Protect your outdoor projects p.32

ISSUE 280 MARCH 2022

Better Homes & Gardens

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The World's Most Trusted Woodworking Resource

Our **29** Favorite Tablesaw Accessories p.44

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Plus Detailed Plans:

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Table Saw 93K7
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- Motor: 2 HP, 120V, single-phase, 15A
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- Table size with extensions: 26⅜" x 32¼"
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- Arbor speed: Variable, 2000–4000 RPM
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- Approx. shipping weight: 72 lbs.

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- Swing: 12"
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- Spindle travel: 3½"
- Spindle speeds: Variable, 400 - 2700 RPM
- Drill chuck: 1/32" - ⅝", JT3, keyless
- Drilling capacity: ⅝" mild steel
- Max. distance from spindle to table: 13¼"
- Table dimensions: 9⅝" x 9⅝"
- Table tilt: 45° left/right
- Table swivel around column: 360°
- T-slots: (x4) ½", X pattern
- Overall dimensions: 13" W x 22" D x 36" H
- Approx. shipping weight: 93 lbs.

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- Motor: 1 HP, 110V/220V (prewired 110V), single-phase, 11A/5.5A
- Max. cutting width left of blade: 13½"
- Max. cutting height (resaw capacity): 6"
- Table size: 14" x 14"
- Table tilt: 15° left, 45° right
- Floor-to-table height: 43 5/16"
- Blade size: 93½" (⅛" - ¾" wide)
- Blade speed: 1500 and 3200 FPM
- Overall dimensions: 26⅜" W x 30¼" D x 66½" H
- Approx. shipping weight: 199 lbs.

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13" 2 HP BENCHTOP PLANER WITH HELICAL CUTTERHEAD

MADE IN AN ISO 9001 FACTORY

- Motor: 2 HP, 120V, single-phase, 15A
- Max. cut width: 13"
- Min. stock length: 6"
- Min. stock thickness: ⅛"
- Max. stock thickness: 6"
- Max. cut depth full width: 1/32"
- Cutterhead type: 2" helical with 2-row spirals, 30 inserts
- Cutterhead speed: 8500 RPM
- Feed rate: 25 FPM
- Table size w/ extensions: 13" x 28"
- Dust port size: 2" w/ 4" adaptor
- Overall dimensions: 25½" W x 28" D x 19" H
- Approx. shipping weight: 82 lbs.

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- Motor: 1 HP, 110V/220V (prewired 110V), single-phase, 14A/7A
- Maximum width of cut: 6"
- Maximum depth of cut: ⅛"
- Maximum rabbeting depth: ½"
- Cutterhead diameter: 2½"
- Cutterhead type: 3-knife
- Knife size: 6" x 1" x ⅛"
- Cutterhead speed: 5000 RPM
- Table size: 6⅝" x 47⅜"
- Fence size: 29⅛" x 4"
- Minimum stock length: 8"
- Minimum stock width: ¾"
- Minimum stock thickness: ½"
- Dust port size: 4"
- Footprint: 13½" x 18"
- Overall dimensions: 47½" W x 20" D x 42" H
- Approx. shipping weight: 260 lbs.

⚠WARNING! †1

G0814 ONLY $1095.00

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12" 1½ HP BABY DRUM SANDER

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- Sanding motor: 1½ HP, 115V, single-phase, 13A
- Conveyor motor: ⅛ HP, 0.3A
- Sanding drum size: 4"
- Drum surface speed: 2127 FPM
- Maximum stock dimensions: 12" W x 3½" T
- Minimum stock dimensions: 8" L x ⅛" T
- Conveyor feed rate: variable, 2.5–17.3 FPM
- Conveyor belt dimensions: 12½" W x 49¾" L
- Sanding belt size: 3" x 70" hook and loop
- Dust port size: 2½"
- Overall dimensions: 27" W x 24" D x 27" H
- Approx. shipping weight: 166 lbs.

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G0459 ONLY $1195.00

$149 SHIPPING

16" X 46" WOOD LATHE WITH DRO

MADE IN AN ISO 9001 FACTORY

- Motor: 2 HP, 110V, single-phase, 14A
- Swing over bed: 16"
- Swing over tool rest: 13½"
- Distance between centers: 46"
- Spindle taper: MT#2
- Spindle thread size: 1" x 8 TPI RH
- Tailstock taper: MT#2
- Spindle speeds: variable, 600 - 2400 RPM
- Headstock rotation: 0°, 60°, 90°, 120°, & 180°
- Tool rest width: 11⅞"
- Tool rest post diameter: 22mm
- Overall dimensions: 72½" W x 19" D x 48"H
- Approx. shipping weight: 354 lbs.

⚠WARNING! †1

G0462 ONLY $1235.00

$189 SHIPPING

SOUTH BEND 2 HP CANISTER DUST COLLECTOR

- Impeller Motor: 2 HP, 220V, single-phase, 9A
- Main inlet size: 6" with three 4" adapter inlets
- Airflow capacity: 1103 CFM @ 3.5" SP
- Maximum static pressure: 11.95"
- Filtration rating: 1-micron
- Filter surface area: 80 sq. ft.
- Impeller: 12¾" radial fin
- Machine collection capacity at same time: 3
- Material collection capacity: 33½ gallons
- Sound rating 81-83dB
- Overall dimensions: 39" W x 31½" D x 76" H
- Approx. shipping weight: 165 lbs.

MADE IN AN ISO 9001 FACTORY

⚠WARNING! †1

SB1100 ONLY $1289.00

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$189 SHIPPING

10" 2 HP HYBRID TABLE SAW WITH T-SHAPED FENCE

MADE IN AN ISO 9001 FACTORY

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- Motor: 2 HP, 120V/240V (prewired for 120V), single-phase, 15A/7.5A
- Rip capacity: 31" right, 16¾" left of blade
- Max. depth of cut @ 90°: 3⅛"
- Max. depth of cut @ 45°: 2¼"
- Table size with extensions: 40½" W x 27" D
- Arbor diameter: ⅝"
- Arbor speed: 3450 RPM
- Max. width of dado: 13/16"
- Dust port size: 4"
- Dimensions: 64" W x 40½" D x 36" H
- Footprint: 21" L x 19½" W
- Approx. shipping weight: 330 lbs.

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22136

When Annette and I bought our first house, it sported shag carpet, paneling, lauan trim, and harvest-gold kitchen appliances. Without enough furniture from our two-bedroom apartment to fill our three-bedroom split foyer, we soon acquired a bunch of midcentury furniture, not because it was trendy or stylish but because it was cheap and plentiful at tag sales. (Probably because we were a lot closer to the middle of the century than we are now!)

Now, almost 34 years later, my son, Colby, and his wife, Jenny (*above*), have bought a house just 15 minutes away from us. Although it's a couple of decades older than our first house, it has "good bones," and came with a 5-year-old kitchen remodel.

Like us, they're now filling rooms they never had with midcentury furniture found on Facebook Marketplace—not because it's affordable, but because they like the style. And not coincidentally, it fits with the retro vibe of their 1950s-built home.

Ironically, much of our secondhand furniture has already left the building, so we've little midcentury stuff left to contribute to the cause. (I'm not yet ready to part with the yellow-birch Heywood-Wakefield bedroom suite my parents bought—used, of course—in the early 1960s.)

Are you sensing a pattern here? Seems like this sometimes-maligned style has staying power.

So, keep the midcentury cycle rolling, or start one of your own, with the Blanket Chest plan on *page 20*. Follow it up with the matching bedroom suite at woodstore.net/midcentbr, or use the QR code below. With our plans and your skills, I guarantee it won't end up... well, wherever people are selling things 20 years from now.

See you in the shop!

Dave Campbell
dave.campbell@meredith.com
Facebook and Twitter: @WOODeditor
Instagram: @wood_editor

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WOOD®

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JUST A BUNCH OF LINKS. FINE. WHATEVER.

Fine-furniture Accuracy from Any Tablesaw
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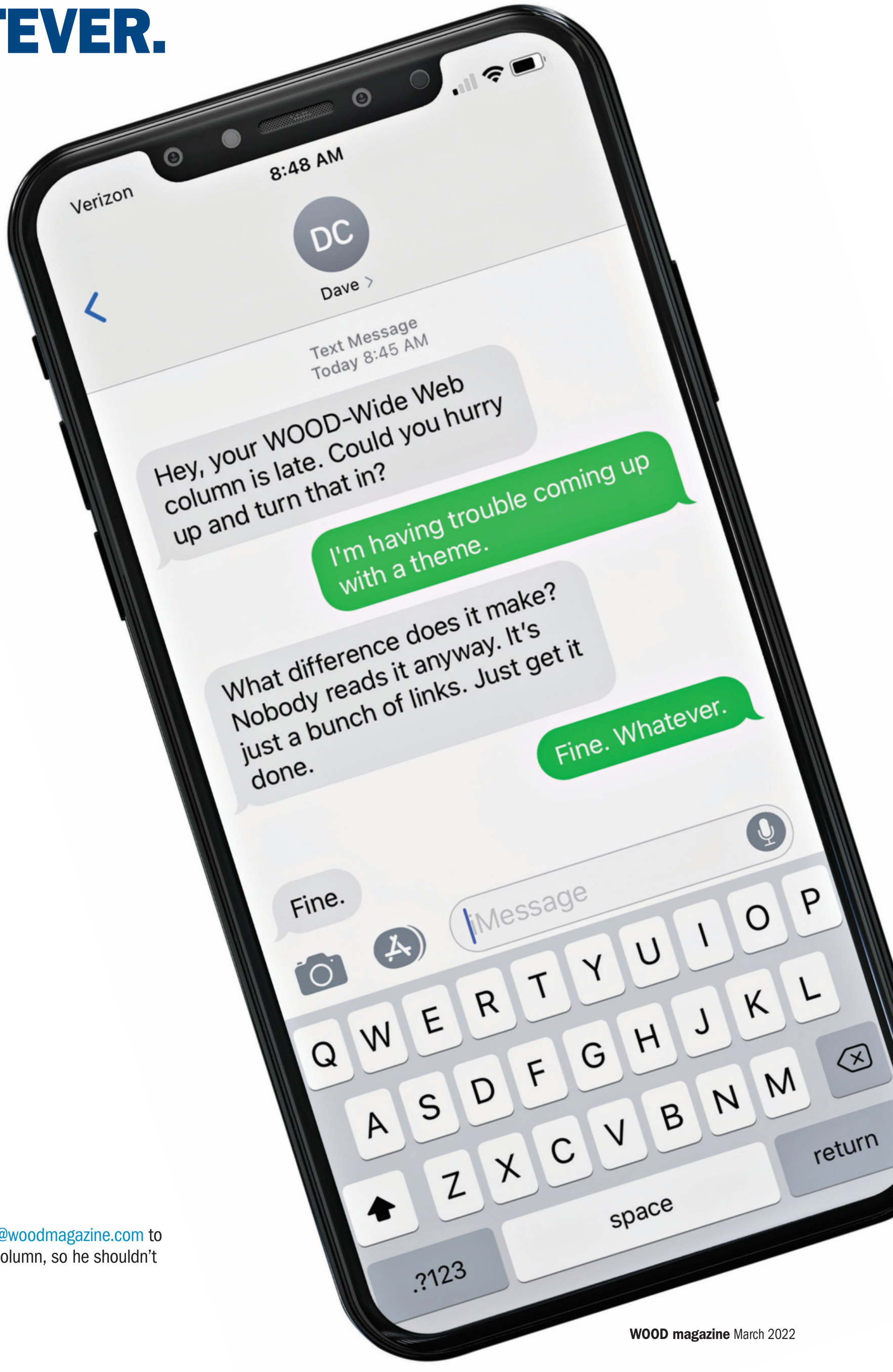


Please send an email to Dave at woodmail@woodmagazine.com to let him know that you also don't read this column, so he shouldn't worry about it that much.

Yes, yes, yes, Darling!

I'm so thankful for WOOD® *magazine and all it has done for my getting started in woodworking and keeping me sane during the pandemic. Some of the projects I've built from your plans are shown in this photo: the Barn-door Buffet and Modern Armchair and Footstool from issue 269 (September 2020) and the Craftsman-style Raised Dog Dishes from issue 273 (March 2021) for our dog, Reba—all made out of oak. When my mom saw the buffet I made for my wife, Alyssa, she wanted one, too, so I made another for her!*

Although I still have much to improve in the craft, each issue of WOOD *teaches me, inspires me, and helps me become a better woodworker.*

—Brian Darling
House Springs, Mo.

Pro amplifies soundproofing suggestions

As a home theater designer by trade and a woodworker by hobby, I was pleasantly surprised to see such a well-done article about sound dampening in issue 277 (October 2021). I especially commend you on recommending the use of hat channels with isolation clips—something that many people forget to mention—and to avoid attaching anything to studs. Please allow me to add to your article based on my experience.

First, instead of using two layers of ⅝" drywall, I layer one each of ⅝", ⅜", and ¼" drywall, as shown, right, *alternating horizontal and vertical orientation between layers. I find it easier to glue the ¼" up first to the hat channel or stud, then glue the ⅜" to that (I like Green Glue on this layer if budget allows); then screw the final ⅝" layer through all three. This minimizes the number of screws in the wall and, because each thickness of drywall has a different frequency range of sound control, you get more rounded sound blocking.*

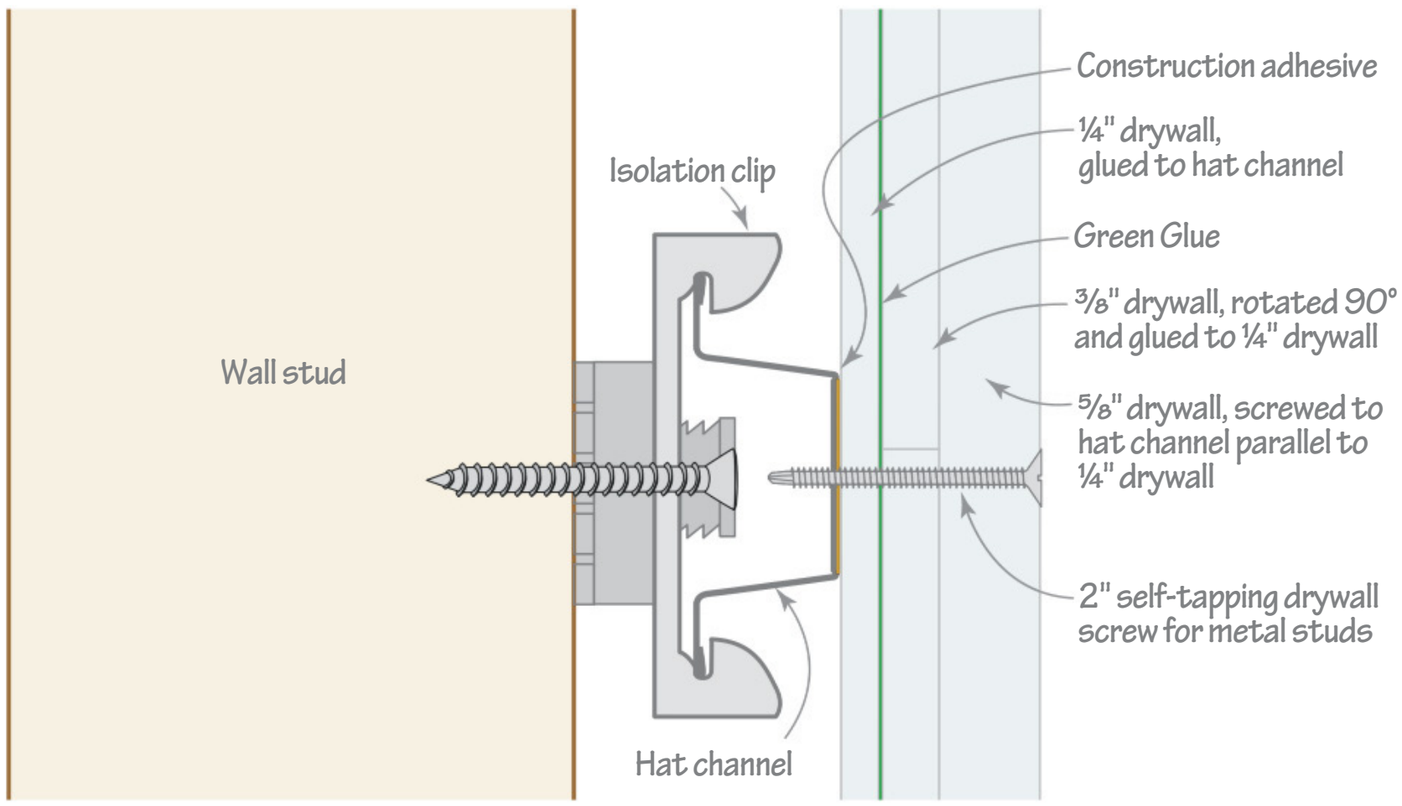
Also, instead of mounting electrical boxes to the studs, I pigtail the electrical lines out of a 1" hole in the drywall and use remodel ("old work") boxes at the end. These are designed to be added after the wall is completed, so they can go anywhere there isn't a stud, and they simplify drywall installation since you don't have to cut accurate electrical box openings multiple times. (But you may need to bend a tab a little, if it hangs up.)

I don't recommend fiberglass batt insulation for sound insulation because paper-backed fiberglass insulation creates a double vapor barrier that can lead to moisture problems down the road. The best sound-dampening product is rock wool: It installs easier, it's almost impossible to compress to the point that it loses its sound-dampening abilities, and you can double it up in a double wall.

Finally, the most overlooked area in sound dampening is the ceiling above. You can follow all of the best practices on the walls, but a single heating duct in the ceiling negates it all. It's important to look up and use some common sense here, too.

Again, a great article from an unexpected source. Well done, WOOD *magazine!*

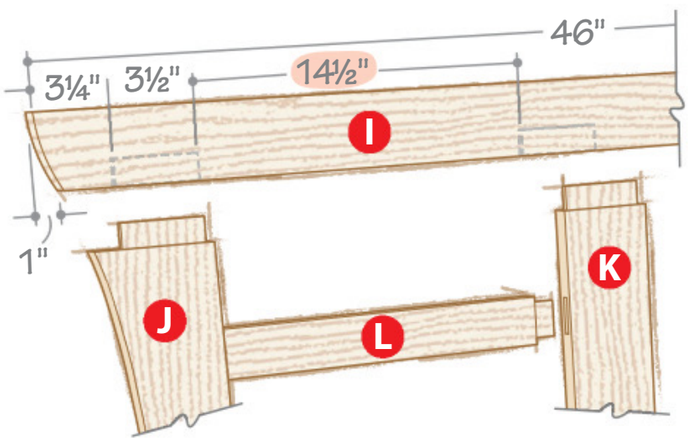
—Josh Stewart
Littleton, Colo.



We'll take that back

While building the Outdoor Bench in issue 275 (July 2021) I discovered an error on the backrest assembly drawing. The dimension between the mortises for the stiles should be 14½", as shown below, not 21¼".

—Doug Havenhill
Cave Creek, Ariz.



A case by any other name

In the Hanging Display Cabinet article in issue 273, you referred to the frame of the project as a "carcase." I worked in case-good furniture plants for 40 years and believe the word you were looking for is "carcass," as in the bare bones of a piece of furniture.

—Rick Penley
Hickory, N.C.

Both spellings are acceptable in a woodworking usage, Rick. We've always used the UK-preferred "carcase" to avoid subconscious comparisons of our project plans to roadkill.

Wen? Where?

Just after issue 279 (Dec/Jan 2021/2022) went to the printer, the folks at Wen notified me that they had discontinued the model 6552T planer that earned the Top Value award in that issue's shop test of benchtop planers. We have not tested its replacement, model PL1303 (also a 13" planer with three disposable dual-edge knives), so if you can't find the 6552T, we recommend the Triton TPT125, which performed just as well as the Wen and costs only $30 more.

—Bob Hunter
Tools Editor

A ring makes it more attractive

One reason I like WOOD® *magazine is the tips and techniques that accompany your project plans. A good example is the slide guides in your Tool Tower plan in issue 273. I'll never again struggle with a tape measure when installing drawer slides. I do have a quick question about that article, though: What is that small disc on the screwdriver bit on page 49?*

—Bill Wells
Olympia, Wash.

That's the magnetizing ring from our Zack Rabbit drill/countersink/drive set (zackrabbit.com), Bill. It simply slips over the driver shaft to hold the screw on the tip for one-handed driving. You can find dozens of similar slip-on magnetic holders at woodmagazine.com/screwmagnet.

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continued on page 8

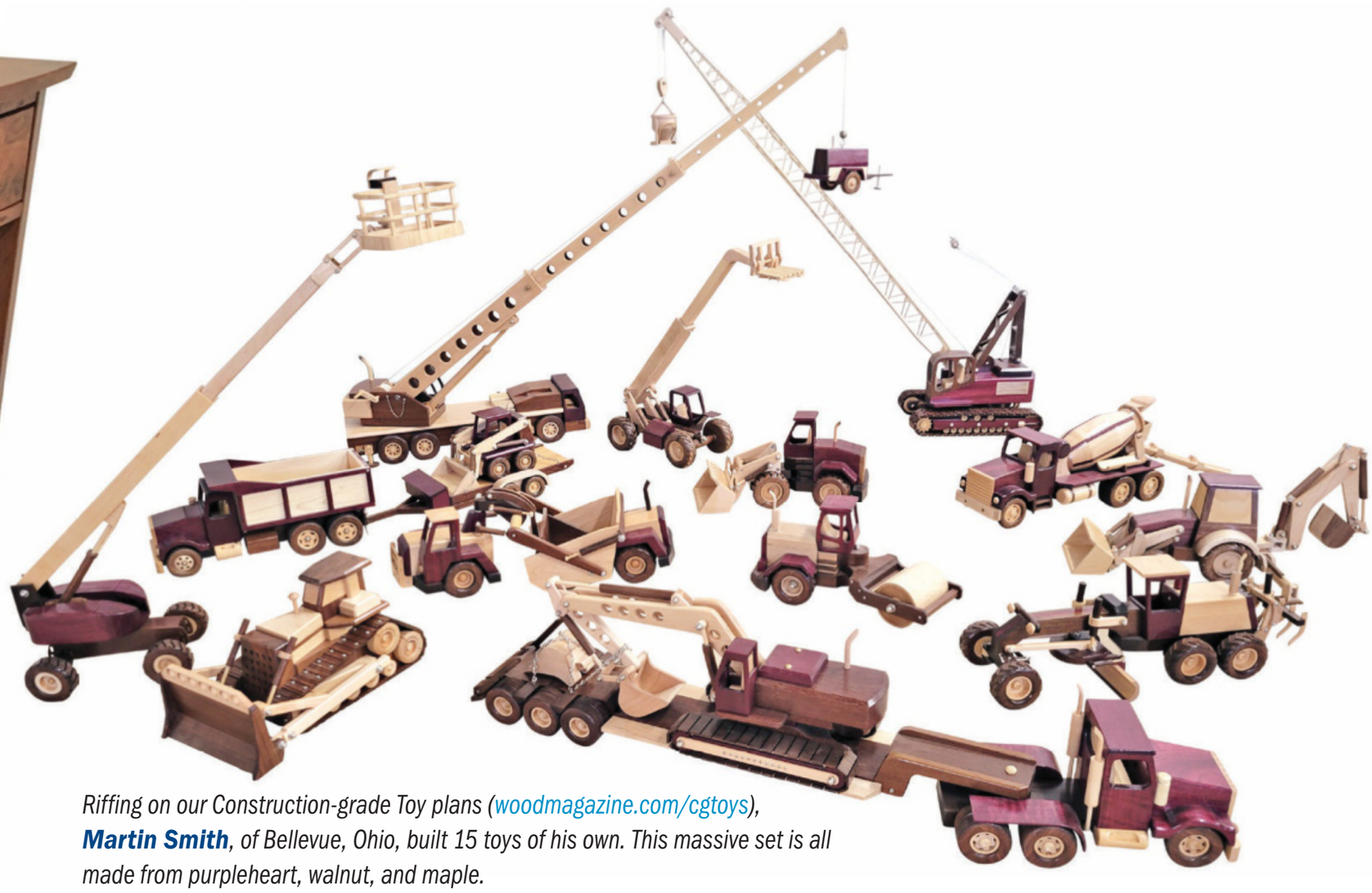
Sounding Board

YOUR PROJECTS

***Matthew Peech**, of Hartford, Ky., makes crazy, functional furniture inspired by "Alice in Wonderland." This piece, titled "Down the Rabbit Hole," incorporates sliding pieces, a butcher-block top, hidden drawers, gas struts, and a remote-control linear actuator.*

▶Watch Matthew build this amazing piece at woodmagazine.com/rabbithole, or point your smartphone's camera at this code.

*After building most of the furniture in their home, **Wade Nitz**, of Hastings, Mich., convinced his wife they needed this corner table, which features slip-matched walnut-burl drawer fronts and a cold-bent laminated curved stretcher.*



*Riffing on our Construction-grade Toy plans (woodmagazine.com/cgtoys), **Martin Smith**, of Bellevue, Ohio, built 15 toys of his own. This massive set is all made from purpleheart, walnut, and maple.*

Sounding Board

YOUR PROJECTS

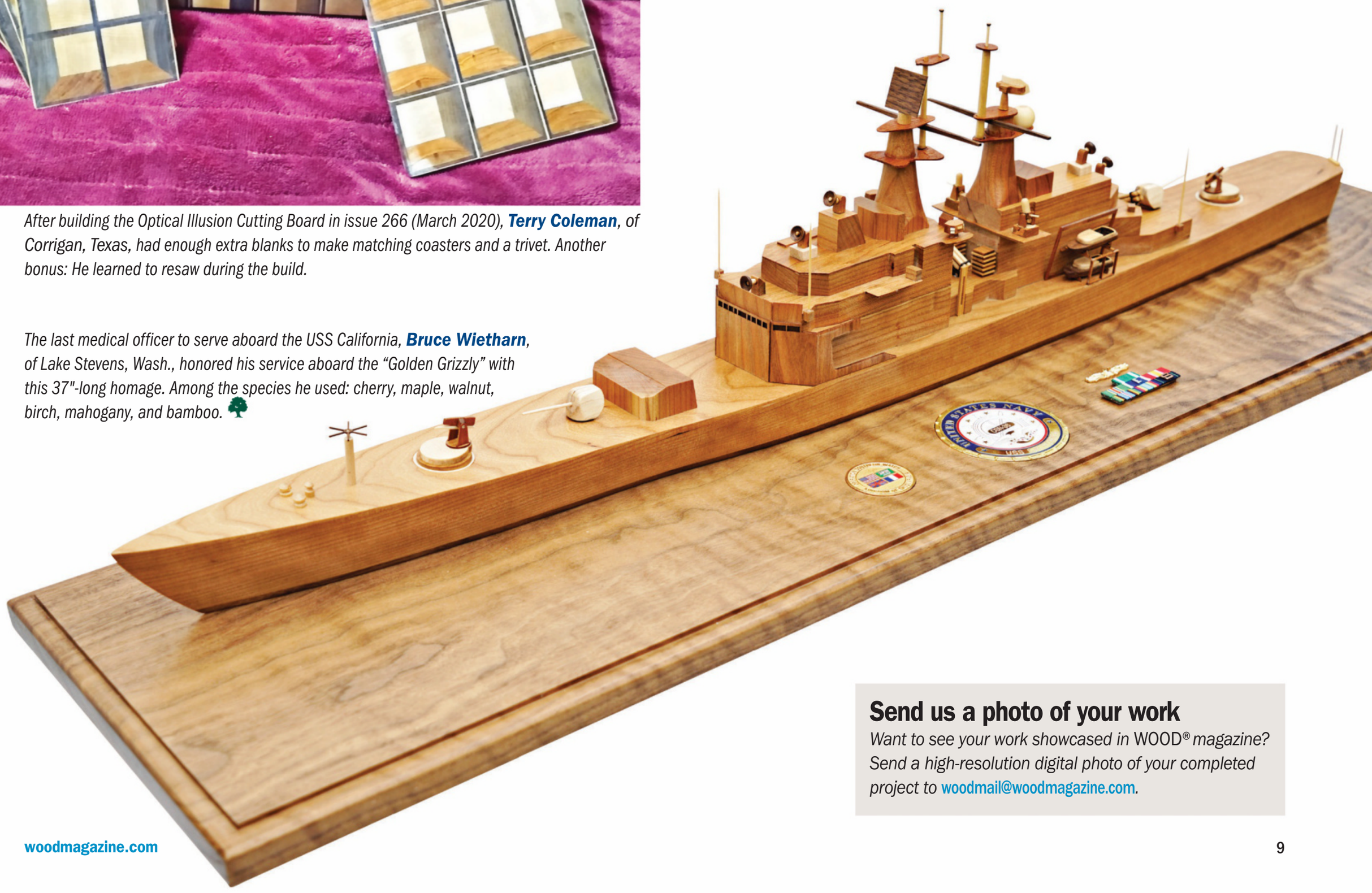
From plans in issue 278 (November 2021), ***Fred Sotcher****, of San Jose, Calif., built this pair of Heirloom Child's Rockers. To individualize them, he replaced the walnut back panel with marquetry of popular children's characters.*

▶To get plans for the Heirloom Child's Rocker, search for "rocker" at woodstore.net.

Mike Rodgers*, of Spring Hill, Fla., designed and built this Victorian-style caddy from walnut. The handle pivots down to provide access to the decanters, and the drawers hold additional pewter tags to identify the bottles' contents.*

After building the Optical Illusion Cutting Board in issue 266 (March 2020), ***Terry Coleman****, of Corrigan, Texas, had enough extra blanks to make matching coasters and a trivet. Another bonus: He learned to resaw during the build.*

The last medical officer to serve aboard the USS California, ***Bruce Wietharn****, of Lake Stevens, Wash., honored his service aboard the "Golden Grizzly" with this 37"-long homage. Among the species he used: cherry, maple, walnut, birch, mahogany, and bamboo.*



Send us a photo of your work

Want to see your work showcased in WOOD® *magazine? Send a high-resolution digital photo of your completed project to* woodmail@woodmagazine.com.

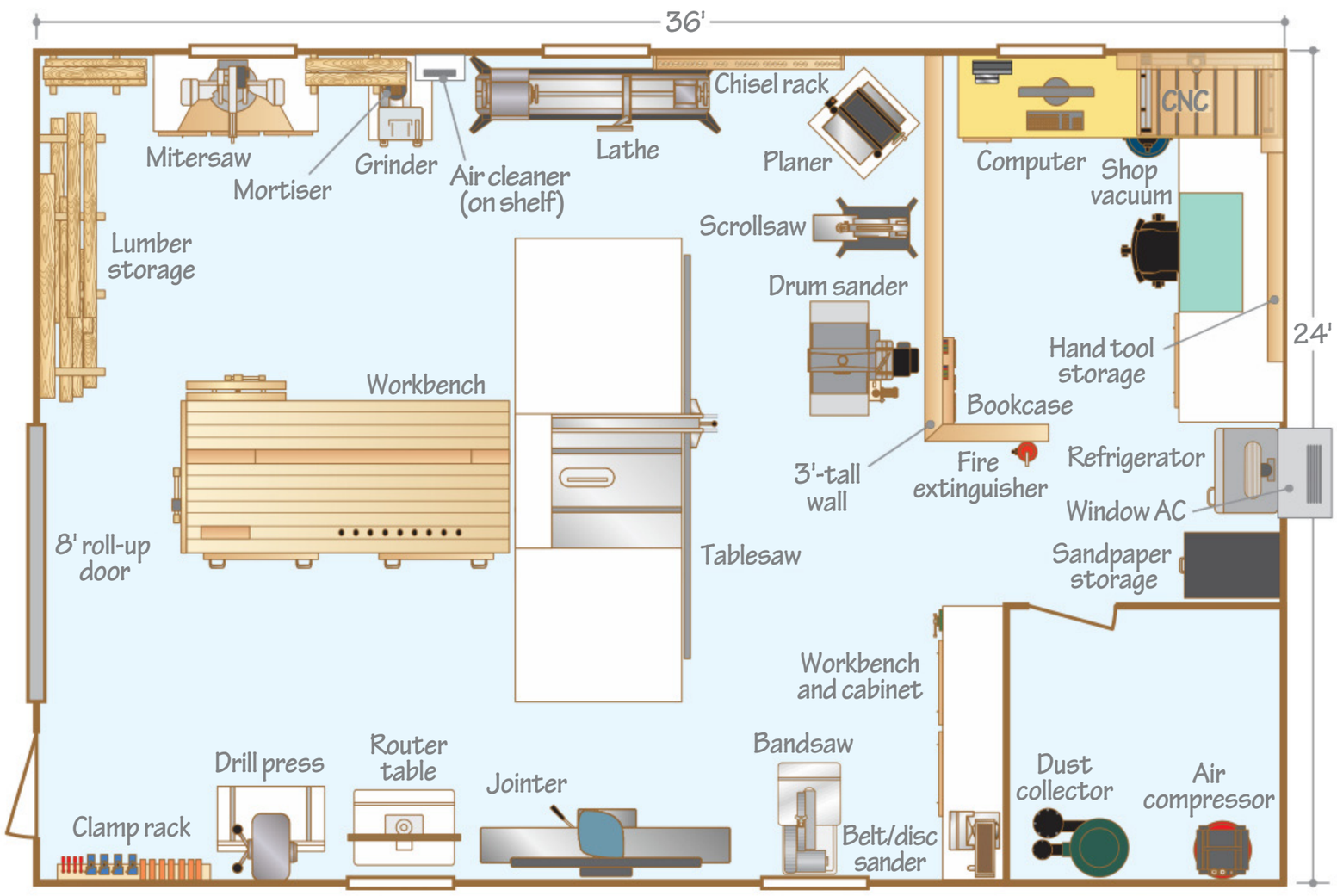
A Shop of New Beginnings

A ¾" plywood floor covers 2×6 joists at 24" on center atop a concrete slab. Under-floor ductwork feeds the dust collector in the 8×8' corner insulated room.

When Rob Daniels relocated to Florida from Oregon, he was hoping the move would help him recover from stressful family and medical issues. He started over with a smaller house than the one in Oregon and took the opportunity to build his dream shop from scratch. He hoped that spending time in the shop would bring much-needed emotional healing and stress-relief.

The 24×36' steel building he erected for his shop features a raised ¾" plywood floor. It's comfortable to walk and stand on, Rob says, and provides a pathway for the 4" dust collection ductwork that runs beneath it.

Rob insulated the shop walls and lined them wih a 4'-tall wainscoting of ⅝" T1-11 siding panels, with oriented-strand board (OSB) above for wall-hung storage. To hide the seam where the two intersect, he installed a wide, decorative French cleat.



continued on page 12

NEW Editors' Choice

Shop Super Bundle

20 of our favorite downloadable shop plans — only $25

woodstore.net/shopfavorites

Custom cabinets surrounding Rob's tablesaw offer stock support and accessory storage. Rob's custom-built workbench makes an ideal outfeed support.

Rob uses the CNC router for 3D carvings and cutouts, but he's not above using hand tools when appropriate.

Because his house has 200-amp electrical service with plenty of capacity, Rob ran a line out to the shop and installed a 100-amp subpanel. While he was at it, he added cabling so he could reliably connect to the internet from his shop.

To keep the shop cool in the Florida weather, Rob installed a 15,000-BTU window air conditioner in one end and uses ceiling fans to help circulate the air. An 8' roll-up door at the opposite end of the shop makes it easy to get materials in and finished projects out. On temperate days, Rob leaves the door open to provide fresh air and lots of natural light. Windows and LED ceiling fixtures provide additional lighting.

Tucked into one corner behind a 3' stub wall, Rob built a desktop and a workbench that serves as a home for his computer and CNC router. He installed a webcam so he

could keep an eye on the CNC machine without having to be in the shop. In contrast to this high-tech tool, Rob proudly displays his hand-tool collection in a custom cabinet on the adjacent wall.

Rob takes great pride in the workbench he built during the coronavirus lockdown of 2020. As a retired graphic designer, he put a lot of thought into the design. The solid base features split turnings applied to 4×4 western cedar legs. The 3×4 yellow pine frame trimmed in eastern cedar and oak contributes to the bench's rock-solid stability. The sunburst applique on one end started out as an old scrollsaw pattern he enlarged and cut with his CNC router.

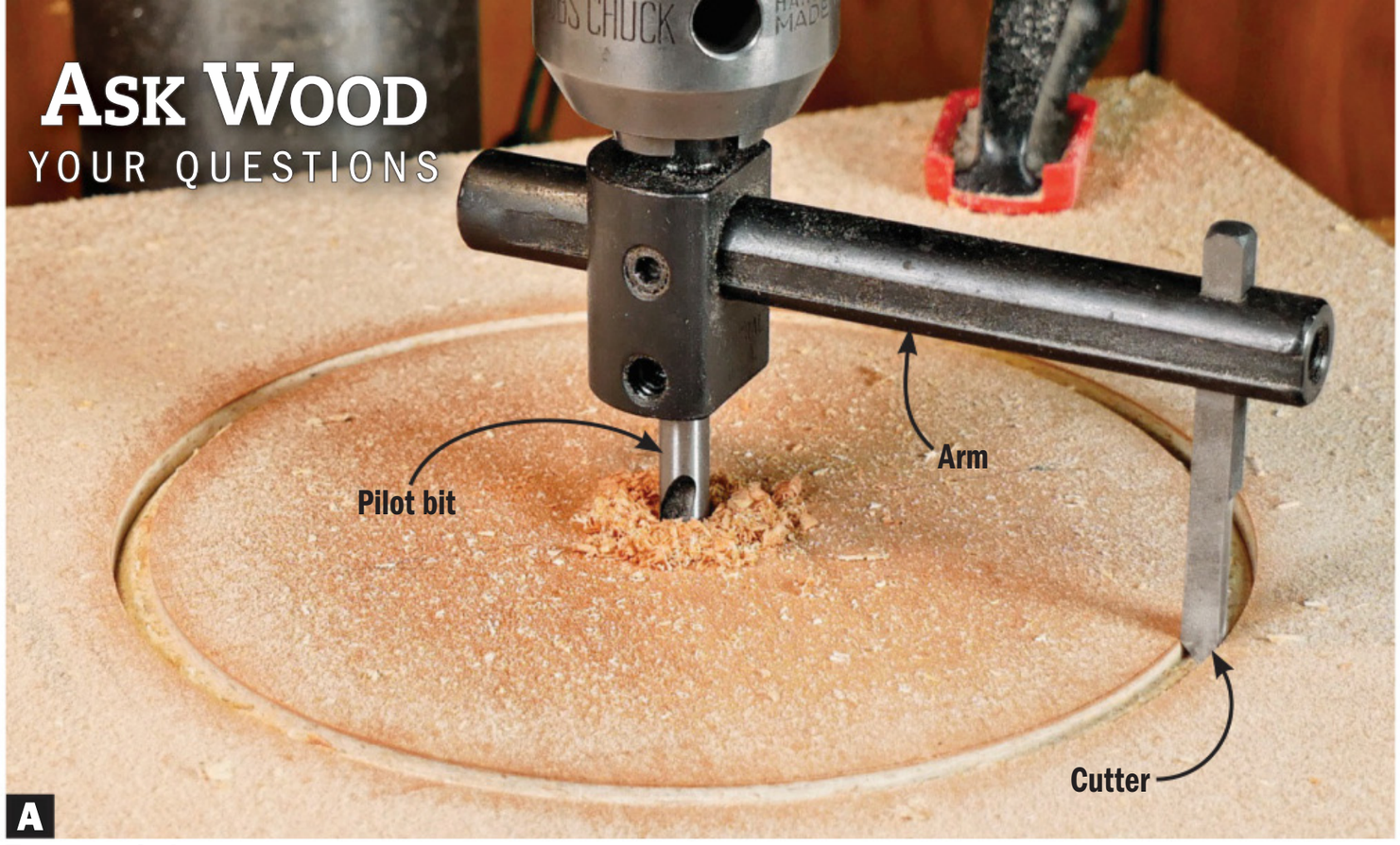
For certain, Rob doesn't need an excuse to spend a lot of hours in his insulated, air-conditioned, well-equipped, and roomy shop. He gets to spend that time designing and creating, forgetting about the world outside his shop doors.

Show us your shop

Send high-resolution digital photos of your shop to
woodmail@woodmagazine.com
and we may showcase it in the magazine!

The centerpiece of Rob's shop is this bench he designed and built. It provides a large worksurface for project assembly, plus ample drawer and shelf space below.

After working 25 years as co-owner of an internet development company, Rob now passes the time working with his hands and experimenting with new techniques to see an idea become a finished piece.



A

To use a circle cutter, clamp the workpiece to a backer board on your drill-press table. Set your drill press to 250 rpm or less and keep your hands clear of the spinning cutter.

Hole-y dilemma, Batman!

Every so often, I have a project that calls for making a hole larger than my largest holesaw. What is the best method for doing this?

—Randy Claxton, Mesa, Ariz.

Most holesaw sets max out at 2½", Randy, although you can buy individual holesaws for diameters up to 6". For holes larger than that, or in between standard holesaw sizes, try one of these methods.

For holes up to about 8" in diameter, consider a circle cutter (also known as a wing cutter) in a drill press. A circle cutter features an adjustable arm that holds a cutter. Set the distance between the center of the pilot bit and the cutter's edge to the radius of the hole you want to drill [**Photo A**]. For workpieces too large for the drill press, use the wing cutter to make a template by cutting the hole in a scrap. Then, rough-cut the hole in the workpiece with a jigsaw. Secure the template over the hole with double-faced tape and complete the hole with a router and pattern bit [**Photo B**].

