**FULL-SIZE PATTERNS INSIDE!**

ISSUE 222 NOVEMBER 2013

Better Homes and Gardens®

# WOOD®

## Country Sideboard

Easy to build with basic tools p.22

## Shop Test: 12" Disc Sanders p.52

51 Shop Tips Inside

## Great Plans

Money-tree Coin Bank p.41

Jewelry Box p.48

Tablesaw Sled p.30

Hidden-compartment Toy Box p.56

Construction-grade End Loader p.32

## Tame Tricky Clamp-ups p.18

# Grizzly Industrial® Christmas Sale

**PURVEYORS OF FINE MACHINERY®, SINCE 1983!**

- OVER A MILLION SQUARE FEET PACKED TO THE RAFTERS WITH MACHINERY & TOOLS
- 2 OVERSEAS QUALITY CONTROL OFFICES STAFFED WITH QUALIFIED GRIZZLY ENGINEERS
- HUGE PARTS FACILITY WITH OVER 1 MILLION PARTS IN STOCK AT ALL TIMES
- 24 HOUR ORDERING BY PHONE OR ONLINE • MOST ORDERS SHIP THE SAME DAY

**Nov 1st - December 31st**

## 10" CONTRACTOR TABLE SAWS

*With Riving Knife*

- Motor: 1¾ HP or 2 HP, 110V/220V, single-phase
- Precision-ground cast iron table wings: 44" W x 27" D
- Arbor: ⅝" • Arbor speed: 4200 RPM
- Table height: 35⅜"
- Footprint: 26" W x 26¼" D
- Capacity: 3⅛" @ 90°, 2¼" @ 45°
- Rip capacity: 36" R, 12" L
- Approximate shipping weight: 328 lbs. (G0713) 338 lbs. (G0661)

MADE IN TAIWAN



MADE IN AN ISO 9001 FACTORY

**1¾ HP, LEFT-TILTING, SINGLE-PHASE**

**G0713** ~~$895.00~~ SALE **$850.00**

**2 HP, LEFT-TILTING, SINGLE-PHASE**

**G0661** ~~$925.00~~ SALE **$875.00**

$99 shipping

## 10" HYBRID TABLE SAW

*With Riving Knife*

- Motor: 2 HP,110V/220V, single-phase
- Precision-ground cast iron table size with wings: 40" W x 27" D
- Arbor: ⅝"
- Arbor speed: 3850 RPM
- Capacity: 3⅛" @ 90°, 2³⁄₁₆" @ 45°
- Rip capacity: 30" R, 12" L
- Cast iron trunnions
- Approximate shipping weight: 404 lbs.

BEAUTIFUL WHITE COLOR!



INCLUDES BOTH REGULAR & DADO BLADE INSERTS

**G0715P ONLY $795.00**

$99 shipping

## 12" BABY DRUM SANDERS

- Sanding motor: 1½ HP, 110V, single-phase
- Conveyor motor: ⅛ HP, 110V, single-phase, variable speed 5–35 FPM
- Max. stock thickness: 3½"
- Min. stock length: 8"
- Sanding drum size: 4"
- Sanding belt: 3" x 70" hook & loop
- Dust collection port: 2½"
- Approximate shipping weight: 160 lbs.



MADE IN TAIWAN

CLASSIC GRIZZLY GREEN COLOR

**G0459** ~~$695.00~~ SALE **$575.00**

POLAR BEAR® DAZZLING WHITE COLOR

**G0459P** ~~$595.00~~ SALE **$575.00**

$79 shipping

## 8" JOINTERS

- Motor: 3 HP, 220V, single-phase, TEFC
- Precision-ground cast iron table size: 9" x 72½"
- Max. depth of cut: ⅛" • Max. rabbeting depth: ½"
- Cutterhead diameter: 3"
- Cutterhead speed: 5000 RPM (G0656P); 5350 RPM (G0656PX)
- Cuts per minute: 20,000 (G0656P)
- Cuts per minute: 21,400 (G0656PX)
- Approximate shipping weight: 500 lbs.

FREE SAFETY PUSH BLOCKS



BUILT-IN MOBILE BASE

**WITH 4 KNIFE CUTTERHEAD**

**G0656P ONLY $825.00**

**WITH SPIRAL CUTTERHEAD**

**G0656PX ONLY $1225.00**

$150 shipping

## 15" PLANERS

- Motor: 3 HP, 220V, single-phase
- Precision-ground cast iron table size: 15" x 20"
- Min. stock thickness: 3⁄16"
- Min. stock length: 8"
- Max. cutting depth: ⅛"
- Feed rate: 16 FPM & 30 FPM
- Cutterhead speed: 5000 RPM
- Approximate shipping weight: 662 lbs. (G0453P) 666 lbs. (G0453PX)



PRECISION-GROUND CAST IRON BED & INFEED/OUTFEED TABLES

BUILT-IN MOBILE BASE

**WITH 3 KNIFE CUTTERHEAD**

**G0453P** ~~$1095.00~~ SALE **$1050.00**

**WITH SPIRAL CUTTERHEAD**

**G0453PX ONLY $1695.00**

$150 shipping

## 20" PLANER

- Motor: 5 HP, 240V, single-phase
- Max. cutting width: 20"
- Max. cutting height: 8"
- Min. stock thickness: 3⁄16"
- Min. stock length: 8"
- Max. cutting depth: ⅛"
- Feed rate: 16 FPM & 20 FPM
- Cutterhead diameter: 3⅛"
- Cutterhead speed: 4800 RPM
- Feed rolls: solid serrated steel
- Overall dimensions: 55½" L x 39½" W x 45⅛" H
- Approximate shipping weight: 920 lbs.



BUILT-IN MOBILE BASE

$179 shipping

**G0454** ~~$1650.00~~ SALE **$1595.00**

## 14" DELUXE BANDSAW

MADE IN TAIWAN

- Motor: 1 HP, TEFC, 110V/220V, single-phase (prewired 110V)
- Amps: 11 at 110V, 5.5 at 220V
- Blade size: 93½" long (⅛"–¾" wide)
- Cutting capacity/throat: 13½"
- Max. cutting height: 6"
- Overall size: 27" W x 67½" H x 30" D
- Footprint: 23½" x 16½"
- Table height above floor: 43"
- Table tilt: 45° right, 10° left
- Approximate shipping weight. 247 lbs.



CAST IRON WHEELS

MADE IN AN ISO 9001 FACTORY

$79 shipping

**G0555LX** ~~$545.00~~ SALE **$445.00**

## 30TH ANNIVERSARY 14" DELUXE BANDSAW

- Motor: 1 HP, TEFC, 110V/220V, single-phase, 1725 RPM
- 4" Dust port
- Cutting capacity/throat: 13½"
- Max. cutting height: 6"
- Overall size: 27" W x 67½" H x 30" D
- Precision-ground cast iron table size 14" x 14"
- Table height: 43⁵⁄₁₆"
- Tilt: 45° R, 15° L
- Fence construction: Deluxe extruded aluminum
- Blade speeds: 1500 & 3200 FPM
- Blade size: 92½–93½" (⅛" to ¾" wide)
- Approx. shipping wt. 205 lbs.

New!

MADE IN TAIWAN



$79 shipping

**G0555LANV** ~~$545.00~~ SALE **$445.00**

## 2 HP DUST COLLECTOR

*With Aluminum Impeller*

- Motor: 2 HP, 240V, single-phase, 9A, 3450 RPM
- Air suction capacity: 1550 CFM
- Max. static pressure: 11"
- Bag capacity: 5.7 cu. ft.
- Impeller: 12¾" balanced cast aluminum
- Height with bags inflated 78"
- Portable base: 21¼" x 33½"
- Approximate shipping weight: 122 lbs.



MADE IN TAIWAN

New!

$79 shipping

**G1029Z2P** ~~$325.00~~ SALE **$309.95**

PRICING CODE 13W00DM MENTION THIS CODE WHEN PLACING YOUR ORDER 15817

**1-800-523-4777 grizzly.com®**

3 GREAT SHOWROOMS! BELLINGHAM, WA • MUNCY, PA • SPRINGFIELD, MO

VIEW VIDEOS AT grizzly.com

FOLLOW US ON

TECHNICAL SERVICE: 570-546-9663 FAX: 800-438-5901

November 2013 Issue 222

# In this issue







## PROJECT PLANS


22 **On the Cover: Country Sideboard**
You'll need no special tools or skills to build this classic cupboard.

30 **Small-parts Tablesaw Sled**

32 **Construction-grade End Loader**

41 **"Money Tree" Coin Bank**

48 **Curvy Keepsake Box**

56 **Toy Chest with a Surprise**
This "unboxy" design features a secret drawer for hiding special curios.


## TOOLS & TECHNIQUES


18 **Tips for Taming Tricky Clamp-ups**

27 **Make "Antique" Hinges from New**

44 **How to Machine Small Parts Safely**

52 **Shop Test: 12" Disc Sanders**

55 **No-fuss Way to Change 12" Sanding Discs**

66 **Shop-Proven Products**
Economical, accurate track saw; compact, folding sawhorses; and more.








## DEPARTMENTS


3 **Editor's Angle**

4 **Sounding Board**

6 **Shop Tips**

16 **Unvarnished**
Your first three hand tools

60 **Ask *WOOD*®**

70 **Advertiser Index**

76 **What's Ahead**





WOOD MAGAZINE SHOP TESTED APPROVED®

The *WOOD*® magazine difference:
We build every project, verify every fact, and test every reviewed tool in our workshop to guarantee your success and complete satisfaction.

woodmagazine.com

# On our website

woodmagazine.com

storemags.com




## WIN A $500 ROCKLER GIFT CARD!

Buy yourself a raft of early Christmas presents when you win $500 worth of woodworking goodies from Rockler. Maximize your chances by entering at **woodmagazine.com/winrockler** every day from now until November 26, 2013.

## CHECK OUT THE COOL NEW TOOLS

*WOOD* magazine editors traveled to the Association of Woodworking & Furnishings Suppliers Fair—the nation's largest woodworking machinery expo—to scout out the latest, greatest tools for your shop. Watch free video reports from the 2013 AWFS Fair at **woodmagazine.com/AWFS2013**.






## UNEARTH CONSTRUCTION TOY PLANS YOU MAY HAVE MISSED

The Construction-grade End Loader on *page 32* is the latest in the popular toy series. Find all 12 plans, and handy specialty-part kits, at **woodmagazine.com/cgtoys**.



Better Homes and Gardens®
# WOOD®

November 2013 Vol. 30, No. 6 Issue No. 222

EDITORIAL CONTENT CHIEF **DAVE CAMPBELL**

DEPUTY EDITOR **CRAIG RUEGSEGGER**

ART DIRECTOR **KARL EHLERS**

DIGITAL CONTENT MANAGER **LUCAS PETERS**

SENIOR DESIGN EDITOR **KEVIN BOYLE**

DESIGN EDITOR **JOHN OLSON**

TOOLS EDITOR **BOB HUNTER**

GENERAL-INTEREST EDITOR **NATE GRANZOW**

ADMINISTRATIVE ASSISTANT **SHERYL MUNYON**

CONTRIBUTING CRAFTSMEN **JIM HEAVEY, ERV ROBERTS, BRIAN SIMMONS, BOB BAKER, TOM BRUMBACK, BOB SAUNDERS, STEVE FEENEY, MATT SEILER, DEAN FIENE, DOUG LEY**
PHOTOGRAPHERS **DEAN SCHOEPPNER, JASON DONNELLY, JAY WILDE**
CONTRIBUTING ILLUSTRATORS **TIM CAHILL, LORNA JOHNSON**
PROOFREADERS **BABS KLEIN, IRA LACHER, STEPHANIE RIVA, JIM SANDERS**

**ADVERTISING AND MARKETING**
VICE PRESIDENT/GROUP PUBLISHER **TOM DAVIS**
DIRECT RESPONSE ADVERTISING REPRESENTATIVE **LISA GREENWOOD** 312-853-1225
ONLINE MEDIA KIT **woodmagazine.com/mediakit**

BUSINESS MANAGER **DARREN TOLLEFSON** CONSUMER MARKETING DIRECTOR **LIZ BREDESON**
CONSUMER MARKETING MANAGER **BILL WOOD** RETAIL BRAND MANAGER-NEWSSTAND **JESS LIDDLE**
PRODUCTION MANAGER **SANDY WILLIAMS** ADVERTISING OPERATIONS MANAGER **JIM NELSON**

**MEREDITH NATIONAL MEDIA GROUP**
PRESIDENT **TOM HARTY**

**EXECUTIVE VICE PRESIDENTS**
PRESIDENT, MEDIA SALES **RICHARD PORTER** PRESIDENT, BETTER HOMES AND GARDENS **JAMES CARR**
PRESIDENT, PARENTS NETWORK **CAREY WITMER** PRESIDENT, WOMEN'S LIFESTYLE **THOMAS WITSCHI**
PRESIDENT, MEREDITH DIGITAL **JON WERTHER** CREATIVE CONTENT LEADER **GAYLE GOODSON BUTLER**
CHIEF MARKETING OFFICER **NANCY WEBER** CHIEF REVENUE OFFICER **MICHAEL BROWNSTEIN**
CHIEF INNOVATION OFFICER **JEANNINE SHAO COLLINS** GENERAL MANAGER **MIKE RIGGS**
DIRECTOR, OPERATIONS & BUSINESS DEVELOPMENT **DOUG OLSON**

**SENIOR VICE PRESIDENTS**
CHIEF TECHNOLOGY OFFICER **JACK GOLDENBERG**
CHIEF DIGITAL OFFICER **ANDY WILSON** DIGITAL SALES **CAROLYN BEKKEDAHL**
RESEARCH SOLUTIONS **BRITTA CLEVELAND**

**VICE PRESIDENTS**
CONSUMER MARKETING **JANET DONNELLY** CORPORATE MARKETING **STEPHANIE CONNOLLY**
COMMUNICATIONS **PATRICK TAYLOR** NEWSSTAND **MARK PETERSON**
CORPORATE SALES **BRIAN KIGHTLINGER** DIRECT MEDIA **PATTI FOLLO** BRAND LICENSING **ELISE CONTARSY**

meredith

CHAIRMAN AND CHIEF EXECUTIVE OFFICER **STEPHEN M. LACY**
PRESIDENT, MEREDITH LOCAL MEDIA GROUP **PAUL KARPOWICZ**

VICE CHAIRMAN **MELL MEREDITH FRAZIER**
IN MEMORIAM — **E.T. MEREDITH III (1933–2003)**

## HOW TO REACH US

- **For woodworking advice:** Post your woodworking questions (joinery, finishing, tools, turning, dust collection, etc.) on one of our online forums at **woodmagazine.com/forums**.
- **To contact our editors:** E-mail **woodmail@woodmagazine.com**; post on our Facebook at **facebook.com/woodmagazine**; write to *WOOD* magazine, 1716 Locust St., LS-221, Des Moines, IA 50309; or call 800-374-9663, option 2.
- **Subscription assistance:** To contact us about your *WOOD* subscription, visit **woodmagazine.com/help**; e-mail **wdmcustserv@cdsfulfillment.com**; or write to WOOD, PO Box 37508, Boone, IA 50037. Include your name and address as it appears on the magazine label, renewal notice, or invoice. For digital subscriptions, visit **woodmagazine.com/zinio**.
- **To find past articles:** Search our online article index at **woodmagazine.com/index**.
- **To order past issues and articles:** For past issues of *WOOD* magazine in print or on DVD-ROM, our newsstand-only issues, or downloadable articles, visit **woodmagazine.com/store**.
- **Updates to previously published projects:** For an up-to-date listing of changes in dimensions and buying-guide sources from issue 1 through today, go to **woodmagazine.com/editorial**.

Our subscribers list is occasionally made available to carefully selected firms whose products may be of interest to you. If you prefer not to receive information from these companies by mail or by phone, please let us know. Send your request along with your mailing label to Magazine Customer Service, PO Box 37508, Boone, IA 50037.

© Copyright Meredith Corporation 2013. All rights reserved. Printed in the U.S.A.
Retail Sales: Retailers can order copies of WOOD for resale by e-mailing jennifer.buser@meredith.com

## Editor's Angle

# To get mad woodworking skills, just ask

I've never been a big fan of "hinting." No, that's not some obscure wood-finishing technique, but it can be just as frustrating, especially among spouses. My philosophy: If you want something, ask for it, and I'll do the same.

Fortunately, my wife thinks along the same lines, and at this time of year, when we're starting our holiday shopping, she'll point to something she likes and say, "You can get me that for Christmas, if you want..." I love it. No guessing. No games. Everybody wins.

So, if what you *really* want this year is to step up your woodworking game with a fun weekend of classes designed just for you, simply ask for it. Open this magazine to the *Weekend With WOOD* info on *page 62*, and say, "This is what I want for Christmas."

You'll choose from more than 50 up-close-and-personal classes taught in the *WOOD*® magazine shops by the world's best instructors.

I guarantee, you'll walk away a better woodworker.

*Weekend With WOOD* is scheduled for May 16–18, 2014, but don't be shy—seating is limited. So register early at woodmagazine.com/weekendwithwood for the best class selection and to assure your place in the fun.



George Vondriska teaches how to create beautiful cathedral raised-panel doors at *Weekend With WOOD* 2013.



After one of his many classes at *Weekend With WOOD* 2013, Marc Adams (*left*) answers attendees' questions.

See you in *our* shop!

*Dave Campbell*
*dave.campbell@meredith.com*


Tired of Cleaning Clogged Filters?

The Dust Cobra®

A unique All-in-One high suction dust collector. ( 70" SP in inches of WC)

Perfect for the small shop!

For example:
12" planer, 6" jointer, portable table saw, all bench top and portable tools.

Rapid Pulse™ Filter Cleaner
Internally cleans the HEPA filter in seconds. No filter removal - no mess!

- Full unit HEPA certification - *Meets EPA RRP requirements including lead.*
- Approx. 4' 4" tall and 20"x 20"with Mobile Cart.




See Dust Cobra video at www.oneida-air.com

ROUGH CUT WOODWORKING WITH TOMMY MAC

Oneida Air Systems is a proud sponsor of Rough Cut-Woodworking with Tommy Mac

Like Us On Facebook

Made in USA

Call Today for FREE Catalog!
1.800.732.4065
www.oneida-air.com

Oneida® Air Systems
Dust Collection Since 1993.

# Sounding Board

Our bulletin board for letters, comments, and timely updates

## No wine-ing in this classroom

As a subscriber to *WOOD*® magazine and a woodworking teacher, I knew the super-simple wine rack project on the cover of issue 216 (December/January 2012/2013) would be a good fit for my class. (We left off the bottle stops as suggested in the article, building them as bookshelves instead.) While building 54 of these projects using roughsawn ash, the students learned to calculate board feet and costs, plane and square lumber, glue up panels, lay out arches and curves, cut mortise and tenon joints, sand, and finish their projects. It's always a joy to see new woodworkers complete their first project, and I appreciate that *WOOD* continues to produce plans that my students find appealing to build.

*—Bryan Couts, Erie, Pa.*



McDowell Intermediate High School students in Erie, Pennsylvania, stand with their bookshelf projects.

## Making memories mentoring

The Editor's Angle in issue 216 (Dec/Jan 2012/2013) made me smile, because I've been mentoring a new woodworker for some time. This past summer, my five-year-old daughter, Kayleigh, spent many hours working with me in our garage shop.

Mom, of course, was initially worried she'd get hurt. But after Kayleigh's continued interest, I decided to build a workbench for her. Now when I go to the shop, she's close behind with hearing muffs on and a sander in hand, ready to help out. The time I get to spend with her is priceless.

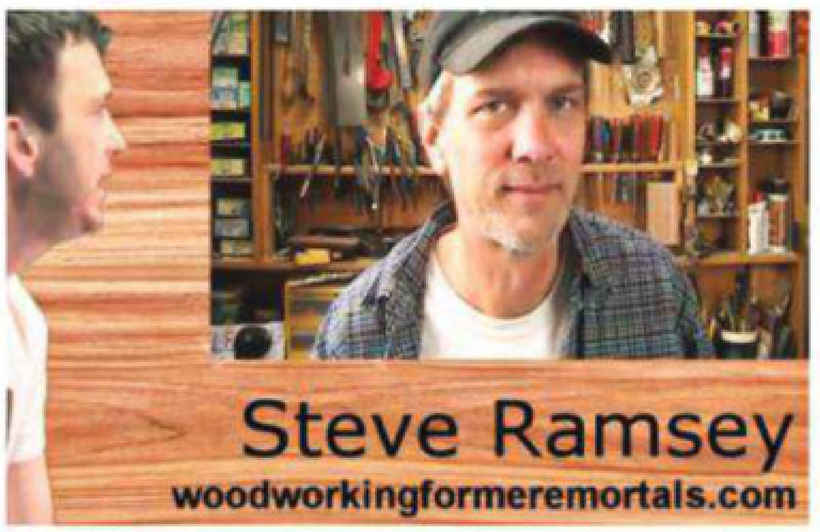
*—Matthew Helm, Garrettsville, Ohio*



## Woodworkers pitch in to surprise their favorite blogger

Steve Ramsey's light-hearted woodworking videos have made him a favorite contributor on WOODTube (woodmagazine.com/woodtube). Fellow WOODTube member Laney Shaughnessy noticed that Steve was still using an old benchtop tablesaw in his shop and promptly organized a surprise to show his and others' appreciation for Steve's work: Putting out a call to fellow woodworkers, Laney raised enough money for a new hybrid tablesaw in less than 24 hours. This overwhelming show of support is just another example of the woodworking community uniting to accomplish great things.

*—WOOD magazine Editors*




To watch a video of Laney Shaughnessy interviewing Steve Ramsey about his new saw, visit woodmagazine.com/steveramseyinterview.

## Avoid steel wool for water-based finishes

In the article titled "Sand for a Perfect Finish" in issue 219 (July 2013) you suggested using steel wool for a fine finish. That's great for oil-based finishes, but when using water-based finish, avoid real steel wool. Any residue left by the steel wool will rust when the finish is applied, and won't be noticed until the finish dries. Stick with synthetic steel wool in that case.

*—John Dayton, Kingsport, Tenn.*

## Article Updates

### ▶ Dust-collecting Tool Stand

In issue 218 (May 2013), the cabinet's support stiles (O) should be 13" long.

### ▶ Adirondack Chair

In issue 219 (July 2013), the back splats (K) should be 3¼" wide.

# INNOVATIVE PRODUCTS SINCE 1989!

2 YEAR WARRANTY

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

## TRACK SAW

- Motor: 120V, 9A, 1100 watt, 5500 RPM
- Blade diameter: 160mm (6¼")
- Cutting capacity:
  With track: 1 31/32" @ 90°, 1 7/16" @ 45°
  Without track: 2 5/32" @ 90°, 1 5/8" @ 45°



New

**W1832**
Track Saw Master Pack
*Includes: Saw, Guide Rail, and Accessory Pack*

**W1835** Track Saw
**D4363** Accessory Pack
**D4362** Guide Rails

## 14" BANDSAW

- 1 HP, 110V/220V
- Precision ground cast iron table measures 14" x 14" x 1½"
- Blade size: 93½" (⅛" to ¾" wide)
- Cutting capacity 13½" (throat)
- Cast iron frame and wheels
- Ball bearing blade guides
- Includes fence and mitre gauge

*Feature packed, and an incredible value*



**W1706** 14" Bandsaw

## 5 HP SPINDLE SHAPER

- Motor: 5 HP, 220V, single-phase, 25A, 3450 RPM
- Precision ground cast iron table measures 35½" x 28" x 2 5/16"
- Spindle travel: 3¼"
- Spindle sizes: ¾", 1", 1¼"
- Spindle capacity: 4¼", 4⅝", 5⅛"

New



**W1827** 5 HP Spindle Shaper

## 10" TABLE SAWS with Riving Knife

- 3 HP, 220V, single-phase motor
- Cast iron table size:
  27" x 40¼" (W1819) 53⅝" w/extension,
  (W1820) 74" w/extension)
- Max. rip capacity: (W1819) 29½",
  (W1820) 50"
- Camlock fence with HDPE face

*Free 10" Carbide-Tipped Blade*



**W1819** 10" Table Saw
**W1820** 10" Table Saw w/ Long Ext. Table

## POCKET HOLE MACHINE

New

- ½"-1½" material thickness range
- Go from making face frames, casework, drawers etc. without stopping between operations.
- Two or more workers can share the same machine and keep working.
- Approx. weight 56 lbs.



*U.S. Patent No. 7,140,813*

**W1833** Pocket Hole Machine

## OSCILLATING BENCHTOP SPINDLE SANDER

- ½ HP, 120V, single-phase, 3.5A
- Table size: 15" L x 11½" W
- 58 Oscillations per minute
- Stroke length: ⅝"
- 2000 RPM (½" spindle)

New



**W1831** Oscillating Benchtop Spindle Sander

# OUTSTANDING SHOP FOX® DUST COLLECTORS

## PORTABLE CYCLONE

- Motor: 1½ HP, 110V/220V, pre-wired 110V, single-phase
- CFM: 806
- Filter: 2.0 micron, pleated
- 20 gal. steel collection drum with casters
- Inlet: 6" (or 4" x 2" with included Y)
- Maximum static pressure: 10.4"
- Includes remote control

New

*Only 70½" Tall!*



**W1823** 1½ HP Portable Cyclone Dust Collector

## WALL DUST COLLECTOR

- Motor: 1 HP, 110V/220V, single-phase
- Air suction capacity: 537 CFM
- Bag capacity: 2 cubic feet
- Standard bag filtration: 2.5 micron
- Static pressure: 7.2"



New

**W1826** Wall Dust Collector

## 3-SPEED HANGING AIR FILTER

- Motor: ⅛ HP, 120V, 60Hz, 1A single-phase
- Air flow: 260, 362, and 409 CFM
- Outer filter: 5.0 micron
- Inner filter: 1.0 micron

New



INCLUDES TIMER AND REMOTE!

**W1830** Hanging Air Filter

**WOODSTOCK® INTERNATIONAL, INC. IS ALSO HOME TO PRO-STICK®, PLANER PAL®, JOINTER PAL®, AND MANY OTHER FINE BRANDS.**

**PLEASE VISIT OUR WEBSITE OR CALL TOLL FREE TO FIND AN AUTHORIZED DEALER NEAR YOU.**

Store455.com

**SHOPFOX.BIZ**
sales@shopfox.biz WHOLESALE ONLY

**1-800-840-8420**

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

15596R

Storemags.com

## Rip the rail to tweak the top

In my garage shop, I use sawhorses for my tablesaw outfeed supports. But I don't always put the saw in the same spot, and the uneven floor sometimes had me shimming the sawhorse feet to get them flush and level with the tablesaw top. So I added these adjusters to quickly make small leveling adjustments. A few quick twists of the shop-made wheels raises or lowers either end of the top rail and offsets the angle of the floor.

*—David McGuffin, Louisville, Ky.*



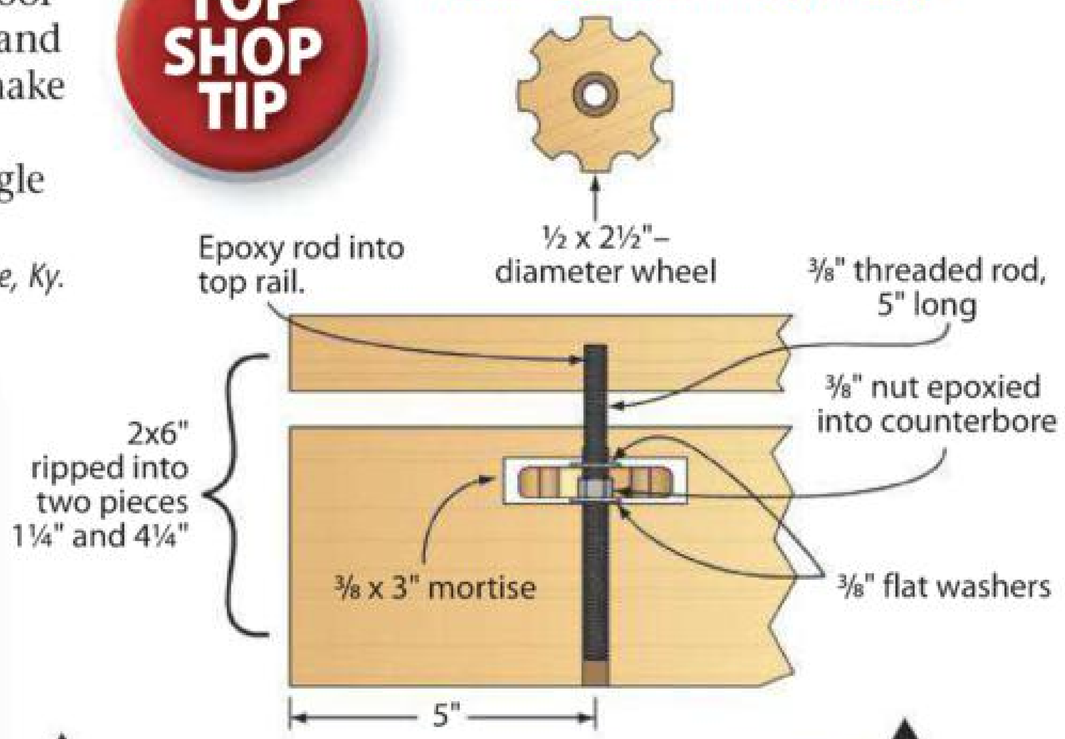
Photograph by: David McGuffin

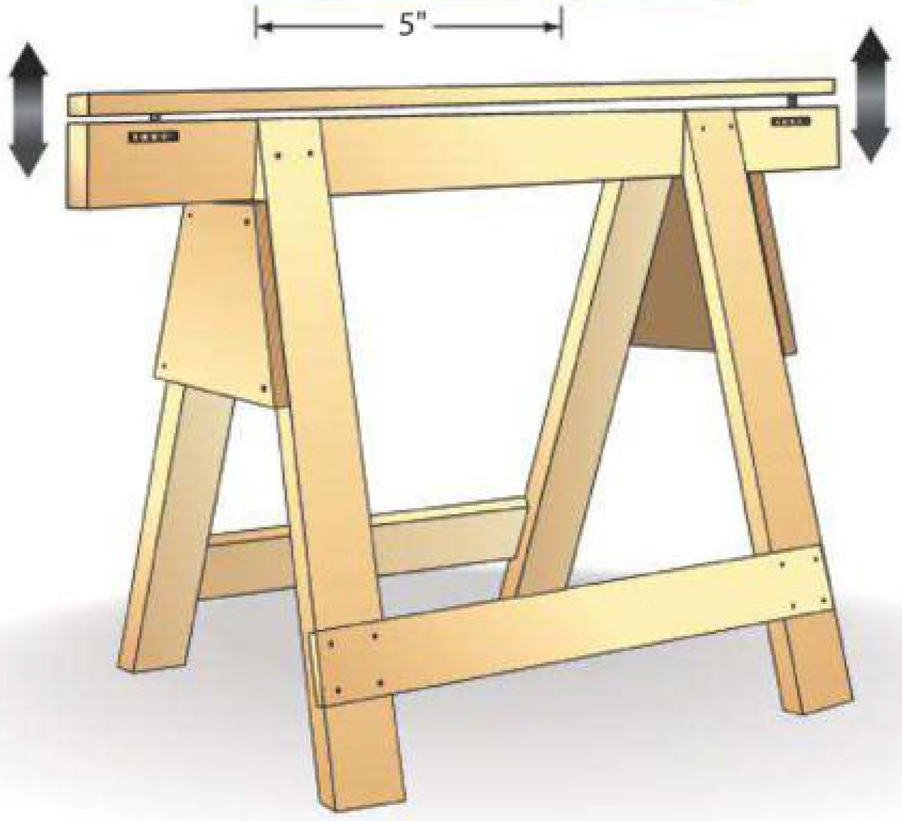



*For sending this issue's Top Shop Tip, Dave receives a Jet Benchtop Oscillating Spindle Sander worth $490.*

TOP SHOP TIP

*We chose our favorite Shop Tip—now choose yours! Vote online now at woodmagazine.com/shoptipoftheyear.*



## HAVE A WOOD-WORTHY TIP?

Tell us how you've solved a workshop stumper. If we print your tip, you'll receive up to $150. And, if the idea garners Top Shop Tip honors, we'll also reward you with a tool prize from Jet Tools worth at least $300!

Send your best ideas, along with photos or drawings and contact info, to **shoptips@woodmagazine.com** or **Shop Tips, WOOD magazine, 1716 Locust St., LS-221, Des Moines, IA 50309-3023.**

Because we try to publish original tips, please send yours only to WOOD® magazine. Sorry, submitted materials can't be returned.

JET DREAM MACHINE GIVEAWAY!



Win woodworking machines worth more than $5,000 from Jet Tools!

Go online today, and you could be enjoying all of the Jet machines shown at *left* by next spring! Visit **woodmagazine.com/jetdreammachines** to sign up. Enter every day, if you like, to increase your chances of winning!

NO PURCHASE NECESSARY TO ENTER OR WIN. Subject to Official Rules at www.woodmagazine.com/jetdreammachines. The Jet Dream Machine Giveaway begins at 12:01 a.m. CT on 06/27/13 and ends at 11:59 p.m. CT on 12/31/13. Open to legal residents of the 50 United States, and the District of Columbia, 21 years or older. Limit one (1) entry per person and per e-mail address per day. Void where prohibited. Sponsor: Meredith Corporation.

 *continued on page 8*

# Penn State Industries

**Top Quality, Great Prices and Expert Advice!**

1-800-377-7297 • www.pennstateind.com



*Patented*

*Bolt action handle smoothly advances and retracts the refill!*

# "Wow! You Made a Bolt Action Pen?"

Discover the joy of making this completely original and irresistibly fun Bolt Action pen, a gift that will be hard for any hunting or target-shooting enthusiast to put down.

## Completely Authentic

Every detail, from the one of a kind bolt-action mechanism to the precision-engineered components, was carefully designed to ensure uniqueness and reliability. The realistic bolt-action handle smoothly advances and retracts to securely lock the refill in place. Includes a bolt-action rifle clip and replica 30 caliber cartridge and rose gold tip for added authenticity. You can even reverse the bolt for left handed operation!

## Easy to Make

So easy to on a lathe, no one will believe you made something of this quality in 15 minutes. Requires mandrel, bushings (Item #PKCP3000BU $5.95) & 3/8" drill bit (Item #PKEXEC-3/8 $3.95)

## Our Customers Love Their Bolt Action Pens!

Rod R. of VA wrote, *"This pen kit is Awesome - I LOVE IT!"*
Daryell S. of TN wrote, *"I am extremely delighted with this pen. The look and feel is remarkable and the craftsmanship is perfect. This already has become my best selling ink pen."*

## More at Pennstateind.com

See our full selection of Bolt Action Pen kits including Magnum and Mini styles. Search "Bolt Action Pen Kits" on our website.

## Easy to start with a FREE DVD! A $20.95 Value!

Our FREE 45 minute instructional pen making DVD is packed with all of the info you need to start making pens. Order item #DVD



*Gun Metal shown with refill advanced*



*24kt Gold shown with refill retracted*



*Black Enamel with Gun Metal tip and clip*

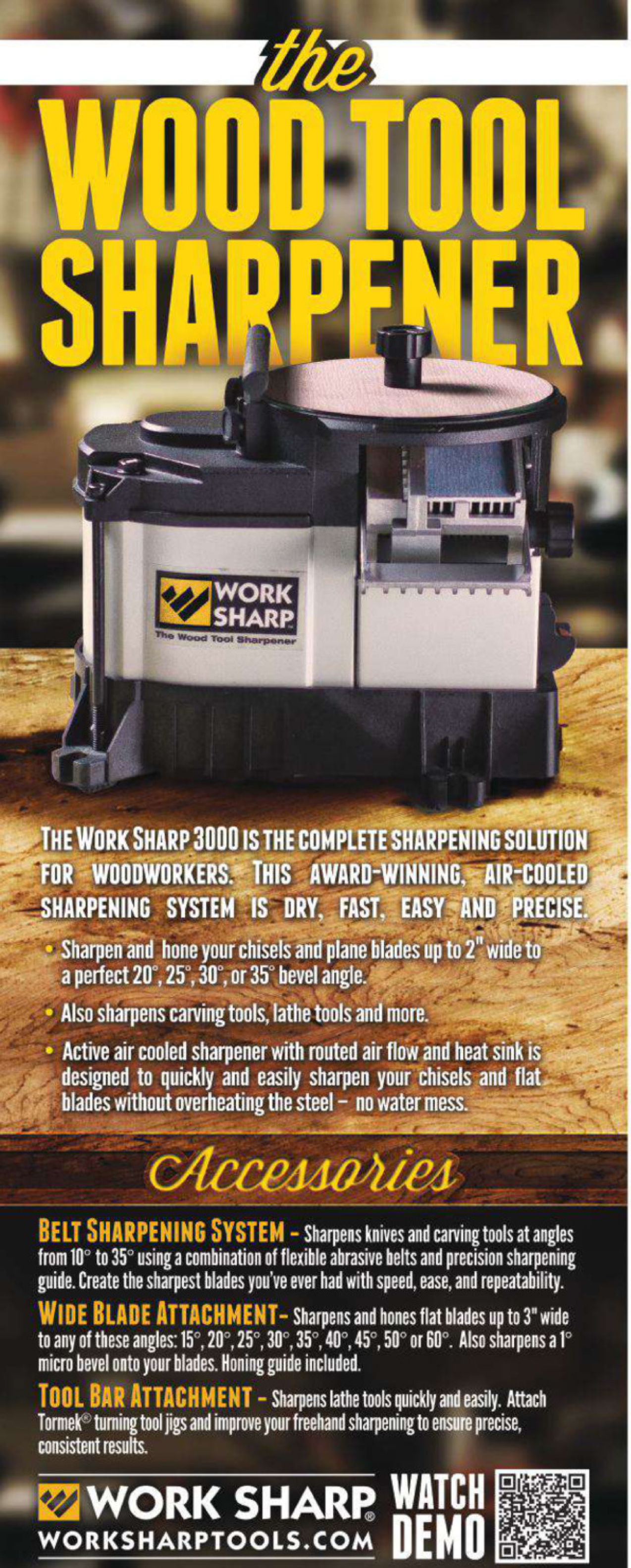


***NEW** Antique Brass shown with refill advanced*

| | | 1-4 | 5-24 | 25-49 | 50+ |
|---|---|---|---|---|---|
| Chrome | #PKCP8010 | $12.95 | $12.05 | $11.15 | $10.25 |
| Gun Metal | #PKCP8020 | $12.95 | $12.05 | $11.15 | $10.25 |
| 24kt Gold | #PKCP8000 | $14.95 | $13.95 | $12.95 | $11.95 |
| Black Enamel | #PKCP8030 | $13.95 | $13.05 | $12.15 | $11.25 |
| Antique Brass *NEW* | #PKCP8040 | $14.95 | $13.95 | $12.95 | $11.95 |

**3 Bolt Action Pen Kit Starter Package**

You get one of each pen in 24kt Gold, Gun Metal and Chrome plus the 3/8" drill bit and 2pc Bushing Set
#PKCPBAPAK **SAVE** $8 **Only $42.75** **SAVE 16%**



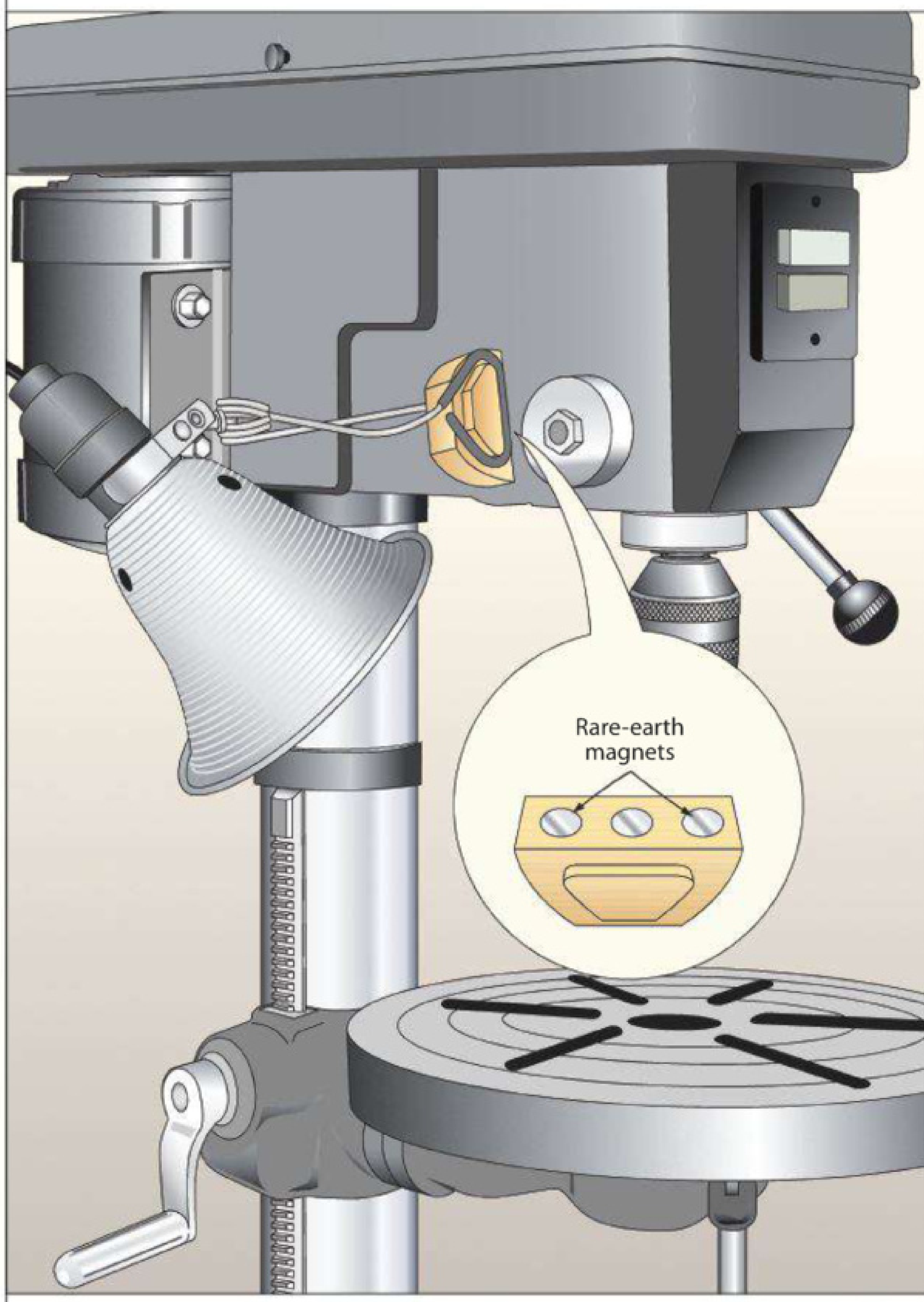


# Shop Tips

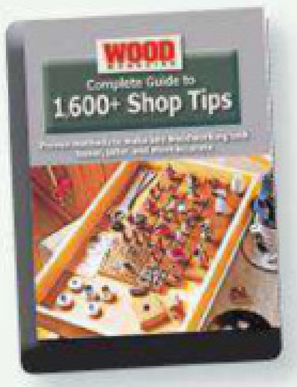
## Clamp-on light grabs magnetic mount

A clamp-on reflector lamp works great for task lighting, but some machines simply lack a good place to clamp it. To provide a place of purchase, make these simple holders. Make the base from ¾" stock and epoxy rare-earth magnets into ½" counterbores in one edge. Then, cut a profile matching the inside shape of the lamp's clamp in ¼" stock, and glue it to one face of the base.

*—Jeff Carlson, Mancos, Colo.*

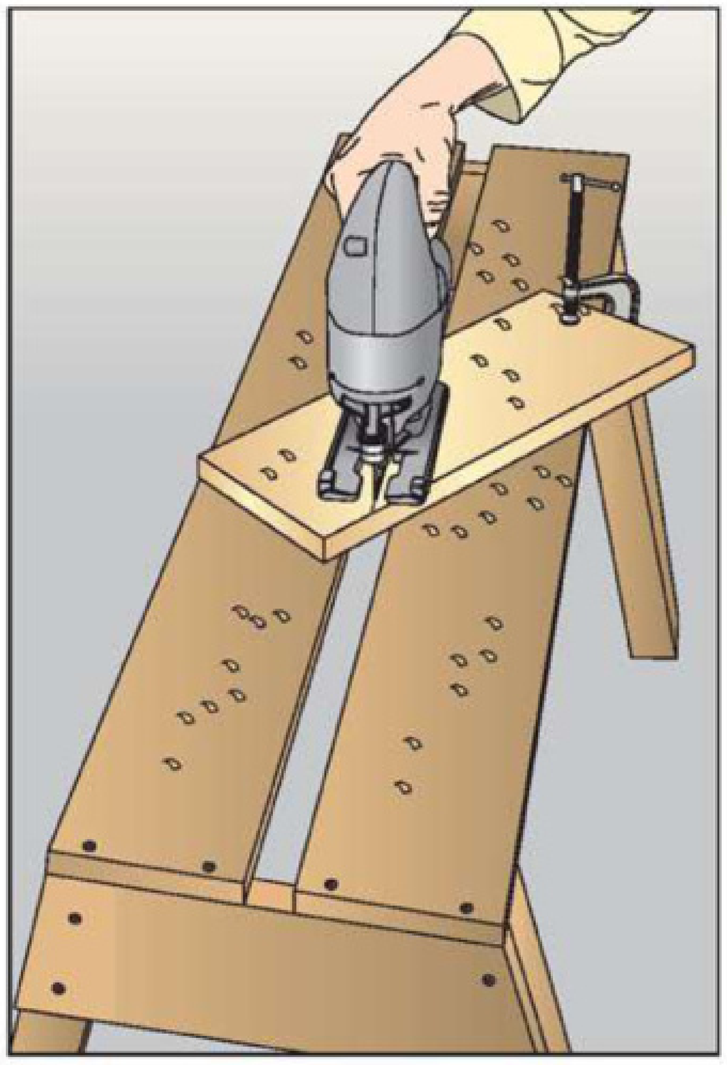







**More Terrific Shop Tips**

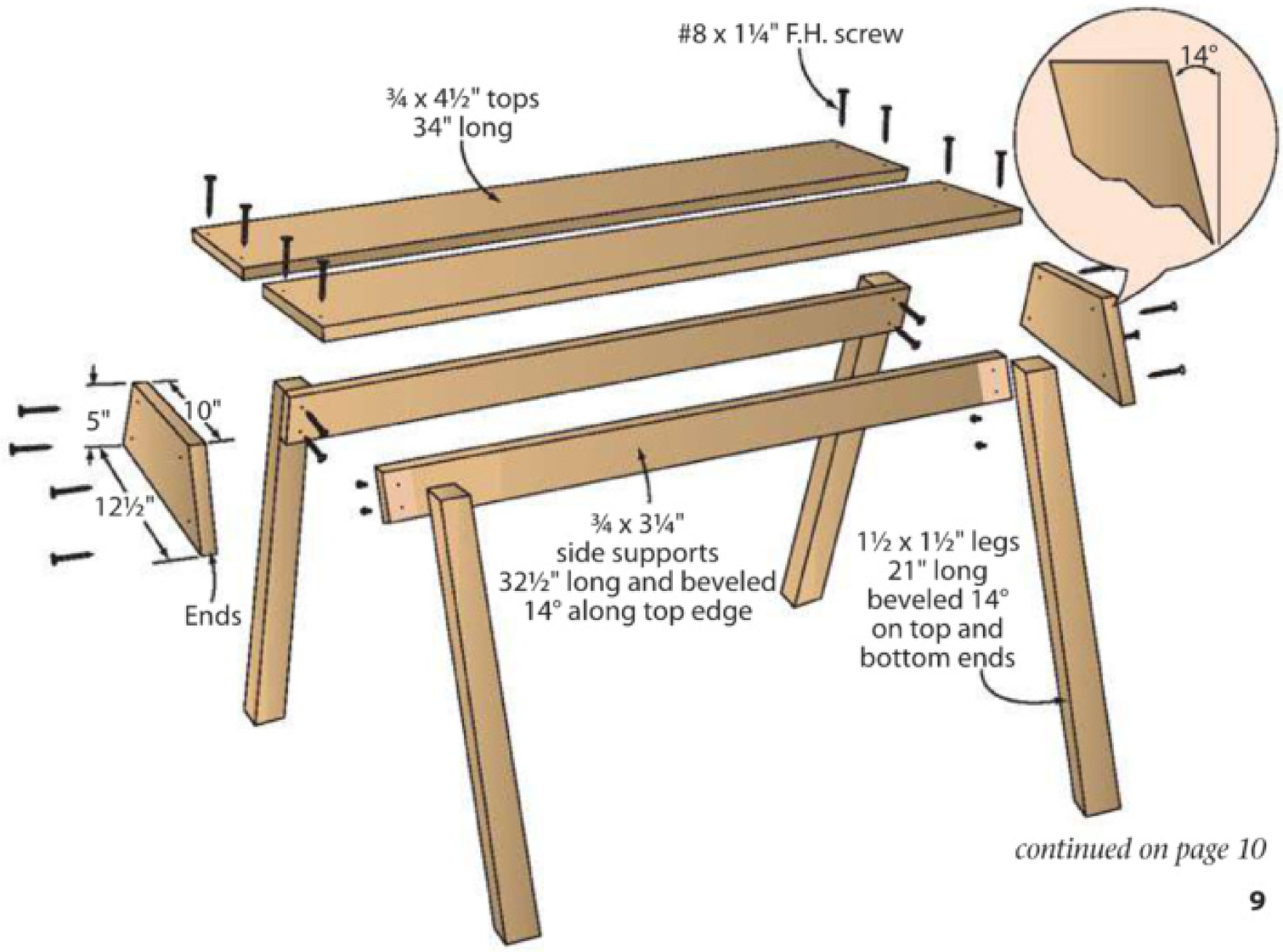
To order call **888-636-4478**
or go to
**woodmagazine.com/CompleteGuide**



## Superwide, split-top sawhorse steps up features

This sawhorse incorporates a simple modification that makes it much more useful. When constructed to the dimensions shown, the extra-wide (10") top makes each horse useful on its own as a workbench. And the gap between the boards leaves me a place to make well-supported cuts. On top of that, they stack for easy storage.

*—Roy Rittenour, Coleman, Mich.*




*continued on page 10*









**FREE** Ductwork Plan
Plus Save $100 when you purchase any S-series Tempest™ cyclone!
Use Code WOOD27
Call 1-800-377-7297 to redeem
*Offer expires 2/1/14. Offer not valid online. Prices subject to change without notice.*

# Nanofiber eats the competition's dust!

**(FREE with any Tempest Cyclone!)**

**The best value in dust collection is now the cleanest.**
Our Tempest Cyclone Dust Collectors now include Nanofiber filters as a **FREE** upgrade (a $54 value). Industry leading, Merv 15 rated Nanofiber filters combined with our cyclonic separation process captures 99.98% of wood chips and dust particles to below 1/2 micron. You achieve near surgical quality air and cleaner tools, while practically eliminating dust clean up forever! In addition, Tempest Cyclones never clog, require almost no maintenance and come with a 5 year warranty.

- 2.5 HP - 1450CFM - **$1095**
- 3.5 HP - 1700CFM - **$1295**
- 5.0 HP - 1800CFM - **$1495**
- 2.0 HP - Portable 1025CFM - **$995**

**Ask about our solutions for smaller shops starting at ONLY $295.**

**SAVE on any system you buy!** PSI offers a variety of discounts and offers on dust collectors too numerous to list here. We're your complete resource for everything you need to get the job done right! To get the best deal on the system sized perfectly for your shop and number of tools, **call Bill at (215) 676-7606 x16**.

## Penn State Industries

**Top Quality, Great Prices and Expert Advice!**

1-800-377-7297 • www.pennstateind.com

800-472-6950
LaVergne, TN
WOODLINE

What can we help you make today?

It's easy!
We can show
you how.

CMT ORANGE TOOLS™
WOODLINE
Quality Carbide Router Bits,
Shaper Cutters & More

Great Carbide Bits
Great Prices
800-472-6950
Request or view
a catalog online or
visit us at
www.woodline.com

The Wood Working Shows
Visit us at a
woodworking
show near you.

# Shop Tips

## Drawer hardware makes a slick slide for bits to ride

To organize your Forstner bits and drilling accessories and make them quick to access, try mounting full-extension drawer slides to the cabinet side for a series of sliding shelves. Each shelf is about 3" wide and holds from six to eight bits in polymer bit holders (¼" socket bit holders, #16J03.61, $3.00 per six, 800-267-8767, leevalley.com).

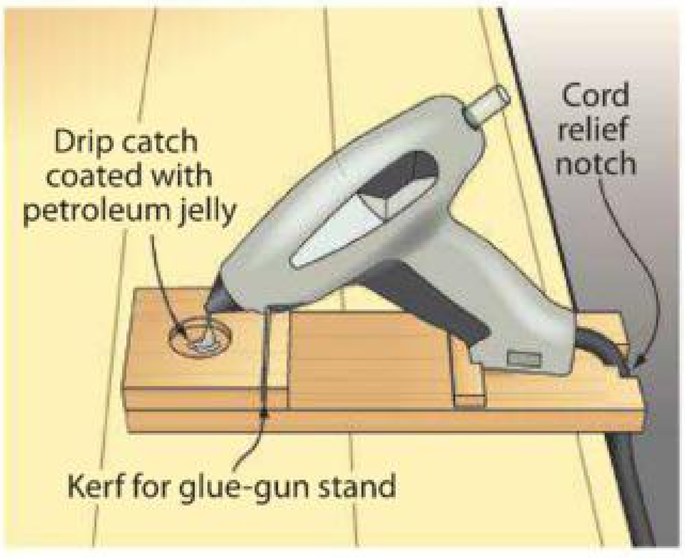
*—Brian Simmons, Des Moines, Iowa*




## Simple stand puts a stop to glue-gun messes

A hot-glue gun comes in handy when a quick-drying, temporary bond is needed, such as when template routing. But it tends to be messy and unsteady when set down. This scrapwood stand holds the gun firmly between uses and catches any glue drippings. Coat the drip catch with a thin layer of petroleum jelly, and dried glue pops out easily.

*—Rafael Rubio, Albuquerque, N.M.*



## Get a grip with super-simple shop-made knobs

When building jigs, I save a little money and get exactly the size I want by making my own knobs.

On a piece of scrap, lay out a circle as large as you'd like the knob to be. Draw three equally spaced, intersecting lines across the circle's diameter. Then, drill a ½" hole where each line meets the circle, as well as a counterbore and through hole in the circle's center (where the lines intersect) for a bolt. Cut along the circle between the holes.

Complete your knob by drawing another circle half the diameter of the first for the knob's base. Drill a counterbore for a nut and a through hole for the bolt in the base's center before cutting it out. Glue the base to the knob's top, drop the bolt in, and lock it in place with the nut. Apply a little epoxy over the bolt head and the nut to keep it from spinning.

*—Wayne Holder, Weeki Wachee, Fla.*




*continued on page 12*



Weekend With WOOD™
May 16-18 • 2014
at the *WOOD*® magazine shops in Des Moines, Iowa
Learn more and register today at
woodmagazine.com/weekendwithwood
or call 888-636-4478

EagleAmerica.com
The best router bits and over 6,000 tables, templates, joinery systems and jigs.
(800) 872-2511
Eagle features the #1 quality router bit. Made in the USA!
EAGLE AMERICA

# Weekend With WOOD™

## 3 "life-changing" days of woodworking

**May 16-18 • 2014**

*(see the ad on page 62 for more details!)*



## Great glue-ups, simple clean-ups




Gluing is about to get easier. Our new kit comes with a flat applicator tip (ideal for biscuits and dominoes), a silicone brush, a ribbed roller and a center-line glue guide – all of which fit on the 8-ounce bottle to deliver glue right where you need it. And cleanup is a breeze – dried glue peels right off the silicone parts. So go ahead, Create with Confidence.

Place your order at **Rockler.com** by entering promotion code 528 at checkout or call 1-800-279-4441. Offer expires December 31, 2013

Free shipping offer cannot be applied to previous orders or combined with other promotions including Professional Catalog orders. Not valid at Rockler Retail Stores or Independent Resellers. Special shipping charges may still apply for Express, International, Alaska, Hawaii, and heavy/oversize items.

ROCKLER® WOODWORKING AND HARDWARE
Create with Confidence™

**For a store near you or free catalog:**
**Rockler.com | 1-877-ROCKLER**


# Shop Tips

## A pop-open place for plans

Project plans, cut lists, and notes have a way of cluttering up a workbench, but I still like to keep them close by and on a flat surface. So I built a slide-out plan tray that sandwiches between my tool chests. By mounting the tray with push-to-open drawer slides, a quick bump from a hand or elbow (when hands are full, or gloved and covered with finish) pops the plans into view.

