon valid through 2/1/20*

CENTRAL MACHINERY
SUPER COUPON

12" x 33-3/8" WOOD LATHE WITH REVERSIBLE HEAD

Customer Rating

NOW $299.99

$399.99

COMPARE TO JET $919.99 MODEL: 708352

SAVE $620

ITEM 34706

23209914

LIMIT 1 - Coupon valid through 2/1/20*

HaulMaster
SUPER COUPON

18" x 12" MOVER'S DOLLY

Customer Rating

• 1000 lb. capacity

COMPARE TO BUFFALO TOOLS $22.99 MODEL: HDFDOLLY

$10.99

NOW $7.99

SAVE 65%

ITEM 60497/61899/63095/63096/63097/63098 shown

23213942

LIMIT 5 - Coupon valid through 2/1/20*

CENTRAL MACHINERY
SUPER COUPON

14" OSCILLATING SPINDLE SANDER

Customer Rating

NOW $109.99

$147.99

SAVE $60

COMPARE TO TRITON TOOLS $170.42 MODEL: TSPS450

ITEM 62146/69257 shown

23214875

LIMIT 1 - Coupon valid through 2/1/20*

PITTSBURGH
SUPER COUPON

50" CLAMP AND CUT EDGE GUIDE

Customer Rating

LIFETIME WARRANTY

NOW $14.99

$22.99

Tools sold separately.

COMPARE TO BORA $39.98 MODEL: 543050

SAVE 62%

ITEM 56363/66581 shown

23215545

LIMIT 3 - Coupon valid through 2/1/20*

drill master
SUPER COUPON

1/4" SHEET ORBITAL PALM SANDER

Customer Rating

$14.99

NOW $9.99

SAVE 66%

COMPARE TO BLACK+DECKER $29.98 MODEL: BDEQS300

ITEM 40070 61509/61311 shown

23222414

LIMIT 4 - Coupon valid through 2/1/20*

CENTRAL MACHINERY
SUPER COUPON

4" x 36" BELT/ 6" DISC SANDER

NOW $64.79

$77.99

Customer Rating

SAVE $84

COMPARE TO RYOBI $149 MODEL: BD4601G

ITEM 5154/64778/97181 shown

23224424

LIMIT 2 - Coupon valid through 2/1/20*

*Original coupon only. No use on prior purchases after 30 days from original purchase or without original receipt. Valid through 2/1/20.

At Harbor Freight Tools, the "Compare to" price means that the specified comparison, which is an item with the same or similar function, was advertised for sale at or above the "Compare to" price by another national retailer in the U.S. within the past 90 days. Prices advertised by others may vary by location. No other meaning of "Compare to" should be implied. For more information, go to HarborFreight.com or see store associate.

Woodworker's Marketplace

The Furniture Institute of Massachusetts
Study with award winning instructor
Phil Lowe
1 to 3 year Fulltime Programs
Fulltime Programs Approved for Veterans
Summer Workshops, Weekend & Night Classes
See our class schedules at:
978-922-0615 **www.furnituremakingclasses.com**