To cut larger holes, use a router and trammel jig. Purchase a jig or make your own from ¼" hardboard or plywood. Drill a clearance hole near one edge of the jig for a ¼" straight bit, and holes to mount your router. Using the radius of the hole you wish to make, measure from the far edge of the bit and drill a ¼" hole near the other end of the jig. Insert a bolt, or glue a short length of dowel into the hole for a pivot pin.

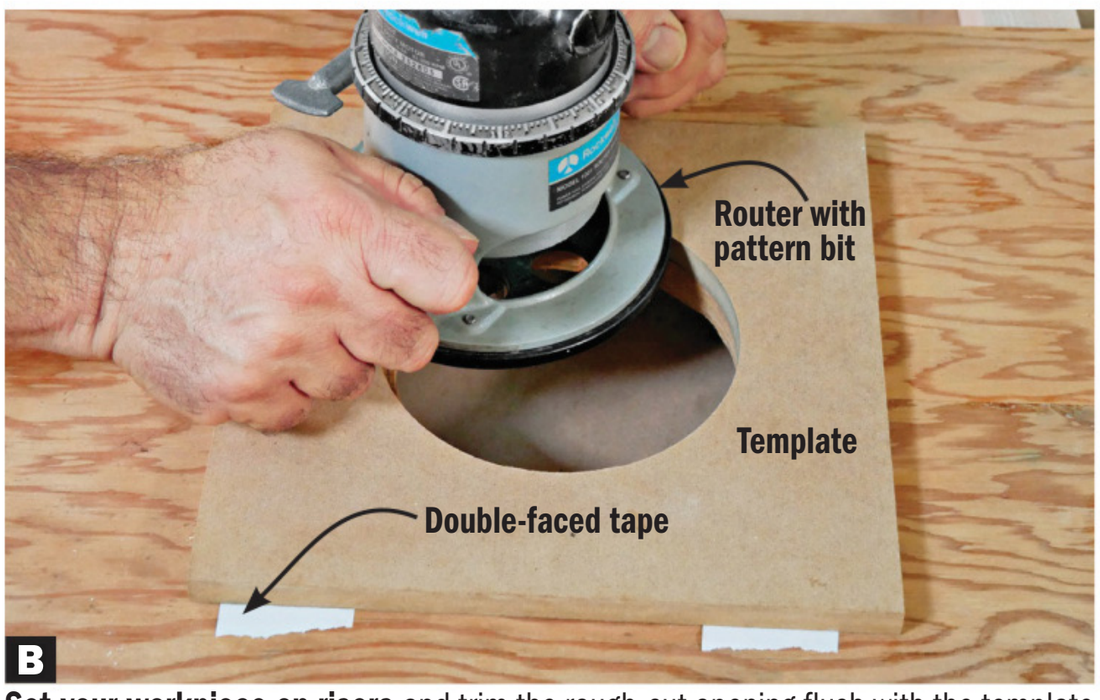
To use the jig, drill a ¼" hole in your workpiece and insert the jig's pivot pin into the hole. Turn on the router, and lower the bit into the wood ¼" for the first pass [**Photo C**]. Then lower the bit ¼" and make another pass, repeating the procedure until you cut through the workpiece.

For less exacting jobs where you won't see the edge of the hole, a jigsaw makes quick work of cutting large holes. Lay out the hole circumference on your workpiece and drill a ⅜" starter hole on the inside edge. Then, insert the jigsaw blade into the hole and carefully cut along the line. With a steady hand, you can achieve reasonable accuracy.

▶ Choose the right speed for a circle cutter or any other drill-press accessory. woodmagazine.com/dpspeed

▶ See how commercial router trammel jigs stack up in our review. woodmagazine.com/routerjigsreview

Have a question? Drop us an e-mail. askwood@woodmagazine.com

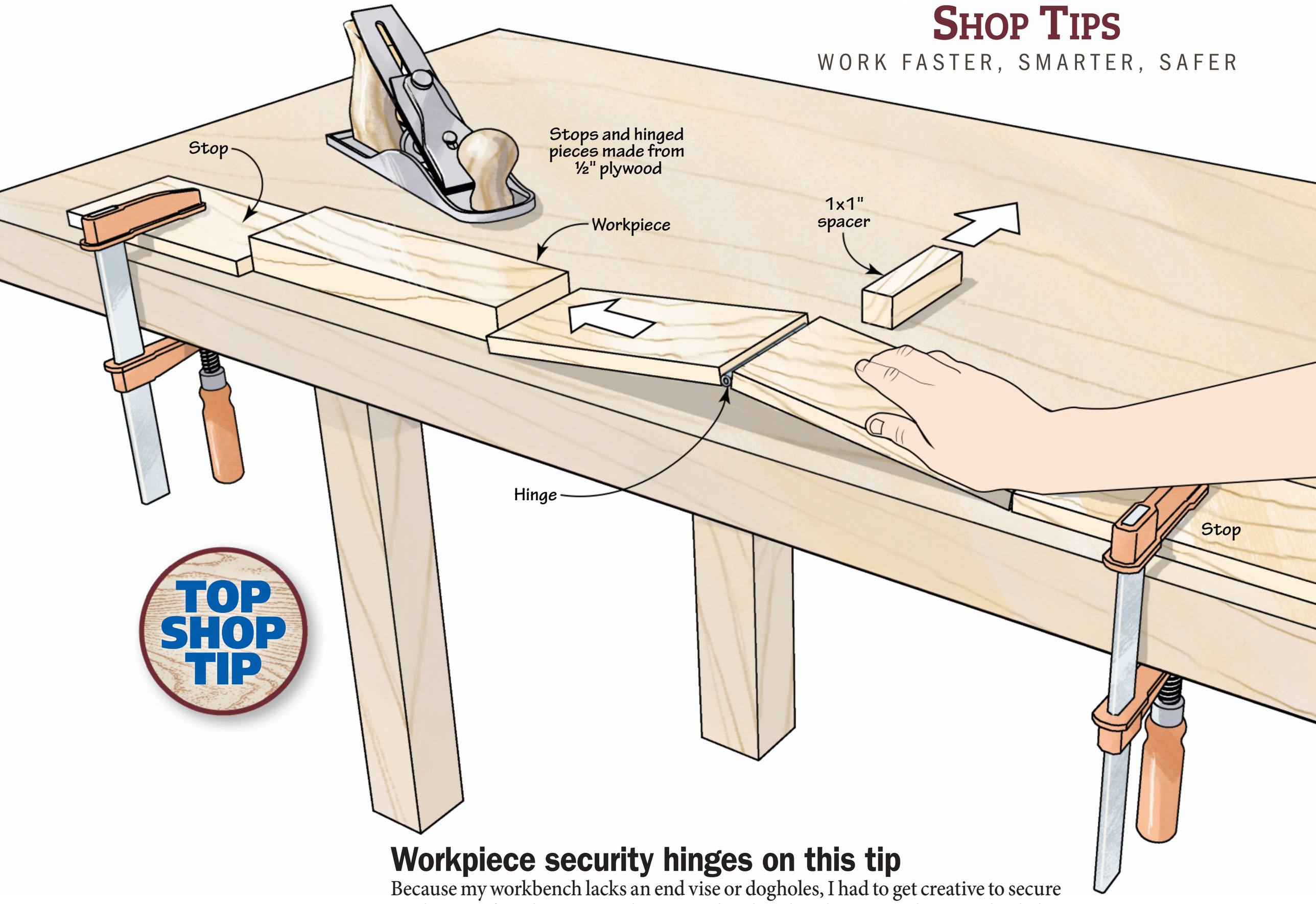


B

Set your workpiece on risers and trim the rough-cut opening flush with the template with a router and top-bearing pattern bit.

C

Secure your workpiece, including the cut-out portion, to a spoilboard with double-faced tape. This prevents the cut-out from spinning as you complete the cut, potentially ruining your new hole.



TOP SHOP TIP

Workpiece security hinges on this tip

Because my workbench lacks an end vise or dogholes, I had to get creative to secure workpieces for planing, sanding, or other handwork. Here is how I solved this problem with four pieces of scrap and a recycled door hinge.

I started by cutting four pieces from ½" Baltic birch plywood, each measuring 4×8". Next, I connected two of the pieces by mortising a hinge onto the ends so the pieces lie flat when placed hinge side down on the workbench. The other pair act as stops I clamp to the workbench to trap the hinged pieces and workpiece.

Clamping a stop to the workbench as shown, I then butt the workpiece against it. I then place the hinged assembly hinge side down over a 1×1" spacer with one end against the workpiece. After clamping the remaining stop to the benchtop against the hinged piece, I remove the spacer and press down on the hinged pieces until they snap down firmly, securing the workpiece.

—Joe Godrey, Forest City, N.C.

Tips earn up to $150.

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Send your tip, photos or drawings, and contact info to **shoptips@woodmagazine.com**

Because we try to publish original tips, please send yours only to *WOOD*® magazine.

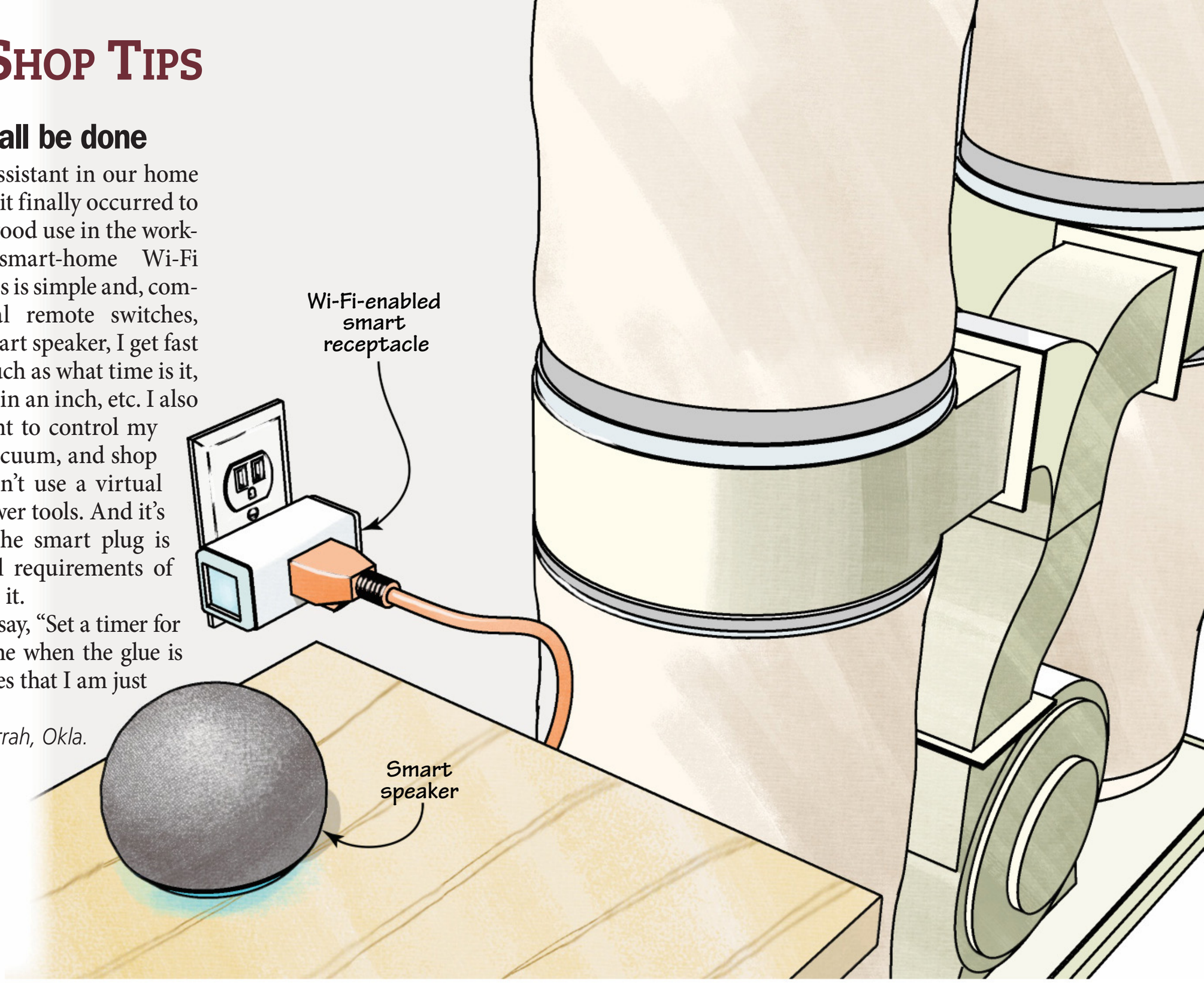
For sending this issue's Top Shop Tip, Joe receives a set of AXE full-size lathe tools from Carter Products worth $375.

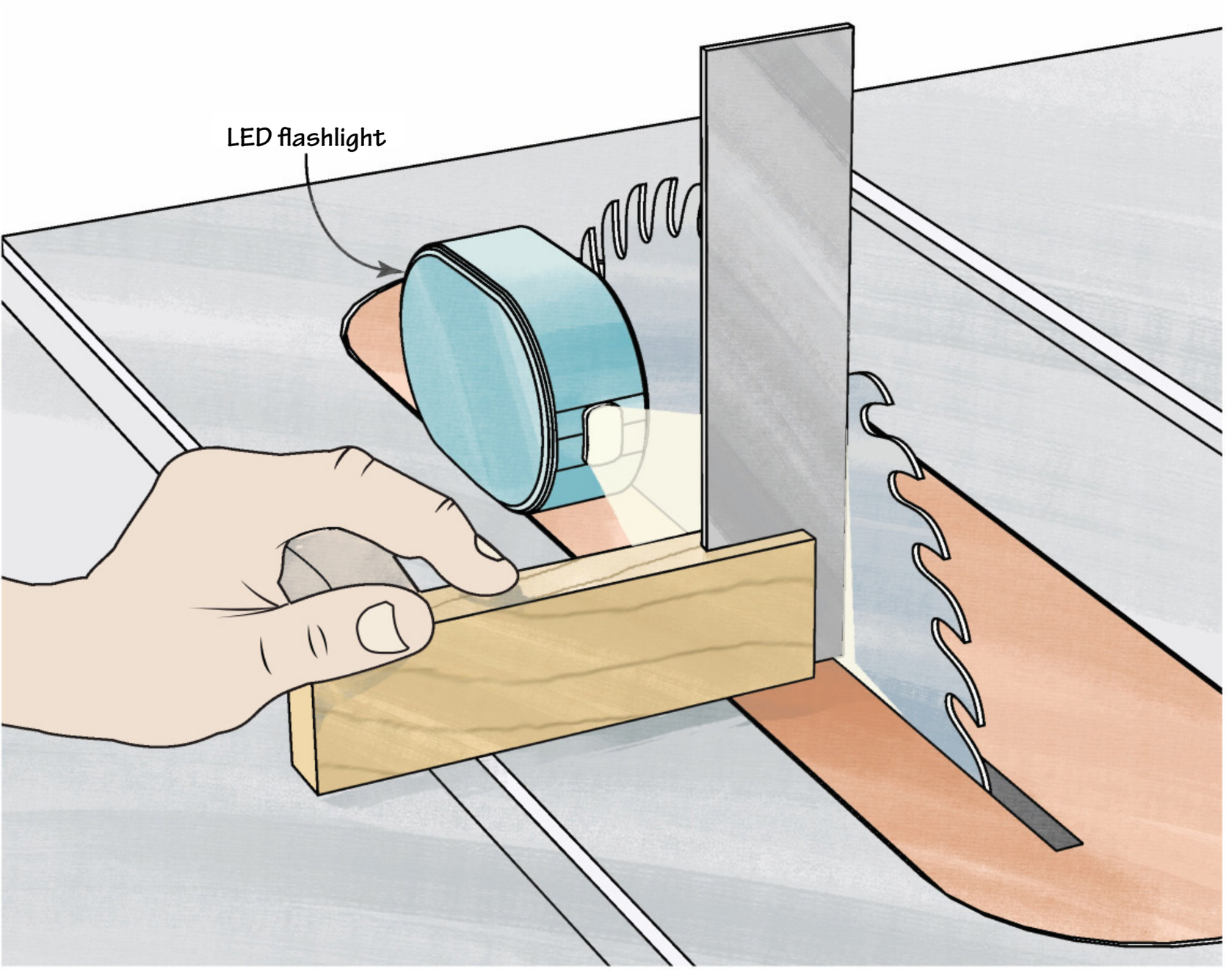
Speak, and it shall be done

After using a virtual assistant in our home over the last two years, it finally occurred to me: Why not put it to good use in the workshop? Setting up smart-home Wi-Fi switches and receptacles is simple and, compared to conventional remote switches, economical. With a smart speaker, I get fast answers to questions such as what time is it, how many centimeters in an inch, etc. I also use the virtual assistant to control my small dust collector, vacuum, and shop lights. For safety, I don't use a virtual assistant to control power tools. And it's important to ensure the smart plug is rated for the electrical requirements of the device plugged into it.

During glue-ups, I'll say, "Set a timer for one hour" to remind me when the glue is dry. There are many uses that I am just now discovering.

—Kenneth Peters, Harrah, Okla.





Inexpensive alignment illumination

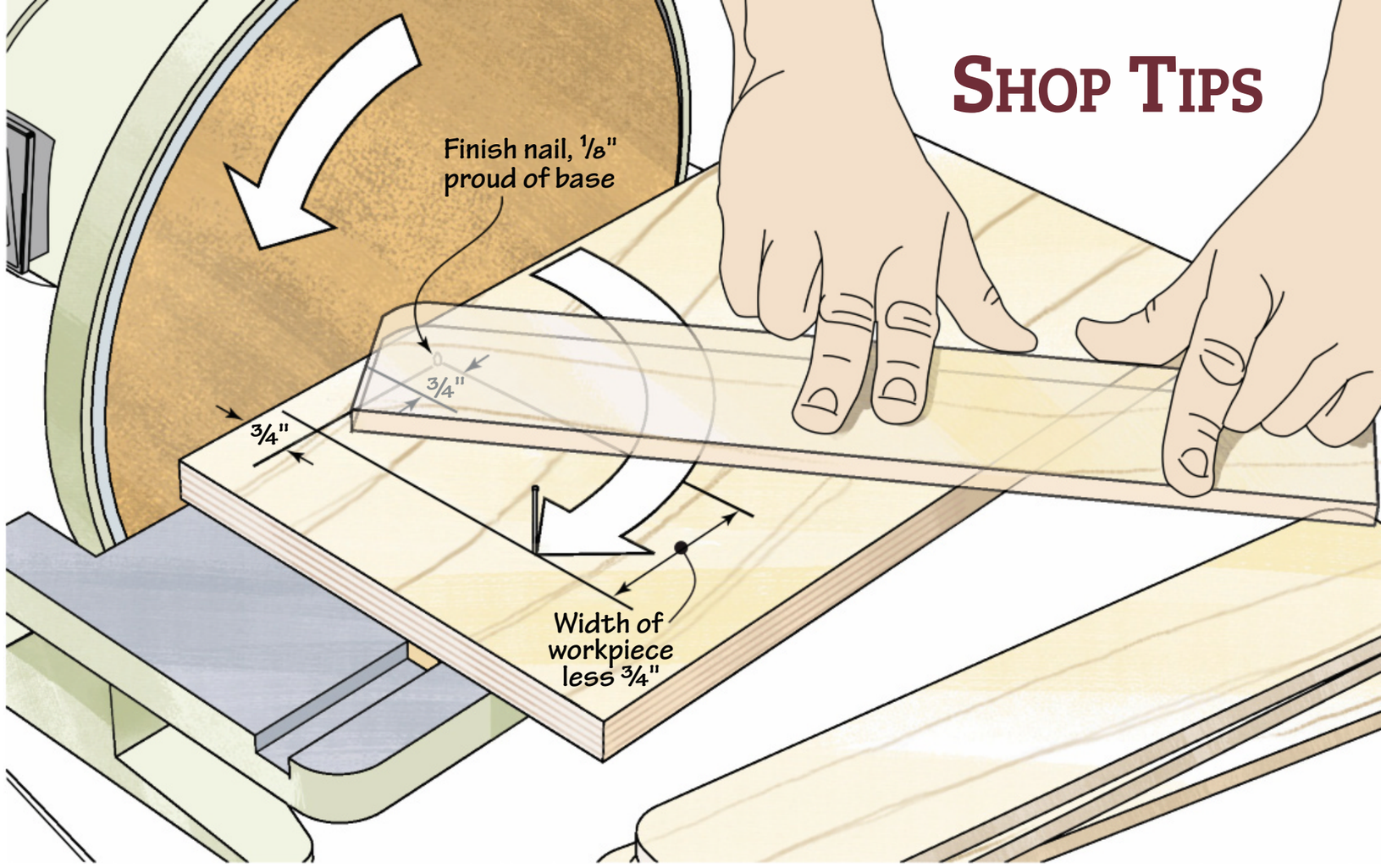
The lighting in my shop and the shadows it creates make it difficult to check the angle of the tablesaw blade with a square. As the saw blade approaches 90° it gets more difficult to see any gap between the square and blade.

I keep an inexpensive LED flashlight hanging on my tablesaw just for this purpose. It has a magnet that I use to attach the light to the saw blade just behind my square. Then I adjust the tilt angle of the blade until there is no light between the blade and the square—a perfect 90°.

—Daniel Diveney, Trenton, Ill.

▶Scan the code at *right* to purchase an inexpensive LED portable flashlight.

continued on page 18



Sand a perfect radius without cutting corners

This simple jig works on a disc sander to create accurate, repeatable radii on workpieces. Start by making a base from ¾" plywood at least as large as the sander's table. To the underside of the base, attach a runner sized to fit the miter slot. Position the runner so the base rests against the sanding disc.

To set up for sanding, for example, a ¾" radius, draw a reference line parallel to and ¾" from the edge of the base on the bottom. On this line, drive a 3-penny finish nail through from the bottom until the point protrudes approximately ⅛" on the top side. This becomes the pivot point for the workpiece. Snip the brad flush with the bottom face.

To the left of the pivot on the top face, draw a line perpendicular to the disc and ¾" from the pivot point. This line serves as a reference for locating the end of the workpiece before sanding. Draw a parallel line spaced the width of the workpiece minus the radius (¾"), as shown. On this line, near the front edge of the base, drive a finish nail into the top face, leaving 1" above the surface. This serves as a stop as you rotate the workpiece while sanding the radius.

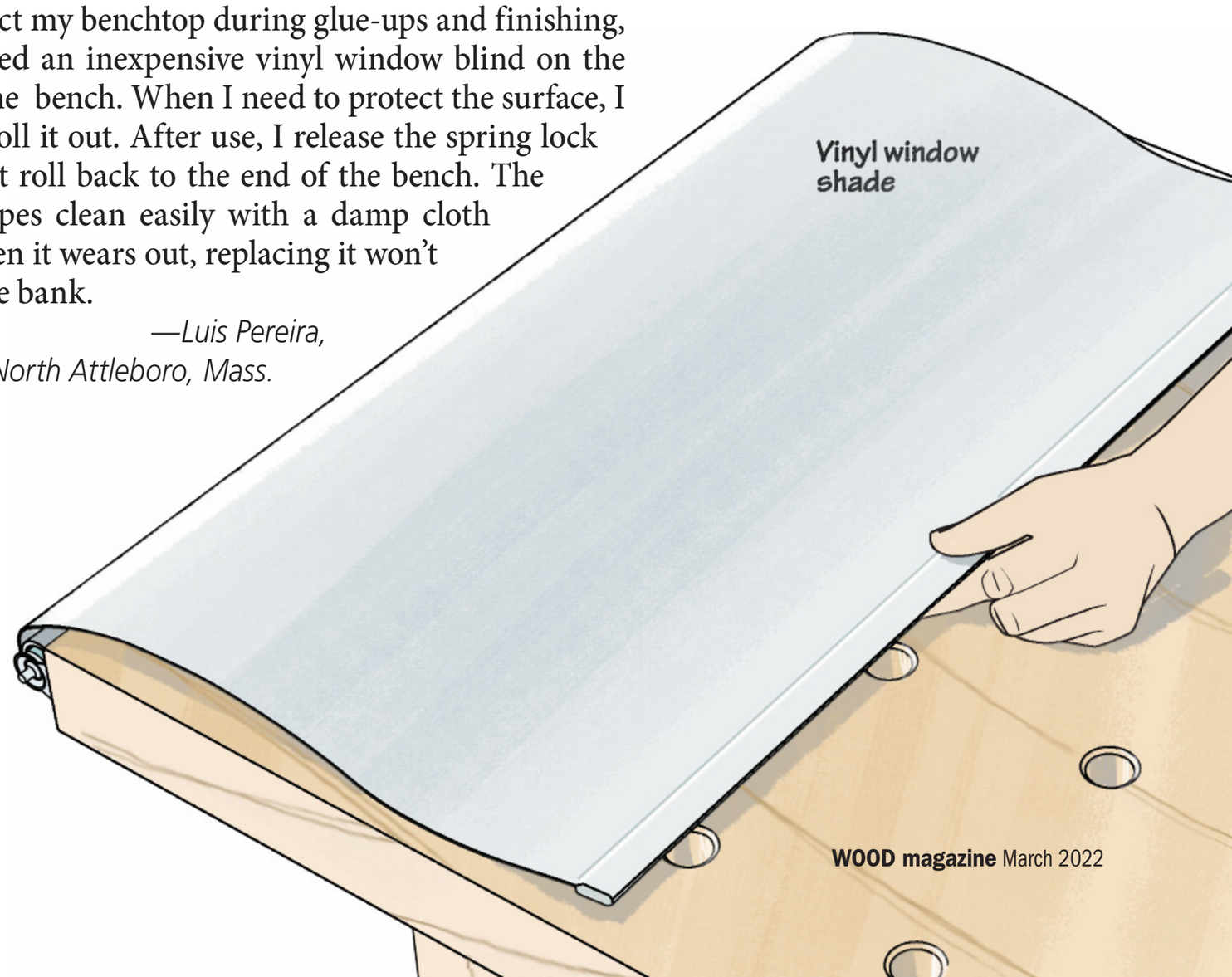
To create the radius, align the end of the workpiece against the line closest to the pivot point with the edge butted against the sanding disc. Lightly tap the workpiece onto the pivot point. Turn on the sander and rotate the workpiece slowly clockwise until it contacts the stop.

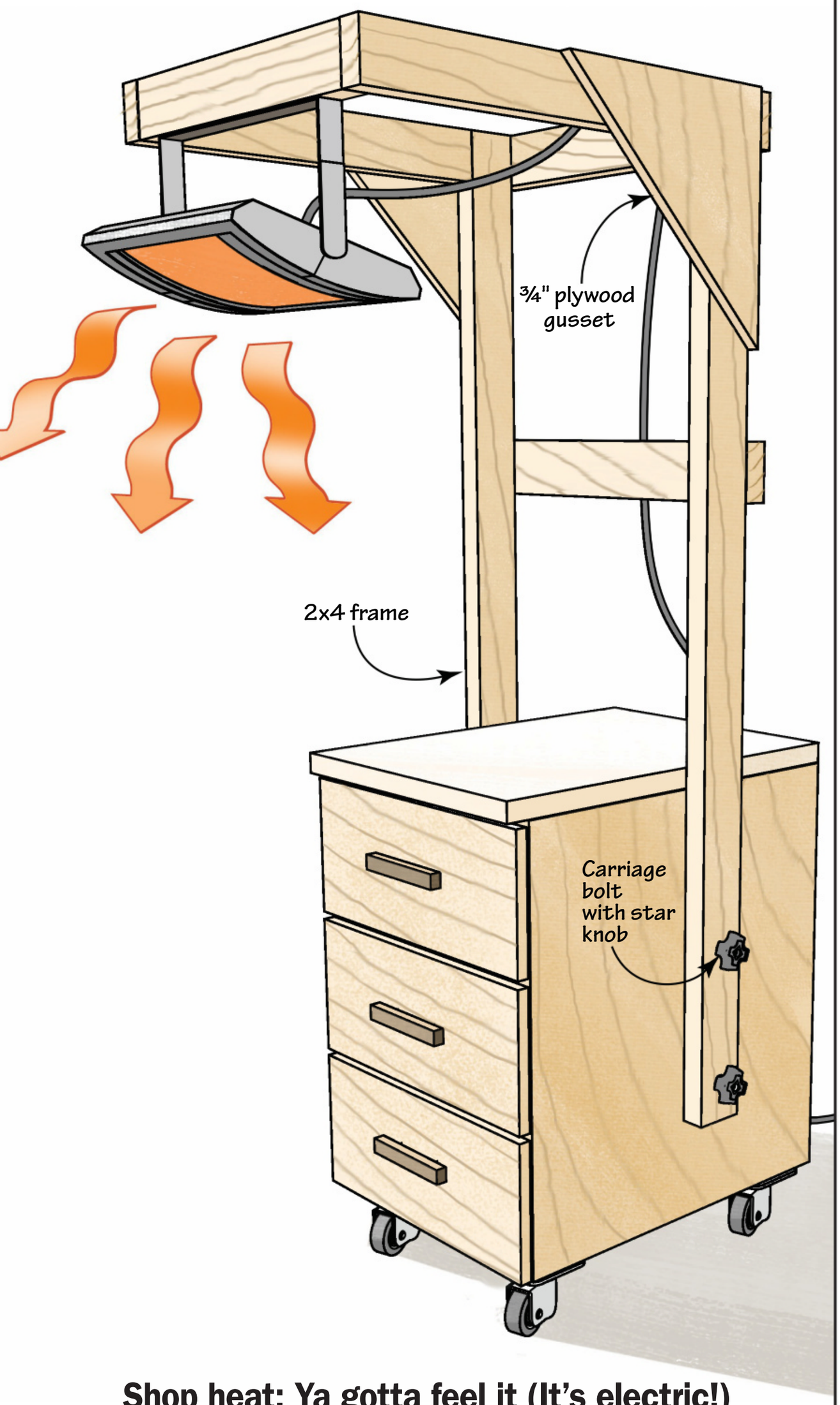
—Mike Bozeman, Wetumpka, Ala.

A shady solution for a clean worksurface

To protect my benchtop during glue-ups and finishing, I mounted an inexpensive vinyl window blind on the end of the bench. When I need to protect the surface, I simply roll it out. After use, I release the spring lock and let it roll back to the end of the bench. The vinyl wipes clean easily with a damp cloth and, when it wears out, replacing it won't break the bank.

—Luis Pereira, North Attleboro, Mass.





Shop heat: Ya gotta feel it (It's electric!)

My unheated garage shop gets pretty cold during Midwest winters, so I built a mobile warming station that rolls to wherever I'm working to provide on-the-spot warmth. To make the radiant heater portable, I mounted it to a rack to fit on a mobile cabinet. The rack fastens securely using a pair of carriage bolts, washers, and knobs on each side of the cabinet, allowing me to disassemble and store it during warm weather. The height of the finished frame places it just below the ceiling.

—Karl Ehlers, WOOD® magazine

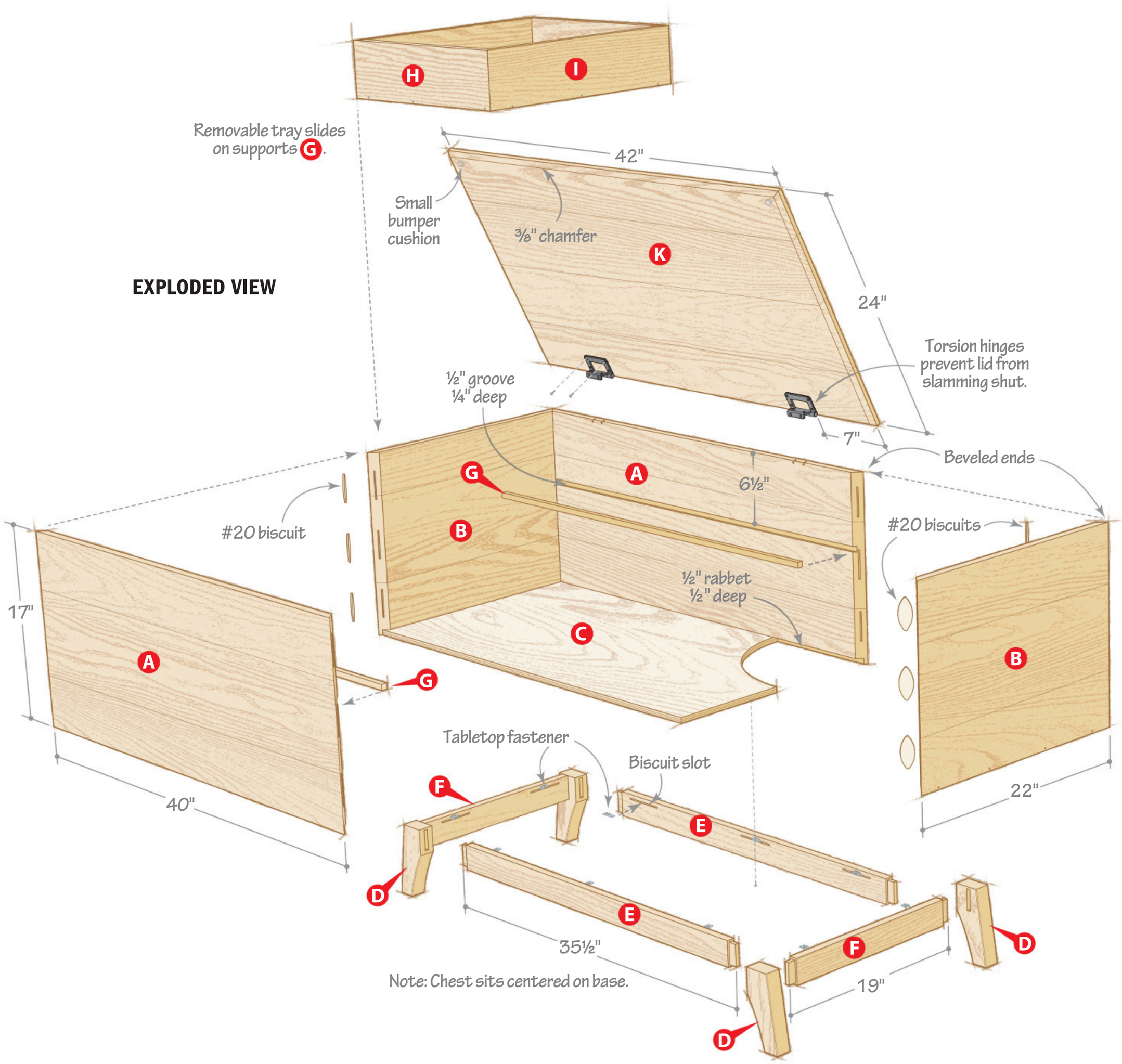
Midcentury Blanket Chest

DIMENSIONS:
42" W × 24" D × 24¾" H

Approximate materials cost:
$625
Lumber and hardware

7.5
cubic feet of storage space

Don't let the name pigeonhole this project. Sure, it will store blankets, but also winter clothes, toys, or anything else that you want to keep out of sight. The sliding tray makes it easy to access articles deep inside without digging.

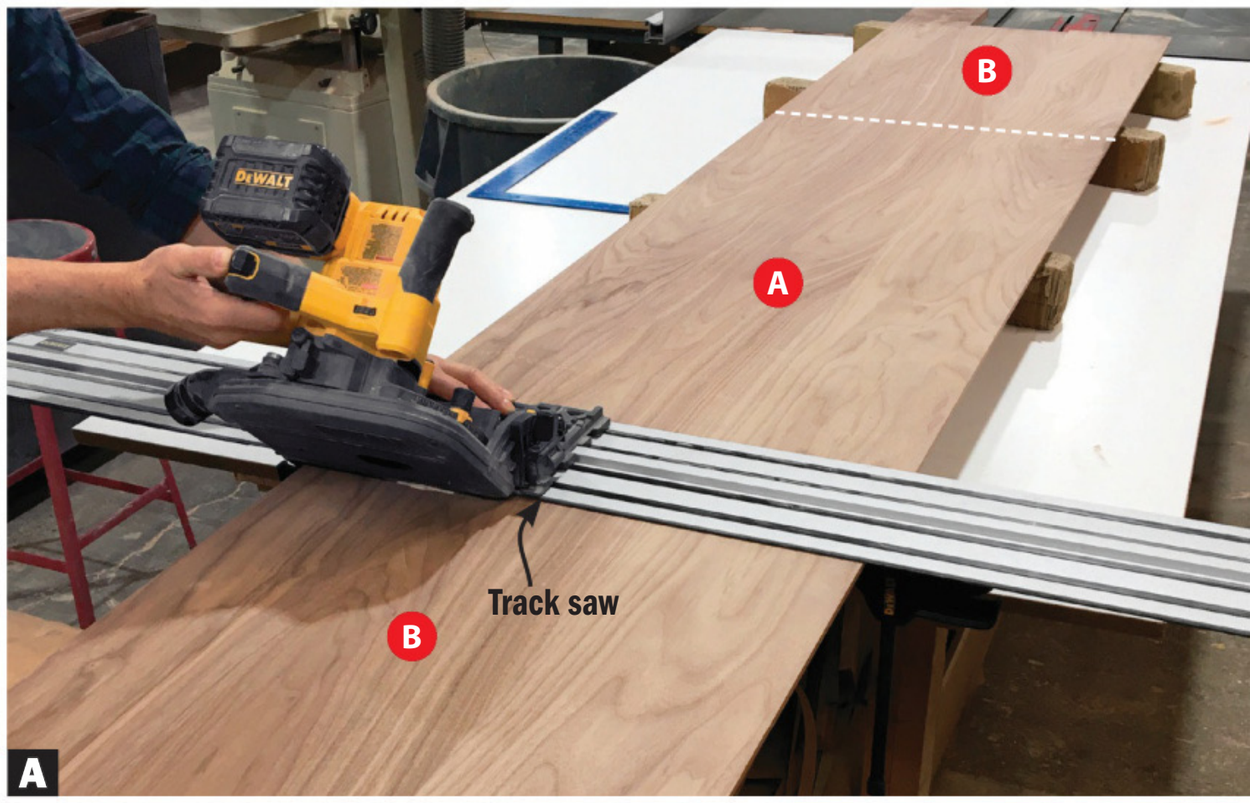


Wrap the wood grain

1 From ¾" stock, glue up a 17×88" panel for the chest front (A) and sides (B) [**Materials List, Exploded View**]. Glue up a second 17×42" panel for the back (A) [**Exploded View**].

2 Lay out the front and two sides on the long panel, with the front (A) in the center. Bevel-cut the front to length [**Photo A, Exploded View**]; then the mating ends of the sides, as close to the beveled end as possible; and finally the opposite ends of the sides to length. Bevel-cut the back panel (A) to match the length of the front panel.

3 Cut biscuit slots in the beveled ends [**Exploded View**]. Rabbet the bottom edges of the panels (A, B), and groove the front and back panels. Finish-sand the inside faces.



Cut the front (A) from the middle of the panel so the grain wraps continuously around the sides and front of the chest.

4 Make a set of clamping blocks [**Skill Builder**]. Using biscuits to align the pieces, glue the front to one of the sides and the back to the other side, creating two L-shape assemblies [**Photo C**].

5 Glue together the two half assemblies of the chest. From ½" plywood, cut the bottom (C) to fit in the rabbeted opening and glue it in place.

Add a firm foundation

1 From 1½" stock, cut to size the blanks for the feet (D) [**Materials List, Drawing 1**]. Mark the location of each foot on top of the blanks and lay out the profile and mortises [**Drawing 1a**]. Then form the mortises.

2 Bandsaw the profile and sand the curves smooth. Ease the edges with sandpaper and finish-sand the surfaces.

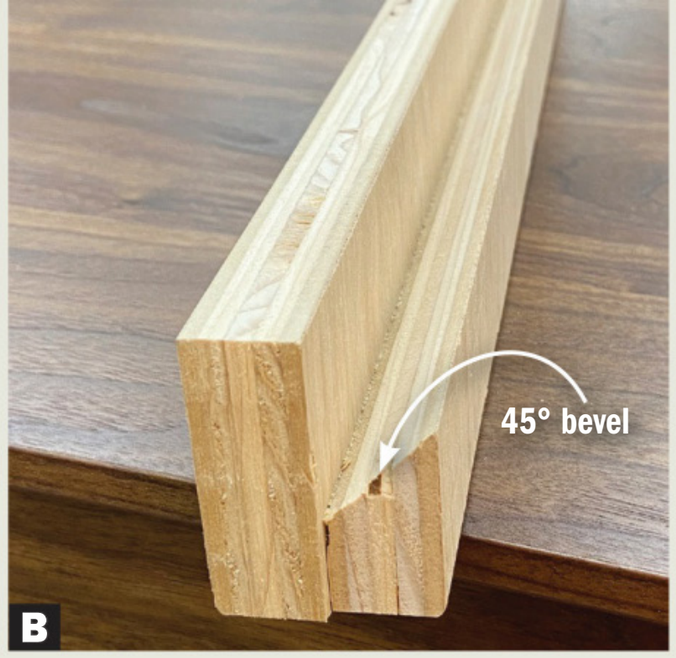
3 Cut the stretchers (E, F) to size. Form tenons on the ends of the stretchers [**Drawing 1b**] and cut biscuit slots on the inside face of each stretcher for the tabletop fasteners [**Exploded View, Source**].