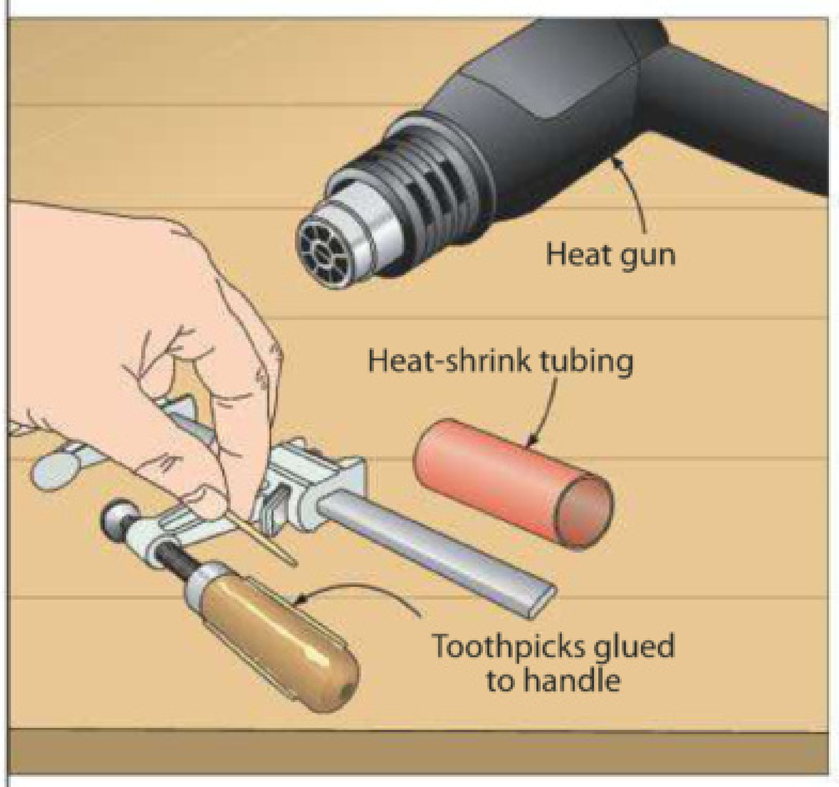
*—Kelly Churchill, Medford, Ore.*




## Toothpicks give a better bite on clamp handles

Here's a way to get a better grip on a smooth wood clamp handle: Glue toothpicks around the diameter of the handle, slip a short length of heat-shrink tubing (available at most home centers) over them, and apply heat with a heat gun. This creates a knurled surface that gives a positive grip.

*—Joel Nowland, West Point, Utah*




*continued on page 14*

EPILOG LASER

# LASER IT!

## ENGRAVE IT. INLAY IT. SELL IT.

- Increase the value of all your woodworking projects with custom laser work.
- Engrave stunning photos, text and graphics with a touch of a button.
- Create custom projects with ease – jewelry boxes, humidors, cabinets and much more!



Custom Birdhouse



Cabinet Inlays



Customize Products




MADEiNUSA

Systems starting at $7,995

To request a brochure, DVD, and samples, contact us at:
epiloglaser.com/bhg • sales@epiloglaser.com • 888-437-4564






Let your passion for wood lead you into a new business with a Furniture Medic® franchise.

- Extensive training
- Low initial investment
- Financing available

**800-230-2360**

furnituremedicfranchise.com

© 2011 Furniture Medic Limited Partnership.
All rights reserved.



*The world's largest furniture and wood restoration franchise*

Rx FURNITURE MEDIC®



# Forrest Sharpening

## Helps Prevent Bad Cuts Like These



Abrasion, pitch buildup, micro chipping and poor sharpening jeopardize the life and performance of even the finest carbide-tipped blades and dado sets. Our *expert factory sharpening* will help protect your investment. We handle *all types and makes of blades*. Typical turnaround is just 4 to 5 days.

We've been the leader for over 60 years, so contact us today.

FORREST

**The First Choice of Serious Woodworkers Since 1946**

www.ForrestBlades.com

**1-800-733-7111**

(In NJ, call 973-473-5236)

© 2013 Forrest Manufacturing Code WM



# THE NEW STANDARD

5-STAR RATING WOOD MAGAZINE 2012

## 19-38 Drum Sander

AMERICAN WOODWORKER EDITORS PICK



* Shown with optional accessories and supplies

- INTELLISAND™ Technology auto-regulates conveyor, preventing burning or damaging stock
- Extra wide conveyor to properly support stock over 19" wide
- Heavy-duty cast iron construction for strength, rigidity and reduced vibration
- Easiest access to abrasive fasteners of any drum sander on the market

SUPERMAX TOOLS

IMPROVING YOUR GREATEST ASSET—TIME

**SuperMaxTools.com | 888.454.3401**





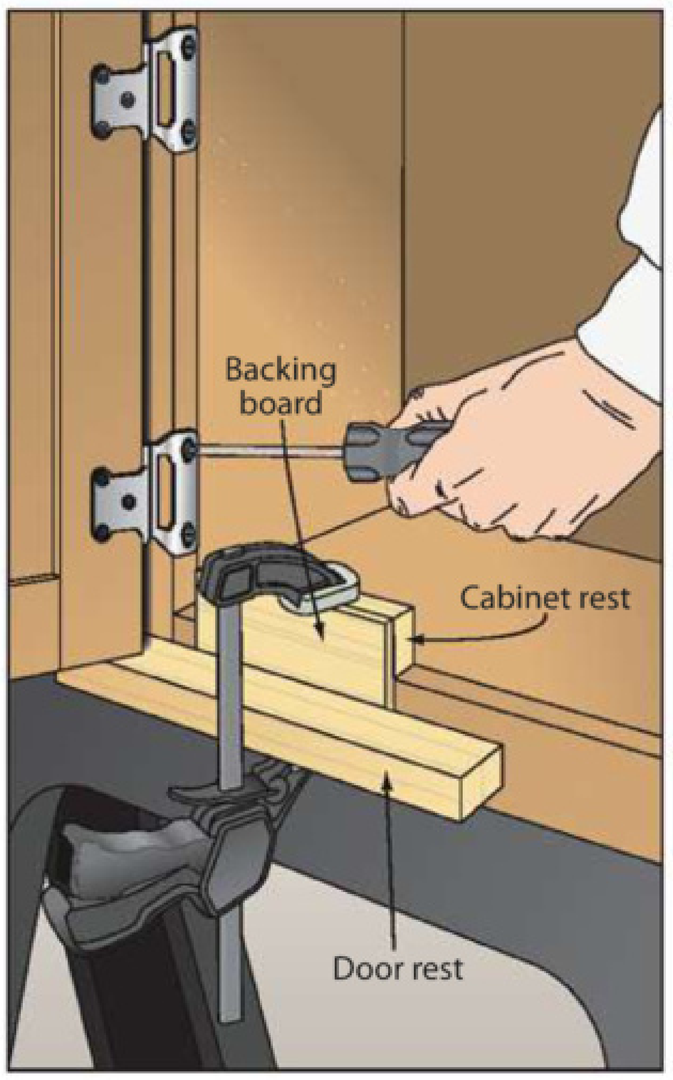


# Shop Tips

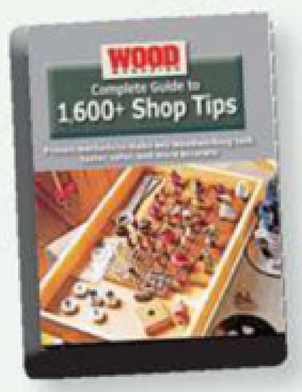
## Door-hanging jig frees your mind and hand

Mounting overlay doors on a cabinet seems to take three hands. This simple jig supports the door while you install it. Build the jig as shown from scrapwood, with the door rest offset from the cabinet rest by the amount of the door's overlay. Mount the door rest to the jig's center to form a T-shape and you can use the same jig for both left- and right-hinged doors. Clamp it in place, mount the hinges to the cabinet door, and rest the door on the jig. Drill pilot holes for the hinges in the cabinet and drive the screws.

*—Dan Buss, Viroqua, Wis.*




**More Terrific Shop Tips**




To order call **888-636-4478**
or go to
**woodmagazine.com/CompleteGuide**

# See our top selling router tables, bits & jigs at MLCSwoodworking.com



## "Cabinet Making Set"

Six 1/2" shank carbide tipped router bits make classic kitchen and fine furniture cabinet raised panels and drawers.

Undercutter #8389...$119.95
Standard #8387....$114.95



## "Don't Stand Stock On Edge"

Rout wide stock FLAT on the table with tall bits in horizontal position! The Horizontal Benchtop Router Table is perfect for raised panels and mortise and tenon. The miter T-track accepts accessory tops.

#9767.....$179.95



## "Tilting Top"

Accessory top tilts up to 45°. Create offset angles that cannot be cut on regular table.

#9764.....$59.95



## "Mortising Top"

Accessory top. A safer and easier way to cut mortise and tenon joints.

#9766.....$79.95



## "Route 66"

66 piece carbide tipped router bit set includes straight, round over, chamfer, cove... 30 total profiles! Wood storage box can be wall mounted.

1/2" shank • #8383.....$189.95
1/4" shank • #6083.....$189.95





## "When Any Old Joint Won't Do..."

The Fast Joint System with matching templates makes creative, custom joinery simple. Includes the jig, joint templates, clamps, bushings and router bits. See the 20 Template Set online.

4 Template Set #9411.....$169.95 • 11 Template Set #9422....$269.95



## "Sliding Table Top"

Free Shipping! The Precison Router Table's large, smooth sliding, extruded aluminum top makes difficult routing easy and exact. Variable opening inserts in "rock solid" fixed cast-iron. Split fence & dust hood.

#9463 .....$469.95

StoreMags.com

**Unvarnished**

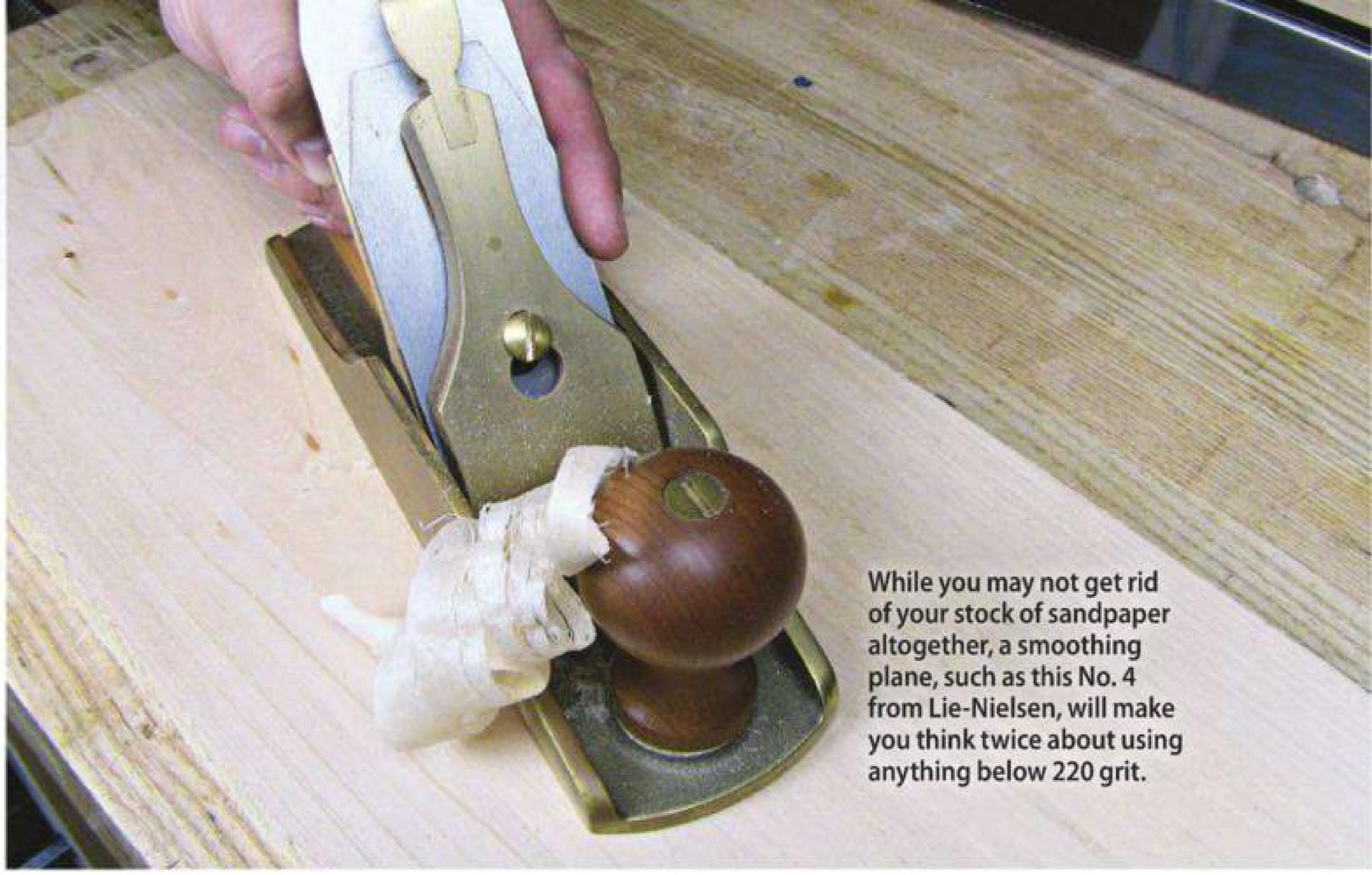
Straight talk from the WOOD-wide web

# The first three hand tools for a power-tool woodworker

**Ne•an•der•thal** \nē'an-dər-thôl — *n* **1:** *(Homo neanderthalensis)* a rapidly growing species of knuckle-dragging hominids found in quiet woodworking shops where power tools have been spurned in favor of manual alternatives.

Unless you have been living in a cave, you've noticed all the chatter about hand-tool woodworking these days. Five years ago, I turned off my powered machines and committed completely to the Neanderthal route. (I have four power outlets in my shop, and three of them are for my stereo—which I can now hear.)

But I found that shopping for hand tools involves the same slippery slope as power tools: If you're not careful, you'll end up with a shop full of shiny iron and no money left to purchase wood. If you have a power-tool-centric shop and find yourself hand-tool curious, here are three hand tools that will get your foot in the cave door while perfectly supplementing the power-tool shop.



While you may not get rid of your stock of sandpaper altogether, a smoothing plane, such as this No. 4 from Lie-Nielsen, will make you think twice about using anything below 220 grit.

## Smooth moves with a smoothing plane

You don't need a bevy of bench planes until you want to try your hand at milling rough stock by hand. For now, pick up a decent smoothing plane, *above*. Smoothers can be adjusted to take both light and medium cuts to break a sharp edge, fine-tune an end or angle using a shooting board, or smooth a surface. Two areas where you'll see instant benefits from a smoother: You'll cut your sanding time in half or more. And, with a reliable vise, you'll drop the risk-to-life-and-limb approach to tweaking small parts on the tablesaw and router table.

## The all-in-one joinery tool: A carcass saw

Next, pick up a backsaw—more specifically a carcass saw, *below left*. This 12–14" crosscut handsaw cuts boards to length precisely. And with surprisingly little practice, you'll be cutting any kind of joint you can dream up—from dadoes and half-laps to tenons and dovetails—all without fussing with a shopful of specialized power-tool jigs. With a carcass saw, if you can see the line, you can saw the line.

## Chisels are a shop's best friend

Not a single woodworking project leaves my bench that hasn't had multiple touches with a chisel. Of course, I'm cheating a bit, because finding a single chisel to do many jobs is tough. But a small set consisting of ¼", ⅜", ½", and 1½" widths lets you cut many joints or refine a fit after your power tools rough it out. The narrow ones square off routed mortises or clean up tenon shoulders. The wider ones work like planes to smooth tenon cheeks or bust out the meat of a dado *below center*. And they require no jigs, setup, or instruction manual; only a little quiet practice.



How long does it take to set up your mitersaw to cut a compound angle? With a carcass saw, you can skip the fussing. Simply lay out your line, then saw to it.



Practice making a dado or rabbet using nothing but a chisel, and you'll learn volumes about just how powerful and efficient this small, all-purpose tool can be.



Among a plethora of other things, Shannon Rogers teaches at his own online woodworking school — handtoolschool.net. Sign up for the school's email list to receive a video series that walks you through making your first three shop projects using your first three hand tools.

WOODCRAFT®

QUALITY WOODWORKING TOOLS • SUPPLIES • ADVICE®

# Take The Hassle Out Of Dust Collection with Oneida's Super Dust Deputy

Oneida's Super Dust Deputy can turn your inefficient single-stage bag collector into a high efficiency two-stage cyclone system that separates 99% of wood waste, reducing filter maintenance and eliminating dusty bags to empty. The Heavy-Duty Welded Steel Cyclone is a great addition to an existing dust-collection system, while the new Lightweight Molded Resin Cyclone is more mobile. Drum kits are optional, or get creative and use your own!

- Retrofits 1 HP – 3 HP Single-Stage Dust Collectors
- 5" OD Inlet And 6" OD Outlet
- Compact Footprint With Easy Installation

154755 Super Dust Deputy Metal Cyclone (Mounted On Optional Drum)




Super Dust Deputy Molded Cyclone 158396

17-Gal Drum For Super Dust Deputy 154756

**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**

13WI11P

Develop Your
**Shop Skills**

# Tame Tricky Clamp-ups

**Big assemblies, tiny projects, curves, and angles all make tough work for getting your clamps in place. These quick tips help you overcome many difficult clamping situations.**

***Note:*** *Before tackling a difficult clamp-up, walk through it first without glue (known as a "dry fit"). This exercise tells you whether you have enough clamps of the right type and size, which parts need more work to fit, and if you need any additional help or accessories. Plus, the dry fit familiarizes you with the assembly process before you find yourself racing against the glue's setup time.*

## Beat the bulk

Large assemblies, such as casework and cabinetry, require loads of clamps, and big ones at that. To apply pressure to areas beyond the reach of the clamp's jaws, extend their reach with cauls *(below left)*, or use a heavy object instead *(below)*. If you don't have enough clamps to complete a glue-up, try making just a few clamps do the same job *(right)*.

### GIVE LONG-DISTANCE CLAMPING A CAUL



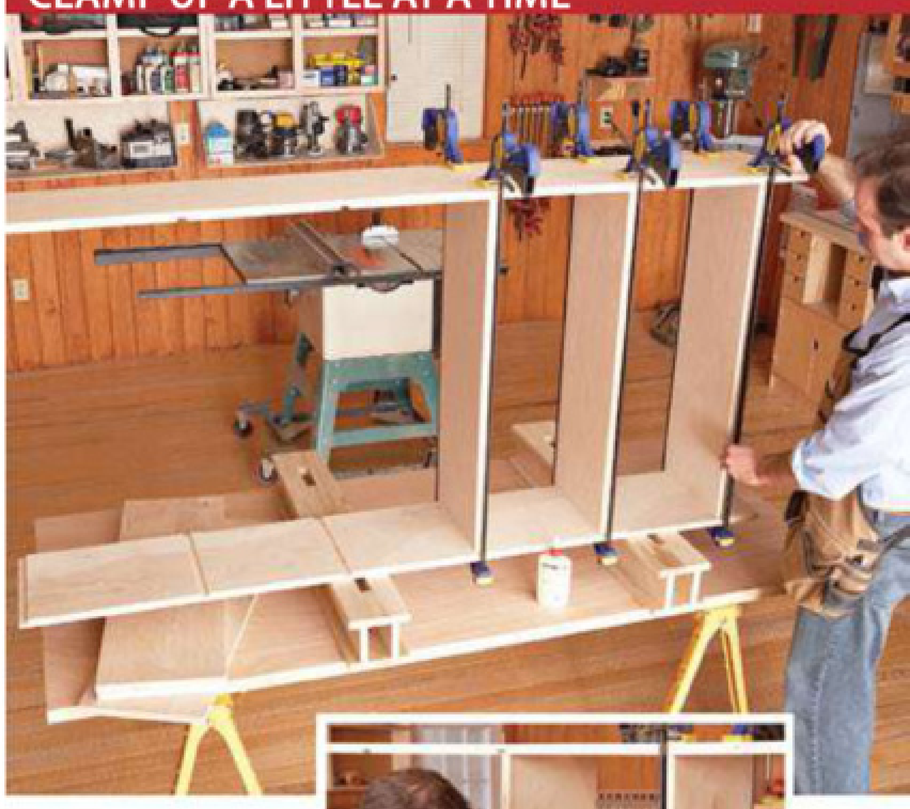

On wide panels, use clamping cauls—shaped slightly thicker in the middle than at the edges—to help distribute pressure evenly across the panel.

### ANOTHER TRICK FOR YOUR TOOLBOX



If you don't have a long enough caul, utilize something heavy, such as a toolbox, to apply pressure in the middle of a field.

### CLAMP UP A LITTLE AT A TIME





To get more from a limited number of clamps, we glued in half of this bookcase's shelves, and after they dried, reused the clamps to install the remaining shelves.

*continued on page 20*

# What's The Secret To Flawless Edge Profiles With NO REWORK?

## Freud's Quadra-Cut™ 4 Cutter Design Router Bits



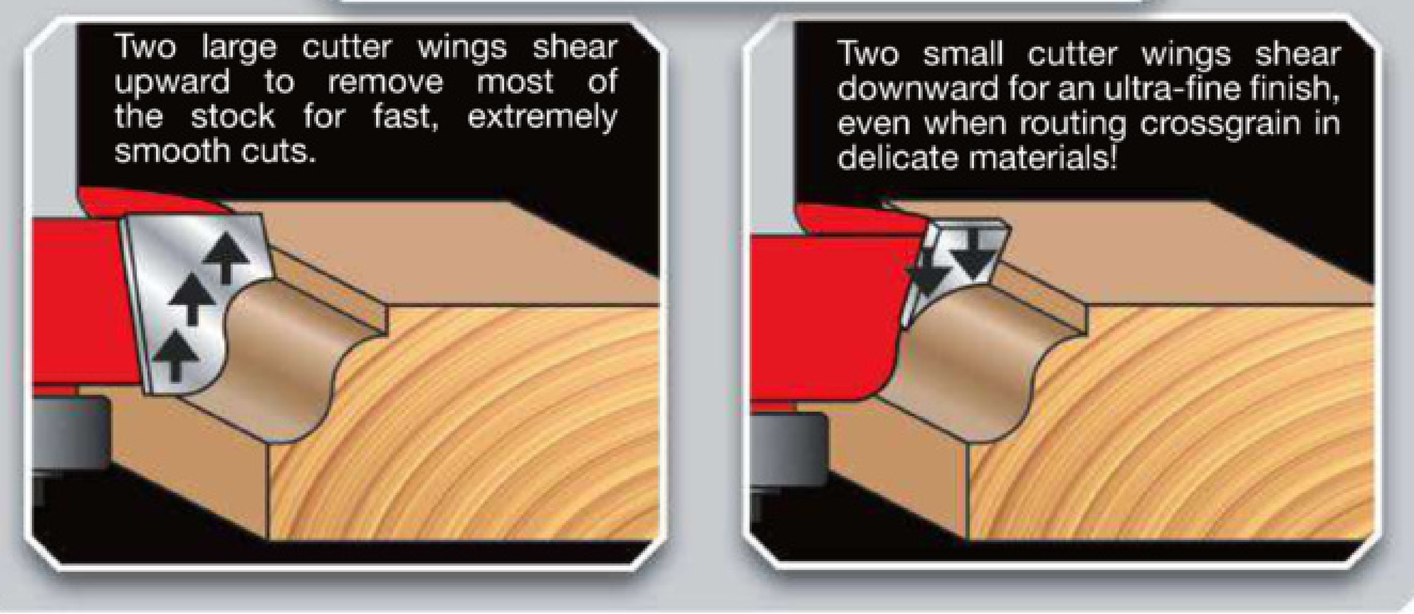

Watch Demo Now!

SCAN WITH MOBILE DEVICE

U.S. Patent No. 8,899,252

***For A Smooth Sanded Finish...***
***...Without The Rework!***

## How It Works!




Quadra-Cut™ 4 Cutter Design

**Ideal for Any Project that Requires a Flawless Finish!**

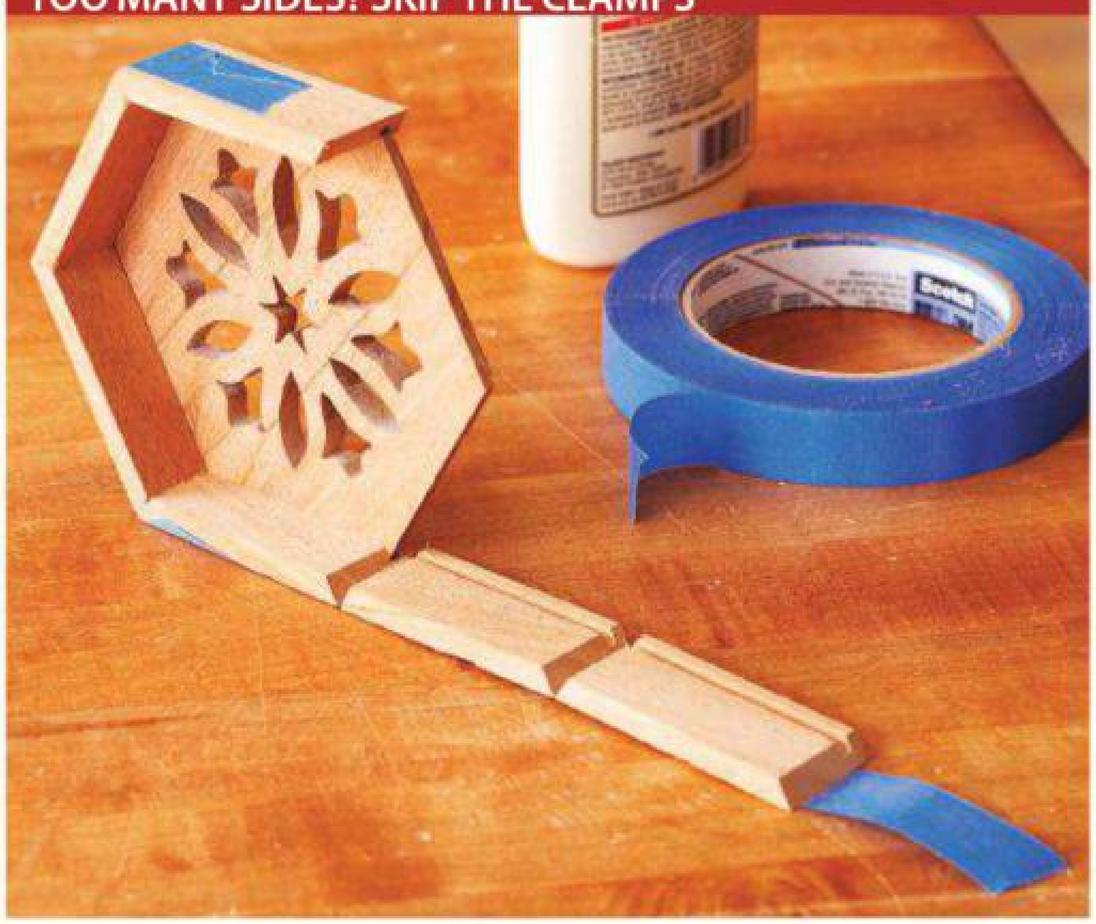
freud®
**Precisely the best.**

**For more information visit: www.freudtools.com/Quadra-Cut** Red router bits are a registered trademark of Freud America, Inc. (US) 1-800-472-7307

## Tackle it with tape

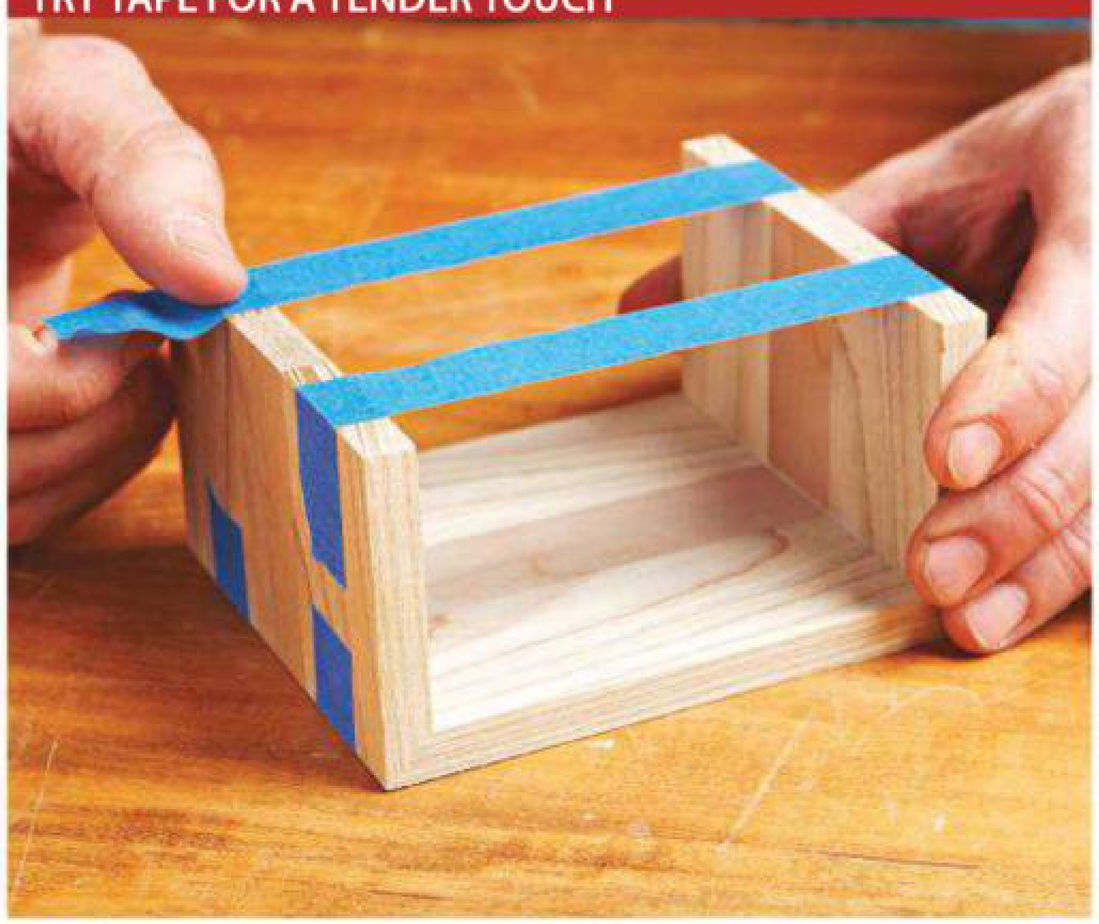
Flexible, disposable, and adjustable, painter's tape—available at most home centers—excels at holding small parts securely. Use it when an assembly lacks adequate clamping area, has an unusual shape that makes it difficult to get clamps in place without creating a crisscrossed mess *(below left)*, or is too delicate for clamps *(below)*.

**TOO MANY SIDES? SKIP THE CLAMPS**



Align mitered box sides tip-to-tip on a long strip of painter's tape; then, roll up the assembly for tightly clamped joints.

**TRY TAPE FOR A TENDER TOUCH**

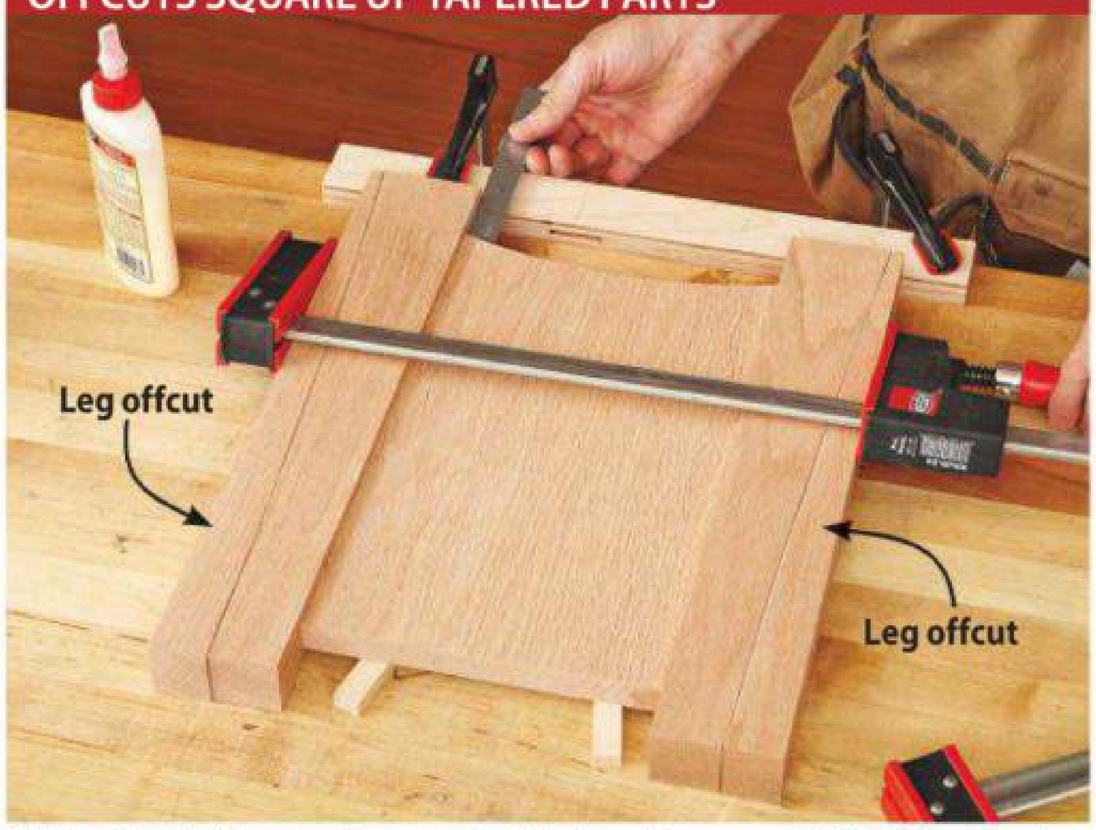


On delicate clamp-ups where the weight of the clamp could collapse the assembly, painter's tape offers a light but firm grip.

## Overcome odd clamp-ups

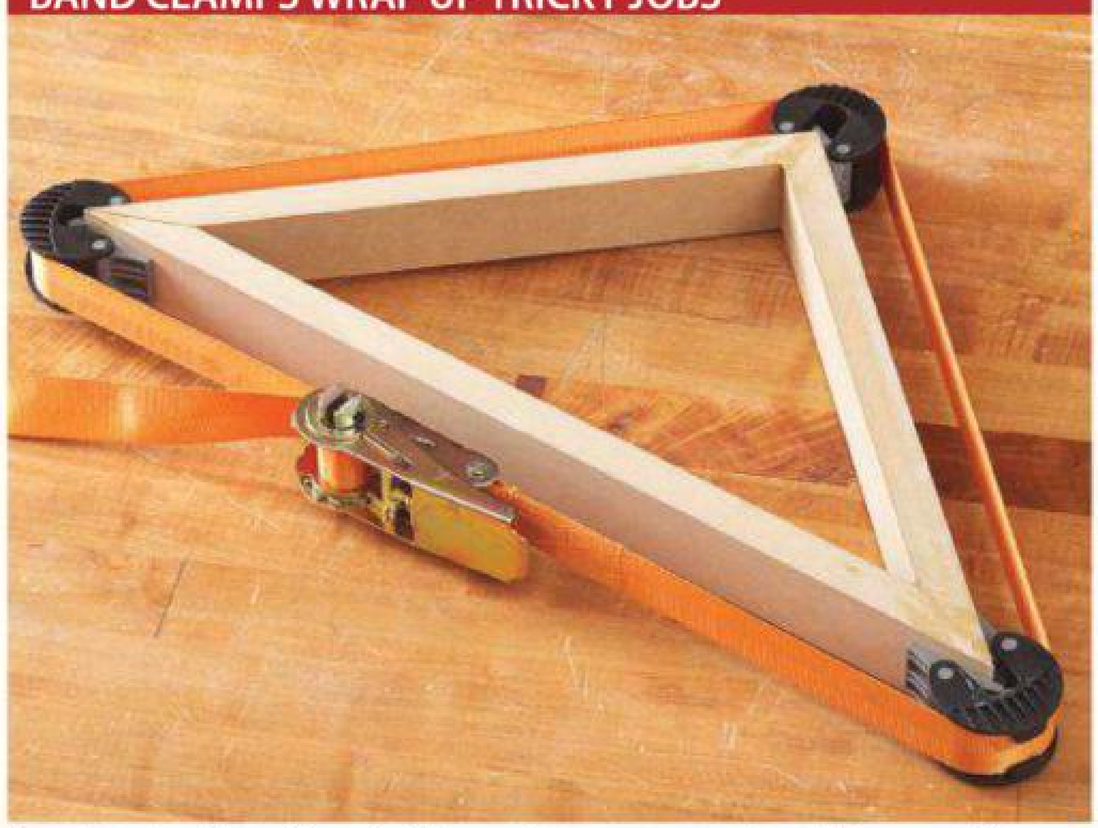
When you can't clamp directly across a joint, such as in the assembly shown at the top of *page 18*, insert spacers between the legs to equalize the clamping pressure along the assembly's length. When cutting tapered parts, save the offcuts *(below left)* to use as cauls. If you find yourself regularly building un-square projects, purchase a band clamp *(below)*—it greatly reduces the hassle of those clamp-ups.

**OFFCUTS SQUARE UP TAPERED PARTS**




Fit the offcuts of tapered legs against the legs they were cut from to re-create parallel clamping surfaces. In some cases, you may be able to first assemble the parts when square, and then taper them afterward.

**BAND CLAMPS WRAP UP TRICKY JOBS**



For clamping jobs with out-of-the-ordinary corners, a band clamp applies even pressure to all joints. Many come with corner blocks to prevent crushed corners and keep glue squeeze-out off the strap.

## More Resources

- Watch clamping and sanding tricks for perfectly flat panels at **woodmagazine.com/clampflat**.
- Find nine more clamping tips at **woodmagazine.com/clamptips**.
- Check out our favorite clamps and clamping accessories at **woodmagazine.com/clampreviews**.

storemags.com

# Last time a band played this well, Ringo was at the drums!







Our bandsaws will bring music to your ears.
Give us a call today and find out how we
can bring harmony to your shop.

**800.234.1976**

**LAGUNA**

LAGUNATOOLS.COM

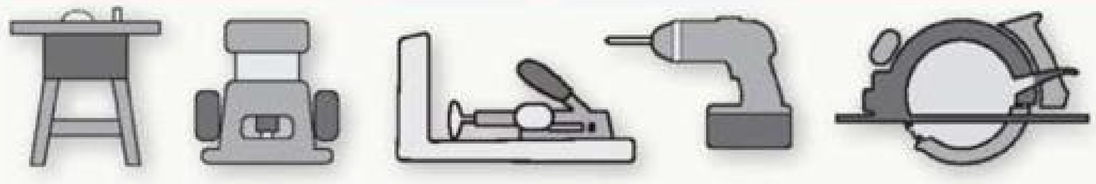
storemags.com

# Easy-to-Build Country Sideboard

BASIC-BUILT™
GREAT PROJECTS MADE SIMPLE.

Approximate materials cost: $220
Dimensions: 38¼"H × 58½"W × 14¼"D

## TOOLS NEEDED



Made without a hint of plywood, this cabinet looks as though it could have been crafted 100 years ago by a highly trained artisan. But today, thanks to a few basic modern tools and fasteners, you need only beginner's skills to build it.

Solid wood expands as it takes on moisture in humid summer months and contracts in the drier winter air. To accommodate those fluctuations and prevent splits in the wood, the boards in this project share the same grain orientation, so they shrink and swell in unison, not in opposition to each other. For example, the grain in the center-shelf assembly runs in the same direction as the cabinets flanking it. Where the grain orientation *opposes* adjoining pieces, such as the back slats, overlapping rabbeted edges (known as shiplaps) are screwed on just one edge, allowing movement while maintaining a gap-free appearance.

## First, build the case

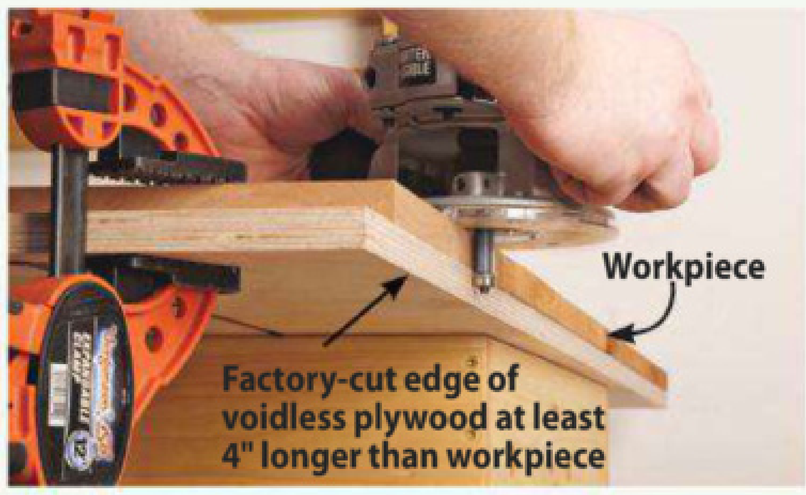
**1** From ¾" knotty alder (or pine) glue up panels for the sides (A), top and bottom shelves (B), middle shelves (C), and divider (D). (See the **Shop Tip**, *above right*, and sidebar "**The secret to gluing up flat panels**," *below right*.) After the glue dries, cut these parts to width and 1" longer than listed in the **Materials List** on *page 28*.

**2** Cut four strips of ¾×2½×16" plywood and use them to make a dado/cutoff jig [**Photo A**]. Use the jig to trim the sides (A), shelves (B, C), and divider (D) to finished length [**Photo B**].

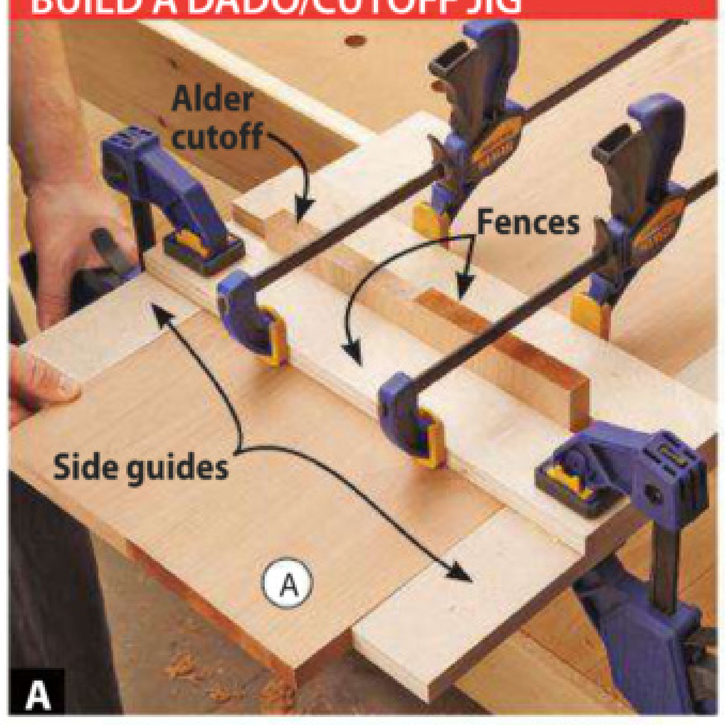
## SHOP TIP

### Get dead-on straight edges with a router

Good glue joints require dead-straight surfaces, so if you can't rip board edges straight enough, try this trick. Using a piece of quality plywood, clamp its factory-straight edge to within about 1/16" of the workpiece's sawn edge, as shown. Outfit your router with a flush-trim bit with a cutting edge at least 1" long. With the bearing riding against the plywood, rout the board flush for a glue-ready edge.




### BUILD A DADO/CUTOFF JIG




Clamp the jig's four strips square to a side (A) with a scrap or two of alder sandwiched between the fences, then glue together the strips.

### TRIM THE SIDES & SHELVES




Clamp the dado/cutoff jig to parts A, B, and C to cut them squarely to length using a portable circular saw and a 40-tooth finishing-cut blade.

### *Knotty but nice: Why I chose alder*

*This project would look just as nice in home-center knotty pine. But my lumber retailer suggested alder—a soft hardwood—and I'm glad he did; it costs about the same as pine and lacks the pitch pockets common to coniferous woods. I found that alder machines nicely without burning, fuzzing, or splintering. It takes a finish well without blotching. But much of the alder on the lumber-store racks was knot-free and bland-looking, so I had to dig for the more-attractive knotty pieces.*

*And unlike pine, which commonly comes in boards up to 12" wide, I couldn't locate any alder wider than 6", so I had to glue up several boards edge to edge to get the wide parts for this project.*

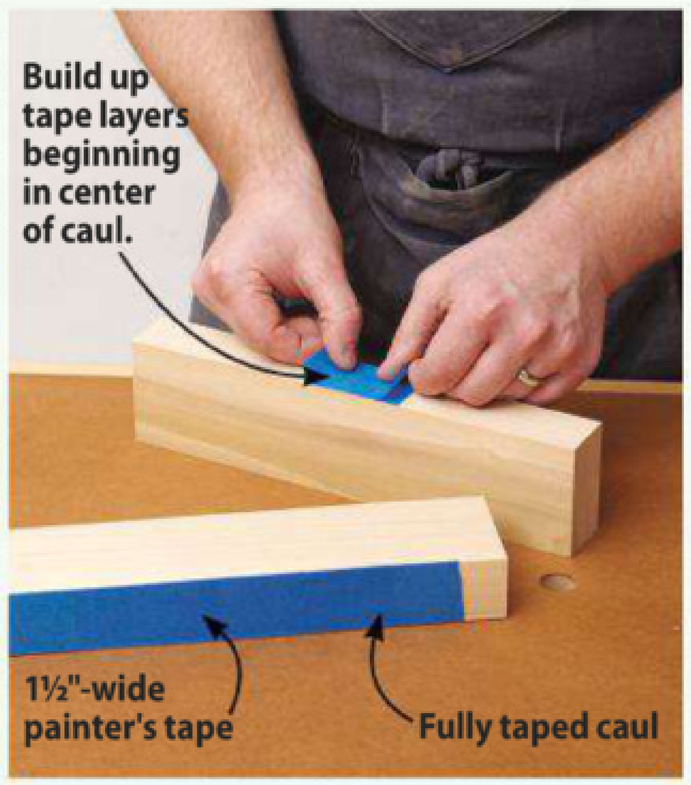


John Olson,
Design Editor

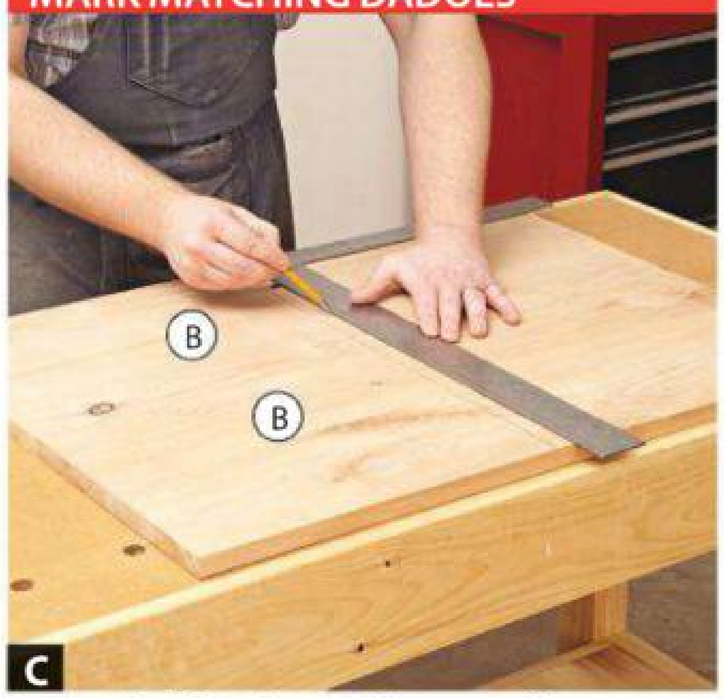
### The secret to gluing up flat panels

Before it becomes tacky, wood glue acts like a lubricant, allowing joint edges to slip out of alignment. Cauls (blocks of wood clamped across the width of a glue-up, as shown *below left*) help keep board faces flush, but become less effective in the middle of wide glue-ups. To create a slightly convex edge that evenly distributes pressure along its length, place a short strip of painter's tape in the center of the caul edges, as shown *below*. Build that up with additional centered layers of tape, each one 2–3" longer than the one below it, until you cover the edge of the caul to within an inch of the ends. Bonus: The tape also sheds glue. This project requires four 11½"-long cauls made from 2×4s.



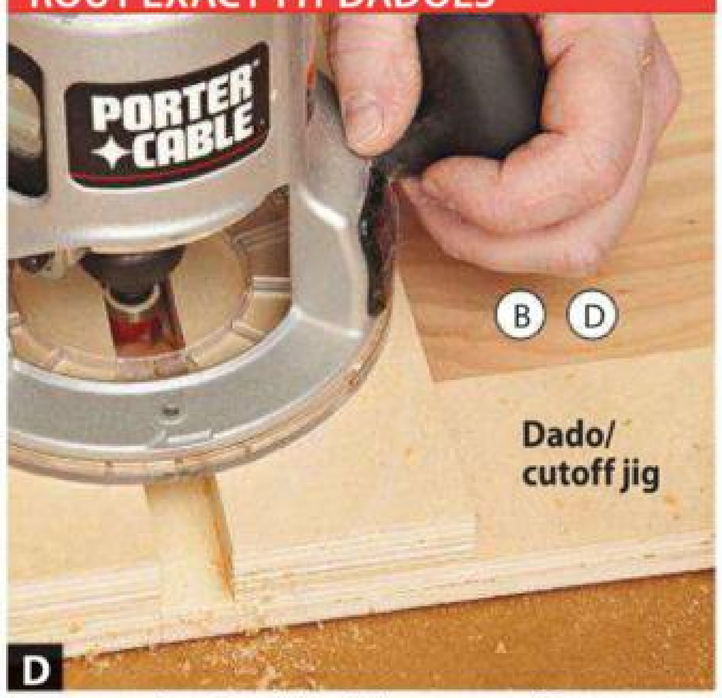



## MARK MATCHING DADOES



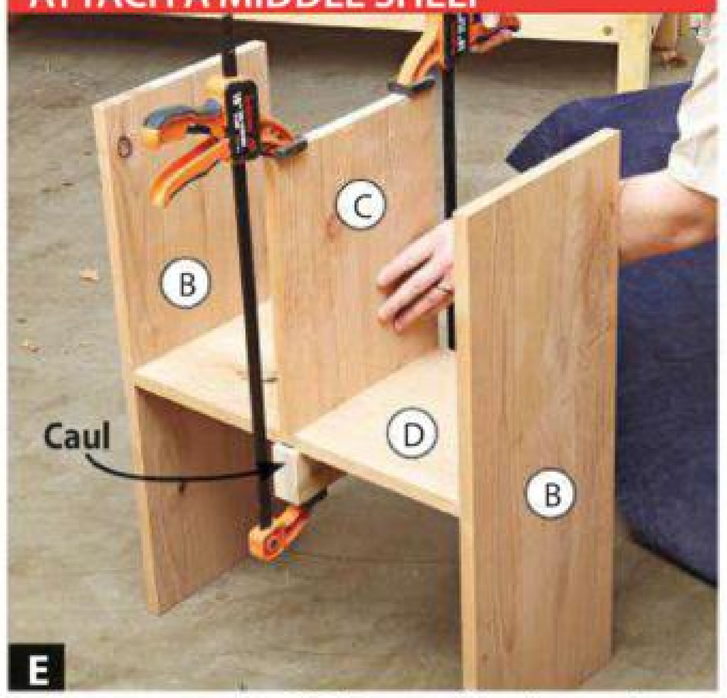

Lay out dado locations on the top and bottom shelves at the same time to ensure the dadoes line up at assembly time.

## ROUT EXACT-FIT DADOES




Run a top-bearing ½" or ⅝" pattern or hinge-mortise bit with a shallow cutter against one side of the jig and then back along the other.

## ATTACH A MIDDLE SHELF

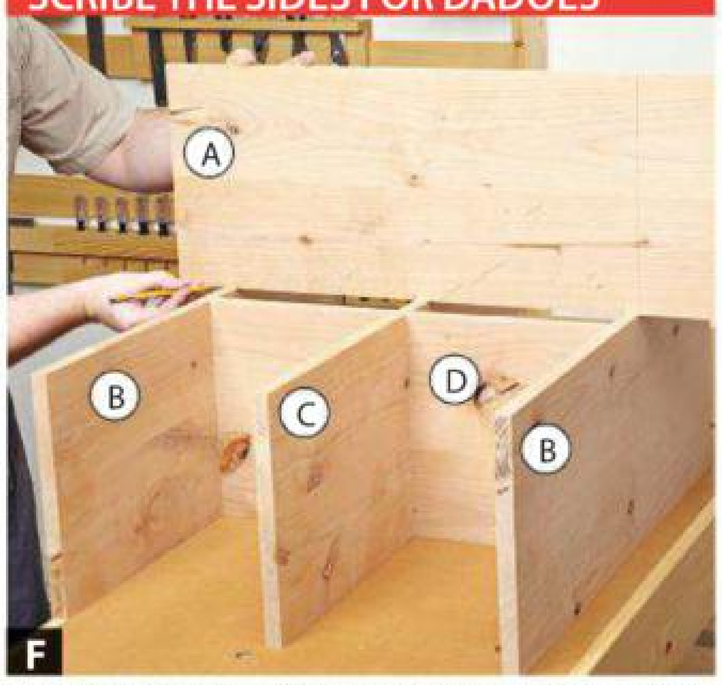



To best manage the B/C/D assembly, glue and clamp one piece at a time to ensure squareness and satisfactory appearance.

**3** Mark the dado locations on the top and bottom shelves (B) and divider (D) [**Drawing 1, Photo C**]. Align one fence of the cutoff jig with a layout mark, clamp it in place, and then rout the ⅛"-deep dadoes [**Photo D**].

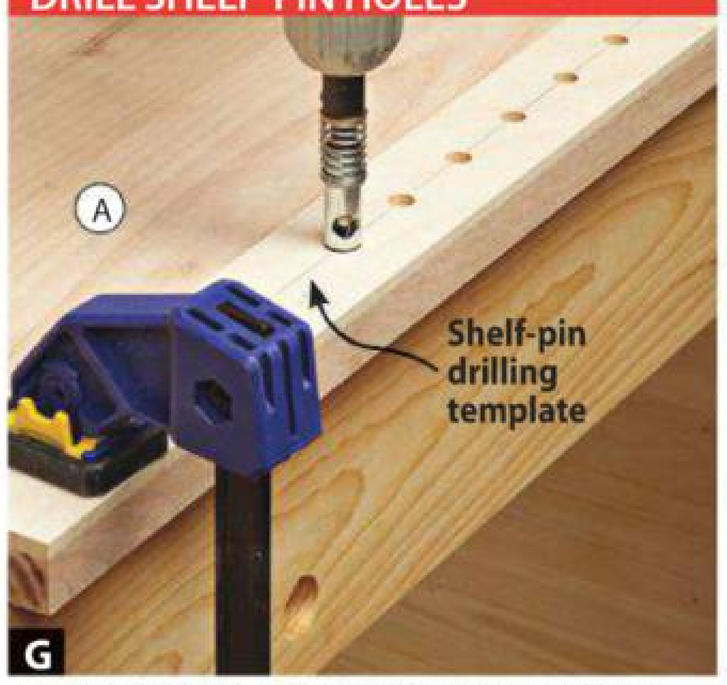
**4** Finish-sand the shelves (B, C) and divider (D) to 220 grit. Glue and clamp the divider square to the top and bottom shelves using cauls between the shelves and clamp pads. When dry, glue and clamp one middle shelf (C) [**Photo E**]. After that dries, glue and clamp the other middle shelf in place. Rout ⅛" round-overs along the assembly's front edges.

