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WOOD®

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SITTING PRETTY

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Smooth broad panels for flawless results

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8" x 76" 3 HP Parallelogram Jointer

Flatten long stock

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1 HP Oscillating Spindle Sander

Shape and smooth intricate projects

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Top-notch dust collection capabilities

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Master complex curves and fine details

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PROJECT PLAN PRAISE

WE ARE UNREASONABLY SERIOUS ABOUT YOUR SUCCESS IN THE SHOP.

We received a communication recently from an irate reader that caught us off guard. The gist was: "I don't trust your project plans because you never publish corrections!"

Dear Reader, we're not perfect, but we publish every correction for every error we know about. We may let the rare typo slide. But, when it comes to our attention, any error that materially affects the outcome of a project plan will be detailed and corrected in *Your Voice* (*page 4* in this issue. Sorry, no errors to report at the moment).

As Vince Ancona notes in his very helpful article "Project-Building Success" on *page 40*, that process involves a lot of double-checking. Let me add some flavor (i.e., bragging):

Once we approve a project design, it is meticulously drafted in CAD, gorgeously illustrated, and skillfully built in our very own shop. Those hands in the photos belong to our design editors, who pause to take helpful how-to images as they build each project from the exact same drawings you use.

The designer passes along detailed notes to one of our writers, a woodworking expert themself, who compiles the notes, photos, and illustrations into reader-friendly, step-by-step instructions, arranged by subassembly and major component. A complex or noteworthy operation is detailed in its own sidebar—a small article within the article. Part letters, photo and drawing numbers, and article components are referenced in color-coded fonts, directing your eye to the correct element. Tips and notes are sprinkled through the margins to call your attention to important details. Illustrations and patterns are labeled, scrutinized, and revised.

The project article goes through a copy-edit round, layout round, proofreading round, and page proof round, each with multiple stops through experts of all stripes. In all, there may be 2,500 individual dimensions, measurements, callouts, and directional indicators in a single issue. (We've counted!) These have to be cross-referenced, added up, and double-, triple-, and quadruple-checked.

If I have a question during the editing process, no problem. The project is steps away in the gallery surrounding our shop. There's no guesswork required. I simply grab my tape and confirm that measurement.

The timeline from project ideation to your mailbox is measured in months and years. There are cheaper ways to fill magazine pages. Heck, filling the pages with corrections is one of the cheapest.

But we are unreasonably serious about your success in the shop because that's what you deserve: no mid-project dejection, no wasted wood, no misspent building time you'll never get back.

So get out to the shop and make something. Take one of our plans to help.

Lucas

LUCAS PETERS
lucas.peters@woodmagazine.com
@peters.lucas

WOOD®
Issue No. 311 | September 2026
Vol. 43, No. 4

WOOD®
Issue No. 311 | September 2026

PLANS

ON THE COVER

32

Build this laid-back bench to carve out a cozy garden retreat for two. Sturdy joinery and exterior-grade lumber mean that you'll be enjoying the shade of the attached arbor for years to come.

TOOLS & TECHNIQUES

DEPARTMENTS

TWO SHEETS TRANSFORM 7 SQUARE FEET OF WALL INTO 26 SQUARE FEET OF CLEVER TOOL STORAGE.

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WOOD-FRAME WHEELED WONDER

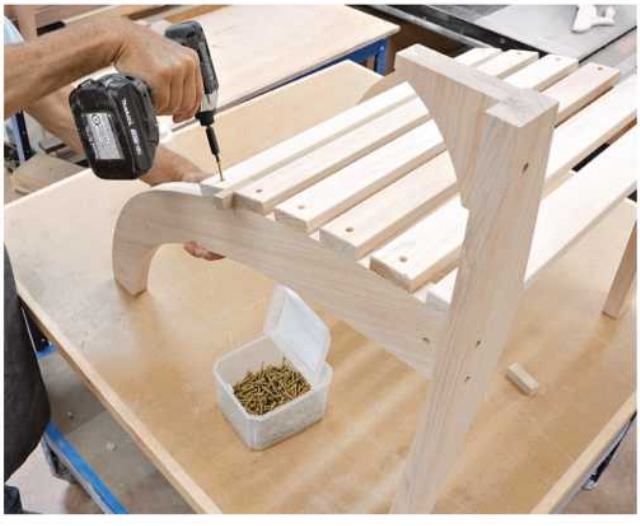
I served as Managing Editor for *WOOD*® magazine from issue 22 (April 1988) through issue 39 (December 1990) and worked with *WOOD* on other projects over the years. Recently, I had the opportunity to combine my passions for woodworking and cycling to create a bicycle with a wood frame.