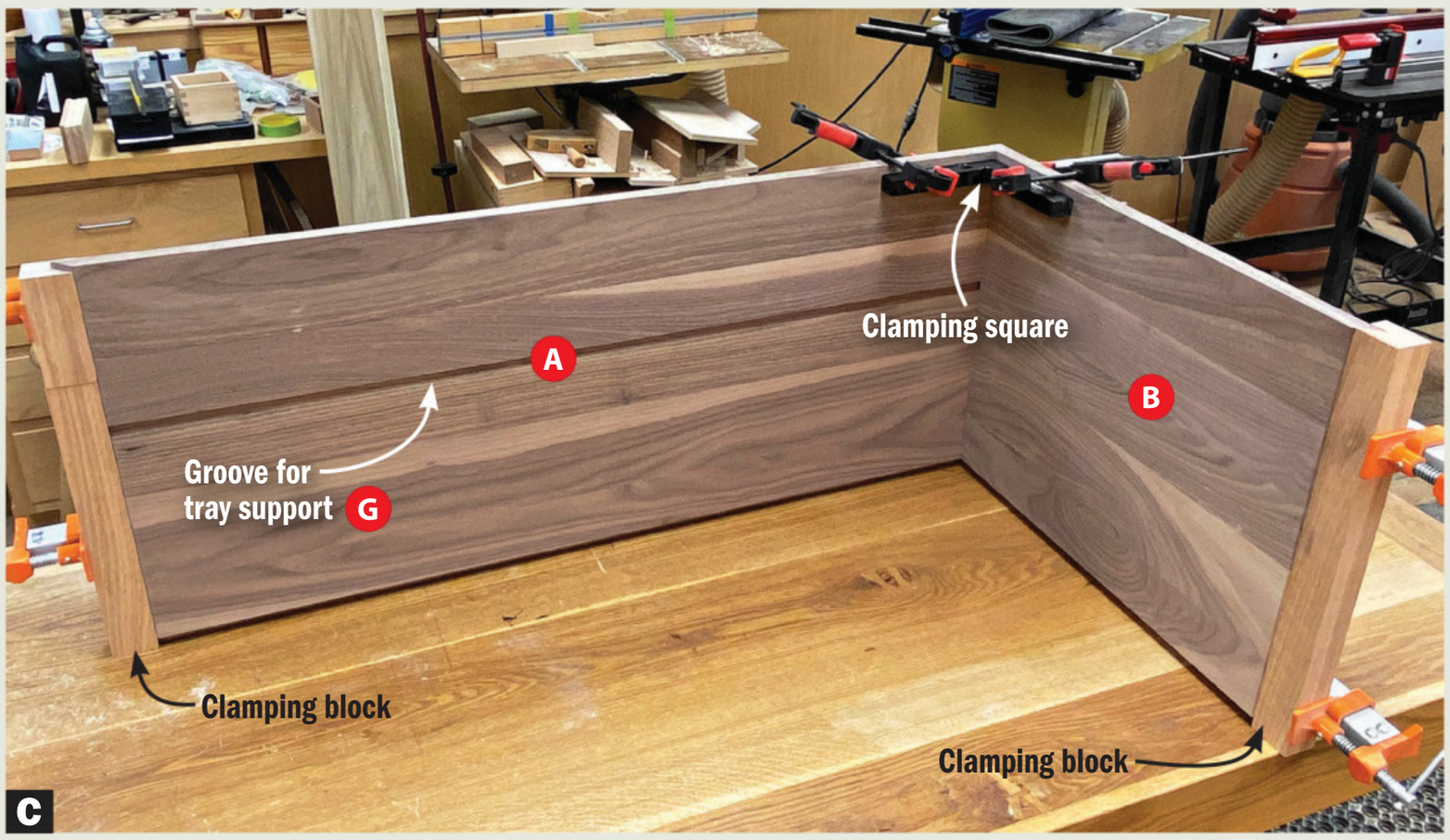
4 Finish-sand the stretchers and glue the base (D–F) together.

SKILL BUILDER

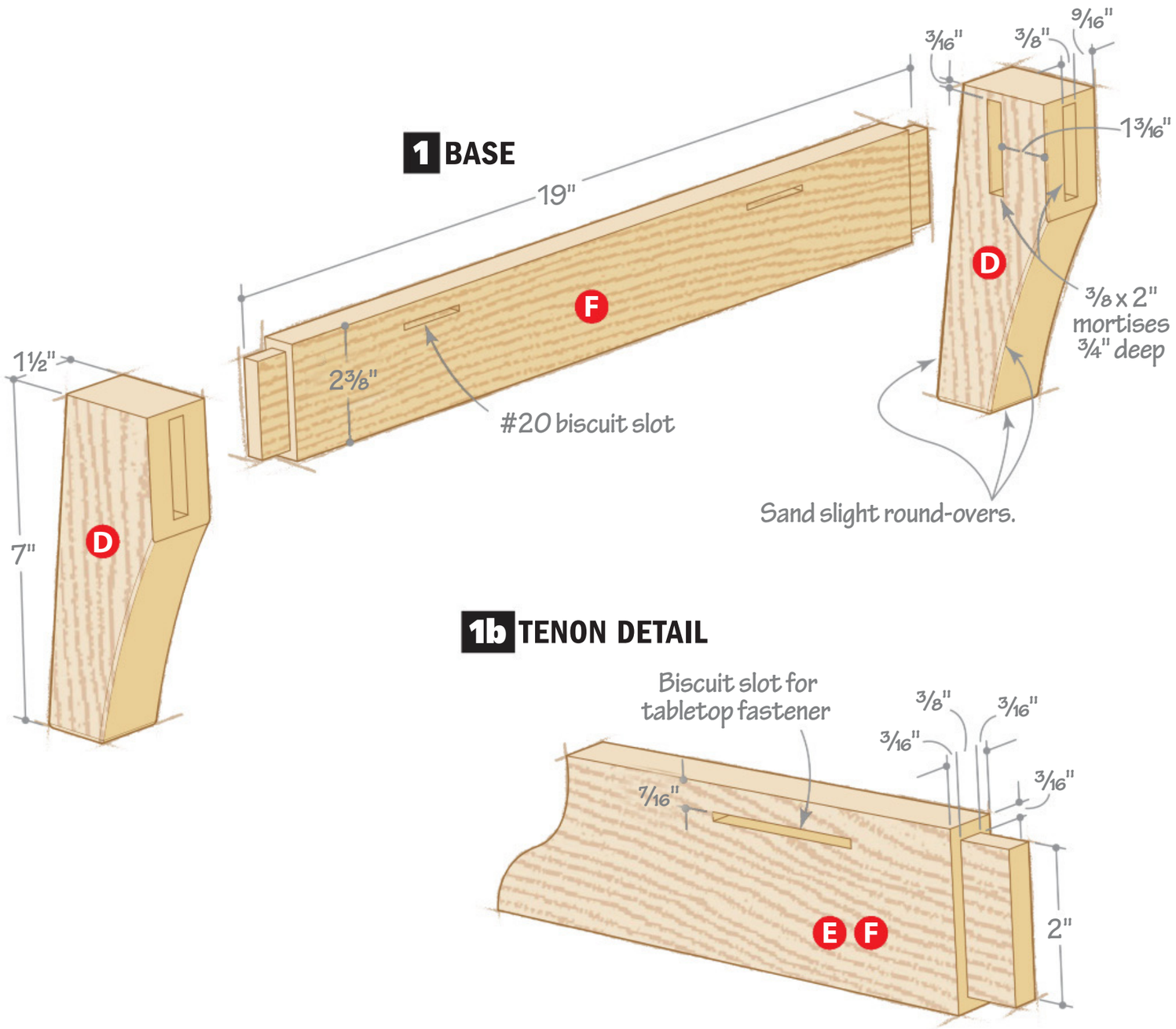
Get a grip

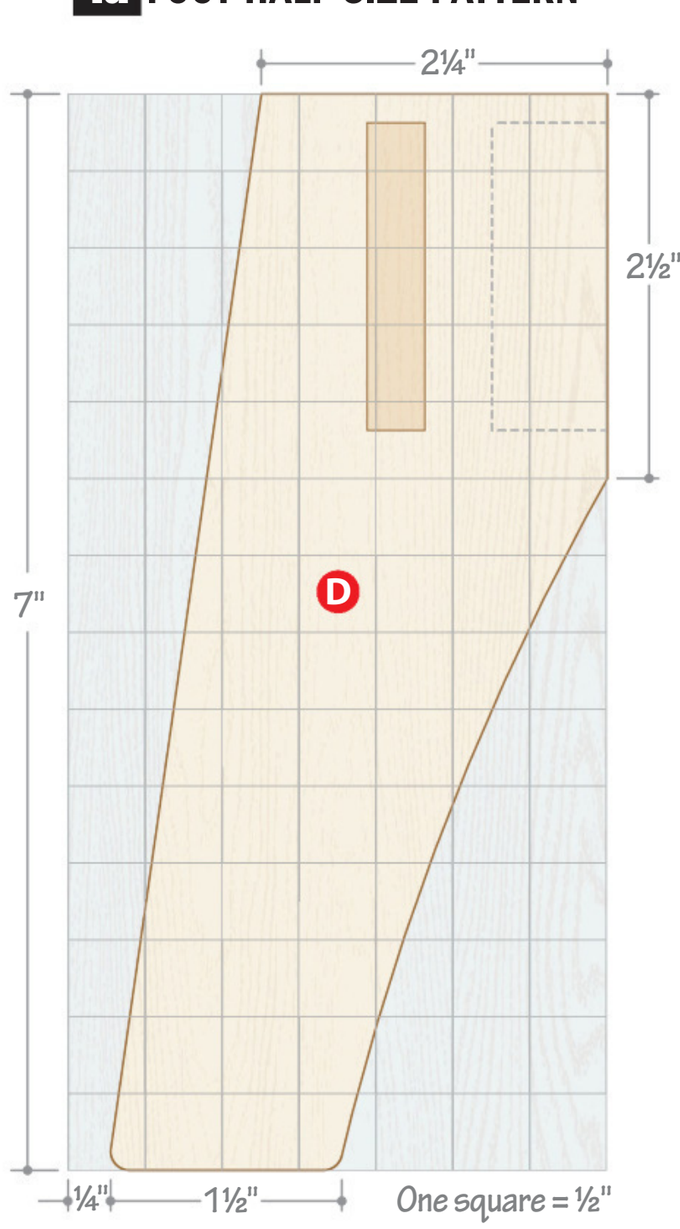
To avoid damaging the edge of beveled workpieces when clamping, use shop-made clamping blocks [**Photo B**]. A 45° bevel along one edge of the clamping block cradles the beveled end of the workpiece while tightening the clamps [**Photo C**].

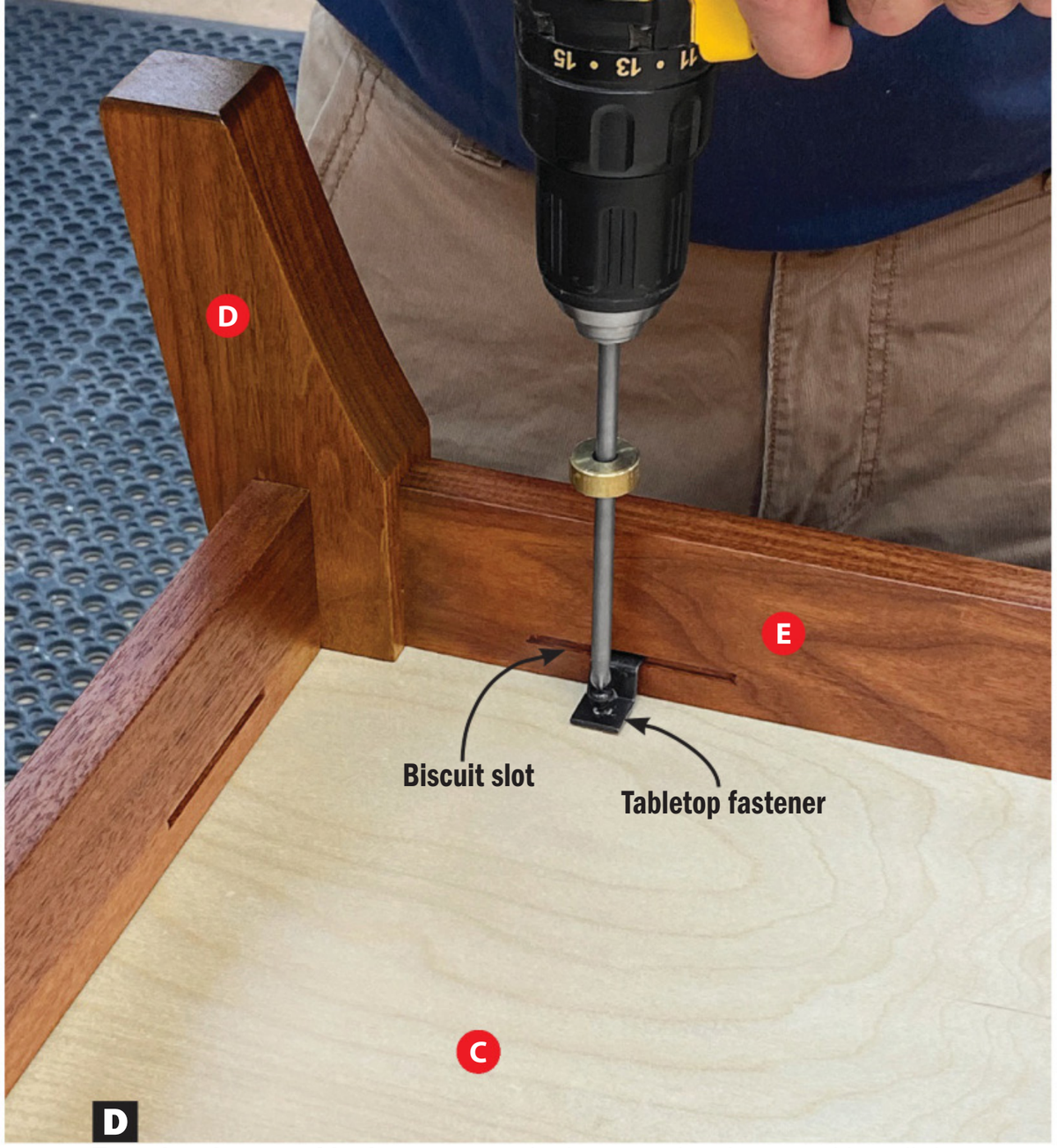




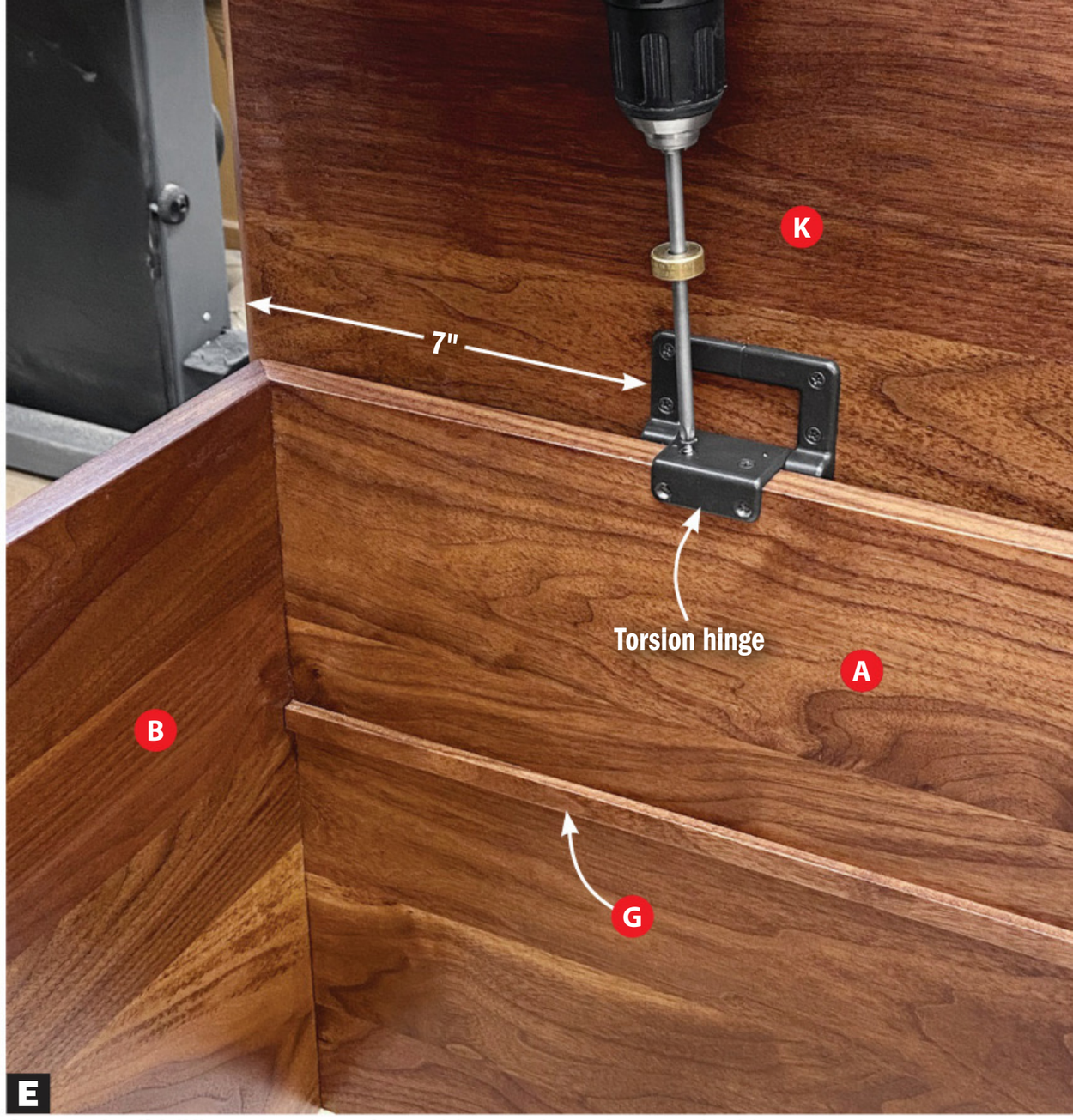
Using clamping squares and the clamping blocks, glue up two subassemblies, orienting the workpieces so the grain wraps continuously around the front corners.







Turn the chest upside down, center the base on the chest, and install the tabletop fasteners to secure the base assembly to the chest.



Center the lid (K) on the chest from side to side and screw the hinges to the back panel.

Lay down a tray and lid

__Tip!__ Measure the inside of the chest from front to back and cut the tray sides (I) ⅛" shorter to allow the tray to slide freely.

1 Cut the tray supports (G) to size and glue them into the grooves in the front and back of the chest [**Exploded View**].

2 From ¾" stock, bevel-cut the tray front and back (H) and sides (I) to fit [**Drawing 2**]. Cut biscuit slots in the beveled ends and rabbet the bottom edge of all four pieces.

3 Finish-sand the inside faces of the tray front, back, and sides. Using glue and biscuits, assemble the tray frame, checking for square as you clamp.

4 Cut the tray bottom (J) to fit in the rabbeted opening. Finish-sand the bottom, then glue it into the opening.

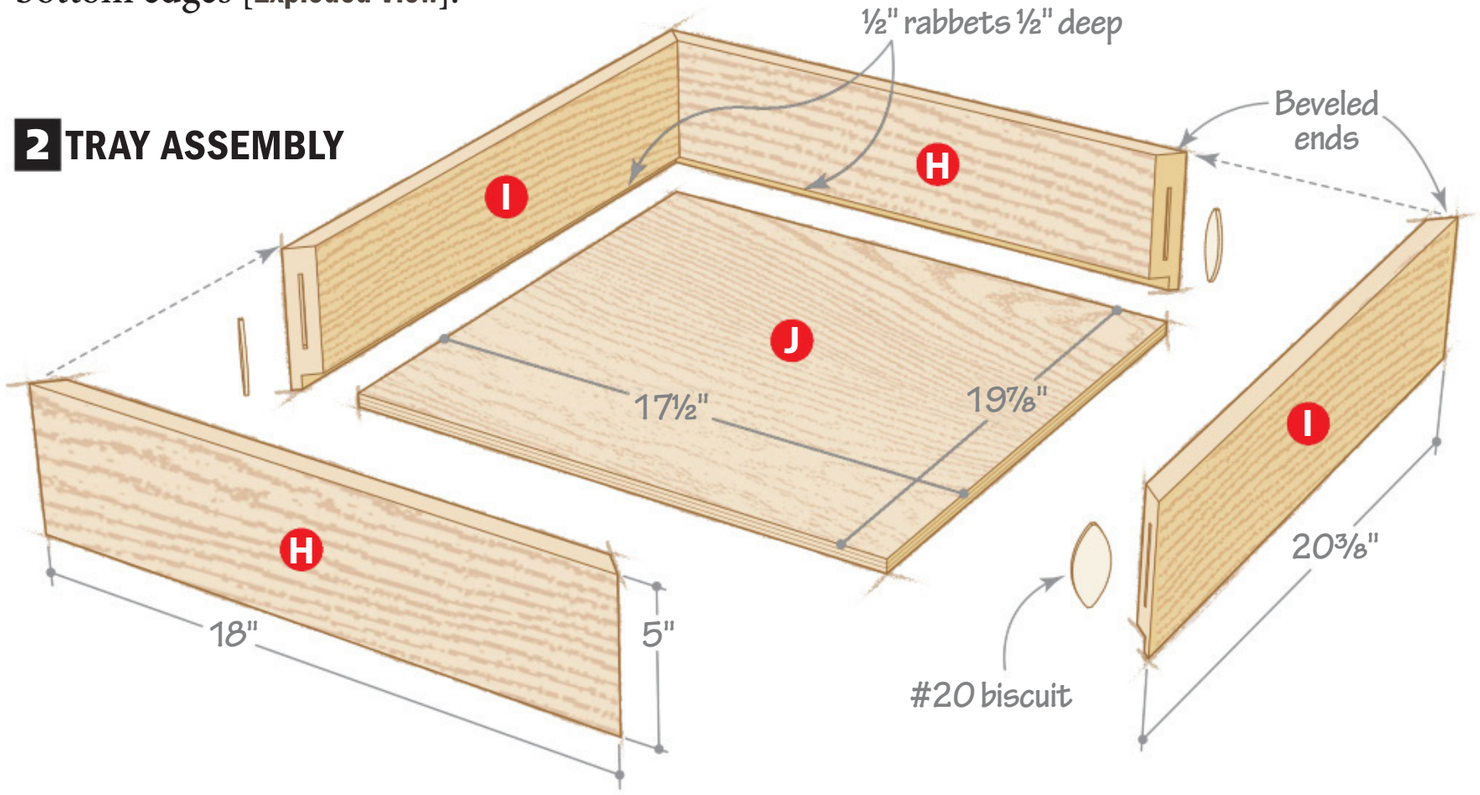
5 From ¾" stock, glue up a panel for the lid (K). Trim the lid to size and chamfer the bottom edges [**Exploded View**].

6 Finish-sand all the assemblies and apply a finish of your choice. We sprayed three coats of a satin lacquer.

7 With the finish dry, attach the base to the bottom of the chest using tabletop fasteners [**Photo D**].

8 Screw the hinges to the underside of the lid (K), lining up the barrels of the hinges with the inside edge of the chamfer. Place the lid on the chest and drive screws to secure the hinges to the back panel [**Photo E**]. Add a pair of rubber bumpers to the front of the lid. Install the tray and fill up the chest with your favorite blankets.

2 TRAY ASSEMBLY



The suite life

We designed the chest as part of our midcentury bedroom suite. Find plans for the dresser in issue 276 (September 2021) and the nightstand and headboard in issue 277 (October 2021) or all three at woodstore.net/bedroom.

Produced by **Vince Ancona** with **Kevin Boyle** and **Brian Bergstrom**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine, Lorna Johnson**

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A*	front/back	¾"	17"	40"	EW	2
B*	sides	¾"	17"	22"	EW	2
C	bottom	½"	21½"	39½"	MP	1
D	feet	1½"	3¼"	7"	W	4
E	front/back stretchers	¾"	2⅜"	35½"	W	2
F	side stretchers	¾"	2⅜"	19"	W	2
G	tray supports	½"	½"	38½"	W	2
H	tray front/back	¾"	5"	18"	W	2
I	tray sides	¾"	5"	20⅜"	W	2
J	tray bottom	½"	17½"	19⅞"	MP	1
K	lid	¾"	24"	42"	W	1

*Parts initially cut oversize. See the instructions.
Materials key: EW-edge-glued walnut, W-walnut, MP-maple plywood.
Supplies: #20 biscuits.
Blade and bit: Dado set; 45° chamfer bit.
Source: Tabletop fasteners (2 packs) no. 34215, $4.49; torsion hinges (1 pair) no. 36275, $50; small bumper cushions (1 pack) no. 31848, $4.49, Rockler, 800-279-4441, rockler.com.

Cutting Diagram

This project requires 37 board feet of 4/4 walnut and 2 board feet of 8/4 walnut.

¾ x 5½ x 96" Walnut (2 needed)

¾ x 7¼ x 96" Walnut

¾ x 5½ x 96" Walnut (2 needed)

¾ x 7¼ x 96" Walnut

¾ x 7¼ x 48" Walnut

1½ x 3½ x 36" Walnut

¾ x 7¼ x 60" Walnut

¾ x 5½ x 84" Walnut

½ x 48 x 48" Maple plywood

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Strong, Simple Drawer Joints

Whether you make inset or overlay, false front or integrated front, these drawer styles work for almost any project.

1. Doweled rabbet

Pinned through the sides and into the drawer front and back, doweled-rabbet joints provide great strength against the force of pulling a drawer open.

To make this joint work, the front must be ⅛"–¼" thicker than the sides. Begin by rabbeting the drawer front and back [**Photos A, B**]. To ensure space for the dowels, make the rabbet depth about two-thirds of the front/back thickness. Glue the drawer together and clamp until dry. Sand the joint smooth, drill the dowel holes [**Photo C**], and glue the dowels in place [**Photo D**]. Sand flush when dry.

Advantages

▲ Easy to make

▲ Great strength

▲ Visible dowel ends provide an appealing design element, especially with contrasting wood species.

▲ Make it with common tools: stacked dado blade or router bit, twist or brad-point drill bit, and a portable drill with a shop-made jig for the dowel holes.

Disadvantage

▼ It can be difficult to find dowels in species other than oak, birch, or poplar, especially in diameters less than ¼".

With a dado stack and auxiliary fence in place, position the rip fence so the amount of exposed blades equals the thickness of the drawer side.

Rabbet both ends of the front and back, holding the workpiece against the auxiliary fence and a miter gauge to ensure a 90° cut.

Make a drilling jig to locate the dowel holes, clamp it to the drawer and drill the holes. Use a stop collar or masking-tape flag to set the drilling depth.

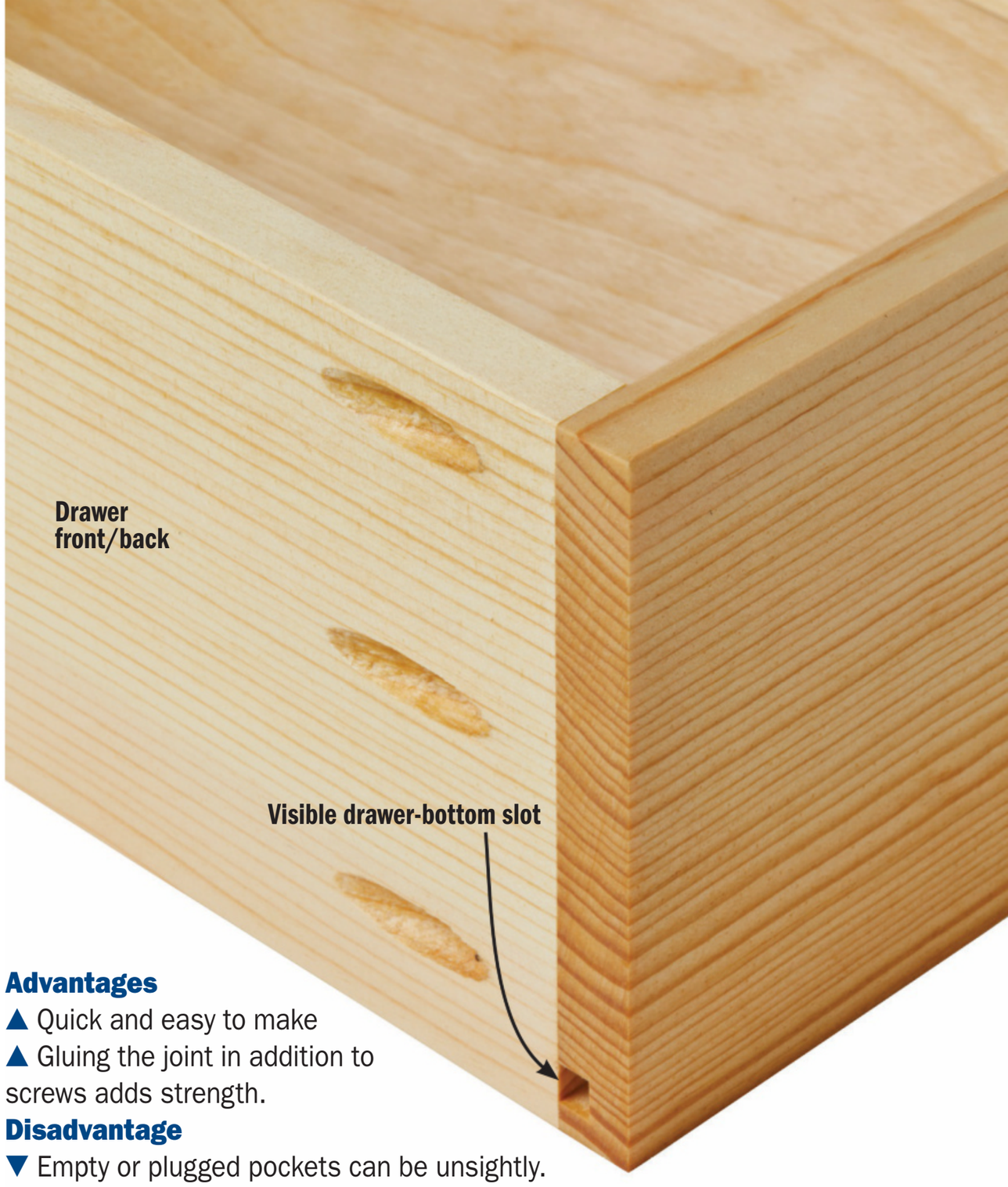
Glue dowels into the holes. Cut them flush when dry, then sand smooth.

2. Pocket-hole screws

Essentially a screw-reinforced butt joint, drawers made with pocket-hole screws require only a low-cost jig and drill to create the angled holes. For maximum joint strength against the pulling force of opening the drawer, and to better hide the holes afterward, drill the pocket holes on the front and back (outer) faces of the drawer box. A false front hides the holes on the front panel, and those on the back will be seen only if you remove the drawer. If *not* using a false front, drill the holes in front on the inner face, then fill the holes with store-bought or shop-made plugs. The holes will still be noticeable, but less so than unplugged holes.

Tip! *When working with ½"-thick drawer sides, use a jig, drill bit, and screws made especially for thin stock.*

Create angled holes for the screws with a drill and pocket-hole jig. Ideally, locate a hole about every 1½" across the width of the drawer part. Glue and screw the drawer box together.



Advantages

▲ Quick and easy to make

▲ Gluing the joint in addition to screws adds strength.

Disadvantage

▼ Empty or plugged pockets can be unsightly.

To be successful, you have to start at the bottom

To install a drawer bottom, you can rabbet the bottom edge of the front, sides, and back (before or after assembly) and glue in a panel, but that presents a potential weakness: Too much weight in the drawer could force the bottom panel out of the rabbet, spilling the contents. Instead, capture the bottom panel in grooves within the assembly. You can do this in several ways.

First, you can cut or rout full-length grooves [**Photo A**] on all parts prior to glue-up. With some joints (doweled rabbet, lock rabbet with integrated front and back), the joint itself hides the groove. But with pocket holes, box joints, and basic lock rabbets without an integrated front, the grooves will show (*above right*).

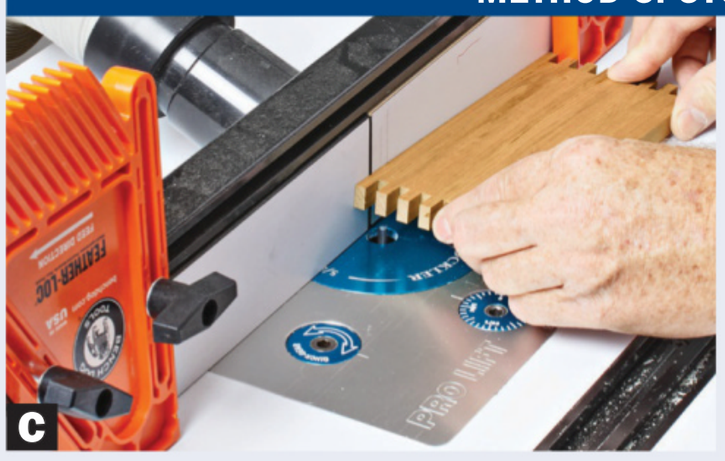
To avoid visible grooves in these joints, you can rout grooves on the router table. One method uses a box-slotting bit [**Sources**]. Simply dry-clamp the box together, then rout a groove by guiding the assembly against the bit's bearing in a counterclockwise rotation [**Photo B**]. When finished, you have a groove with rounded corners, so round the corners of the bottom panel to match.

Another option: Rout stopped grooves prior to glue-up. Do this on the router table by securing stopblocks to the fence to stop the groove ¼"–⅜" from the ends of the workpiece. With an upcut spiral bit installed and set to depth, position the workpiece against the right stop [**Photo C**] and slowly lower the board onto the spinning bit, keeping a firm grip on the workpiece. Then slide the workpiece until it contacts the left stop [**Photo D**] and shut off the router. When it stops, lift the board to reveal the stopped groove. If you need a wider groove, move the fence back slightly and rout again, repeating until you have the desired width.

METHOD 1: THROUGH GROOVES

METHOD 2: SLOT THE WHOLE BOX

METHOD 3: STOPPED GROOVES



3. Lock rabbet

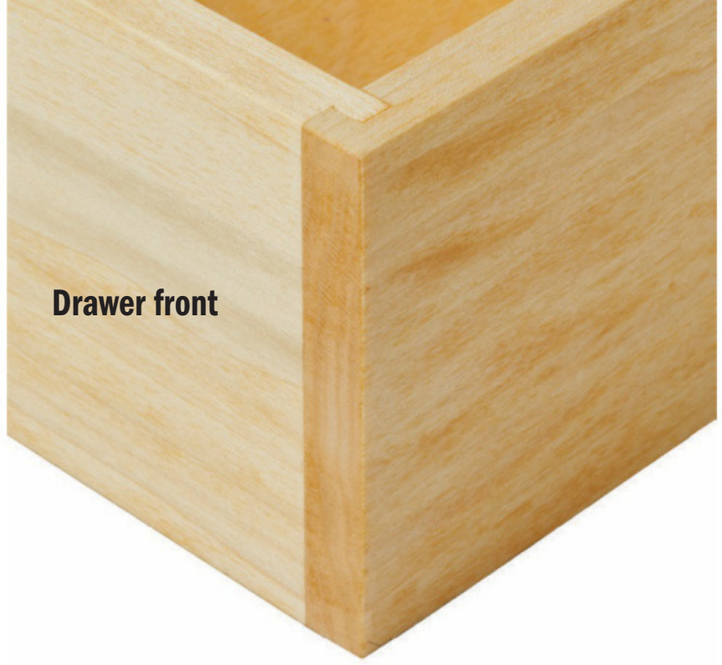
Make this joint either to accommodate a false front or with an integrated front. The techniques work the same for each, but the integrated front requires an additional step. In both versions, tongues machined on the front and back fit into dadoes in the sides, adding resistance against the pulling force of opening a drawer. In a basic lock rabbet (*right*), the end grain of the sides shows, so cover it with a false front. The integrated-front version hides the end grain of the sides.

▶Watch a video demonstrating cutting lock rabbets. woodmagazine.com/lockrabbetdrawers

With a basic lock-rabbet joint [**Photos A–C**], the tongue should fit snugly in the dado without dropping out or being forced. All four drawer parts should be of equal thickness (in this case, ½"). Make test cuts in scrap stock at each step to ensure a perfect fit.

▶Make a saddle jig for your tablesaw. woodmagazine.com/saddlejig

For a lock-rabbet joint with an integrated front (and possibly back, though not required) [**Photos D, E**], the front and back pieces should be ¼" thicker than the sides (in this example, ¾" front and back and ½" sides). Cut the sides in the same manner as with the basic lock rabbet.



Advantages

▲ Great strength because of mechanical connection and large glue surface

▲ Make it with a stacked dado set or straight/spiral bit.

▲ Easily repeatable for multiple drawers with the right stops and setups

Disadvantages

▼ Limited visual appeal

▼ Requires precise-fitting joints—gaps will reduce joint strength—and fine-tuning the fit is critical.

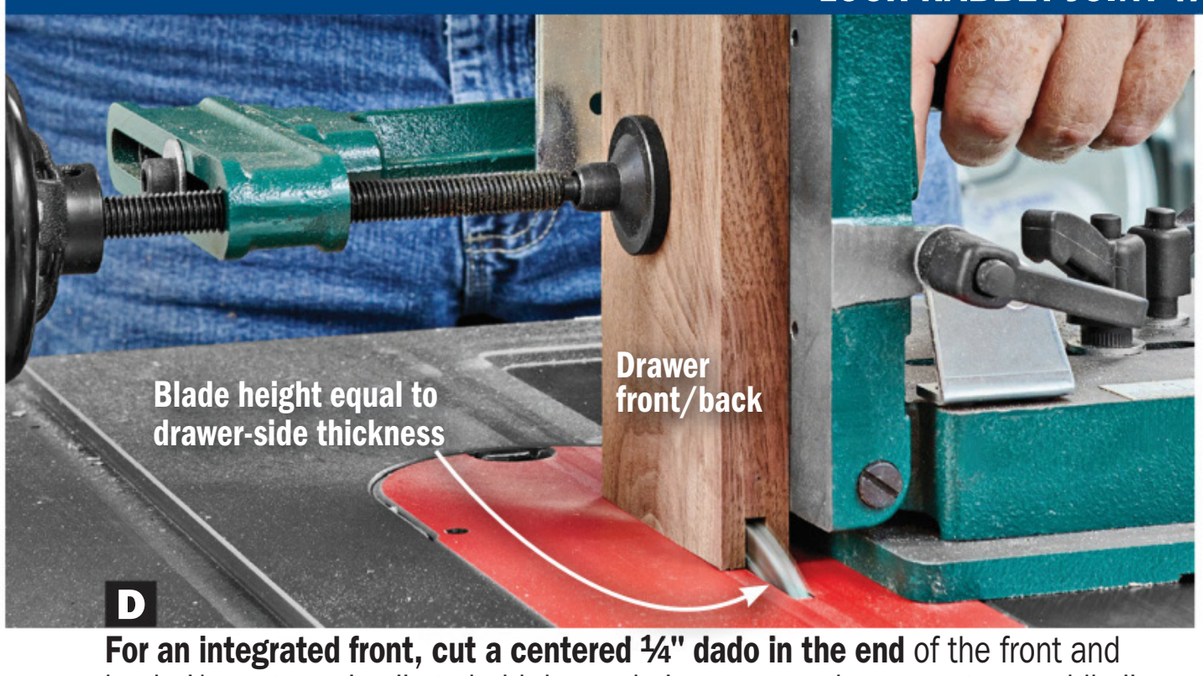
BASIC LOCK-RABBET JOINT

With the dado-set outer blades installed on the tablesaw, position the rip fence so the blade farthest from the fence aligns flush with a drawer side. Blade height equals half the drawer-side thickness.

Holding the drawer side against the rip fence and guided by a miter gauge, cut a dado across each end. Repeat for the other drawer side.

Position an auxiliary rip fence against the same blade setup and cut rabbets on each front and back. Sand the parts and glue together.

LOCK-RABBET JOINT WITH INTEGRATED FRONT/BACK



For an integrated front, cut a centered ¼" dado in the end of the front and back. Use a tenoning jig to hold the workpieces securely, or create a saddle jig for your rip fence that works similarly.

Install an auxiliary rip fence and lower the blade to about ⅜". Cut away a portion of the lower tongue, leaving a tongue that fits the dado in a drawer side. Repeat for the back. Sand all parts and assemble.

4. Box joints

▶Watch a video demonstrating how to cut box joints on a tablesaw. woodmagazine.com/boxjointvid

Centuries of use have proven the strength and durability of this joint, which can be cut on a tablesaw or router table. The smaller the fingers, the more glue surface, resulting in a stronger joint. Regardless of what size fingers you make, the technique works the same. To ensure perfect joints, we cut our drawer parts about ⅛" wider than needed, then rip the drawer to final width after assembly.