## SCRIBE THE SIDES FOR DADOES

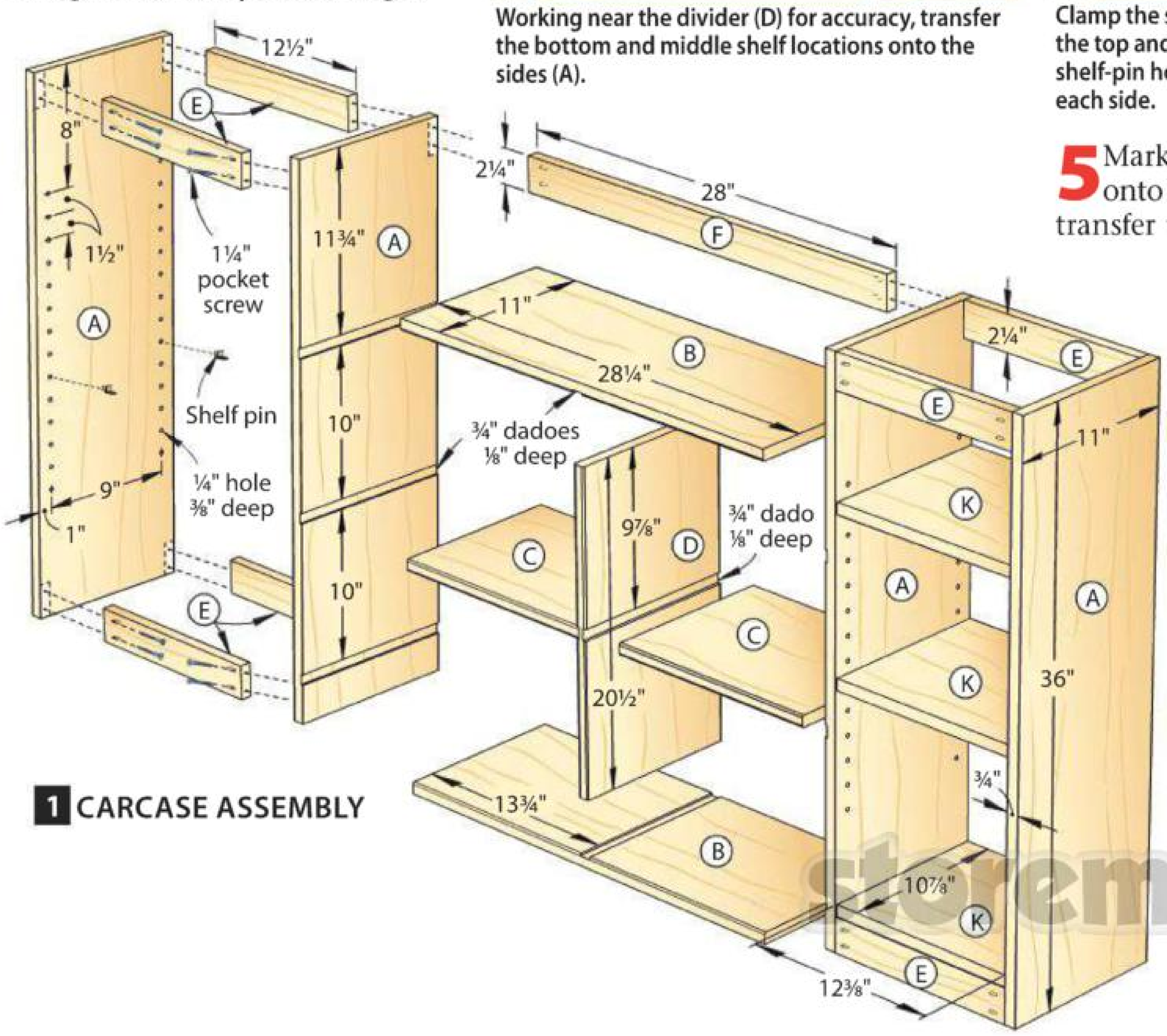



Working near the divider (D) for accuracy, transfer the bottom and middle shelf locations onto the sides (A).

## DRILL SHELF-PIN HOLES




Clamp the shelf-pin drilling template flush with the top and edge of a side (A) and use it to drill ¼" shelf-pin holes ⅜" deep. Repeat on both edges of each side.



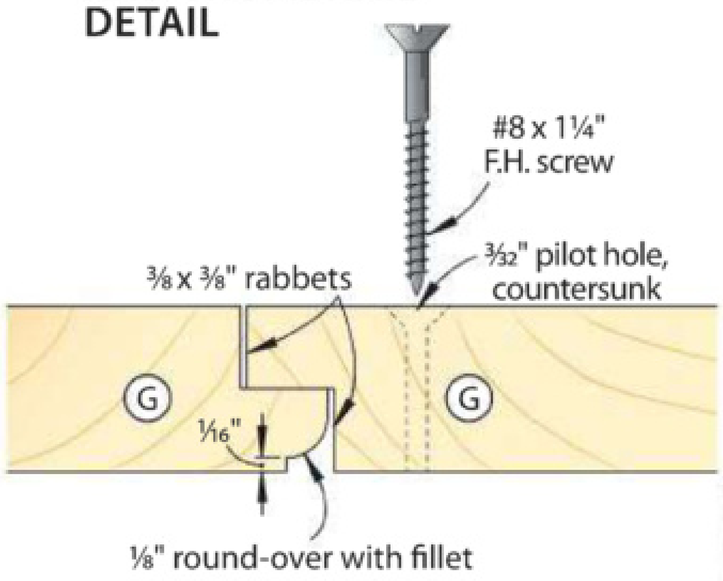

**1** CARCASE ASSEMBLY

**5** Mark the location of the top shelf (B) onto the sides (A) [**Drawing 1**]. Then transfer the dado locations for the bottom and middle shelves to the sides [**Photo F**]. As before, rout ⅛" dadoes into the sides.

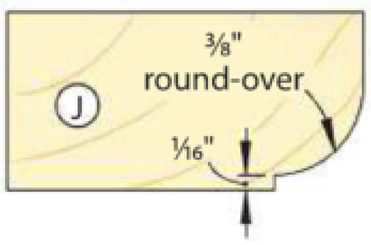
**6** To make a shelf-pin drilling template, cut a 2×32" strip of ¼" plywood and mark a centered line down its length. Starting 8" from one end, mark 14 hole locations spaced 1½" apart. Drill a ¼" hole at each mark. Use the template to drill shelf-pin holes in the four *inside* faces of the sides [**Photo G, Drawing 1**]. A special self-centering drill bit [**Sources**] controls depth and centers the ¼" hole.

storemags

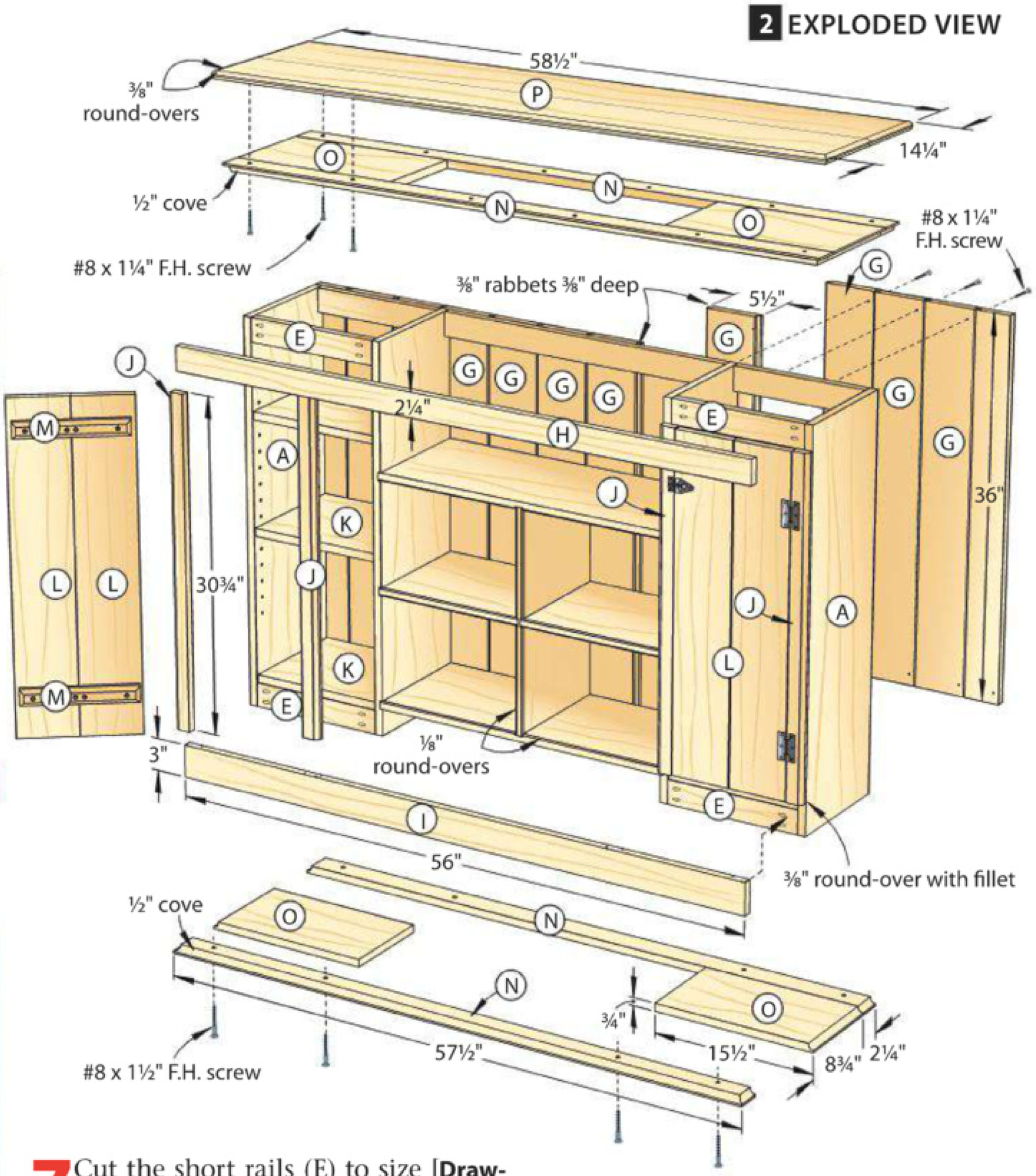
## 2a BACK SLAT RABBET AND THUMBNAIL DETAIL



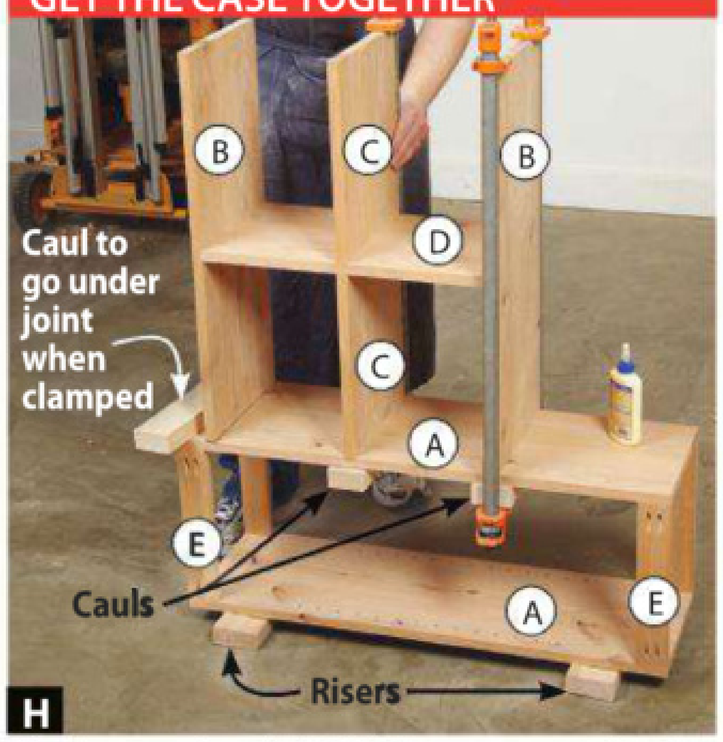

## 2b FACE FRAME THUMBNAIL DETAIL




## 2 EXPLODED VIEW




## GET THE CASE TOGETHER




Use three cauls and six 36" clamps to assemble the case. Be sure the shelves bottom out in the dadoes and sit flush with the front side (A) edges.

## RABBET EACH BACK SLAT




Adjust a rabbeting bit for a 3/8×3/8" cut and rout rabbets on opposite faces and edges of all back slats (G).

## ADD A DECORATIVE CUT




To create a round-over-with-fillet profile on each back slat simply adjust a 1/8" round-over bit so its straight cutting edges cut 1/16" deep.

**7** Cut the short rails (E) to size [**Drawing 1**]. Drill two pocket holes at both ends of each rail. Finish-sand the inside faces of the sides (A) and short rails. Glue and screw together two sides and four short rails, being careful to keep the top ends of the sides up so all shelf-pin holes align. Repeat for the other parts A and E.

**8** Glue and clamp one side cabinet (A/E) to the center shelf assembly (B/C/D) [**Photo H**]. After the glue dries attach the other side cabinet.

**9** Cut the back rail (F) to fit between the two side cabinets (A/E) [**Drawing 1**]. Attach it with pocket screws (facing the rear of the assembly), flush at the tops and backs.

## Give the case a back and face

**1** Cut to size the back slats (G) [**Materials List, Drawing 2**].

**2** Rout 3/8" rabbets 3/8" deep along both edges of the back slats (G) but on opposite faces [**Drawing 2a, Photo I**], so that one edge will overlap the adjoining edge of the slat next to it. Then, along the inside face of each slat, rout a thumbnail profile using a 1/8" round-over bit [**Drawing 2a, Photo J**]. Finish-sand the inside faces of all slats to 220 grit.

## PREFINISH TO SAVE TIME



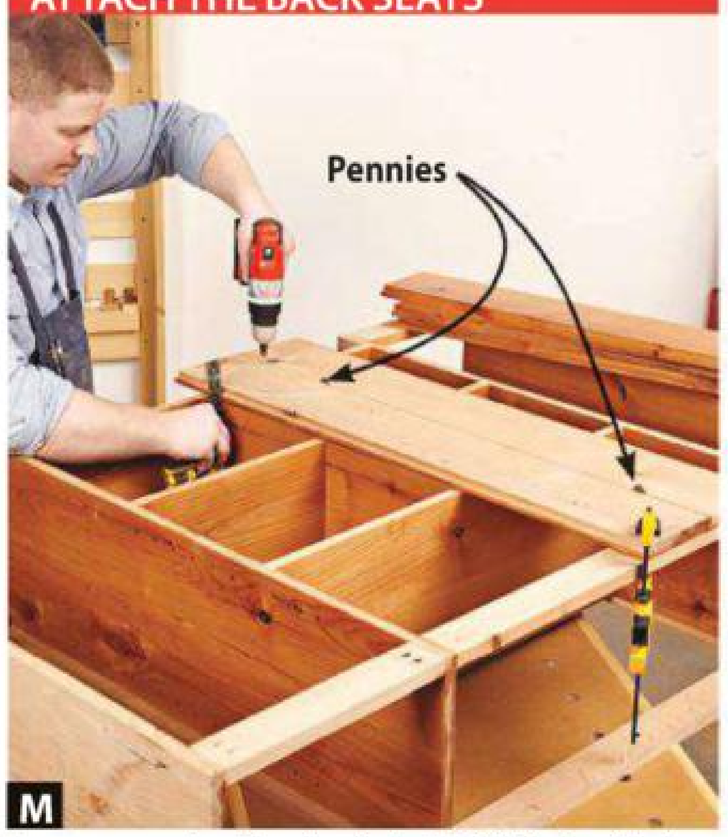

Applying finish to the interior surfaces of the case before the access-inhibiting face frame goes on will make your life easier later.

## CLAMP ON THE STILES




Align the profiled edge of the stile (J) flush with the outside face of the side (A), and glue and clamp the stile in place.

## ATTACH THE BACK SLATS




Use a square to align the first slat (G) flush with the divider (D). Attach the slats with #8×1¼" screws driven just to one side of the shiplap joints.

**3** Mask off the front edges of the case (A–E) that will receive a face frame later [**Photo K**], and finish the interior of the case as well as the interior faces and edges of the back slats (G). We applied a coat of boiled linseed oil for color, wiped off the excess, and let it dry for 12 hours. We followed that with three coats of premixed clear shellac thinned one part denatured alcohol to two parts shellac for easier brushing. We scuff-sanded with 320-grit sandpaper between coats.

**4** Remove the masking tape from the carcase. Cut the top rail (H), bottom rail (I), and stiles (J) to size [**Materials List, Drawing 2**]. Glue and clamp the bottom rail in place.

**5** Use a ⅜" round-over bit to rout a round-over-with-fillet profile along one edge of each stile (J) [**Drawing 2b**]. Glue and clamp the stiles to the case [**Photo L**], butted against the bottom rail.

**6** Glue and clamp the top rail (H) in place, butted against the stiles (J).

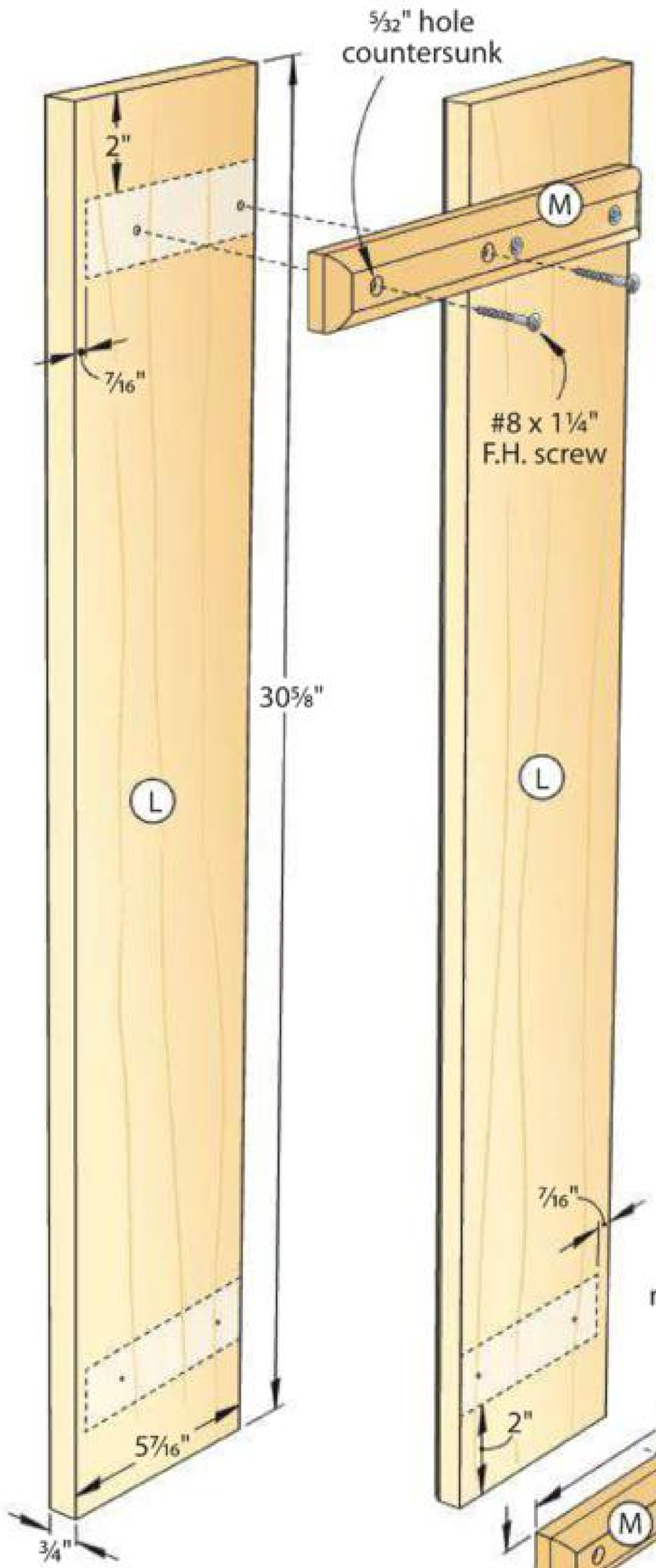
**7** Once the glue for the rails and stiles has dried, flip the assembly onto its front, and screw in place the back slats (G) [**Drawings 2, 2a; Photo M**]. Start on either side of center and use pennies to space the half-laps.

**8** The last slats on both ends of the case will overlap the sides (A). Scribe and trim those to fit [**Photo N**] before screwing them in place.

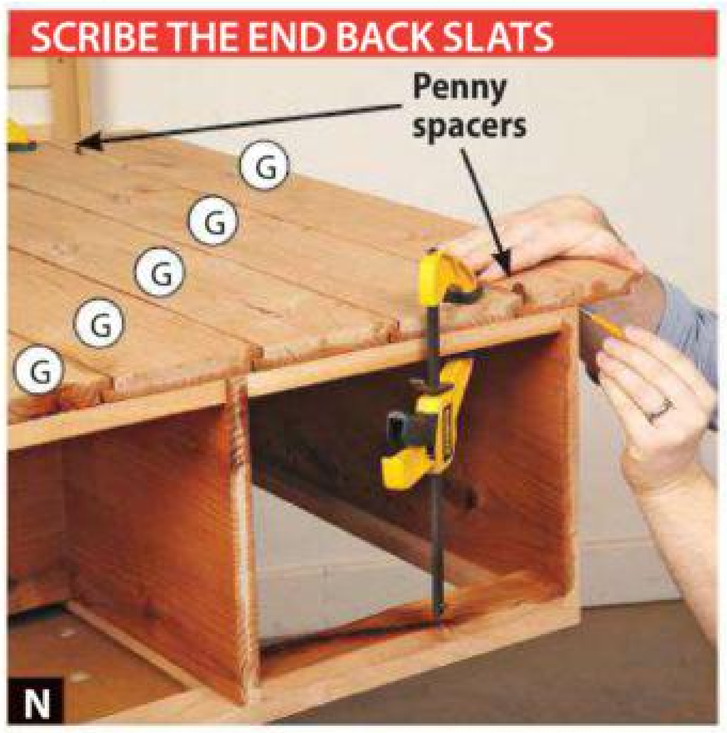
## Make the shelves and doors

**1** Glue up and cut to size six cabinet shelves (K) [**Materials List**]. Set them aside for now.

**3 DOOR ASSEMBLY**
**(Viewed from inside)**




## SCRIBE THE END BACK SLATS

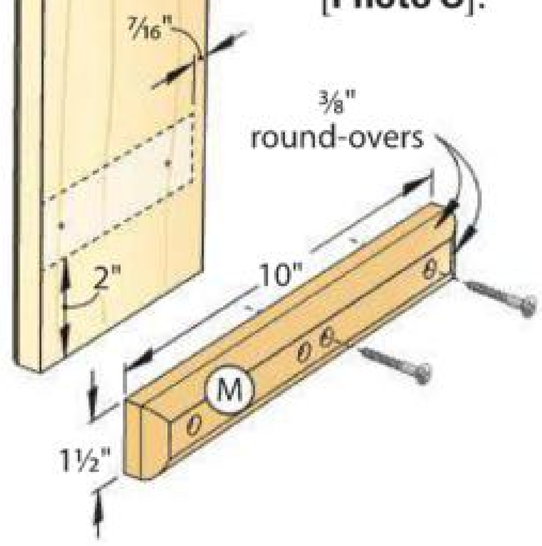



Mark the overhang of the slats (G) at both ends of the back, then cut them for a flush fit.

**2** Cut to size the door panels (L) [**Drawing 3**]. Use a ⅛" round-over bit to cut a thumbnail profile along one edge of two door panels.

**3** Edge-glue together two door panels with the thumbnail profiles in the center. Repeat for the other panels.

**4** Place the assembled case (A–J) on the workbench face up. Using the cabinet shelves (K) as supports, place the doors in their openings and trim to fit [**Photo O**].




**5** Locate the hinges [**Sources**] on the doors 3" from the door tops [**Photo O, Drawing 2**] and drill the screw holes. Do the same for the latches. Leave the hinges and latches unattached for now.

stormags

## CHECK FOR AN EVEN REVEAL




Mark and trim the doors for an even 1/16" reveal all around. Also, mark and drill the hinge locations at this time.

## ATTACH THE SUB-TOP AND -BOTTOM




Apply glue to the N/O assemblies, align them flush with the back of the case, clamp in place, and secure with countersunk screws.

## TOP OFF THE CASE




Clamp the top (P) centered on the sub-top and attach with screws from underneath the sub-top. Do not use glue.

**6** Cut to size the battens (M) [**Materials List**] and rout 3/8" round-overs on both edges and ends of one face. Drill countersunk 5/32" pilot holes where shown in **Drawing 3**. (These are oversize so the screws can move slightly within them as the wood expands/contracts.) Screw—but don't glue—the battens to the backs of the doors.

## Assemble the top and bottom

**1** Cut to size the rails (N) and spacers (O) for the sub-top and -bottom [**Drawing 2, Materials List**]. Glue the front and back rails (N) to the spacers (O) flush at their ends.

**2** Rout a 1/2" cove profile on the front edge and ends (not the back edge) of the sub-top and -bottom assemblies (N/O) [**Drawing 2**].

***Quick Tip!*** ***To avoid grain blow-out when routing across end grain, always clamp a scrap piece to the exit edge of the cut. It supports the wood fibers and prevents them from splintering.***

**3** Glue, center, and screw the sub-top and -bottom assemblies (N/O) to the case (A–J) [**Photo P, Drawing 2**].

**4** Glue up and cut to size the top (P) [**Drawing 2**]. Rout 3/8" round-overs on both faces of all edges and ends to create a bullnose profile.

**5** To secure the top (P), drill countersunk pilot holes from underneath and through the sub-top (N/O) [**Photo Q**]. Attach with screws [**Drawing 2**].

## Finish it off

**1** Apply finish to the parts of the project not finished earlier.

**2** Install the door hinges and latches. You did it!

## Give low-dough home-center hinges a high-dollar look

The antique-look mail-order hinges and latches for this project will set you back about $60. If you would rather keep some of that cash in your wallet, modify inexpensive hinges found at any home center or hardware store to appear aged.

First, buy hinges like the left half of the one shown *near right*. We purchased Schlage "Antique Brass Hinges" (they're actually made of steel) from a home center for less than $3 per pair. You'll also need a bench grinder (a file will work, but take longer), something hard to pound on (we used the anvil on a machinist's vise), a ball-peen hammer, a centerpunch with its tip ground round to approximate the curved face of the ball-peen hammer, and a countersinking drill bit. Then, do the following:

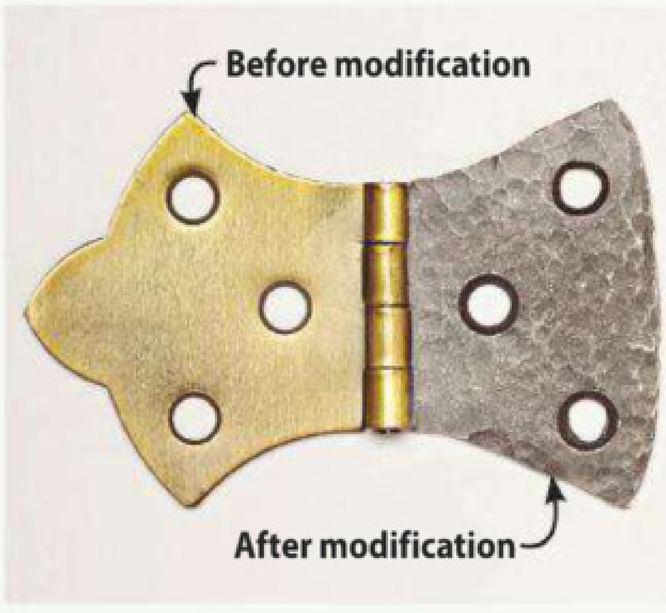
**1** Grind the pointed ends off each hinge.

**2** With the centerpunch and a hammer repeatedly strike the area near the hinge barrel. Be careful not to accidentally strike the barrel, which might impair the hinge's movement.

**3** Using the hammer, peen along the edges of the hinge to stretch the metal toward the corners. It's okay to thin out the material near the edges to your desired shape because those areas are not critical to the hinge's strength. Then, lightly peen the center of the hinge for a consistent look across the surface.

**4** Peening will distort the area around the screw holes; restore their rims with a countersinking bit.

**5** Spray-paint the hinge to your desired color. (We applied Rust-Oleum Dark Bronze Metallic.) Let it dry for a few seconds, then wipe off gently to enhance the aged look.















## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| **Carcase** | | | | | | |
| A* | sides | ¾" | 11" | 36" | EA | 4 |
| B* | top and bottom shelves | ¾" | 11" | 28¼" | EA | 2 |
| C* | middle shelves | ¾" | 11" | 13⅜" | EA | 2 |
| D* | divider | ¾" | 11" | 20½" | EA | 1 |
| E | short rails | ¾" | 2¼" | 12½" | A | 8 |
| F | back rail | ¾" | 2¼" | 28" | A | 1 |
| **Face frame and back** | | | | | | |
| G | back slats | ¾" | 5½" | 36" | A | 12 |
| H | top rail | ¾" | 2¼" | 56" | A | 1 |
| I | bottom rail | ¾" | 3" | 56" | A | 1 |
| J | stiles | ¾" | 1½" | 30¾" | A | 4 |
| **Doors and shelves** | | | | | | |
| K | cabinet shelves | ¾" | 10⅞" | 12⅜" | EA | 6 |
| L | door panels | ¾" | 5⅞16" | 30⅝" | A | 4 |
| M | battens | ¾" | 1½" | 10" | A | 4 |
| **Tops and bottom** | | | | | | |
| N | sub-top and bottom rails | ¾" | 2¼" | 57½" | A | 4 |
| O | sub-top and bottom spacers | ¾" | 8¾" | 15½" | A | 4 |
| P | top | ¾" | 14¼" | 58½" | EA | 1 |

*Parts initially cut oversize. See the instructions.

**Materials key:** A–knotty alder; EA–edge-glued knotty alder.
**Supplies:** Masking tape, #8×1¼" flathead screws (52), #8×1½" flathead screws (16), 1¼" coarse-thread pocket screws (36).
**Bits:** Flush-trim, ½" or ⅝" pattern, ⅜" rabbeting, ⅛" round-over, ⅜" round-over, and ½" cove router bits.

## Sources

**Hardware:** 3×1 13⁄16" smooth flush H-hinge no. 01X35.10 (4), $10.80 per pair; 1 13⁄16×2 13⁄16" trapped latch no. 01X39.10 (2), $19.20 each. Lee Valley Hardware, 800-871-8158, leevalley.com.
**¼" self-centering shelf-pin drill bit:** item no. 22567, $14.99, Rockler, 800-279-4441, rockler.com.
**¼" shelf-pin supports:** available in brass (30437), antique brass (22765), nickel (22773), or black (22781), packs of 16, $4.59, Rockler.

## More Resources

▶ Watch a free video showing how to turn new hinges into distressed antique ones at **woodmagazine.com/distresshinges**.

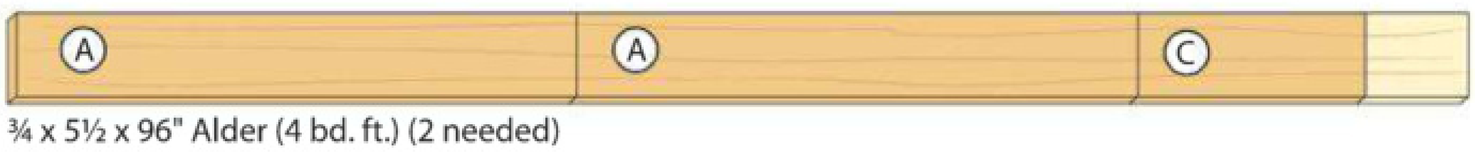
## Cutting Diagram



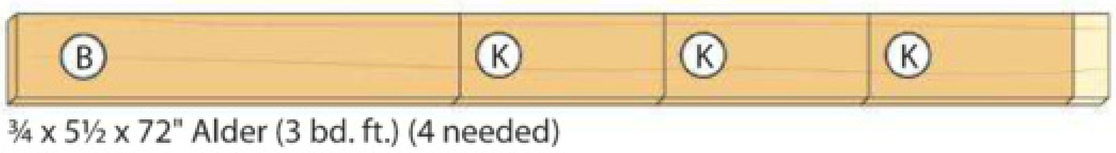
¾ x 7¼ x 96" Alder (5.3 bd. ft.) (2 needed)



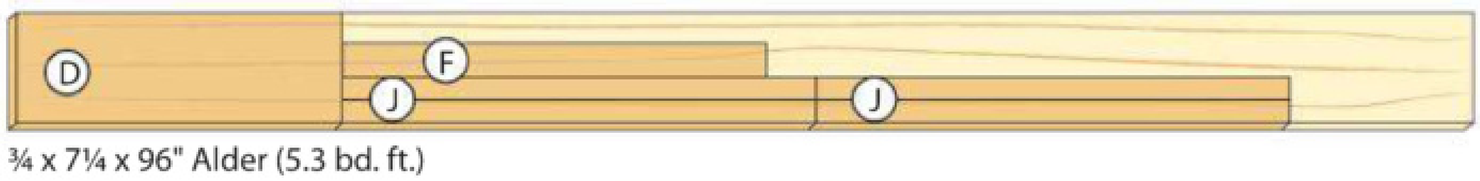
¾ x 7¼ x 72" Alder (4 bd. ft.) (2 needed)



¾ x 5½ x 96" Alder (4 bd. ft.) (2 needed)



¾ x 5½ x 72" Alder (3 bd. ft.) (4 needed)



¾ x 7¼ x 96" Alder (5.3 bd. ft.)



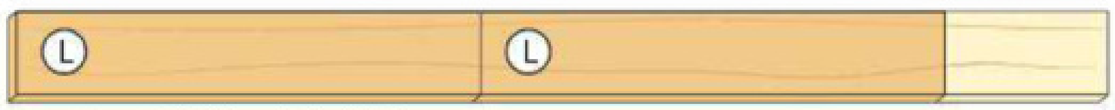
¾ x 5½ x 96" Alder (4 bd. ft.)



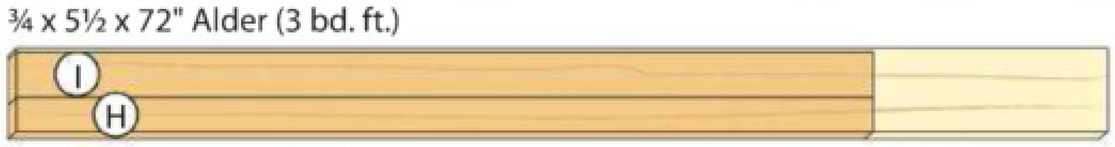
¾ x 5½ x 96" Alder (4 bd. ft.) (4 needed)



¾ x 5½ x 96" Alder (4 bd. ft.) (2 needed)



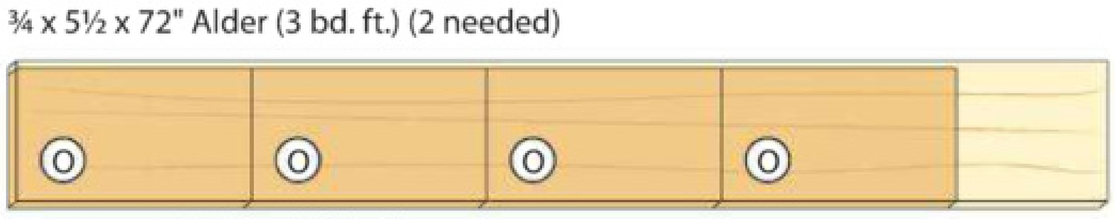
¾ x 5½ x 72" Alder (3 bd. ft.)



¾ x 5½ x 72" Alder (3 bd. ft.)



¾ x 5½ x 72" Alder (3 bd. ft.) (2 needed)



¾ x 9¼ x 72" Alder (5 bd. ft.)

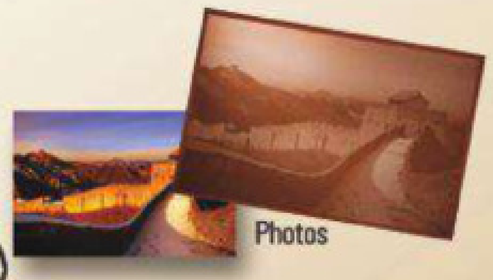


¾ x 7¼ x 72" Alder (4 bd. ft.) (2 needed)


Written by **Bill Krier**
Produced by **Bob Hunter** with **John Olson**
Project design: **John Olson**
Illustrations: **Lorna Johnson**

# Carving Made Easy

*Engraving signs, lithophanes, 3D carvings or intricate parts for projects the intelliCarve is the perfect choice for the savvy woodworker.*




OLIVER®
ESTABLISHED 1890
A TRADITION OF INNOVATION™

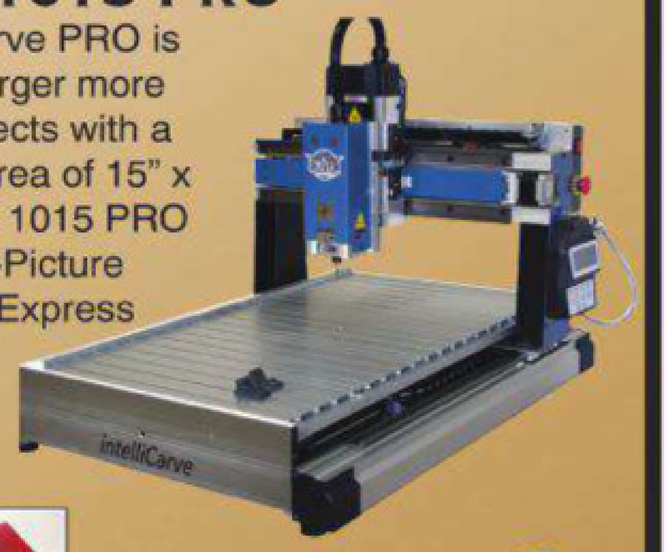
**Model 1013**
The intelliCarve is capable of handling a maximum work piece dimension of 13" x 18" x 3".

$2,099




Visit Oliver Machinery's NEW customer forum online at www.olivermachinery.boards.net

**Model 1015 PRO**
The intelliCarve PRO is capable of larger more detailed projects with a work piece area of 15" x 20" x 4". The 1015 PRO comes with i-Picture and ArtCam Express software.





Craft Ideas


Moulder Templates

Now includes 500 sample images on CD!

WWW.OLIVERMACHINERY.NET | INFO@OLIVERMACHINERY.NET | 800-559-5065

OLIVERMACHINERY | WWW.FACEBOOK.COM/OLIVERMACHINERY | WWW.YOUTUBE.COM/OLIVERMACHINERY



# New Pedestal Kits


Reeded Pedestal Kit


Mission Pedestal Kit


Shallowford Pedestal Kit


Transitional Pedestal Kit

Save time, trouble and ensure a perfect outcome for your table project with one of Osborne's new pedestal kits. We offer four different styles in many wood species to help you achieve precisely the look and feel you want.

Become refreshed with an Osborne pedestal kit. Call or click for more information.

Become Refreshed

Order by phone at
866.963.5580
Or visit
www.bun-feet.com

Osborne Wood Products, Inc.

# Small-parts Tablesaw Sled

Hold-down prevents offcuts from shifting into the blade after the cut.

Stopblock makes cutting identical-length parts a cinch.

T-slotted fence and base enable quick positioning of a stopblock and hold-down.

**Hold parts securely, safely, and dead square to the blade for clean and super-accurate cuts.**

Overall dimensions: 11½" W × 23¼" L × 5⅛" H

## It's just a base and a fence

***Note:*** *To ensure the sled's cutting accuracy, first adjust your saw blade parallel to the miter-gauge slots. Refer to your saw's owner's manual or go to woodmagazine.com/TStuneupvid for a free video on tuning up a tablesaw.*

**1** From ¾" plywood, cut the base (A) and fence (B) to size [**Materials List**]. Using a ¾"-thick dado stack in your tablesaw, cut the ¼"-deep dadoes in the base and fence [**Drawings 1** and **1a**].

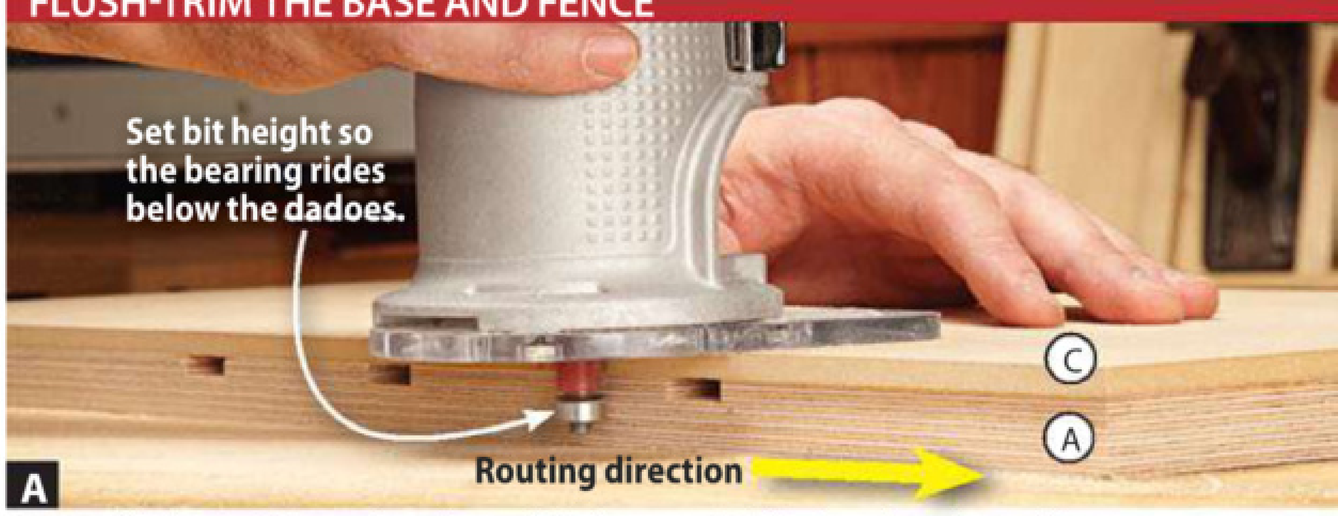
**2** From ¼" hardboard, cut the base top (C) and fence front (D) ⅛" wider and longer than listed [**Materials List**].

**3** Glue and clamp the base top (C) and fence front (D) to the dadoed faces of the base (A) and fence (B), with overhangs all around. After the glue dries, use a flush-trim bit in a router to trim the overhanging hardboard edges flush with the plywood [**Photo A**].

**4** With a ¼" dado blade set ⅜" above the table, cut slots in the base top (C) and fence front (D) centered over the ¾" dadoes [**Drawing 1a, Photo B**]. (The slots and dadoes capture the heads of the ¼" hexhead bolts for the hold-down and stopblock.)

**5** From ⅜" hard maple, cut the miter-slot guides (E) to size [**Materials List**]. Sand the guide edges for a snug but smooth glide in their miter-gauge slots. Position and temporarily attach the base (A/C) to the guides, as shown in

### FLUSH-TRIM THE BASE AND FENCE



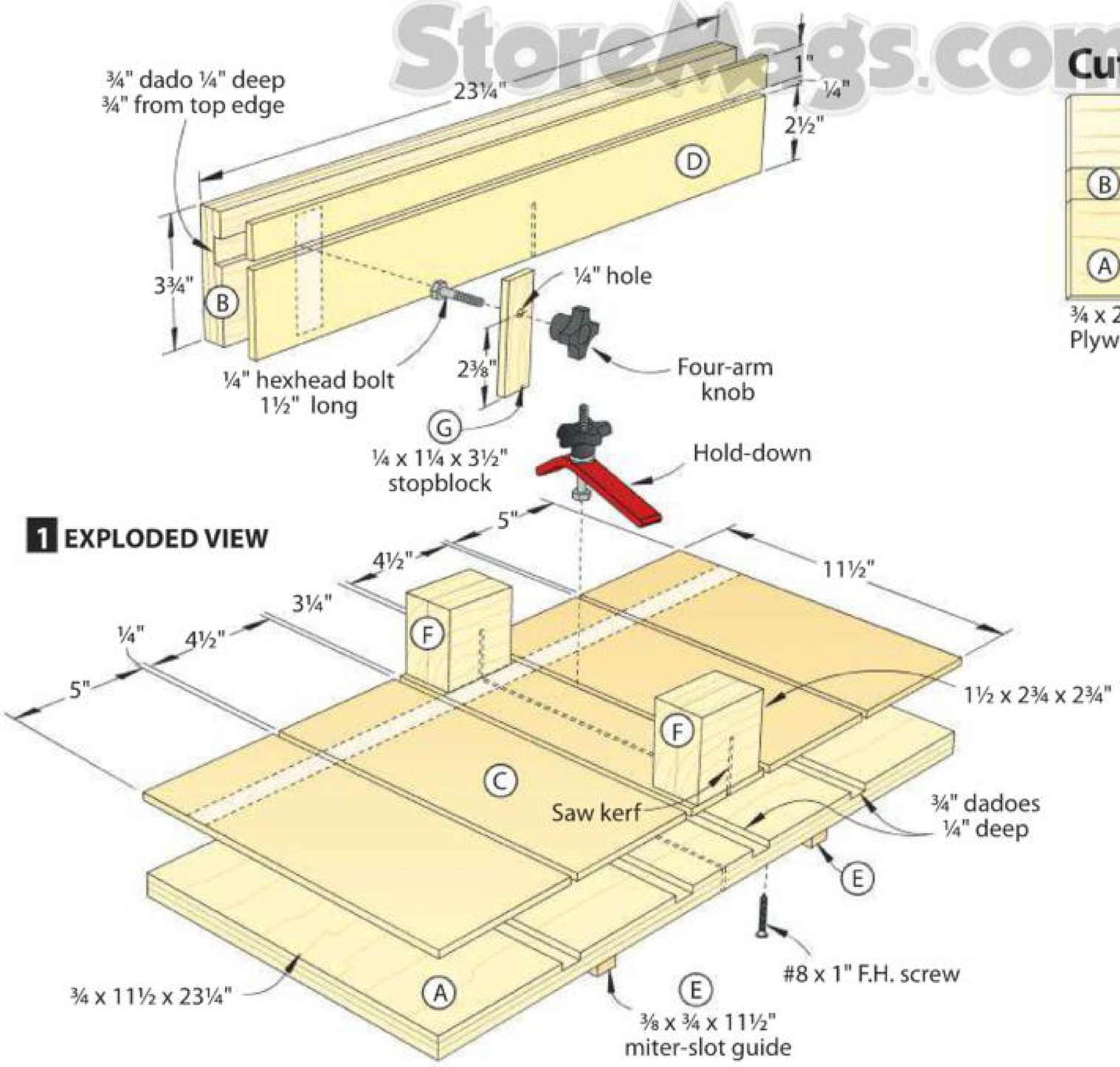

Using a flush-trim bit, cut the edges of the base top (C) flush to the edges of the base (A). Repeat to trim the fence front (D) flush to the fence (B).

### CUT CENTERED SLOTS



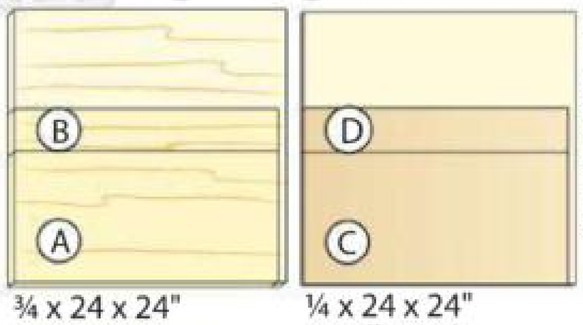

Using your tablesaw fence to position the base (A/C) and fence (B/D) where required, cut a ¼" slot through only the hardboard centered over each dado.

StoreMags.com




**1 EXPLODED VIEW**

## Cutting Diagram




¾ x 24 x 24"
Plywood

¼ x 24 x 24"
Hardboard




¾ x 2½ x 12"
Maple (.3 bd. ft.)




¾ x 5½ x 12"
Poplar (.5 bd. ft.)
*Plane or resaw to the thicknesses listed in the Materials List.

## Materials List

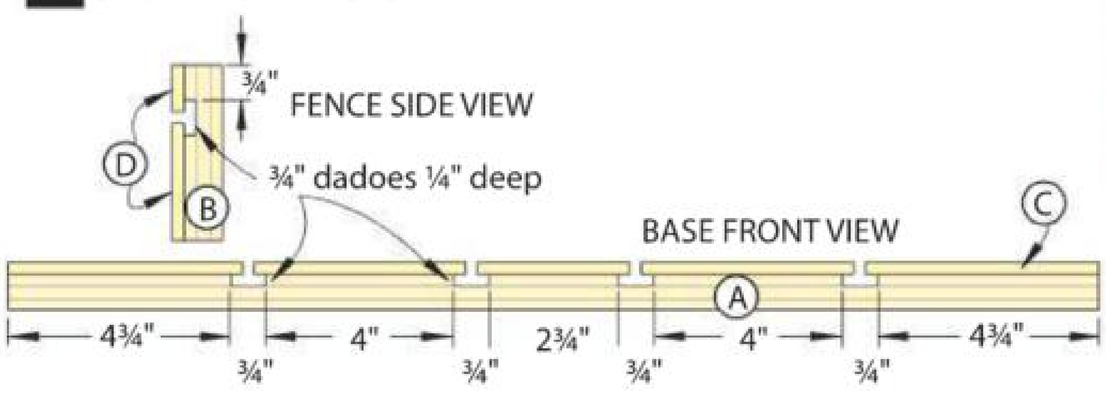
| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| A | base | ¾" | 11½" | 23¼" | PL | 1 |
| B | fence | ¾" | 3¾" | 23¼" | PL | 1 |
| C* | base top | ¼" | 11½" | 23¼" | H | 1 |
| D* | fence front | ¼" | 3¾" | 23¼" | H | 1 |
| E | miter-slot guides | ⅜" | ¾" | 11½" | M | 2 |
| F | cleats | 1½" | 2¾" | 2¾" | P | 2 |
| G | stopblock | ¼" | 1¼" | 3½" | P | 1 |

*Parts initially cut oversize. See the instructions.
**Materials key:** PL–plywood, H–hardboard, M–maple, P–poplar.
**Supplies:** Double-faced tape, #8×1" F.H. screws (6), ¼" hexhead bolt 1½" long, ¼"-20 four-arm knob (female), hold-down.
**Blade and bit:** Dado set, flush-trim router bit.

## Source

**Hold-down clamp:** #86N70.52, $10.50 each, Lee Valley, 800-871-8158, leevalley.com.
**Four-arm knob:** #00M55.30, $2.80 each, Lee Valley.

**1a BASE AND FENCE DETAIL**




**Photos C** and **D**. Then, carefully remove the assembly, flip it over, and drill countersunk mounting holes for #8×1" flat-head screws through the guides and into the base. Remove the tape and drive the screws.

**6** To accurately position the fence (B/D) on the base (A/C), cut a ¾×1½×21½" spacer from scrap. Use it when gluing the fence to the base [**Photo E**].

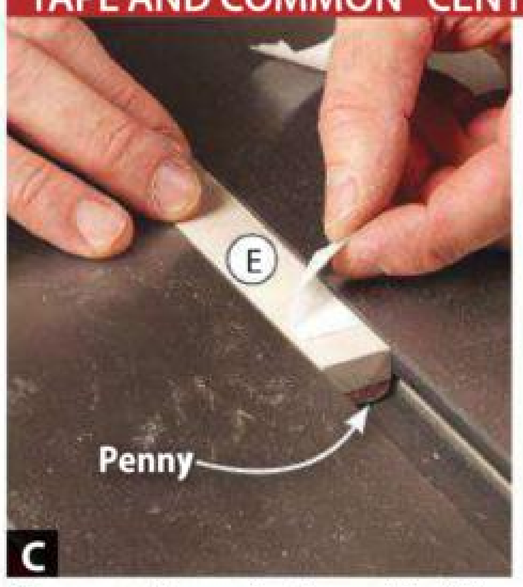
**7** From poplar glued up to 1½" thickness, cut two cleats (F) to size. Centering the cleats end to end on the base, glue one flush with the front edge and the other flush with the back edge and glued to the fence.

**8** From ¼" poplar, cut the stopblock (G) to size. Drill a ¼" hole through the stopblock where shown [**Drawing 1**].

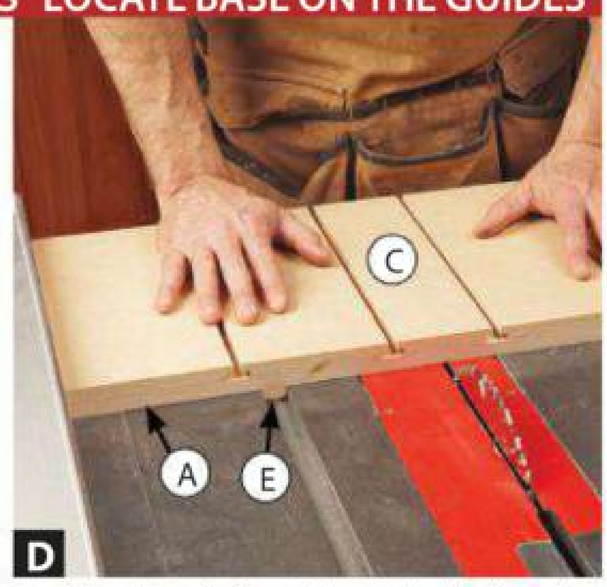
**9** Finish-sand the jig to 150 grit and remove the dust. Apply a penetrating finish to protect the jig. (We used General Finishes Arm-R-Seal Oil & Urethane Topcoat, semi-gloss.) Now, fire up your saw and cut away—precisely!

Written by: **Owen Duvall** Produced by **Nate Granzow** with **Kevin Boyle**
Project design: **Kevin Boyle** Illustrations: **Lorna Johnson**

**TAPE AND COMMON "CENTS" LOCATE BASE ON THE GUIDES**

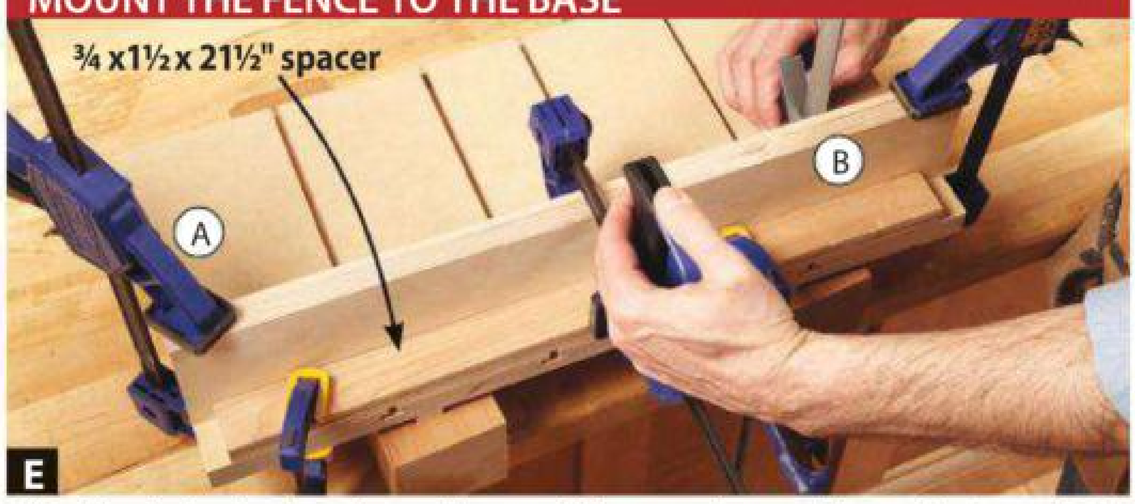



Place pennies under the guides (E) to raise them above the tablesaw top. Apply two pieces of double-faced tape to the tops of the guides.




Position the rip fence to center the base to the saw blade. With the guides flush with the back edge of the saw top, press the base firmly onto the guides.

**MOUNT THE FENCE TO THE BASE**




With the slot in the fence front (D) toward the top, glue and clamp the fence (B/D) to the base (A/C) tight against a spacer aligned with the base back edge. Check the fence face for square.

# Construction-grade End Loader

Dimensions: 7"H × 5¾"W × 14"L

When it's time to fill up a toy dump truck, here's the right machine for the job. With a pivoting body for tight turns, and a bucket that lifts and dumps, this rig works much like the real thing. Crafted from walnut and maple, it matches our other Construction-grade toys (*pages 34–35*). A kit provides all the specialty parts you need [**Source**, *page 36*].