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (required by Act of August 12, 1970: Section 3685, Title 39, United States Code). 1. Popular Woodworking Magazine 2. (ISSN: 0884-8823) 3. Filing date: 10/1/19. 4. Issue frequency: 7 issues annually. 5. Number of issues published annually:7. 6. The annual subscription price is $24.95. 7. Complete mailing address of known office of publication: 4445 Lake Forest Drive, Suite 470, Blue Ash, OH 45242. Contact person: Kolin Rankin. 8. Complete mailing address of headquarters or general business office of publisher: 4445 Lake Forest Drive, Suite 470, Blue Ash, OH 45242. 9. Full names and complete mailing addresses of publisher, editor, and managing editor. Publisher, Peter H. Miller, 5720 Flatiron Parkway, Boulder, CO 80301, Editor, Andrew Zoellner, 4445 Lake Forest Drive, Suite 470, Blue Ash, OH 45242, Managing Editor, N/A. 10. Owner: Active Interest Media; Andrew W. Clurman, CEO, 5720 Flatiron Pkwy, Boulder, CO 80301. 11. Known bondholders, mortgages, and other security holders owning or holding 1 percent of more of total amount of bonds, mortgages or other securities: None. 12. Tax status: Has Not Changed During Preceding 12 Months. 13. Publisher title: Popular Woodworking Magazine. 14. Issue date for circulation data below: AUGUST 2019. 15. The extent and nature of circulation: A. Total number of copies printed (Net press run). Average number of copies each issue during preceding 12 months: 119,363. Actual number of copies of single issue published nearest to filing date: 107,333. B. Paid circulation. 1. Mailed outside-county paid subscriptions. Average number of copies each issue during the preceding 12 months: 104,229. Actual number of copies of single issue published nearest to filing date: 90,082. 2. Mailed in-county paid subscriptions. Average number of copies each issue during the preceding 12 months: 0. Actual number of copies of single issue published nearest to filing date:0. 3. Sales through dealers and carriers, street vendors and counter sales. Average number of copies each issue during the preceding 12 months: 3,064. Actual number of copies of single issue published nearest to filing date: 3,097.4. Paid distribution through other classes mailed through the USPS. Average number of copies each issue during the preceding 12 months: 1,058. Actual number of copies of single issue published nearest to filing date: 975. C. Total paid distribution. Average number of copies each issue during preceding 12 months: 108,351. Actual number of copies of single issue published nearest to filing date; 94,154. D. Free or nominal rate distribution (by mail and outside mail). 1. Free or nominal Outside-County. Average number of copies each issue during the preceding 12 months: 73. Number of copies of single issue published nearest to filing date: 28. 2. Free or nominal rate in-county copies. Average number of copies each issue during the preceding 12 months: 0. Number of copies of single issue published nearest to filing date: 0. 3. Free or nominal rate copies mailed at other Classes through the USPS. Average number of copies each issue during preceding 12 months: 1,265. Number of copies of single issue published nearest to filing date: 4,202. 4. Free or nominal rate distribution outside the mail. Average number of copies each issue during preceding 12 months: 0. Number of copies of single issue published nearest to filing date: 0. E. Total free or nominal rate distribution. Average number of copies each issue during preceding 12 months: 1,338. Actual number of copies of single issue published nearest to filing date: 4,230. F. Total free distribution (sum of 15c and 15e). Average number of copies each issue during preceding 12 months: 109,689. Actual number of copies of single issue published nearest to filing date: 98,384. G. Copies not Distributed. Average number of copies each issue during preceding 12 months: 9,674. Actual number of copies of single issue published nearest to filing date: 8,949. H. Total (sum of 15f and 15g). Average number of copies each issue during preceding 12 months: 119,363. Actual number of copies of single issue published nearest to filing: 107,333. I. Percent paid. Average percent of copies paid for the preceding 12 months: 98.8% Actual percent of copies paid for the preceding 12 months: 95.7% 16. Electronic Copy Circulation: A. Paid Electronic Copies. Average number of copies each issue during preceding 12 months: 8,302. Actual number of copies of single issue published nearest to filing date: 7,882. B. Total Paid Print Copies (Line 15c) + Paid Electronic Copies (Line 16a). Average number of copies each issue during preceding 12 months: 116,653. Actual number of copies of single issue published nearest to filing date: 102,036. C. Total Print Distribution (Line ISf) + Paid Electronic Copies (Line 16a). Average number of copies each issue during preceding 12 months: 117,992. Actual number of copies of single issue published nearest to filing date: 106,266. D. Percent Paid (Both Print & Electronic Copies) (16b divided by 16c x 100). Average number of copies each issue during preceding 12 months: 98.9%. Actual number of copies of single issue published nearest to filing date: 96.0%. I certify that 50% of all distributed copies (electronic and print) are paid above nominal price: Yes. Report circulation on PS Form 3526-X worksheet 17. Publication of statement of ownership will be printed in the NOVEMBER 2019 issue of the publication. 18. Signature and title of editor, publisher, business manager, or owner: Paige Nordmeyer, Circulation Director. I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanction and civil actions.

Classified

Books

WE HAVE A WIDE VARIETY of woodworking books–from small projects, to home improvement, to enhancing your woodworking skills, and more! To see our full line of books, please visit our web site at PopularWoodworking.com/Shop!