To start this venture, I attended a week-long class by Mark Osgood at the Marc Adams School of Woodworking. I laminated layers of maple and cherry, relying on the advice of expert bike builders and other woodworkers to create a strong frame. I enlisted friends to help me with details like the pinstriping and gold leaf, as well as setting up the driveline and components. The Voss family coat of arms in the "fox rampant" headtube badge honors my heritage.

Carl Voss
Des Moines, Iowa

Not only is Carl a passionate cyclist, himself, but as a member of the Des Moines City Council, he advocates for the metro cycling community. In 2021, the City of Des Moines Parks and Recreation Department dedicated the Carl Voss Trail.

Lucas Peters
Editor-in-Chief



MODIRONDACK MODS

After building a "Modirondack Chair" featured in issue 301 (March 2025), I have one suggestion. In the assembly steps, you instruct attaching the arm brackets (parts D) prior to installing the seat slats (parts E and F). With the arm brackets in place, it's difficult to get a screwdriver into position to attach the first few front slats. I suggest fastening slats first, then the arm brackets.

Jack Obszarski
Fairfield, Ohio

Jack, your recommended assembly sequence certainly works. Another good solution for driving screws in hard-to-reach areas is a right-angle attachment for your drill. Available for as little as $20, these handy accessories prove so useful you may wonder how you got along without one.

Dave Stone
Managing Editor

continued on page 6

Upper Class Just Got Lower Priced

Finally, luxury built for value—not for false status

Until Stauer came along, you needed an inheritance to buy a timepiece with class and refinement. Not any more. The Stauer ***Magnificat II*** embodies the impeccable quality and engineering once found only in the watch collections of the idle rich. Today, it can be on your wrist.

The ***Magnificat II*** has the kind of thoughtful design that harkens back to those rare, 150-year-old moon phases that once could only be found under glass in a collector's trophy room.

Powered by 27 jewels, the ***Magnificat II*** is wound by the movement of your body. An exhibition back reveals the genius of the engineering and lets you witness the automatic rotor that enables you to wind the watch with a simple flick of your wrist.

It took three years of development and $26 million in advanced Swiss-built watch-making machinery to create the ***Magnificat II***. When we took the watch to renowned watchmaker and watch historian George Thomas, he disassembled it and studied the escapement, balance wheel and the rotor. He remarked on the detailed guilloche face, gilt winding crown, and the crocodile-embossed leather band. He was intrigued by the three interior dials for day, date, and 24-hour moon phases. He estimated that this fine timepiece would cost over $2,500. We all smiled and told him that the Stauer price was less than $100. A truly magnificent watch at a truly magnificent price!

Try the ***Magnificat II*** for 30 days and if you are not receiving compliments, please return the watch for a full refund of the purchase price. The precision-built movement carries a 2 year warranty against defect. If you trust your own good taste, the ***Magnificat II*** is built for you.

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† Special price only for customers using the offer code versus the price on Stauer.com without your offer code.

The Stauer Magnificat II is powered by your own movement

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KEN RUMMER of Ankeny, Iowa, worked with his wife to build a cherry top for an adjustable-height computer desk. They purchased the metal legs and lift mechanism from an office furniture store. For the cherry top, they crafted breadboard ends using individual tenons and extra-long mortises secured with matching cherry pegs.

Using a classic Hepplewhite table as inspiration, **GUY ROSSI** of Proctor, Vermont, built this end table and matching box. He used tiger maple, spalted yellow birch, Cuban mahogany, cherry, and African mahogany, and he finished the table with Minwax Antique Oil.

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 WORKSHOP WITH AN ANNEX

Thoughtful layout and careful control of noise and dust prove that a full-function shop can exist in the confines of a condominium.

WRITER: RANDY MAXEY

Careful selection and placement of tools provide plenty of working space to get around the shop. Mobile bases on all the tools make it easy to change the layout.