## Shape parts for the rear unit

**1** Make two photocopies of *page 38* and one photocopy of *pages 37* and *39* of the *WOOD Patterns*® insert. Prepare a ¾×5½×6¾" walnut blank for the rear

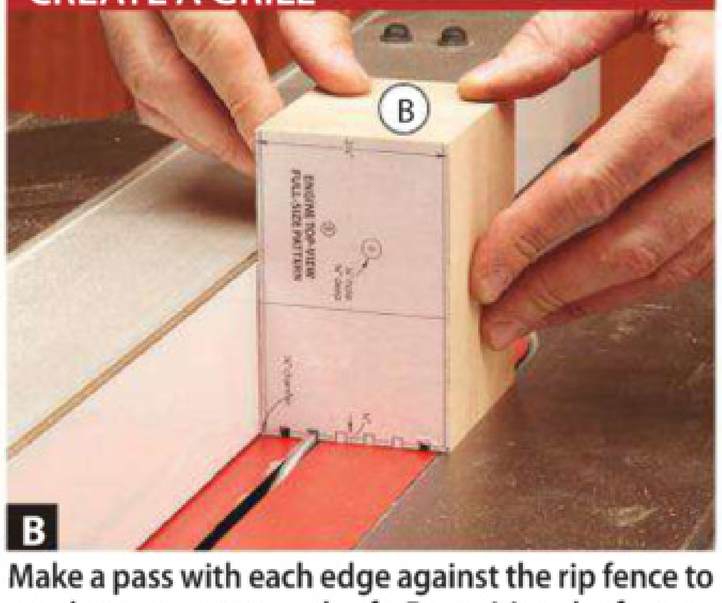
**SUPPORT THE REAR CHASSIS**




A

To position the chassis (A) for drilling the axle hole, rest it on a scrap at least 1½" thick. Clamp the chassis to the fence to prevent it from turning.

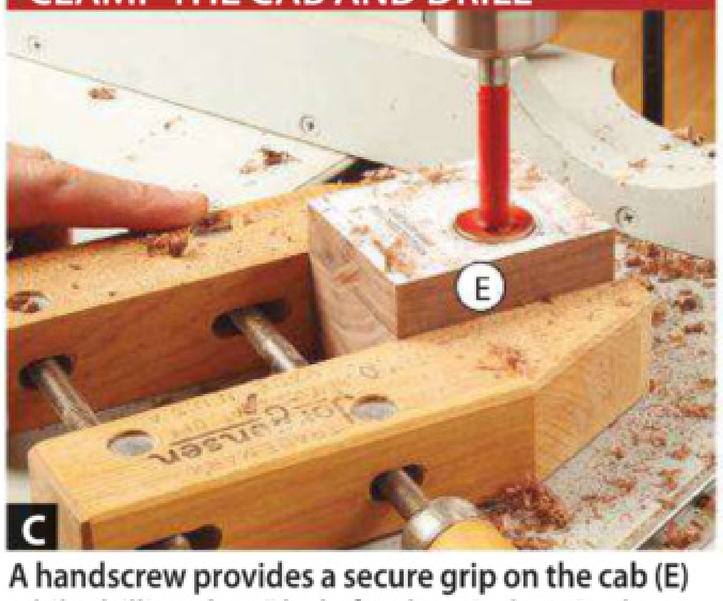
**CREATE A GRILL**




B

Make a pass with each edge against the rip fence to cut the two outermost kerfs. Reposition the fence for the next pair of kerfs and repeat.

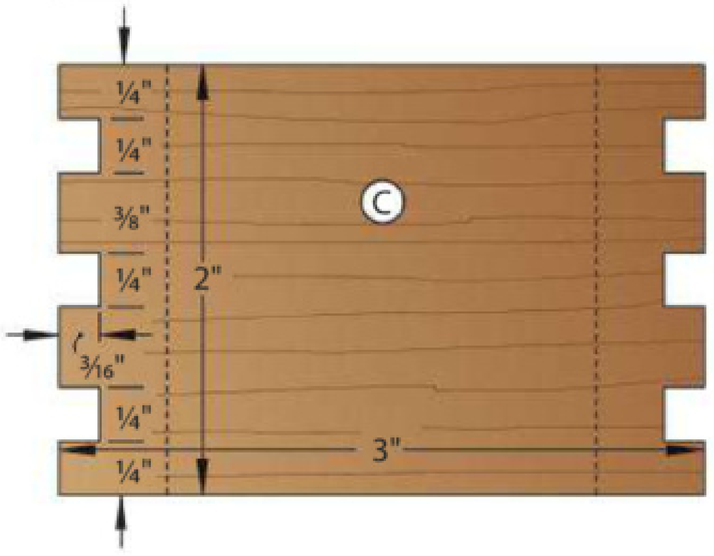
**CLAMP THE CAB AND DRILL**




C

A handscrew provides a secure grip on the cab (E) while drilling the 1" hole for the window. Back out the bit frequently to clear the chips.

**1a** **STEPS (Front view)**




chassis (A). Spray-adhere a copy of the **Rear Chassis Pattern** to the blank, and bandsaw and sand the chassis to shape.

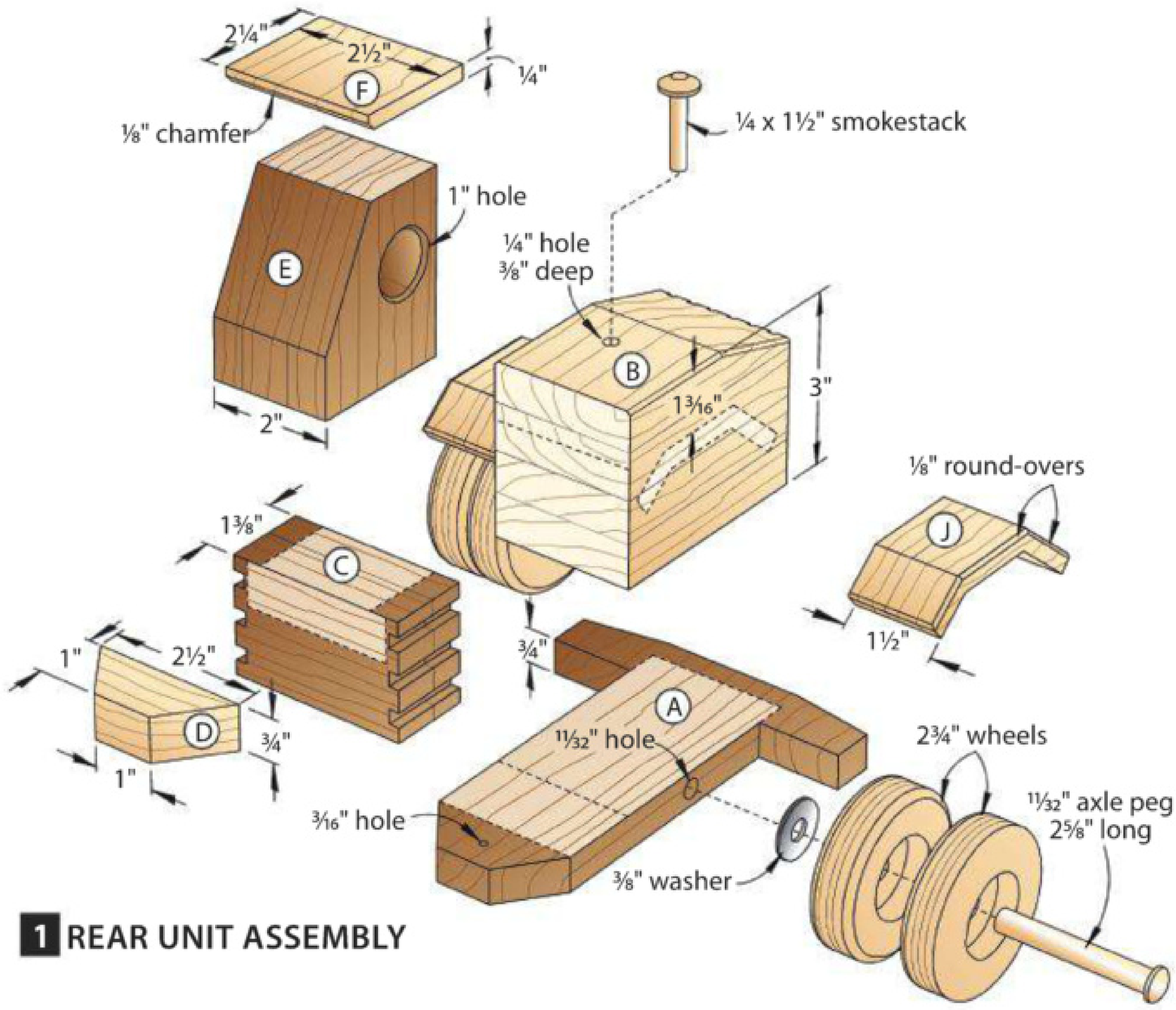
**2** Drill the 11/32" hole where indicated [**Photo A**]. Then drill the 3/16" through-hole where shown.

**3** Laminate four layers of ¾×2¾×4½" maple for the hood (B) [**Drawing 1**]. After the glue dries, trim the blank to size [**Materials List**], and attach copies of the **Hood Side-View** and **Hood Top-View Patterns**. Following the top-view pattern, cut the kerfs for the radiator grill [**Photo B**]. Then drill the ¼" hole where shown and bandsaw the bevel following the side-view pattern. Chamfer the edges where shown.

**4** Laminate two pieces of ¾×2×3" walnut for the steps (C). Resaw and sand the blank to 1⅜" thick; then, cut the dadoes for the steps [**Drawing 1a**]. From ¾"-thick maple, lay out and cut the cab support (D) to size [**Drawing 1**].

**5** From a laminated walnut blank, cut the cab (E) to size, and attach a copy of the **Cab Side-View Pattern** to it. Drill the hole for the window [**Photo C**]; then, chamfer the edges of the window, and cut the bevel along the front of the cab.

**6** Cut the maple roof (F) to size [**Drawing 1**], and chamfer the front edge.




**1** REAR UNIT ASSEMBLY

**7** Retrieve all of the parts cut to shape so far, moisten the patterns with mineral spirits, and scrape them away. Finish-sand all parts to 220 grit.

## Load up for assembly

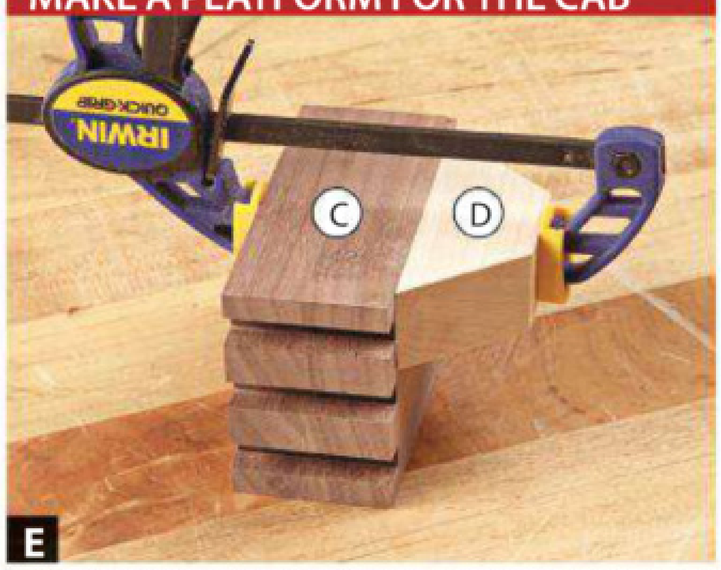
Assemble the rear unit of the loader as shown in **Photos D–H** *below*. Allow the glue to dry at least 20 minutes between steps.

**GLUE THE HOOD IN PLACE FIRST**



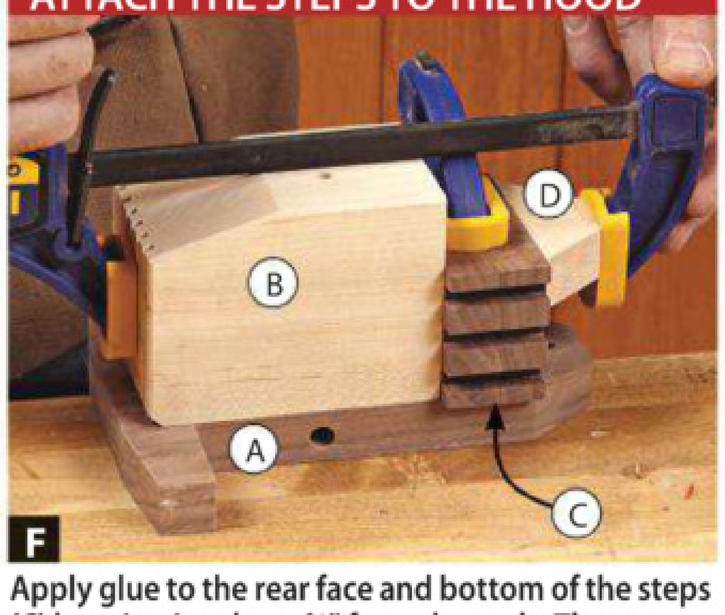

Apply glue to the bottom of the hood (B) and clamp it to the rear chassis (A), flush with the edges and set back 5/16" from the wide end of the chassis.

**MAKE A PLATFORM FOR THE CAB**



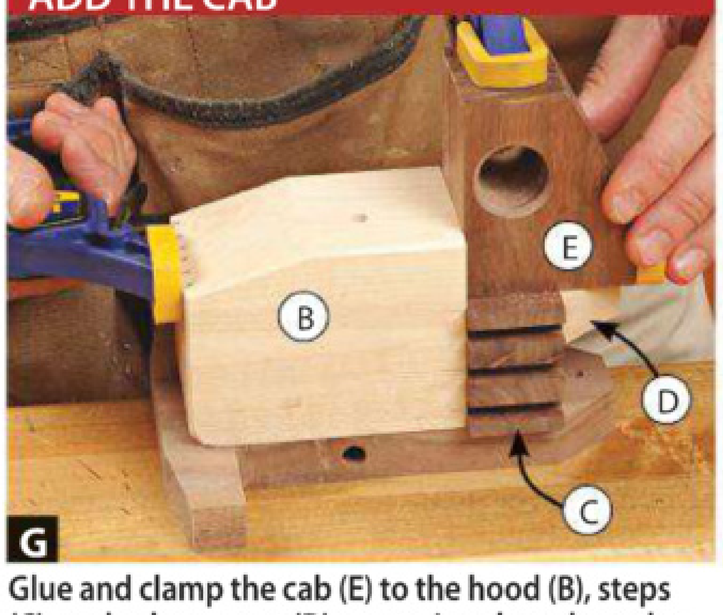

While the hood assembly dries, glue and clamp the cab support (D) flush with the top edge of the steps (C), and centered between the ends.

**ATTACH THE STEPS TO THE HOOD**



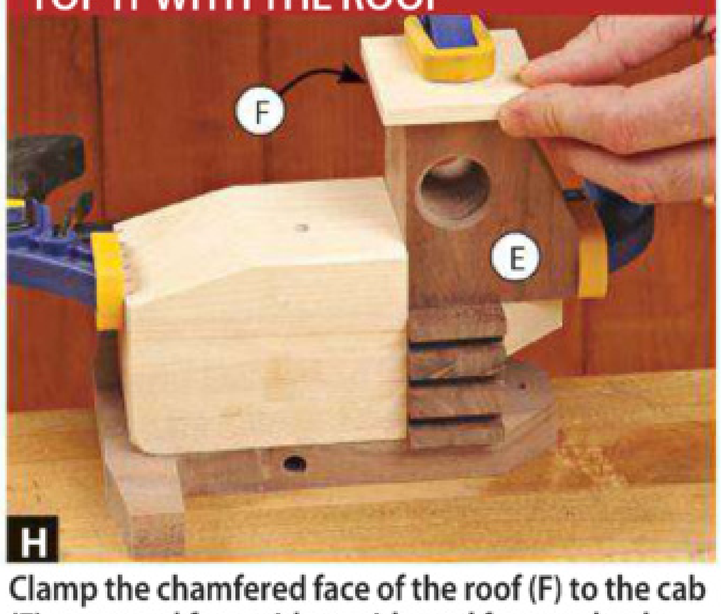

Apply glue to the rear face and bottom of the steps (C) keeping it at least ¼" from the ends. Then center and clamp the steps to the chassis and hood.

**ADD THE CAB**

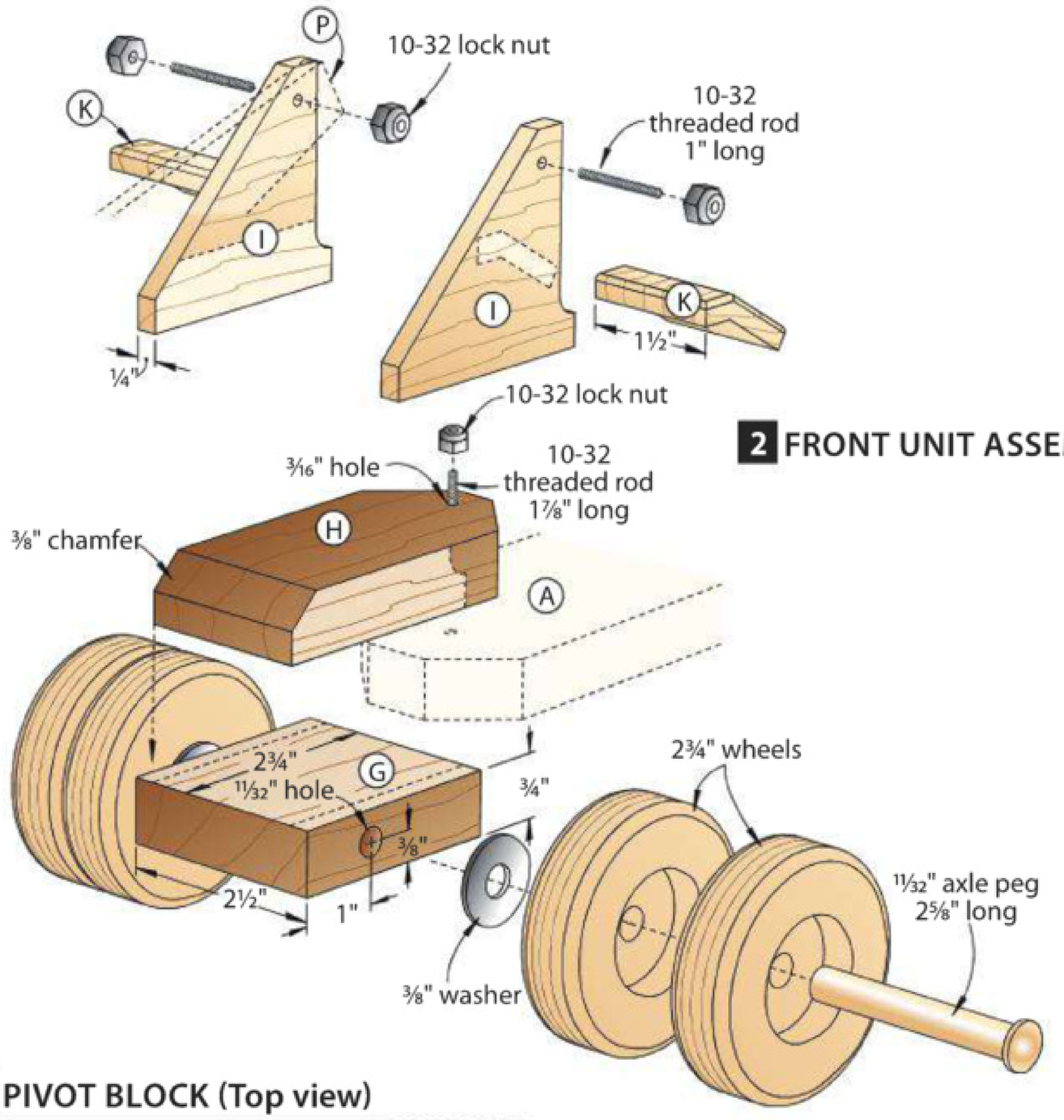



Glue and clamp the cab (E) to the hood (B), steps (C), and cab support (D), centering the cab on the width of the hood.

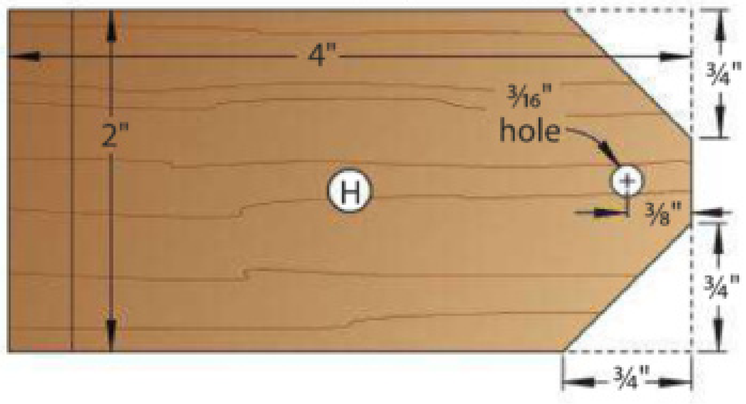
**TOP IT WITH THE ROOF**




Clamp the chamfered face of the roof (F) to the cab (E), centered from side to side and front to back, with the chamfer facing down and forward.




**2** FRONT UNIT ASSEMBLY




## Shape parts for the front unit

**1** Cut the front chassis (G) and pivot block (H) to size [**Drawings 2, 2a**]. Drill the 3⁄16" hole in the pivot block and the 11⁄32" hole in the chassis where shown. Then rout the chamfer on the end of the pivot block.

**2** From ¼" maple, cut two 2½×2¾" blanks for the arm braces (I). Stack the blanks together with double-faced tape between them, and their ends and edges flush. Attach the **Arm Braces Pattern** to the stack and drill the 3⁄16" hole where shown. Then, cut the braces to shape [**Photo I**] and finish-sand them.

**3** Glue the arm braces (I) to the edges of the pivot block (H), with their front ends and bottom faces flush. After the glue dries, glue this assembly to the front chassis (G) [**Photo J**].

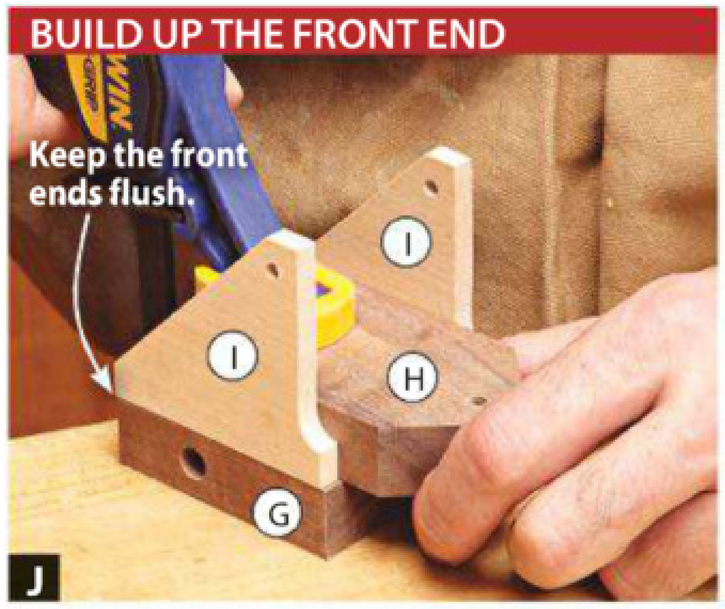
**4** Laminate maple stock to make a 1½×1½×12" blank. Spray-adhere two copies each of the **Rear Fender** and **Front Fender Patterns** along one face of the blank. Bandsaw and sand the fenders (J, K) to shape. Remove the patterns

### CUT IDENTICAL PARTS THE EASY WAY




By cutting both arm braces (I) at the same time, you guarantee they will be identical. Do the same later with the bucket sides (M) and arms (P).

### BUILD UP THE FRONT END




Glue the arm brace/pivot block assembly (H/I) to the front chassis (G), clamping the parts to your bench while the glue dries.

# Build the whole crew

Purchase plans and kits for these companion projects at **woodmagazine.com/cgtoys**.



Give the crane (issue 185, September 2008) a spin on its base, and raise and lower its bucket with a crank.



Reach out and scoop with the excavator (issue 194, November 2009).

For heavy hauling, fill the dump truck (issue 215, November 2012).

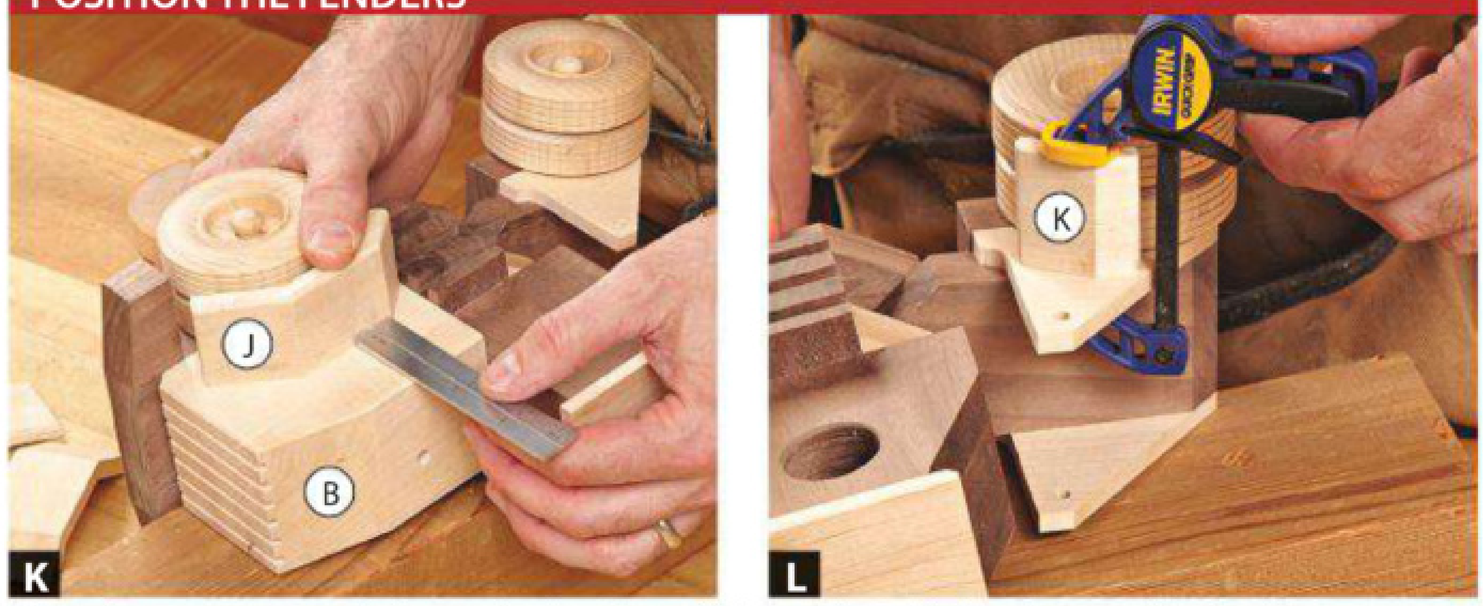
Move earth with the bulldozer (issue 199, September 2010).



and rout 1/16" round-overs on the outside edges, making sure you end up with mirrored pairs. Finish-sand the fenders.

**5** Temporarily join the front unit (G/H/I) with the rear unit (A–F) using a length of 10-32 threaded rod and lock nuts. Dry-fit two wheels and an axle peg in the front and rear chassis, then apply glue to the edge of each fender and hold or clamp them in place for a few minutes until the glue grabs [**Photos K** and **L**]. After the glue dries, repeat the process for the other side.

**POSITION THE FENDERS**




**K** **L**

Align the center section of the rear fenders (J) parallel to and 1 3/16" below the top of the hood (B). To position the front fenders (K), refer to the location shown on the **Arm Braces Pattern.**

## Build the bucket and arms

**1** Cut the bucket back (L), sides (M), top (N), and bottom (O) to size, beveling the indicated edges of the back, top, and bottom [**Drawing 3**]. Rout a 1/8" chamfer along the top front edge of the bucket bottom.

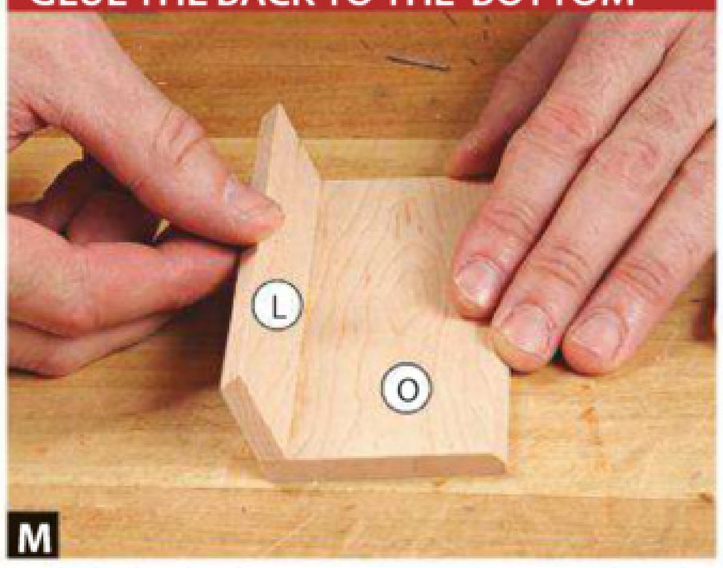
**2** Spray-adhere the **Bucket Top Pattern** to the top (N). Miter the two corners, and drill the holes where shown. Chamfer both faces of the holes and the front edge. Finish-sand pieces L–O to 220 grit before assembling the bucket as shown in **Photos M, N,** and **O**.

**3** From 1/4" stock, cut two 2 3/4×5 1/8" blanks for the arms (P). Stack the blanks together as you did with the arm braces (I), apply a copy of the **Arm Pattern**, cut and sand them to shape, and drill the holes where shown. Separate the arms and remove the pattern.

**4** Cut the arm spacer (Q) to size and finish-sand it. Slide a 2 1/2" length of 10-32 threaded rod through the holes in the upper ends of the arms (P) to align them, then glue and clamp the arm spacer between the arms [**Photo P**].

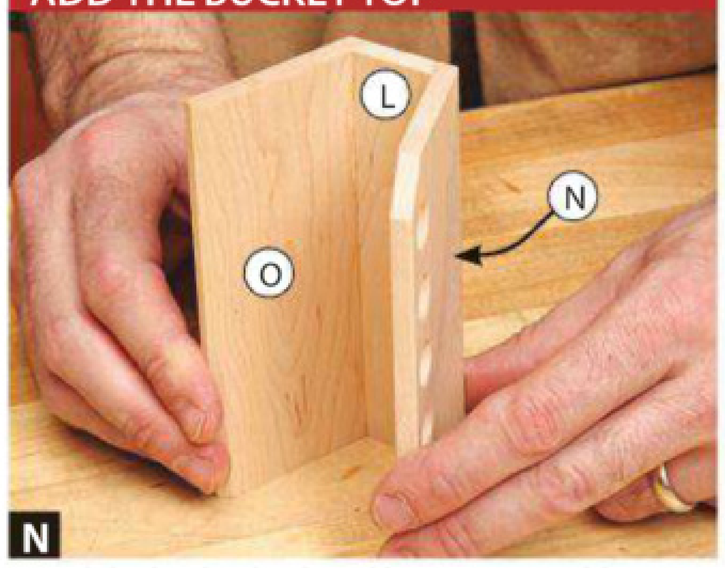
**5** Cut the brackets (R) 1/8" wider than listed [**Materials List**]. Apply a **Bracket Pattern** to each bracket and round one edge as shown in **Photo Q**. Note the grain orientation; the rounded and the opposite square surfaces should be edge grain, not end grain.

**GLUE THE BACK TO THE BOTTOM**



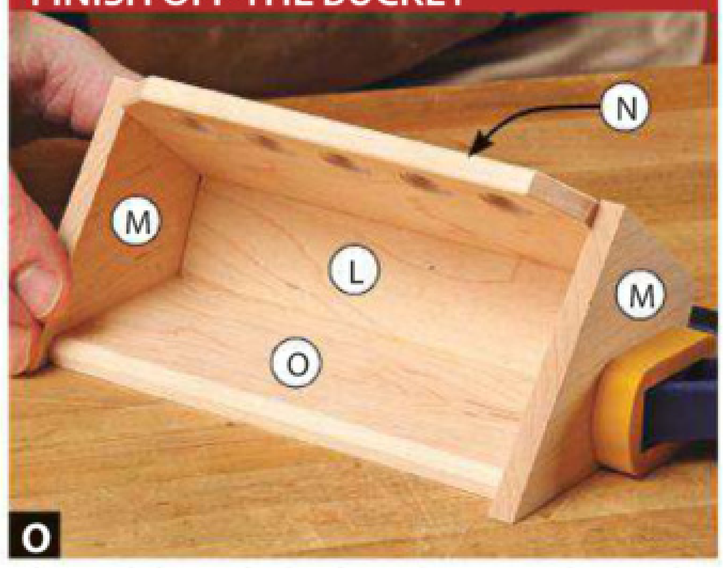

With the bucket bottom (O) resting on your bench, glue the bucket back (L) to its top face. Hold the pieces in place until the glue grabs.

**ADD THE BUCKET TOP**




Stand the bucket back and bottom assembly (L/O) on end and glue the bucket top (N) in place, sandwiching the bucket back.

**FINISH OFF THE BUCKET**




Glue and clamp the bucket sides (M) in place and set the bucket aside to dry while you move on to making the arm assembly.

Put the scraper to work (issue 219, July 2013).



Load and spin with the skid loader (issue 211, May 2012).



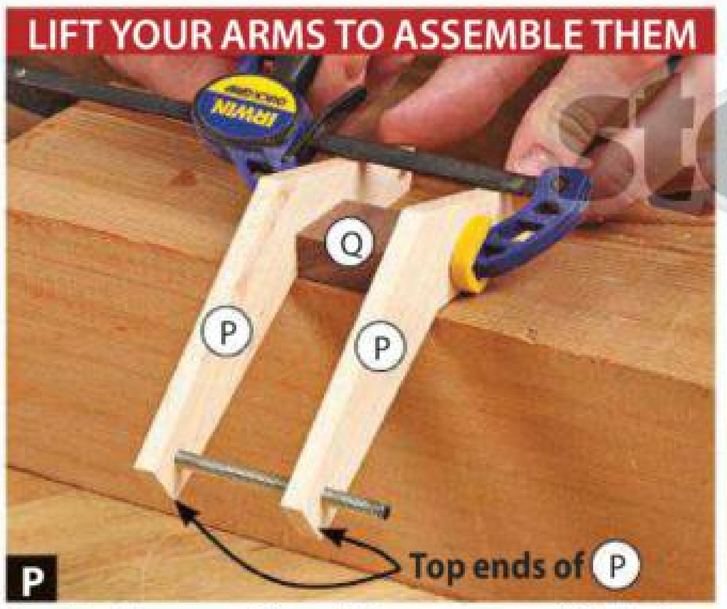
Rev up the motor grader (issue 208, November 2011).





The tractor pulls both the side-dump and lowboy trailers. (Find all three pieces in issue 205, July 2011.)

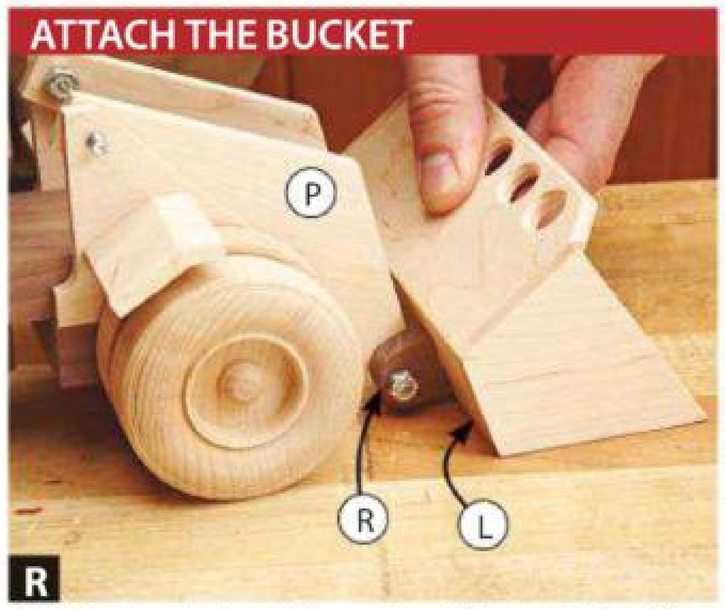





To align the arms (P) and the arm spacer (Q) during glue-up, rest the pieces on a thick scrap. A length of threaded rod aligns the top ends of the arms.

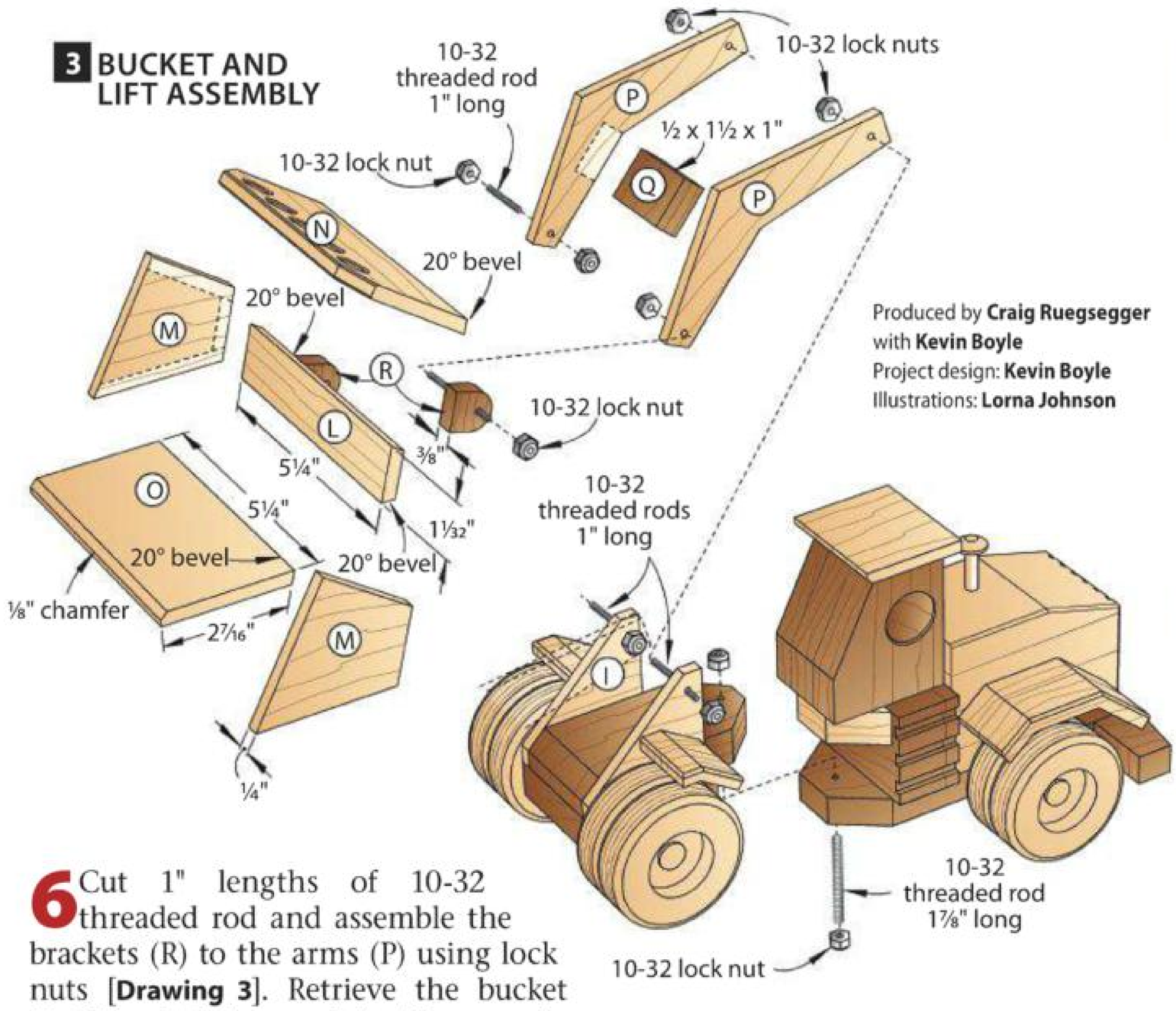



To create the radius on the brackets (R), glue each one to a scrap handle. After sanding up to the pattern line, cut the bracket free.




With the bucket and the ends of the brackets (R) resting on your bench, press and hold the bucket against the brackets.

## 3 BUCKET AND LIFT ASSEMBLY

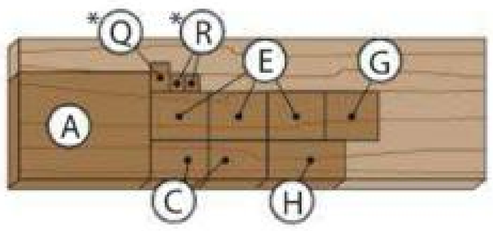



Produced by **Craig Ruegsegger** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Lorna Johnson**

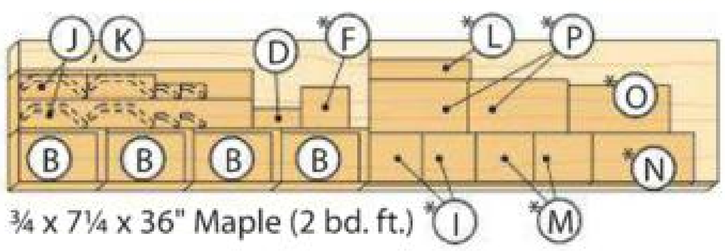
**6** Cut 1" lengths of 10-32 threaded rod and assemble the brackets (R) to the arms (P) using lock nuts [**Drawing 3**]. Retrieve the bucket (L–O) and finish-sand it. Then apply glue to the square edges of the brackets and glue them to the bucket back (L) [**Photo R**]. Allow the glue to dry.

**7** Glue the smokestack [**Source**] into the hole in the hood (B) [**Drawing 1**]. Remove the hardware and apply a finish. (We sprayed on three coats of satin aerosol lacquer.) Join the front and rear chassis with a 1⅞" length of 10-32 threaded rod and lock nuts [**Drawing 3**]. Secure the wheels with axle pegs glued into the chassis (A, G) [**Drawings 1** and **2**], trapping the ⅜" washers. Finally, attach the bucket arms (P) to the arm braces (I) and brackets (R) with threaded rod and lock nuts [**Drawing 3**]. Your loader is ready to fill that truck!

## Cutting Diagram




¾ x 7¼ x 24" Walnut (1.3 bd. ft.)
*Plane or resaw to thicknesses listed in the Materials List.




¾ x 7¼ x 36" Maple (2 bd. ft.)

## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| **Rear and front units** | | | | | | |
| A | rear chassis | ¾" | 5½" | 6¾" | W | 1 |
| B* | hood | 3" | 2½" | 4" | LM | 1 |
| C | steps | 1⅜" | 2" | 3" | LW | 1 |
| D | cab support | ¾" | 1" | 2½" | M | 1 |
| E | cab | 2" | 2½" | 3" | LW | 1 |
| F | roof | ¼" | 2½" | 2¼" | M | 1 |
| G | front chassis | ¾" | 2½" | 2¾" | W | 1 |
| H | pivot block | ¾" | 2" | 4" | W | 1 |
| I | arm braces | ¼" | 2½" | 2¾" | M | 2 |
| J | rear fenders | 1½" | 1¼" | 3½" | LM | 2 |
| K | front fenders | 1½" | ¾" | 1⁵⁄16" | LM | 2 |
| **Bucket and lift** | | | | | | |
| L | bucket back | ¼" | 1⅛2" | 5¼" | M | 1 |
| M | bucket sides | ¼" | 2½" | 3" | M | 2 |
| N | bucket top | ¼" | 2½" | 5¼" | M | 1 |
| O | bucket bottom | ¼" | 2⁷⁄16" | 5¼" | M | 1 |
| P | arms | ¼" | 2¾" | 5⅛" | M | 2 |
| Q | arm spacer | ½" | 1½" | 1" | W | 1 |
| R* | brackets | ⅜" | ¾" | ¾" | W | 2 |

*Parts initially cut oversize. See the instructions.

**Materials key:** W–walnut, LM–laminated maple, LW–laminated walnut, M–maple.
**Supplies:** Double-faced tape, spray adhesive.
**Bits:** 3⁄16", ¼", 1⅛2" ½", 1" drill bits; ⅛" round-over, 45° chamfer router bits.

## Source

**Hardware kit:** The kit contains all the specialty parts (wheels, axle pegs, and smokestack) and hardware (no lumber) needed to build one end loader. Order kit no. RS-00988, $19.95+shipping, 888-636-4478, woodmagazine.com/loader.

## More Resources

- Fellow *WOOD®* readers inspire creativity with toys of their own at **woodmagazine.com/toygallery**.
- Prefer slightly larger big-boy toys? Check out some ½-scale versions at **woodmagazine.com/bigmodels**.

Download this full-size printable patterns at **woodmagazine.com/zinio222**

Storemags.com



Better Homes and Gardens®

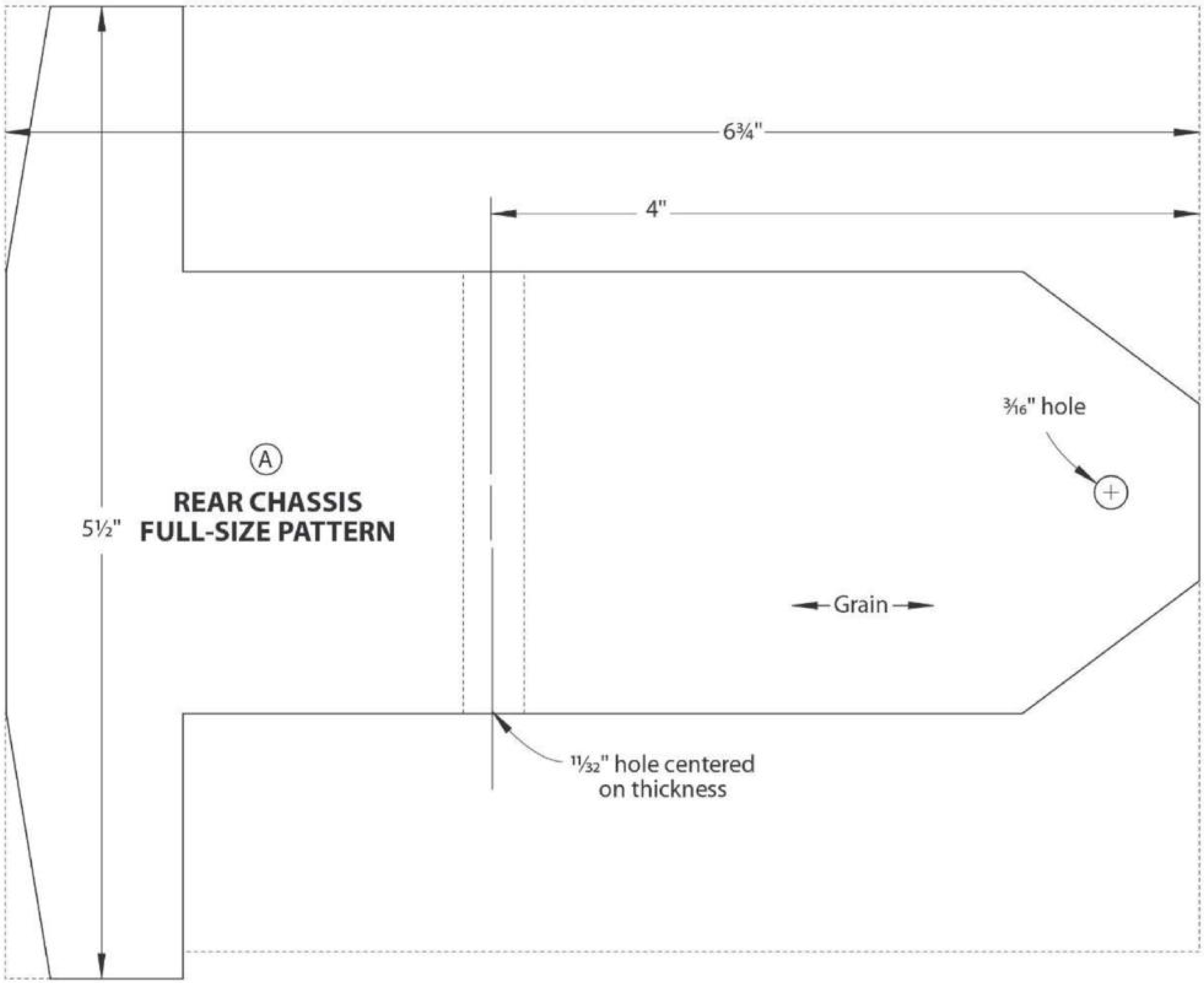
# WOOD® PATTERNS®

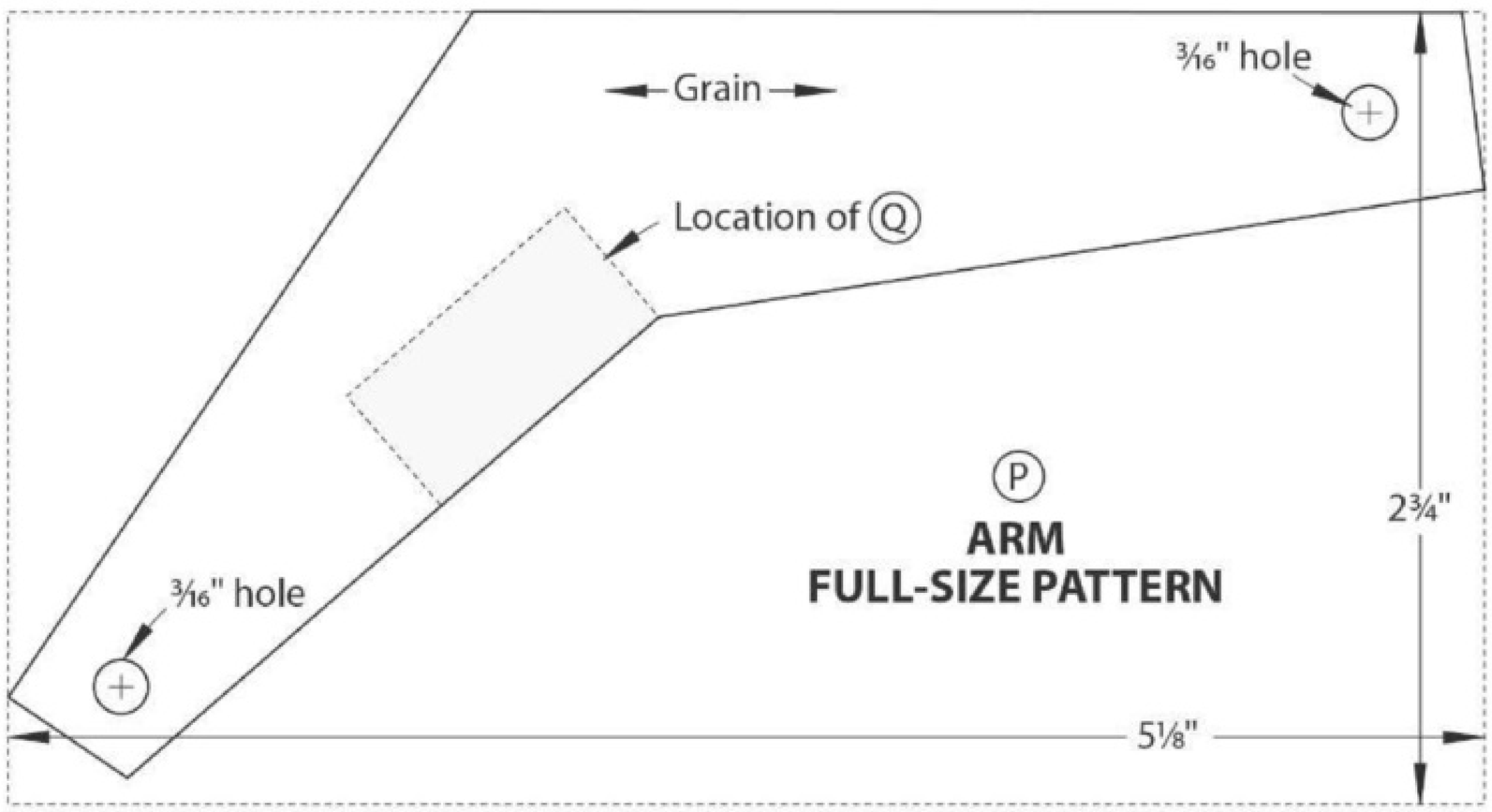
*November 2013* *Issue 222*

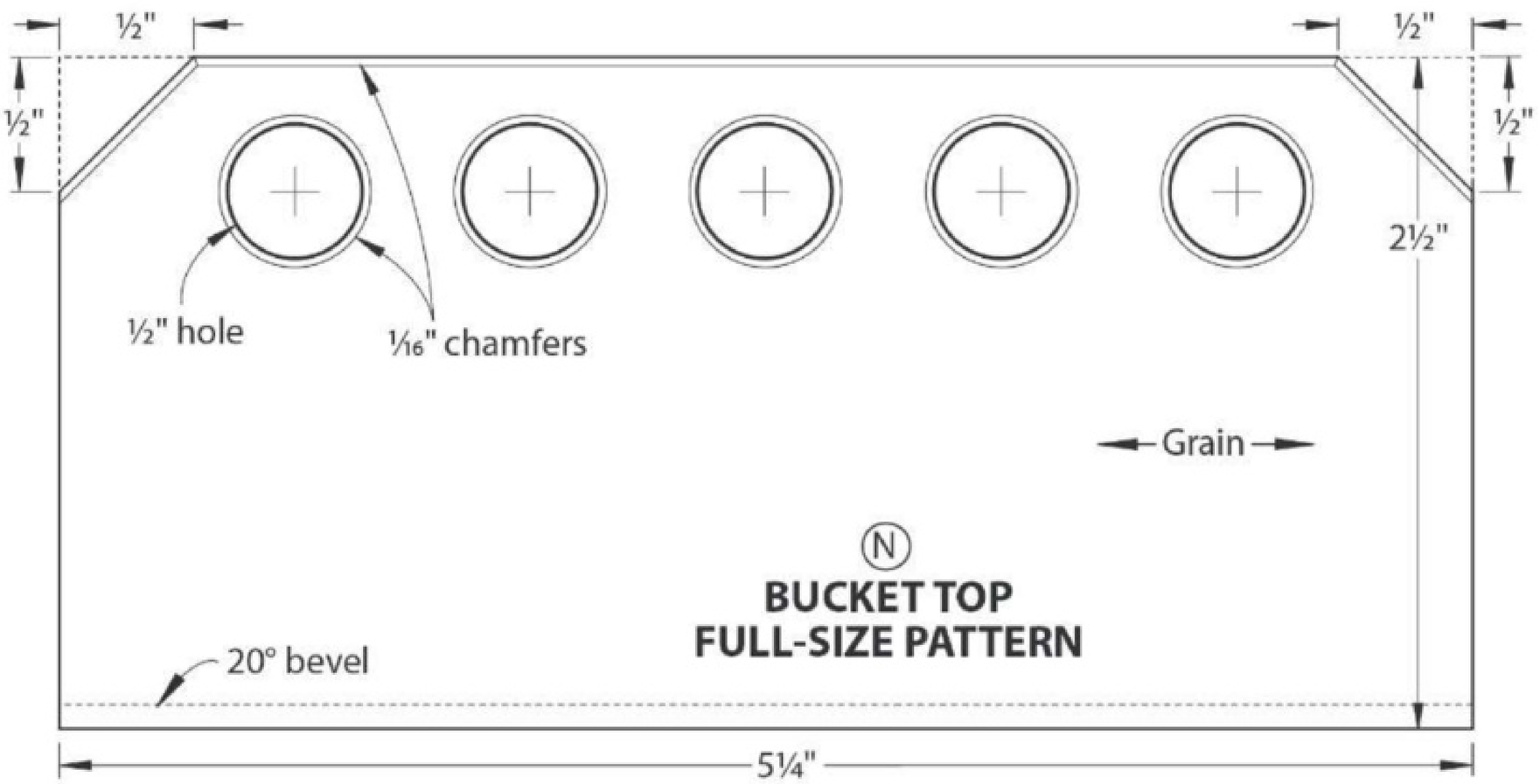
**Dear Reader:** As a service to you, we've included full-size patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Materials List and the drawings accompanying the project you're building.

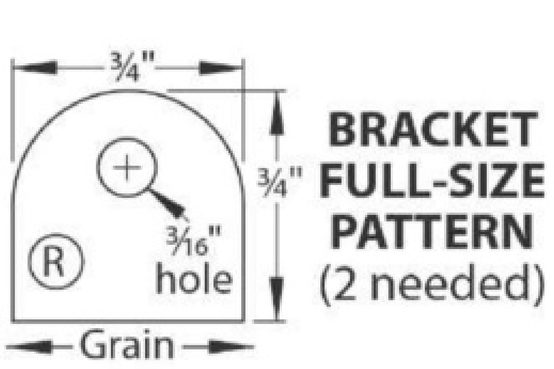
© Copyright Meredith Corporation, 2013. All rights reserved. Printed in the U.S.A. Meredith Corp., the publisher of WOOD Patterns®, allows the purchaser of this pattern insert to photocopy these patterns solely for personal use. Any other reproduction of these patterns is strictly prohibited.