▶Make your own box-joint jig for the router table. woodmagazine.com/boxjointjig

We made this drawer using the Rockler box-joint jig **[Sources]** shown *below*. Install the desired bit in the router table (we used a ¼" bit for ¼" fingers), and install the equivalent indexing key in the jig's movable sled [**Photo A**]. Register the jig in the miter slot with the bit protruding through the cutout in the base. Set the bit height about 1/32" higher than the thickness of the drawer sides. When cutting the fingers, be sure to cut opposing sides identically—it makes no difference whether you start with the front/back or the sides [**Photos B, C**]. Next, cut the remaining parts [**Photos D, E**]. After assembling the drawer, clean up the joints [**Photos F, G**].

Advantages

▲ Lots of long-grain-to-long-grain glue surface for excellent strength

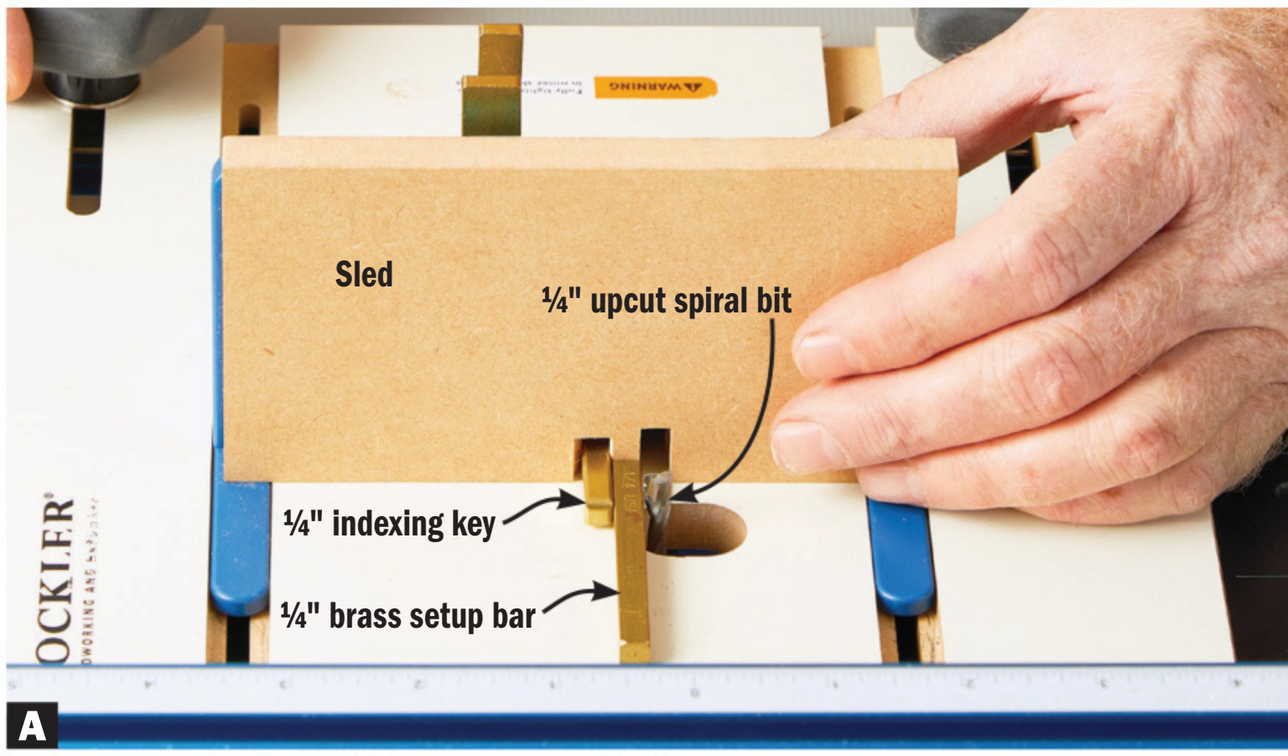
▲ Great visual appeal, especially if using contrasting wood species

▲ Easily repeatable for multiple drawers once set up

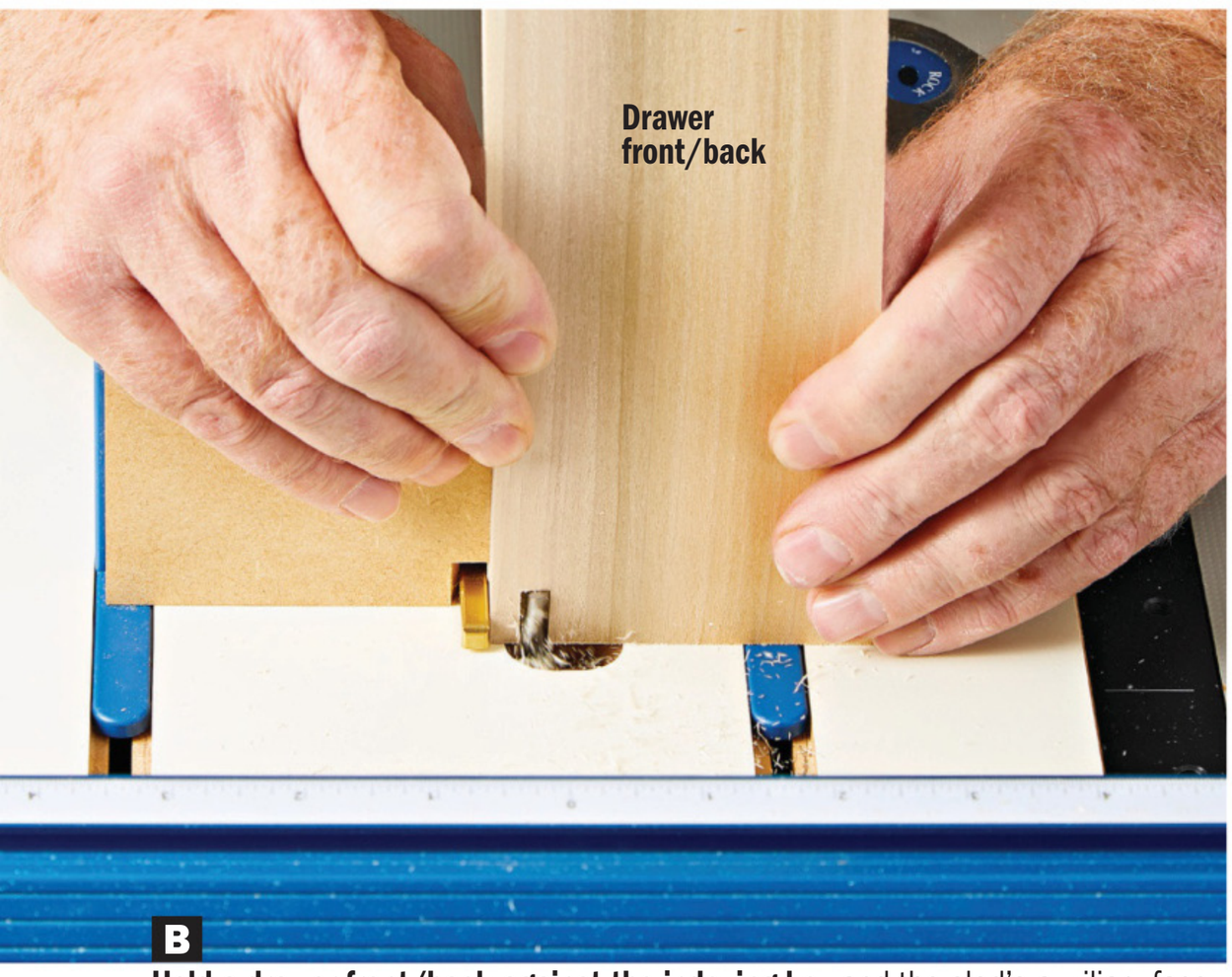
Disadvantages

▼ Drawer-side width and finger size can dictate the size and spacing of the fingers.

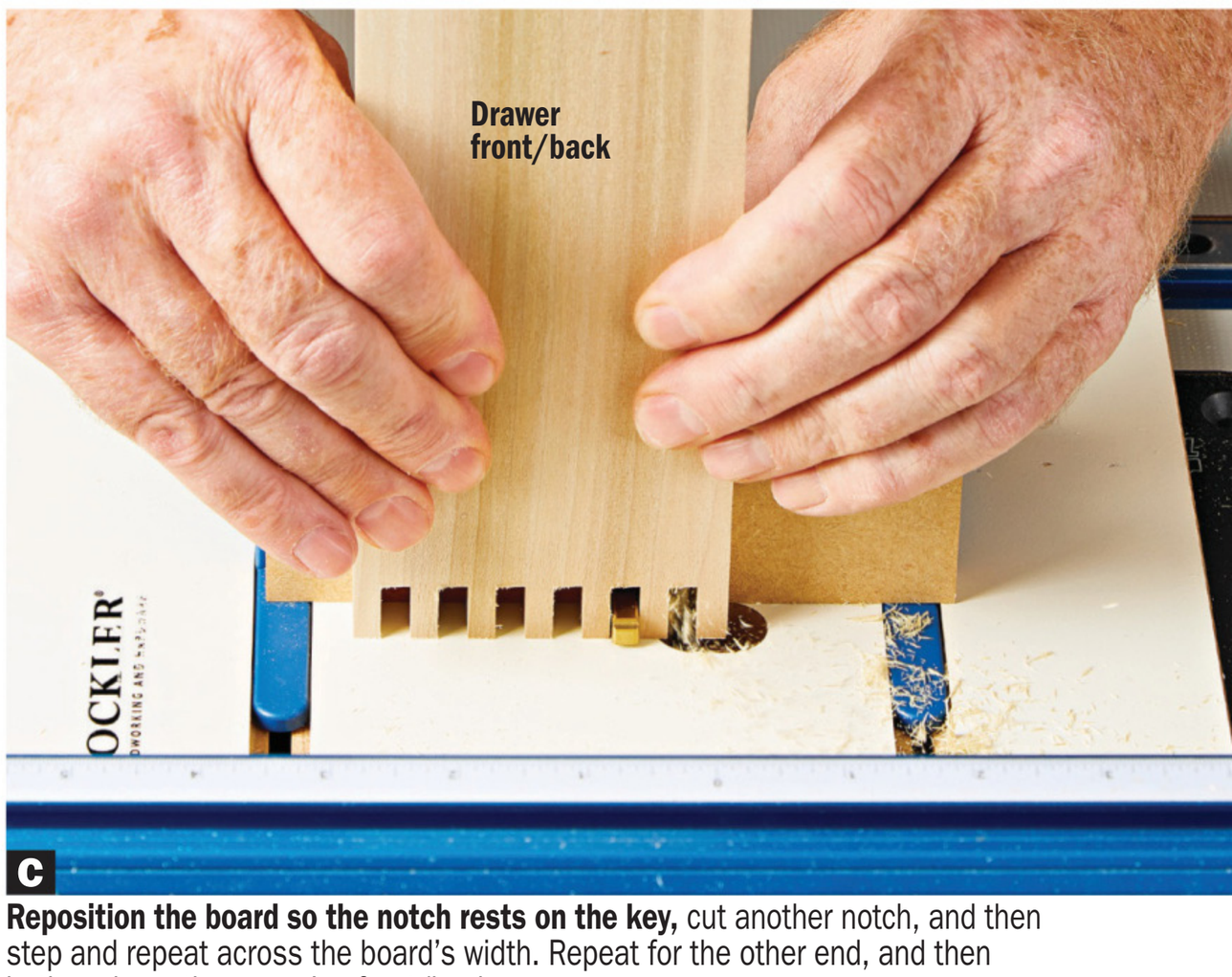
▼ Potentially lengthy glue-up, especially with ¼" or narrower fingers and wide drawer sides



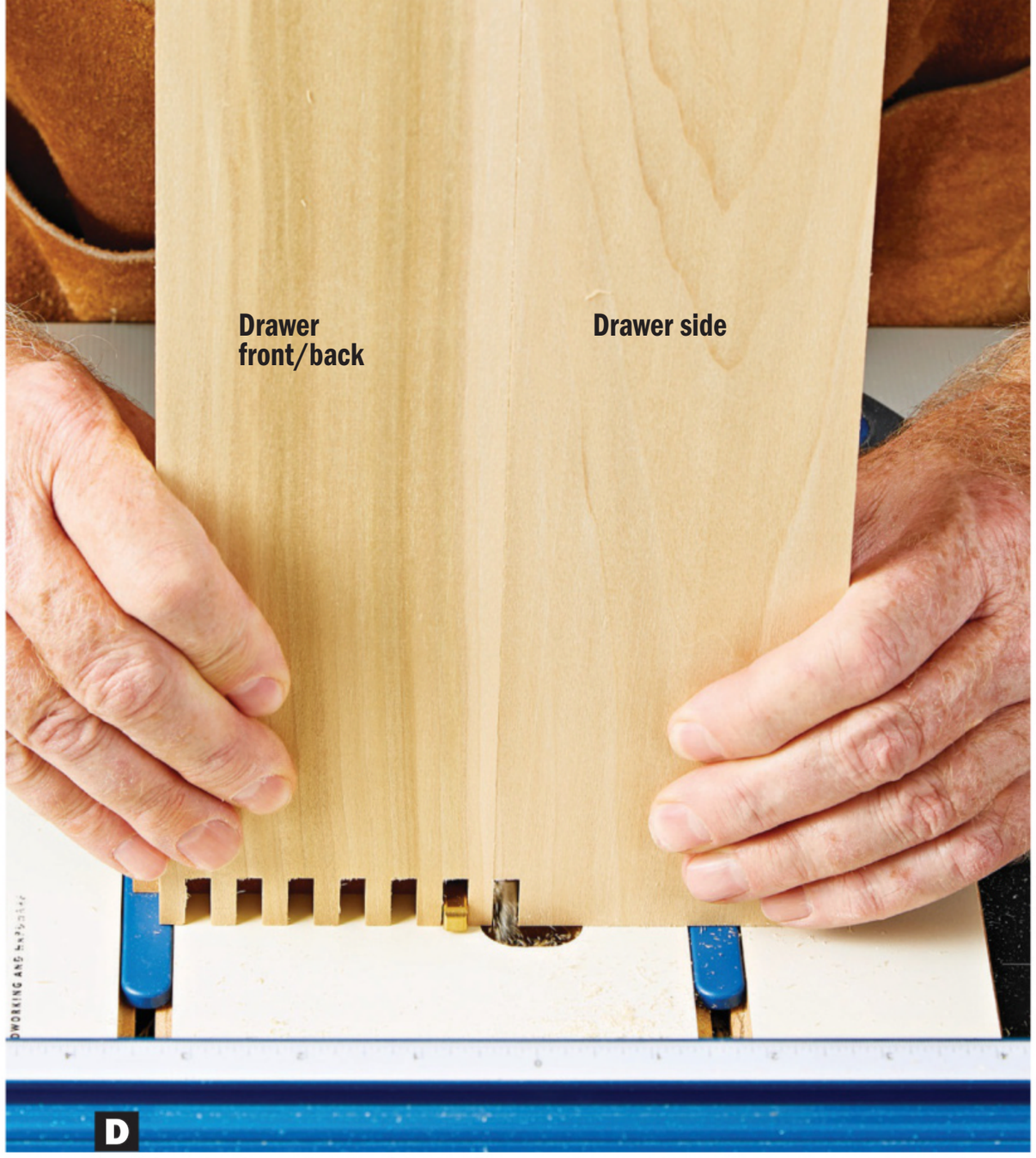
Use a spacer the same width as the router-bit diameter to set the gap between the router bit and indexing key. Lock the jig base in place.



Hold a drawer front/back against the indexing key and the sled's auxiliary face. Gripping the board tightly, slide the sled forward to make the first cut.



Reposition the board so the notch rests on the key, cut another notch, and then step and repeat across the board's width. Repeat for the other end, and then both ends on the opposing front/back.



D

Position the front/back with the first notch straddling the key, and slide a side against it. Hold both securely, and cut a notch. This offset makes the joint fit together perfectly. Repeat to notch the other end and the other drawer side.

E

Remove the front/back and cut the rest of the notches on each side as you did with the front and back. Sand the inside faces of all parts, and glue together.

F

Trim the proud fingers with a flush-trim bit on the router table. Elevate the drawer box on a spacer board to prevent the proud fingers resting on the tabletop from causing a skewed cut. Repeat for all corners.

G

Trim the box sides to final width, ripping away any partial fingers/sockets.

Sources: Router-table box-joint jig, no. 59032, $70; precision brass setup bars, no. 36918, $25; Rockler, 800-279-4441, rockler.com.
¼" box-slotting router bit, no. 16J8314, $35.50, Lee Valley, 800-871-8158, leevalley.com.

Produced by **Bob Hunter** with **John Olson** and **Kevin Boyle**

Great Finishes for the Great Outdoors

Help your projects stand up to Mother Nature by using the right finish.

Projects destined to spend all or part of their life outside need a finish that protects the wood against two enemies: moisture and ultraviolet (UV) light. That's a tall order, and no finish can stand up to the challenge without periodic maintenance. Choose one of these three options based on the level of protection you require and the amount of effort you're willing to invest.

A

For large projects, a pump-type garden sprayer makes an excellent applicator. Back-brush the finish immediately after spraying for even coverage.

B

After allowing the oil to soak in, use a lint-free rag to wipe off any oil that remains on the surface. Dispose of oily rags safely.

Let it sink in

For ease of application and maintenance, you can't beat a penetrating oil finish. Penetrating oils soak into the surface of the wood, preventing it from absorbing moisture. They typically contain UV inhibitors to block out harmful rays from the sun that destroy lignin, the component in wood that gives cells their rigidity. But for even more protection, choose a pigmented penetrating oil. The ground-up pigments in these finishes block UV light for years as well as inhibit mold and mildew growth. Pigmented penetrating oils protect your project and impart color all in one step.

To apply a penetrating oil, stir the contents thoroughly before use to evenly mix the pigments and solids. Brush, roll, or spray a liberal amount of finish over the entire project [**Photo A**]. Raw wood soaks up quite a bit of oil the first time you apply it, so reapply if the surface looks dry immediately. After allowing the oil to penetrate according to the manufacturer's recommendation, typically between 10 and 30 minutes, wipe off any excess with a clean rag [**Photo B**].

Although it doesn't offer as much protection as other outdoor finishes, renewing a penetrating oil finish couldn't be easier. Simply wash down the surface with a solution containing ¾ cup of bleach per gallon of water and allow it to dry, then reapply a coat of the oil. Penetrating oils vary in quality from manufacturer to manufacturer, but plan on reapplying every 2–5 years.

Capture it in film

Film finishes, such as paints, polyurethanes, and varnishes, sit on top of the wood, forming a barrier to moisture. While paint offers the most UV protection, it doesn't allow the natural beauty of the wood to show through the way a varnish does. Varnishes sold for outdoor use are often labeled as marine or spar varnish. Spar varnishes remain more flexible than ones for interior use. This allows the finish to stretch without cracking as the wood expands and contracts. They also contain UV inhibitors, but when contained in a clear finish, most UV inhibitors only last a few years. For longer-lasting protection, stain the wood first. The stain will continue to block UV light well after the inhibitors in the finish cease to be effective.

Before application, stir the varnish thoroughly to mix any solids that have settled to the bottom of the can and then pour it through a strainer [**Photo C**]. Apply the varnish using either a fine China bristle or badger hair brush. Brush on the varnish in straight, even

C

Use a paint strainer to separate out any foreign matter or undissoved solids from the varnish before applying it.

To tip off the varnish, hold the brush perpendicular and lightly drag the tips of the bristles across the surface.

strokes, keeping a wet edge and tipping off the surface as you go [**Photo D**]. Allow the varnish to dry according to the product directions. Then, remove brush marks and imperfections using 220-grit sandpaper on a hand sanding block. Vacuum and wipe down the surface with a tack cloth before applying the next coat. To build sufficient protection, apply a minimum of three coats.

A varnish finish requires periodic maintenance, usually every 2–3 years. If you notice slight flaking or a chalky appearance on the finish, lightly sand the surface and vacuum up any dust before applying a fresh coat of varnish. If you keep up with the maintenance, a varnish finish will last for years. But let it slide, and the varnish will crack, allowing moisture under the film barrier. Once this happens, the varnish lifts and cracks more. At this point, you must strip the entire project down to bare wood before reapplying.

An impenetrable barrier

Epoxy finishes provide the most protection of all outdoor finishes, creating a thick, plastic-like, water-impermeable barrier on the surface of the wood. This makes them the finish of choice for boat builders. Although epoxy finishes do a great job at blocking moisture, they don't offer any UV protection. In fact, UV light will break down the epoxy, causing it to yellow and eventually crack and fail. For this reason, you must overcoat an epoxy finish with a spar varnish or polyurethane with UV inhibitors. This makes epoxy the most expensive and labor-intensive choice.

Using a mixing cup and stir stick, thoroughly mix the resin and hardener in the recommended ratio.

Epoxy finishes work best on projects with flat surfaces easily accessible from all sides. To allow the epoxy to flow freely over the surface, avoid projects with complex moldings, crevices, or closely spaced slats that are hard to reach or where excess epoxy might collect. Epoxy doesn't bond well to sharp corners, so ease all edges with sandpaper or a round-over bit in the router and then sand smooth all surfaces.

Because you have a narrow window of time to apply the epoxy once you mix the resin and hardener, make sure you have everything ready beforehand. Follow the manufacturer's recommendation when mixing the epoxy, keeping in mind that multiple thin coats give better results than one thick coat. Stir throughly but slowly to avoid introducing bubbles into the mixture [**Photo E**]. For large projects, choose a slower-setting epoxy or work in sections, mixing small batches of epoxy as needed.

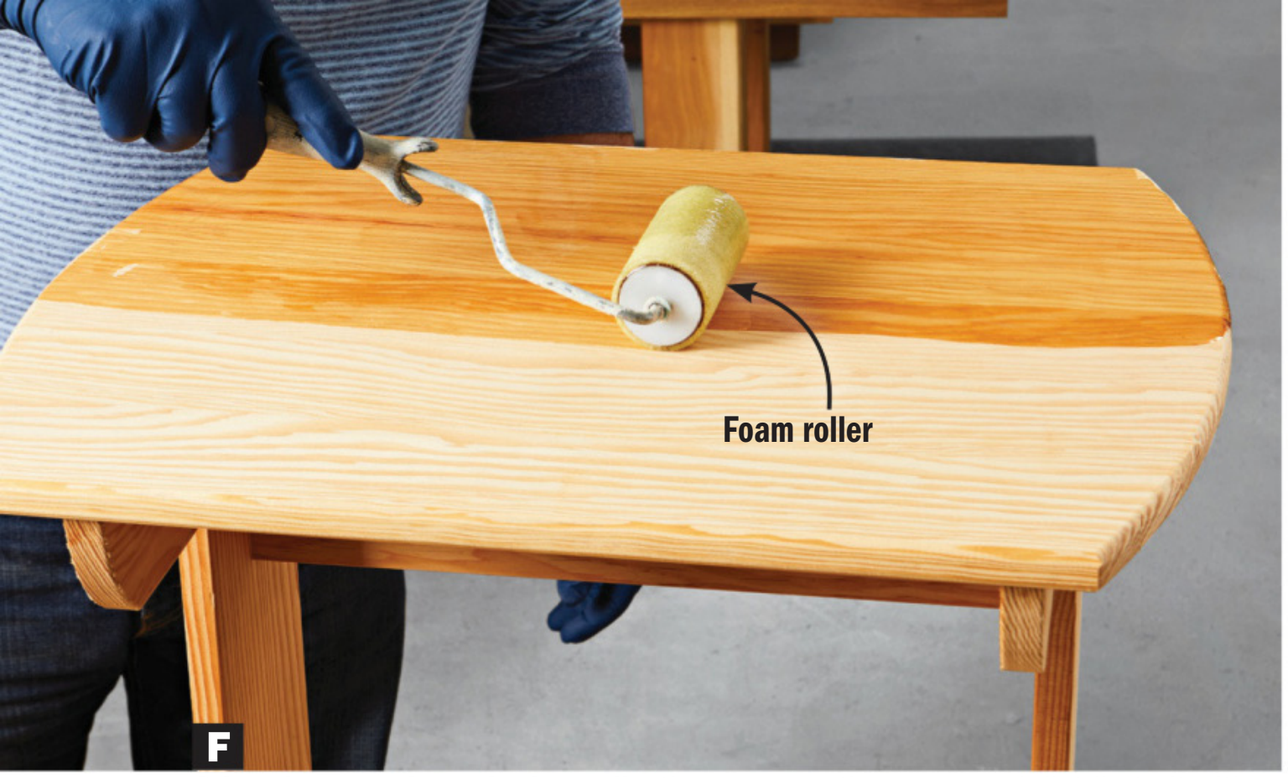
Tip! *Some epoxy manufacturers offer spar varnishes formulated to work with their products, eliminating any concerns about finish compatibility.*

Before heading out

Regardless of the finish you choose, if you plan to do your finishing *al fresco* rather than inside, follow these guidelines for best results. First, check the weather conditions. Most finishes provide recommendations for temperature and humidity levels. Applying a finish when it's too cold (or too humid) can prevent your finish from penetrating or drying properly. Warm, dry days are best.

Avoid finishing in direct sunlight. Even with a cool air temperature, heat from the sun's rays causes the finish to start drying before it has a chance to level out. Choose an overcast day with no rain in the forecast, or work inside a garage (with the door open) or on a covered porch or deck.

While some air circulation is beneficial for the drying process, avoid finishing on breezy days. Airborne dust particles and debris landing on your wet finish creates blemishes. Combat this by setting up defensive walls of cardboard or plastic sheeting around your project to protect it from dust.



Orient large surfaces horizontally, then pour on the epoxy and distribute it with a foam roller.

Lightly drag a foam brush over the wet epoxy to remove any air bubbles trapped just below the surface.

Apply the epoxy with a bristle brush. For large surfaces, use a foam roller as a squeegee to spread the epoxy, rather than rolling it [**Photo F**]. After application, go over the surface lightly with a foam brush [**Photo G**]. With most epoxies, you can apply a second coat once the first dries to the touch but remains soft enough to leave a fingerprint (usually 2–3 hours). Sanding between coats is not necessary. If you miss that window of opportunity, let the first coat dry completely before applying the next coat. Apply three to four coats total.

After giving the final coat at least 48 hours to cure, level the surface by lightly wet-sanding with a sanding block and water or mineral spirits. Start with 150-grit sandpaper and work your way up to 220 grit for a satin finish or 320 grit for a gloss finish.

Before topcoating with varnish, thoroughly wipe down the surface with clean water and dry with rags or paper towels. Water beading up on the surface of the epoxy indicates contaminants that will interfere with the varnish. In this case, wipe down the surface with mineral spirits and dry with a rag before applying at least two coats of varnish.

In order to maintain the integrity of the epoxy coating, the varnish topcoat requires maintenance every few years, when it begins to look cloudy or dull. Lightly sand the surface, wash it down, and apply a fresh coat of varnish. Don't wait until the topcoat cracks or peels or you'll need to remove the epoxy finish entirely and start over. Diligent maintenance of the varnish topcoat will help the epoxy last for years.

Produced by **Vince Ancona**

Get your feet wet to keep them dry

End-grain legs or feet resting on the ground soak up moisture like sponges. Give your feet some extra protection by setting them in small cups of penetrating oil while you finish the rest of the project. The penetrating oil wicks into the end grain, creating a barrier to ground moisture.

Another option is to coat with epoxy the bottoms of feet or legs. Before applying your chosen finish, flip the project upside down and create a dam around the leg or foot with masking tape. Pour epoxy onto the masked-off area [**Photo H**]. After the epoxy cures, remove the tape and sand smooth to blend the transition.

Pour enough epoxy into the masked off area to create a ⅛"-thick layer on the bottom of the foot.

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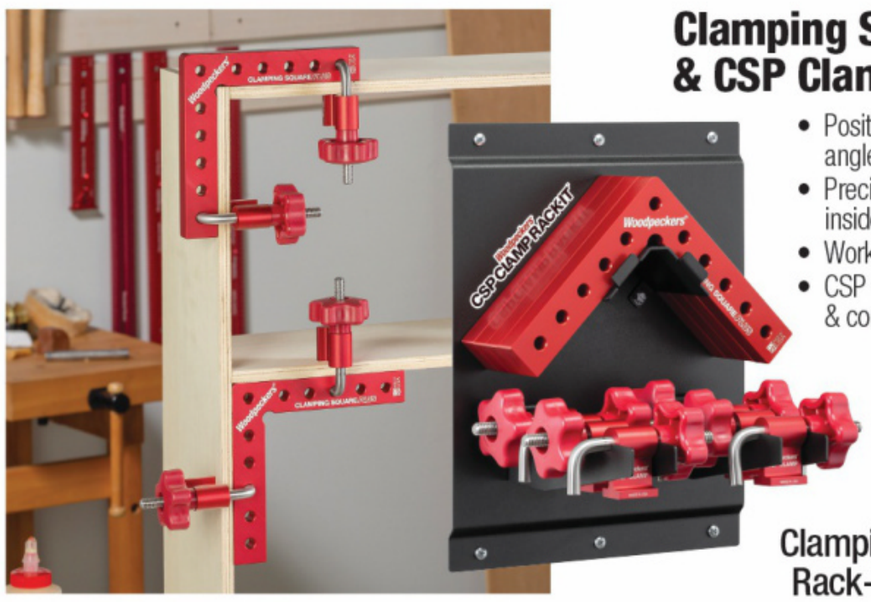

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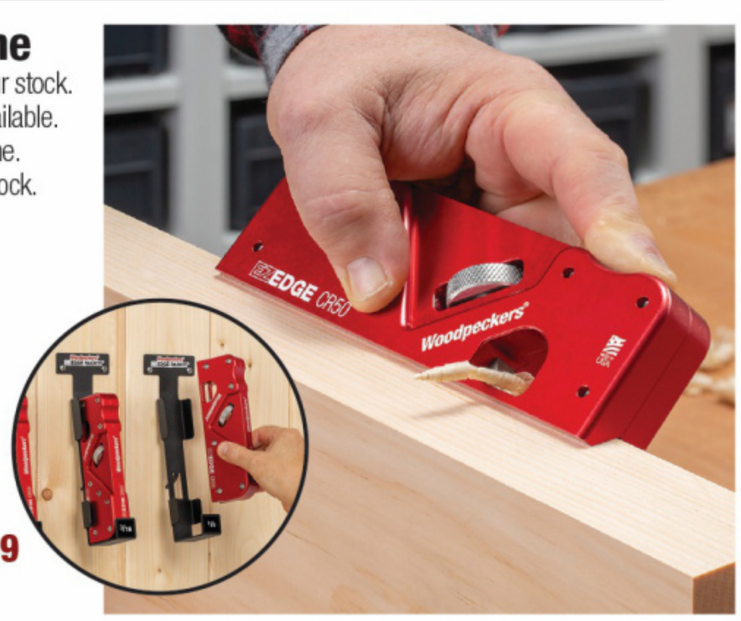

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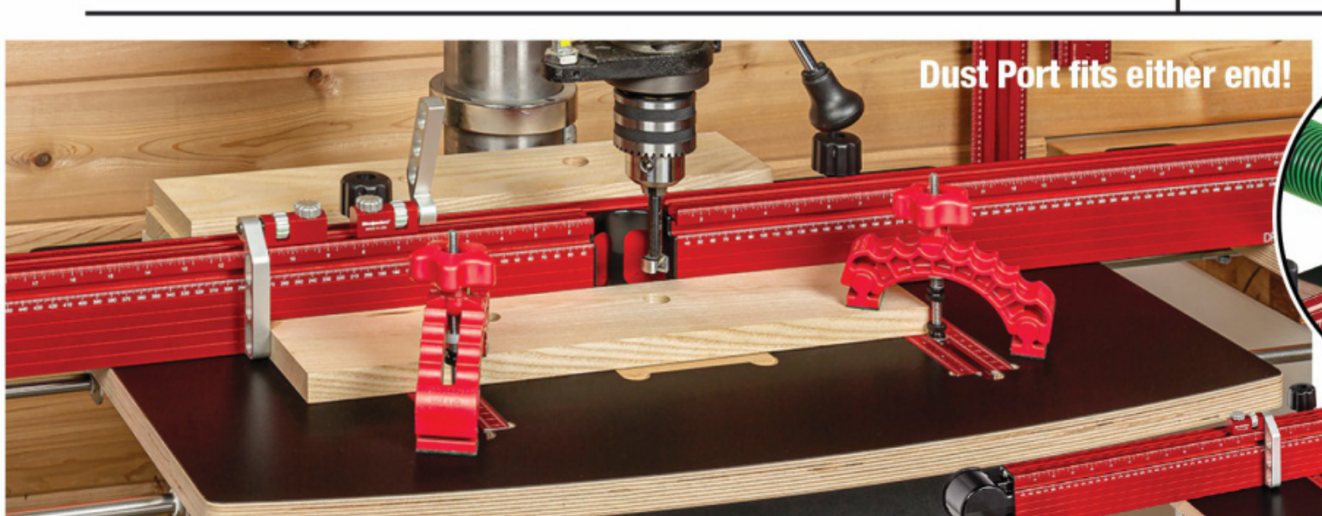

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Dream-time Hammock

There's nothing better than planning your next woodworking project while relaxing in the one you just completed.

A hammock made of wood? You bet! Besides the classic look, getting in and out is a snap, and the open design allows the breeze to keep you cool. Plus, you'll learn the skills for creating multiple identical parts. A couple of simple jigs make the process of shaping the parts foolproof. The result: a comfortable way to while away the summer.

Holey holes!

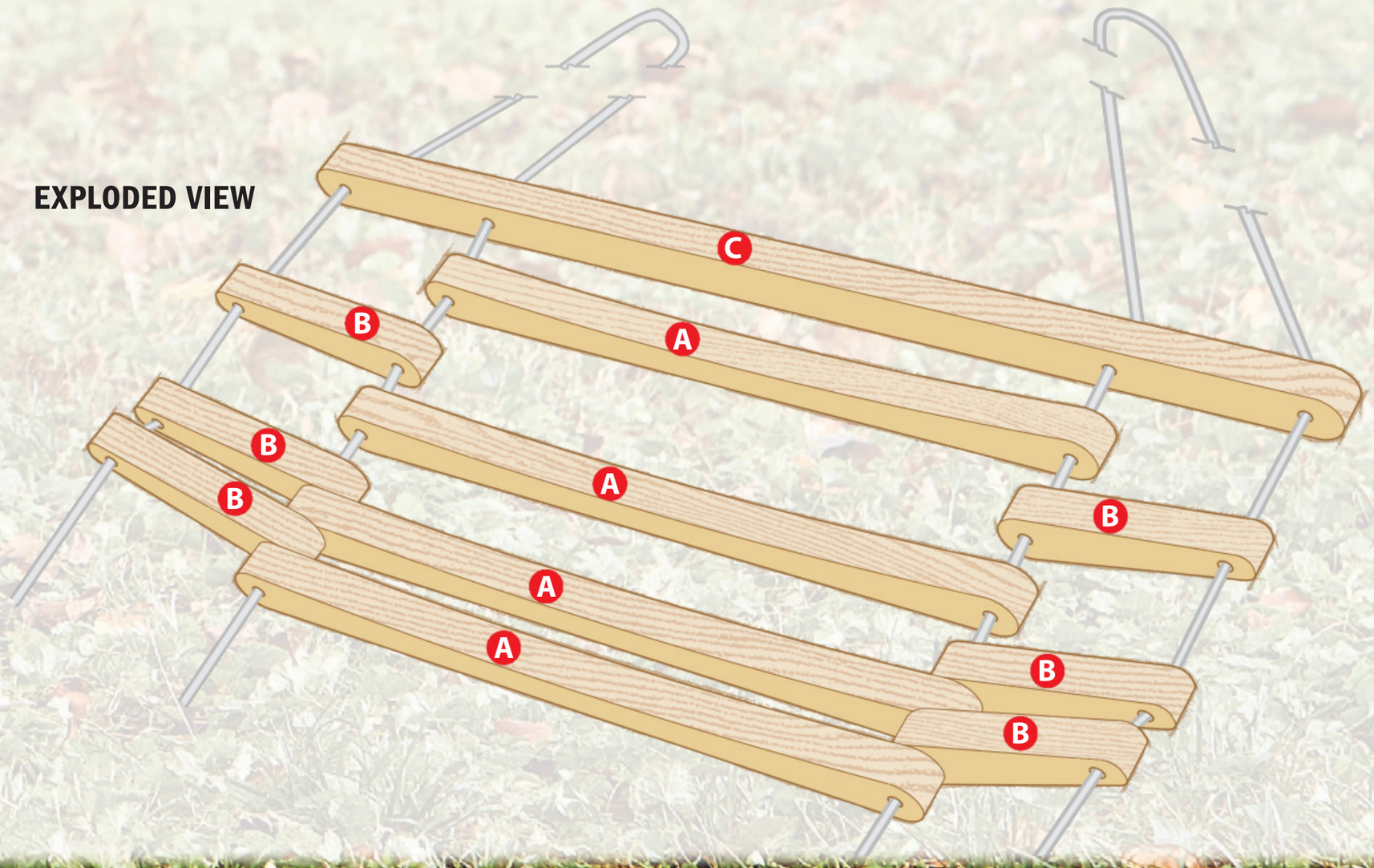
1 Rip and crosscut the centers (A), wings (B), and caps (C) to size from cedar [**Materials List**] but don't cut them to shape yet.

DIMENSIONS:
86⅝" W × 32" D × 1½" H

Approximate materials cost:
$186
Lumber, rope, and hammock hanging kit

232
holes bring rest and relaxation

EXPLODED VIEW



A

Drill a pair of holes in the centers (A), centered on the width and ¾" from each end. A fence and stopblock ensure identical locations in each part.

B

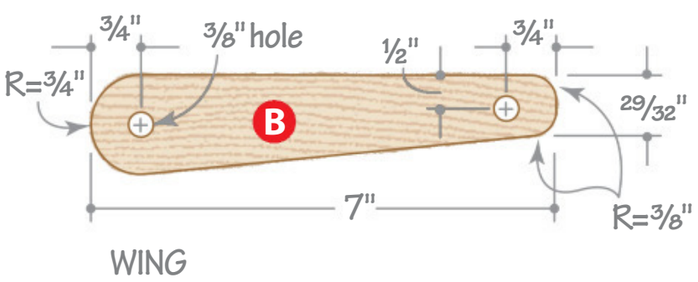
Without changing the drill-press setup, drill one hole in each wing (B).

2 Drill holes in both ends of the centers (A) and one end of the wings (B) [**Drawing 1, Photos A, B**].

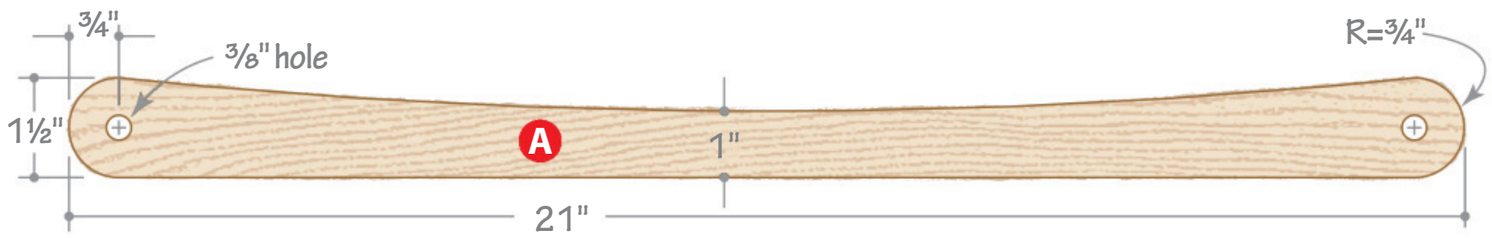
3 Reposition the stopblock and drill the outer holes in the caps (C) [**Drawing 1**]. Adjust the stopblock again and drill the inner holes.

4 Drill an offset hole in each of the wings (B) [**Drawing 1, Photo C**]. These holes will "center" later when the wings are tapered.

1 PARTS VIEW



Reposition the drill-press fence ½" from the center of the bit and drill the offset holes in the wings.



Note: All parts are 1⅛" wide.

Install a ¾" round-over bit in a table-mounted router with the bearing flush with the fence faces. An auxiliary fence attached to the miter gauge minimizes tear-out as you rout.

Flip the workpiece over to complete the radius. Repeat the process at the opposite end of all the centers (A), but not the wings (B).

Use a ⅜" round-over bit on the tapered end of the wings (B). To minimize tear-out, trim off the end of the auxiliary miter-gauge fence and remount it to support the cut.