Tim Lawler and his wife, Robin, reside in southern Michigan. His years in manufacturing using the concept of "continuous improvement" helped him become a better woodworker.

SHOW US YOUR SHOP

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

Before moving into his condominium, Tim Lawler had a workshop in a large space attached to his home's garage. Downsizing his shop into his condo's lower level required careful planning to produce an efficient, clean, and quiet workspace.

First, Tim had an electrician upgrade the main panel to 200-amp service. Then he wired in a 240-volt outlet for his tablesaw, plus 120-volt circuits for lighting and receptacles.

Then Tim set about preventing noise and dust from reaching into the living areas upstairs. He couldn't eliminate workshop noise, so he took steps to minimize sound transmission. He started by insulating the stud walls, exterior walls, and common walls with fiberglass before adding drywall. Overhead, he wrapped HVAC ductwork with insulation and enclosed the main furnace trunk in a box filled with fiberglass batts. More fiberglass insulation fills the floor joist cavities overhead, and a drop ceiling with acoustic tiles adds another sound-deadening layer. Over the concrete floors, DriCore panels deaden vibration and reflect sound less than bare concrete.

Shop access is through exterior doors, their weatherstripping blocking sound better than hollow-core interior doors.

Those doors also help contain dust inside the shop. And, though the space is heated and cooled, Tim eliminated cold air returns in the space that would pull dust into the HVAC system. A cyclone

PHOTOGRAPHER: BRETT MERKEL; **ILLUSTRATOR:** ROXANNE LEMOINE

continued on page 10

Meet the Beauty in the Beast

Discover this spectacular 6½-carat green treasure from Mount St. Helens!

For almost a hundred years it lay dormant. Silently building strength. At 10,000 feet high, it was truly a sleeping giant. Until May 18, 1980, when the beast awoke with violent force and revealed its greatest secret. Mount St. Helens erupted, sending up an 80,000-foot column of ash and smoke. From that chaos, something beautiful emerged… our spectacular ***Helenite Necklace***.

EXCLUSIVE
FREE
Helenite Earrings
-a $99 value-
with purchase of Helenite Necklace

Helenite is produced from the heated volcanic rock of Mount St. Helens and the brilliant green creation has captured the eye of jewelry designers worldwide. Today you can wear this massive 6½-carat stunner for *only $99!*

Make your emeralds jealous. Our ***Helenite Necklace*** puts the green stone center stage, with a faceted pear-cut in a luxurious gold-finished setting. The explosive origins of the stone are echoed in the flashes of light that radiate as the piece swings gracefully from its 18" luxurious gold-finished chain. Today the volcano sits quiet, but this unique piece of American natural history continues to erupt with gorgeous green fire.

Your satisfaction is guaranteed. Bring home the ***Helenite Necklace*** and see for yourself. If you are not completely blown away by the rare beauty of this exceptional stone, simply return the necklace within 30 days for a full refund of your purchase price.

JEWELRY SPECS:
- 6 ½ ctw Helenite in gold-finished setting
- 18" gold-finished chain