## Construction-grade Loader
## Page 32

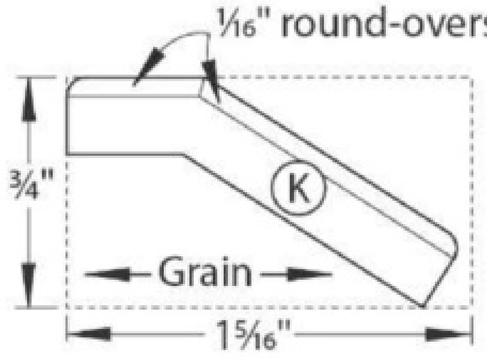




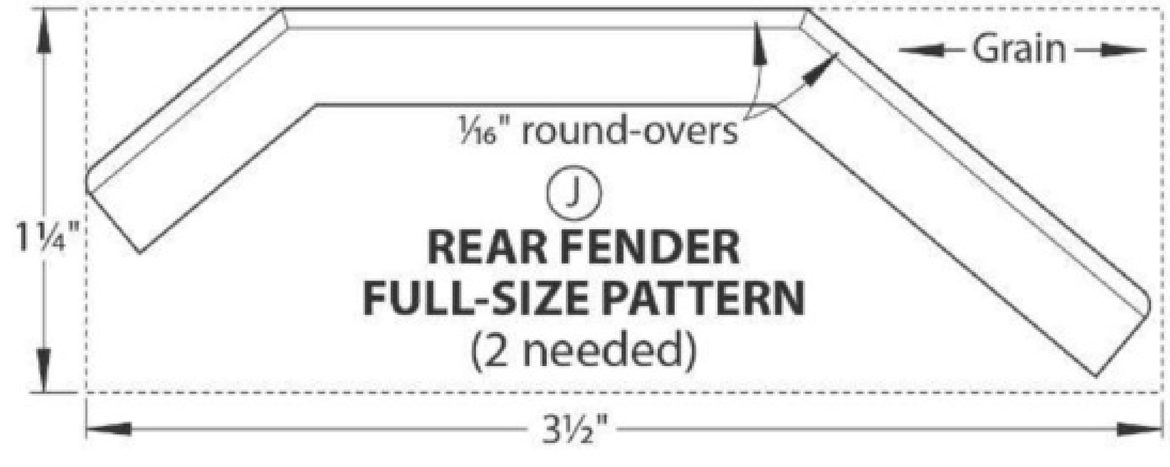




**BRACKET FULL-SIZE PATTERN**
(2 needed)

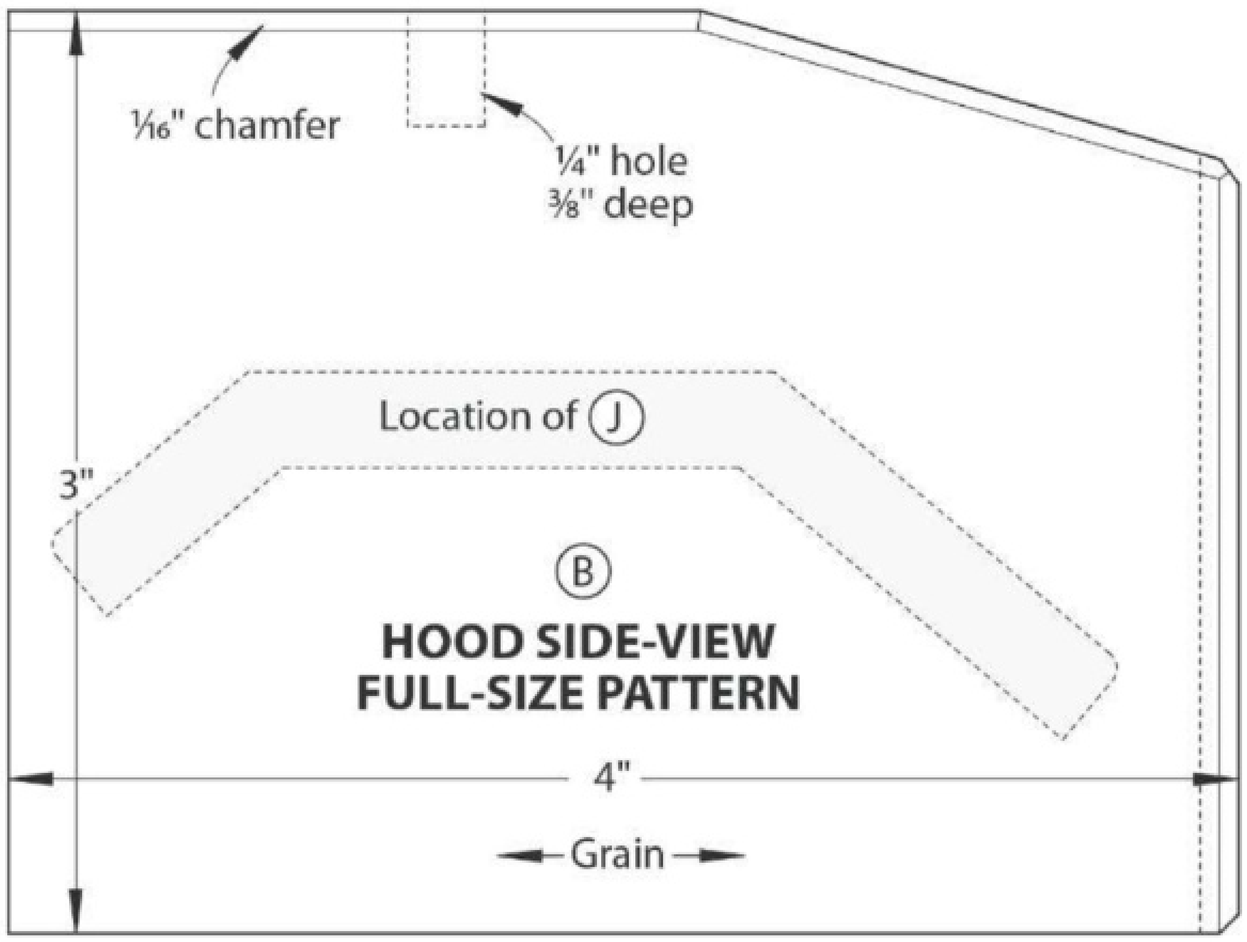


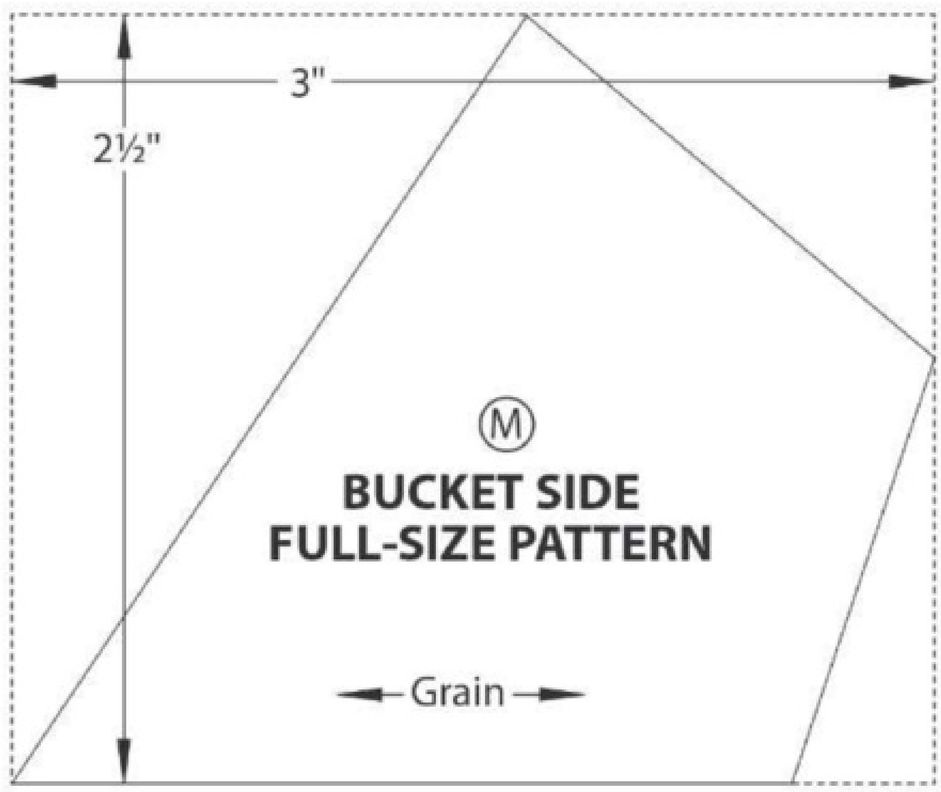

**FRONT FENDER FULL-SIZE PATTERN**
(2 needed)

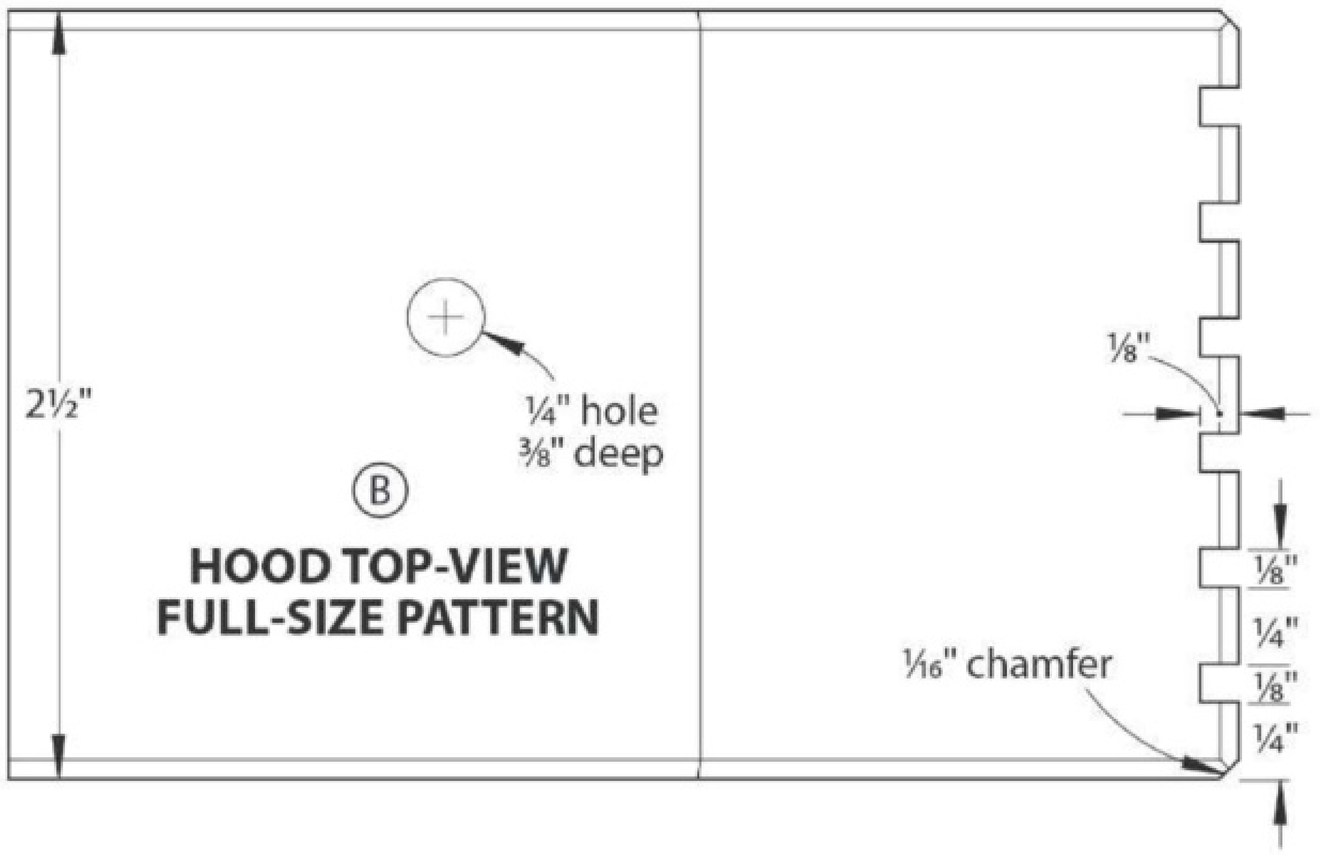


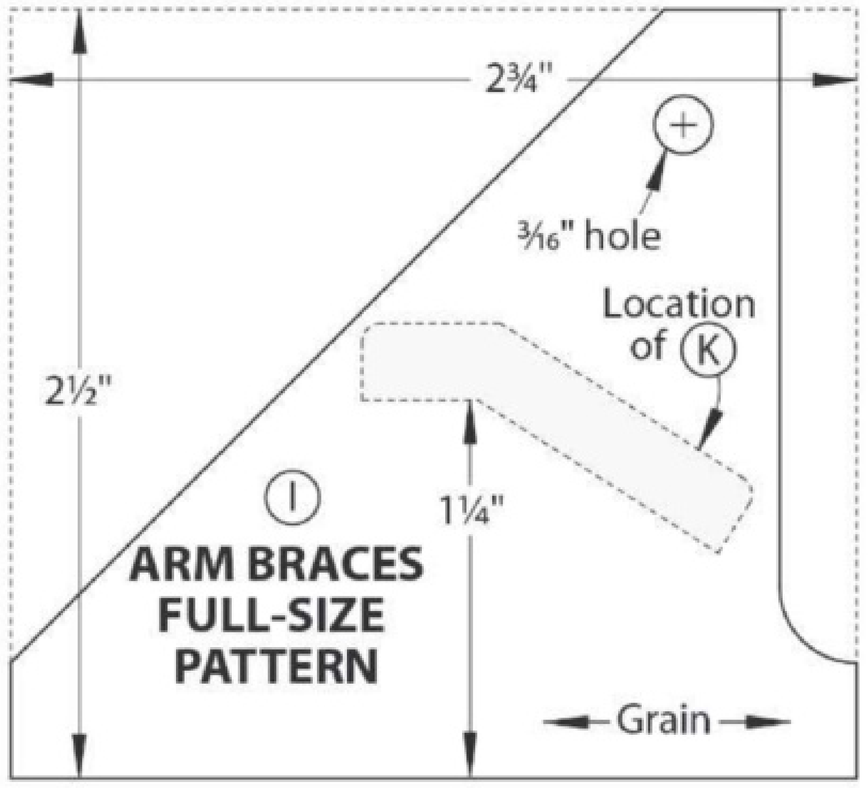

**REAR FENDER FULL-SIZE PATTERN**
(2 needed)

Download this full-size printable patterns at **woodmagazine.com/zinio222**



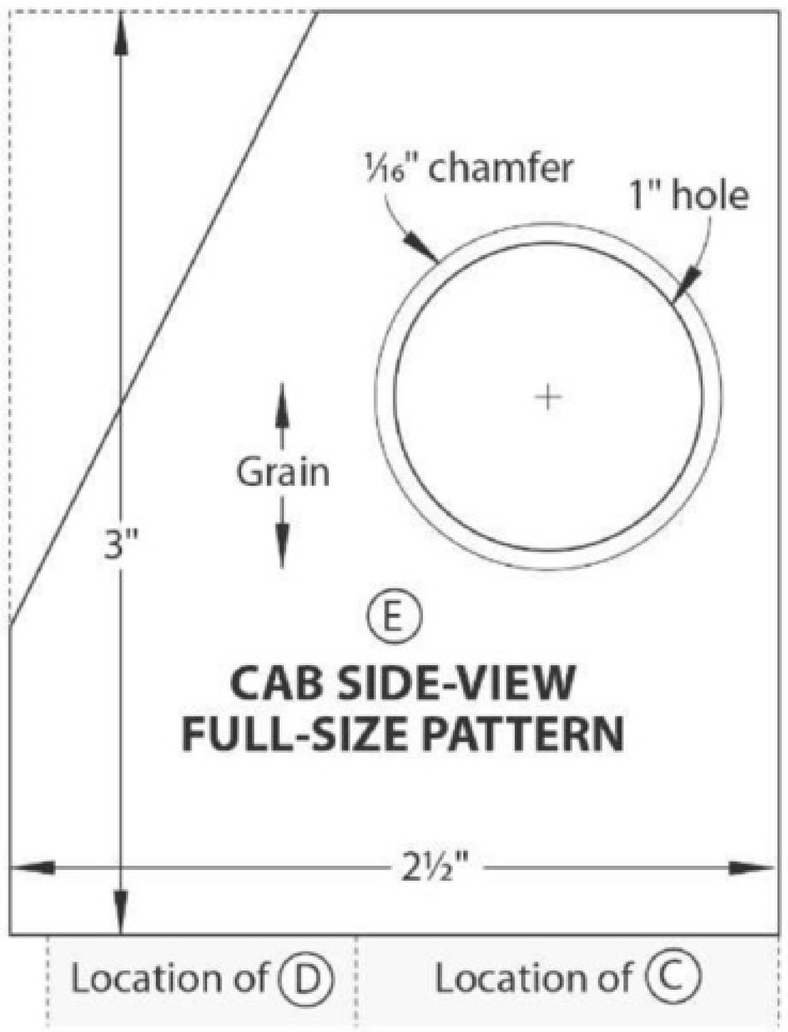



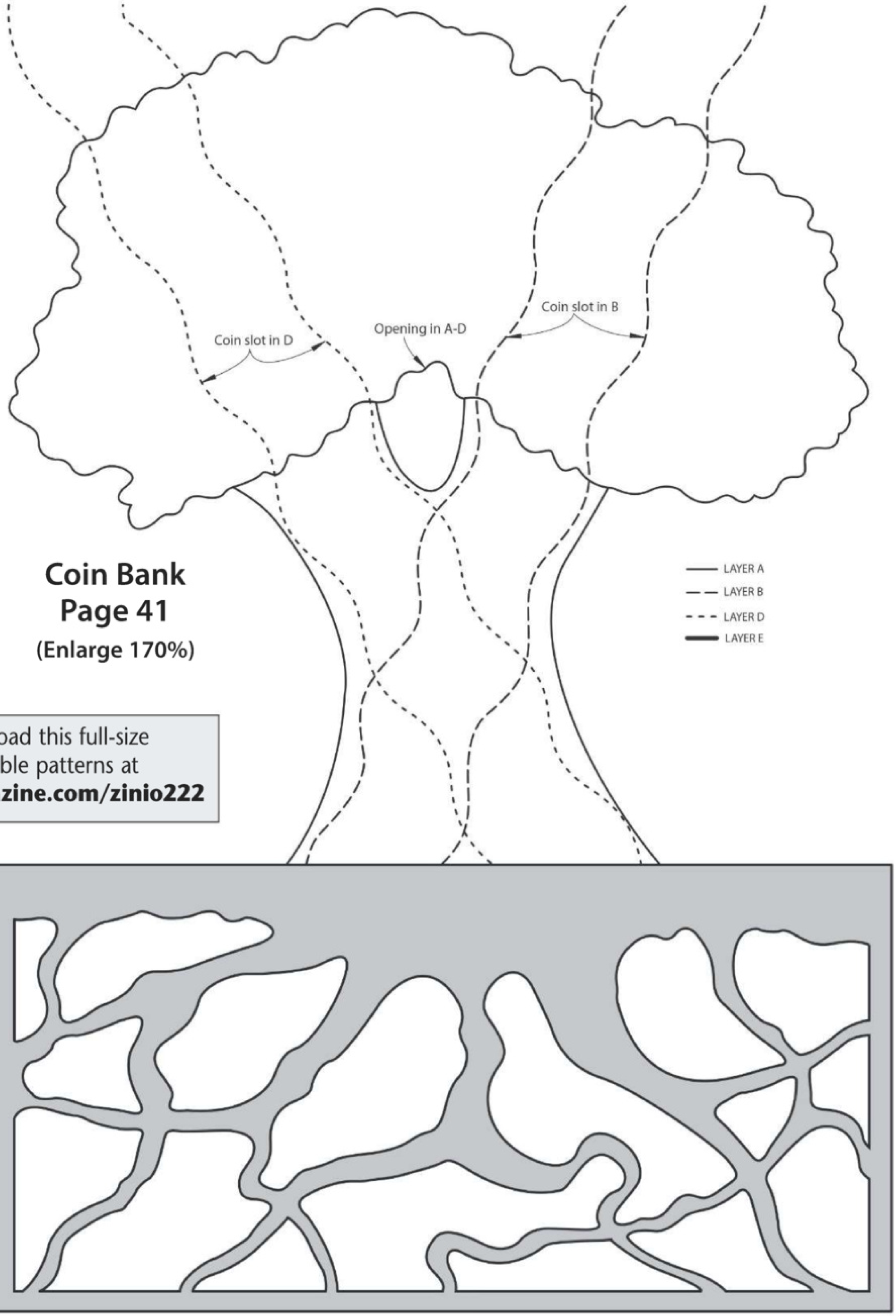






**Construction-grade Loader**
**Page 32**




Download this full-size printable patterns at **woodmagazine.com/zinio222**




## Coin Bank
## Page 41
**(Enlarge 170%)**

Download this full-size printable patterns at **woodmagazine.com/zinio222**

# The Prosperi-tree Coin Bank

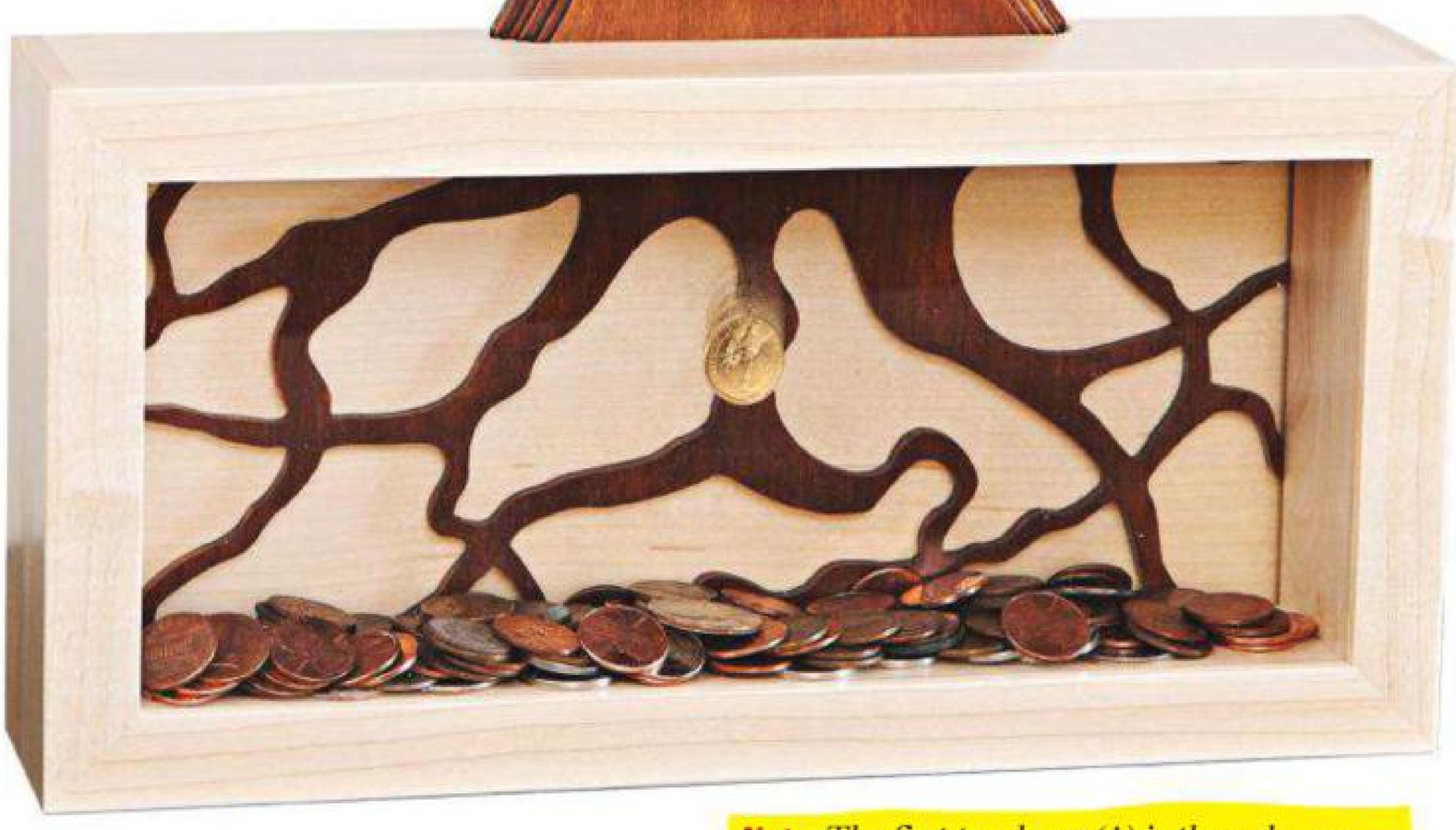


**Who says money doesn't grow on trees? Plant this coin bank in a fertile location and feed its roots often for a bountiful harvest.**

*I wanted to have fun with the "money tree" metaphor for this scrollsawn coin bank, so I decided to really push the design elements to reflect that. Coins rain through the leaves in unexpected paths to "water" the roots of the underground vault. And an easy scribing technique creates a three-dimensional "growing" effect from a single pattern. I think it makes saving fun and I hope you will too.*



John Olson, Design Editor



## Turn wood back into a tree

**1** From ⅛" cherry plywood, cut four 11×11" blanks for the front four tree layers (A–D). From ¼" cherry plywood (or laminated ⅛" plywood), cut an 11×16" blank for the back tree layer (E).

**2** Make three photocopies of the full-size **Tree Pattern** on the *WOOD Patterns®* insert. Cut the root pattern away from all the trees and discard all but one root pattern. Spray-adhere one tree pattern to an 11×11" blank (A), aligning the base of the trunk with one end. Set the other patterns aside for now.

**3** Using a #2 blade, scrollsaw the tree around the solid outline. Cut the leaf canopy away from the trunk. Cut out and discard the canopy opening.

***Note:*** *The first tree layer (A) is the only one where you'll cut the canopy away from the trunk. Separating them now makes it easier to avoid bleeding when you stain the trunk later.*

**4** Tape the canopy and trunk (A) back together, position the tree on the next 11×11" blank (B), and use a small flat washer (ours was a #4×5⁄16" O.D. washer) to scribe a slightly larger tree shape onto the blank [**Photo A**]. Be sure

Scrollsaw.com

to scribe the canopy opening, too. Scrollsaw layer B, drilling a 1/16" blade-start hole to cut the canopy opening.

***Quick Tip:** Alternate the grain direction of the tree layers for an additional highlight to the tree canopy. A characteristic of wood grain called "chatoyance" causes variations in sheen as light reflects from the two different angles.*

**5** Retrieve one of the tree patterns, cut apart the pattern's right side including layer B's coin slot, and spray-adhere it to layer B [**Photo B**], positioning the smaller pattern evenly spaced within the larger tree layer. Scrollsaw only the coin slot from layer B. Then, tape layer B back together, coin-slot waste piece included. Repeat the enlarging and scrollsawing process for layers C and D in the remaining 1/8" blanks. Use the final tree pattern to cut the coin slot for layer D, and tape D back together.

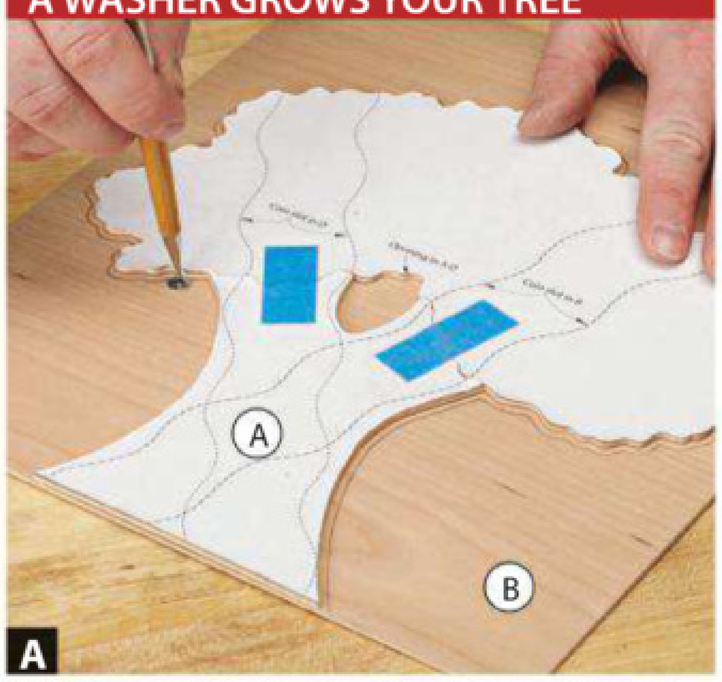
**6** Retrieve the root pattern and spray adhere it to the bottom of the 1/4" blank. Align layer D along the top edge of the root pattern, centered side to side, and use the washer to enlarge the tree a final time.

***Note:** The canopy opening will be too small to reduce a final time. Instead, position layer C in layer E's outline and trace the cutout without the washer.*

Drill blade start holes in layer E's root and canopy cutouts and scrollsaw layer E to shape. Remove the patterns from all pieces.

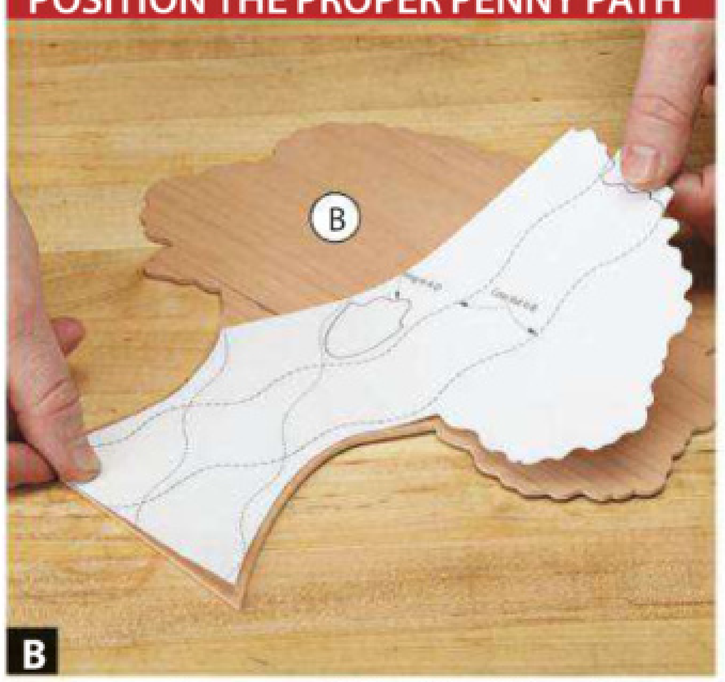
**7** Carefully spread a thin layer of white glue (chosen because it dries clear) on the backs of the two pieces of layer D, keeping the glue about 1/8" away from the edges to prevent squeeze-out. Position and lightly clamp layer D to layer E using the coin-slot waste piece to aid in positioning [**Drawing**]. Discard the coin-slot waste piece and allow the glue to set. Then, repeat with layers C, B, and A and allow the glue to dry.

## A WASHER GROWS YOUR TREE

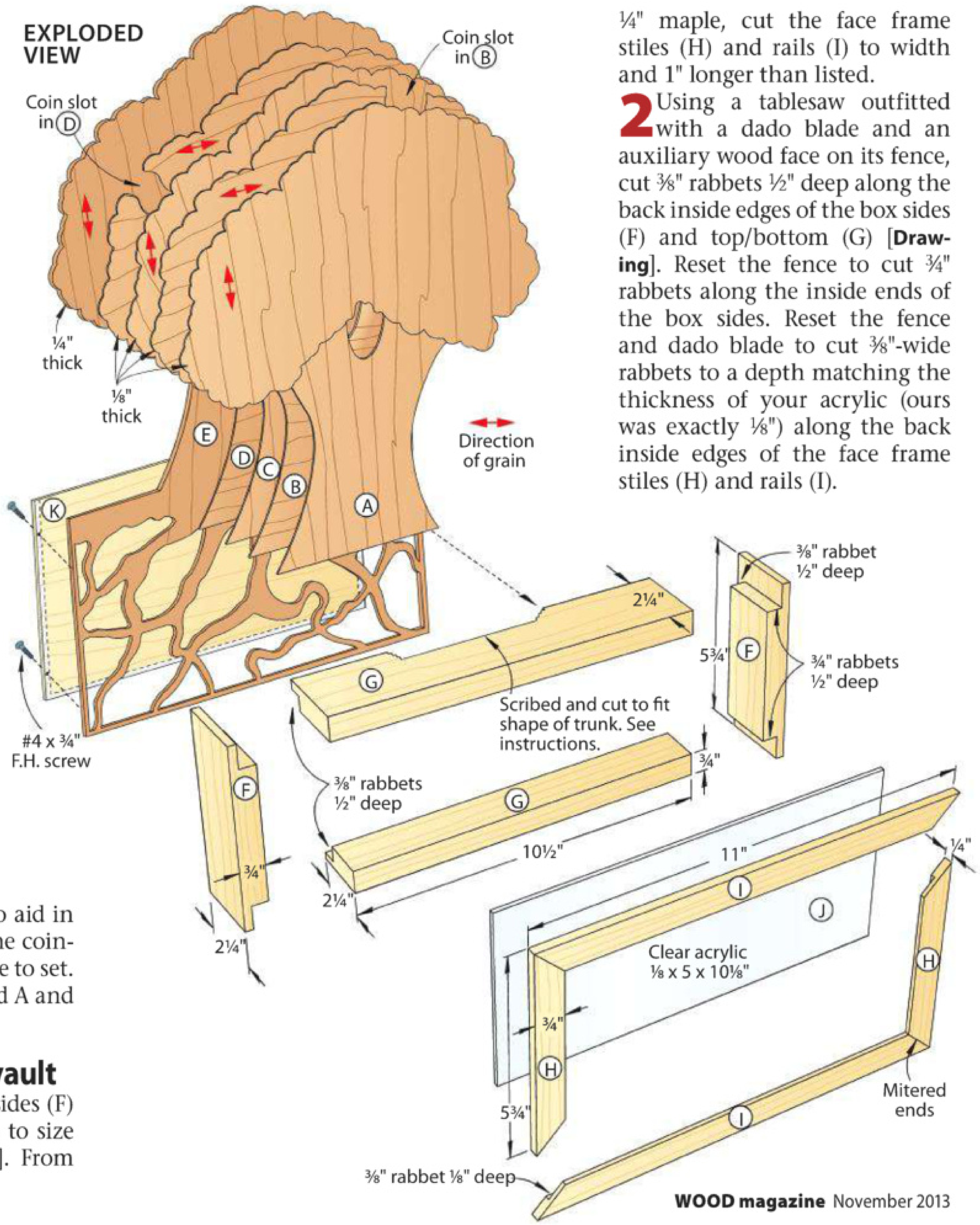



Butt the pencil lead against the interior of a small washer and use it to trace the tree. The washer acts as a spacer, enlarging the tree's outline.

## POSITION THE PROPER PENNY PATH




As a precaution, use only the side of the pattern with the correct coin slot. This eliminates confusion and potentially wasted wood.




## Give the branch office a vault

**1** From 3/4" maple, cut the box sides (F) and box top and bottom (G) to size [**Materials List**, *page 43,* **Drawing**]. From 1/4" maple, cut the face frame stiles (H) and rails (I) to width and 1" longer than listed.

**2** Using a tablesaw outfitted with a dado blade and an auxiliary wood face on its fence, cut 3/8" rabbets 1/2" deep along the back inside edges of the box sides (F) and top/bottom (G) [**Drawing**]. Reset the fence to cut 3/4" rabbets along the inside ends of the box sides. Reset the fence and dado blade to cut 3/8"-wide rabbets to a depth matching the thickness of your acrylic (ours was exactly 1/8") along the back inside edges of the face frame stiles (H) and rails (I).

**3** Adjust a compass so that the gap between the lead and the point is ½". Lay the tree (A–E) face up on a work surface and hold the box top (G) in position, butted against the bottoms of the tree layers. Scribe the shape of the tree trunk onto the box top [**Photo C**]. Then, scrollsaw the opening in the box top and double check the fit, making any necessary adjustments. Glue and assemble the box top, bottom, and sides (F)

**4** Miter-cut the face frame stiles (H) and rails (I) to fit the box (F/G). Glue, then clamp, the face frame together and allow the glue to dry. Measure the rabbeted opening in the back of the face frame and cut the viewing window (J) to fit from ⅛" clear acrylic. Glue the face frame (H/I) to the front of the box, trapping the viewing window between the two.

**5** Measure the rabbeted opening in the back of the box (F/G/H/I) and cut the backer board (K) to fit from ¼" birch plywood. Drill countersunk screw holes in the backer board [**Drawing**].

## Add a clear coat, then coins

**1** Carefully stain the tree trunk and roots. We used General Finishes Antique Cherry oil-based stain. Allow the stain to dry.

***Quick Tip:** To prevent the stain from bleeding from the trunk to the canopy on layers B–E, make scoring cuts in the plywood veneer with a crafts knife, delineating the border between the two.*

**2** Mask off the acrylic viewing window (J) and apply a clear finish to all the parts. We sprayed three coats of satin aerosol lacquer, sanding to 320 grit between coats.

**3** After the finish dries completely, assemble the box with screws (see **Shop Tip**, *left*), trapping the tree's roots between the box and the backer board. Now empty your pockets and watch your savings grow.

Produced by **Lucas Peters** and **John Olson**
Project design: **John Olson**
Illustrations: **Lorna Johnson**

### SCRIBE A PERFECT FIT

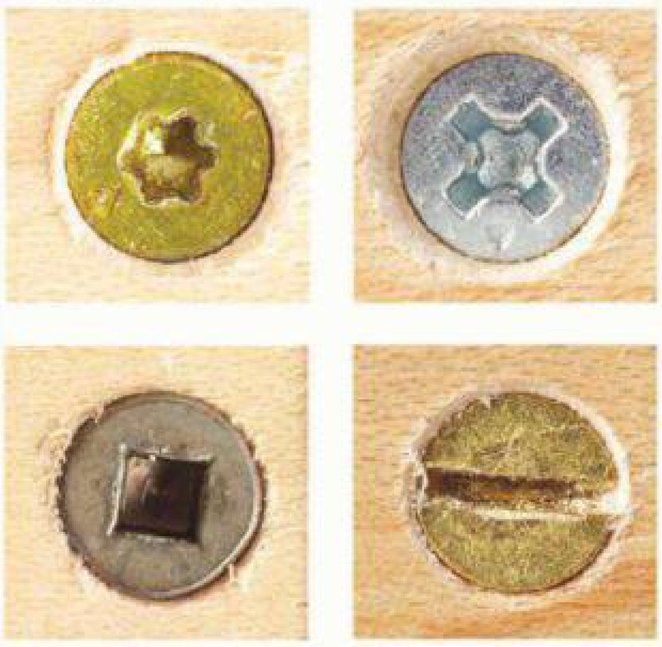



Keep the compass point and lead aligned perpendicular to the worksurface as you move the point along the contours.

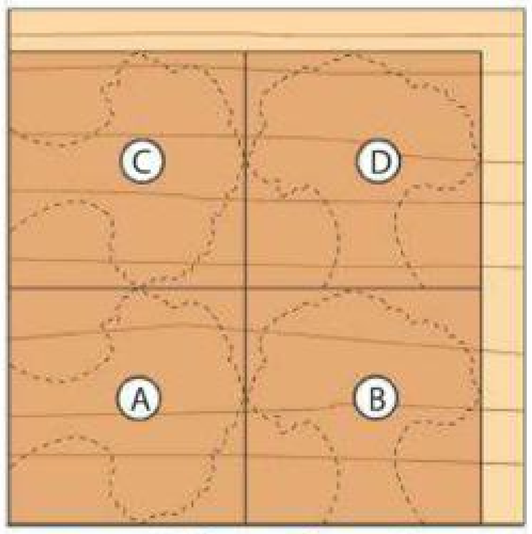
### SHOP TIP

## Install a screwy security system

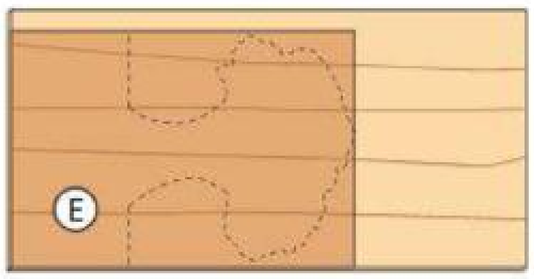
Quadruple the "security" on your coin bank and confound would-be burglars with a variety of screw-heads. By using one Phillips, one slotted, one Torx, and one square-drive screw to attach the backer board, designer John Olson ensured that not just any thief (or editor) with a screwdriver is getting into his spare change.



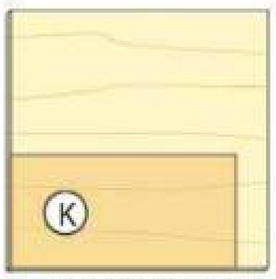
## Cutting Diagram




⅛ x 24 x 24" Cherry plywood



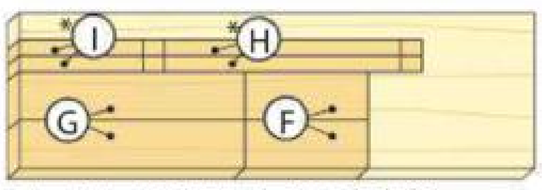

¼ x 12 x 24" Cherry plywood




¼ x 12 x 24" Birch plywood




⅛ x 6 x 12" Clear acrylic




¾ x 7¼ x 24" Maple (1.3 bd. ft.)
*Plane or resaw to the thickness listed in the Materials List.

## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| A* | layer A | ⅛" | 11" | 11" | CP | 1 |
| B* | layer B | ⅛" | 11" | 11" | CP | 1 |
| C* | layer C | ⅛" | 11" | 11" | CP | 1 |
| D* | layer D | ⅛" | 11" | 11" | CP | 1 |
| E* | layer E | ¼" | 11" | 16" | CP | 1 |
| F | box sides | ¾" | 2¼" | 5¾" | M | 2 |
| G | box top and bottom | ¾" | 2¼" | 10½" | M | 2 |
| H** | face frame stiles | ¼" | ¾" | 5¾" | M | 2 |
| I** | face frame rail | ¼" | ¾" | 11" | M | 2 |
| J | viewing window | ⅛" | 5" | 10⅛" | CA | 1 |
| K | backer board | ¼" | 5¼" | 10½" | BP | 1 |

*Part dimensions are for blanks to be scrollsawn.
**Parts initially cut oversize. See the instructions.

**Materials key:** CP–cherry plywood, M–maple, CA–clear acrylic, BP–birch plywood.
**Supplies:** Spray adhesive, #4×5/16" O.D. flat washer (1), white glue, #4×¾" flathead screws (4).
**Blades and bit:** #2 scrollsaw blade, 1/16" drill bit, dado set.

**Supplies on Demand**
You can quickly and easily order supplies needed for this project at woodmagazine.com/treebank. Simply delete any supplies you already have on hand before checkout.

## More Resources

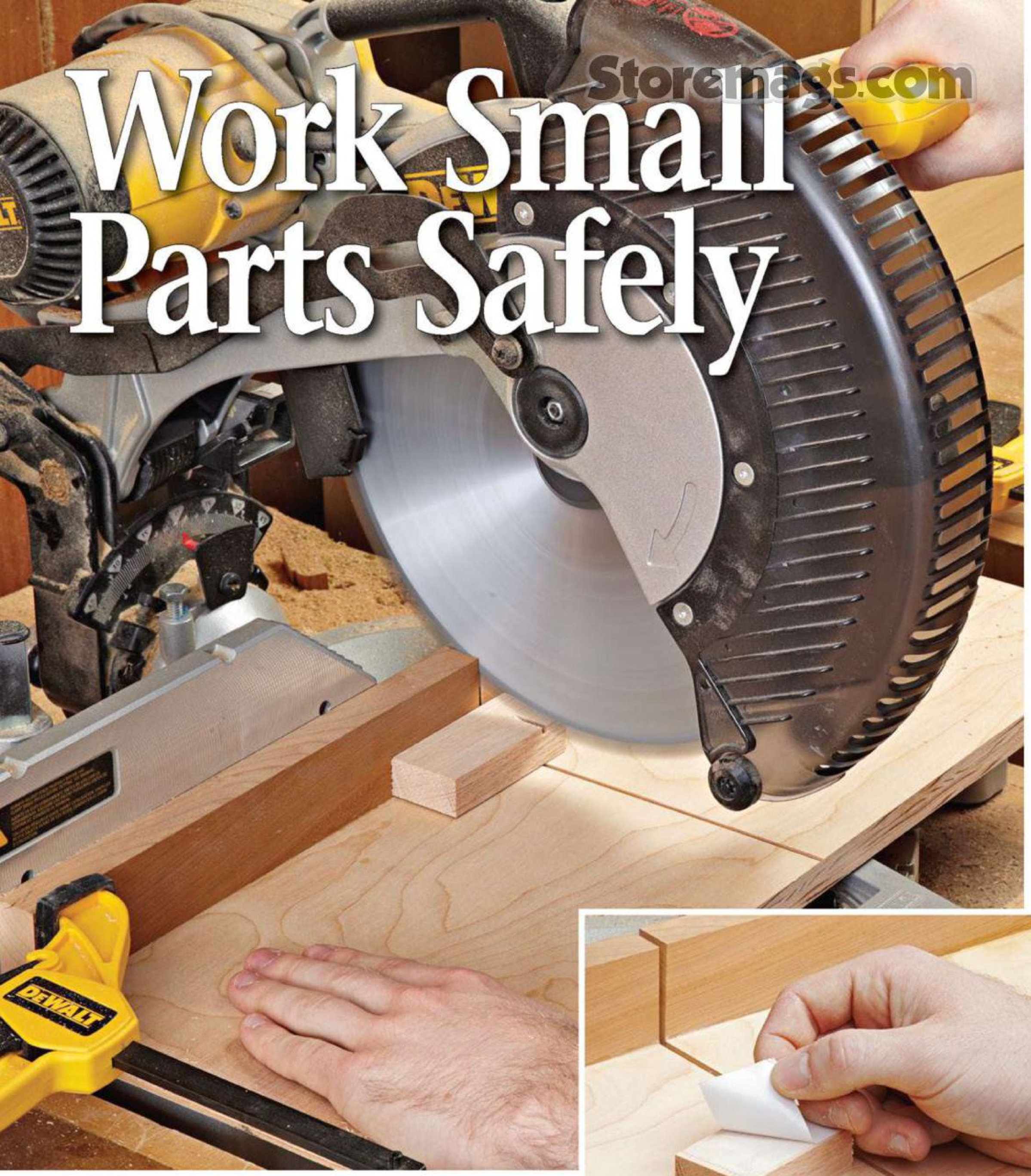
- Find 8 shop-tested scrollsaw tips at **woodmagazine.com/8scrollsawtips**.
- Shop for dozens of scrollsaw plans at **woodmagazine.com/scrollsawplans**.



Storemags.com

# Work Small Parts Safely

Storemags.com




When cutting and shaping petite pieces, regardless of what tool you use, one universal rule applies: Keep your fingers a safe distance from the machine's cutting edges. Not only will your digits thank you, you'll also improve accuracy by better controlling your workpiece during the cut. Here's how.



This zero-clearance mitersaw table supports small parts during crosscuts. Double-faced tape holds your workpiece in place.

## Complete close cuts

The force a big blade applies to a small part can make the workpiece difficult to control. Regain command by adding accessories that grip the workpiece firmly—such as the zero-clearance mitersaw table *on the previous page*—while your hands remain a safe distance from the blade. By gluing a hardwood scrap to a piece of plywood, you create a platform that closes the gaps in both the fence and the table, preventing a workpiece or offcut from falling into them. The tablesaw sled on *page 30* provides the same benefits. Here are some other solutions for cutting narrow, short, and thin stock safely.

### SMALL-PIECE JOINTER UNPLUGGED




Clamp a hand plane and a rabbeted scrapwood fence into your bench vise to square up a tiny piece or remove a thin layer of material.

### SLICE SMALL AND THIN PIECES SAFELY




Cut multiple thin pieces without stopping to reset using this setup. Stick the blank to the carrier in front of the blade after each cut.

### DOWEL-CUTTING CRADLE FOR BANDSAW




Build this carrier with the 2×4 extending just past the blade; then, run it through to cut it flush and provide a reference edge for aligning cutlines on the

## Drill even diminutive parts

The drill press may not be as intimidating as a tablesaw or router, but can still be dangerous if the workpiece isn't properly secured. If the force securing the piece isn't as strong as the torque from the spinning drill bit, the bit may grab the workpiece and rip it from your hands. Prevent that from happening with these techniques.

### "FLATTEN" ROUNDED KNOBS WITH A STICKY NICHE



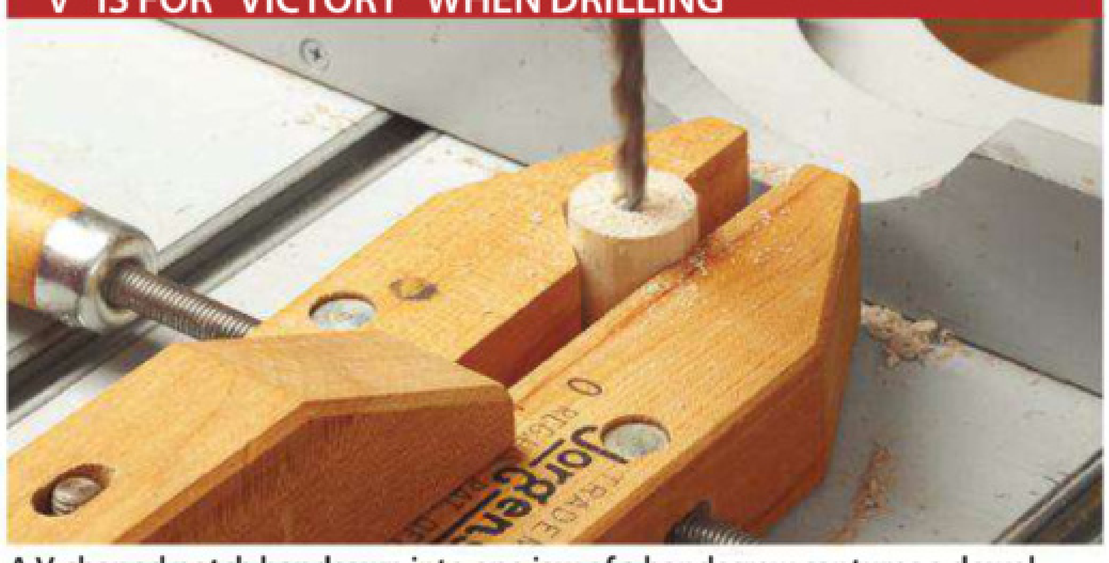
In scrap, drill a shallow hole, cover it with double-faced tape *above left*, and press the knob into the hole. Clamp the scrap beneath the bit and drill slowly.

### NOTCHED JIG CAPTURES NARROW PARTS




Notch a scrap to fit your workpiece, glue the scrap to a base, and mount an in-line clamp to hold the workpiece tightly in place.

### "V" IS FOR "VICTORY" WHEN DRILLING

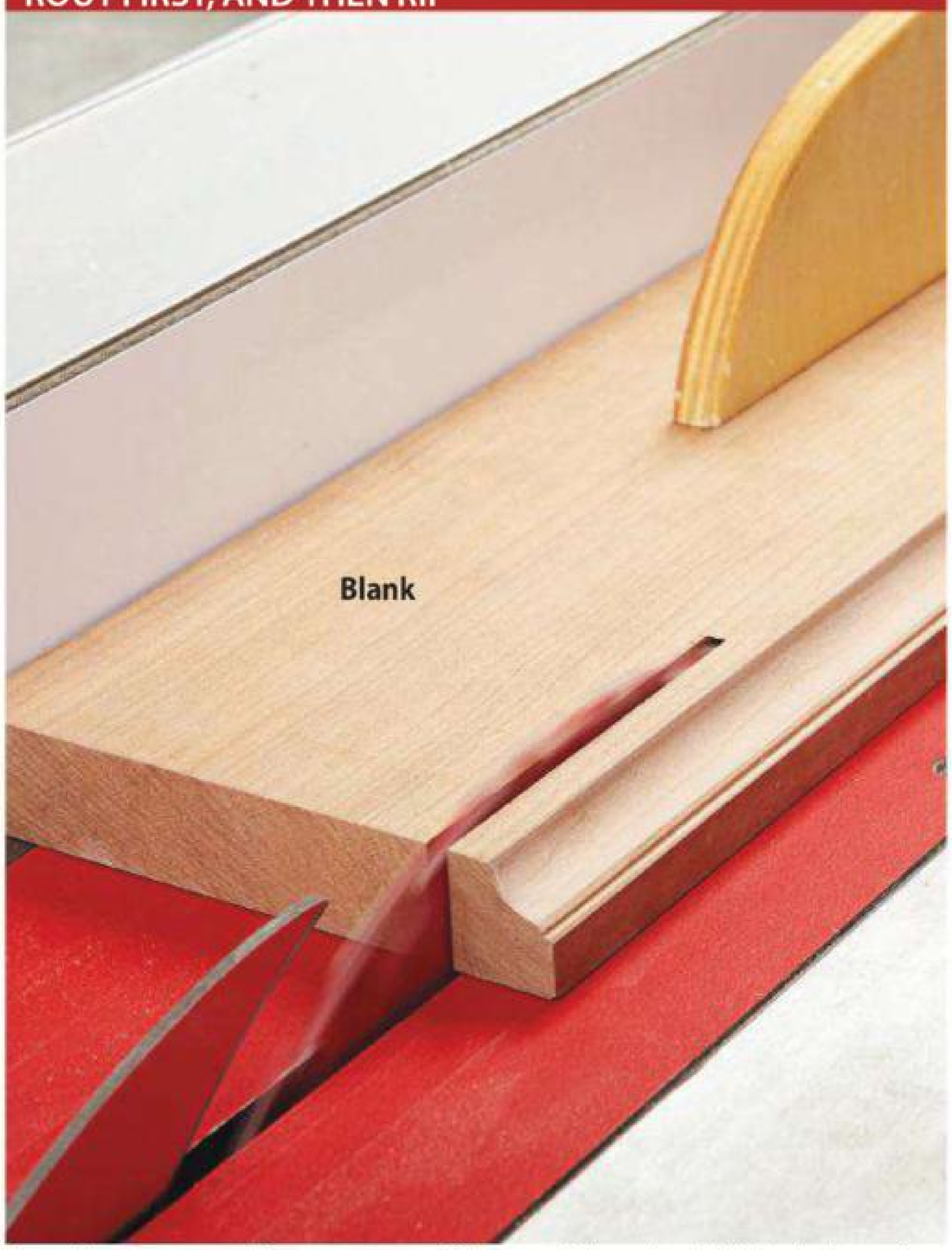


A V-shaped notch bandsawn into one jaw of a handscrew captures a dowel, keeping it from spinning during drilling.

# Rout the runts

When adding an edge treatment to a small workpiece, keep it from being flung across the shop with these simple tricks.