A round-over, round-over we go

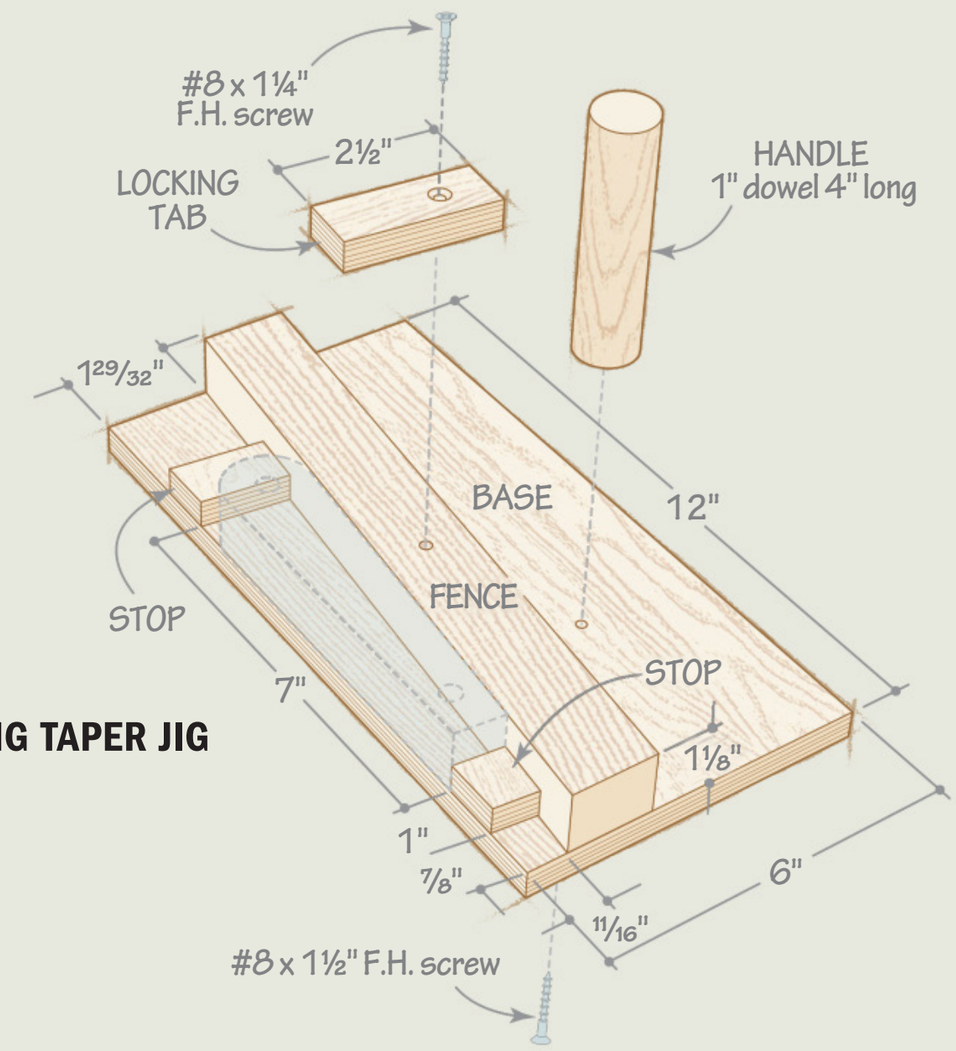
1 Radius both ends of the centers (A) and caps (C), and the end of each wing (B) that has the centered hole [**Drawing 1, Photos D, E**].

2 Using a taper jig [**Quick and easy tapers**], trim one edge of the wings (B).

3 Complete the wings (B) by radiusing the narrow ends [**Drawing 1, Photos G, H**].

Quick and easy tapers

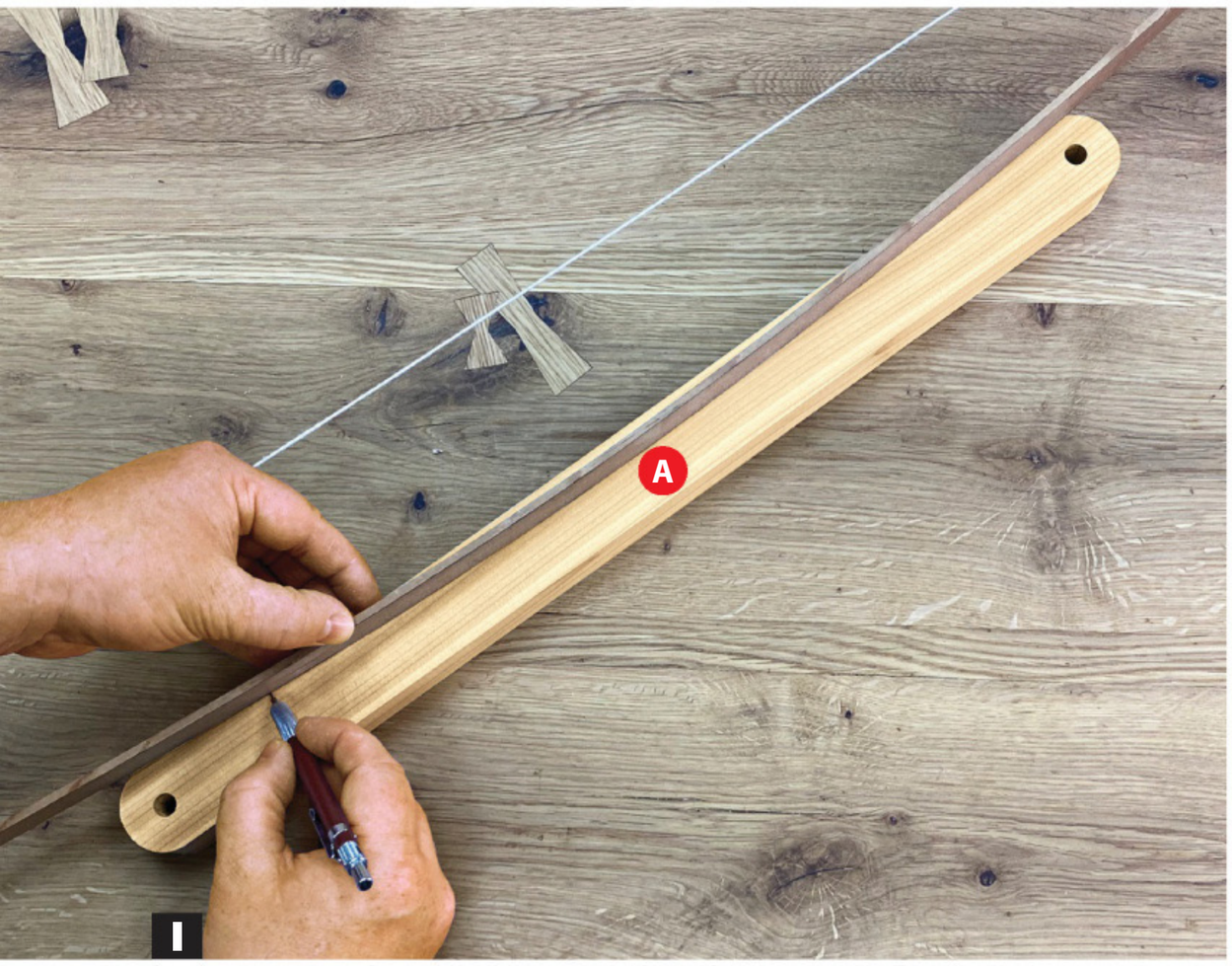
A simple taper jig [**Drawing 2**] makes quick work of completing the final shape of the wings (B). Knock this together from scraps and start cutting in minutes.



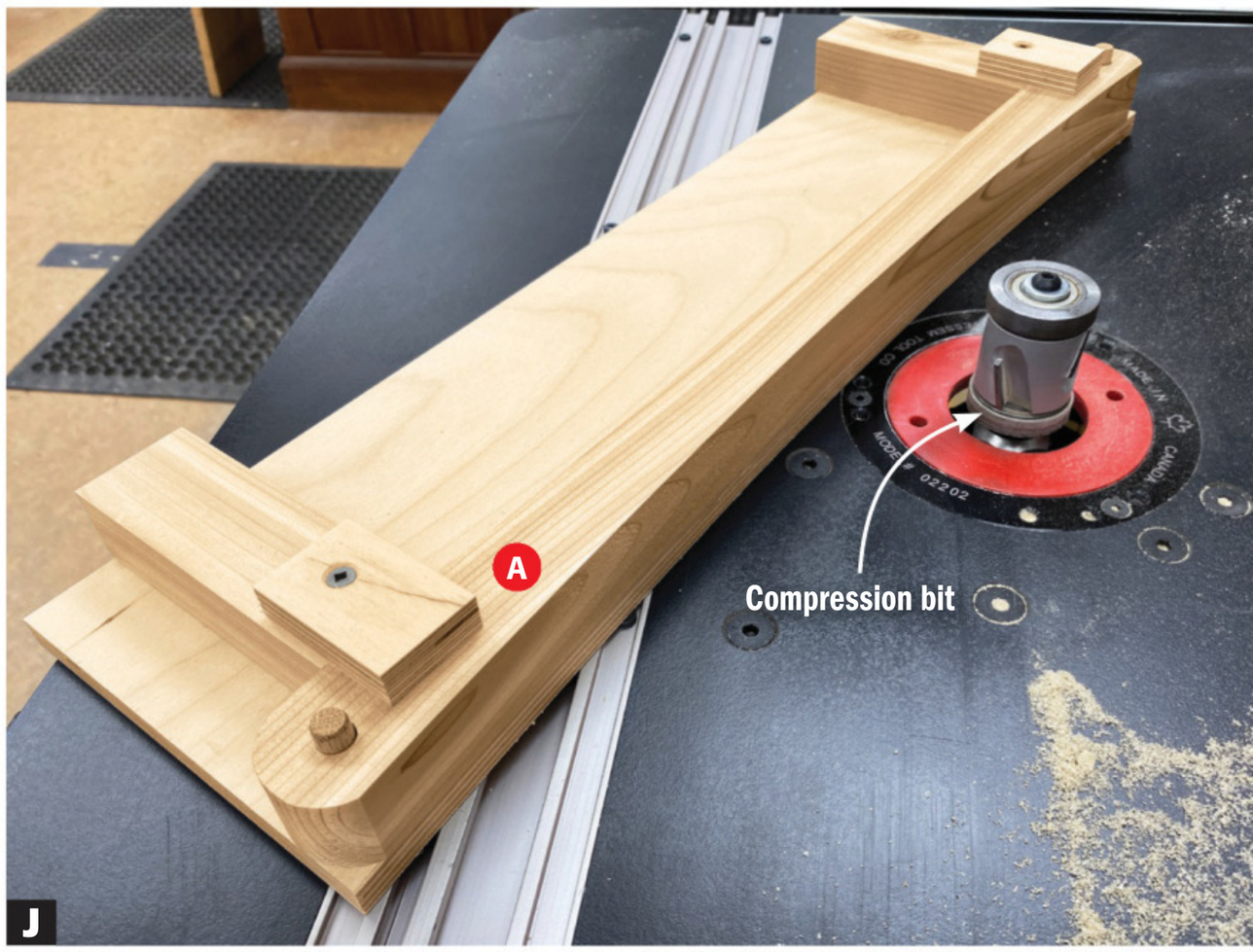
2 WING TAPER JIG

The locking tab pivots to quickly swap out each wing while still providing a secure hold during the cut. Adjust the rip fence to position the left edge of the base flush with the tablesaw blade. Secure a wing (B) in the jig and make a single pass to cut the taper [**Photo F**].

Position each wing (B) on the jig so the offset hole sits close to the fence.



Lay out a smooth curve along one edge of a center (A). Bandsaw the curve and sand the edge smooth to the layout line.



Slip the center (A) over the dowels of the scooping jig and secure it in place with the locking tabs. Using a compression bit, rout with the grain to smooth half the curve, then flip the workpiece in the jig and rout the other half.

Scooping for comfort

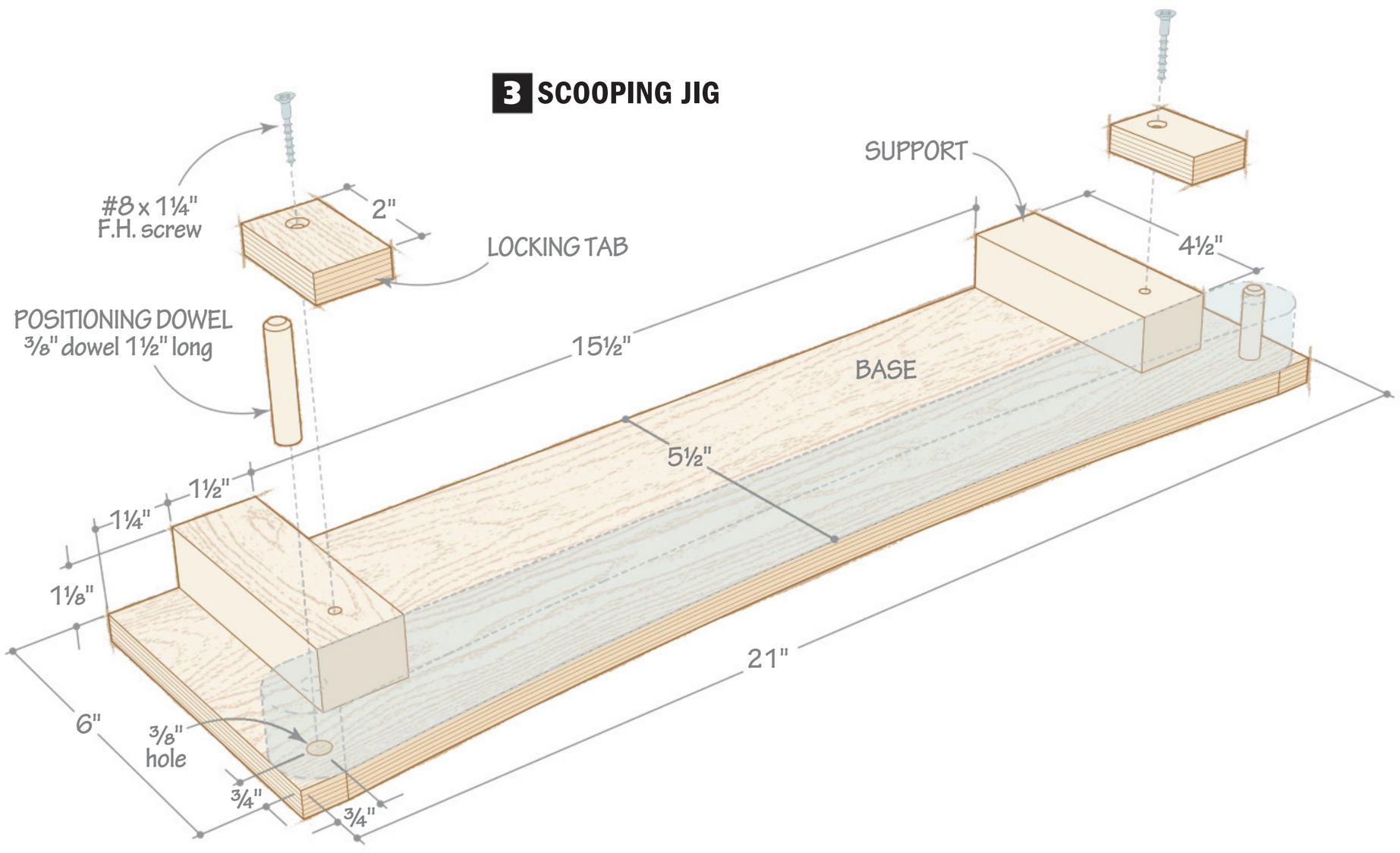
To shape the arc on the top edge of the centers (A) use a scooping jig [**Drawing 3**].

▶Make and use a fairing stick to create smooth curves. woodmagazine.com/fairing

1 To shape the edge of the ½" Baltic-birch base, start by using a fairing stick to lay out the curve on a center (A) [**Drawing 1, Photo I**]. Cut the curve at the bandsaw and sand it smooth. Transfer the curve to one edge of the jig base along with the hole locations. Bandsaw and sand the curve smooth, drill the holes in the base, and glue in a pair of dowels. Add the supports and locking tabs.

2 Remove the bulk of the waste on each center (A) at the bandsaw. Use the jig to rout the remaining waste [**Photo J**]. A segmented compression bit [**Sources**] helps to eliminate chip-out along the top and bottom edges of the centers.

3 SCOOPING JIG



Tying up loose ends

1 Finish-sand all the parts, easing sharp edges by hand. (We sanded to 150 grit.)

2 Apply an outdoor penetrating oil finish to all of the parts. Allow the finish to cure fully before assembly and use.

3 Lay out all the parts with the scoops of the centers (A) facing up, the tapered end of the wings (B) facing outward, and a cap at the top and bottom [**Exploded View**]. Run a single 96' length of rope through the holes to connect all the parts. Leave about 8' at each end before feeding the rope through the next set of holes [**Exploded View**].

4 Head to your favorite shady spot, hang up the hammock using a hanging kit [**Sources, Photos K–M**], then kick back, relax, and start dreaming about your next project.

Tip! *Melt the ends of the rope with a lighter to make it easier to feed the rope through the holes.*

▶Learn how to tie secure hammock knots. woodmagazine.com/hammockknots

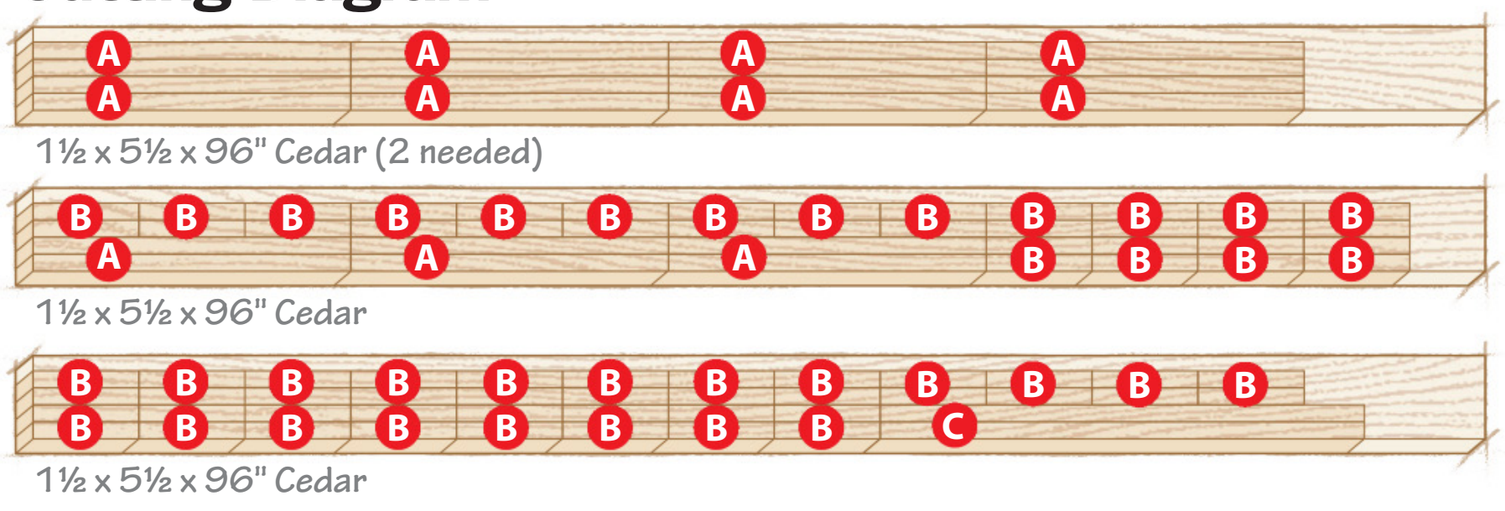
Produced by **Bryan Nelson** with **John Olson** and **Brian Bergstrom**
Project design: **John Olson**
Illustrations: **Roxanne LeMoine, Lorna Johnson**

After threading the rope through the holes, tie it off with a square knot.

Secure the looped ends of the rope using the carabiners in the hanging kit.

To adjust the hanging height of the hammock, reposition the hammock hanging straps around the trees or form a double figure-8 hitch knot to create a loop.

Cutting Diagram



Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	centers	1½"	1⅛"	21"	C	38
B	wings	1½"	1⅛"	7"	C	74
C	caps	1½"	1⅛"	32"	C	2

Materials key: C–cedar.
Supplies: #8×1¼" flathead screws, ⅜×1½" dowels (2), 1×4" dowel.
Bits: ¾" round-over router bit; ⅜" round-over router bit, 1¼" flush-trim router bit (compression style) (Sources).
Sources: ⅜"×100' KingCord nylon anchor line, no. 2351129, $35, Menards, menards.com; 1¼" Mega flush-trim router bit, no. 06-694, $89.90, Infinity Cutting Tools, 877-872-2487, infinitytools.com; hammock hanging kit, $15, woodmagazine.com/hammockhanger.

SHOP TEST

Tablesaw Jigs and Accessories

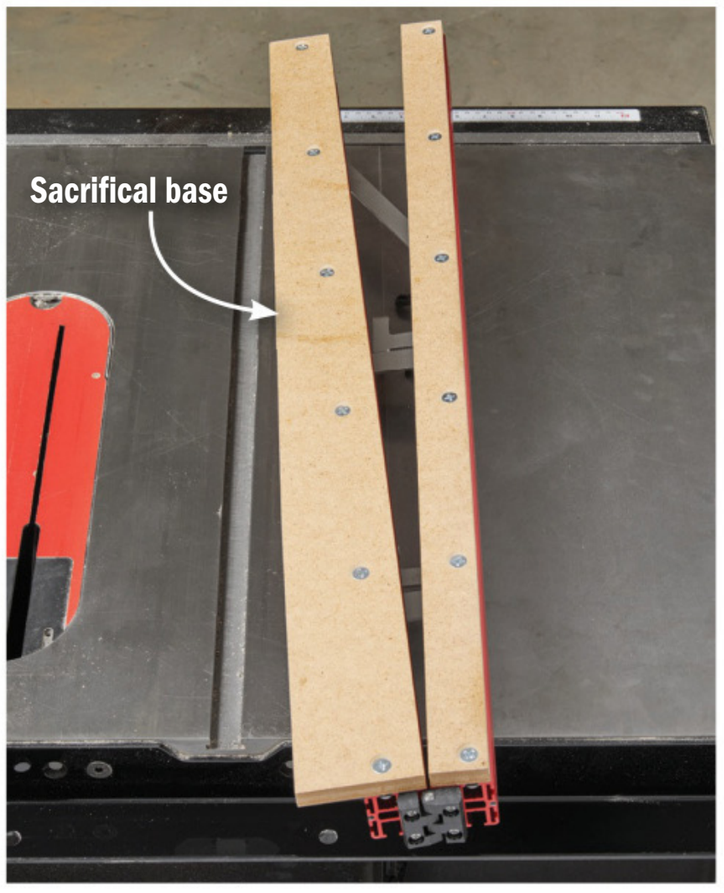
Make your work at the tablesaw easier, safer, and more accurate with these aftermarket upgrades.

Tapering Jigs

These jigs, when used on a tablesaw, help cut precise low-angle tapers (up to about 15°) and come in two styles: fixed-sled versions guided by your saw's miter slot, and hinged models that register against your saw's rip fence. Fixed-sled jigs come with an oversize base that you trim to fit your tablesaw, providing a zero-clearance edge that prevents workpiece tear-out and shows precisely where the blade will cut the taper. Hold-downs secure the workpiece at the desired angle and against a movable fence, making it easy to cut multiples at the same angle.

▶You also can use these jigs to cut a straight line on a workpiece lacking one.

With a hinged jig, the left arm pivots to the desired angle and the workpiece rests against it. With most hinged jigs, the workpiece rests on the tablesaw top and against the jig, but some include a base for zero-clearance support.



The sacrificial MDF base under the Woodpeckers pivoting arm gets recut with each different angle, removing some zero-clearance support in the process. You can buy replacement bases or make your own from ½" MDF.

Rockler Taper/Straightline Jig, no. 21597, $100

Size: 7¾×31⅝"

Overall grade: A

This accurate jig is so intuitive, we found ourselves cutting perfect tapers before even reading the instructions. Simply lay out the taper on your workpiece, align the mark with the edge of the jig and against the end stop, clamp the workpiece with the rubber-tipped hold-downs, and cut the taper. It's just that easy. Although Rockler provides indexing marks in 1° increments, we found it easier to align the workpiece taper to the jig edge. To taper a wide workpiece, simply remove the miter bar and run the jig against the rip fence.

800-279-4441, rockler.com

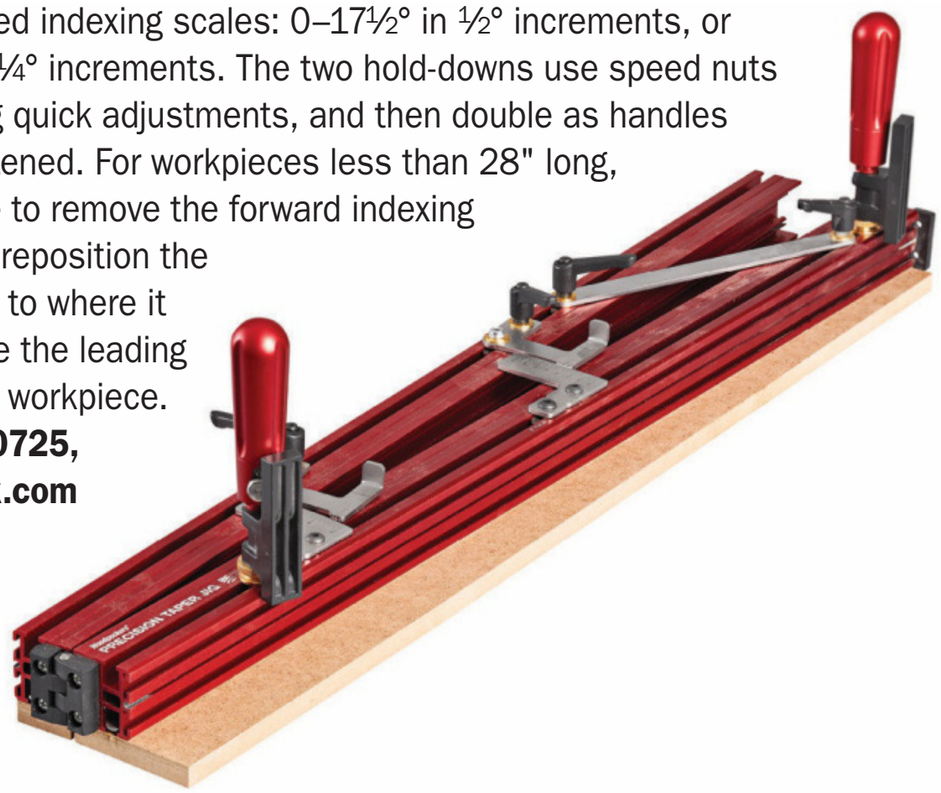
Woodpeckers 32" Precision Taper Jig, no. PTJ-32, $280

Size: 4¾×32½" (closed)

Overall grade: A

There's no questioning the high quality of this jig, made of anodized aluminum and stainless steel. Set the taper angle with two spot-on laser-etched indexing scales: 0–17½° in ½° increments, or 0–7½° in ¼° increments. The two hold-downs use speed nuts for making quick adjustments, and then double as handles when tightened. For workpieces less than 28" long, you'll have to remove the forward indexing scale and reposition the hold-down to where it can secure the leading end of the workpiece.

800-752-0725, woodpeck.com



Rockler Small-Parts Taper Jig, no. 57550, $60

Size: 7¼×11½"

Overall grade: A–

Functioning similarly to the Rockler 21597, this model works well for tapering small parts, such as box feet or handles. Three rows of miter-bar mounting holes allow it to fit a greater range of saws. The hold-downs work okay on stock up to 1⅜" thick, but require longer T-bolts to hold thicker stock.

800-279-4441, rockler.com

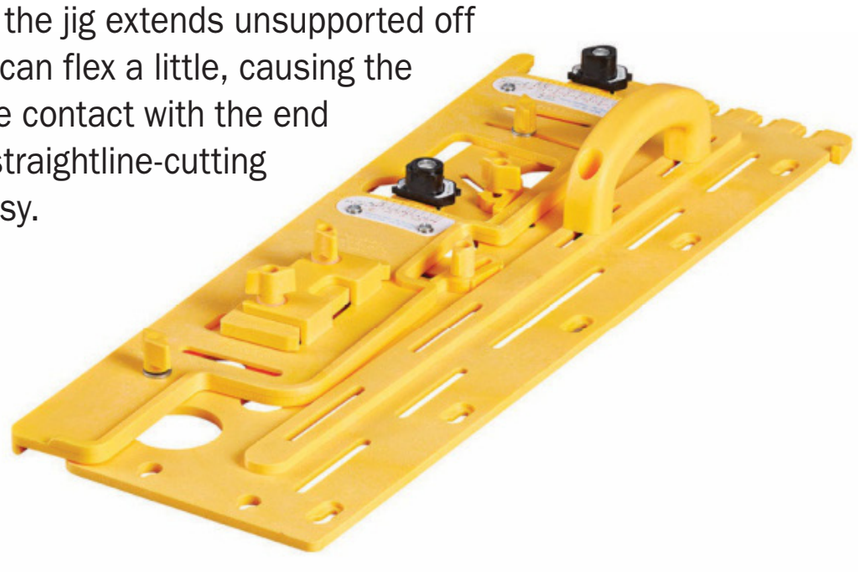
MicroJig MicroDial Tapering Jig, no. TJ-5000, $130

Size: 8½×25" (closed)

Overall grade: B–

If you know the taper angle, you can precisely set this jig to that angle (up to 10°) in ⅛° increments. Or you can set the angle based on the amount of taper per foot (rise/run), which requires some math. We found it easiest, though, to simply align the jig to a taper laid out on a template or existing project part, then lock the fence in place. Because this jig has no hold-downs, one handle, and a short end stop, use an extra pushblock to safely hold the workpiece in place through the cut. When about half the jig extends unsupported off the saw's top, it can flex a little, causing the workpiece to lose contact with the end stop. We found straightline-cutting with this jig clumsy.

855-747-7233, microjig.com



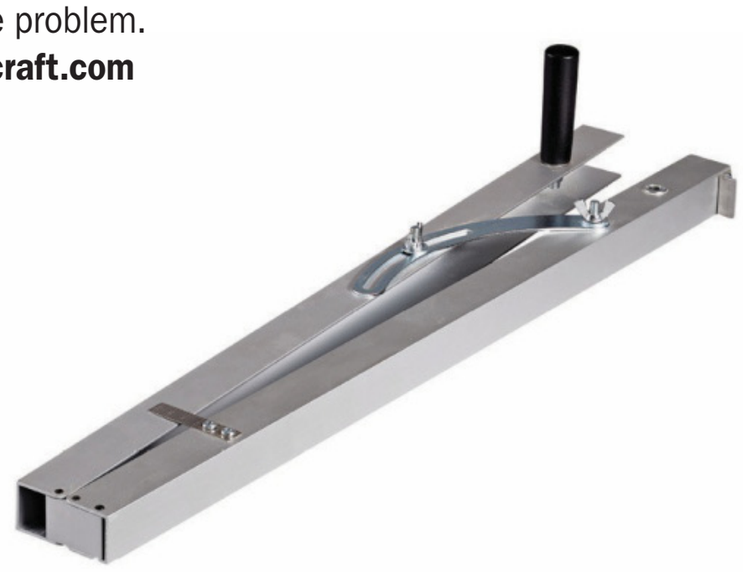
WoodRiver Taper Jig, no. 03R22, $32

Size: 3¼×24¼" (closed)

Overall grade: C–

This basic jig works well on wide workpieces, but the lack of hold-downs makes cutting tapers on narrow workpieces (coffee-table legs, for example), not impossible, but dicey. This model's scales set 0–15° angles and 0–3" per foot rise/run, but they sit so close to the hinge that a slight inaccuracy magnifies into greater error at the tail end. In our tests, tightening the brace wing nuts caused the jig arms to creep out of adjustment; replacing the supplied lock washers with flat washers eliminated the problem.

800-225-1153, woodcraft.com



Tenoning Jigs

Cutting tenon cheeks horizontally with a stacked dado set can't match the smooth cuts made when using a tenoning jig to hold the workpiece vertically (*above*). A tenoning jig registers in a miter slot, so it can't wiggle side-to-side after you tweak the built-in bar adjusters to snug the fit. The five cast-iron jigs we tested look and act similarly and have the heft to help glide through cuts without vibration.

We like the easily accessible miter bars on the Rockler and WoodRiver jigs to reposition them for wider workpieces or farther-spaced miter slots. Other models require removing the sliding base to do so.

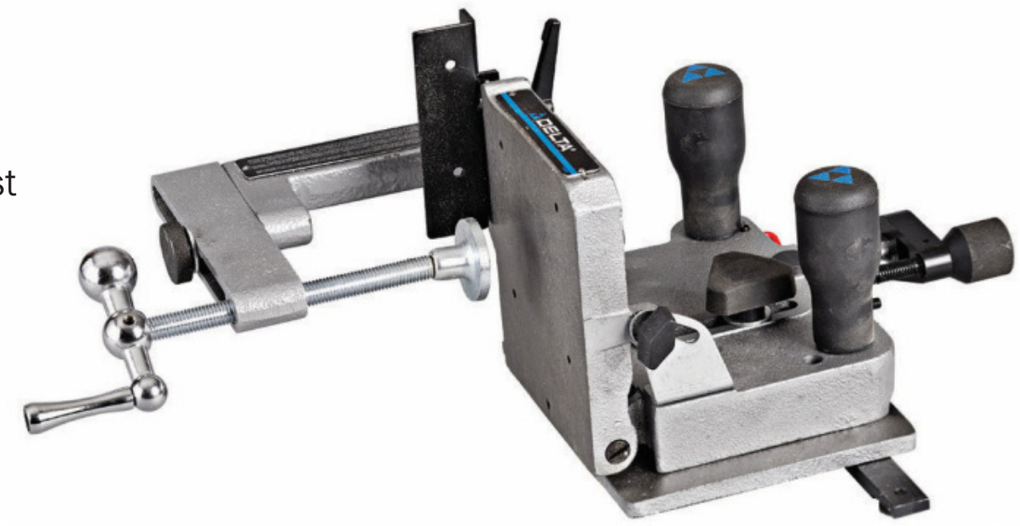
For angled tenons, none of the tested jigs has an angle scale on the rear stop, so you must set an angle using a sliding T-bevel or similar device.

Delta, no. 34-184, $150

Overall grade: A

Subtle differences among such similar jigs add up to make this our favorite model. A push-button release helps this base adjust side-to-side easiest, and the most responsive microadjuster makes it a cinch to dial in a perfect-fitting tenon. It slides smoothly in the miter slot, and the large-diameter handles feel the most natural. The workpiece rear stop tilts only to 45°—all other test models extend 48–50°—but we rarely need more than 45°.

800-223-7278, deltamachinery.com



2022 WOOD® Magazine TOP TOOL Tenoning Jig

Rockler, no. 29840, $180

Overall grade: A–

Unlike the two vertical handles typical of a tenong jig, one of this jig's handles mounts horizontally, so you grip it differently (though we found no advantage). We like that the miter bar relocates without disassembling the jig (see *lower left photo, previous page*).

800-279-4441, rockler.com

WoodRiver, no. 163700, $145

Overall grade: A–

Nearly identical to the Rockler jig, but we found the base plate more difficult to slide side-to-side when making coarse adjustments.

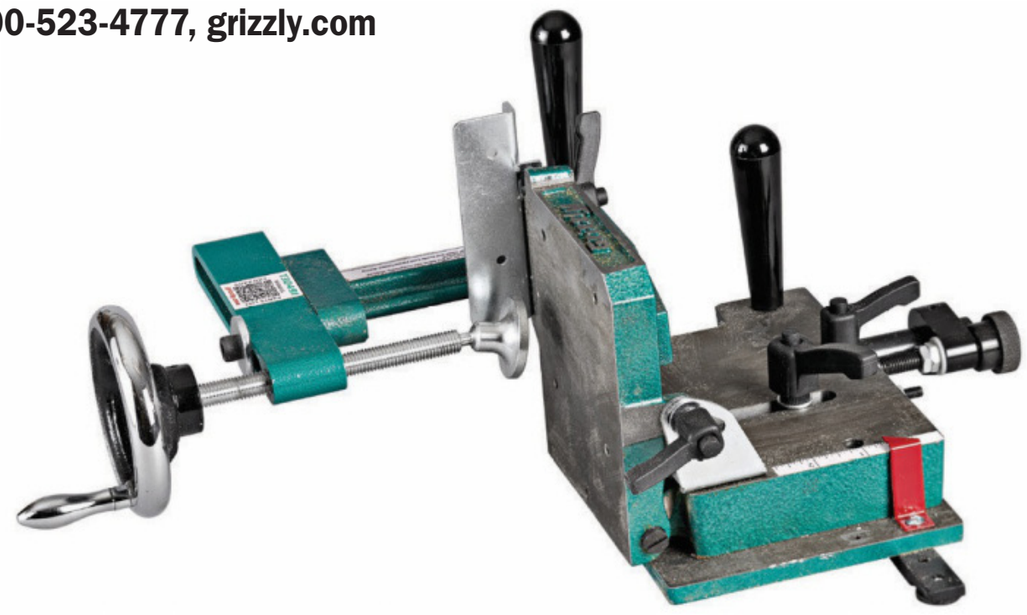
800-225-1153, woodcraft.com

Grizzly, no. T30491, $160

Overall grade: B+

This bare-bones model won't dazzle you, but it does everything a tenoning jig should do safely and accurately.

800-523-4777, grizzly.com

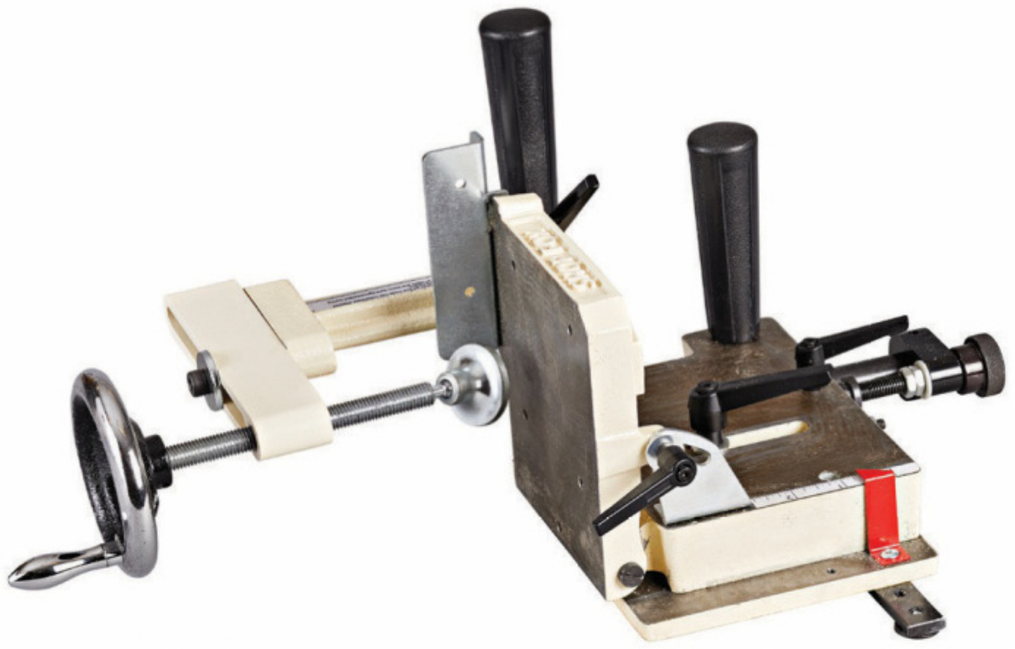


Shop Fox, no. D4902, $224

Overall grade: B+

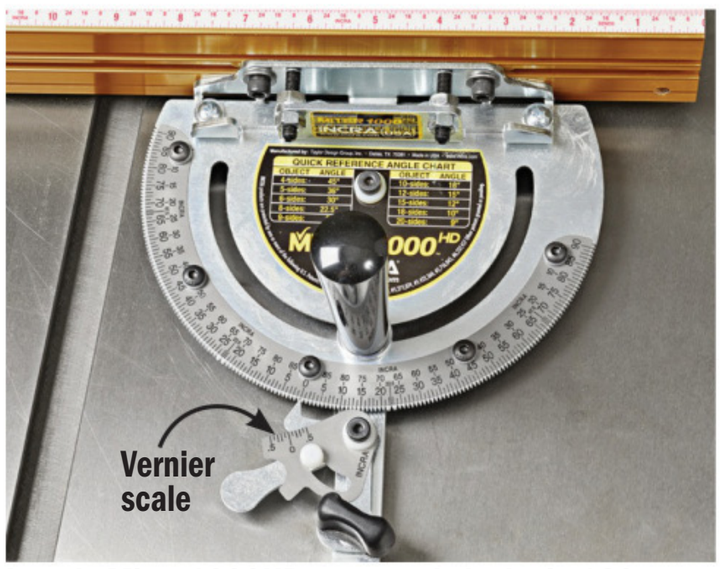
This model is a twin to the Grizzly, with only cosmetic differences.

800-840-8420, woodstockint.com



A miter gauge guides a workpiece for spot-on crosscuts and miters. These upgrades outperform the typical factory-supplied gauges, thanks to precise scales, including Vernier scales on some models that allow for fine-tuning angles to ⅒°. All of the miter gauges we tested have positive detent stops for 0°, 22½°, and 45°. Models with fences and length stops make it a snap to cut multiple parts to equal length.