Limited to the first 600 orders from this ad only

Helenite Necklace (6 ½ ctw)..... Only $99 +S&P
Helenite Stud Earrings (1 ctw) ..... $99 +S&P
Helenite Set ~~$198~~ ..... Call-in price only **$99** +S&P
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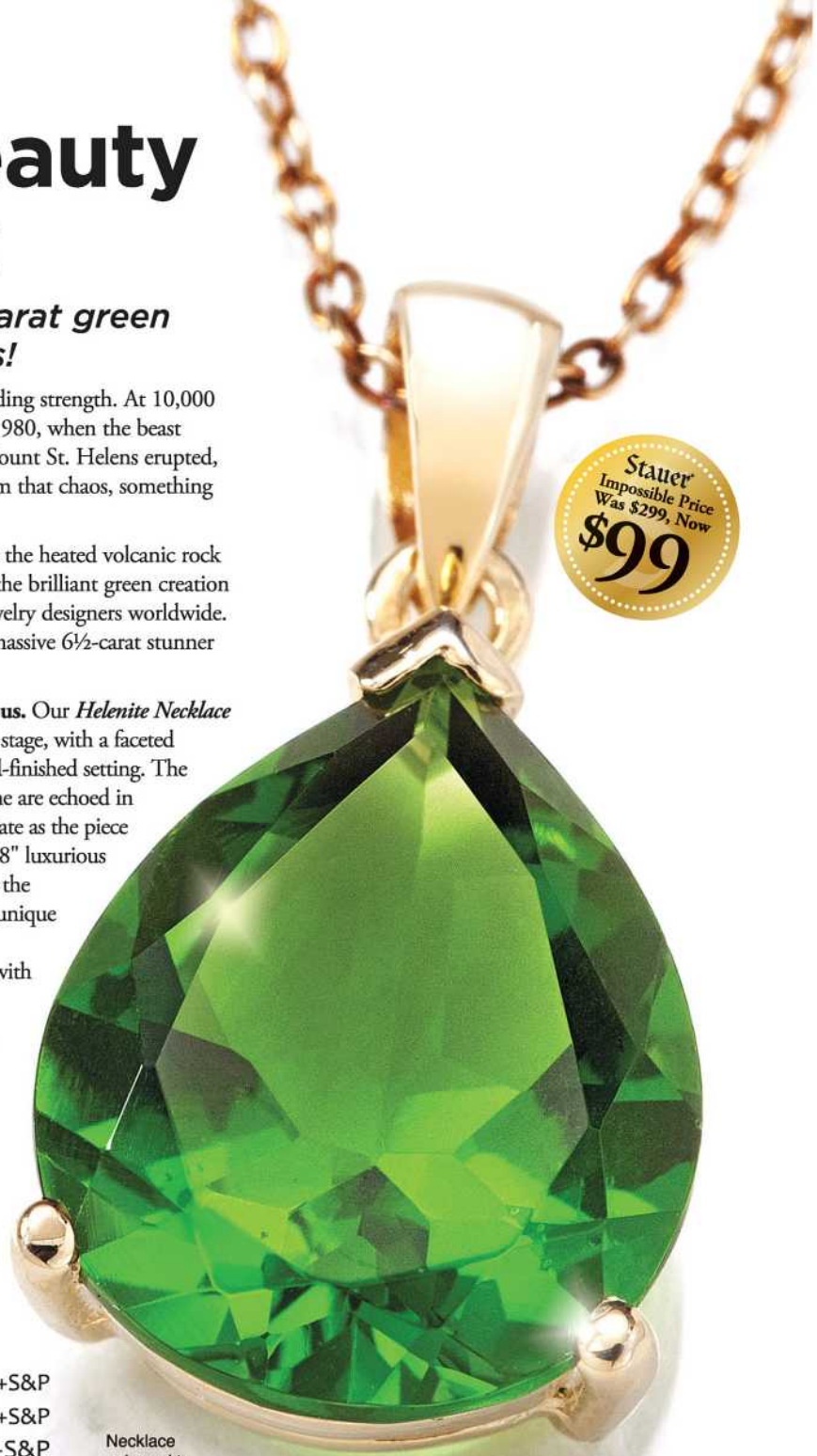

Necklace enlarged to show luxurious color.

"My wife received more compliments on this stone on the first day she wore it than any other piece of jewelry I've ever given her."