## ROUT FIRST, AND THEN RIP

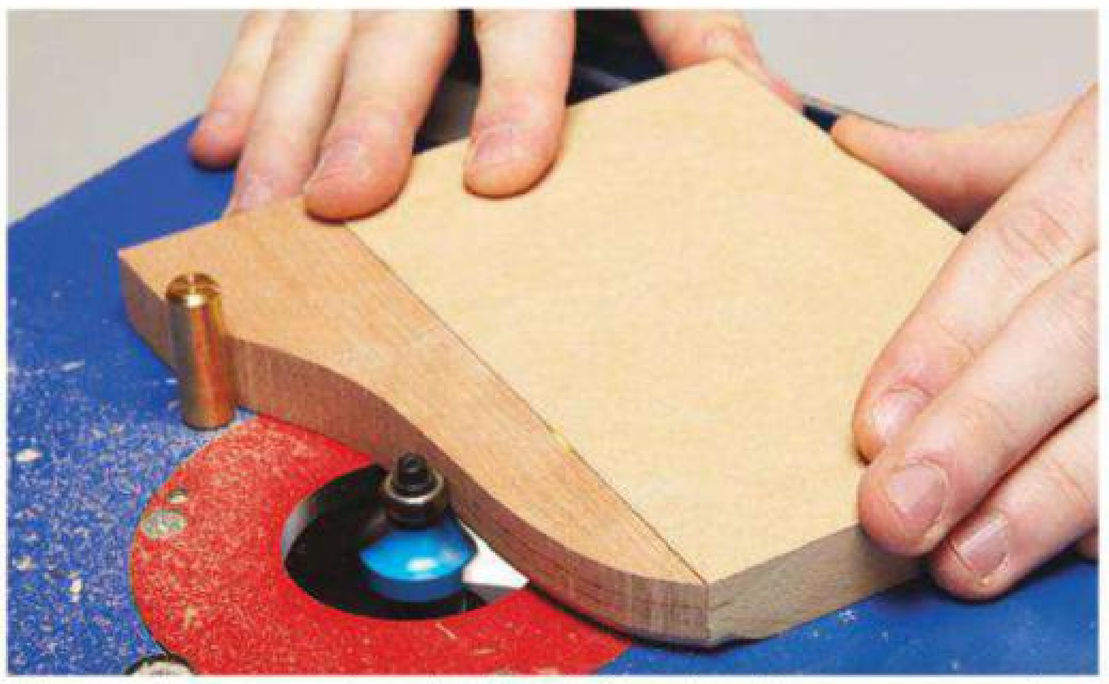



To make narrow moldings, rout a profile on a wide and stable blank; then, rip away the molding. For multiples, rout both edges before ripping.

## EMPLOY A TEMP TO GET A GRIP

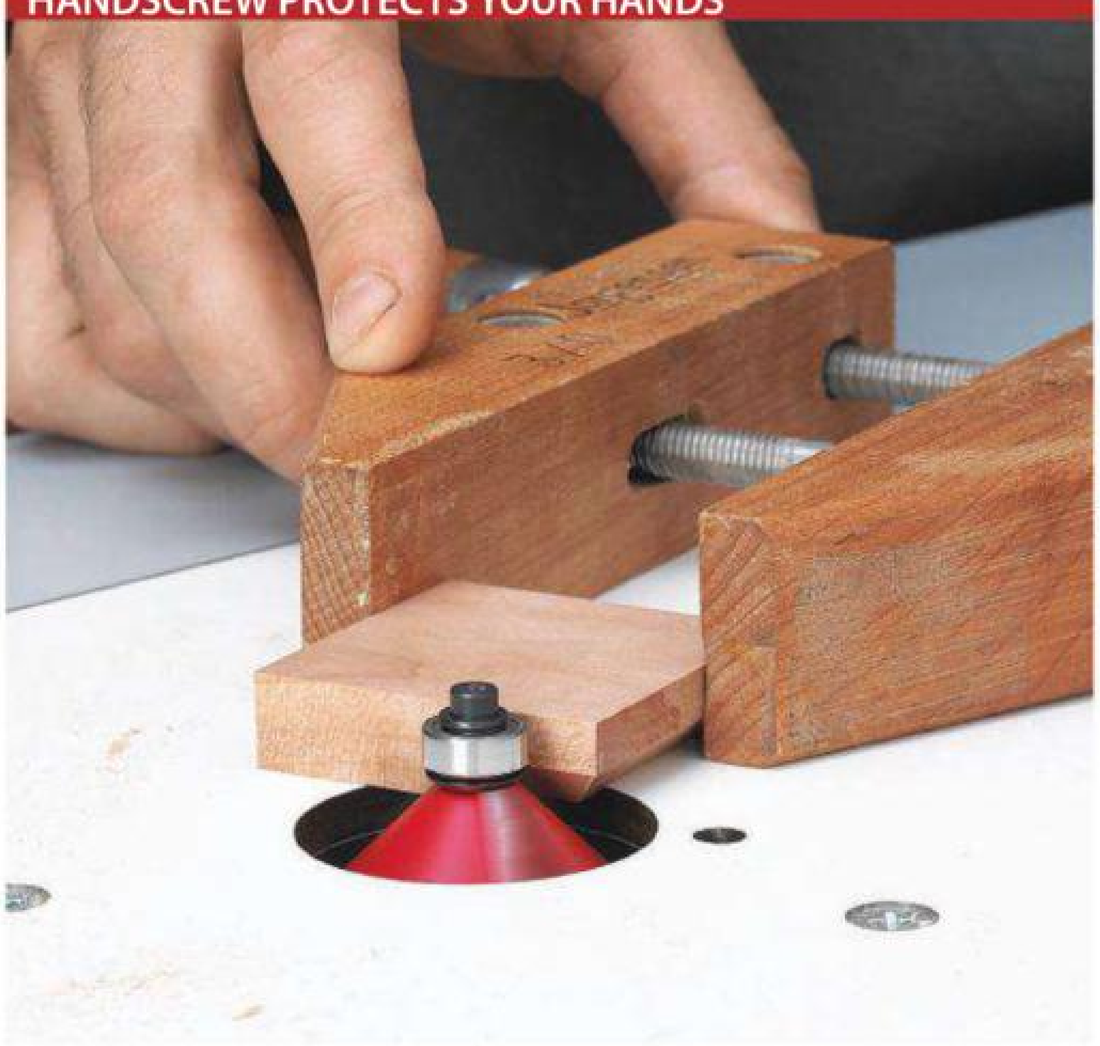


For thin workpieces, an extra layer of wood adds thickness to reach the router bit's bearing. Tape on a jobber stick to help control the workpiece.



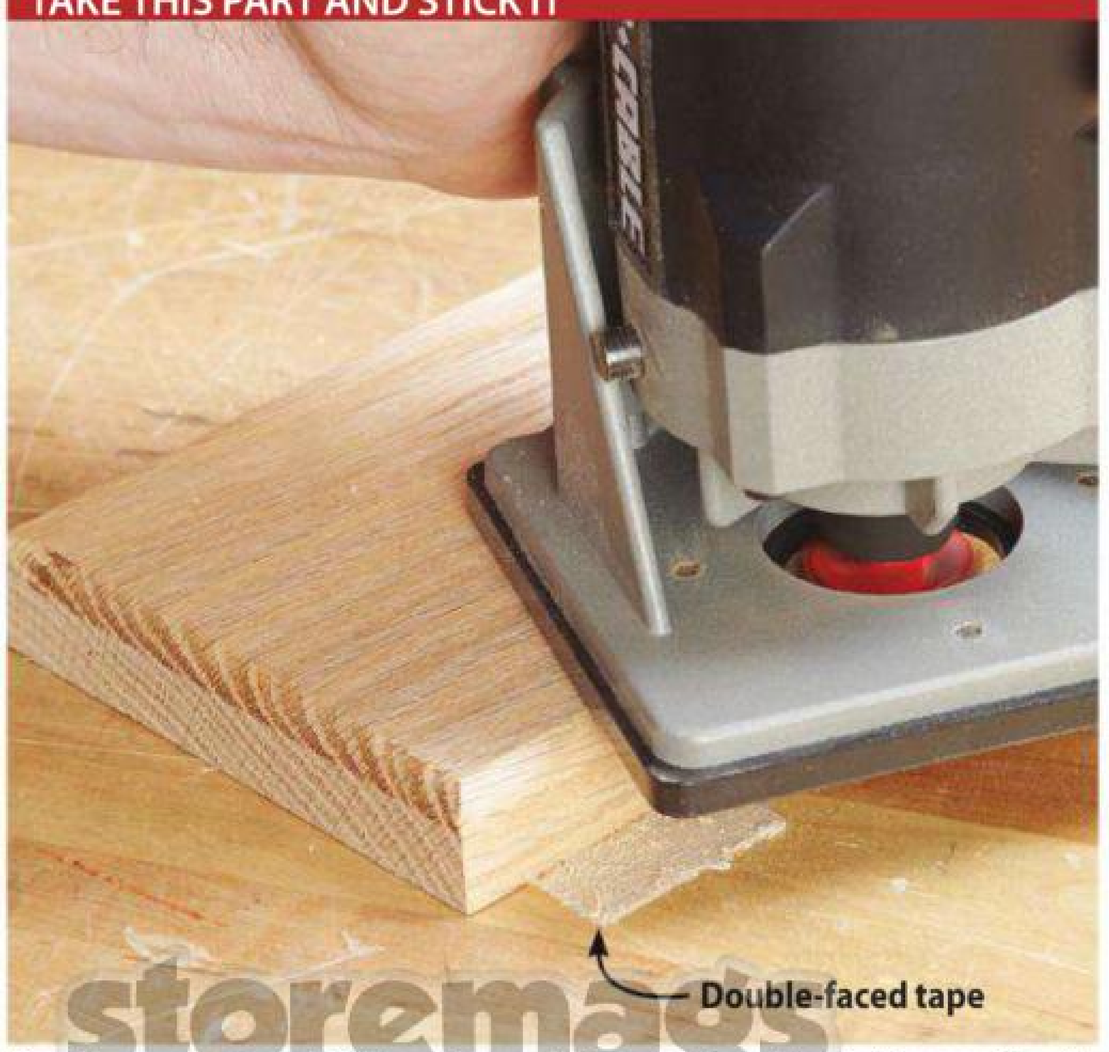
When routing narrow or irregular-shaped pieces, hot-glue on a scrapwood extension, and, after routing, cut it away.

## HANDSCREW PROTECTS YOUR HANDS



Clamp square or rectangular parts into a handscrew, flat against the router table's top. The handscrew's wood jaws won't cause damage if they touch the bit.

## TAKE THIS PART AND STICK IT



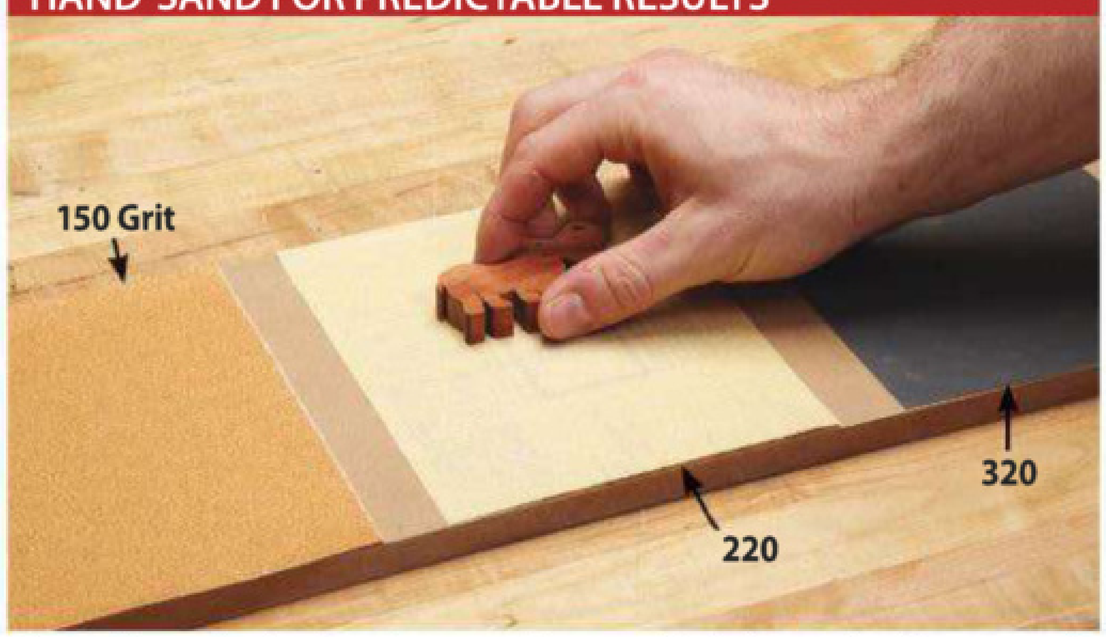

Don't have a router table? Tape the workpiece to a benchtop before routing. A trim router provides better visibility and control when working small pieces.

storemags

# Sand on a small scale

Most power sanders have broad abrasive surfaces better suited to working with large workpieces, so using these tools to sand small parts safely presents a challenge. Try these easy-to-build scrapwood jigs and sanding tricks better suited for use with small workpieces to keep edges crisp and parts intact without risk to your fingertips.

## HAND-SAND FOR PREDICTABLE RESULTS




Spray adhere sheets of sandpaper—of progressively finer grits—to a scrap of flat sheet goods. Hand-sand the workpiece through the grit sequence.

## PUT YOUR SMALL PIECE INTO ORBIT



For faster stock removal, adhere the workpiece to a random-orbit sander pad with double-faced tape. A touch on each grit sands it to finish-ready.

## SAND EVENLY WITH A SCRAP CARRIER



To keep the edges of your small parts square, tape the workpiece to a carrier with scraps of equal thickness on either side and place it on your belt sander.

## A FAIR IDEA: WORKPIECE ON A STICK



A thin piece of scrap flexes enough to apply pressure to the taped-on workpiece while keeping your hand a safe distance from the abrasive.

## DRILL AND DROP FOR MORE CONTROL



To keep small parts from flying off your belt sander, drill a hole the size of your workpiece in ¼" scrap. Rest the sled against the sander's fence during use.

## More Resources

- Double-check your shop safety with the small-shop safety checklist at **woodmagazine.com/shopsafety**.
- Learn a slick trick for ripping thin strips at **woodmagazine.com/thinstrips**.



# Curvaceous Keepsake Box

## An elegant treasure as easy to build as it is breathtaking to behold

Dimensions: 11½" W × 7½"D × 3"H

Splines have been used for centuries to increase the strength of miter joints. The long-grain-to-long-grain contact between the splines and box sides provides a far stronger glue bond than the end grain of a miter joint. For this box, I played up the decorative element of the splines, using wenge because it contrasts nicely against the lighter cherry of the box. (Find sources for the wenge and the spalted maple used for the lid on *page 51*.) If you've never tried splined miter joints before, don't worry—a super-simple tablesaw jig makes cutting the spline slots quite easy.



Kevin Boyle, Senior Design Editor

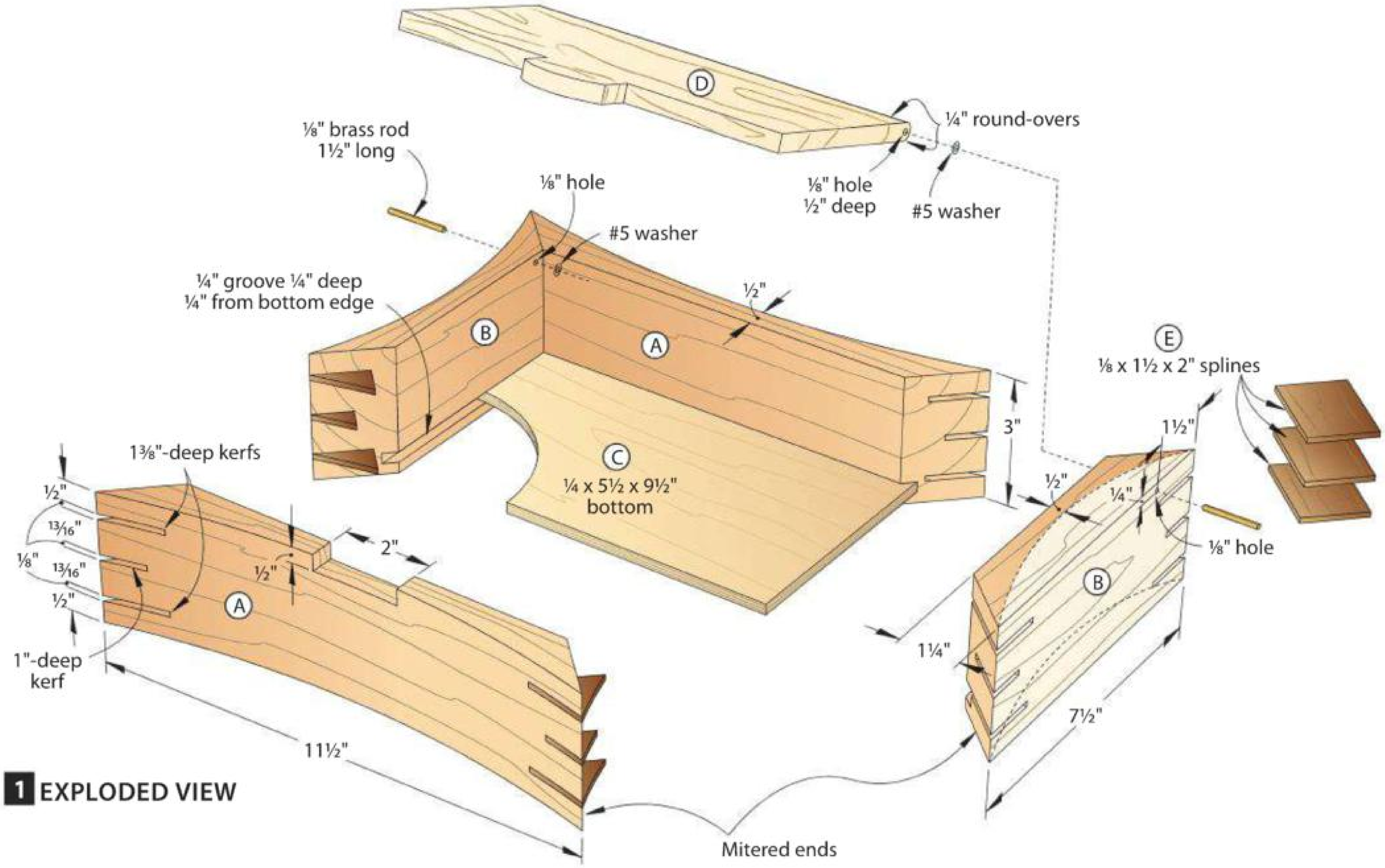
## Cut and assemble the box

**1** From 1¼" cherry, cut two 3×20½" blanks for the front/back (A) and sides (B). Cut a groove to fit the thickness of the plywood bottom (C) ¼" deep and ¼" from the bottom edge of the two blanks [**Drawing 1**].

**2** From one blank, cut the front (A) and one side (B) to finished length [**Materials List**], mitering their ends at 45°. Likewise, miter-cut the back (A) and other side from the remaining blank; then cut the 2"-wide notch centered along the top of the front [**Drawing 1**].

**3** Cut the plywood bottom (C) to size [**Materials List**]. Sand the inside faces of the front/back (A), sides (B), and bottom (C) to 150 grit.

**4** Apply glue to the miters and in the ¼" grooves, then insert the bottom (C) into the grooves and assemble the box




**1** EXPLODED VIEW

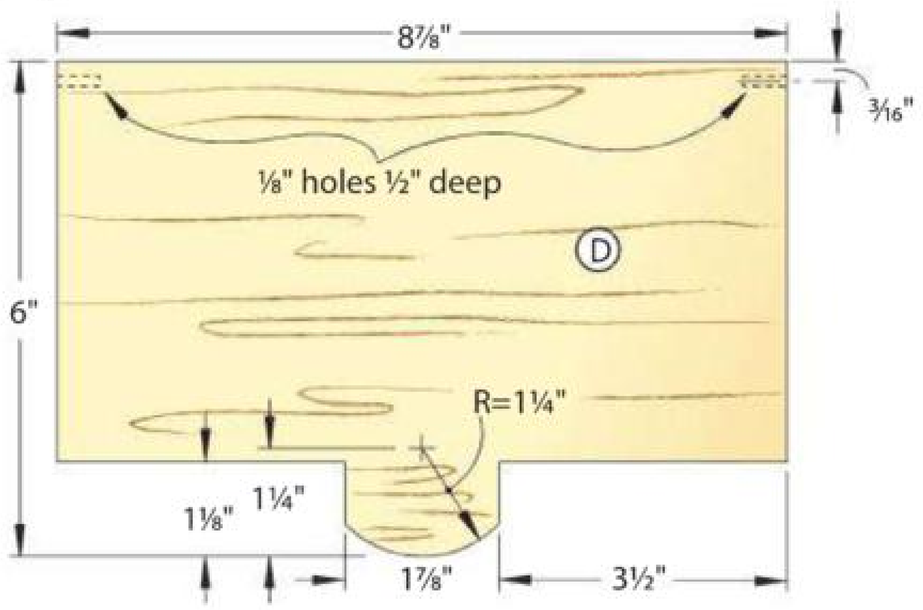
using a band clamp to hold the parts together [**Photo A**]. Check for square as you tighten the band clamp and place a bar clamp across the longest diagonal, if necessary, to tweak the box into square.

**5** After the glue dries, mark the two hinge-pin locations in the sides (B) [**Drawing 1**]. Then use a drill press and ⅛" bit to drill the holes [**Photo B**].

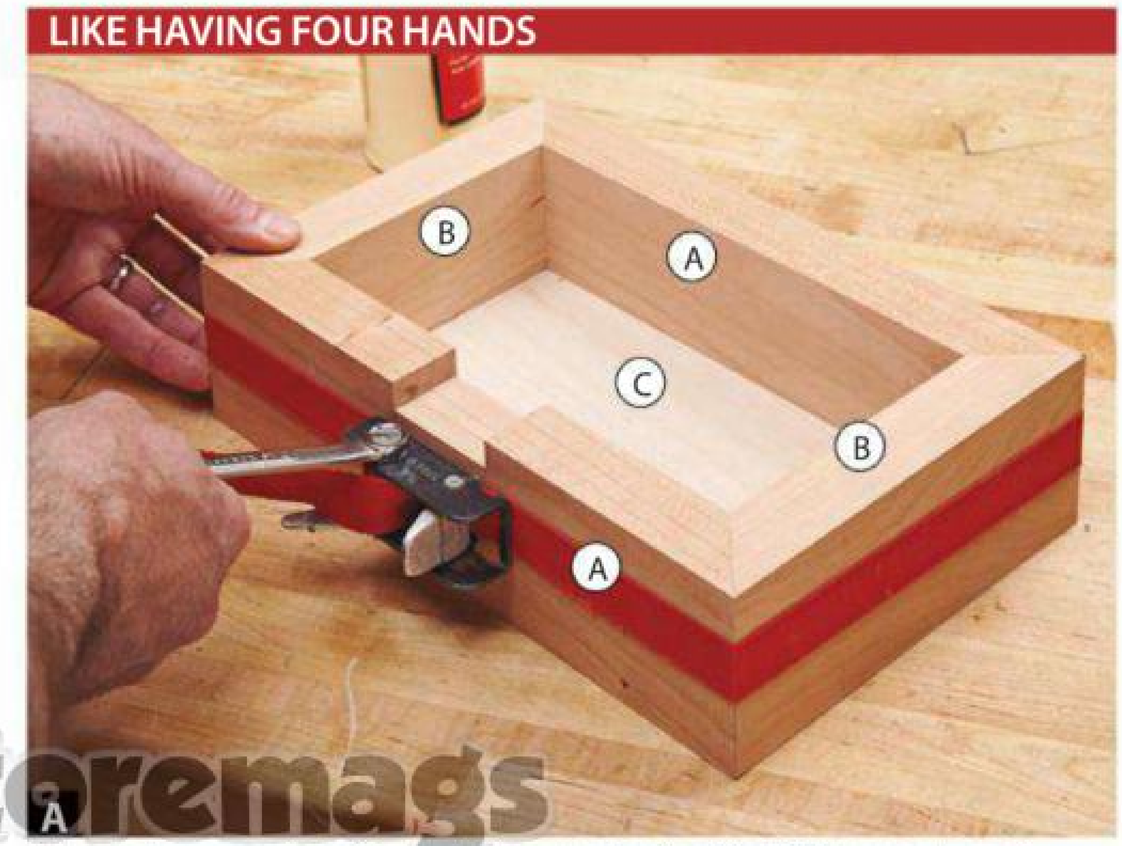
## Make and install the lid

**1** To select the best grain for the lid (D) from the spalted maple, cut a cardboard mask with inner dimensions matching the lid size [**Drawing 1a**]. Move it around the stock

**1a** LID (Top view)

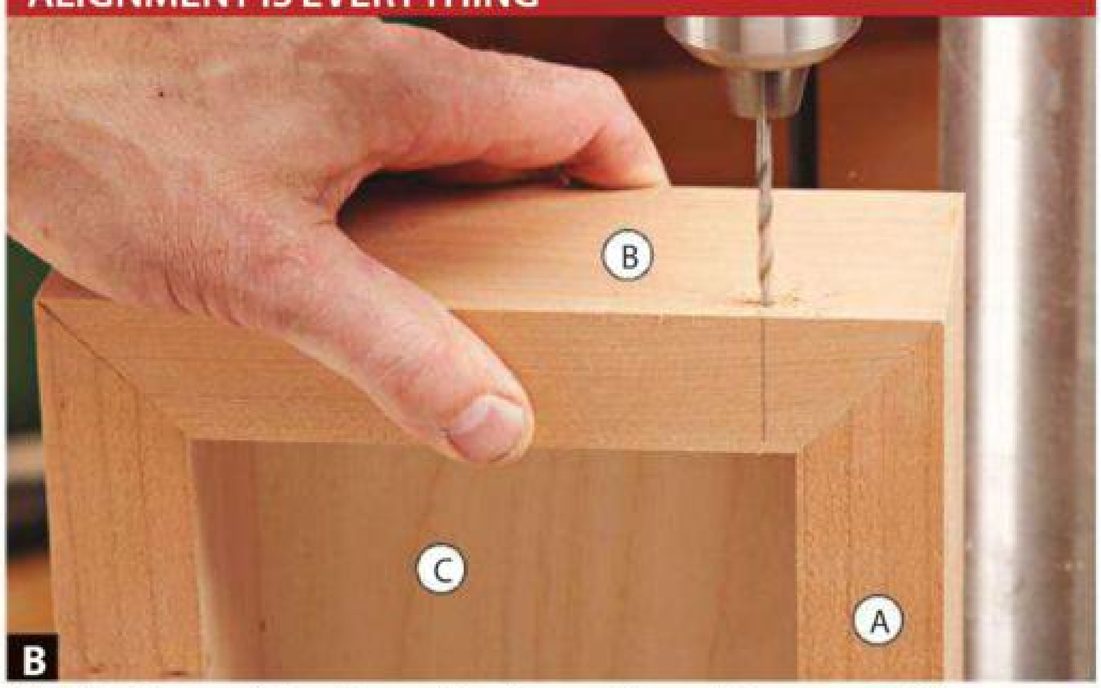



**LIKE HAVING FOUR HANDS**




A band clamp consists of a ratcheting mechanism that tightens a strap of webbing, applying even clamping pressure all around the box.

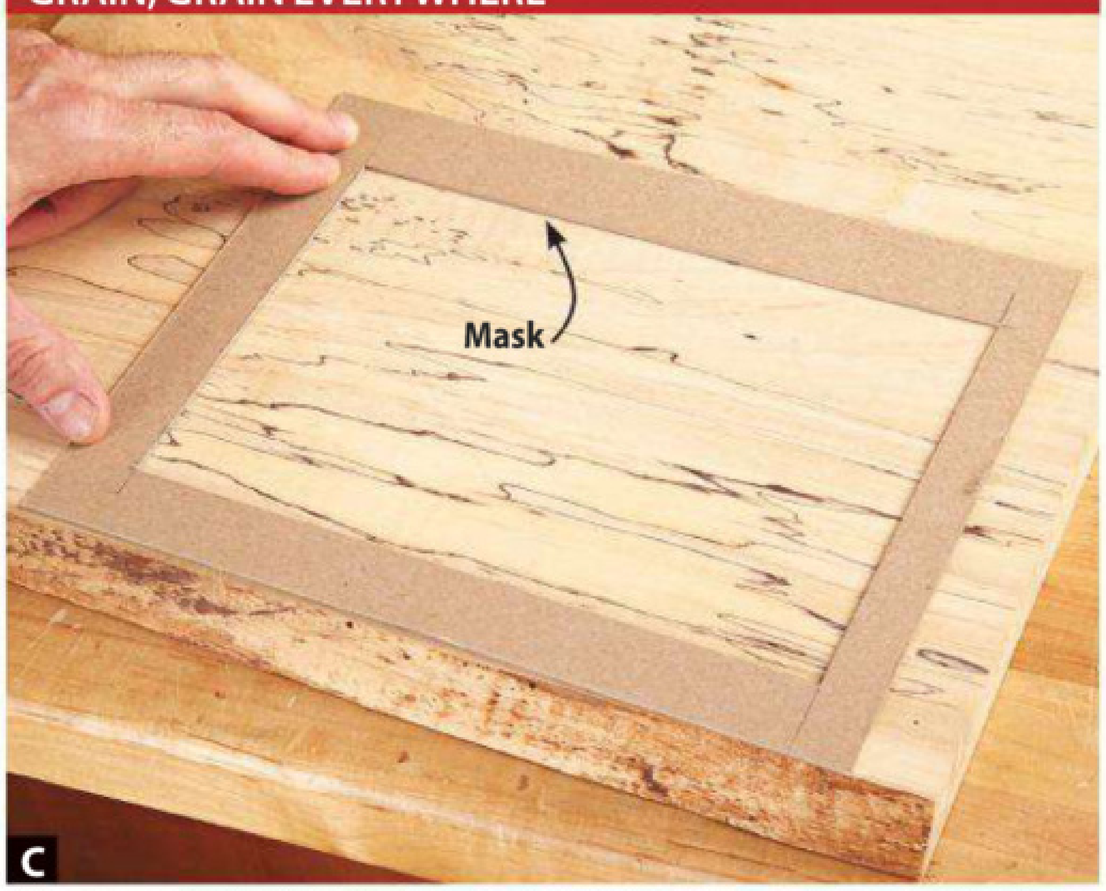
**ALIGNMENT IS EVERYTHING**




Mark the hinge-pin locations with a fine-point pencil for accurate bit placement. If you don't have a drill press, a drill guide will work.

storemags

## GRAIN, GRAIN EVERYWHERE




When choosing the right grain from a large piece of decorative or exotic stock, a cardboard mask helps your eyes see the smaller picture.

## KEEP THE LID ALIGNED




Clamp the lid (D) in place to prevent it from shifting when you drill the holes for the hinge pins. Note the tape on the bit that serves as a depth gauge.

until you find what you like [**Photo C**]. Mark around the inside of the mask; then, crosscut the lid to finished length and rip it just over finished width.

**2** Lay out the shape of the handle on the lid (D) [**Drawing 1a**]; then, bandsaw and sand the lid to finished shape.

**3** Using a router table outfitted with a ¼" round-over bit, form a bullnose on the back edge of the lid (D) [**Drawing 1**].

**4** Make two 2"-tall spacer blocks and place them inside the box against the sides (B). Center the lid (D) in its opening—allow an equal reveal between the lid and the sides and a 1/16"-wide reveal between the back edge of the lid and the back (A); then clamp the lid in place.

**5** Using the holes you previously drilled in the sides (B) as guides, drill two ⅛" holes ½" deep that will serve as hinge points in the lid [**Photo D**]. Save the spacer blocks for use later.

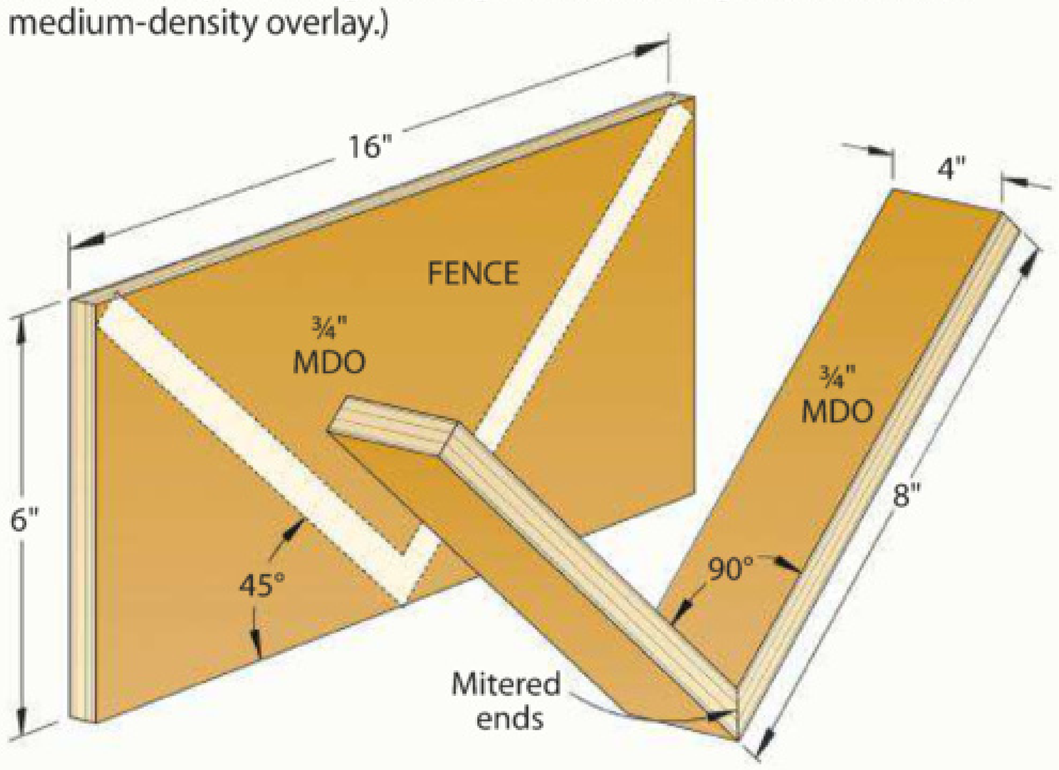
## Kerf, cut, and complete

**1** Lay out on the box the locations of the ⅛"-wide kerfs for the decorative corner splines [**Drawing 1**]. Then build a jig to hold the box while cutting kerfs for the splines. (See **How to build a kerfing jig**, *below left*.) Draw 1" and 1⅜" depth reference lines on one corner of the bottom of the box to help set the tablesaw blade height [**Photo E**]. Cut the two outer kerfs 1⅜" deep in each corner first [**Photo F**]; then lower the blade and cut the center 1"-deep kerf. See the **Shop Tip**, *below*, to ensure flat-bottomed kerfs.

**2** Use a fairing stick [**More Resources**] to lay out the curves on the top edges of the front/back (A) and the sides (B) [**Photo G**, **Drawing 1**]. Don't cut the curves yet.

## How to build a kerfing jig

This simple jig cradles the box while carrying it over the blade. Build it from three pieces of glued-together ¾" sheet goods. (We used medium-density overlay.)




SHOP TIP

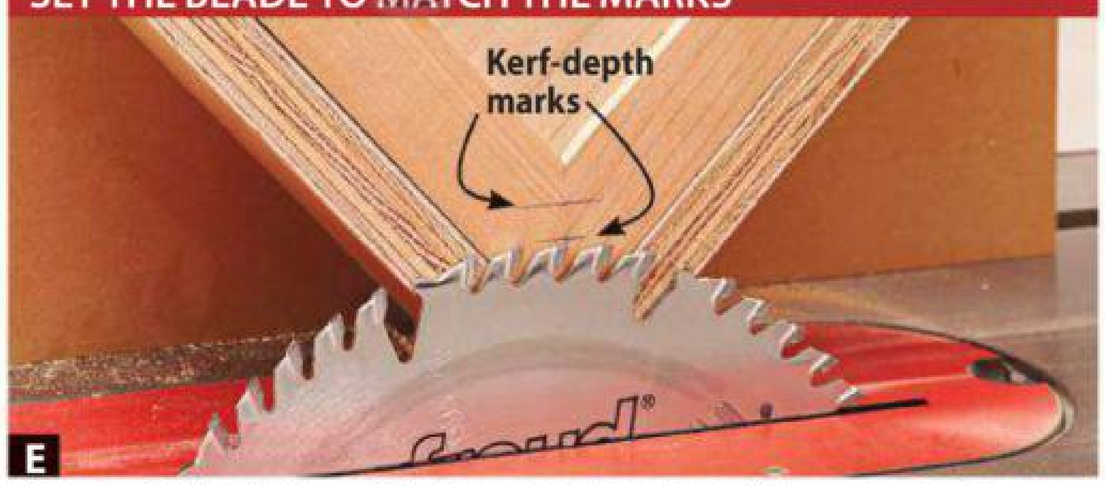
## Flatten kerfs for fine-fitting splines

If you cut kerfs using an alternating top bevel (ATB) blade, V-shaped notches will show at the bottom of the kerfs. To fix this problem, cut a piece of scrap slightly thinner than the kerf. Place its edge down on adhesive-backed sandpaper and cut a strip the same width as the scrap. Use this sanding block to flatten the kerf bottoms.



storemags

## SET THE BLADE TO MATCH THE MARKS



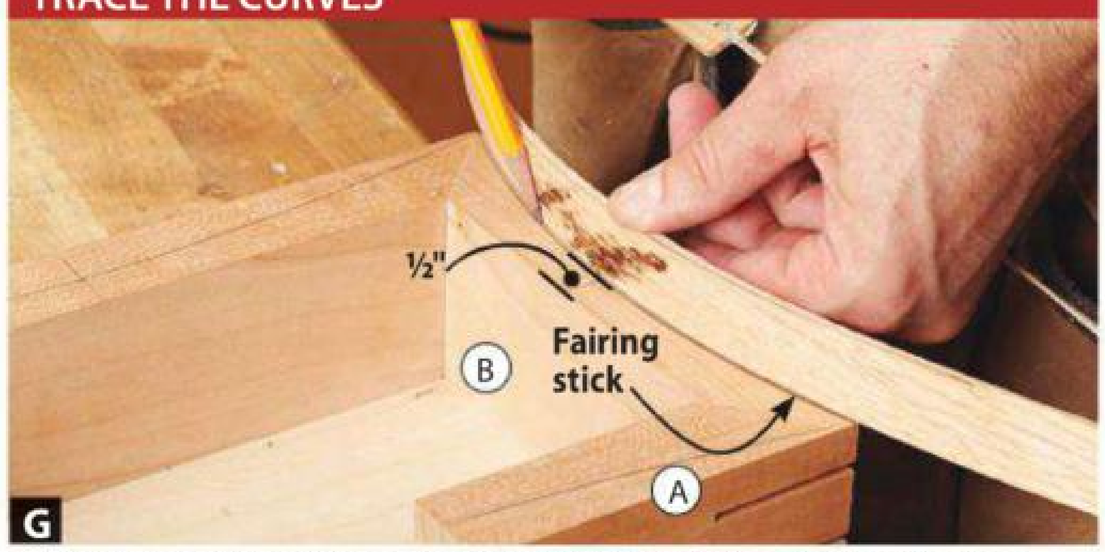

Place the kerfing jig in position between the tablesaw's fence and blade, set the box in the jig, and raise the blade to a kerf-depth mark.

## WATCH OUT FOR THE BLADE



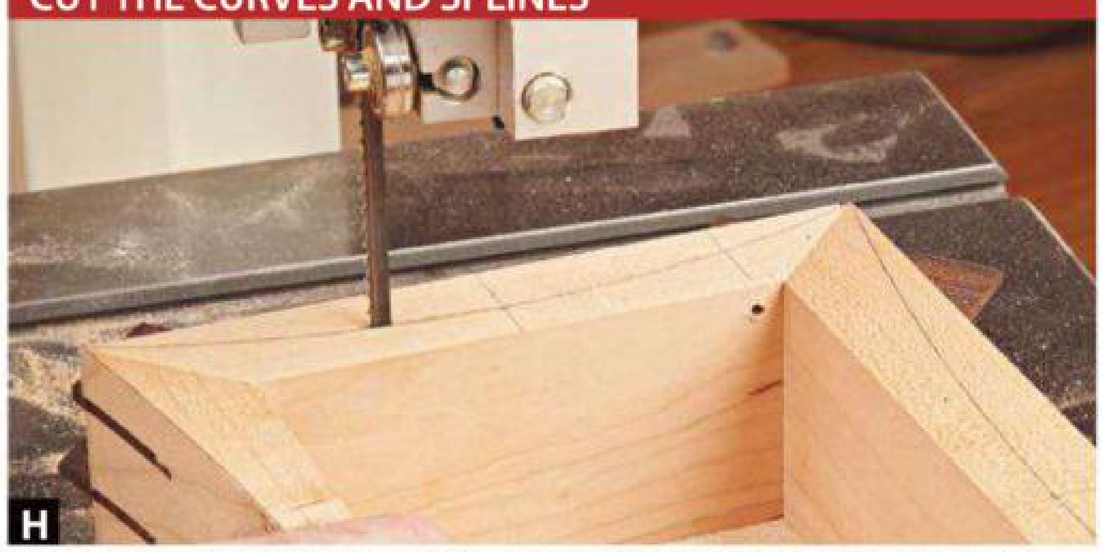

When using the kerfing jig, keep your hands high on the box to avoid the blade. Apply steady pressure both down and forward.

## TRACE THE CURVES




When laying out the curves, create a profile that begins at each corner and leaves ½" of material at the center of the curve.

## CUT THE CURVES AND SPLINES




Work slowly as you feed the box into the bandsaw blade. Pushing too fast leaves a rougher surface and causes the blade to deflect.

**3** Plane or resaw wenge slightly thicker than the width of the kerfs in the corners. Cut the splines (E) to size [**Materials List**], sand them to fit the kerfs, and glue them in place, making sure they seat on the kerf bottoms. After the glue dries, bandsaw and sand the box to shape [**Photo H**]. Finish-sand all box and lid surfaces that still need it with 220-grit abrasive.

**4** To attach the lid (D) to the box, first cut two 1½"-long pieces of ⅛" brass rod (available at craft stores) for hinge pins and roughen them with 100-grit sandpaper. Set inside the box the two spacer blocks you previously used to align the lid, resting against each side (B). Insert the hinge pins into the sides so they slightly protrude on the inside; then place a #5 washer onto each of the pins on the inside of the box. Mix a very small amount of two-part epoxy, dribble it into the two hinge-pin holes in the lid, and carefully wipe away any excess. Set the lid in position on the spacer blocks and press the rods into place so they seat fully in the lid.

**5** After the epoxy cures, cut the rods flush and sand their ends and any remaining rough areas of the box. Then apply a finish of your choice. (We wiped on three coats of penetrating oil, sanding lightly between coats with 400-grit abrasive.)

Written by **Mike Berger**
Produced by **Craig Ruegsegger** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

## More Resources

- Learn how to make and use a fairing stick to lay out curves at **woodmagazine.com/fairing**.
- What in the world is spalted wood? Find out at **woodmagazine.com/spalt**.
- Shop for box plans in dozens of sizes and styles at **woodmagazine.com/boxes**.

## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| A* | front/back | 1¼" | 3" | 11½" | C | 2 |
| B* | sides | 1¼" | 3" | 7½" | C | 2 |
| C | bottom | ¼" | 5½" | 9½" | BP | 1 |
| D* | lid | ½" | 6" | 8⅞" | SM | 1 |
| E | splines | ⅛" | 1½" | 2" | W | 12 |

*Parts initially cut oversize. See the instructions.

**Materials key:** C–cherry, BP–birch plywood, SM–spalted maple, W–wenge.
**Supplies:** ⅛ × 1½" brass rod (2), #5 washers (2), two-part epoxy.
**Blade and bits:** ¼" dado blade; ¼" round-over router bit; ⅛" drill bit.

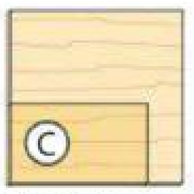
## Sources

**Wood:** ⅛" wenge, Rockler, no. 16451, 800-223-4441, rockler.com; Spalted maple, Spirit of the Woods, 207-668-2163, spaltedmaplelumber.com, no. SMPLK-3.

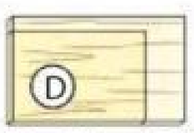
## Cutting Diagram




1½ x 3½ x 48" Cherry (2.7 bd. ft.) *Plane or resaw to the thicknesses listed in the Materials List.




¼ x 12 x 12" Birch plywood




½ x 7¼ x 12" Spalted maple (.3 bd. ft.)




¼ x 3½ x 16" Wenge (.1 bd. ft.)

# 12" Disc Sanders

**These benchtop beasts bring both muscle and finesse to sanding chores.**

When you need to quickly and precisely sand outside curves, or fine-tune miters and cross-cuts, nothing beats a dedicated 12" disc sander. Its table accepts a miter gauge to deftly sand precise angles for joinery. Yet the heavy disc behind the abrasive makes it aggressive when you need to hog away waste quickly. We took six 12" disc sanders for a test spin, essentially all benchtop machines (though one has an open-leg stand) and priced within reach of the home woodworker. Read on to learn how they fared.

## Six important features to look for in a disc sander

**1. Ample power** If you have a need for speed in completing your work, a sander must have the power to handle aggressive stock removal without bogging down. To test this, we installed a new 80-grit Klingspor disc on each machine and sanded away ½" from the end of 6"-wide pine and oak boards with as much force as each sander could handle.

Of the four sanders with 1-hp-rated motors, the Grizzly G0702 and Jet JDS-12OS demonstrated the most actual power in our testing. The ½-hp-rated

### Delta 31-140, $250

800-223-7278, deltamachinery.com



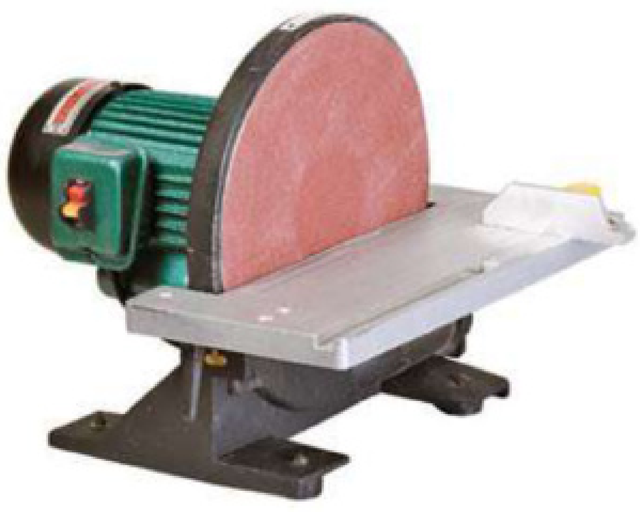
### Grizzly G0702, $415

800-523-4777, grizzly.com

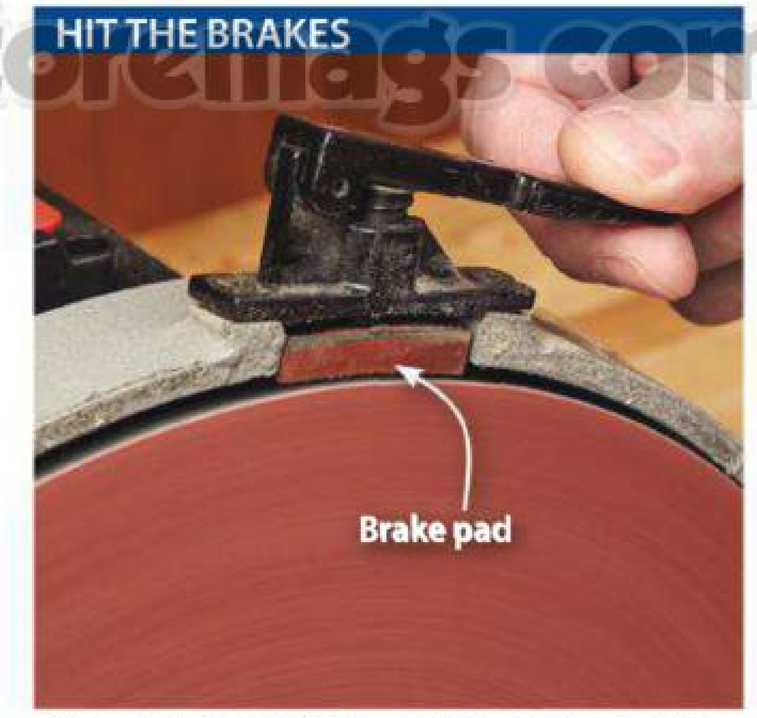


### Grizzly G7297, $170

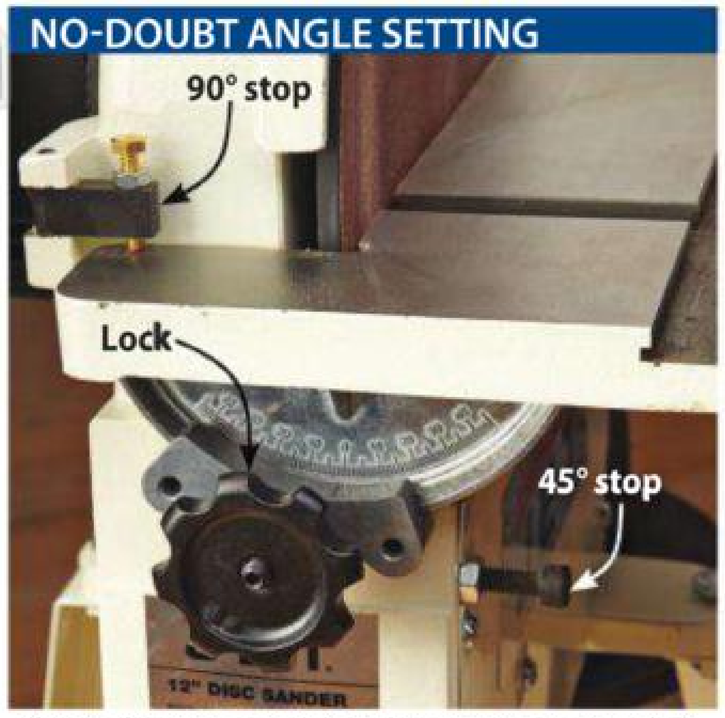
800-523-4777, grizzly.com



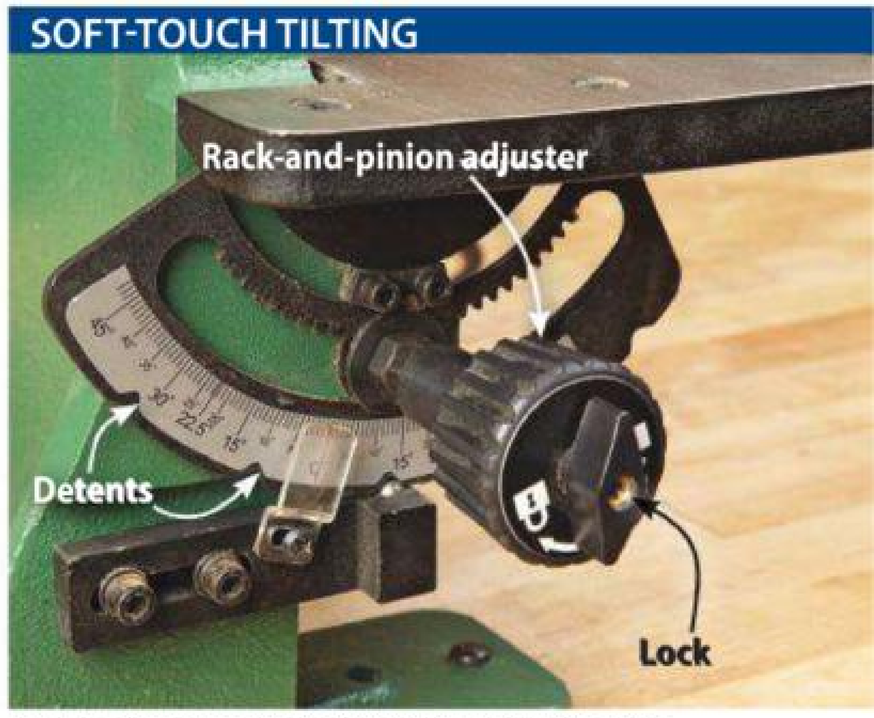
Storemags.com




For sanders so equipped, push down on the brake lever to press the brake pad into the edge of the spinning platen to bring it to a stop quickly.




Adjustable stops on Jet's table ensure spot-on 45° and 90° angles to the disc (90° shown as 0° on the scale). Dual locks hold the table securely.




Ball-bearing detents (at 0°, 22.5°, and 45°) on the Rikon (shown) and Delta units engaged so subtly we had to visually double-check each adjustment.

motors on the nearly identical Delta 31-140 and Rikon 51-200 bogged down easily; backing off the stock-removal rate, though, allowed these two machines to sand capably.

**2. A flat platen** The *platen* is the metal disc that holds the abrasive. All six sanders' platens proved flat, ran with no runout (wobble), and delivered accurate results when sanding 45° miters and 90° crosscuts. (Although getting the tables and miter gauges to do that proved more of a challenge. Read points 4 and 5 to learn why.)

Because the platens develop so much inertia when running, it's nice to have a brake to stop them rather than risk an injury or workpiece damage by letting them coast to a stop. (Without braking, the cast-iron and steel platens spin for more than two minutes before coasting to a stop; the aluminum platens, about 30–45 seconds.) The Grizzly G0702 has an automatic brake that stops its platen in three seconds; and the Delta, Jet, and Rikon units have manual brakes, shown *above left*.

**3. Effective dust collection** Because you make nothing but fine dust with these sanders, it's critical to have effective dust control. All six units, when hooked to a typical 12-gallon tub-style shop vacuum, did a superb job of evacuating dust. We give the Jet bonus points for having a fan-assist built into its dust shroud, and a 2-micron canister filter, *left*, that traps dust well without needing a vacuum.

**4. A heavy, easy-tilt table** A disc sander's table must resist vibration, tilt easily and accurately, and have a slot for registering a miter gauge and other jigs. All but one tested sander have cast-iron tables that provide a solid surface and resist vibration during use. The Grizzly G7297's aluminum table vibrated steadily as the disc rotated. It did not affect sanding quality, but left our tester's arms tingling afterward. A large table, such as that on the Grizzly G0702, provides more support for large workpieces, but we found the smaller tables proved adequate for most jobs.

Tilting the table proved easiest on the Jet, and rock-solid 45° and 90° stops, shown *above center*, ensured quick, accurate results for the two most common settings. The Delta and Rikon units use a rack-and-pinion geared mechanism, shown *above*. The other tables use free-sliding adjustments with no positive stops and unreliable scales.

Only the tables on the Delta, Jet, and Rikon sanders have a standard ⅜×¾" miter slot, so you can use your tablesaw's miter gauge or build a jig with a store-bought miter bar. The Grizzly G0702 and Jet, shown *left* and on the *next page*, have intersecting (X-Y) miter slots that give you more workholding options.

### Jet JDS-1220S, $560

800-274-6848, jettools.com




### Rikon 51-200, $240

877-884-5167, rikontools.com



### Shop Fox W1828, $256

800-840-8420, shopfox.biz



**5. Easy-to-use miter gauge** To sand any angle accurately, you need something to hold the workpiece steady, and a miter gauge is the natural choice. Each machine comes with a miter gauge, shown *below right*, but, unfortunately, none of them have positive stops for common angles, such as 90° and 45°, and their scales proved unreliable. We found it best to set angles using a drafting triangle or reliable combination square rather than rely on the miter-gauge scale. And if we had one of the three sanders with a standard ⅜×¾" miter slot, we'd swap the included miter gauge for a more accurate aftermarket model or the one from our tablesaw, or build a jig for that purpose.

**6. Easy sanding-disc changes** Eventually, you'll wear out the sanding disc that came with the machine and need to replace it. (Learn how on the *next page*.) All the test models use pressure-sensitive adhesive (PSA) discs that stick onto the platen. We found it easiest to remove worn discs from the steel-platen Jet. Removing worn discs from Grizzly's cast-iron platen proved most pesky, with aluminum platens somewhere in between. You must remove a shield from the G0702 before changing discs, the only test model with this hiccup.

## CRISSCROSSED MITER SLOTS TURN OUT PERFECT CIRCLES






A miter slot perpendicular to the platen on the Jet lets you sand diameters up to 20" using the included pivot-point jig. Simply secure the jig in the slot with its two setscrews, center the rough-cut workpiece onto the pointed pin, and rotate it against the spinning disc to sand a perfect circle.

## MINIMAL MITER GAUGES




The sanders we tested come with small miter gauges, ranging from toyish plastic ones to aluminum ones of varying usefulness.