Miter Gauges

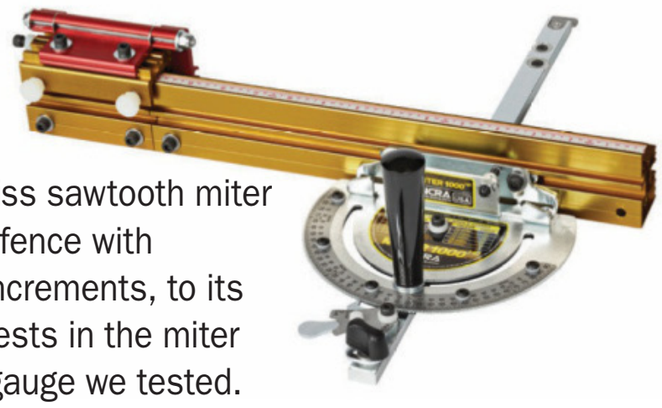


Incra's Miter 1000HD accurately locks in 180 angles: just drop the pointer in the corresponding detent and secure.

Several miter gauges, such as JessEm, incorporate extendable fences. Scales on the extension continue the precise measuring of the main fence.

Two flip-stops on the Incra Miter 1000HD can be linked with a steel rod, or used independently to make two cuts, such as the sides of a dado, without repositioning the stop.

Incra Miter 1000HD, $220



Miter detents: 180

Overall grade: A

This jig screams precision. From its can't-miss sawtooth miter detents, to its Vernier scale, to its 32"-long fence with dual-function flip-stop that indexes in 1/32" increments, to its miter-bar adjusters you tweak while the jig rests in the miter slot, this is the most comprehensive miter gauge we tested. Our only gripe is that to reposition the fence on the head, you must use an included wrench; we'd prefer tool-free knobs.

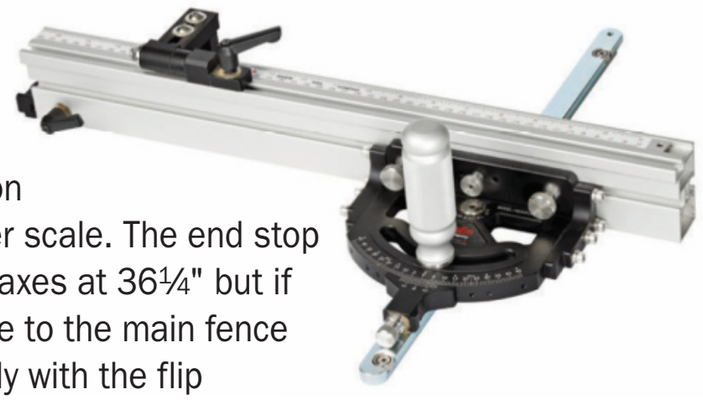
972-242-9975, incra.com

2022 WOOD Magazine TOP TOOL Miter Gauge

Kreg, no. KMS7102, $150

Miter detents: 9
Overall grade: A
Accurate detents and easy-to-eyeball non-detent angle setting, including a Vernier scale, make using this miter gauge a breeze. We like this flip-stop best for its easy-to-read cursor and ability to reach over a ¾" auxiliary fence—but lacking a telescoping extension, you're limited to cutting a maximum of 21¾" using the flip-stop.
800-447-8638, kregtool.com

JessEm, no. 07150, $300



Miter detents: 9
Overall grade: A–
Another gauge that's spot-on accurate, including a Vernier scale. The end stop on the telescoping fence maxes at 36¼" but if you add a ¾" auxiliary fence to the main fence body—which works perfectly with the flip stop—the extension's end stop becomes useless. Otherwise, the fence and scale work great. In our tests, the snuggers on the miter bar lost their setting over a couple of weeks of use and needed readjusting.
800-436-6799, jessem.com

Incra Miter V120, $100

Miter detents: 120
Overall grade: B+
With 120 detents in 1° increments plus 22.5°, this gauge delivers all the precision you might ever need. You don't get a fence, but adding a shop-made one proves easy enough.
972-242-9975, incra.com

Harvey Compass, no. MG-36, $360

Miter detents: 7
Overall grade: B
The quality of machining and materials on this gauge speaks to its precision. Despite only seven miter detents, we found it easy to set non-detent angles. The fence flip-stop works well and has a microadjuster for fine-tuning, but the fence scale lacks numbers—we found it easier to use a tape or rule to set it each time. The fence telescopes for a maximum crosscut of 28¾" using the flip-stop.
888-211-0397, harveywoodworking.com

Rockler, no. 62095, $180

Miter detents: 11
Overall grade: B–
Although the 60° angle detents were slightly off—an angle we rarely if ever cut on a tablesaw—we otherwise found this miter gauge spot-on. The melamine-coated-MDF fence provides zero-clearance support, but over time you'll need to replace it. The fence lacks a scale, but its flip-stop reaches up to a 23" crosscut when you extend the fence.
800-279-4441, rockler.com

Woodhaven, no. 4910, $190

Miter detents: 15
Overall grade: B
The miter detents proved spot-on and lock securely with a threaded brass pin. Choose one of two angle indicators to use for setting non-detent angles: a standard pointer or a Vernier-scale pointer; these need to be recalibrated when swapped out. This model lacks a fence, but has screw holes for attaching a shop-made fence.
800-344-6657, woodhaven.com

Fulton, no. 11567, $120

Miter detents: 13
Overall grade: C–
When using the detent settings, you'll get precise cuts with this gauge. However, the cursor hides the single-degree increments, making it next to impossible to accurately set a non-detent angle by eye. The fence scale on the front face reads easiest when you look over the fence and down at it; we found it more difficult to use than top-mounted scales.
888-512-9069, ptreeusa.com

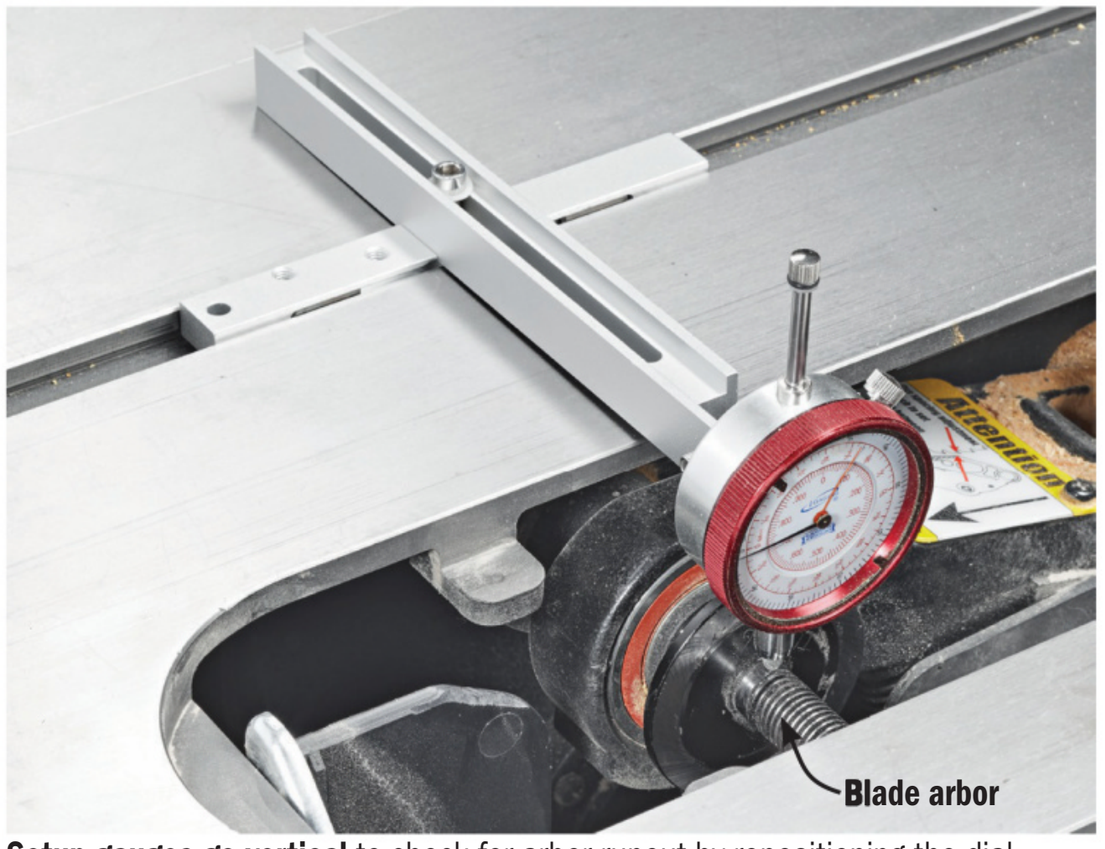
Incra Miter V27, $70

Miter detents: 27
Overall grade: C–
This gauge delivers precise angles for the 27 detent settings (0°, 5°–60° in 5° increments, and 22½°), but without a cursor that aligns over the angle marks, you have to set non-detent angles by eyeballing the pointer with the desired angle mark.
972-242-9975, incra.com

Setup/Alignment Gauges

A setup gauge helps you aligning the blade and rip fence with the top, ensuring accurate cuts. Most of the gauges we tested also can check your tablesaw arbor for run-out, and some can be used to set up and align other tools and machines.

A barbell-like rod resting on two smaller steel rods ensures the Woodpeckers gauge maintains perfect center in the slot rather than resting against an edge.



Setup gauges go vertical to check for arbor runout by repositioning the dial indicator and pointer.

A-Line-It Deluxe, $145

Overall grade: A

Easy to use and precise: Who wouldn't want that? We like its dial indicator's easy-to-read face, the miter bar's spring-loaded ball catches that eliminate slot slop, a long bar that provides up to 12¼" of reach, and all the tools and accessory tips you'll need for each application.

508-949-2968, in-lineindustries.com

A-Line-It Basic, $80

Overall grade: A

This gauge uses the same indicator and miter bar as the deluxe model, but with a shorter arm (7⅞" maximum reach) and no accessory tips.

508-949-2968, in-lineindustries.com

Woodpeckers Saw Gauge 2.0, no. SG2-WP, $220

Overall grade: A

This gauge requires no tweaking to make it fit in a miter slot (see photo at *bottom left, previous page*). It uses a T-track bar mounted to a locking block that holds securely and reaches up to 37" (using all three T-track bars). It sets up quickly, and the dial indicator reads perfectly.

800-752-0725, woodpeck.com

Woodpeckers Saw Gauge, no. SG-WP, $100

Overall grade: A–

Similar to the SG2-WP, this gauge takes only seconds to set up and use accurately, although it lacks the reach of its sibling for some uses.

800-752-0725, woodpeck.com

EZ-Align Alignment Gauge, no. 35-378A, $30

Overall grade: A–

It's hard to beat the value of this gauge, and it works great at aligning the blade and fence. Magnets and ball catches hold the miter bar securely in the slot, and the dial reads easily.

513-233-9019, chipsfly.com

iGaging DigiAlign, no. 35-0928, $68

Overall grade: A–

Nearly identical to the EZ-Align, this gauge uses a digital indicator (powered by a battery) that works well enough, but doesn't seem worth the upcharge.

818-332-1603, igagingstore.com

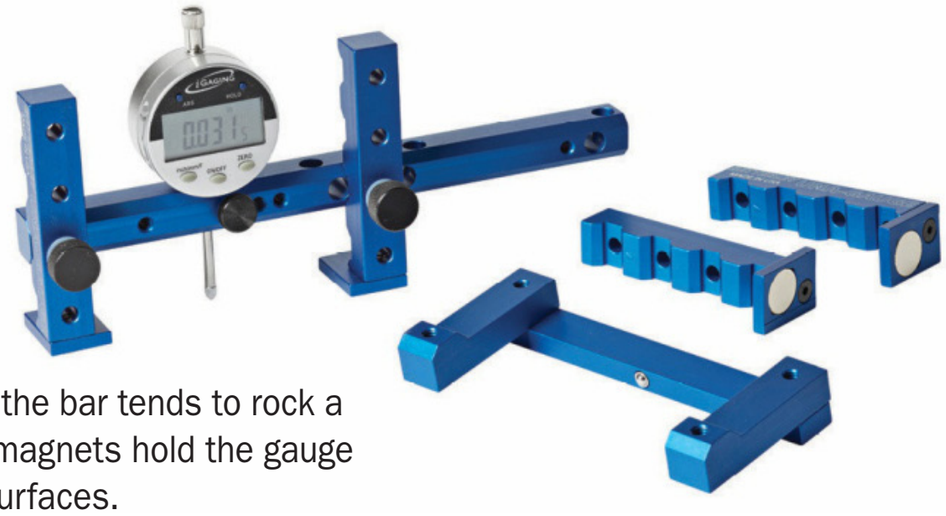
MasterGage SuperBar, $69

Overall grade: B+

Drop the magnetic gauge into a miter slot and it clings to one side yet still slides smoothly. We needed both removable indicator-arm extensions to reach the blade on our saw. (For benchtop saws with nonferrous-metal tops, MasterGage sells a nonmagnetic resin-body version for the same price.)

888-893-8300, mastergage.com

Betterley Una-Gauge, no. UG-1000, $219



Overall grade: B

More than just a tablesaw gauge, this model comes with accessories to set up almost any machine in your shop. The miter bar has one ball catch, so the bar tends to rock a bit as you measure. Rare-earth magnets hold the gauge in place on steel and cast-iron surfaces.

763-755-3425, betterleytools.com

Magswitch Universal Saw Indicator, no. 81101304, $96

Overall grade: B

This gauge uses two on/off MagJigs to grip the steel bar of your miter gauge (positioned in the slot) to align the blade and rip fence.

303-468-0662, magswitch.com

Produced by **Bob Hunter** with **Jan Svec**, **Peter Kasper**, and **Steve Feeney**

Stowaway Mitersaw Stand

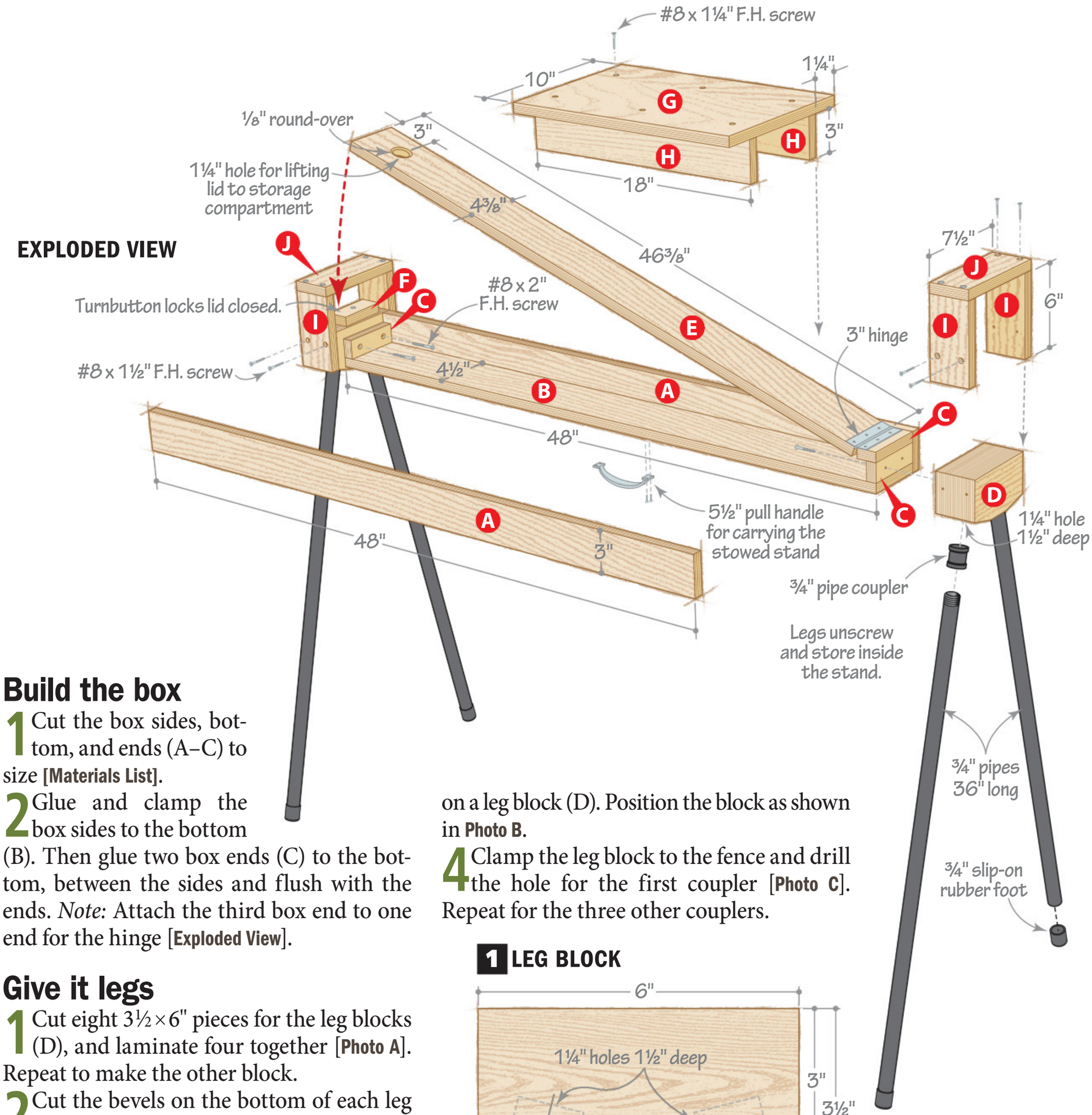
Sized for a new breed of powerful, compact mitersaws, this sturdy stand uses off-the-shelf plumbing pipe for legs that stow inside the stand for transport.

DIMENSIONS:
In use: 54" W × 23" D × 39" H
Stored: 54" W × 10" D × 6½" H

Approximate materials cost:
$150
Lumber and hardware

4
Pipe legs make it portable

EXPLODED VIEW



Build the box

1 Cut the box sides, bottom, and ends (A–C) to size **[Materials List]**.

2 Glue and clamp the box sides to the bottom (B). Then glue two box ends (C) to the bottom, between the sides and flush with the ends. *Note:* Attach the third box end to one end for the hinge [**Exploded View**].

Give it legs

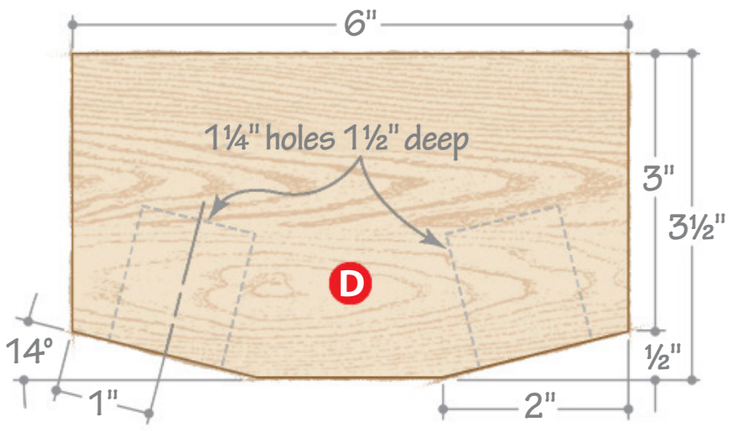
1 Cut eight 3½×6" pieces for the leg blocks (D), and laminate four together [**Photo A**]. Repeat to make the other block.

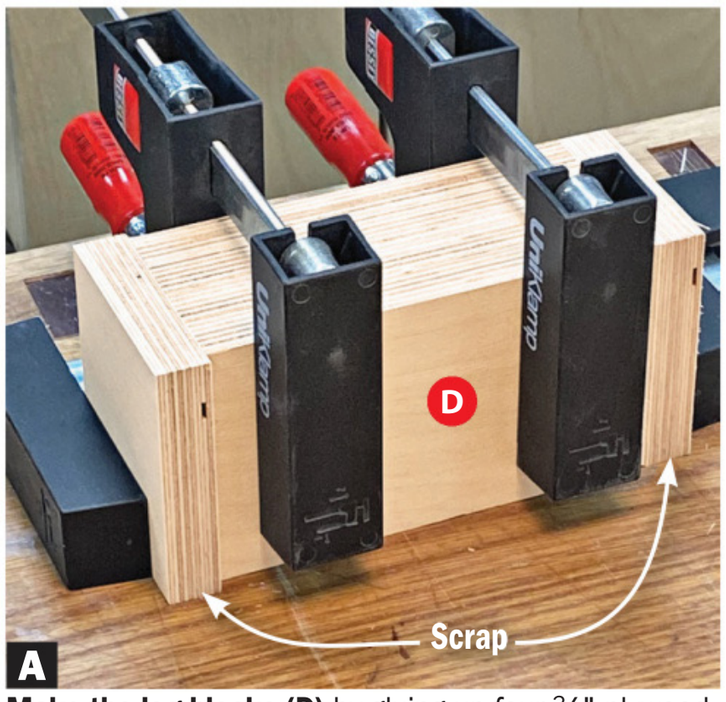
2 Cut the bevels on the bottom of each leg block **[Drawing 1]** and sand smooth.

3 Lay out the hole locations for the pipe couplers. Install a 1¼" Forstner bit in your drill press and position the fence to center the bit on a leg block (D). Position the block as shown in **Photo B**.

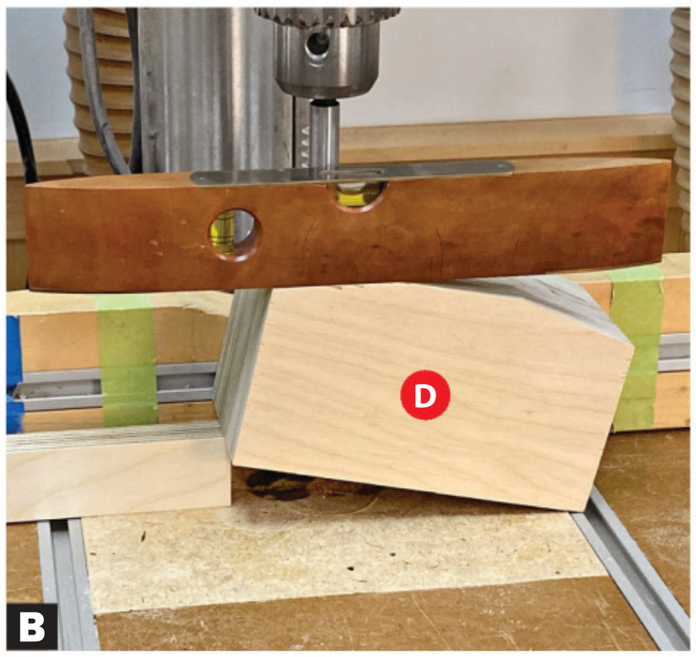
4 Clamp the leg block to the fence and drill the hole for the first coupler [**Photo C**]. Repeat for the three other couplers.

1 LEG BLOCK



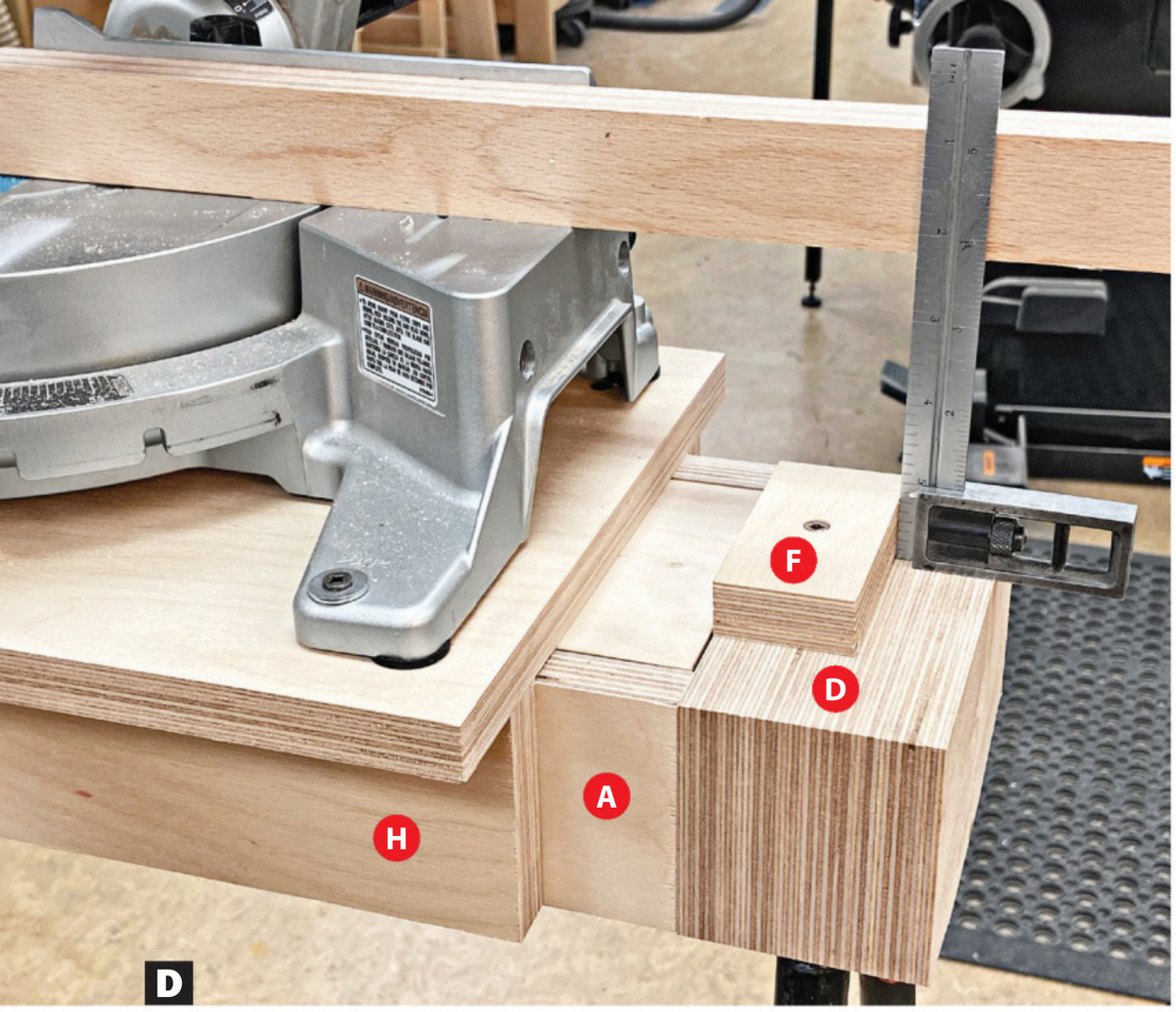


Make the leg blocks (D) by gluing up four ¾" plywood pieces. Use scrap to align the ends while clamping, but remove the scrap before the glue begins to dry.



Level your drill press and adjust the table square to the bit. Place a scrap block under the end of the block and confirm the bevel rests square to the bit using a level.

Set the depth stop to 1½" so the coupler will sit recessed just inside the hole. Confirm the coupler fits before drilling the remaining holes.



D

E

Extend a straight piece of scrap over the leg blocks. Measure to the bottom of the scrap and add 2¼" to determine the length of the support legs (I).

Use the scrap to help align the outfeed supports with the top of your saw table. Clamp the supports in position, then screw the outfeed supports in place.

__Tip!__ Tape over the interior end of each coupler before inserting it to prevent epoxy from getting inside.

5 Glue and screw the leg blocks (D) to the box assembly, flush at the top and sides.

6 Check the fit of the couplers in the holes, and if necessary, grind or file the outside ribs to fit. Epoxy a coupler into each hole, taking care to avoid getting epoxy in the threads of the couplers.

Put a lid (and a saw) on it

1 Cut the lid (E) to size. Drill the finger hole and round over the top and bottom edges of the hole. Center the lid in the opening and install the hinge.

2 Cut the turnbutton (F) to size and screw it to the top of the block (D) **[Exploded View]**.

3 Cut the saw platform and cleats (G, H) to size. (Adjust the platform size as needed to fit your saw.) Glue and screw the cleats to the bottom of the platform, positioned to fit snugly over the box, and bolt your saw to the platform.

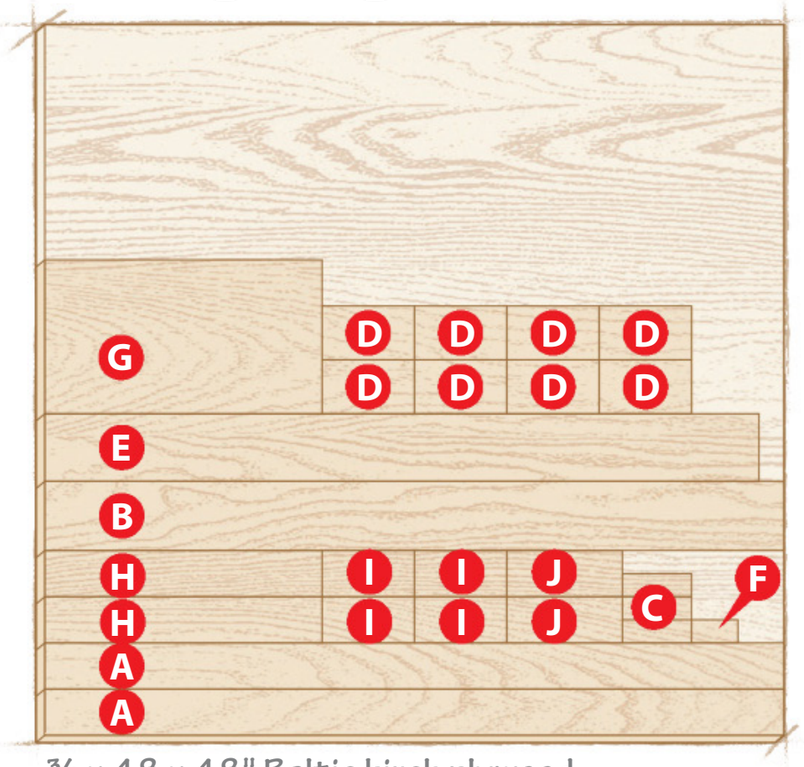
4 Attach the handle to the bottom (B). Fit a rubber foot on one end of each pipe leg, and thread the legs into the couplers. Place the stand on the floor and fit the saw platform over the box.

5 Determine the length of the support legs (I) [**Photo D**] and cut them. Screw an outfeed support (J) to each pair of support legs.

6 Glue and screw the support assemblies (I/J) to the leg blocks [**Photo E**].

7 Remove the saw, hardware, and legs. Apply a durable finish, reassemble, and start your next project.

Cutting Diagram



¾ x 48 x 48" Baltic birch plywood

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	box sides	¾"	3"	48"	BB	2
B	box bottom	¾"	4½"	48"	BB	1
C	box ends	¾"	1½"	4½"	BB	3
D	leg blocks	3"	3½"	6"	LBB	2
E	box lid	¾"	4⅜"	46⅜"	BB	1
F	turnbutton	¾"	1½"	3"	BB	1
G	saw platform	¾"	10"	18"	BB	1
H	platform cleats	¾"	3"	18"	BB	2
I	support legs	¾"	3"	6"	BB	4
J	outfeed supports	¾"	3"	7½"	BB	2

Materials key: BB–Baltic birch plywood, LBB–laminated Baltic birch plywood.
Supplies: 36" ¾" steel pipe (4), 3" butt hinge, ¾" pipe couplers (4).
Bit: 1¼" Forstner bit
Source: Rubber slip-on feet no. 2517T1 (10 pack), $7.43; handle (1) no. 1646A22, $3.24, McMaster-Carr, 630-833-0300, mcmaster.com.

Produced by **Andrew Zoellner** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine, Lorna Johnson**

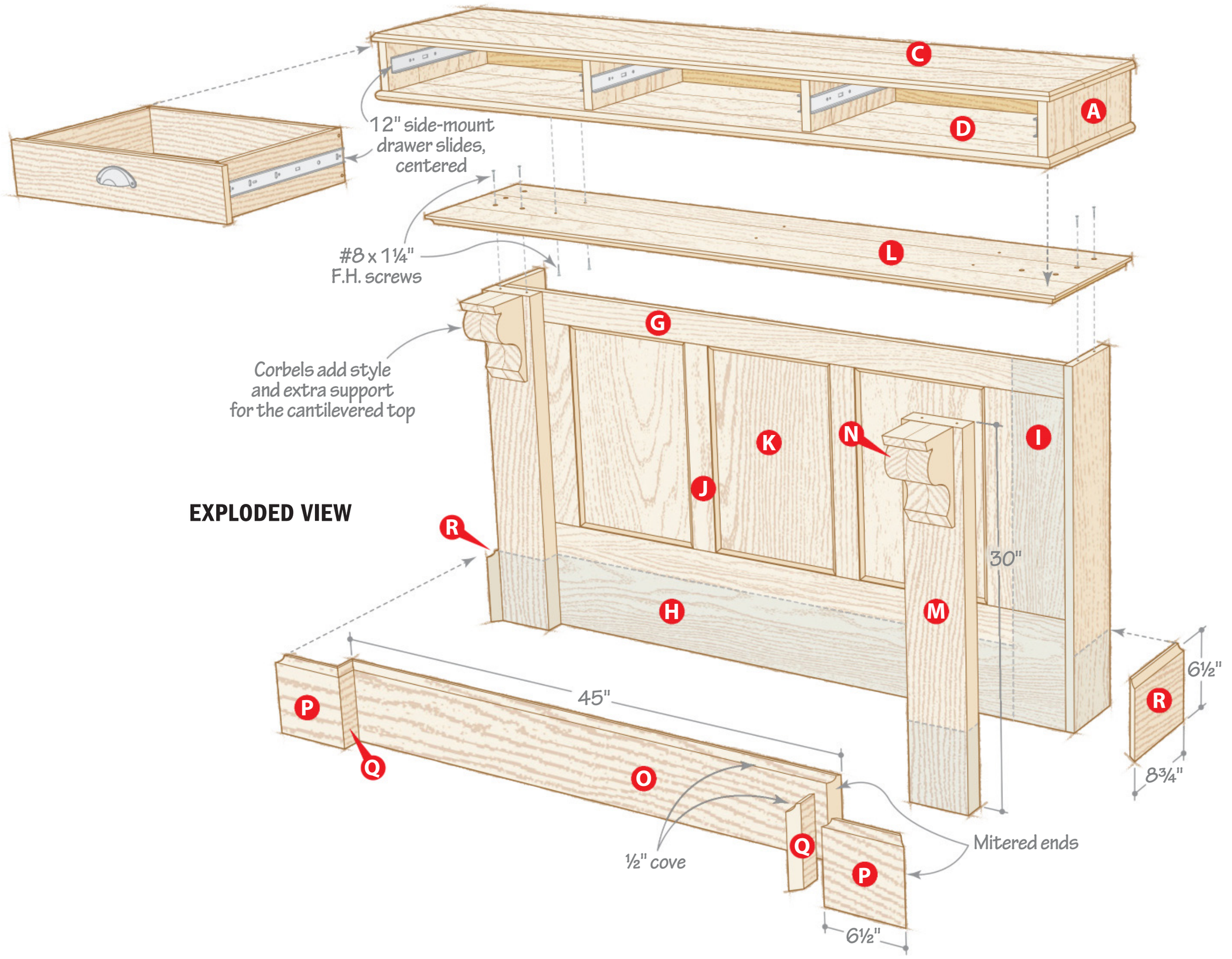
Stylish Entry Storage

Radiating charm while providing subtle storage

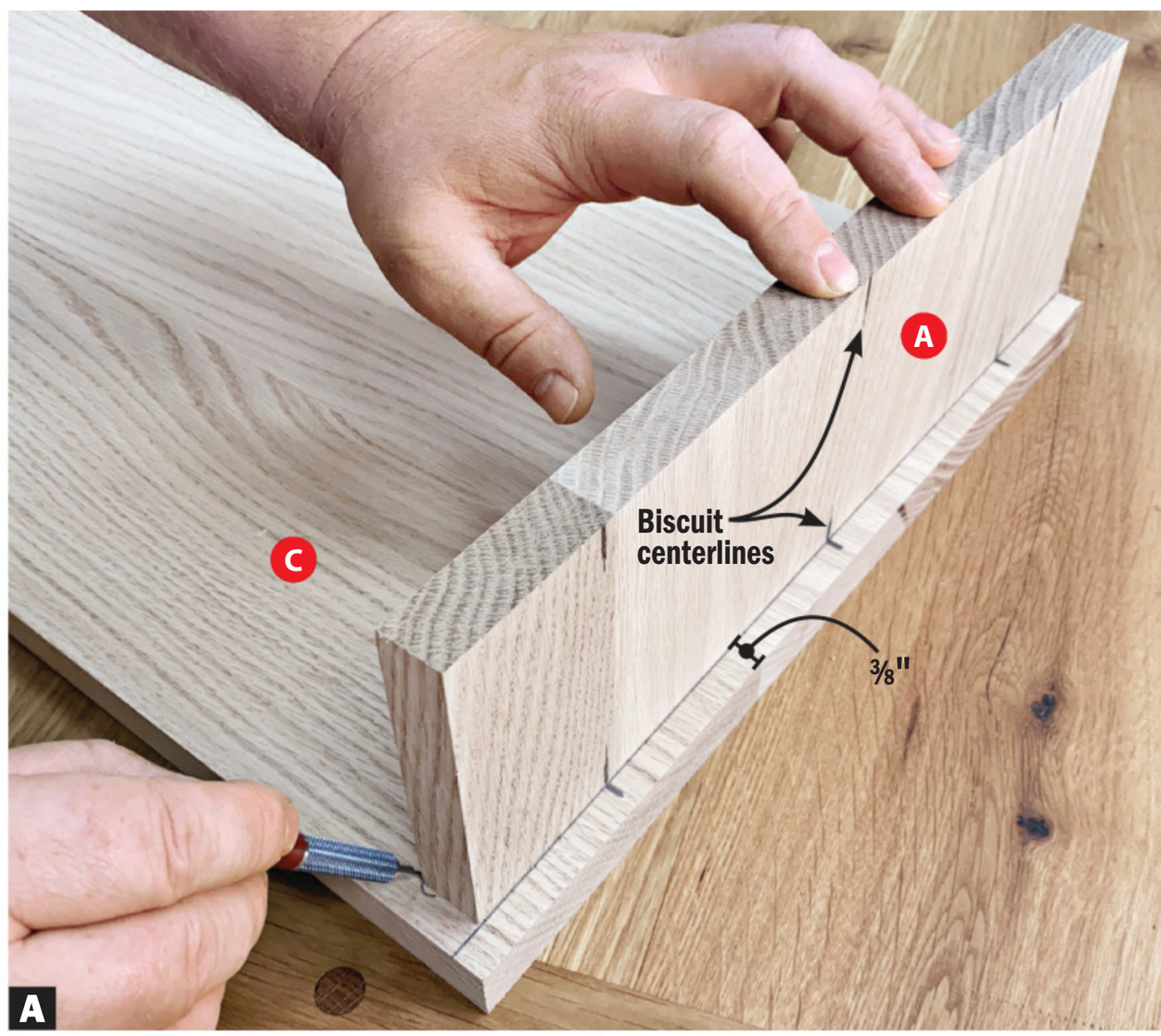
DIMENSIONS:
60" W × 13¼" D × 36¼" H

Approximate materials cost:
$300
Lumber and hardware

3
roomy drawers



EXPLODED VIEW



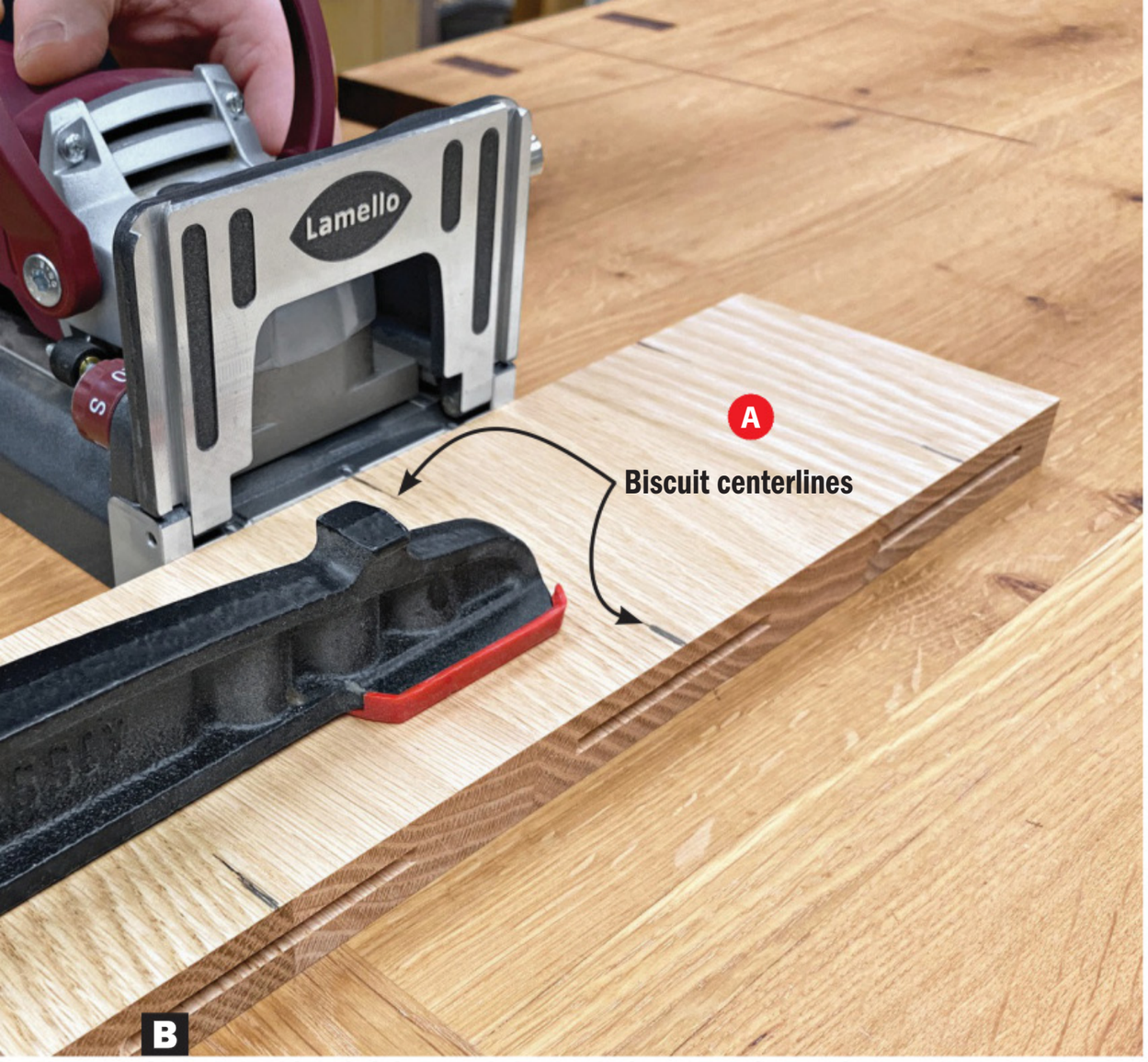
Position the sides (A) on the top and bottom (C, D) with their back edges flush, and position the dividers (B) ⅞" from the front edge. Transfer the biscuit centerlines and mark the edges of each workpiece.