- J. from Orlando, FL
Stauer Client

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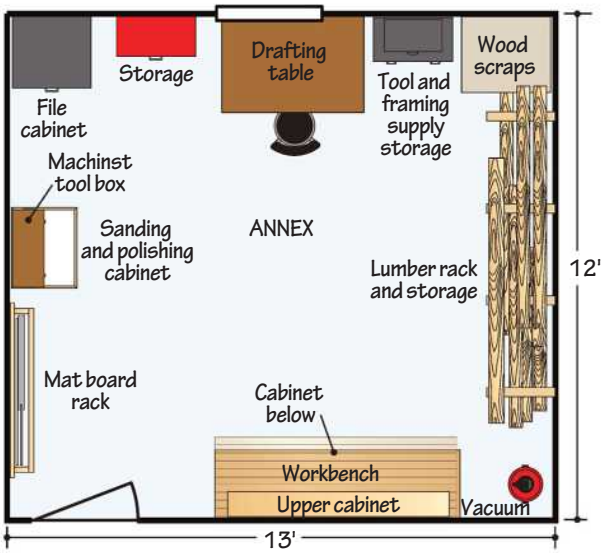
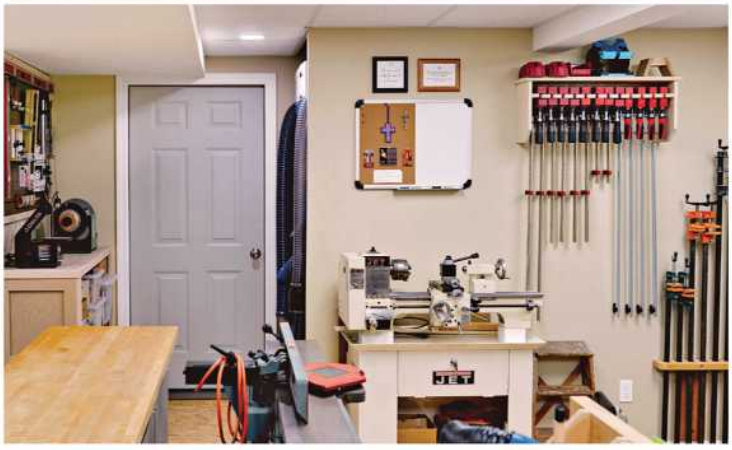
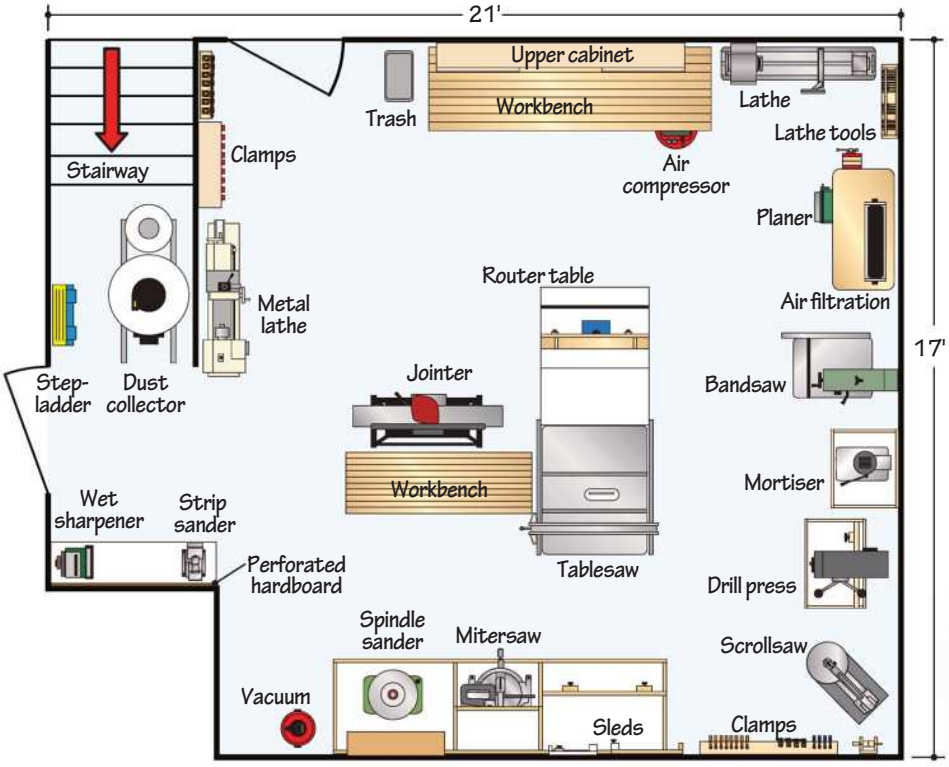




After a career in manufacturing, Tim wouldn't dream of having a shop without a metalworking lathe. He uses it to make or repair broken parts and turn custom hardware for his projects.



dust collector and his shop vacuum gather most dust at the source, and an electrostatic filter cleans the air.

Tim's efforts paid off. "We don't notice dust creeping into our living space. And when I shut the doors to my shop, the noise upstairs is so minimal my wife hardly notices it."