Finishing Supplies & Equipment

BLOXYGEN SAVES LEFTOVER FINISHES– Just spray, seal and store. www.bloxygen.com or (888) 810-8311.

SHELLAC.NET–WOOD FINISH SUPPLY Large Shellac Flake Selection - Brushes - Dyes BEHLEN Finishing Supplies - Stains - Aerosols RENAISSANCE Wax. (877) 245-5611.

Kits & Plans

FULL SIZE FURNITURE LAYOUTS Drawn by Philip C. Lowe. (978) 922-0615. 116 Water St., Beverly, MA 01915. www.furnituremakingclasses.com

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 (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, 10151 Carver Road, Suite 300, Blue Ash, OH 45242 or Don Schroder, d.schroder@verizon.net. Phone: (610) 821-4425, Fax: (610) 821-7884.

Advertiser's Index

Understanding Furniture Polishes

There are only four categories, so it's easy.

By Bob Flexner

There are probably more myths surrounding furniture polishes than any other single aspect of wood finishing. What makes this topic confusing are the often-silly claims of manufacturers. They range from half-truths, such as "furniture polish preserves the finish," to outright absurdities, such as "furniture polish replaces the natural oils in wood."

The success of the furniture polish industry in convincing millions of consumers that there's oil in wood that needs replacing with a petroleum-distillate product through a finish that's there to keep liquids out of the wood has to rank among the great scams of American marketing.

Deceptive marketing has shifted the emphasis away from the real benefits of furniture polish as an aid in dusting, cleaning and adding a pleasant scent to a room (more important to consumers than you might think). In addition, some polish manufacturers have totally misrepresented the beneficial role of wax. Instead of pointing out its long-lasting shine and wear resistance, they have made wax into a problem, claiming that it keeps wood from breathing by stopping up its pores, and that it builds up to create a smeary surface.

It took me years to work my way through the myths. But when I did, I realized how easy furniture polishes are to understand. This is because there are only three types – four if you include wax.

Keep in mind that it's not the wood that is being cared for. It's the finish, and all film-building finishes, except shellac, are plastics, and shellac acts like a plastic. So the most important things a person can do are to keep the plastic shielded from UV light (which causes cracking) and reduce abuse (scratches and dings).

1

2

1 There are four types of furniture-care products. From the left are examples of clear polishes, emulsified polishes, silicone polishes and paste wax.

2 It's ultra-violet light that is primarily responsible for the deterioration of finishes. Notice the middle of this 100-year-old drawer front where the pull had blocked the UV light. The finish is nearly like new.

Products

There are four categories of furniture-care products: clear polishes, emulsion polishes, silicone polishes and wax. Within each category, the only significant differences are scent and color (if these are added).

Clear polishes are usually composed entirely of slow-evaporating petroleum distillates, but they may contain related solvents such as citrus or turpentine. Just as you would expect from your understanding of paint thinner, clear polishes clean grease and remove wax, but they don't remove water-soluble dirt such as soft-drink spills or sticky fingerprints.

Most clear polishes are packaged in plastic containers, which makes identification easy – the liquid can be seen as clear. Because clear polishes evaporate off the surface within a few hours, they aren't effective at adding long-lasting shine or scratch resistance.

Emulsion polishes are a combination of petroleum distillates and water, and are always milky-white in color. The combination makes these polishes fairly effective at cleaning both grease and water-soluble dirt. But because the ingredients evaporate rapidly, these polishes also don't add long-lasting shine or scratch resistance.

Most emulsion polishes are packaged in aerosols and are easily iden-

PHOTOS BY THE AUTHOR

A TIMELESS CLASSIC

You Will Treasure Forever!

Silver Classique

Each Classique designer watch is made with a durable stainless steel back, genuine leather band and GENUINE DIAMOND encased under a scratch-resistant crystal. Faux Chrono dials richly complement each style, surrounded with bezels layered in genuine Silver, 18k Gold or 18k Rose Gold. Comfortable leather bands designed to fit both men & women.