Inspired by the radiator covers common to upper-class homes a century ago, this cabinet-meets-catchall provides an elegant collection point for keys, gloves, scarves, and more. Its built-in design and cantilevered top occupy a minimal footprint in your entryway.

Build a box, basically

1 Glue up a ¾×13½×18" blank for the drawer-box sides and dividers (A, B), and individual panels for the top (C) and bottom (D) [**Drawing 1, Materials List**]. When the glue dries, cut these parts to size.

2 Mark the center of each biscuit slot in the sides and dividers, then transfer the layout to the top and bottom [**Drawing 1, Photo A**].



Clamp the biscuit joiner and the workpiece on a flat surface and cut the slots.

Clamp a straightedge on the inside layout line and cut the biscuit slots in the top and bottom (C, D).

Cut the biscuit slots in the sides, dividers, top, and bottom (A–D) [**Photos B, C**].

3 Rabbet the sides, top, and bottom (A, C, D), then rout the cove on the top (C) and round-overs on the bottom (D) [**Drawing 1**]. Square up the ends of the stopped rabbets in the top and bottom with a chisel.

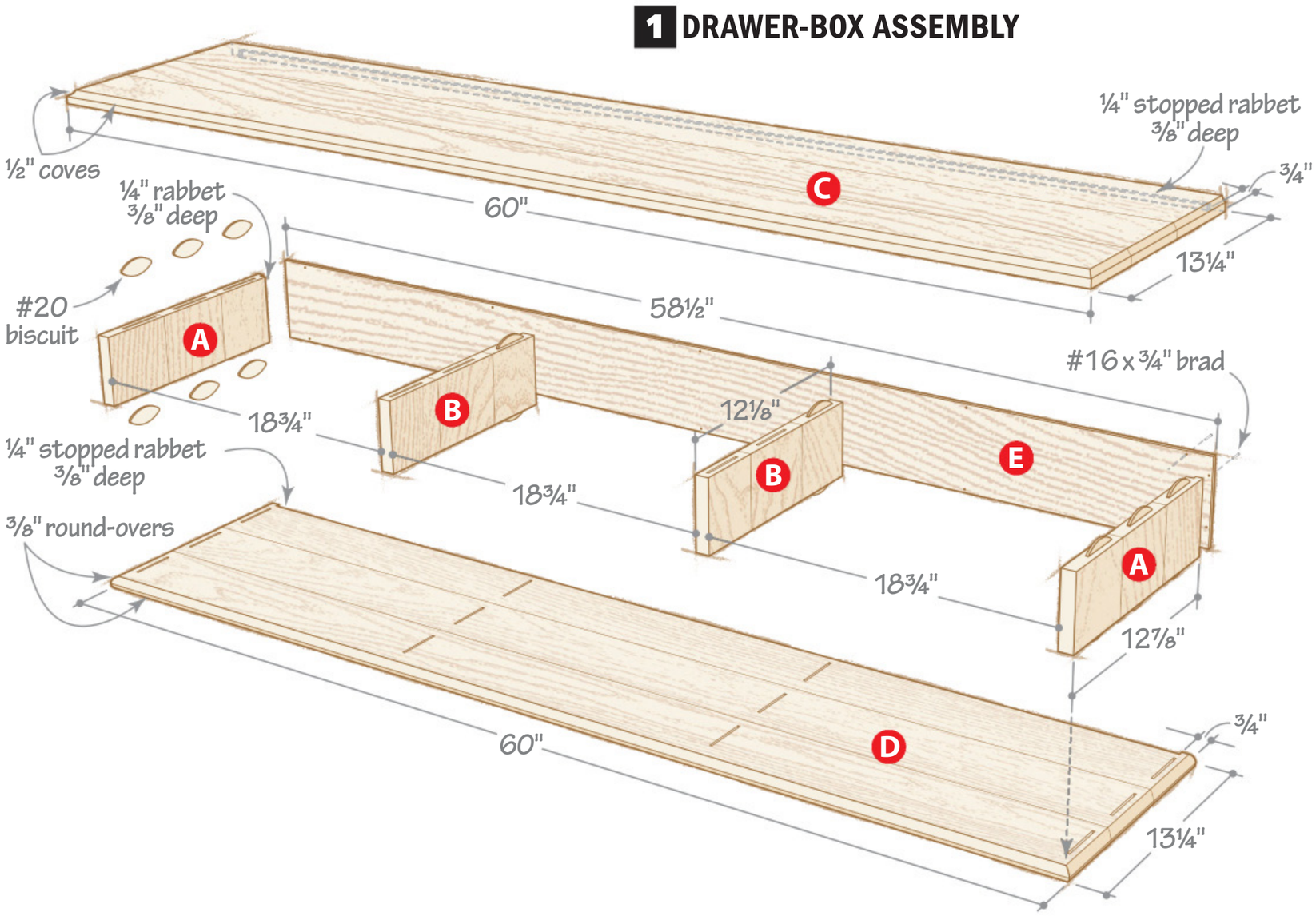
4 Finish-sand all parts, then glue and clamp together the drawer-box assembly.

5 Measure between the rabbets on the drawer-box assembly and cut the back (E) to fit. Set it aside for now.

This looks like a frame job

1 Cut to size the base sides, rails, and stiles (F–J) [**Drawing 2**]. Cut a few extra pieces of this stock for router setup.

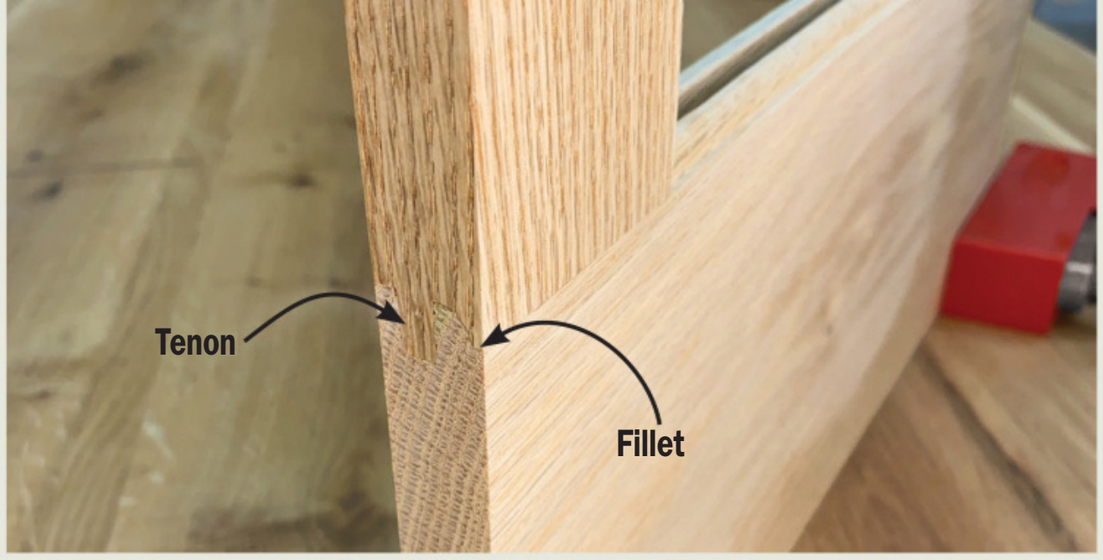
1 DRAWER-BOX ASSEMBLY

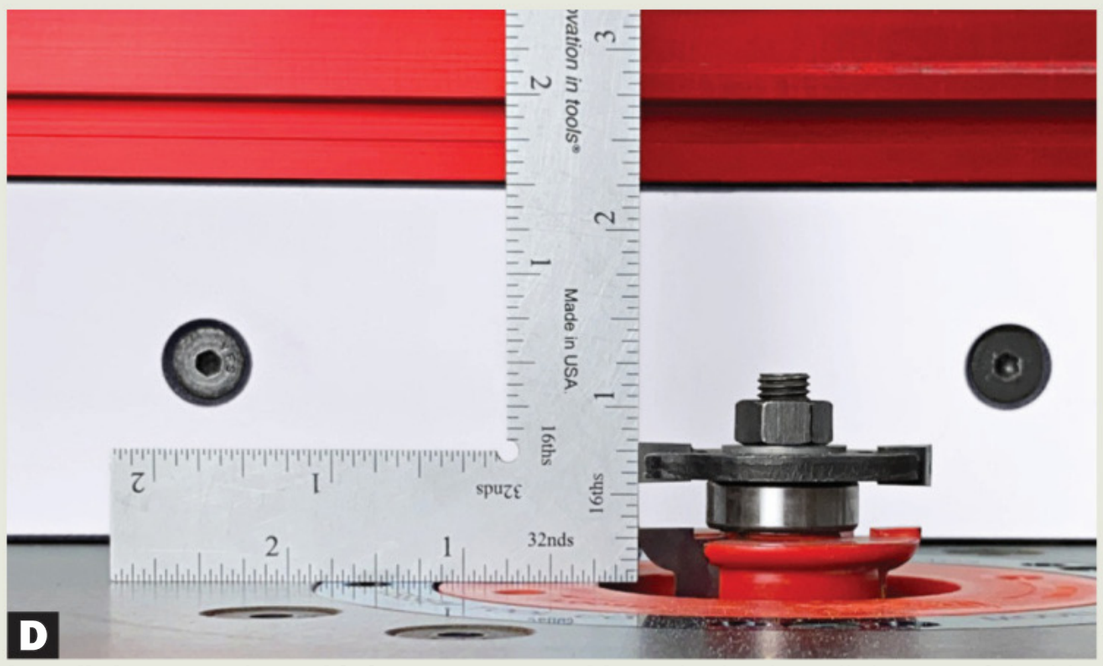


SKILL BUILDER

Set up for offset rail-and-stile joinery

Cut crisp, strong rail-and-stile joinery with router bits [**Sources**]. One bit simultaneously cuts a groove for a panel and a handsome profile along the rail and stile edges. The other bit machines a tenon on the rail ends while coping them to mate with the stiles. Instead of centering the grooves and tenons, we raised the router bit slightly, producing a back-of-center tenon and a small fillet on the front face.





Install the tenon/cope bit in your router table and raise it until the top of the bit is 13⁄16" from the table.

Align the fence with the edge of the bearing on the bit and rout the ends of the stiles (I, J) facedown on the router table. Back up the cut with a piece of scrap to prevent tear-out.

Swap in the groove and round-over bit and raise it until the cutter aligns with the tenon on a stile. Cut a test groove/round-over on a piece of scrap and check the fit with a stile.

Once you have a good fit between your test piece and the stiles, rout the groove and round-overs with the workpieces facedown.

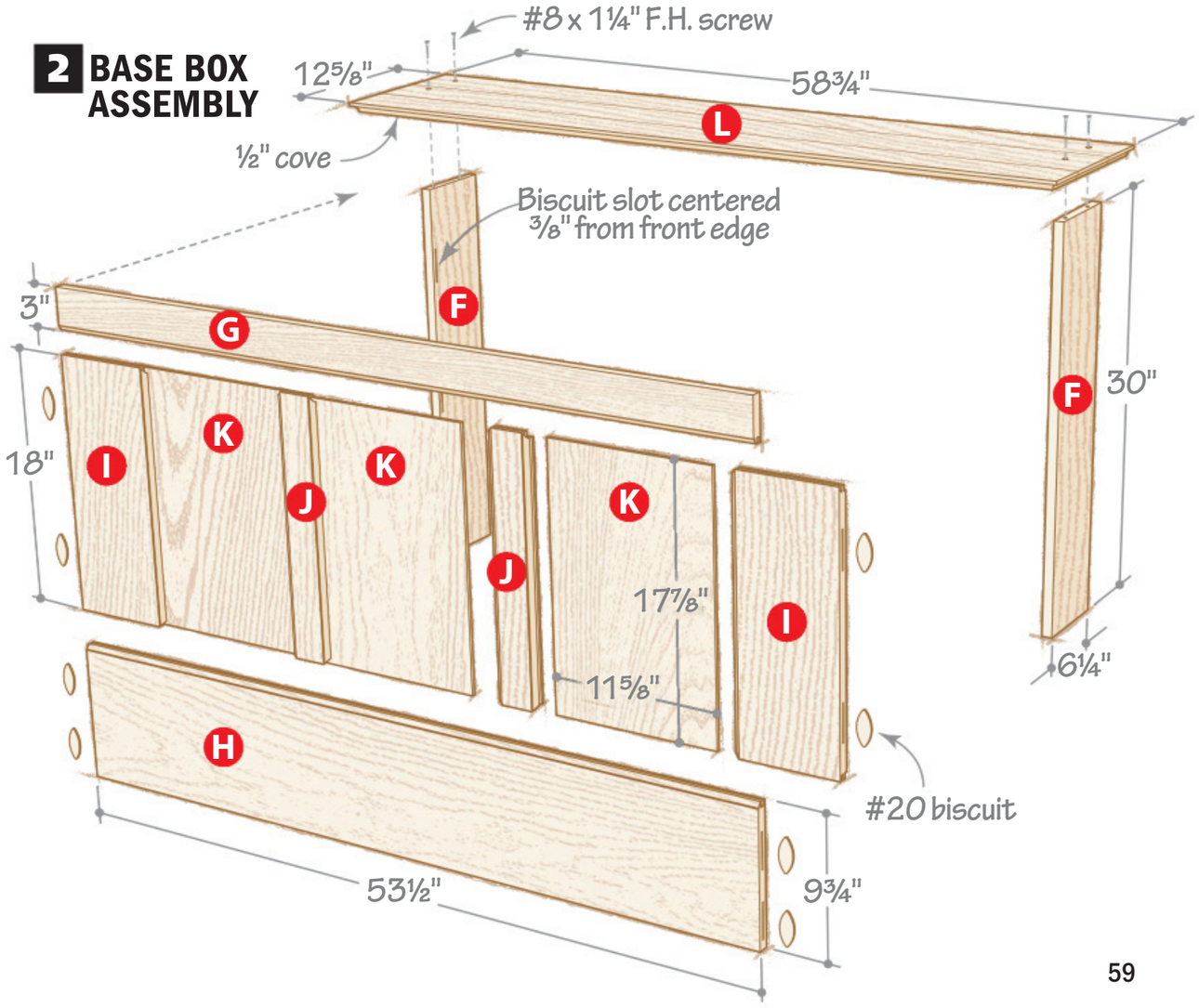
Note: *Rout the groove and round-over on one edge of the rails (G, H) and outer stiles (I), and* both *edges of the inner stiles (J).*

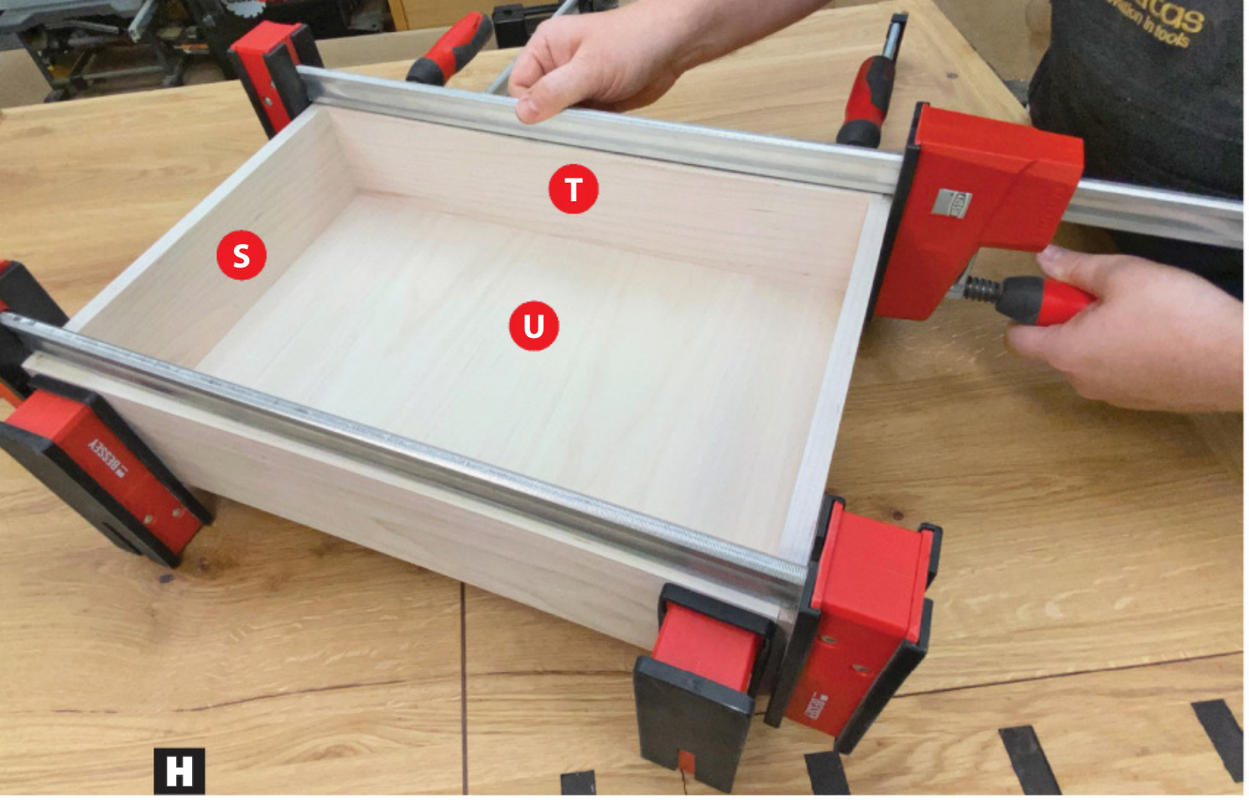
2 Machine the tenons and grooves in the rails and stiles [**Drawing 2, Skill Builder**].

3 Cut to size the front panels (K). Glue and clamp the base front assembly (G–K), checking for square [**Drawing 2**].

4 Lay out the biscuit slots in the ends of the base front assembly, then transfer the layout to the base sides (F) [**Drawing 2**]. Cut the biscuit slots, then glue and clamp the base sides to the base front assembly.

5 Glue up and cut to size the base top (L) [**Drawing 2**]. Rout the cove profile on the front edge and ends. Glue and screw the base top to the base assembly, flush at the back and centered side-to-side.





Apply glue to the rabbets on the drawer sides (S) and assemble the drawer, providing clamping pressure from both directions.

Make this simple drilling guide to get straight, evenly spaced holes on all of the drawer joints. Use masking tape as a depth stop on your drill bit.

Trim out the base

1 Cut to size the base corners (M) [**Exploded View**], then laminate blanks for the corbels (N). Transfer the corbel pattern [**Drawing 3**] to the blanks.

2 Bandsaw the corbels, then sand them smooth. Glue each one to a base corner (M), flush with the top and centered side-to-side [**Exploded View**].

3 Glue and clamp the base corners to the base assembly, flush with the ends [**Exploded View**]. Screw the base top (L) in place.

4 From ¾" stock, cut a 6½×96" blank for the cove trim (O–R), then rout the cove [**Exploded View**]. Miter-cut each piece of trim to length, then glue and brad-nail them to the base.

More boxes, basically

1 Cut to size the drawer sides, fronts, and backs (S, T). Rabbet the sides [**Drawing 4**], then rout the grooves in the sides, fronts, and backs.

2 Cut to size the drawer bottoms (U), then glue and clamp together each drawer [**Drawing 4, Photo H**].

3 After the glue dries, drill the dowel holes in the sides (S) [**Drawing 4, Photo I**]. Glue a dowel into each hole, cut them flush, then finish-sand each drawer.

4 Cut to size the drawer false fronts (V) and set them aside for now.

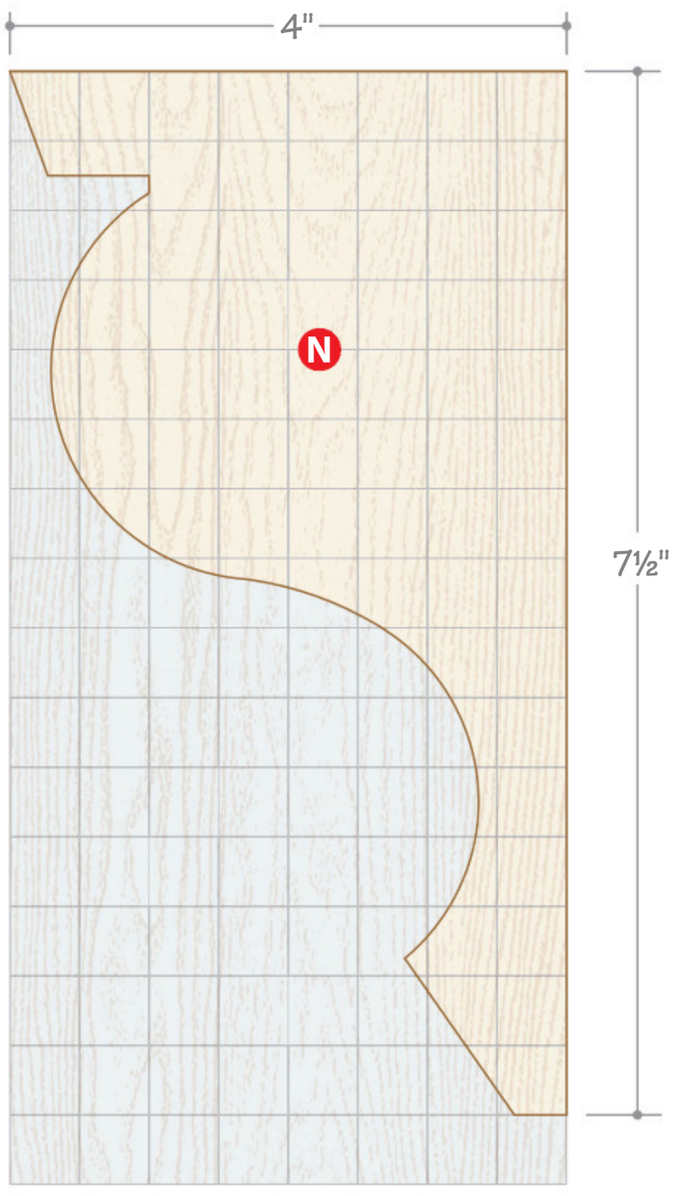
Tip! *Cut the false fronts from a single board to get continuous grain across the front of all three drawers.*

A contrasting finish

1 Touch up any remaining finish-sanding. Mask off the drawer-box top (C) and apply a stain to the lower portion of the drawer box, base, and drawer false fronts [**Opening photo**]. We wiped on Varathane Sun-bleached.

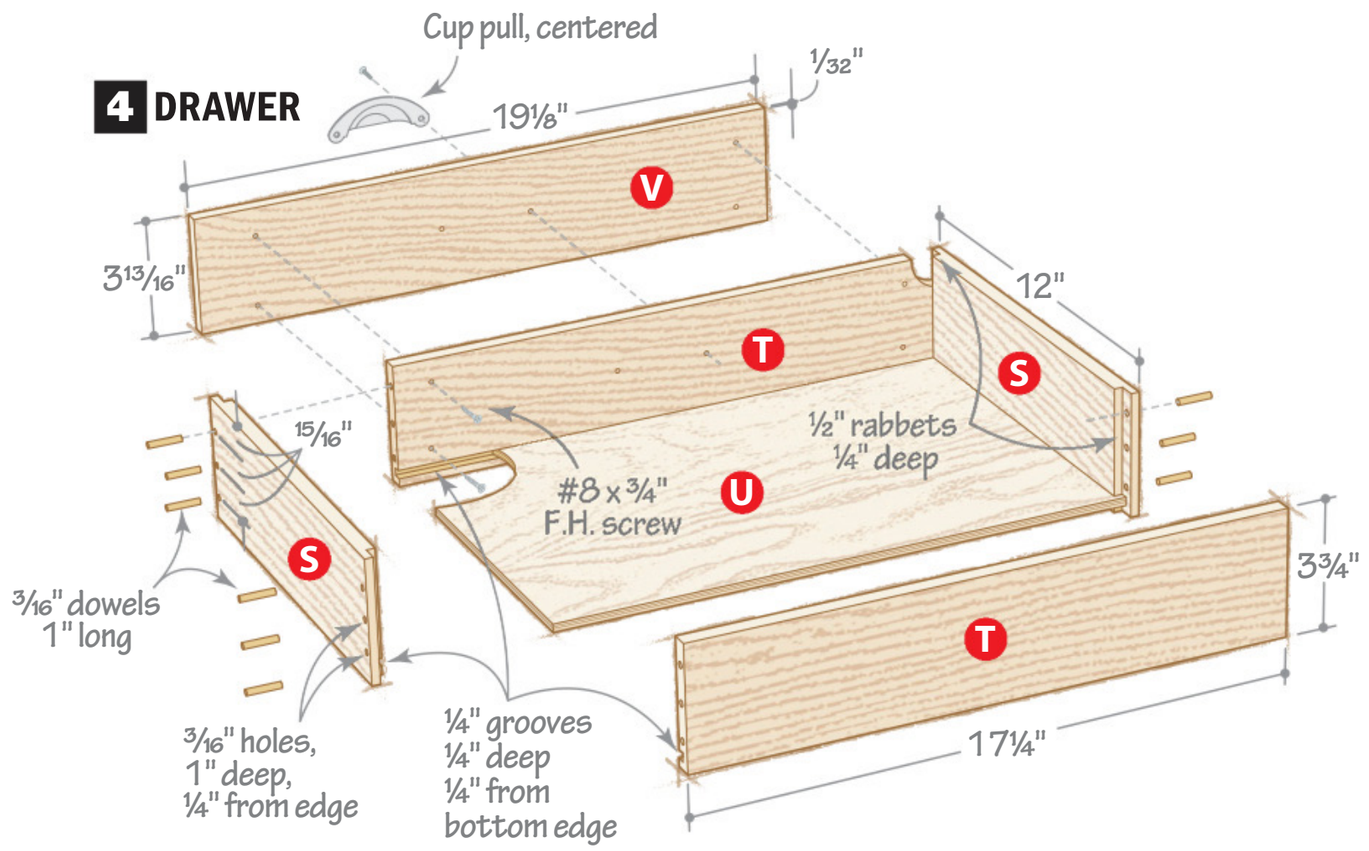
2 Once this stain dries, apply a contrasting stain to the drawer-box top, masking off below the top as required. We used Varathane Kona.

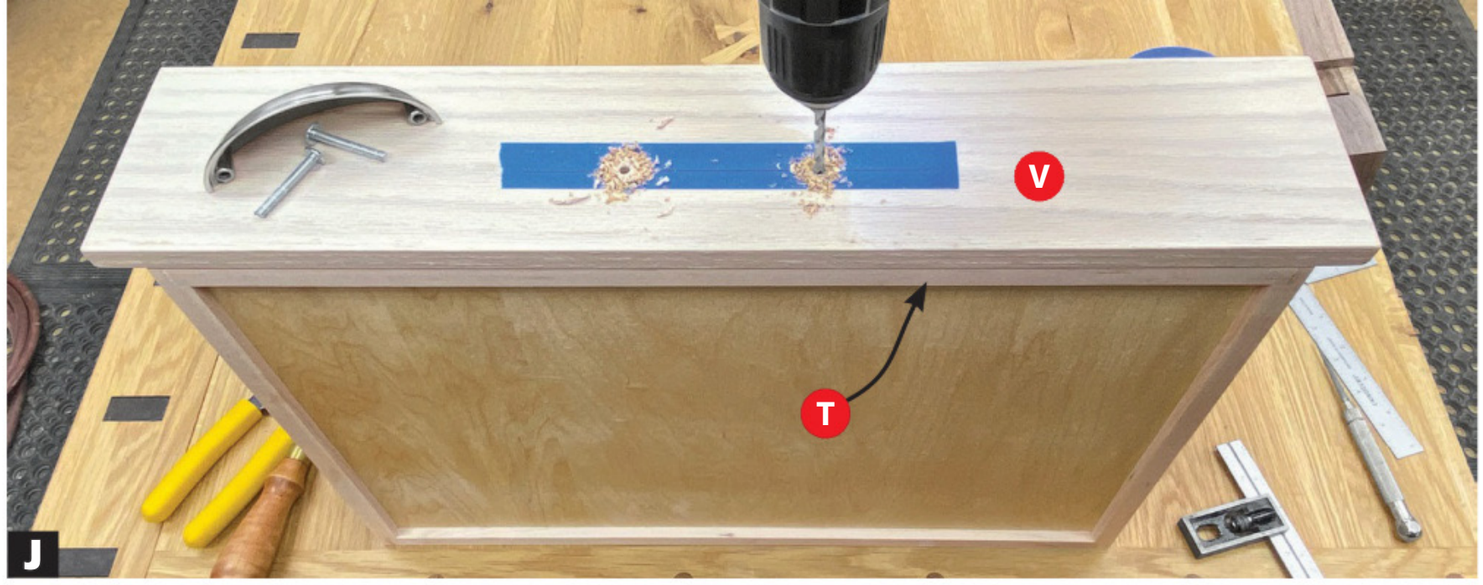
3 CORBEL GRIDDED PATTERN



▶ Download a full-size corbel pattern. woodmagazine.com/280patterns

4 DRAWER





Lay out the drawer-pull holes on masking tape, then drill through the tape and both the drawer and false fronts (T, V).

3 Apply a clear finish to all of the project parts. We sprayed on three coats of satin lacquer, lightly sanding between each coat.

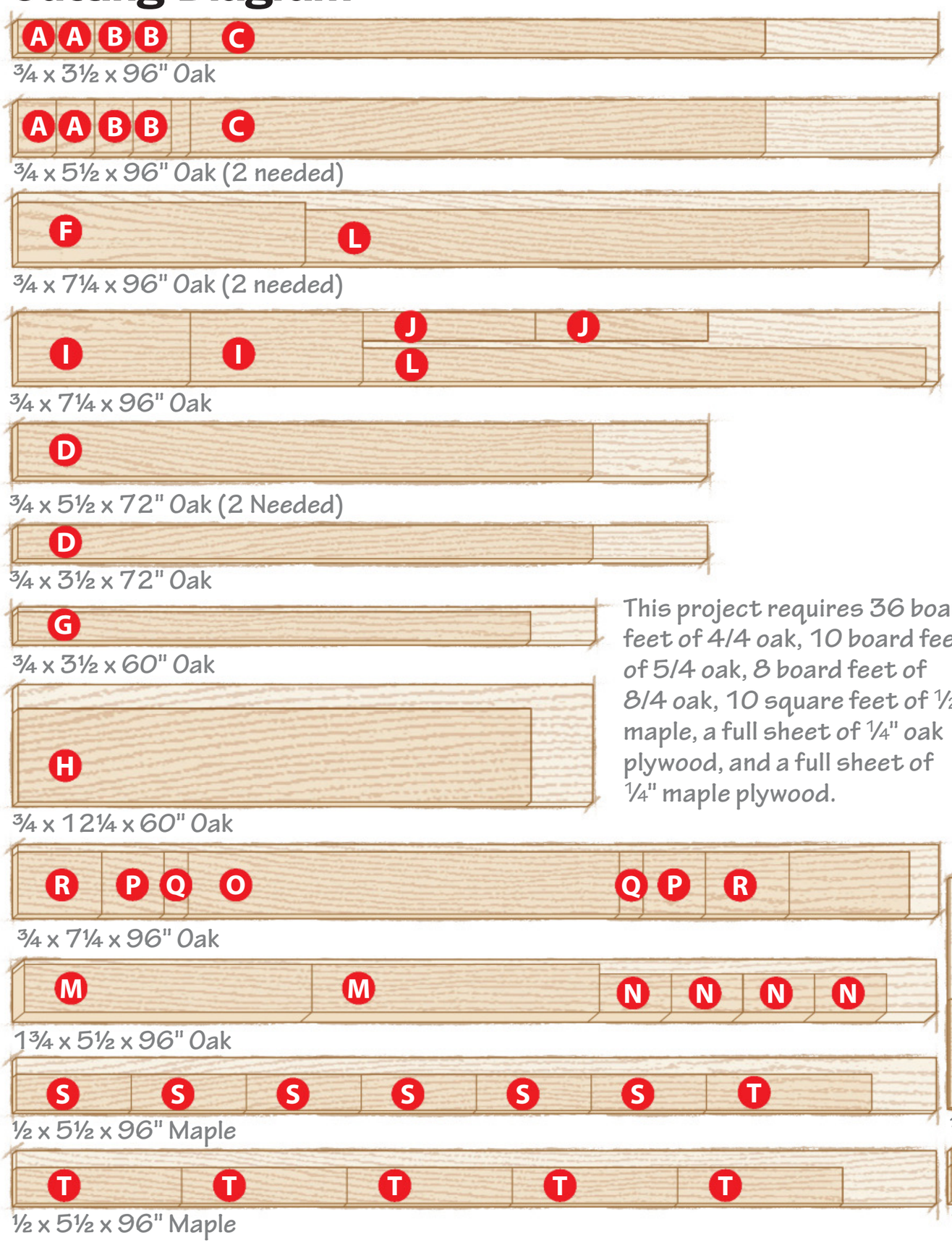
4 Once the finish dries, mount the drawer slides to the drawers and drawer box (A–D) [**Exploded View**]. Slide the drawers in place, then attach the false fronts (V) to each drawer with double-faced tape. Remove the drawers, screw the false fronts to the drawer fronts (T), and attach the drawer pulls [**Drawing 4, Photo J**].

5 Glue and screw the drawer box (A–D) to the base [**Exploded View**], then attach the back (E) [**Drawing 1**].

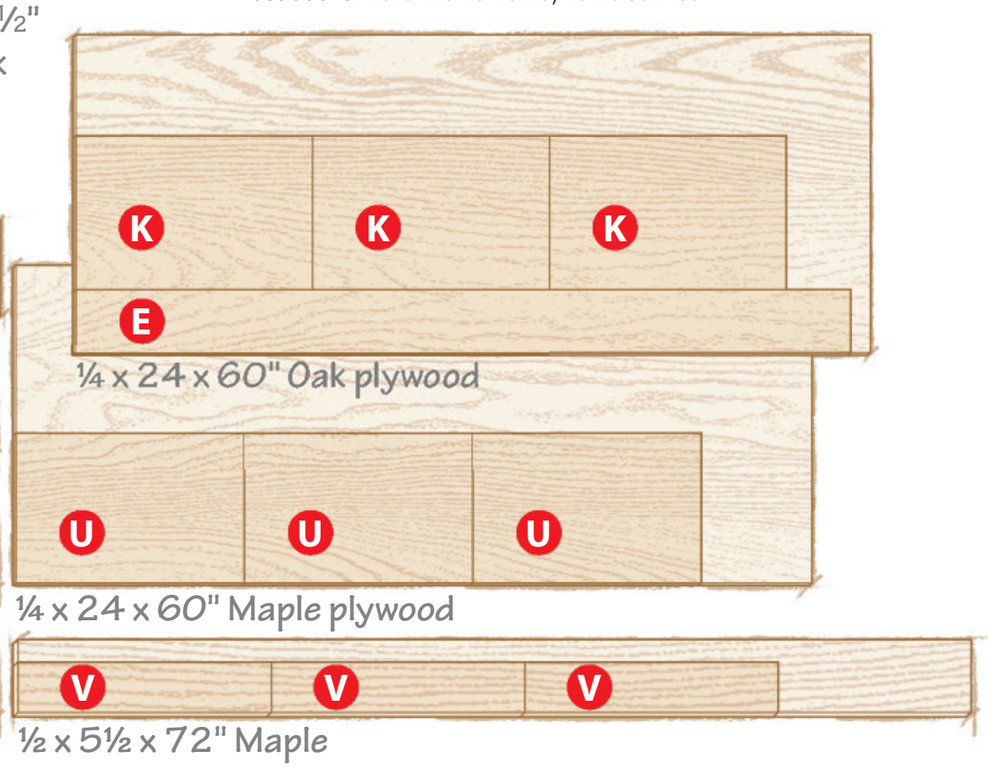
6 Remove the baseboard molding from the wall and install the unit, screwing through the back into studs. Cut the baseboard to fit tight against the sides of the cove molding.

▶ Watch a video with great tips on installing three common types of drawer slides.
woodmagazine.com/drawerslides

Cutting Diagram



This project requires 36 board feet of 4/4 oak, 10 board feet of 5/4 oak, 8 board feet of 8/4 oak, 10 square feet of ½" maple, a full sheet of ¼" oak plywood, and a full sheet of ¼" maple plywood.



Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
Drawer box						
A	sides	¾"	12⅞"	4"	EO	2
B	dividers	¾"	12⅛"	4"	EO	2
C	top	¾"	13¼"	60"	EO	1
D	bottom	¾"	13¼"	60"	EO	1
E	back	¼"	4¾"	58½"	OP	1
Base						
F	sides	¾"	6¼"	30"	O	2
G	top rail	¾"	3"	53½"	O	1
H	bottom rail	¾"	9¾"	53½"	O	1
I	outer stiles	¾"	7¼"	18"	O	2
J	inner stiles	¾"	3"	18"	O	2
K	front panels	¼"	11⅝"	17⅞"	OP	3
L	top	¾"	12⅝"	58¾"	EO	1
Base trim						
M	corners	1¾"	5"	30"	O	2
N	corbels	3½"	4"	7½"	LO	2
O*	cove center	¾"	6½"	45"	O	1
P*	cove corners	¾"	6½"	6½"	O	2
Q*	cove inners	¾"	6½"	2½"	O	2
R*	cove outers	¾"	6½"	8¾"	O	2
Drawers						
S	sides	½"	3¾"	12"	M	6
T	fronts/backs	½"	3¾"	17¼"	M	6
U	bottoms	¼"	11½"	17¼"	MP	3
V	false fronts	½"	3 13/16"	19⅛"	M	3

*Parts initially cut oversize. See the instructions.

Materials key: EO-edge-glued oak, OP-oak plywood, O-oak, LO-laminated oak, M-maple, MP-maple plywood.

Supplies: #8×1¼" flathead screws, #8×¾" flathead screws, #16×¾" brad nails, #20 biscuits, 12" side-mount soft-close drawer slides (6), 3/16" maple dowel.

Bits: ½" cove router bit, rail-and-stile router bit set (source below).

Sources: 3" cup pull (3) no. 2981SN, $6.79, Hardware Resources, 800-463-0660, hardwareresources.com; Freud 99-760 quarter-round adjustable rail-and-stile router bit set no. 35392, $134, Rockler, 800-279-4441, rockler.com; Varathane 8 oz. wood stain no. 203310371 Sunbleached, no. 203310374 Kona, $6.47, The Home Depot, 800-466-3337, homedepot.com.