## THE STRAIGHT SPIN ON 12" DISC SANDERS

| | | PERFORMANCE RATINGS (1) | | | | | TABLE | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRAND | MODEL | POWER | DUST COLLECTION | EASE OF ADJUSTING TABLE | QUALITY OF MITER GAUGE | EASE OF CHANGING DISCS | PLATEN MATERIAL (2) | TYPE OF DISC BRAKE (3) | DIMENSIONS (D×W), INCHES | MATERIAL (2) | TILT RANGE, UP/DOWN, DEGREES | ⅜ × ¾" MITER SLOT? (YES/NO) | OVERALL DIMENSIONS (W×D×H), INCHES | DUST-COLLECTION PORT DIAMETER, INCHES | STANDARD ACCESSORIES (4) | CORD LENGTH | WEIGHT, LBS | WARRANTY, YEARS | COUNTRY OF ASSEMBLY (5) | SELLING PRICE (6) |
| DELTA | 31-140 | B- | A- | B+ | C | B | C | M | 8⅜ × 17⅛ | C | 48/48 | Y | 19¼ × 17¼ × 15 | 2¼ | D,H,M | 6'10" | 72 | 5 | C | $250 |
| GRIZZLY | G0702 | A | A- | B- | B- | B- | C | A | 15½ × 14¾ | C | 15/45 | N | 16½ × 27 × 16 | 2½ | D,M | 5' | 84 | 1 | T | 415 |
| | G7297 | B | A- | C | C- | B+ | A | N | 8¼ × 17⅛ | A | 45/45 | N | 17⅛ × 17½ × 14½ | 2 | D,M | 5'6" | 66 | 1 | C | 170 |
| JET | JDS-12OS | A | A | A | B+ | A | S | M | 12⅝ × 16½ | C | 15/45 | Y | 16¾ × 22 × 42 | 4 | C,D,F,M,S | 6' | 100 | 5 | T | 560* |
| RIKON | 51-200 | B- | A- | B+ | C | B | C | M | 8⅜ × 17⅛ | C | 48/48 | Y | 19¼ × 17¼ × 15 | 2¼ | D,M | 6'10" | 72 | 5 | C | 240 |
| SHOP FOX | W1828 | B | A- | C | C- | B+ | A | N | 7 × 15¾ | C | 45/45 | N | 19½ × 16¼ × 14½ | 2 | D,M | 6' | 68 | 2 | C | 256 |

1. A Excellent, B Good, C Fair
2. (A) Aluminum (C) Cast iron (S) Steel
3. (A) Automatic (M) Manual (N) No brake
4. (C) Circle-sanding jig (D) Sanding disc (F) Canister filter (H) Dust-collection hose (M) Miter gauge (S) Stand
5. (C) China (T) Taiwan
6. Prices current at time of article production and do not include shipping, where applicable. (*) Available without stand and filter for $500 (model JDS-12B)

StoreMaster.com

## The top spinners

As you might expect, the higher-priced Jet JDS-12OS outperformed the other machines in many aspects: It earns our Top Tool award. This stand-mounted machine has power to spare, built-in dust collection, a user-friendly cast-iron table with X-Y miter slots, a circle-sanding jig, and the easiest abrasive changes of our test group. It also comes with a five-year warranty. But if the $560 price tag proves too much for your wallet, you can buy the sander without stand and filter (model JDS-12B) for $500.

Produced by **Bob Hunter** with **Bob Saunders**

## More Resources

- Post your own review of these sanders and read reviews from other woodworkers at **toolreviews.woodmagazine.com**
- Sand perfect circles on your disc sander. Learn how at **woodmagazine.com/circlesander**
- Need to chamfer dowels? Your disc sander does that, too: **woodmagazine.com/dowelchamfer**

## How to replace a PSA disc in four easy steps

Pressure-sensitive adhesive (PSA) discs develop a stronger bond with the sander's platen over time, so it can be frustrating replacing a disc that's been in place for months (or, gulp, years). Follow these step-by-step instructions to take the hassle out of this sticky job.



1

Use a heat gun or blow dryer to soften the disc's adhesive through the abrasive. Then peel the disc away from the platen with a putty knife and your fingers while still applying heat.



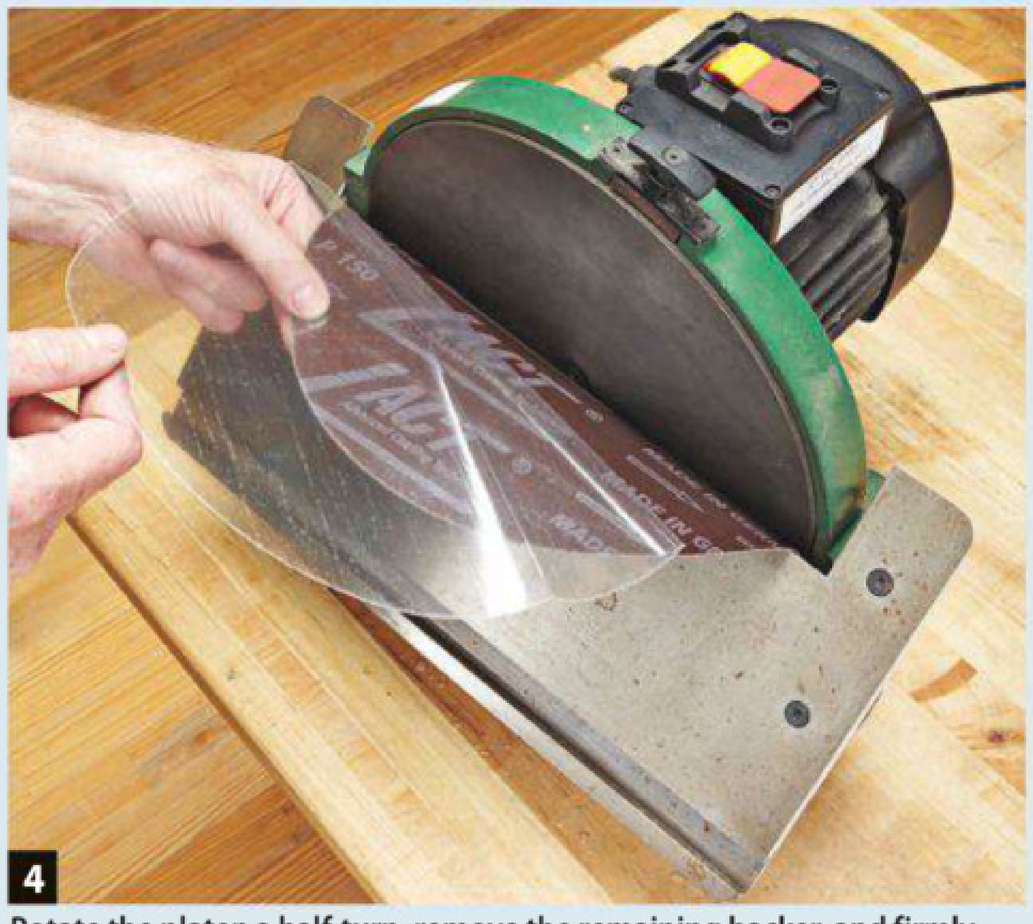
2

With the disc removed, soften the remaining adhesive with a solvent, such as lacquer thinner, and scrape it off with a putty knife. Wipe the platen clean with more solvent.




3

Once the platen is clean and dry, peel back half the backing on a new disc and fold it over the other half. Insert the disc between the table and platen as shown, and press the top half in place.



4

Rotate the platen a half-turn, remove the remaining backer, and firmly press the disc to the platen. Rotate and press the disc securely in place.

# Sit 'n' Store
# Toy Box and Bench

Lift the lid to reveal ample space including five cubby drawers (and a bonus secret drawer).

Dimensions: 28½" W × 20½" D × 22½" H
Materials and hinges: $93

*My main goal with this design was to take the "box" out of "toy box." I wanted something unique without sacrificing simplicity. To achieve that, I incorporated a theme of contrasting elements: Curved ends contrast with angled drawers. The industrial feel of exposed-edge plywood contrasts with the polished brass hardware. The contrasting walnut drawer faces add a visual surprise upon opening the lid, while the secret drawer adds a literal one. I hope you enjoy building it as much as I did designing it!*



John Olson,
Design Editor

## Start with some box parts

**1** Cut the box front (A), back (B), and blanks for the sides (C) to size [**Materials List**, *page 59,* **Drawings 1** and **2**]. Saw a 10° bevel on the bottom edge of the back and parallel 10° bevels on the top and bottom edges of the front. Rout ⅜" round-overs along the top edge of both faces of the back.

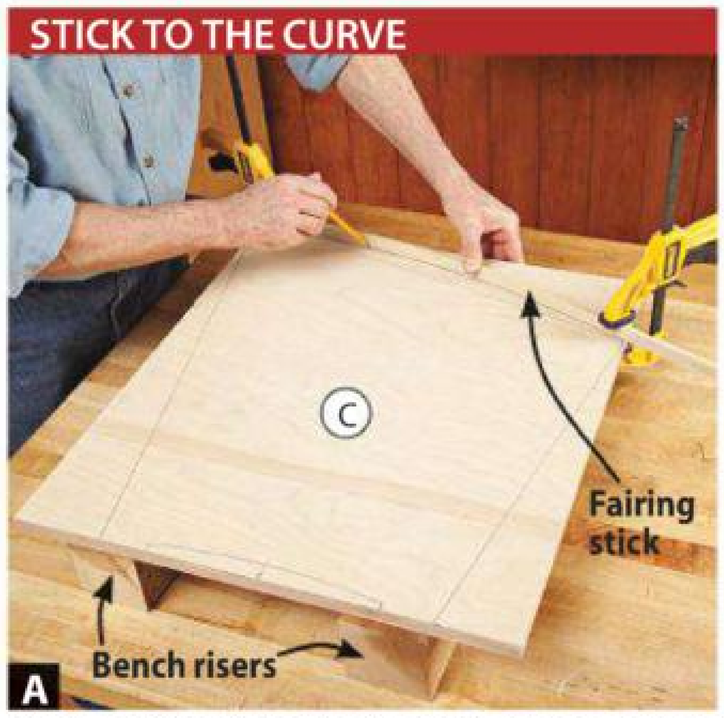
**2** Lay out the tapered edges on the sides (C) [**Drawing 2**]. Use a ¼×¾×30" fairing stick to lay out the curved top [**Photo A**] on the sides and the feet details on the sides, front (A), and back (B). Cut the front, back, and sides to shape. Then, pair and clamp the parts to sand the curves smooth and uniform.

**3** Cut the box lid (D) and caddy top (E) to size. Bevel the back edge of the caddy top 10° and rout ⅜" round-overs on both faces of the front edge of the box lid [**Drawings 1** and **3**].

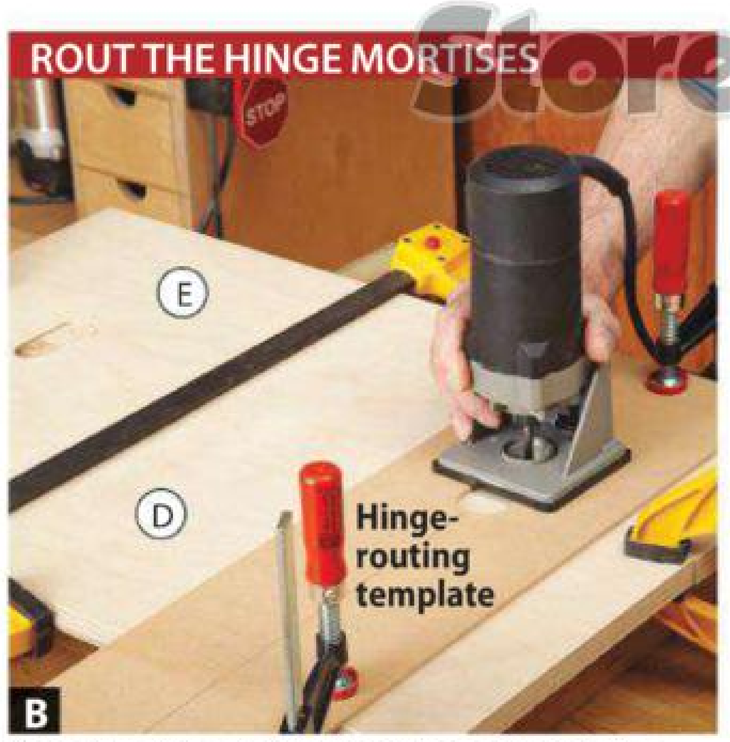


**4** Arrange the box lid (D) and caddy top (E) on bench risers with the square-cut edges butted together and each end of the caddy top overhanging the ends of the box lid by 1/16". Clamp the parts to the risers, center the hinge barrels on the joint line, and mark the hinge locations [**Drawing 1**].

Storenight.com




Clamp a fairing stick at the top front and back corners of each side (C) and pull the center to the midway point marked on Drawing 2. Trace along the stick.




Keep the hinge-routing template square to the mating edges of the box lid (D) and caddy top (E) and rout equal-sized mortises on both parts.



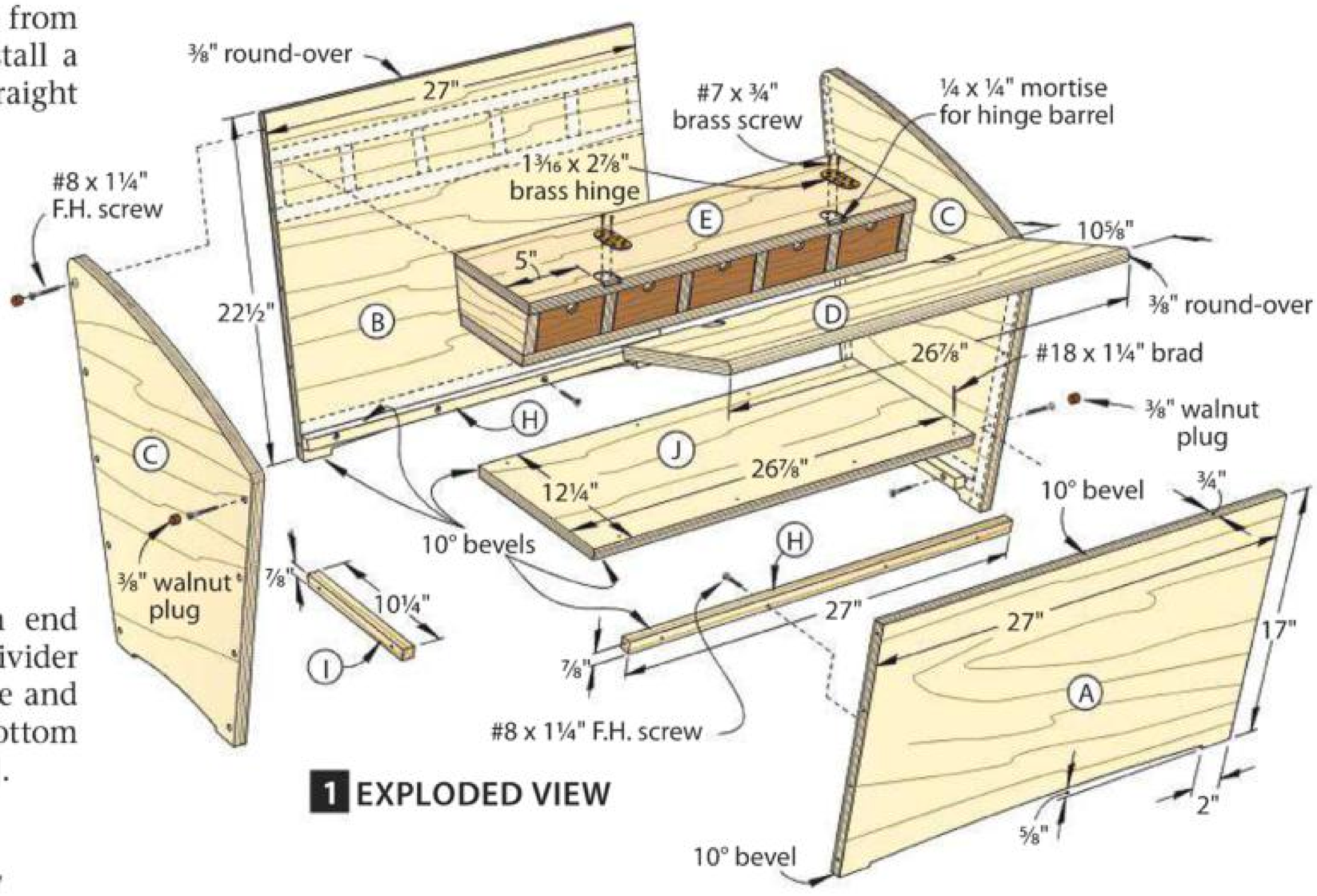

Chisel the edge of each mortise to accommodate the hinge barrel. Gauge the depth and width with the hinges you're using.

**5** Make a hinge-routing template from ¼" hardboard [**Drawing 4**]. Install a 7/16" O.D. guide bushing and ¼" straight bit in your handheld router. Adjust the cutting depth to the thickness of the hinge leaf plus the template and rout the mortises [**Photo B**]. Cut barrel reliefs with a chisel [**Photo C**].

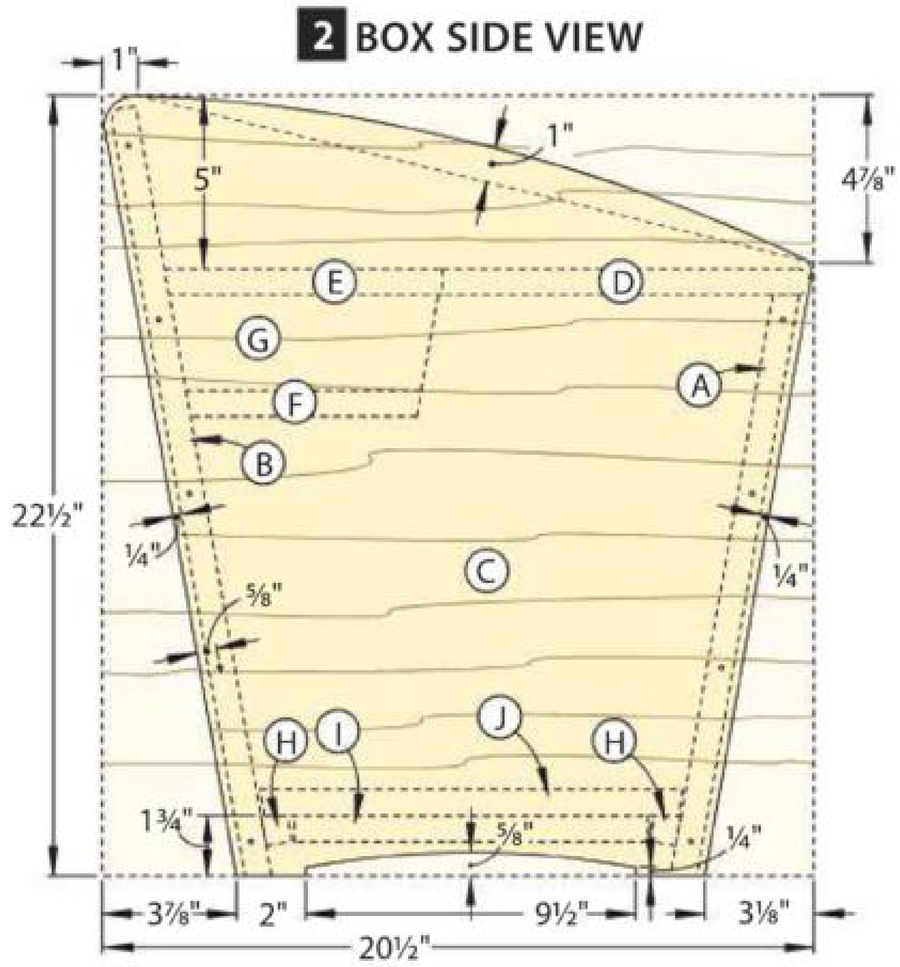
## Assemble the drawer caddy

**1** Cut the caddy bottom (F) to size. Bevel the front and back edges [**Drawing 3**].

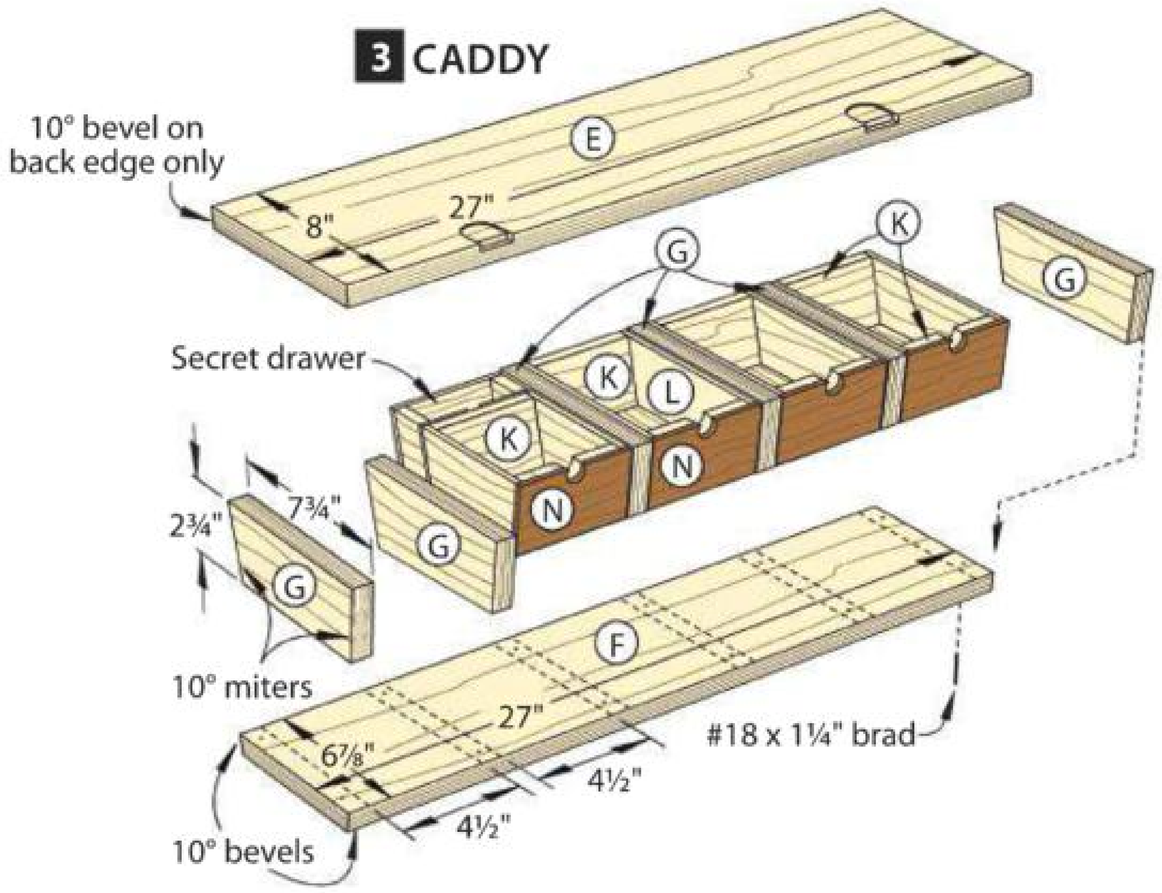
**2** Cut the dividers (G) to size with 10° miter cuts on each end making the top edge of each divider longer than the bottom edge. Glue and nail the dividers to the caddy bottom (F), starting at the ends [**Drawing 3**].



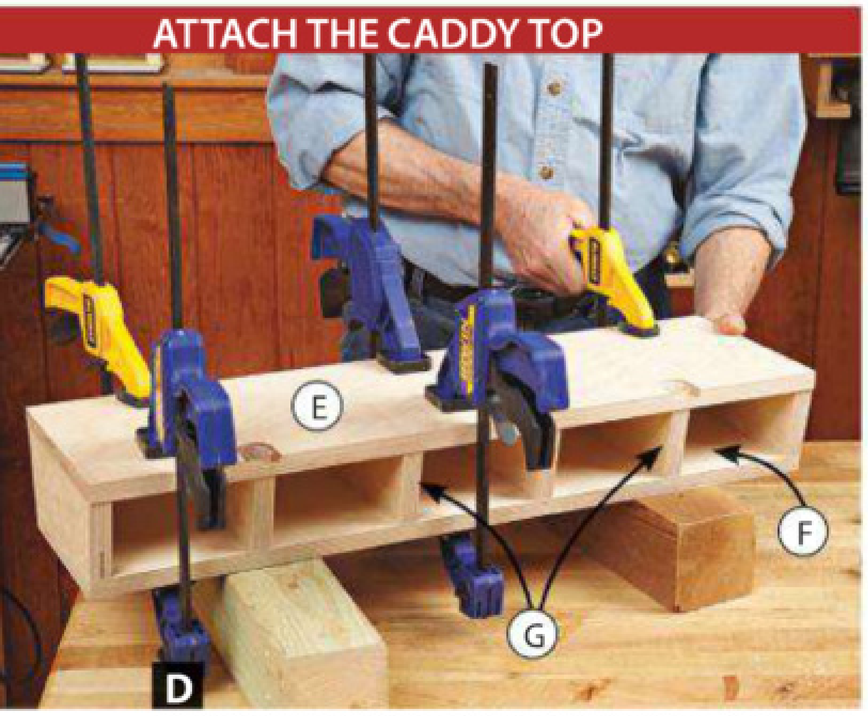

**1** EXPLODED VIEW



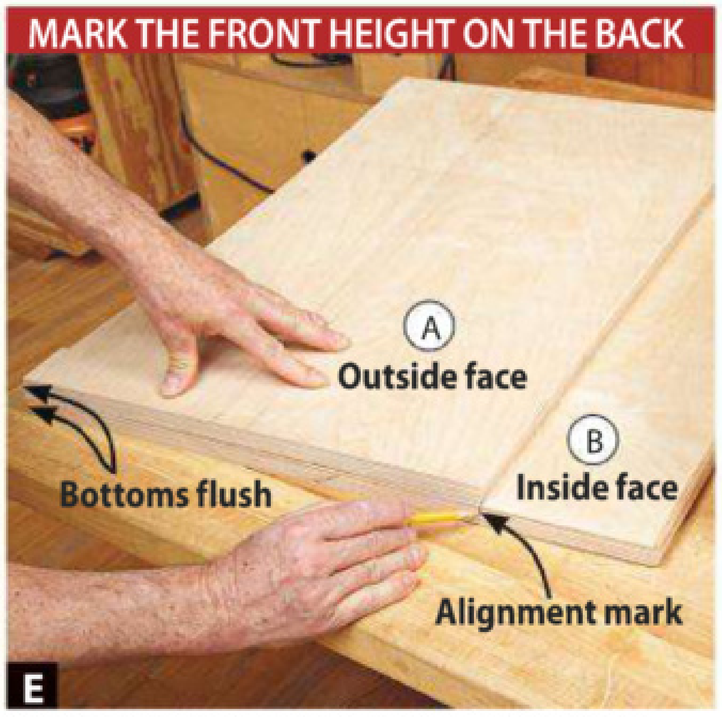

**2** BOX SIDE VIEW



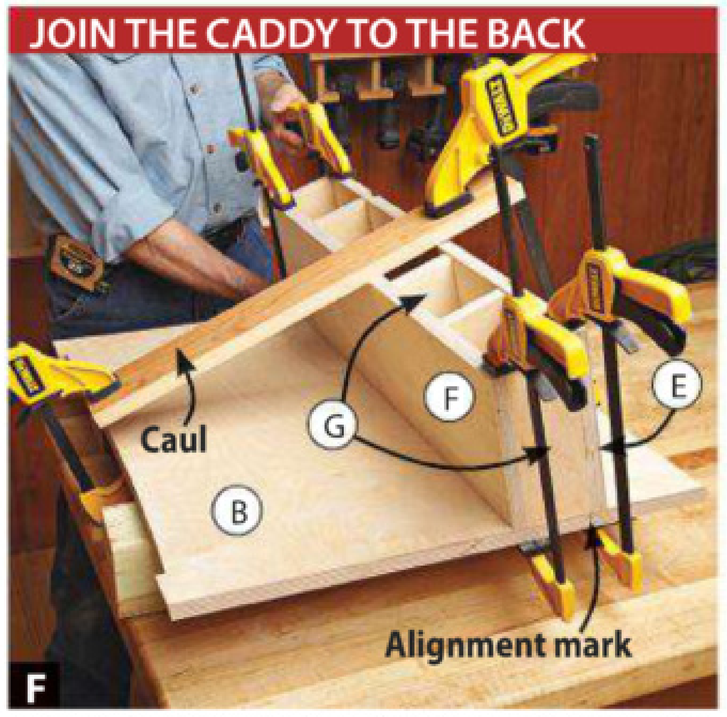

**3** CADDY




Glue and clamp the caddy top (E) to the assembled bottom and dividers, aligning it so it's flush at both ends and along the back ends of the dividers (G).




With the inside face of the box back (B) and the outside face of the box front (A) up, mark each edge of the box back at the top of the box front.




Lay the box back (B) on bench risers to glue on the caddy (E/F/G). A piece of scrap stock serves as a caul to clamp the middle of the caddy.

**3** Glue the caddy top (E) to the divider assembly (G) [**Photo D**].

**4** Lay the box back (B) on your workbench. Then, place the box front (A) on it, with the edges and bottoms flush. Mark the top of the box front on both edges of the box back **[Photo E].**

**5** Glue the caddy (E/F/G) to the box back (B), aligning the *bottom* surface of the caddy top (E) with the marks on the edges of the box back (B) [**Photo F**].

## Build the box

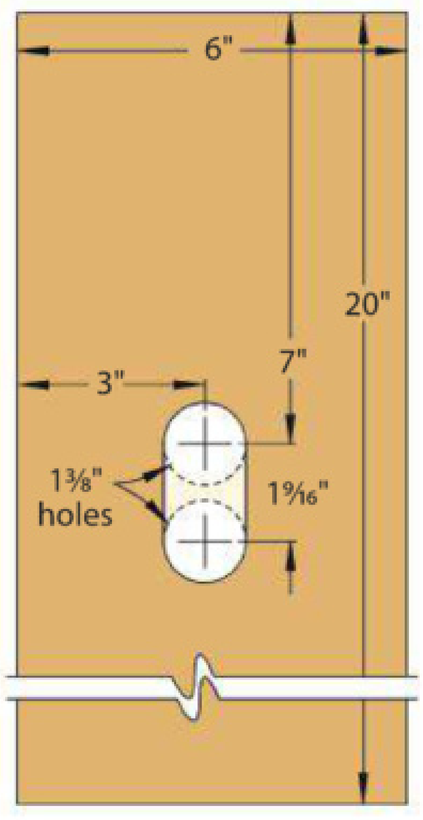
**1** Lay the box back/caddy assembly (B/E/F/G) on ¼" spacers. With the help of a squaring brace, glue and clamp one side (C) in position [**Photo G**]. Drill counterbores and countersink screw holes and drive #8×1¼" flathead screws. Repeat for the other side. Flip the assembly over and glue and screw the box front (A) in place, following the same procedure.

**2** From scraps of ¾" walnut stock, cut face-grain plugs for the counterbores and glue them in place. Trim the plugs flush; then, sand them smooth.

**3** Cut the long cleats (H) and short cleats (I) to size, ripping a 10° bevel on the top edges of the long cleats. Glue and screw the cleats in place where shown in **Drawings 1** and **2**.

**4** Cut the box bottom (J) to size, beveling the long edges [**Drawing 1**]. Apply glue to the top edges of the cleats (H, I) and lay the bottom in position. Secure it with brads.

**4** HINGE-ROUTING TEMPLATE




## Add drawers to finish it up

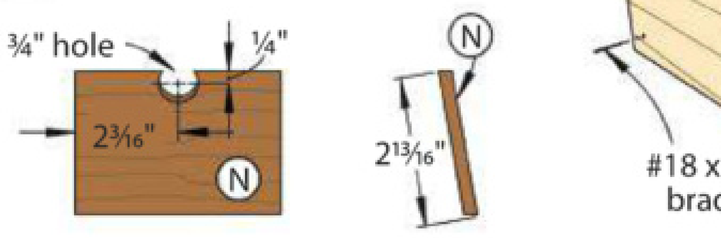
**1** Cut the drawer fronts and backs (K) and sides (L) to size [**Drawings 5** and **6**]. Trim two sides to 5⅜" long to accommodate the secret drawer. Bevel the parts where shown [**Drawing 6**]. Assemble the fronts and backs (K) and sides (L) [**Photo H**].

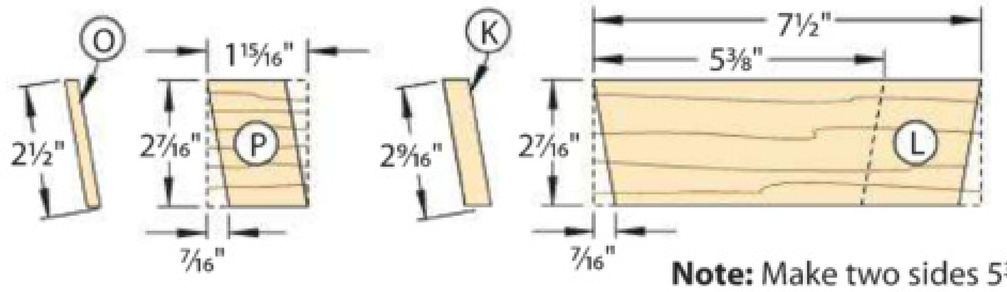
**2** Cut the drawer bottoms (M) ⅛" larger than shown [**Materials List, Drawing 6**] in each direction. Center the bottoms on the drawer assemblies (K/L) and glue and nail them in place. Sand the bottoms flush with the fronts, backs, and sides for a perfect fit.

**3** Cut the false fronts (N) to size and glue one to the front of each drawer. (We made the false fronts of walnut for contrast with the birch plywood.)

**4** Cut the secret-drawer front and back (O) and sides (P) to size [**Drawing 7**]. Make the bottom (Q) ⅛" oversize. Assemble the secret drawer and sand the bottom flush.

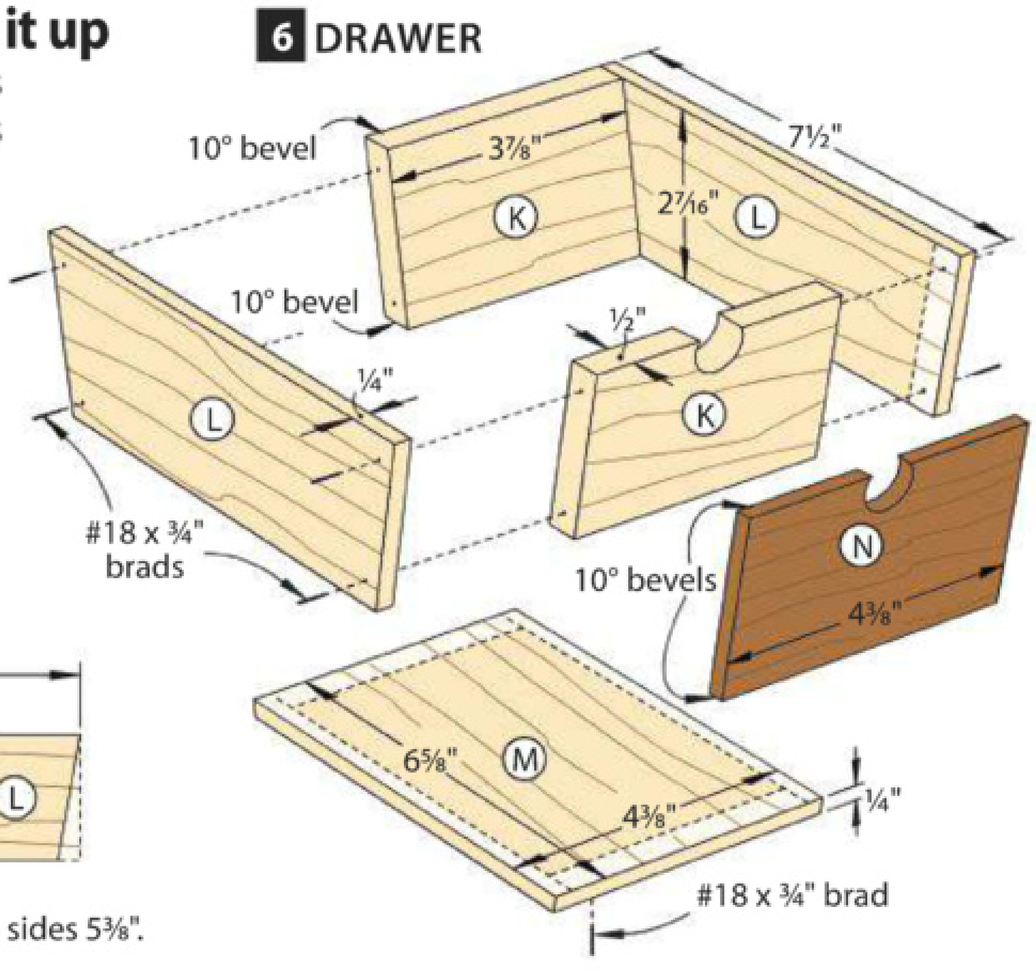
**5** DRAWER PARTS VIEW



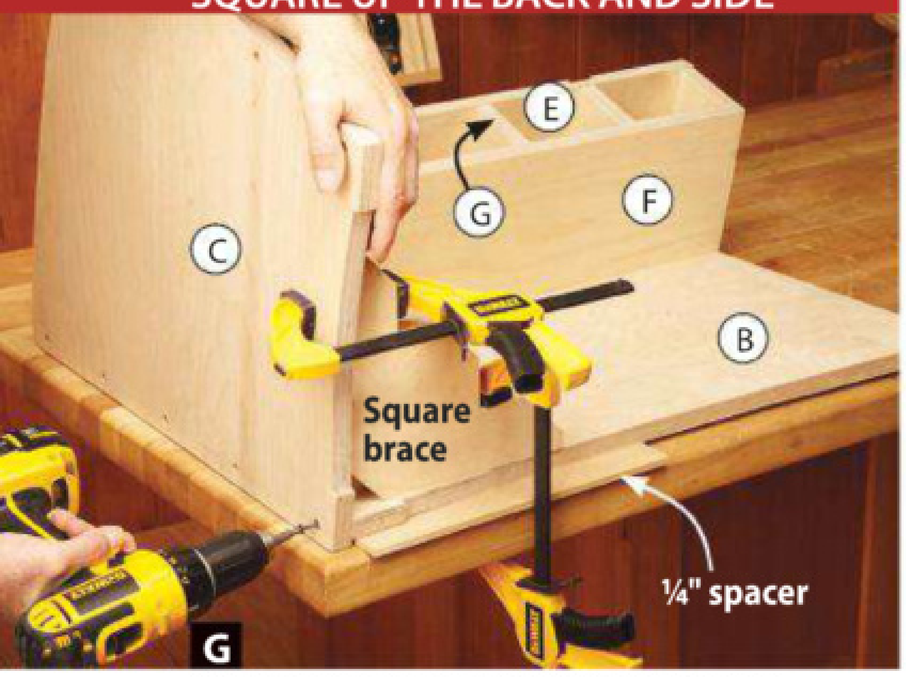




**Note:** Make two sides 5⅜".

**6** DRAWER

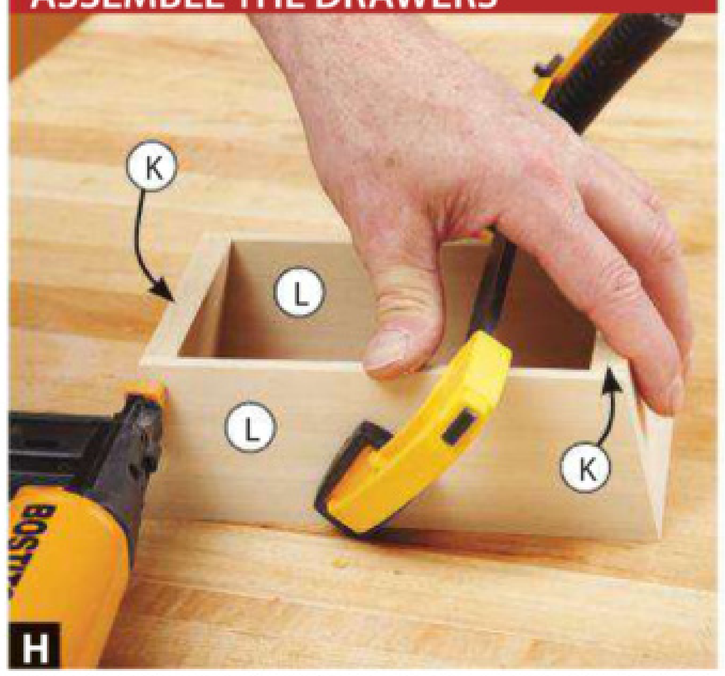


## SQUARE UP THE BACK AND SIDE



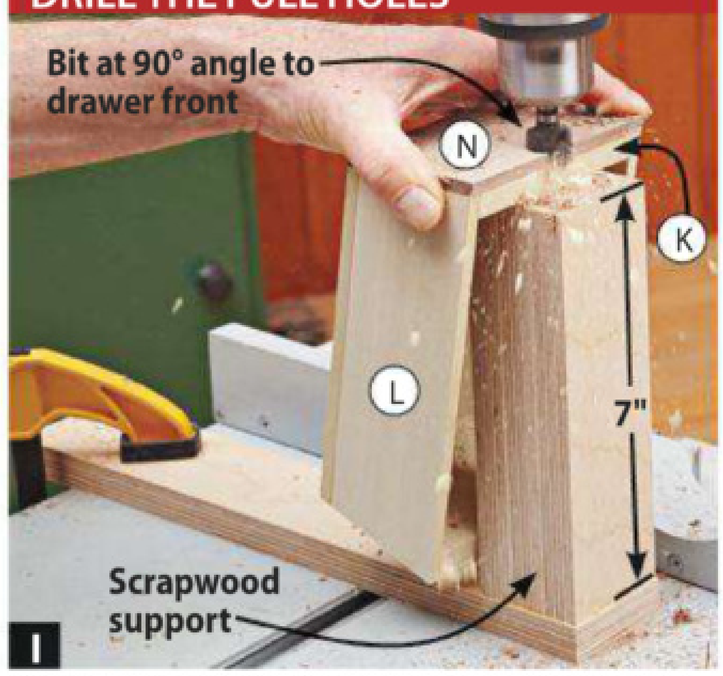

Hold the side (C) square to the back/caddy assembly (B/E/F/G) as you attach it. Get a free plan for the brace at woodmagazine.com/brace.

## ASSEMBLE THE DRAWERS




Glue the drawer sides (L) to the fronts and backs (K) and reinforce the joints with brads. A pneumatic brad nailer gives you great control over the job.

## DRILL THE PULL HOLES



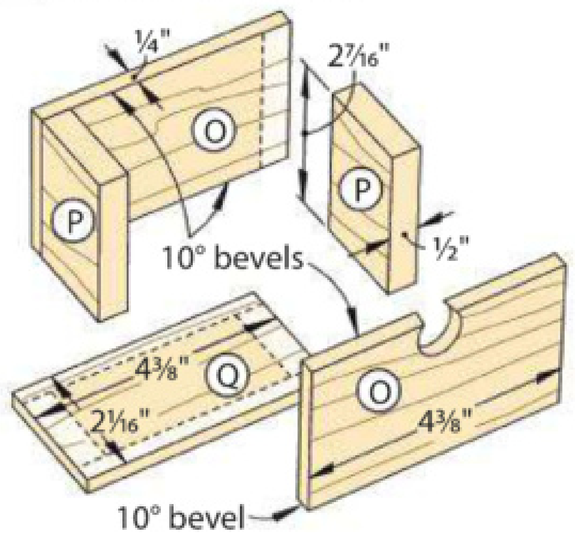

Rest the drawer front on a scrapwood support to bore the pull hole. A ¾" Forstner bit makes a clean cut for the holes, which break out of the top edge.

**5** Drill a ¾" drawer-pull hole where shown in each drawer [**Drawing 5**], making the holes perpendicular to the drawer fronts [**Photo I**].

**6** Soften any sharp edges by sanding. Finish-sand the box and drawers to 220 grit. Apply paint or a clear finish. (We applied several coats of satin polyurethane, sanding lightly with 320-grit paper between coats.)

**7** Attach the lid with two hinges. Then, slide the drawers into the caddy and start loading the box up with all your toys.

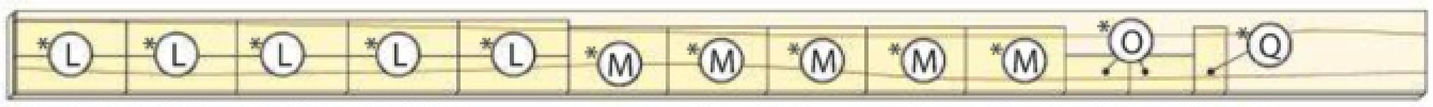
## 7 SECRET DRAWER



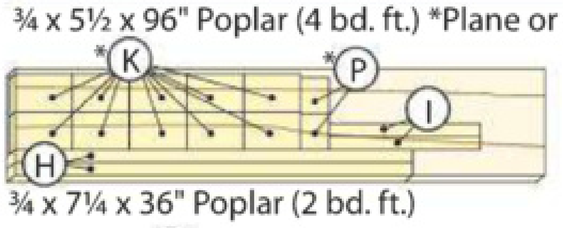


Produced by **Lucas Peters**
Written by **Larry Johnston**
Project design: **John Olson**
Builder: **Brian Bergstrom**
Illustrations: **Lorna Johnson**

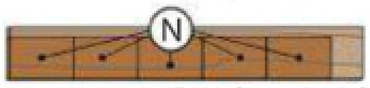

## Cutting Diagram



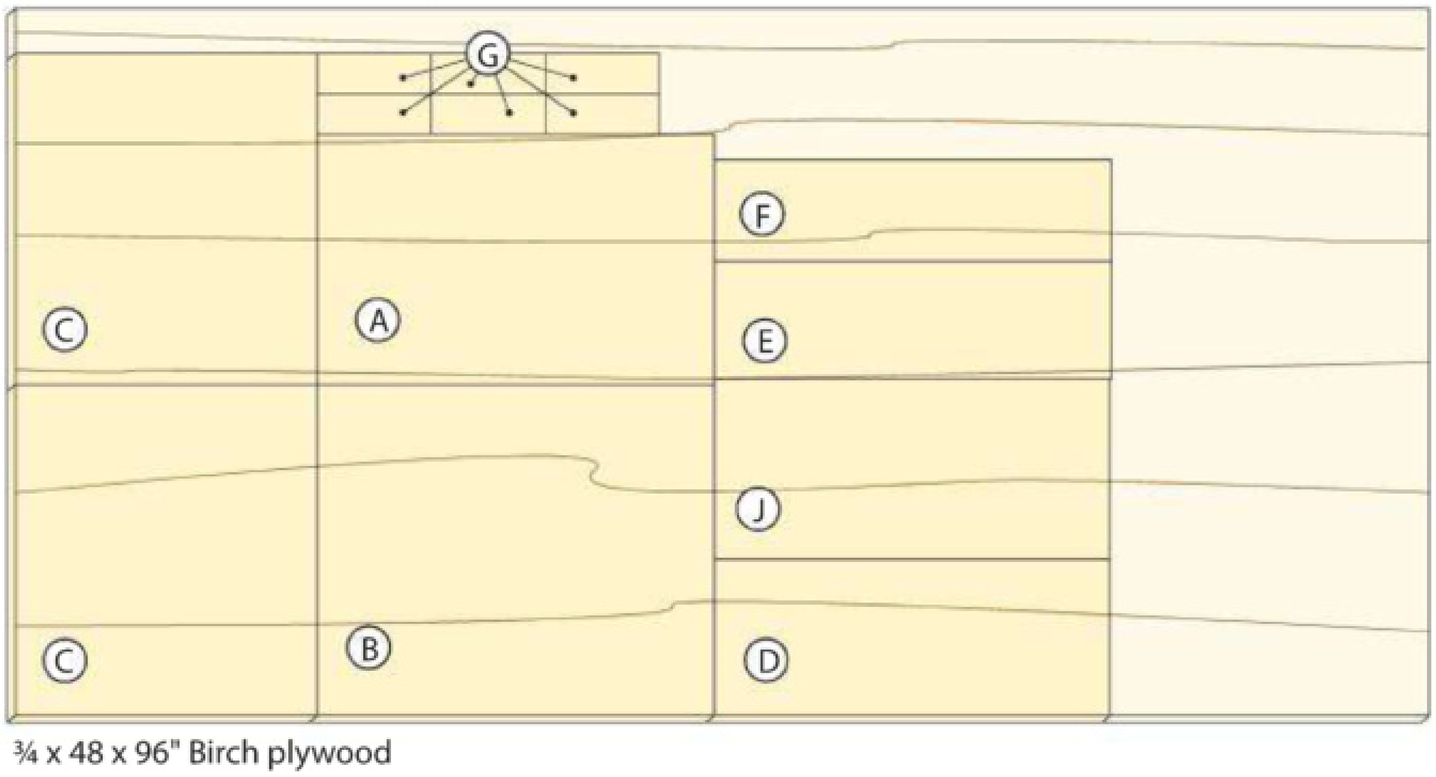

¾ x 5½ x 96" Poplar (4 bd. ft.) *Plane or resaw to the thicknesses listed in the Materials List.




¾ x 7¼ x 36" Poplar (2 bd. ft.)




¼ x 3½ x 24" Walnut (.17 bd. ft.)




¾ x 48 x 96" Birch plywood

## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| A | box front | ¾" | 17" | 27" | BP | 1 |
| B | box back | ¾" | 22½" | 27" | BP | 1 |
| C | box sides | ¾" | 22½" | 20½" | BP | 2 |
| D | box lid | ¾" | 10⅝" | 26⅞" | BP | 1 |
| E | caddy top | ¾" | 8" | 27" | BP | 1 |
| F | caddy bottom | ¾" | 6⅞" | 27" | BP | 1 |
| G | caddy dividers | ¾" | 2¾" | 7¾" | BP | 6 |
| H | long cleats | ¾" | ⅞" | 27" | P | 2 |
| I | short cleats | ¾" | ⅞" | 10¼" | P | 2 |
| J | box bottom | ¾" | 12¼" | 26⅞" | BP | 1 |
| K | drawer fronts and backs | ½" | 2⁹⁄₁₆" | 3⅞" | P | 10 |
| L | drawer sides | ¼" | 2⁷⁄₁₆" | 7½" | P | 10 |
| M* | drawer bottoms | ¼" | 4⅜" | 6⅝" | P | 5 |
| N | false fronts | ¼" | 2¹³⁄₁₆" | 4⅜" | W | 5 |
| O | secret-drawer front and back | ¼" | 2½" | 4⅜" | P | 2 |
| P | secret-drawer sides | ½" | 2⁷⁄₁₆" | 1¹⁵⁄₁₆" | P | 2 |
| Q* | secret-drawer bottom | ¼" | 4⅜" | 2¹⁄₁₆" | P | 1 |

*Parts initially cut oversize. See the instructions.

**Materials key:** BP–birch plywood, P–poplar, W–walnut.
**Supplies:** 1³⁄₁₆×2⅞" brass hinges, item no. 00W23.01, leevalley.com, 800-871-8158 (1 pair needed); #7×¾" F.H. brass screws (12 for hinges); #8×1¼" F.H. screws (30); #18×¾" and 1¼" brads.
**Bits:** ⅜" round-over bit, ¼" straight router bit, ⁷⁄₁₆" O.D. guide bushing, ¾" Forstner bit, ⅜" plug cutter.

## More Resources

▶ Shop for dozens of toy plans that you can use to fill this toy box at **woodmagazine.com/toys** or purchase over 200 toy plans on a single disc at **woodmagazine.com/toycollection**.

# Ask WOOD

Answers to your questions from letters, e-mails, and WOOD Online®

## Have a Woodworking Question?

E-mail it to us at **askwood@woodmagazine.com**. For faster feedback from your fellow woodworkers, search for or post your question in the **Ask WOOD Online** section of **woodmagazine.com/askwood**, or on one of our topical woodworking forums at **woodmagazine.com/forums**. You can also snail-mail questions to Ask WOOD, 1716 Locust St, LS-221, Des Moines, IA 50309-3023.

## A sawmill or portable mill might be closer than you think

**Q** I've got some downed trees that I'd like to have sawn into lumber, but don't own a sawmill. How can I locate a mill in my area—preferably a portable one that can come to my place and cut the logs on-site?

*—Darrell Jones, Batesville, Miss.*

**A** First, Darrell, check your local phone directory's business pages under "Sawyers," "Lumber," and "Logging." Second, log on to the websites of bandsaw mill manufacturers, such as Wood-Mizer, TimberKing, and Norwood, and search their owner databases for nearby sawyers who do custom milling. Finally, browse websites dedicated to milling lumber. We recommend the following:

- forestryforum.com
- woodfinder.com
- sawmilltrader.com

Before contacting a sawyer, be ready to discuss the following:

- the species, diameter, and length of the log portions of the trees; will he have to cut the logs to length;
- how long the trees have been down;
- where the trees are currently lying, and what kind of access the sawyer can expect;
- if you'll bring the logs to a mill, how you will transport them;
- how you want the logs sawn (quartersawing makes the best furniture-grade lumber, but requires more effort and costs more);
- whether you'll want to assist in or provide direction during the milling.



## More variability gives you greater control of your jigsaw

**Q** I've noticed that a lot of top-handle jigsaws have both a variable-speed dial and a variable-speed trigger. Isn't one control enough?

*— Carisa Anderson, Newport News, Va.*

**A** Think of these dual controls in terms of a car, Carisa: The trigger works as the accelerator, and the dial as the gear. You squeeze the trigger to control the blade speed during a cut, feathering it as needed to follow a line. Manufacturers recognize this as the best way to connect your focus to the blade's cutting action. But just as a gear limits a car to a certain speed range, the variable-speed dial limits the top-end speed for each setting. This allows you to squeeze the trigger fully and not exceed your desired speed.

*(continued on page 63)*



# The facts are hard to ignore.

## Titebond® III outperforms polyurethane glues.




As the leader in wood glues, we want you to know the truth about polyurethane glue and woodworking. A straightforward comparison between Titebond® III Ultimate Wood Glue and polyurethane glue tells the story.

Titebond® III is THE ultimate choice for bonding wood to wood. Period.

www.titebond.com/TBIIIvsPolyurethane

Made in the USA

# Weekend With WOOD™

# 3 "life-changing" days of woodworking



*"Best woodworking event I have ever attended."*



*"...knowledgeable and approachable..."*



*"Small classes, and cameras with big-screen video—YES!"*

- **Up-close, intensive instruction by the world's best woodworkers: Marc Adams, Jim Heavey, George Vondriska, Andy Chidwick, The Wood Whisperer, and many more**
- **More than 50 classes for all skill levels: cabinetmaking, joinery, hand- and power-tool skills, finishing, turning, and more**
- **Small class sizes guarantee access to top-notch instructors**
- **Tuition is $525 and seating is limited!**

*"...didn't want it to end..."*

*"Everything was first class."*

## May 16-18 • 2014

**at the *WOOD*® magazine shops in Des Moines, Iowa**

**Learn more and register today at**

**woodmagazine.com/weekendwithwood or call 888-636-4478**

Peachtree Woodworking Supply Inc. "Your One Stop Supply Shop"

Professional Titebond Wood Glues

Woodline — What can we help you make today?

Wood-Mizer

Est. 1903 Pony Tools Incorporated

Work Sharp — The Wood Tool Sharpener

Woodworkers Source — Hardwoods • Tools • Supplies

Gmaxx Series

## Ask WOOD

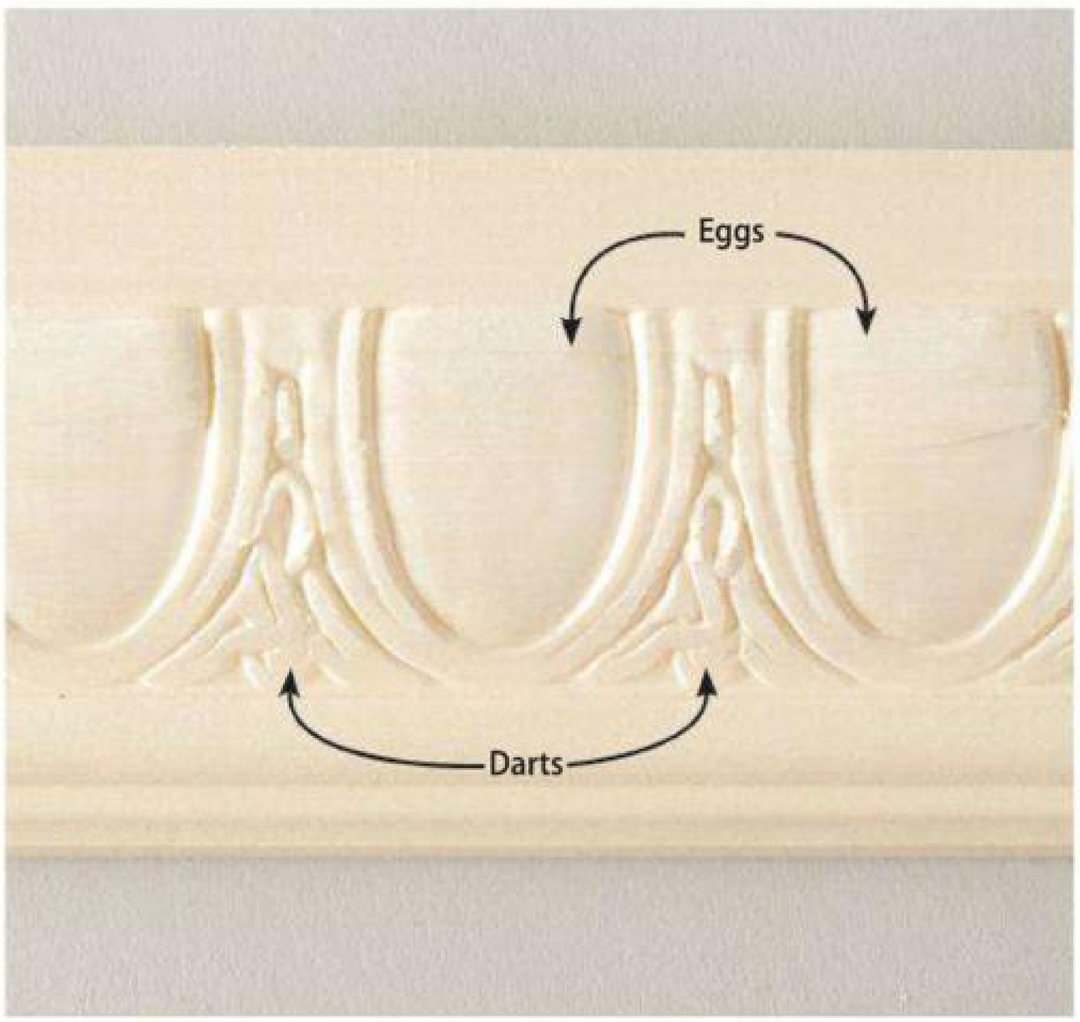
### What is egg-and-dart molding?