Rose Gold Classique

Blue Classique

SAVE 90% ON Diamond Watches

Now Only $9.99 Each Watch Valued At $100!

Dept. 78054 © Dream Products, Inc. (Prices valid for 1yr.)

BEST OFFER Buy 2 Or More Watches & Your **Shipping & Handling is FREE!**

Receive A Free Surprise Gift with every order

1-800-530-2689
Order Now Toll-Free

Connect with
DreamProducts.com
website offers may vary

⚠ California Proposition 65 Warning: This product contains a chemical that exposure to is known by the State of CA to cause cancer, birth defects or other reproductive harm. Do not mouth or chew. See our website FAQ's for additional information.

Satisfaction Guaranteed or Return For Your Money Back

90% OFF Diamond Watches!

Item #85601 _____ Silver Classique Diamond Watch(s) @ $9.99 each	$
Item #85842 _____ Blue Classique Diamond Watch(s) @ $9.99 each	$
Item #85707 _____ Rose Gold Classique Diamond Watch(s) @ $9.99 each	$
CA residents must add 7.25% sales tax	$
Regular Shipping Add $5.95 1st watch, **FREE S/H** when buying 2 or more watches!	$
❑ **FOR EXPEDITED SHIPPING** *(optional)* **Add An Additional $2.95** **(receive your order 5-7 days from shipment)**	$ 2.95
Please Print Clearly — **TOTAL**	$

Check or money order **payable** to: **Dream Products, Inc.**
Send Order To: 412 Dream Lane, Van Nuys, CA 91496

❑ VISA ❑ MasterCard ❑ Discover®/NOVUS℠Cards

Card# _____ Exp. Date ___/___

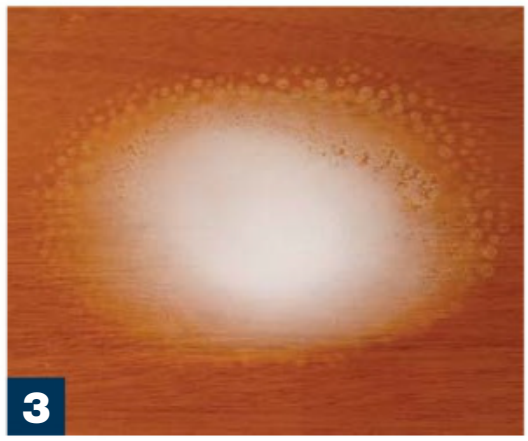
Name _____

Address _____

City _____ ST ____ Zip _____

Daytime Phone # _____

Dept. 78054 Email _____


3


4


5

3 Emulsified furniture polishes are composed of both petroleum-distillate solvent and water for better cleaning. They are easy to identify by the milky-white puddle they produce when sprayed thickly.

4 Fish eye, which is also called cratering for obvious reasons, is the result of silicone from some very popular furniture polishes getting into the wood and causing the finish to pull away from the very slick silicone.

5 Shellac is very effective at sealing off silicone in the wood so another finish, such as polyurethane, lacquer or water-based finish, can flow out without problems (right half).

tified by their milky-white spray.

Silicone polishes are clear polishes or emulsion polishes to which a small amount of silicone has been added. Silicone is a synthetic oil resembling mineral oil, but noticeably slicker. In addition to making a finished surface slick and thus resistant to scratches, silicone remains on a surface until it's worn or cleaned off. Silicone also creates the appearance of greater depth in wood.

Because silicone polishes can be either clear or milky-white, they aren't easy to identify – except by the smear they sometimes leave, even days later, if too much has been applied. Unfortunately, no manufacturer lists silicone as an ingredient on their container.

Wax is a solid at room temperature and thus provides long lasting shine and scratch resistance. Wax is available to consumers both as a paste and as an ingredient in a liquid. When in a liquid, the wax settles and appears white at the bottom of a container. Wax is seldom a significant ingredient in aerosols because it clogs the nozzle.

How to Choose

Choosing among the four types of furniture-care products is easy.

For simple dusting with an inexpensive, pleasant-smelling liquid that causes dust to stick to a cloth and lubricates the surface so the dust doesn't scratch it during polishing, choose a clear polish.