Tim did have to adjust his layout and choice of tools to fit into the smaller space. He traded his old dust collector for a cyclone system housed in a closet under the stairs. He modified his tablesaw extension to retrofit his router table. A quieter air compressor replaced the old one. And he downsized his lathe. Mobile bases under all of his machines

One end of the shop "annex" provides storage for a variety of shop necessities and a handy workcenter. Lumber storage fills an adjacent wall.

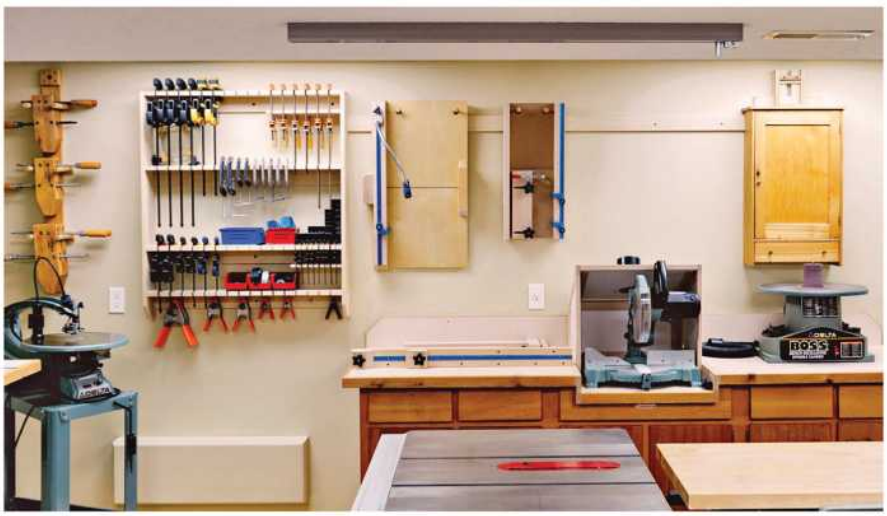
Tim made the overflow space a haven for dreaming up new projects. His lifetime collection of machinist tools resides in a myriad of tool cabinets.

Tim's dad built this workbench 60 years ago. Tim added the large drawer and a hardwood top salvaged from an old building. The cabinet above is equipped with sliding doors for easy access.

allow reconfiguring the layout to accommodate the project at hand. Once all the machines were in place, he built wall storage racks and cabinets that hang on a French cleat system. The system's flexibility allows him to rearrange or add items to the walls like tablesaw jigs, a bulletin board, and custom tool racks.

Tim's floor plan also encompasses a room across the hall that he took over as his "annex." It houses his drafting table, which he uses to work on sketches for new projects. Lumber storage racks take up most of one wall of this room. A handy workcenter and storage cabinet occupy the space on an adjacent wall.

In this room, you'll also find his collection of machinist tools gathered during his career in manufacturing. In the shop, Tim is never without his digital calipers and 6" metal rule. "I use my calipers for measuring everything: depth of cuts; drilled hole depths; material thickness before and after planing; finding and marking centers; checking screw diameters for pilot holes; and fitting mortise-and-tenon parts."



Tim thoroughly enjoys building jigs, fixtures, and custom storage racks for his shop. The French cleat hanging system provides a simple, sturdy method for mounting cabinets and racks.

Q: LUMBER THROUGH THE MAIL?

I live in a remote area where there are few options for buying hardwood lumber. I've seen ads for hardwood dealers that will ship lumber, but I've been hesitant to try them. Do you have any advice or suggestions on going this route?

Art Hamlin
Arthur, Nebraska

A: You're not alone, Art. Many woodworkers don't have access to hardwood lumber in their area or are limited to the meager selection at the nearest home center. For small to medium-size projects, or if you want to make something from an exotic species, mail-order lumber is a viable alternative. There are a few things to be aware of before placing an order.

A quick online search will yield a long list of sawmills and hardwood dealers that ship lumber. To narrow down the selection, look for dealers that cater to everyday woodworkers rather than commercial buyers. These dealers usually don't mind small orders and will ship the lumber through the mail or a parcel service, so your order shows up at your doorstep.

Retail online lumber dealers often sell boards that have been surfaced on all four sides and cut to standard sizes. Some offer bundles of lumber, which makes pricing and ordering a little more straightforward.