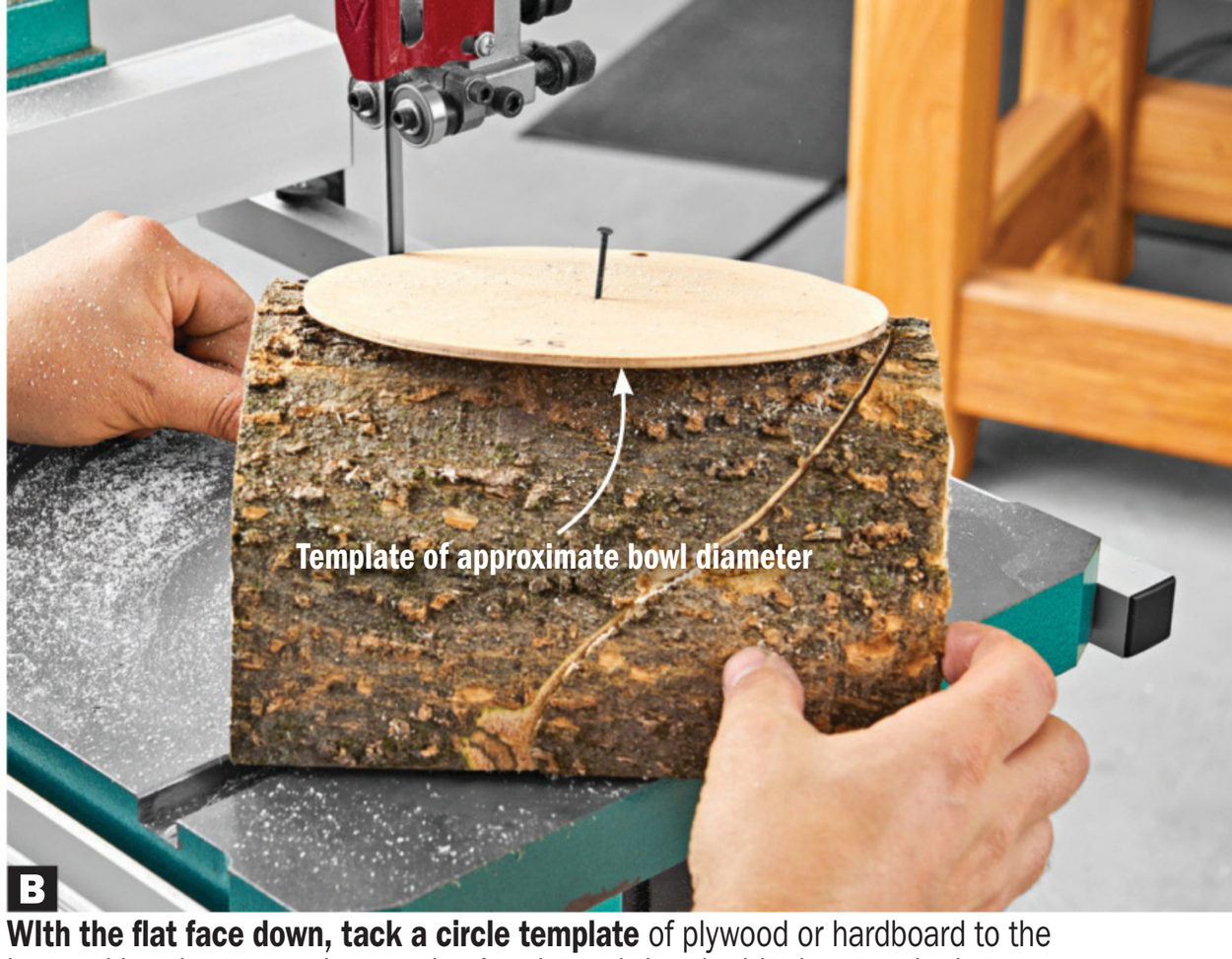
Produced by **Zach Brown** with **Brian Bergstrom**
Project design: **John Olson**
Illustrations: **Roxanne LeMoine, Lorna Johnson**

Natural-edge 3-foot Bowl

The lathest dad joke.

This bowl, as you can plainly see, measures not 36" but only about 8" in diameter. However, it does stand on three *feet*, proving that you can turn a 3-foot bowl on a lathe with 12" or less of swing. It may be a long way to go for a joke, but you'll enjoy the turns on the journey, and end up with a seriously good-looking bowl.

For the easiest and cleanest cut with a chainsaw, rip the log as shown, parallel to the long grain, rather than cutting through end grain from the end.



With the flat face down, tack a circle template of plywood or hardboard to the log, and bandsaw near the template's edge to bring the blank to rough shape.

Prep a bowl blank

Tip! *Walnut and white oak readily shed their bark. Avoid these species if you want to keep bark on your bowl.*

Choose a recently felled log, because green wood turns more easily than dry lumber. You also have a better chance of the bark staying on a bowl turned from a green blank. But there is no guarantee—the bark may come off during turning, or as the bowl dries.

Start with a log at least 3" longer than its diameter, then cut 1" from each end to eliminate the drier ends. Split the log through the pith with a chainsaw or bandsaw [**Photo A**]. Bandsaw round one of the log halves [**Photo B**].

On the flat face of the blank, center a 3" faceplate and secure it with #10×1" sheet-metal screws. Mount the faceplate on your lathe's headstock.

▶Turn the entire bowl between 500–1000 rpm, depending on the blank size.

The push and pull of grinds and bevels

Note: *Because the 80°-bevel gouge may extend farther beyond the tool rest during use, I chose a ½" shaft for more support.*

For this turning, I used only the two bowl gouges shown: a ⅜" gouge with a square grind and a 45° bevel, and a ½" gouge with a fingernail grind and an 80° bevel. Let me explain those terms and why I needed only these two gouges.

Bowl gouges can be sharpened at any angle (the *bevel*) and with several profiles, often referred to as the *grind*. The bevel (colored blue in the **Photo**) sits at the lower tip of the tool, while the *wings* (colored red) extend from the bevel around the flute along the remainder of the grind.

The *bevel angle* is measured using the bottom of the flute as 0°. So a 45° bevel slopes back toward the tool handle more than an 80° bevel. The more acute 45° angle cuts more efficiently, creating less tear-out. The steeper 80° bevel allows for rubbing the bevel while reaching deeper into a bowl and moves the tool shaft away from the bowl rim, providing room to maneuver the tool.

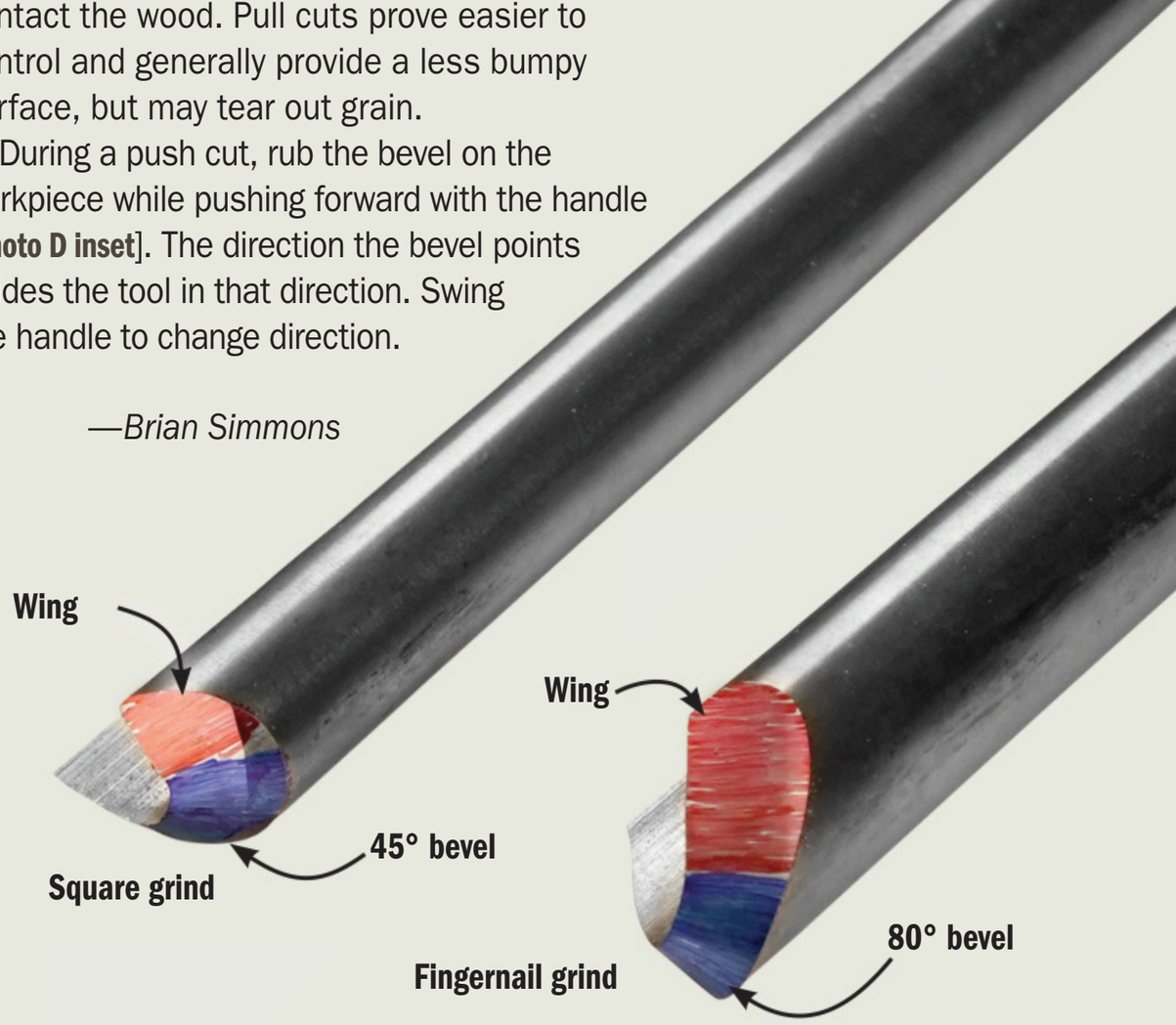
When viewed from the side, the profile at the front of a tool with a *square grind* forms a 90° angle to the bottom of the tool. A *fingernail grind* has a swept-back profile. Square grinds sharpen easily freehand, while fingernail grinds require a special jig attachment for your grinder to sharpen.

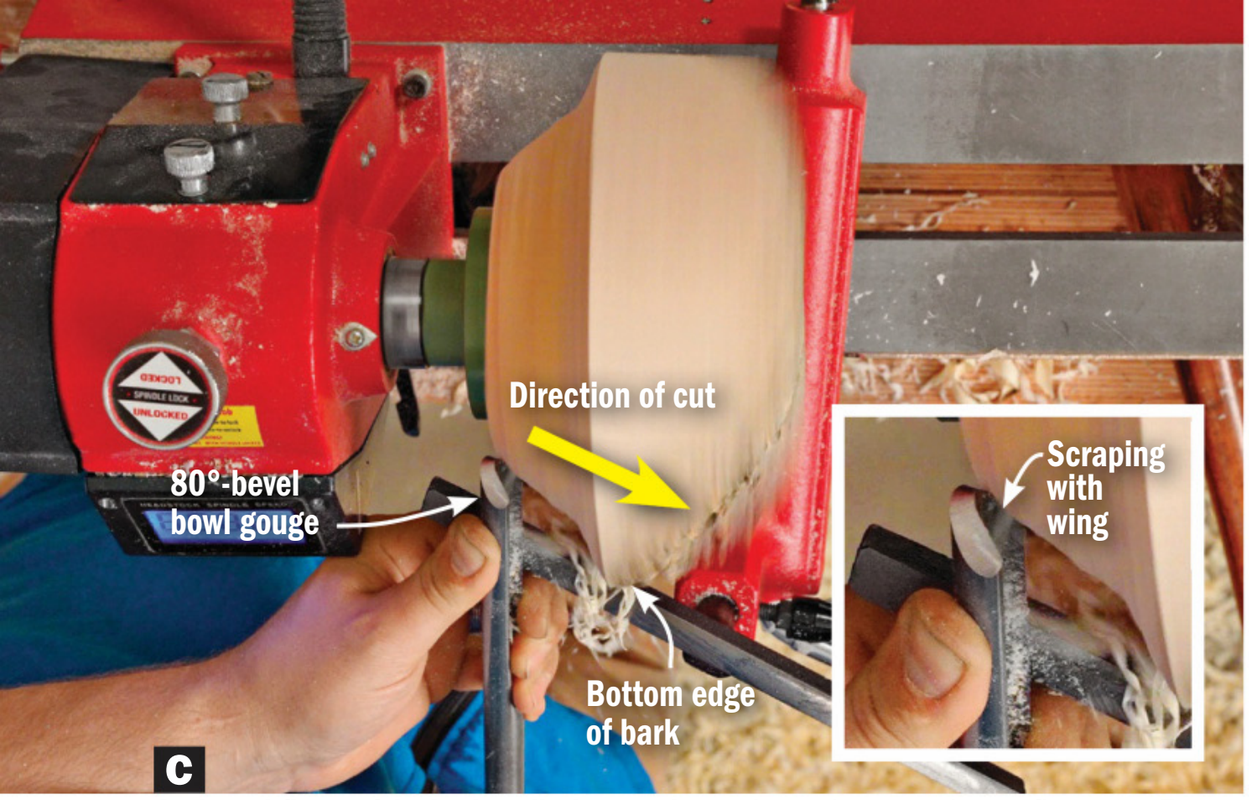
▶Learn to create and sharpen a bowl gouge with a fingernail grind. woodmagazine.com/sharpbowlgouge

When turning the bowl, you'll use *push cuts* and *pull cuts*. A bowl gouge with any profile can make push cuts, but only fingernail-grind tools can make pull cuts. With a pull cut, you pull the tool toward you with both hands while cutting with the sharpened edge of the wing (a scraping cut) [**Photo C inset**]. The bevel doesn't contact the wood. Pull cuts prove easier to control and generally provide a less bumpy surface, but may tear out grain.

During a push cut, rub the bevel on the workpiece while pushing forward with the handle [**Photo D inset**]. The direction the bevel points guides the tool in that direction. Swing the handle to change direction.

—Brian Simmons





A closed flute with the handle lowered, as shown here, makes a finer cut. For more aggressive cuts, open the flute slightly and level the tool handle.

Make push cuts from the rim to the bottom of the bark line. Cutting against the grain in this fashion prevents tear-out along the bark edge.

Start with shallow cuts around the center. Swing the handle to create a dished cut. Expand the diameter and depth of the hollowed area with successive cuts.

As the bowl deepens, the 80° bevel allows positioning the tool closer to parallel to the lathe bed while still rubbing the bevel on the surface.

Shape the outside

▶On outside scraping cuts, a *closed flute* means facing the flute to about 3 o'clock with the lower wing cutting and the upper wing barely clearing the surface. For an *open flute,* the flute faces about 2 o'clock creating space between the upper wing and the workpiece.

1 Using the fingernail-grind bowl gouge, begin rounding the bowl exterior with scraping pull cuts from near the faceplate toward the bark. Stop just before reaching the bark as scraping cuts will damage it [**Photo C**].

2 Make push cuts with the bevel rubbing, from the bowl rim (uppermost portion of the bark) to just below the bottom of the bark [**Photo D**]. Keep the flute open about 45° while cutting right to left. If you need additional room to work, remove more waste from the faceplate to the bark edge with pull cuts.

3 Alternate between pull cuts and push cuts to shape the outside of the bowl. Leave at least 1" of wood at the base of the bowl beyond the bottom curve to allow for shaping the feet later.

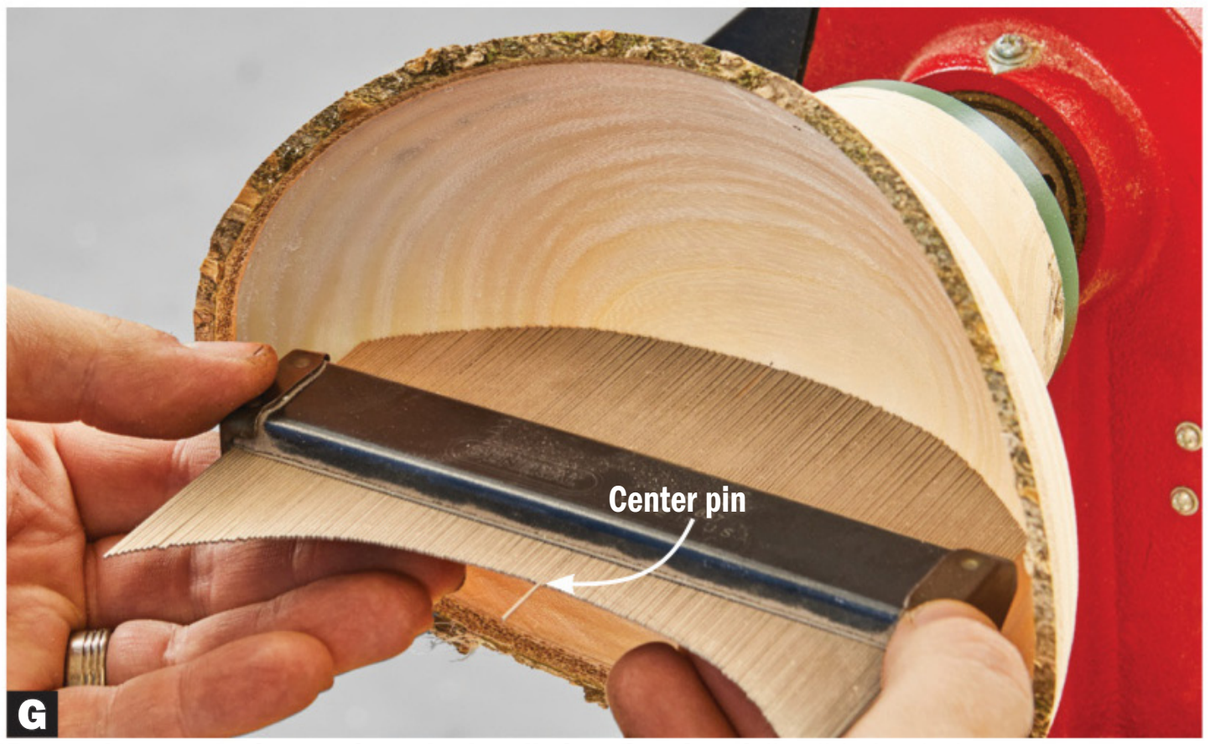
Take it inside

When hollowing the interior, rub the bevel on all cuts, working toward the center.

1 Using the 45°-bevel bowl gouge, begin hollowing from the center [**Photo E**]. As you hollow deeper, switch to the 80°-bevel gouge to prevent the tool shaft from contacting the rim [**Photo F**]. Measuring with outside calipers, work to a wall thickness of 3⁄16".

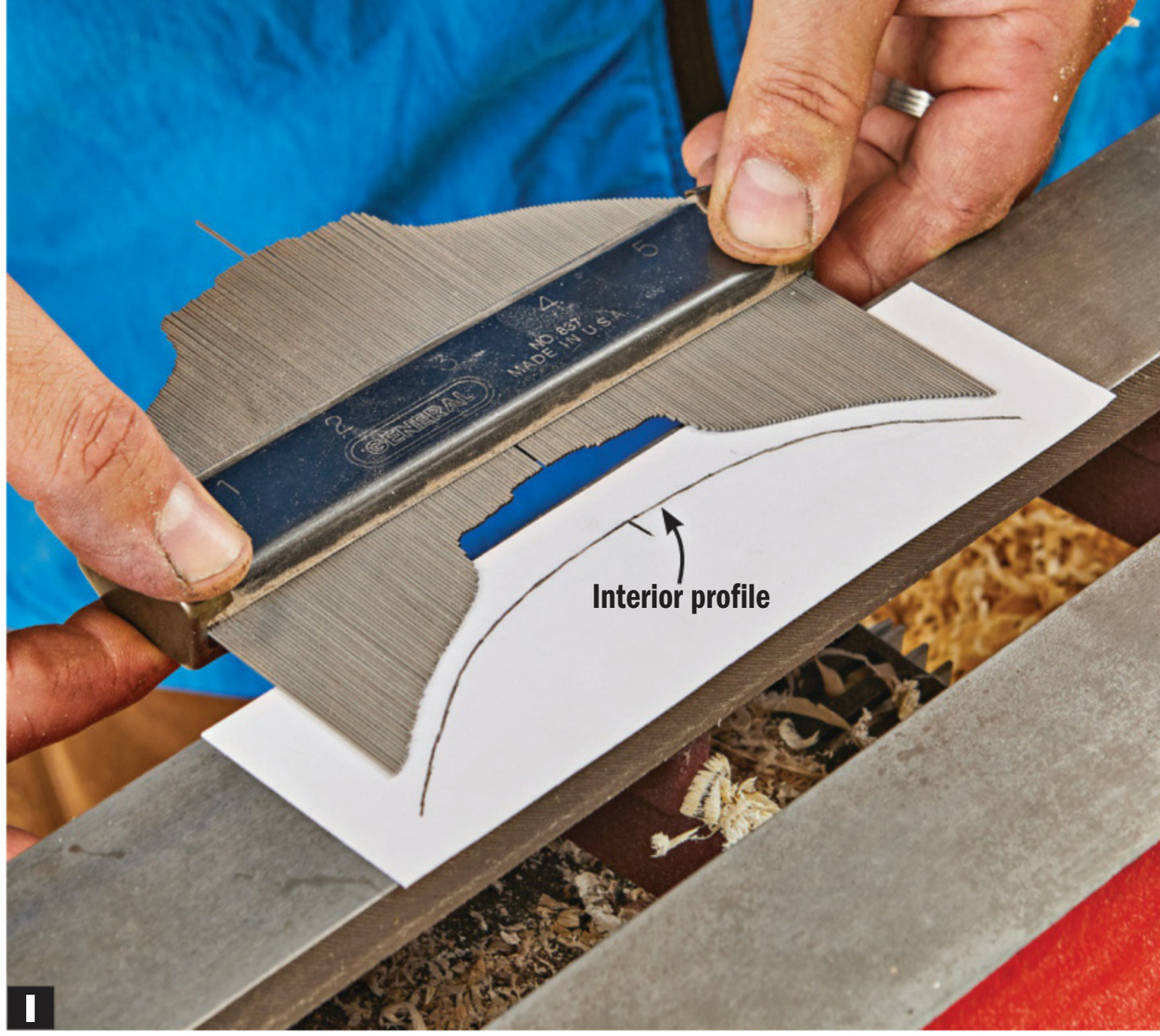
2 Mark a small dot at the bottom center of the bowl interior. Use a profile gauge to transfer the interior profile to a piece of paper [**Photo G**].

▶Buy a profile gauge. woodmagazine.com/profilegauge



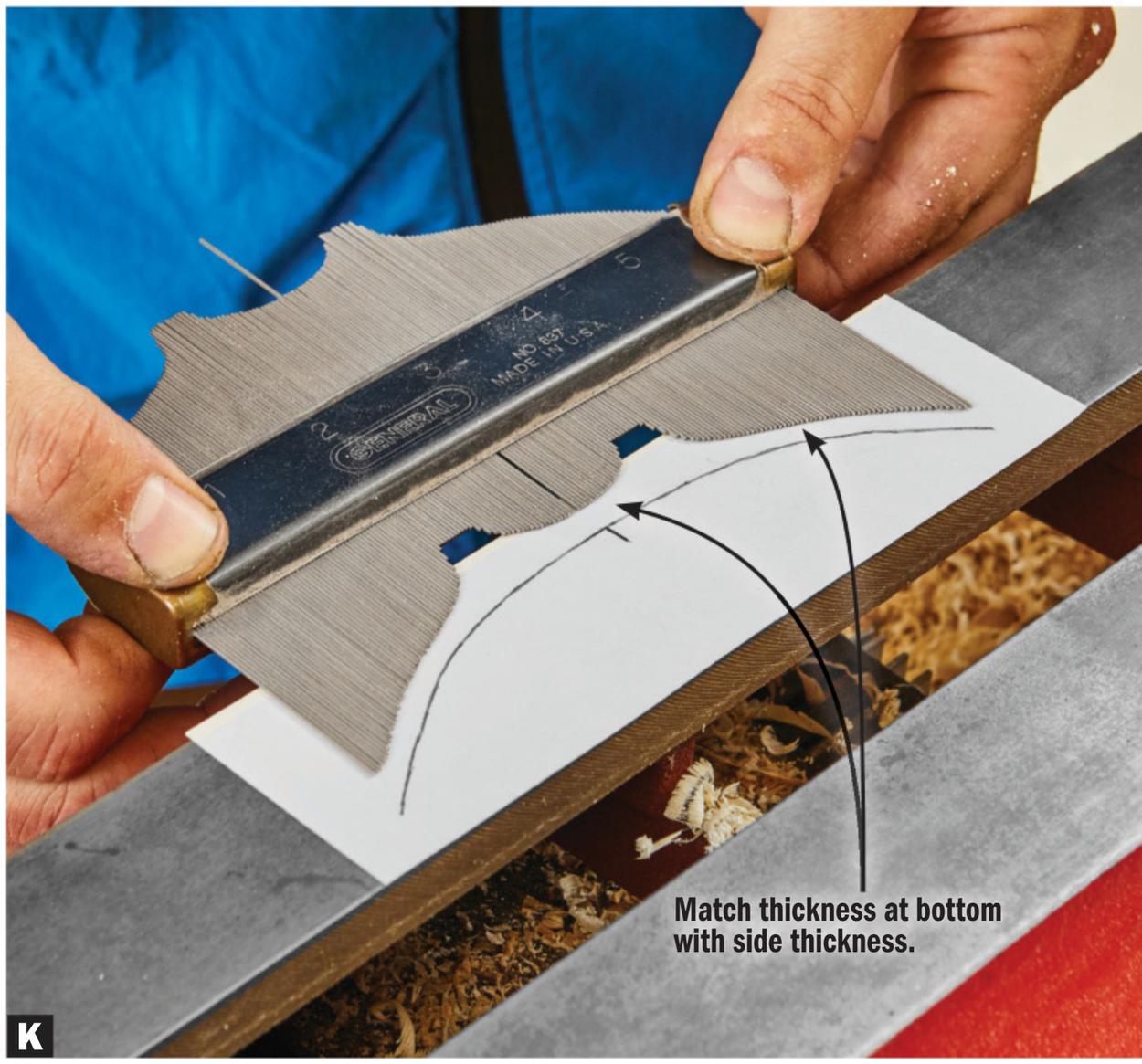
Press the gauge pins against the bowl's interior. Carefully slide back the center pin (the one aligned with the dot) about ¼". Trace the profile, including the retracted pin location, to a piece of paper.

Turn away the waste to leave a 2"-diameter tenon about ¼" long.



Align the retracted pin with the center mark on the template. Work for a consistent thickness except for the area of the tenon.

After hollowing within the tenon, mark the center, reset the profile gauge, and retract the center pin.



Check for a consistent thickness around the center of the recess.

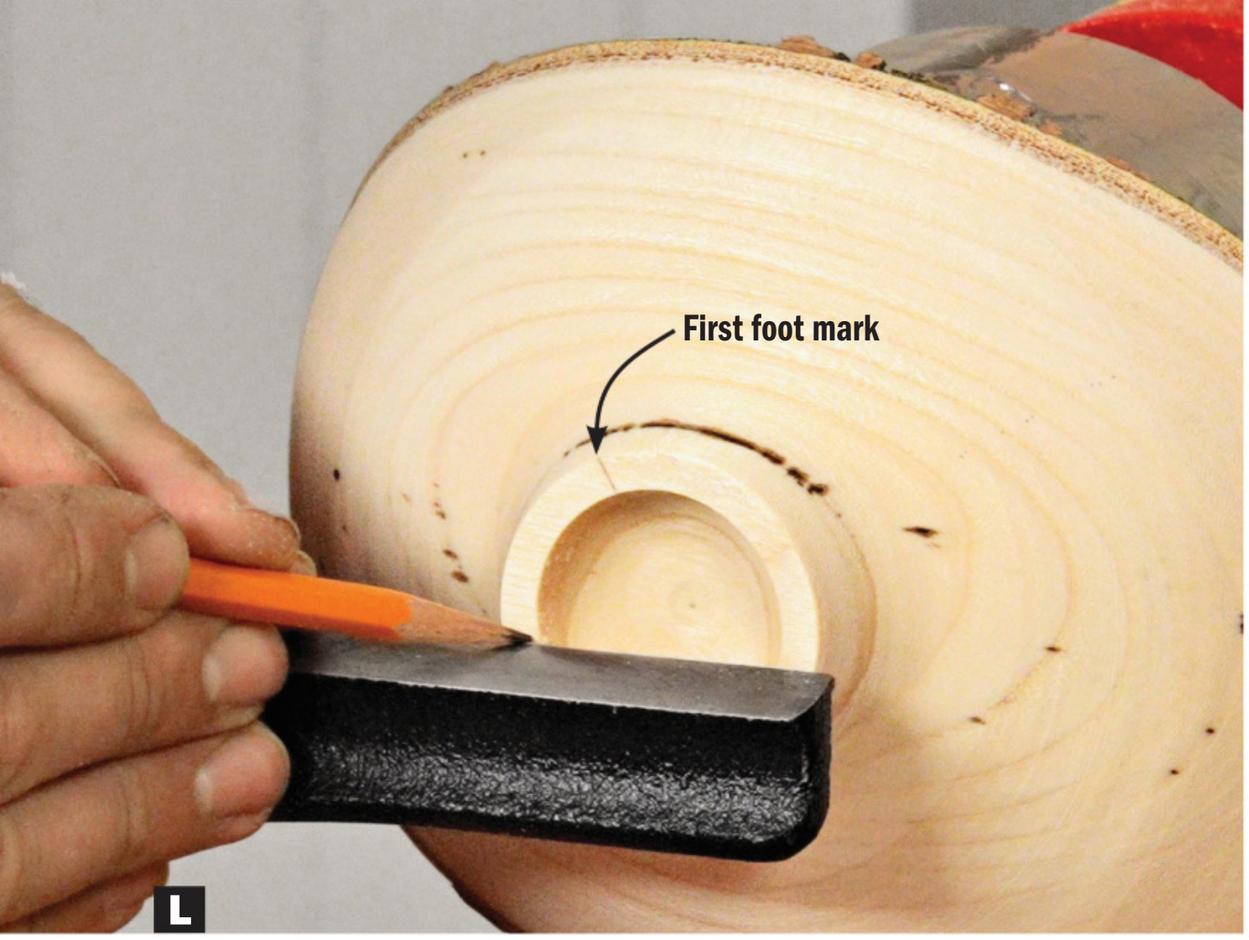
Make an appeal to the base

▶Make your own vacuum chuck. woodmagazine.com/suckychuckplan

1 Secure the bowl blank to a vacuum chuck, centered. Use the tailstock to help align the blank and for support as you turn, until it gets in the way.

2 Make pull cuts from the center out or, with the tailstock removed, bevel-rubbing cuts in the same direction, to leave a tenon from which the feet will be shaped [**Photo H**].

3 With a pencil, mark the center of the bowl bottom. Press the profile gauge against the bowl exterior, and as before, retract the center pin. Compare the profile gauge to the paper template of the bowl interior [**Photo I**]. Shape the exterior until the thicknesses match and become parallel on either side of the tenon. Then, hollow the tenon to leave a 3⁄16"-wide rim from which the feet will be carved. Again, use the profile gauge to check your progress when hollowing [**Photos J, K**].



Position the tool rest ⅛" below center and perpendicular to the lathe bed. With the indexing system locked, mark across both sides of the foot ring. Rotate the headstock 60°, mark again, and repeat once more.

Rotate the bowl 180° from each set of marks and mark lines parallel to the first sets, making six pairs of marks.

A carbide burr bit removes material quickly. Switch to a sanding drum to finish shaping the feet and blend them into the curve of the bowl bottom.

Create a smooth transition from the bowl surface to the sides of the feet, matching the inside and outside curves.

4 Use the lathe indexing system to lay out the feet [**Photos L, M**]. Mark between the first, third, and fifth pairs of marks to indicate the feet. Set the bowl aside for a week to dry.

Plant your feet

1 Use a rotary tool with a carbide burr and a sanding drum to remove the waste areas between the marked feet [**Photos N, O**]. Sand the bowl surfaces at the drill press [**Photo P**]; then finish-sand the inside and outside to 220 grit by hand.

2 Apply a finish. We sprayed on three coats of aerosol lacquer. After you put your creation on display, ask your friends if they can find your three-foot bowl.

Source: 2" heavy-duty sanding-pad holder mandrel, $10/pair, WoodTurners Wonders, 678-400-8181, woodturnerswonders.com.

Produced by **Craig Ruegsegger**
with **Brian Simmons**
Project design: **Brian Simmons**

A 2" soft hook-and-loop sanding disc [Source] conforms to the curves of the bowl. Work carefully near the bark to avoid tearing it off.

Super-secret Super Bundle

These downloadable plans have something to hide.

20 plans for $25

woodstore.net/secrets

Specialty Chisels

As your woodworking skills grow and your interests broaden, you'll soon discover that even a great set of bench chisels won't suffice for every job. That's where specialty chisels earn their keep. For five specific tasks, here are our favorite models.

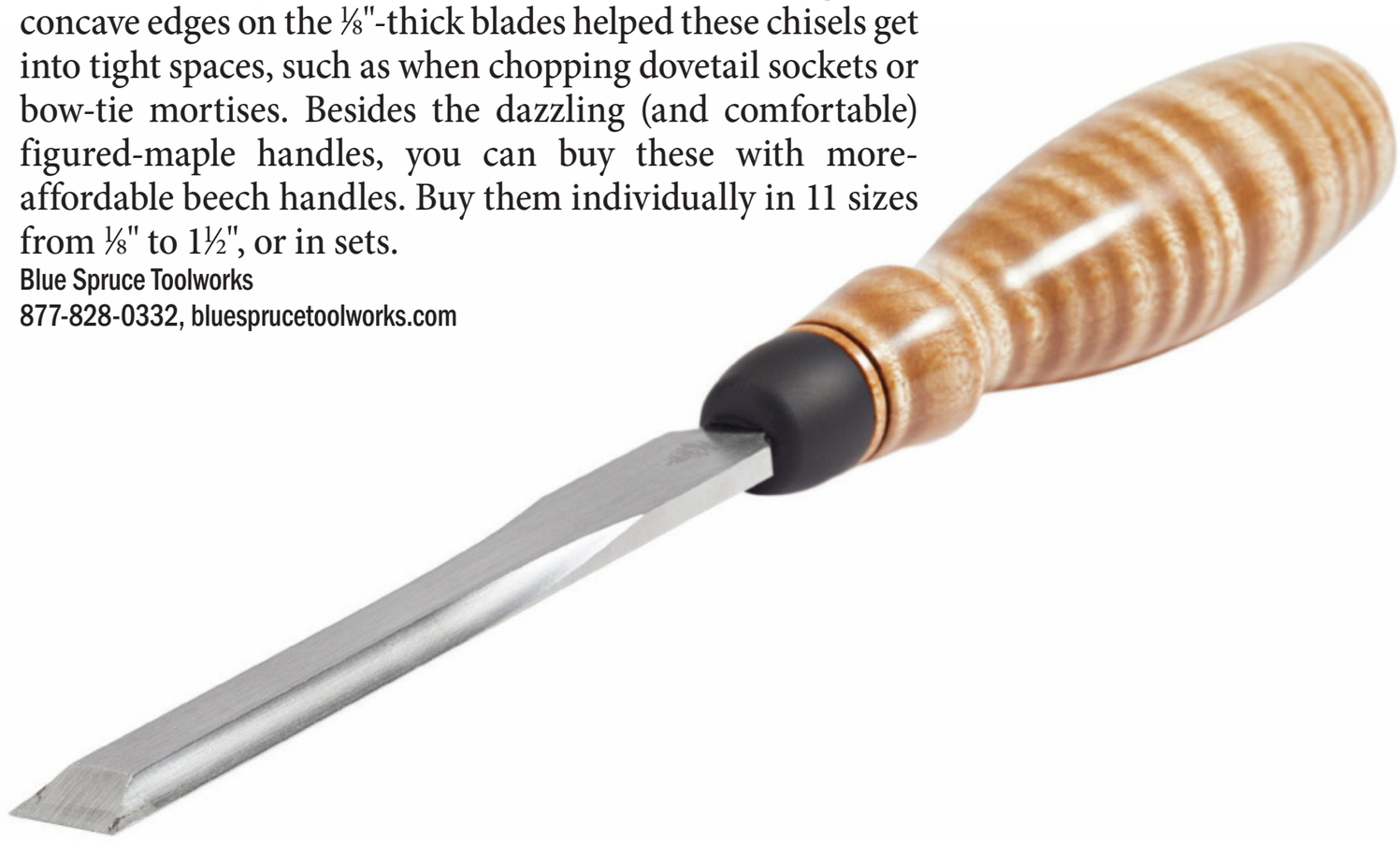
Task: Fitting dovetails

Blue Spruce dovetail chisels

½" chisel (shown) $92.50; 4-chisel set (⅛", ¼", ⅜", and ½") $380

Out of the box, we were pleased to find the A2-steel blades flat and polished to a mirror finish, and the cutting edge honed to a sharp microbevel. Unlike a flat beveled edge, the concave edges on the ⅛"-thick blades helped these chisels get into tight spaces, such as when chopping dovetail sockets or bow-tie mortises. Besides the dazzling (and comfortable) figured-maple handles, you can buy these with more-affordable beech handles. Buy them individually in 11 sizes from ⅛" to 1½", or in sets.

Blue Spruce Toolworks
877-828-0332, bluesprucetoolworks.com



Task: Cleaning out angled corners

Narex skew chisels

no. 10S1517, $29.50 (per pair)

You'll love these value-priced right- and left-angled ½"-wide chisels for cleaning out half-blind dovetail sockets.

Lee Valley
800-871-8158, leevalley.com

Task: Squaring router-cut corners

Robert Sorby corner chisels

⅜" no. 85S0701, $93.50; 1" no. 85S0703, $167.50

When you rout a mortise or rabbet in an assembled frame or carcase to fit a recessed lock, panel, glass, or mirror, this chisel squares up the corners cleaner and quicker than one of those stubby spring-loaded hammer-strike chisels.

Lee Valley
800-871-8158, leevalley.com

Task: Flush-trimming adjoining surfaces

WoodRiver bent paring chisels

1" chisel, no. 157919, $27; set of 4 chisels (¼", ½", ¾", 1"), no. 100141, $90

Whether you're shaving a joint flush or scraping glue squeeze-out, these affordable angled chisels work well.

Woodcraft
800-225-1153, woodcraft.com

Task: Tight-quarters work

WoodRiver butt chisels

Set of 4 chisels (¼", ½", ¾", 1"), no. 152169, $70

Inevitably, you'll need to chisel in a spot where your long-handled chisels can't fit, and the 6½" length of these four makes that easier.

Woodcraft
800-225-1153, woodcraft.com

Cut pocket holes fast and clean by machine

Pocket-hole machine, no. TSM-12, $1,500

I build a lot of cabinets and like to use pocket-hole joinery for assembling face frames. The Castle TSM-12 cuts pockets and pilot holes faster and cleaner than any other system I've used. And I like the 6°-angled pockets (most drill-type jigs make 15° pockets) that give the screws better purchase in the meat of the adjoining frame member.

The TSM-12 uses two Bosch router motors that do all the work: A 2¼-hp motor routs the pockets using an included three-flute carbide bit, and a 1-hp trim router bores the pilot hole. Simply push the lever forward to cut the pocket, then pull it back to drill the pilot hole. It's loud, but effective.

The adjustable toggle clamp holds workpieces securely, but without registration markings or stops, I had to clamp on shop-made stops for precise repeatability. I expected built-in stops for the price of this unit.

You can connect dust-collection hose via 4" and 2½" knockouts in the back panel, and Castle provides a template to make a panel to enclose the open bottom of the machine to assist with dust collection. When I did this, my vacuum gathered up about two-thirds of the dust.

—Tested by Kevin Boyle, Senior Design Editor

Castle
800-282-8338, castleusa.com

Cordless air supply will softly rock your world

18-volt air compressor, no. 2840-20, $350 (no battery or charger included)

It seems there's always a "yeah, but" attribute for an air compressor, whether it's the noise of an oil-free unit, the weight of a model built to hold up to job-site use, or the need to be near an electric outlet. Milwaukee's Fuel compressor addresses all of those. Powered by a single 18-volt rechargeable battery, the 2840-20 can be carried and used anywhere. It's built ruggedly and weighs 31 pounds, a reasonable compromise. And it runs at an astonishingly quiet 68 decibels.

The two-gallon tank holds enough air—and the pump refilled it quickly enough when it kicked on—that I fired 2" 15-gauge finish nails without having to stop and wait. Curious about how long the battery could keep this up, I cycled the pump 36 times on a fully charged 6-amp-hour battery pack. If you have two battery packs, you'll likely never get caught waiting for one to recharge.

I found the hose-pressure adjuster easy to use. And the steel tank's quarter-turn drain valve opened and closed easily. I don't see why this couldn't be my full-time shop compressor.

—Tested by Bob Hunter, Tools Editor

Milwaukee
800-729-3878, milwaukeetool.com

continued on page 70

Clamp panels in two directions at once

Deluxe panel clamps, no. 67164, $100 each

Panel clamps have been around for decades—usually made of wood—but always with limitations: They either bow slightly in the middle or fail to apply equal downforce across their length. These Rockler clamps, made of steel, not only squeeze together the boards in your panel, but also force them to remain flat, according to Rockler. They work on panels from ¾" to 3" thick and from 10" to 36" wide.

Rockler
800-279-4441, rockler.com

Varathane launches tinted epoxies

Super Glaze Epoxy Resin, $27 per quart

This pourable epoxy resin comes in five premixed colors: charcoal, gray, aged wood (brown), metallic blue, and turquoise. It also comes in a crystal clear version. Use this product to fill gaps and voids in wood, as a decorative adhesive (where you want it to show), and as a durable, waterproof finish for tabletops and other flat surfaces.

Varathane
800-901-0411, rustoleum.com

What's Ahead

A GLIMPSE INSIDE THE MAY ISSUE (ON SALE MARCH 4)

Brighter, lighter plant stand
The slatted shelves of this stackable unit allow sunlight to filter through and make it easy on the eyes.

Crokinole game
What do you get when you cross curling with bumper billiards? This fun game of skill and dexterity!

Hand-tool tote
Carry your most-used tools from shelf to bench and back in this elegant, easy-to-build case.

Joinery "Dream Team"
With these tools, you can cut virtually any joint imaginable.

Specialty wax finishes
So easy to apply and repair, these eye-popping finishes will make even Mr. Miyagi question the benefit of "wax off."

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