For cleaning in addition to dusting, choose an emulsion polish.

For fairly long-lasting shine and scratch resistance without the effort of using wax, choose a silicone polish. For better cleaning, choose one of the emulsified silicone polishes.

For near permanent shine and scratch resistance, choose wax, but keep in mind that wax is much more difficult to use because of the extra effort required to buff off the excess, and that a water-dampened cloth or chamois, not furniture polish, should be used for dusting so as not to remove the wax.

For old, crazed finishes, wax is the best choice because it adds fairly permanent scratch resistance to the fragile surface, and it adds shine without highlighting cracks in the finish as liquid polishes do.

Of course, none of these products have to be used. Dusting and cleaning can be accomplished using a water-dampened cloth or chamois, as is done almost everywhere else in the world.

The Silicone Issue

Silicone causes refinishing problems because of its slickness. It gets into wood through cracks in old finishes causing newly applied finishes to pull away and create crater-like patterns called fish eyes. To counter this problem, clean the wood really well, seal with shellac, or add silicone, sold as fish-eye eliminator or Smoothie, to the finish so it will flow over the contamination.

Even though silicone contamination can be dealt with successfully, doing so requires extra effort and often a lot of frustration. As a result, refinishers and conservators hate the furniture polishes that contain silicone and have been discouraging people from using them for half-a-century or longer.

Because "extra effort" and "frustration" don't work well as explanations, however, refinishers and conservators have resorted to accusations that silicone polishes cause all sorts of damage to finishes, ranging from softening to making finishes so brittle they crack. In fact, silicone is every bit as inert as mineral oil; it doesn't damage anything.

Consumers, on the other hand, love silicone polishes because these polishes make their furniture and cabinets look better and keep them looking better for much longer than other polishes. **PW**

Bob Flexner is author of "Wood Finishing 101," "Flexner on Finishing," and "Understanding Wood Finishing."

Introducing
the future of personal transportation.

It's not a Wheelchair...

It's not a Power Chair...

The Zinger folds to a mere 10 inches.

It's a Zinger Chair!

More and more Americans are reaching the age where mobility is an everyday concern. Whether from an injury or from the aches and pains that come from getting older– getting around isn't as easy as it used to be. You may have tried a power chair or a scooter. The ***Zinger*** is NOT a power chair or a scooter! The ***Zinger*** is quick and nimble, yet it is not prone to tipping like many scooters. Best of all, it weighs only 47.2 pounds and folds and unfolds with ease. You can take it almost anywhere, providing you with independence and freedom.

Years of work by innovative engineers have resulted in a mobility device that's truly unique. They created a battery that provides powerful energy at a fraction of the weight of most batteries. The ***Zinger*** features two steering levers, one on either side of the seat. The user pushes both levers down to go forward, pulls them both up to brake, and pushes one while pulling the other to turn to either side. This enables great mobility, the ability to turn on a dime and to pull right up to tables or desks. The controls are right on the steering lever so it's simple to operate and its exclusive footrest swings out of the way when you stand up or sit down. With its rugged yet lightweight aluminum frame, the ***Zinger*** is sturdy and durable yet convenient and comfortable! What's more, it easily folds up for storage in a car seat or trunk– you can even gate-check it at the airport like a stroller. Think about it, you can take your ***Zinger*** almost anywhere, so you don't have to let mobility issues rule your life. It folds in seconds without tools and is safe and reliable. It holds up to 275 pounds, and it goes up to 6 mph and operates for up to 8 hours on a single charge.

Why spend another day letting mobility issues hamper your independence and quality of life?

Zinger Chair®

Call now and receive a utility basket absolutely FREE with your order.

1-888-595-8195

Please mention code 111950 when ordering.

Just think of the places you can go: • Shopping • Air Travel • Bus Tours • Restaurants– ride right up to the table! • Around town or just around your house

Zinger is not intended for medical purposes to provide mobility to persons restricted to a sitting position. It is not a medical device nor a wheelchair. It is not covered by Medicare nor Medicaid. © 2019 *first*STREET for Boomers and Beyond, Inc.

83966

A Shaker's Life

Research gives names to unknown artisans.