I'm looking to restore a 100-plus-year-old home to a look true to that period. Without photos of the original interior, I'm relying on advice from friends. One of them suggested egg-and-dart moldings, but I'm not sure what that is. Can you help?

*—Peter Hammond, Columbia, Md.*

That classic architectural embellishment dates back to at least ancient Greece, Peter, and some experts believe it's derived from even earlier Egyptian designs. In the modern age, it shows up most often in crown molding for high-end interiors or built-in cabinets.

An egg-and-dart design is almost always along the length of an ovolo profile (a convex quarter circle or ellipse similar to quarter-round molding). Not all ovolo designs, however, have egg-and-dart features. "Eggs" (half ovals with the rounded ends down) alternate with pointed "darts" (any shape resembling arrows, anchors, or tongues). This feature can stand alone as the primary focus of a molding, shown *below*, or be used in conjunction with other shapes to make up a wider molding, *bottom*.






*continued on page 64*



Dust Collection Made in America
Dust Gorilla® Portables!
2 & 3hp
High Quality, Powerful Dust Collection for Small Spaces!
New! Flashing Stobe Dust Level Sensor. Pat. Pend.
Never overfill your dust drum again!
▶ GE® HEPA (Certified H-12) Filter Media
See specs on website. Included most systems.
▶ Filter Flame-Guard Protection Pat. Pend.
Included most systems.
Pat. # 8,491,686
Pat. # 7,282,074
Vac Not Included
Retrofits to any shop vacuum!
Dust Deputy®
No More Clogged Filters!
Captures 99% of the waste *before* it reaches your vacuum!
Deluxe Dust Deputy® - $89.00
Shown at Left
Go to our website to see Dust Deputy® reviews, videos and other models.
Ductwork
FREE shipping on $300+ / 48 states / Some restrictions apply.
Made in USA
Like Dust Collection Systems and Components Since 1993.
Call Today for FREE Catalog!
1.800.732.4065
www.oneida-air.com
Oneida® Air Systems
Dust Collection Since 1993.

WOODCRAFT®
QUALITY WOODWORKING TOOLS • SUPPLIES • ADVICE®



NEW
FESTOOL
Carvex 420 EBQ Series Jigsaws –
Blade Drift And Deflection A Thing Of The Past
Armed with the most advanced motor technology and every feature you have come to expect from Festool, plus many more never imagined, the Carvex Jigsaws will surpass all expectations. Challenge any scribe line and curve with ease, thanks to the fully automatic blade guidance system.
• Revolutionary Base-Changing System • Triple Blade Guidance
• 4-LED, Stroboscopic System • Brushless Motor Technology
561593 Carvex PS 420 EBQ Barrel Grip Jigsaw
561608 Carvex PSB 420 EBQ D-Handle Jigsaw
497709 Carvex Jigsaw Accessory Kit
13WI11R
To Find Your Local Woodcraft Store Or For A Free Catalog, Visit woodcraft.com Or Call 1-800-225-1153.
For Information On Woodcraft Retail Franchise Opportunities, Visit woodcraftfranchise.com

Easy-On, Easy-Off Snow Plow
Perfect for Homeowners




Plow your own driveway and save! Pays for itself quickly if you currently hire a plow. Don't struggle snow-blowing your entire driveway…give yourself a break with the RediPlow!
For trucks, SUVs, ATVs, UTVs. Attaches to a front receiver hitch (included). Automatically engages when you drive forward and releases when you reverse. Works on gravel or pavement. Can be locked in travel position.
One pass and you're free to go! Never be trapped waiting for a snow plow again. The Redi-Plow is light enough for one person to handle. Clear your parking area, and a path to the barn with ease!



Tough Enough For Any Snowstorm!
• No hydraulics or electric components • Heavy-duty rubber blade edge
SPECIAL OFFER for WOOD Readers:
SAVE $100!
Use the phone number or URL below to save $100 off list price!
LIMITED TIME OFFER
80757X © 2013
LIMITED-TIME OFFER 1★YEAR TRIAL
Call today for FREE Buyers Guide!
TOLL FREE 877-201-5446
DRrediplow.com/wood100
PROFESSIONAL POWER DR DONE RIGHT

storemags.com

# Ask WOOD

## Avoid a tight squeeze: Start with clamps you'll use most

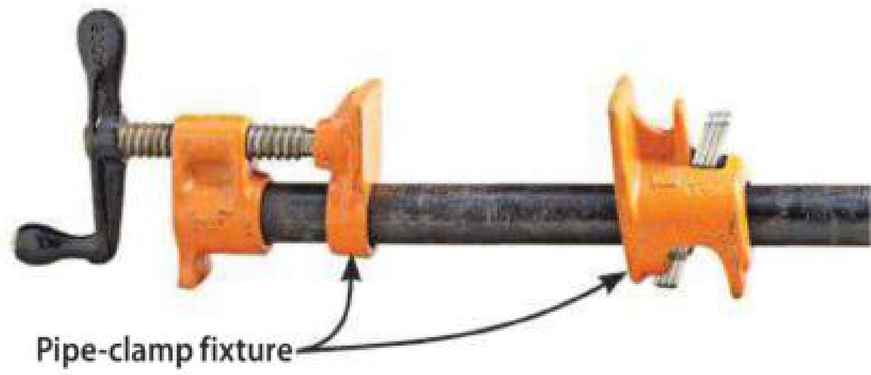
**Q** Having just bought a house with a three-car garage, I'm looking to set up a woodworking shop. I already own a few basic tools, but when it comes to clamps I'm not sure where to start, and have a limited budget. Can you help me invest wisely in clamps I'll need?

*—Gordon Dennett, Philadelphia*

**A** You're in luck, Gordon, because a good starter set will set you back only a few hundred dollars, and you can find all you need at a local home center or hardware store. First, get eight ¾" pipe-clamp fixtures (about $15 each), such as those shown *below*. Then buy ¾" black pipe in 24" and 48" lengths (four of each), threaded on both ends. Throw in four couplers and you can join any two pipes together to make longer clamps. These will handle any panel or case glue-ups you attempt.

Next, get yourself four 12"-long one-handed ratcheting bar clamps, such as those shown at *bottom*. These work great for any quick clamping task, such as securing a workpiece to a bench, or small assemblies, such as gluing up a jewelry box.

As your skills and projects grow, add more clamps to this collection as needed. That could include different lengths of one-handed bar clamps, band clamps for mitered frames and boxes, and hand-spring clamps for light-duty jobs.



# HARBOR FREIGHT TOOLS

**Quality Tools at Ridiculously Low Prices**

**LIFETIME WARRANTY** ON ALL HAND TOOLS!

Scribd.com

## FACTORY DIRECT TO YOU!

How do we sell high quality tools at the lowest prices? We cut out the middle man and buy direct from the factories who supply other major brands. It's just that simple! Come see for yourself and use this 25% Off Coupon on one of our 7,000 products*, plus pick up a Free 9 LED Aluminum Flashlight, a $6.99 value. We stock Automotive Tools, Power Tools, Air Tools and Compressors, Engines and Generators, Welders, Hand Tools, Tool Storage, Tarps and much more.

- 1 Year Low Price Guarantee
- No Hassle Return Policy
- 100% Satisfaction Guaranteed
- Over 25 Million Satisfied Customers
- 430+ Stores Nationwide

**NOBODY BEATS OUR QUALITY, SERVICE AND PRICE!**

SUPER COUPON!

## FREE!

WITH ANY PURCHASE



3-1/2" SUPER BRIGHT NINE LED ALUMINUM FLASHLIGHT

ITEM 65020/69852/69911

Item 65020 shown

REG. PRICE $6.99

LIMIT 1 - Cannot be used with other discount, coupon or prior purchase. Coupon good at our stores, HarborFreight.com or by calling 800-423-2567. Offer good while supplies last. Shipping & Handling charges may apply if not picked up in-store. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

59074650

SUPER COUPON!

## 25% OFF

ANY SINGLE ITEM!

LIMIT 1 - Save 25% on any one item purchased at our stores, HarborFreight.com or by calling 800-423-2567. *Cannot be used with other discount, coupon, gift cards, Inside Track Club membership, extended service plans or on any of the following: compressors, generators, tool storage or carts, welders, floor jacks, Towable Ride-On Trencher (item 65162), open box items, in-store event or pawing lot sale items. Not valid on prior purchases after 30 days from original purchase date with original receipt. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

32659665

SUPER COUPON!

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



LOT NO. 877/69137/69249/69129/69121

Item 877 shown

SAVE 68%

$2.79

REG. PRICE $8.99

36918442

LIMIT 8 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 24" CLAMP AND CUT EDGE GUIDE

PITTSBURGH



LOT NO. 66126

SAVE 46%

$6.99

REG. PRICE $12.99

95562380

LIMIT 7 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 90 AMP FLUX WIRE WELDER

Item 68887 shown



LOT NO. 68887/61207

CHICAGO ELECTRIC WELDING

SAVE $60

NO GAS REQUIRED!

$89.99

REG. PRICE $149.99

20252526

LIMIT 4 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## ALUMINUM OXIDE SANDING SPONGES PACK OF 10

Lifetime CARBIDE



YOUR CHOICE!

SAVE 41%

COARSE LOT NO. 46751

MEDIUM LOT NO. 46752

FINE LOT NO. 46753

$3.49 REG. PRICE $5.99

83378892

LIMIT 7 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 29 PIECE TITANIUM NITRIDE COATED DRILL BIT SET



LOT NO. 5889

drillmaster

SAVE 60%

$9.99 REG. PRICE $24.99

20450700

LIMIT 8 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 44", 13 DRAWER INDUSTRIAL QUALITY ROLLER CABINET

US GENERAL PRO

WEIGHS 306 LBS.

NEW!

SUPER HIGH GLOSS FINISH!



2900 LB. CAPACITY

SAVE $290

LOT NO. 68784/69387

Item 68784 shown

$359.99 REG. PRICE $649.99

68219535

LIMIT 4 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 14" FOUR SPEED WOODWORKING BAND SAW



SAVE $130

LOT NO. 60564

CENTRAL MACHINERY

$329.99 REG. PRICE $459.99

82211539

LIMIT 3 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 8" x 12" BENCH TOP WOOD LATHE



CENTRAL MACHINERY

SAVE $50

LOT NO. 95607

$99.99

REG. PRICE $149.99

95271877

LIMIT 5 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## HEAVY DUTY RETRACTABLE AIR HOSE REEL WITH 3/8" x 25 FT. HOSE



SAVE 38%

LOT NO. 69234/46104/69266

Item 69234 shown

CENTRAL PNEUMATIC

$42.99 REG. PRICE $69.99

76646070

LIMIT 4 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 5 SPEED BENCH DRILL PRESS

CENTRAL MACHINERY



SAVE $50

LOT NO. 60238

$49.99 REG. PRICE $99.99

86179679

LIMIT 5 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## NO. 33 BENCH PLANE



SAVE 20%

LOT NO. 97544

WINDSOR DESIGN

$7.99 REG. PRICE $9.99

85763668

LIMIT 8 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## CENTRALPNEUMATIC 3 GALLON, 100 PSI OILLESS PANCAKE AIR COMPRESSOR



SAVE 50%

Item 95275 shown

LOT NO. 95275/60637/69486/61615

$39.99 REG. PRICE $79.99

19870746

LIMIT 3 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 15" x 13" ALL PURPOSE SHOP TOWELS PACK OF 50



Item 46163 shown

LOT NO. 46163/69649

SAVE 43%

$8.99

REG. PRICE $15.99

63704873

LIMIT 7 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

SUPER COUPON!

## 70 GALLON INDUSTRIAL 5 MICRON DUST COLLECTOR

CENTRAL MACHINERY

SAVE $100



$149.99 REG. PRICE $249.99

LOT NO. 97869

2 HP

45606248

LIMIT 4 - Good at our stores, HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/8/14. Limit one coupon per customer per day.

**Order at HarborFreight.com or 800-423-2567**

**We FedEx Most Orders in 24 Hours for $6.99**

**GRAND OPENINGS** Auburndale, FL · Indianapolis, IN · Lafayette, IN · Hickory, NC · Blackwood, NJ · El Paso, TX · Humble, TX · Sterling, VA

# Shop-Proven Products

These woodworking wares passed our shop trials.

## About our product tests

We test hundreds of tools and accessories, but only those that earn at least three stars for performance make the final cut and appear in this section. The products shown here, and those that don't make the cut, are also reviewed at toolreviews.woodmagazine.com. Prices shown are current at the time of article production and do not include shipping, where applicable.

## Value-priced track saw cuts like a champ

Rail-guided track saws work great for cutting up sheet goods because they deliver accurate, splinter-free cuts safely. Until now, you couldn't buy one for less than $500, but Grizzly's T25552 provides all that precision at half the price.

The saw powered through cuts in veneered plywood and melamine-coated particleboard without bogging down, and left edges free of tear-out, thanks to the 48-tooth carbide blade and the zero-clearance edge on the rail. The saw glides smoothly along the rail, and it plunges nicely for cuts up to 2" deep.

The T25552 kit also includes a 55" rail, two clamps, a stabilizer bar (to secure the saw to the rail during bevel cuts), and a connector for linking together an optional second rail for longer workpieces.

*—Tested by Dean Fiene*



**Portable track saw master pack (T25552)**

| | |
|---|---|
| Performance | ★★★★★ |
| Price | $245 |

Grizzly Industrial
800-523-4777; grizzly.com



## Folding sawhorses deliver strength and convenience

I know what you're thinking: I can make my own sawhorses. Fair point, but can you make them rock solid *and* so they fold up compactly for easy transport and storage? Made from 1-by pine, HideAHorse's folding sawhorses are stronger than they appear; the manufacturer says each will support 1,100 lbs, and although we never got anywhere near that total, they did hold nicely under heavy loads of plywood and dimensional lumber without wobbling. The legs fold out and lock into dadoes, shown *below*, for quick setup. To take them down, simply reverse the steps and wrap the legs with the included strap.

When folded up, each weighs just over 7 lbs for easy carrying.

*—Tested by Kevin Boyle, Senior Design Editor*



**Folding sawhorses**

| | |
|---|---|
| Performance | ★★★★★ |
| Price | $84 per pair |

HideAHorse
928-284-5015; hideahorsefoldingsawhorses.com





*continued on page 68*

Save up to 50% or more on heating costs




envi™
wall-mounted room heater

consumes less. warms more.

| | |
|---|---|
| energy saving | heats a room for only 4 cents per hour! |
| ultra-safe | leave unattended 24/7, cool to touch |
| healthy | fanless - will not circulate dust or dry the air |
| effective | 100% Pure Stack Convection, gentle whole room warmth! |
| silent | fanless design, auto dimming power light |
| easy install | installs in minutes, no drill required hardwired and plug-in models available |
| stylish | slim space saving design only 19" wide by 2" thin! |

economical. safe. simple.

eheat.com 1-800-807-0107

**Free Shipping** *On all Orders!*

*Limited Time* **10% Discount!** *Coupon Code: WOOD1110*
*For 2 or more* **15% Discount!** *Coupon Code: WOOD1115*


✓Yes


✓Yes


✗No


✓Yes


✓Yes


✓Yes


✓Yes

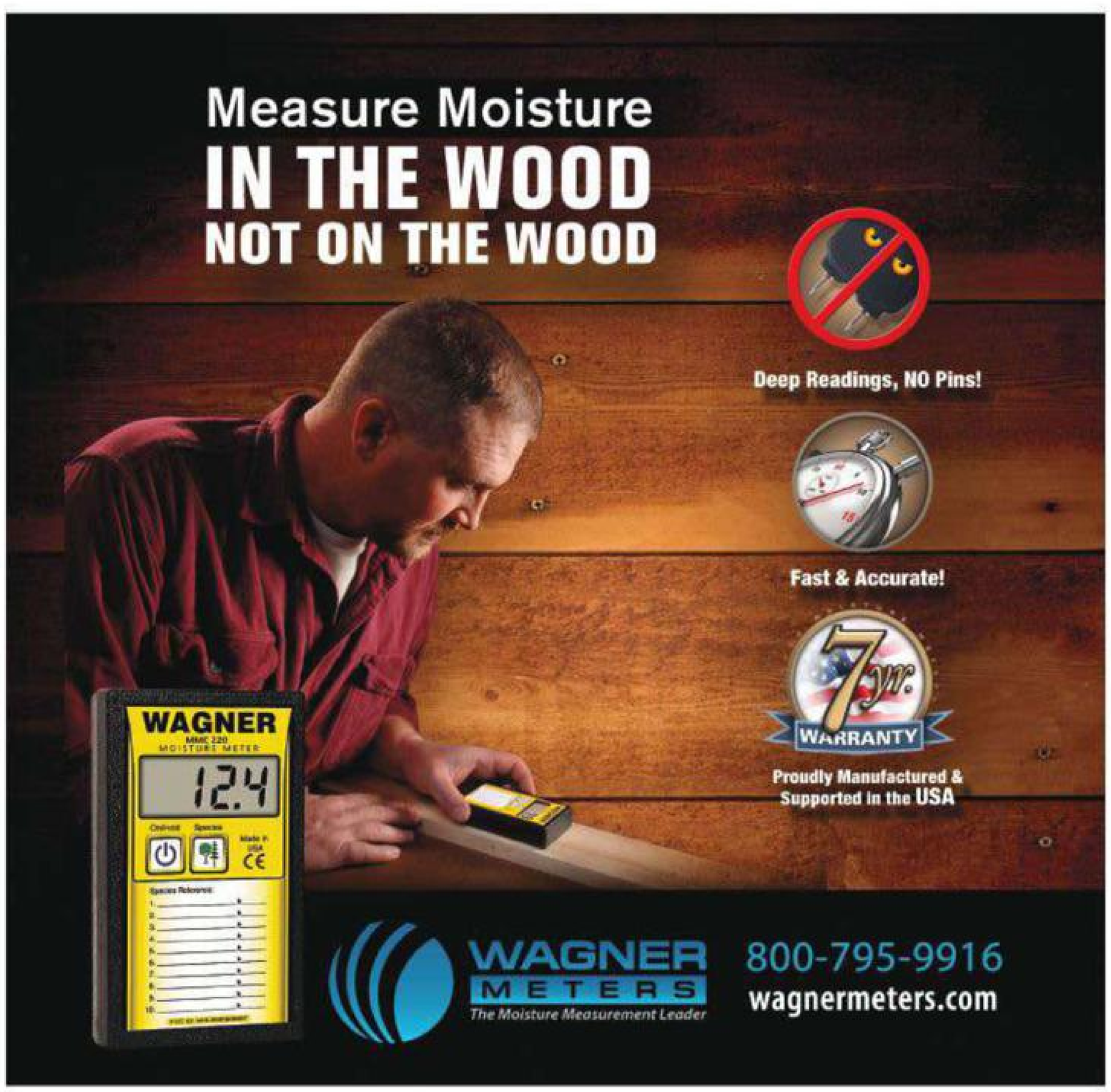

✓Yes

✓ Reliably Low Prices
✓ Easy To Use Website
✓ Huge Selection
✓ Fast Shipping

ROCKAUTO.COM
ALL THE PARTS YOUR CAR WILL EVER NEED

GO TO WWW.ROCKAUTO.COM ROCKAUTO, LLC (EST. 1999)





# Shop Proven Products

## True one-pass frame profiles

Making your own frames adds a personal touch to a prized photo, painting, or child's drawing, and Eagle America's picture-frame router bits make it easy to create eye-catching profiles in one pass on your router table. No need to use a variety of different-shaped bits to achieve the five profiles shown here. And to top it off, these U.S.-made bits cut cleanly—cutting the full profile in one pass—in all the species I tried, including some prone to tear-out (figured maple, red oak, and hickory).

After routing the profile, you cut a rabbet on the back for the picture and glass. The five profile bits shown come as a set, or sell for $40–$45 apiece.



*—Tested by Bob Hunter, Tools Editor*

**Picture-frame router bits, 5-pc. set**

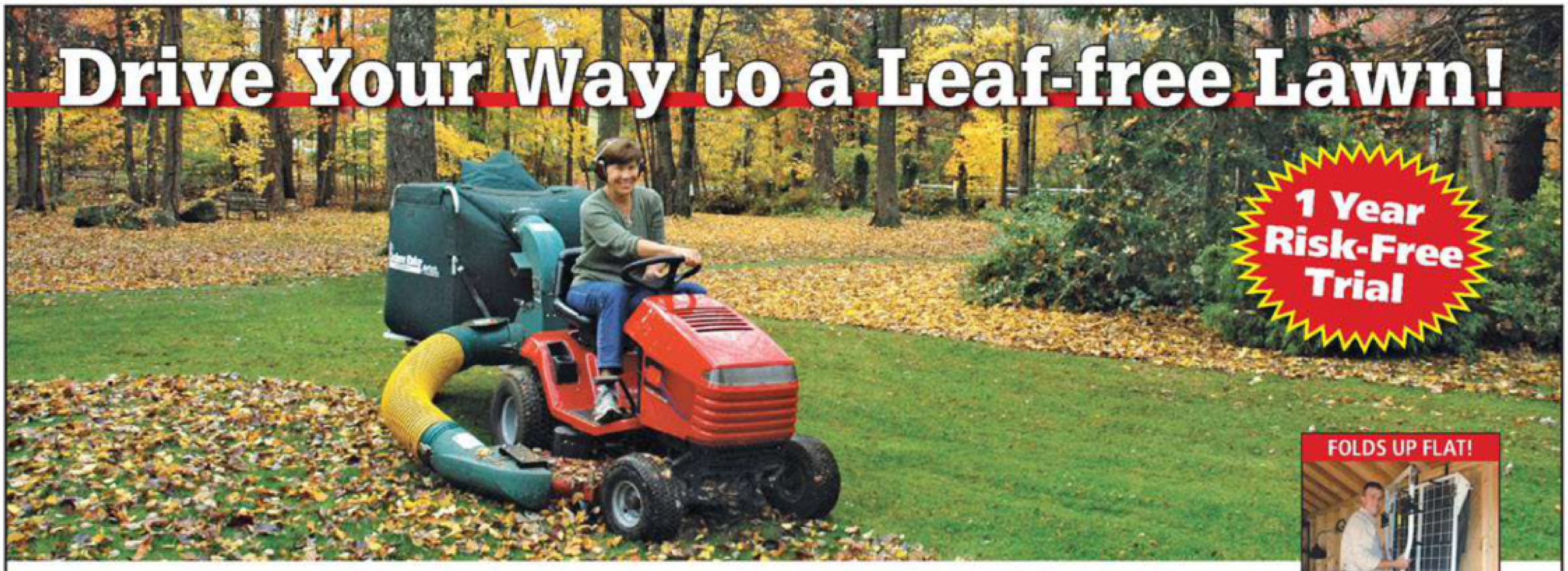
| | | |
|---|---|---|
| Performance | | ★★★★★ |
| Price | ¼"-shank bits, (199-1652) | $190 |
| | ½"-shank bits, (199-1655) | $190 |

Eagle America
800-872-2511; eagleamerica.com



*continued on page 70*

# Drive Your Way to a Leaf-free Lawn!







Keeping your property looking great doesn't have to mean long weeks of back-breaking labor. Get a Cyclone Rake and you'll turn all those agonizing weeks into a few easy hours.

The Cyclone Rake ***hitches to almost any riding mower or ZTR***. It has it own powerful engine-driven vacuum-mulcher that ***delivers incredible lifting power and up to 415 gallons of hauling capacity***. You'll clear acres of leaves, pine straw and other lawn debris, saving you precious time and your back.

Plus, when your done, it ***folds up flat, just 8 inches thick*** for compact storage — no need for a barn or spare garage!

Cyclone Rake®

Follow us on

**Call for a FREE Information Kit**

**1-800-549-9811**

**or visit CycloneRake.com to learn more.**

Mention the Discount Code **WM1113** when you call, or enter it on our web site for a special discount on any Cyclone Rake unit. (Expires 12/27/13)

©2013, Woodland Power Products, Inc., 72 Acton St., West Haven, CT 06516

---

# CherryTree Wildwood

Woodworking Plans, Kits & Supplies

*Since 1981*




www.CherryTreeToys.com

12446 W State Rd 81 • Beloit, WI 53511

1-800-848-4363

---

# MAX® FINISHES Quality Jobs.




| NF665/15 | NF255F/18 | TA238A/18-6 |
|---|---|---|
| 16Ga. Straight Finish Nailer Up to 2-1/2" | 18 Ga. Brad Nailer Up to 2-1/8" | 18 Ga. Narrow Crown Stapler Up to 1-1/2" |

Like us on facebook.

800-223-4293

www.maxusacorp.com

## Heavy-duty bandsaw resaws with power and finesse

There's a lot to like about Rikon's robust 14" Professional bandsaw. Its 2½-hp motor powers the blade through even the maximum 14" resaw cut in hardwoods. With dual-bearing, tool-free blade guides and easy-to-adjust wheels and rip fence, I resawed 1/16" veneers with no blade deflection or drift. And I like that the table surface sits just 36" from the floor, making it easier to resaw large, heavy workpieces.

Rikon built in welcome safety measures on this saw as well. A foot-activated brake stops the blade and motor in just a couple of seconds. And electric microswitches on the doors and blade-tension release—mounted conveniently below the top door—prevent accidental start-ups.

Still, a few small details—a wobbly handwheel, a too-long fence-handle bolt, a not-quite-large-enough opening for the blade-guidepost cap—detract from the overall fit and finish of a top-performing bandsaw.

*—Tested by John Olson, Design Editor*



**14" Professional bandsaw (10-350)**

| | |
|---|---|
| Performance | ★★★★½ |
| Price | $1,400 |

Rikon Tools
877-884-5167; rikontools.com






# WOOD® ADVERTISER INDEX

Storemags

**AMERICAN FURNITURE DESIGN CO.:** 150 of America's best furniture plans, comprehensive instruction guide. Catalog. p.73–75

**AZTEC STEEL CORP.:** Quality pre-engineered arch-style steel buildings at the lowest cost anywhere. p.73–75

**BEREA HARDWOODS:** Quality pen kits and other turning kits. p.14

**BIG GATOR TOOLS:** High quality portable drill and tap guides. Standard and metric sizes available. 100% made in USA. p.73–75

**BYEGONE WORKSHOPS:** p.73–75

**COOK'S SAW MFG., L.L.C.:** Portable sawmills, edgers, sharpeners, band blades… Free catalog. Video available. p.73–75

**COUNTRY HOME PRODUCTS:** p.64

**DEWALT POWER TOOLS:** Back cover

**DMT DIAMOND MACHINING TECHNOLOGY:** For sharp edges—rely on USA made DMT® diamond sharpeners. p.71

**DIGITAL WOOD CARVER:** Bring a CNC router into your shop at an affordable price. p.73–75

**EAGLE AMERICA:** Largest selection of professional quality, American-made router bits + 100's of unique woodworking accessories. p.11

**EASY WOOD TOOLS:** American-made woodturning tools and chucks for all skill levels. p.71

**EHEAT, INC.:** p.67

**EPILOG:** Wood engraving and cutting systems — Low price, high-quality laser systems. p.13

**FORREST MFG. CO., INC.:** Top quality blades and dados for an ultra-smooth finish. p.13

**FREUD USA:** p.19

**FURNITURE MEDIC:** Offering franchises to perform on-site furniture and wood repair. p.13

**GEL PRO:** Let's Gel. p.73–75

**GRIZZLY INDUSTRIAL, INC.:** Providing quality woodworking and metalworking machines and tools to American workshops and businesses since 1983. Inside front cover

**HARBOR FREIGHT TOOLS:** p.65

**HUT PRODUCTS:** Woods, acrylics, and supplies for pen- and game-call turning. p.71

**KLOCKIT:** The leading supplier of clock-making supplies for over 35 years. p.73–75

**KREG:** Makers of KregJigs, routing systems, machine accessories, cutting and measuring tools, clamps, and more! Inside back cover

**LAGUNA TOOLS:** Fine woodworking machines. Award-winning bandsaws, European quality machines with over 25 years of experience. p.21

**LEIGH INDUSTRIES:** p.68

**LIGNOMAT USA, LTD.:** Affordable, reliable, pin and pinless moisture meters for wood. Free catalog. p.73–75

**MAX:** Manufacturing professional tools for over 70 years. p.69

**MLCS WOODWORKING:** Best quality, huge selection, low prices, superior service. Free shipping! p.15

**NORWOOD SAWMILLS:** Portable sawmills, edgers, ATV skidders, hydraulic tractor-mounted skidding winches and wood splitters. p.73–75

**OLD MASTERS CRAFTSMAN-QUALITY STAINS AND FINISHES:** Quality stains and finishes to protect and enhance wood's beauty and richness. p.14

**OLIVER MACHINERY:** Oliver's 120-year heritage of innovative design and quality goes into every product in their full line of heavy-duty machinery. p.29

**ONEIDA AIR SYSTEMS, INC.:** Free informative catalog contains dust collection systems and complete ductwork. p.3, 63

**OSBORNE WOOD PRODUCTS, INC.:** A free catalog of table legs, corbels, and island legs. p.29

**PACKARD WOODWORKS:** Free Catalog for WOODTURNERS! — Quality lathes, tools, and supplies. p.73–75

**PENN STATE INDUSTRIES:** Award-winning dust collection. Collectors, cyclones, ductwork and more. p.9

**PENN STATE INDUSTRIES:** Create stunning, easy-to-make pens. Get everything you need to start. Plus, work healthier with PSI dust collectors. p.7

**PHASE-A-MATIC, INC.:** Convert 1-phase electric power into 3-phase; run 3-phase equipment anywhere. p.73–75

**QUICKSCREWS INTERNATIONAL CORP.:** Full line of screws made exclusively for the woodworking industry. Buy any selection online. p.71

**RADARCARVE:** Manufacturer of specialized wood carving duplicators. p.73–75

**ROCKAUTO.COM:** Check out www.RockAuto.com for all the parts your car or truck will ever need. p.67

**ROCKLER WOODWORKING AND HARDWARE:** One of the nation's premier suppliers of specialty hardware, tools, lumber and other high quality woodworking products. p.12

**SOKOLOWSKI STUDIOS:** Add sparkle and sophistication to your woodworking with metal inlay. p.73–75

**SUPERMAX TOOLS:** Exceptional drum, brush, and wide-belt sanders for the professional and enthusiast. p.13

**TITEBOND:** The widest variety of glues and adhesives for woodworkers of all skill levels. The industry standard for over 75 years. p.61

**WAGNER METER:** p.68

**WEEKEND WITH WOOD:** Spend three days immersed in woodworking with the best teachers in the world. May 16–18, 2014, at the *WOOD* magazine shops. p.62

**WHOLESALE CABINET COMPONENTS:** Fulterer drawer slides at wholesale prices. p.73–75

**WILDWOOD DESIGNS SCROLLSAW PATTERNS:** Up to 74" clocks, 300+ patterns, books, clock parts, saw blades, tools, wood! p.69

**WOODCRAFT SUPPLY, LLC:** Quality tools, supplies and expert advice from Woodcraft can help take your woodworking to the next level. p.17, 64

**WOODLAND POWER PRODUCTS:** Cyclone Rake information. p.69

**WOODLINE USA:** Router tables, routers, router bits, clamps, saw blades and more. p.10

**WOODMASTER TOOLS:** Multi-duty planers that mold, sand, and saw. p.73–75

**WOODMIZER PRODUCTS:** Eight portable sawmills available starting with the LT10 at $3,995. p.73–75

**WOODSTOCK INTERNATIONAL, INC.:** Selling fine quality woodworking & metalworking machines through thousands of dealers since 1989. p.5

**WOODWORKERS GUILD OF AMERICA:** Join the guild and get top-quality woodworking plans and videos, streaming online for one low subscription price. p.72

**WOODWORKERS SOURCE:** Hardwoods from around the world. p.73–75

**WORK SHARP:** WS3000 power sharpener—air cooled, dry sharpener quickly, accurately and consistently sharpens and hones tools to razor-sharp results. p.8

**For more information about these advertisers, visit woodmagazine.com/adindex**

QuickScrews International Corporation

Over 950 different woodworking and furniture screws



Full Line of Drive Bits



Torx Drive Screws Now In Stock!

Assembly Flat Head
With Nibs & Type 17 Point Coarse Thread
Size Range
#8 - #10 x ¾" - 4"



Comes with FREE INSERT BIT!

Installation Round Washer Head
XL Type 17 Point to make awkward driving easier to penetrate
Size Range
#10 x 2½" - 4"



Warehouse Locations: Livermore, CA & Rock Hill, SC

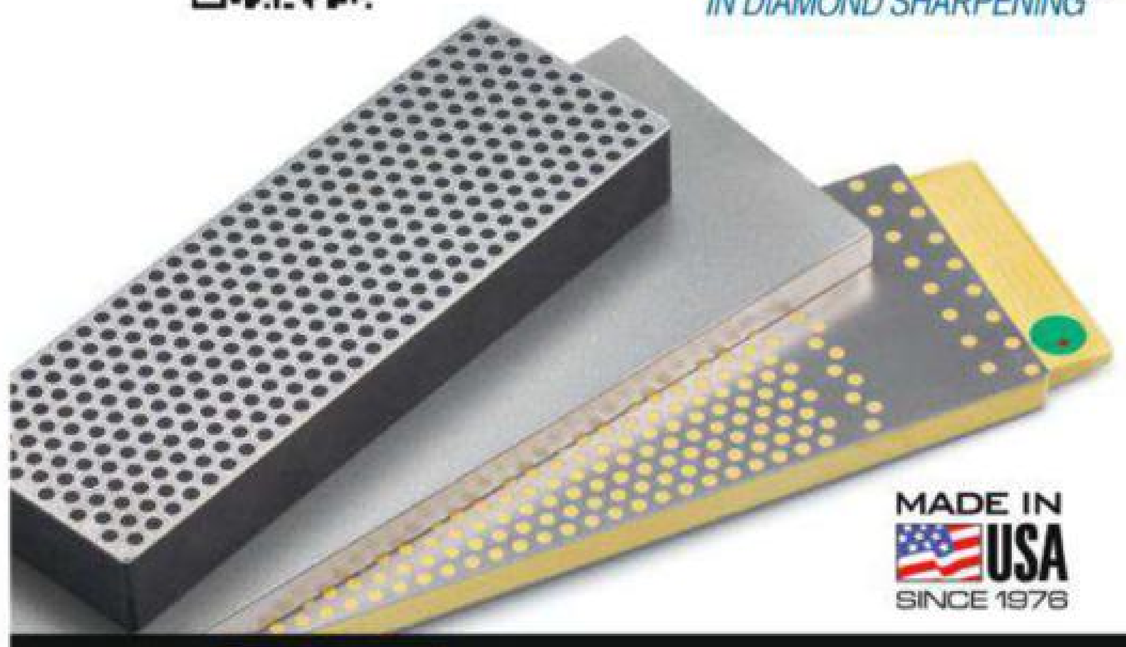
www.quickscrews.com

It's the best thing you can do for your tools

DMT® diamond sharpeners rank highest in ❶ diamond quality, ❷ diamond coverage, and ❸ surface flatness. So whether you prefer our continuous or interrupted surface, one thing is certain. You'll never feel more connected to your tools.

See the DMT® Difference for yourself, visit: www.dmtsharp.com

DMT® THE LEADER IN DIAMOND SHARPENING™



MADE IN USA SINCE 1976

ROUGH CUT WOODWORKING with TOMMY MAC

DMT® is a proud funder of ROUGH CUT– Woodworking with Tommy Mac

NOW LOWER PRICE!

EASY WOOD TOOLS

EASY CHUCK™

4" Woodturning Chuck

Thread Sizes: 1" - 8, 1 1/4" - 8, and M33 - 3.5




Snap-Lock SLT Technology

With these exclusive features:

Easy Jaws
Change out jaw sets in under 30 seconds and get right to your next project

Zoom Ring
Quickly adjust the gripping diameter with just your fingertips!
*Then final tighten with included chuck key*

Other Easy Chuck Exclusives:

**Hardened jaws** and jaw slides will last for generations

**Rounded jaw corners** for safety that will not cut your knuckles

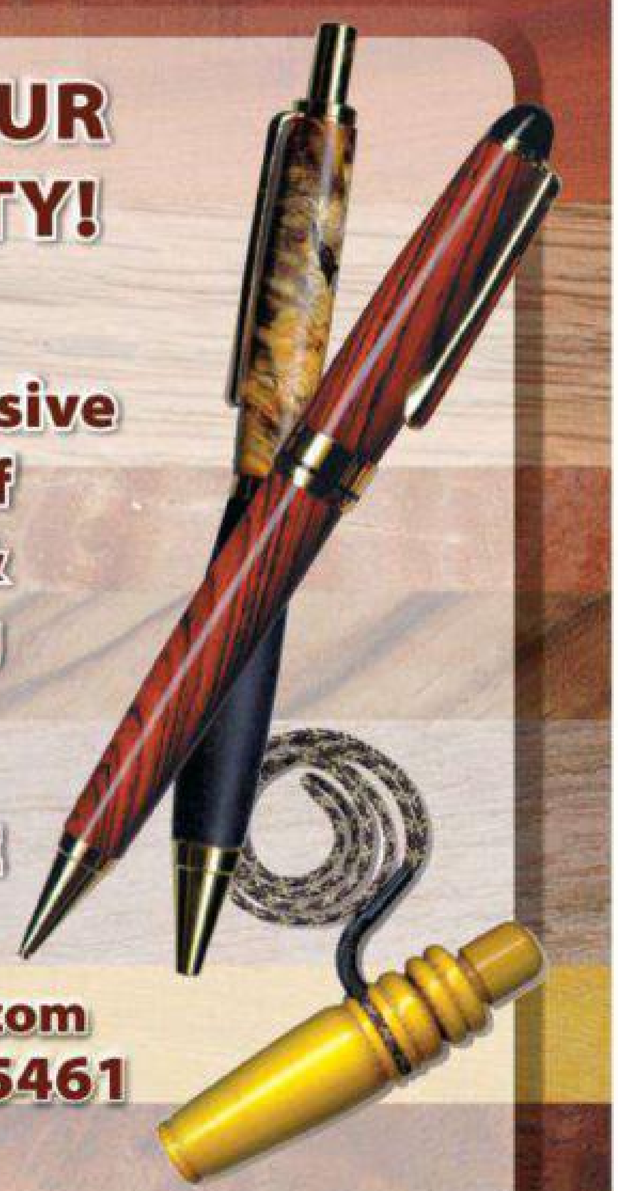
**Jaws are not numbered** because they can go in any slot

**Strong jaw design** uses no screws for mounting

See videos at: www.woodturning.com | 1-866-963-0294

ENJOY YOUR CREATIVITY!

With Our Comprehensive Inventory of Game Call & Pen Turning Supplies



EASY ONLINE ORDERING

hutproducts.com
1-800-547-5461

Turn to Quality

HUT® Products



WOODWORKERS GUILD OF AMERICA®
presented by WOOD Magazine

# SPECIAL HOLIDAY OFFER

Treat yourself to expert woodworking videos this holiday season for only **$14.99** for the first year and get **50% OFF A GIFT SUBSCRIPTION** for the woodworker on your gift list!

**Get this offer today!**
**Visit wwgoa.com/gift for more information.**

## WoodWorkers Guild of America
## PREMIUM VIDEO MEMBERSHIP

- Unlimited access to expert woodworking videos, tips & techniques, projects and woodworking classes.
- Enjoy 15% off at the *WOOD* store & $10 off coupon for the *WOOD* store.
- Access to a library of downloadable woodworking plans, shop-tested by the master woodworkers at *WOOD* Magazine



### TIPS & TECHNIQUES
Shop-tested techniques that you can utilize on your next woodworking project.

### PROJECTS
A variety of woodworking projects that are great for a weekend in your workshop.

### CLASSES
Learn at your own pace with step-by-step video instruction as well as detailed written instructions.

# V-DrillGuides

**Drill Straight-Every Time!**

Portable Drilling Solution!

**Used On:**
Corners
Round Stock
Flat Surfaces

**Lifetime Warranty**

BIG GATOR TOOLS®
"Gator Tough"

913-377-2444 www.BigGatorTools.com

MADE IN THE USA

MADE IN THE USA

up to 50% savings

Easy to Build
Easy to Own!

GARAGES • WORKSHOPS

NO MAINTENANCE

800-891-6733
www.steelspan.com ext 018

TURN TO PACKARD FOR QUALITY TURNING TOOLS AND SUPPLIES

"At-Tea-Tude" by David Datwyler

Packard WOODWORKS INC.
1-800-683-8876
PACKARDWOODWORKS.COM
The Woodturner's Source

Metal Inlay Techniques DVD & Supplies

Add sparkle and creativity to your next project!

Easy and unique!

Available at
Metal-Inlay.com
(570) 937-9400

# Wood for Woodworkers

WOODWORKERS Source
HARDWOODS • TOOLS • SUPPLIES

Lumber • Veneer • Turning Stock

**Red Oak, Maple, Cherry**
And many more . . . plus lumber with shipping included

- ☑ 100 woods in stock
- ☑ Friendly service
- ☑ Extraordinary selection
- ☑ 100% satisfaction

Come browse our great website

www.101woods.com
VISA PayPal 800-423-2450

# STUMP REMOVAL FAST & EASY!

**ELIMINATE** Landscape Eyesores with a DR® STUMP GRINDER!

- **EXPAND** lawn areas.
- **OPEN UP** fields and meadows.
- **REMOVE** mowing hazards.

LIMITED-TIME OFFER 1★YEAR TRIAL

The DR® STUMP GRINDER uses carbide-tipped cutting teeth that take over 360 "bites" per second, pulverizing stumps into a pile of wood chips. Quickly and easily, you can grind any size tree stump below ground level. Gone forever!

**Call for a FREE DVD and Catalog!**

TOLL-FREE
877-201-5446
DRstumpgrinder.com

DR PROFESSIONAL POWER DONE RIGHT

80758X © 2013

# Moisture Meters

Avoid
Shrinking
Warping
Cracking
Cupping
Delamination

Don't waste time and money on wet wood, use a moisture meter

Buy a meter from Lignomat for:
- ✔more quality
- ✔more accuracy
- ✔more warranty
- ✔more customer service

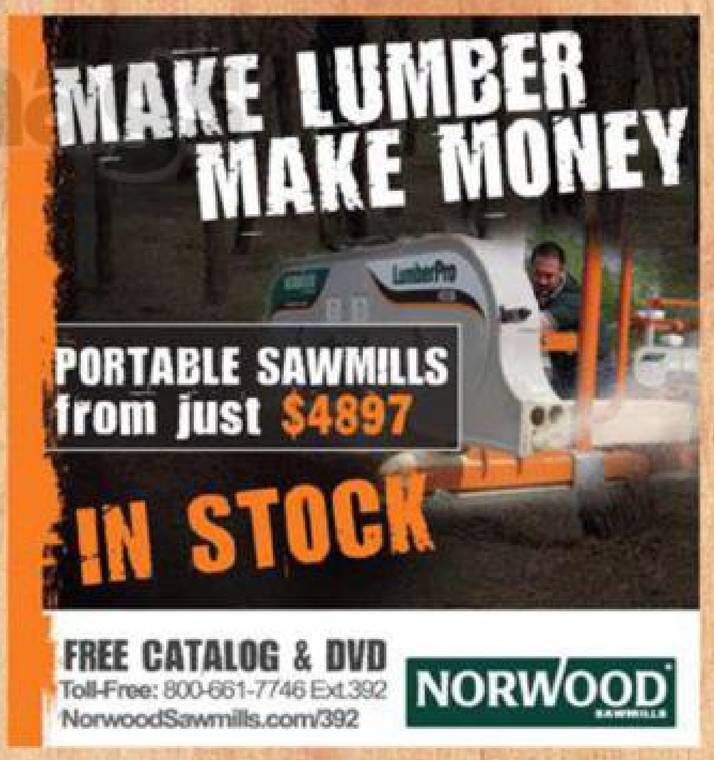
pin and pinless meters from Lignomat

800-227-2105
www.Lignomat.com
www.wood-moisture.com

mini-LIGNO E/D
9.8 MC (%)
Double Click to Set Wood Group
The Woodworker's Choice

MEMBER TESTED AND RECOMMENDED HANDYMAN













SAVE $10 ON WOOD® PLANS

Buy $40 or more of shop-tested *WOOD* Plans
and we'll knock $10 off your order
when you enter coupon code GIMME10

Offer ends November 26, 2013.

**WOOD** Plans.
The best plans on the planet.

Click or call:
**woodmagazine.com/plans**
**888-636-4478** WD1113

## BOW ARM MORRIS CHAIR

This award wining chair has been featured in Magazines and has won woodworking contests across the country. Our assembly directions have over 25 step by step photographs to assure a great project.

WIN A GRIZZLY BAND SAW IN OUR YEARLY CONTEST




FREE CATALOG

*AMERICAN FURNITURE DESIGN*
P.O. BOX 300100 ESCONDIDO, CA 92030
BOW ARM MORRIS CHAIR $19.95 + $5.00 S/H
Phone 760 743-6923
www.americanfurnituredsgn.com

## SAW WITH THE BEST!

MP-32™ PORTABLE SAWMILL




1-800-473-4804
WWW.COOKSSAW.COM

## STAND IN COMFORT WHILE YOU WORK!




- Ergonomically designed to provide comfort & support
- Solid one-piece construction
- Durable and easy-to-clean
- Beveled edge prevents trips
- For use in workshops, garages & utility areas
- Best-in-class 10-year warranty
- Made in the USA
- Certified by NFSI

www.GelPro.com
or call 1.866.435.6287

NewLife® by GelPro®

## Like Having a Lumberyard Right in Your Shop!





1. MOLDER


2. PLANER


3. DRUM SANDER


4. GANG RIPSAW

## 4-WAY MONEY MAKER!

**Now, turn a $5 board into $75** worth of high-dollar molding in less than one minute! Over 600 patterns plus curved molding, tongue & groove, picture frame stock, custom work. Quickly CONVERTS to molder, planer, sander, saw. 12", 18" & 25" models, 60-Day Free Trial, 5-Year Warranty. Made in USA!

FREE DVD & BUSINESS STARTER KIT!



www.woodmastertools.com
Toll Free 1-800-821-6651 Ext. P372
Woodmaster Tools, Inc. 1431 N. Topping Ave., Kansas City, MO 64120

## Projects and Plans



**Wheelbarrow**

Kit to build includes 15" **iron wheel** *that really works,* **axle** and step-by-step **plans**. Finished project measures 66"L x 24"W x 26"H. $47.90 P.P.D.

ByeGone Workshop
888-279-3941 8-5 M-F EST
www.byegone.com




## CLEAR ACRES OF LEAVES
*While You Ride!*

The DR® LEAF and LAWN VACUUM turns your riding mower into a powerful yard clean-up machine!

**VACUUMS** leaves, grass clippings, and other debris from your lawn using an incredible 85 mph suction force!

**SHREDS** most everything it vacuums. Reduces the volume of debris significantly.

**DUMPS OR BAGS** collected material.

**CHIPS** fallen tree branches and prunings up to 2" thick with a built-in chipper.

WALK-BEHIND MODELS AVAILABLE!

LIMITED-TIME OFFER 1★YEAR TRIAL

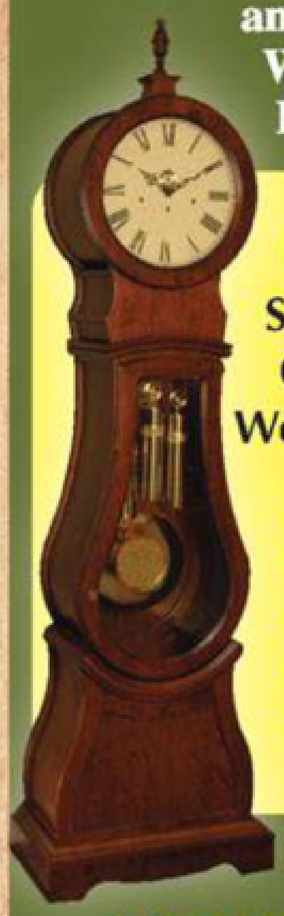
80756X © 2013

Call for a FREE DVD & Catalog!

TOLL-FREE
877-201-5446
DRleafvac.com

## KLOCKIT®

Helping You Buy, Build and Restore Time & Weather Products For Over 41 Years



Industry's Largest Selection of Clock Components and Weather Instruments

- Movements
- Clock Kits
- Inserts
- Weather Stations
- Plans

*Request Your*
FREE CATALOG
Mention Code: WD1113

Visit www.klockit.com
1-800-556-2548
Follow Us:
Scan to view new products!

## PHASE-A-MATIC

PHASE CONVERTERS



CONVERTS 1-PHASE to 3-PHASE POWER!
1-800-962-6976
www.phase-a-matic.com

# What's Ahead

A glimpse inside the Dec/Jan issue (on sale November 26)



**Handsome hutch**
This heirloom-quality cabinet features quartersawn oak, hand-hammered hinge straps, and authentic mission-style tiles.



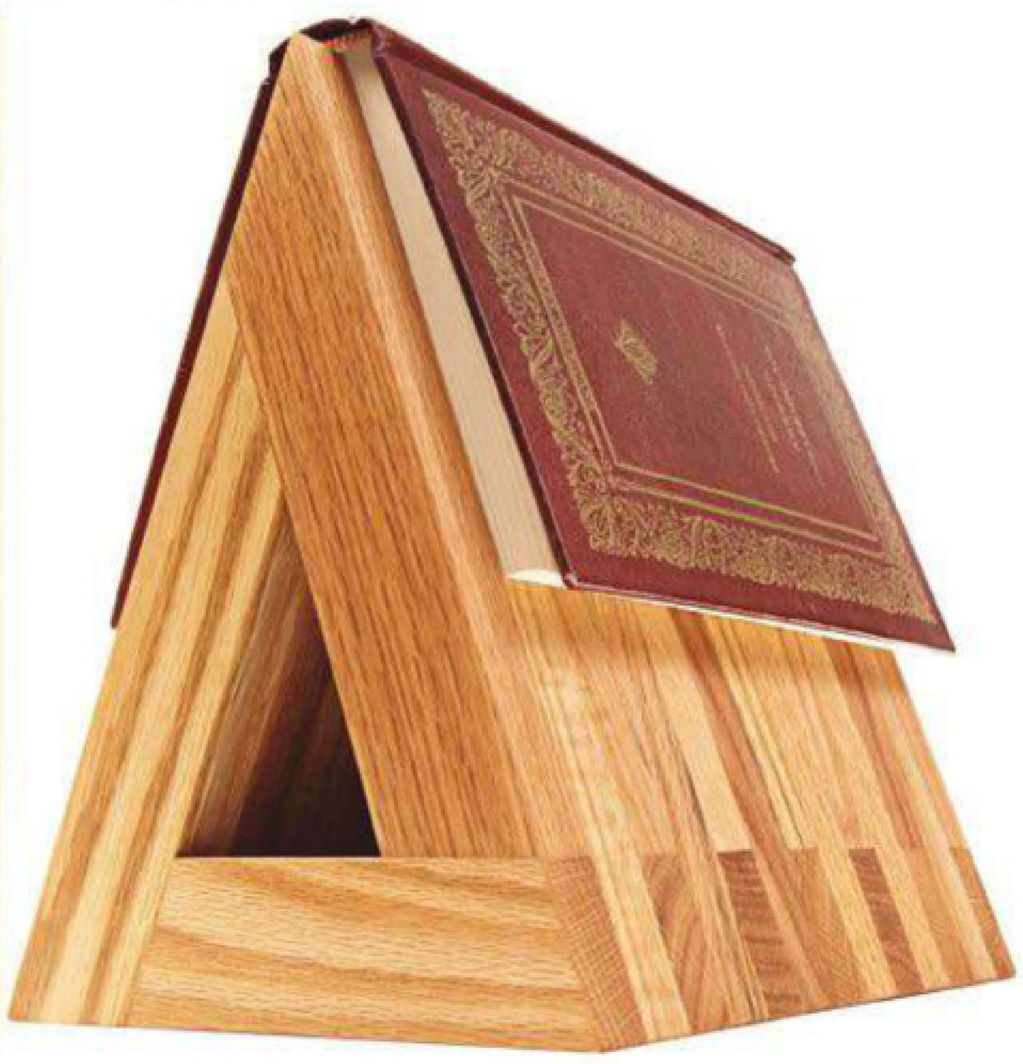
**Neoclassical Clock**
Faux-gilded accents and the deep glow of oil-finished cherry create eye-catching contrast.



**3-hp routers**
No need to ask "Where's the beef?" These monster routers have all the power you need for big bits and tough jobs.




**Hidden-compartment wall shelf**
Slide on the wrapped-grain maple cover for an attractive floating wall shelf. Slide it off to reveal a discreet trove for your treasures.



**Elegant book stand**
This simple book stand holds your tomes without breaking a spine. Or with a simple alteration, props your tablet without breaking a sweat.



Better Homes and Gardens® WOOD® magazine (ISSN-0743-894X); November 2013, Volume 30, No. 6, is published 7 times a year in March, May, July, Sept, Oct, Nov, Dec/Jan by Meredith Corporation, 1716 Locust Street, Des Moines, IA 50309-3023. Periodicals postage paid at Des Moines, IA, and at additional mailing offices. Subscription prices, $28.00 per year in the U.S.; $41.00 (U.S. dollars) in Canada; $49.00 (U.S. dollars) overseas. POSTMASTER: Send all UAA to CFS. (See DMM 707.4.12.5); NON-POSTAL AND MILITARY FACILITIES: send address corrections to (Better Homes and Gardens WOOD), P.O. Box 37508, Boone, IA 50037-0508. In Canada: mailed under Publications Mail Sales Product Agreement No. 40069223; Canadian BN 12348 2887 RT. Return undeliverable Canadian addresses to (Better Homes and Gardens WOOD), PO Box 882 STN Main, Markham ON, L3P 9Z9. © Meredith Corporation 2013. All rights reserved. Printed in the U.S.A.

NEW

# Introducing...
# Kreg Jig® K5

## The Most-Advanced Kreg Jig® Yet!

The Kreg Jig® K5 combines the best features from every jig we've built before with advanced all-new features to make it easier than ever for you to build it yourself and build it better using fast, strong Kreg pocket-hole joinery.

Quick-Release Drill Guide Block

Easy-To-Adjust Ratchet Clamp

Built-In Swiveling Dust Collection

Support Wings with Storage

Front-Side Clamping

See the K5 in action at
www.kregtool.com



NEW

## Also New from Kreg...
## AUTOMAXX
AUTO-ADJUST CLAMPING

**Automaxx™ Clamps make clamping fast & foolproof!**

Now you can clamp materials that are thick, thin, or in between without ever adjusting the clamp. Just set the clamping pressure once, and Automaxx™ does the rest!

Kreg®

www.kregtool.com | 800.447.8638




DEWALT

# CONTRACTOR SAW

## Workshop Capacity, Jobsite Power

With a 32 ½" rip-capacity, and 15 Amp motor, you can take your workshop with you. Introducing the NEW wide-fence Job Site Saw by DEWALT.

GUARANTEED TOUGH.




DWE7491RS

© 2013 DEWALT The following are trademarks for one or more DEWALT power tools and accessories. The yellow and black color scheme, the "D" shaped air intake grille, the array pyramids on the handgrip, the kit box configuration, and the array of lozenge-shaped humps on the surface of the tool