By Tom Caspar

David Rowley, Freegift Wells, Amos Stewart, Orren Haskens, Eli Kidder...ever hear of these guys?

They were Shaker cabinetmakers, the names behind one of the most unified and influential movements in American furnituremaking. You might think that they would have been completely anonymous, like most woodworkers of that era, but a remarkable project by Shaker scholar Jerry Grant, undertaken in the 1970s and 80s, has brought to life these and other artisans–27 utterly fascinating people–in Shaker Furniture Makers (1989).

Grant drew heavily on journals kept by the Shakers, discovering detailed descriptions of their joinery and finishing techniques. You won't find much of that technical information in this book, but you will find a well-written set of stories about a set of celibate artisans who labored under different aesthetic and philosophical constraints from those of today. Grant writes:

Even though the Shaker craftsmen worked for the good of the community more than for personal advancement, they were in many cases strong individuals. Many were saintly in their devotion; some had strong fleshly appetites for things of this world... Some of their intense personal efforts [to remain true to Shaker ideals]...were in vain. Some of the master craftsmen left the Society, while others remained Shakers for life.

Shaker style evolved over the years, but at its high point in the first half of the nineteenth century, it was a pure form of a rectilinear Federal style popular in the world outside the utopian Shaker villages. Remove the inlay, simplify the molding, use only local woods–and you have the basis for many Shaker pieces. Of course, all this was done in the name of a higher cause. Grant relates one telling example: "In the summer of 1840, David Rowley removed the superfluous brass pulls on drawers and replaced them with wooden ones, which were deemed, through spiritual communication, to be more appropriate to Shaker life." Imagine building to please those clients!

Many Shaker pieces were unsigned, so how do you tell who made what? Well, how they were made. One way is to look at how. Grant writes about an unusual method of dovetailing drawers that can be traced to the work of Abner Allen and Grove Wright, of the Hancock Bishopric. On more than thirty pieces, these artisans tapered the sides of their drawers, making the sides narrow at the top and wide at the bottom. This meant that the wear surface on the drawer's bottom was wider than normal–and thus would presumably last longer–while the top of the side would have a more delicate look. Cutting dovetails for tapered sides is definitely more difficult than straight sides.

A few years ago, I found a chest at a flea market whose drawers were made this way (right). The drawer sides are pine, and although their bottom edges are 3/4" wide, they're quite worn down. The chest was covered in black paint, and cost very little. Underneath the paint were beautiful birch boards, flaunting large, tight knots and sensuous crotch grain. The lines of the chest were very plain–but not like any Shaker piece I'd seen. Clearly, the maker had fallen in love with some unusual wood.

Who made this piece? Did Allen or Wright train this fellow? Could it have been a young man who left the sect because his "fleshly appetites" were too strong? Reading Shaker Furniture Makers makes me wish that we all left more behind than just our work, because someday, somewhere, someone might ask, "Who was that guy?" **PW**

Tom Caspar is the former editor of **American Woodworker and Woodwork** *magazines.*

Woodpeckers® Precision Squares

The Most Trustworthy Tool in Your Shop

Success in the workshop depends on accuracy in your machinery set up, layout work, and assembly checks. All three jobs call for an accurate, well-made square, and here are several to choose from.

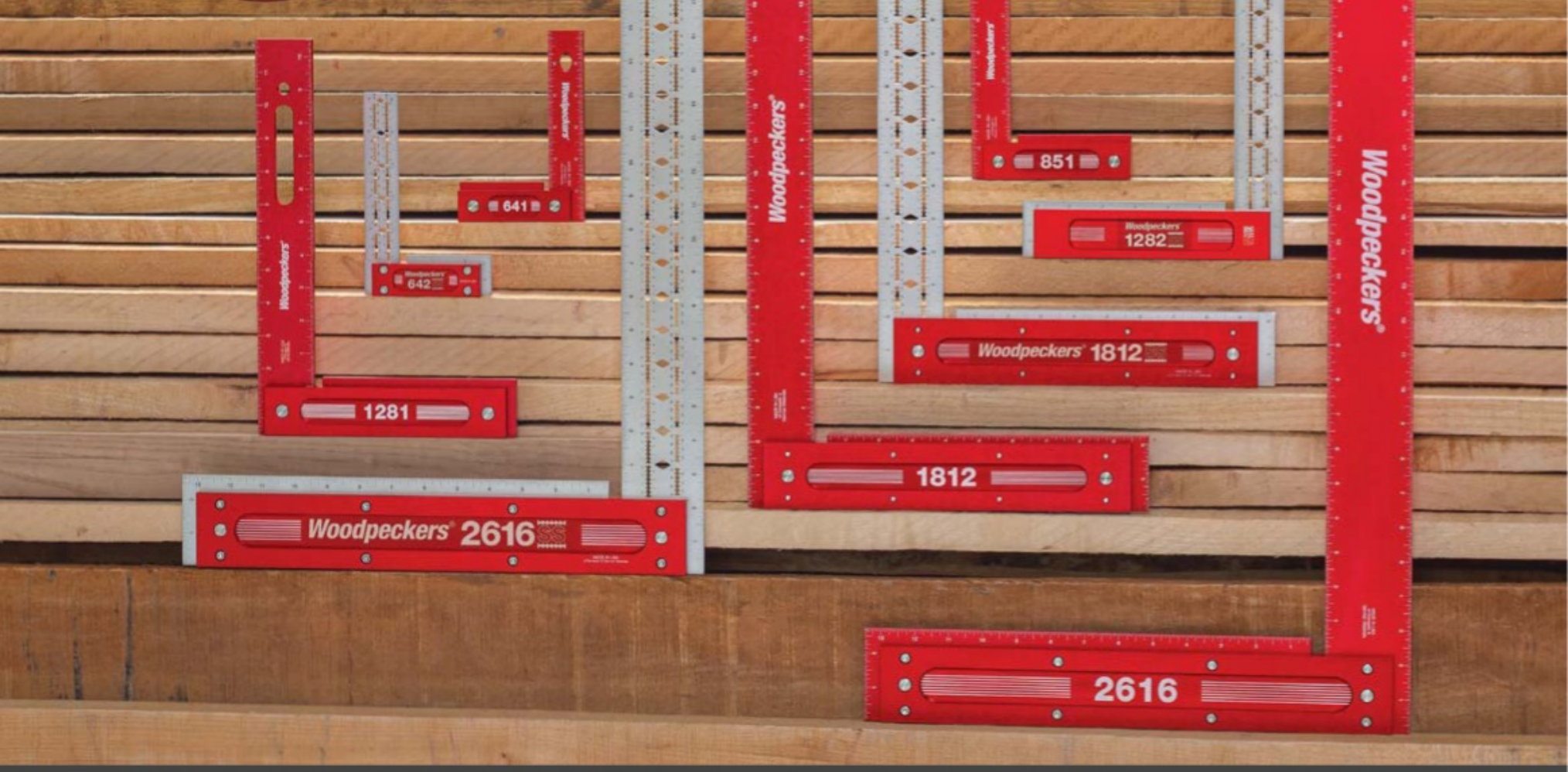
The cores of our squares are one precisely machined piece. ***Square*** is determined by our CNC milling centers and verified by our computer controlled optical inspection system. The cheeks added to this central core are narrower by a quarter of an inch, forming a shoulder not found in traditional square designs. The shoulder keeps your square on the edge of a board without a hand from you. We use this same fundamental design in squares from 6" to 26" and with two different core materials.

Our familiar anodized aluminum squares excel at checking cabinet and furniture assemblies as well as striking lines square. Our new durable, heat-treated stainless-steel squares, with their 1/16" thick blade and laser cut scribing notches are ideal for critical measuring and marking tasks, machinery setup and checking the edges of stock.

The precise scale graduations on Woodpeckers squares are permanently laser-engraved, high contrast markings, designed to last for generations.

We guarantee our squares to ±0.0085° for the life of the tool. If you ever find your square outside that tolerance, we'll fix it or replace it.

UNMATCHED ACCURACY
LIFETIME
Woodpeckers
GUARANTEE
EST. 1988



Woodpeckers, LLC • Strongsville, Ohio • 800.752.0725 • ***woodpeck.com***