Make sure you understand the shipping charges before placing an order. Most online dealers have shipping estimators or explain their shipping rates upfront. Packages over 4 feet in length usually carry a surcharge, so if your project doesn't call for any long parts, you're better off ordering shorter boards. To avoid having to place a second order (and pay additional shipping costs), make sure to order a little extra.

The downside to ordering lumber through the mail is that you don't get to select the boards yourself. However, some exotic-wood dealers will have photos of the actual boards they're selling, allowing you to see the board before you purchase it.

Mail-order lumber is typically wrapped in plastic to protect it from moisture and then wrapped in heavy cardboard for shipping. When your order arrives, open it to inspect the condition. If there's significant damage, contact the seller or carrier right away. It's also a good idea to allow the lumber to acclimate to the moisture level in your shop for a couple of weeks before using it.

Sources:

- **Badger Hardwoods of Wisconsin**
  badgerwood.com
- **Barrington Hardwoods**
  barringtonhardwoods.com (or Amazon.com)
- **Bell Forest Products**
  bellforestproducts.com
- **Cook Woods**
  cookwoods.com
- **Ocooch Hardwoods**
  ocoochhardwoods.com
- **Rockler**
  rockler.com
- **West Penn Hardwoods**
  wphardwoods.com
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I '*Bearly*' Made It Out Alive

A 12-inch stainless steel knife for only $79

What Stauer Clients Are Saying About Our Knives

★★★★★

"The feel of this knife is unbelievable... this is an incredibly fine instrument." — H., Arvada, CO

★★★★★

"This knife is beautiful!" — J., La Crescent, MN

It was a perfect late autumn day in the northern Rockies. Not a cloud in the sky, and just enough cool in the air to stir up nostalgic memories of my trip into the backwoods. This year, though, was different. I was going it solo. My two buddies, pleading work responsibilities, backed out at the last minute. So, armed with my trusty knife, I set out for adventure.

Well, what I found was a whole lot of trouble. As in 8 feet and 800-pounds of trouble in the form of a grizzly bear. Seems this grumpy fella was out looking for some adventure too. Mr. Grizzly saw me, stood up to his entire 8 feet of ferocity and let out a roar that made my blood turn to ice and my hair stand up. Unsnapping my leather sheath, I felt for my hefty, trusty knife and felt emboldened. I then showed the massive grizzly o**ver 6 inches of 420 surgical grade stainless steel,** raised my hands and yelled, "Whoa bear! Whoa bear!" I must have made my point, as he gave me an almost admiring grunt before turning tail and heading back into the woods.

JOIN MORE THAN 322,000 SHARP PEOPLE WHO COLLECT STAUER KNIVES

I was pretty shaken, but otherwise fine. Once the adrenaline high subsided, I decided I had some work to do back home too. That was more than enough adventure for one day.

Our Grizzly Hunting Knife pays tribute to the call of the wild. Featuring **stick-tang construction**, you can feel confident in the strength and durability of this knife. And the hand carved, natural bone handle ensures you won't lose your grip even in the most dire of circumstances. I also made certain to give it a great price. After all, you should be able to get your point across without getting stuck with a high price.

But we don't stop there. While supplies last, we'll include a pair of $99 **Stauer pocket binoculars FREE** when you purchase the Grizzly Hunting Knife.

Make sure to act quickly. The Grizzly Hunting Knife has been such a hit that we're having trouble keeping it in stock. Our first release of more than 1,200 SOLD OUT in TWO DAYS! After months of waiting on our artisans, we've finally gotten some knives back in stock. **Only 1,337 are available at this price,** and half of them have already sold!

EXCLUSIVE
FREE
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Pocket Binoculars
-a $99 value-
with your purchase of the Grizzly Hunting Knife

Knife Specifications:

- Stick tang 420 surgical stainless steel blade; 7 ¼" blade; 12" overall
- Hand carved natural brown and yellow bone handle
- Brass hand guard, spacers and end cap
- FREE genuine tooled leather sheath included (a $49 value!)

The Grizzly Hunting Knife ~~$249~~ $79* + S&P

Save $170

California residents please call 1-800-333-2045 regarding Proposition 65 regulations before purchasing this product.

**Special price only for customers using the offer code.*

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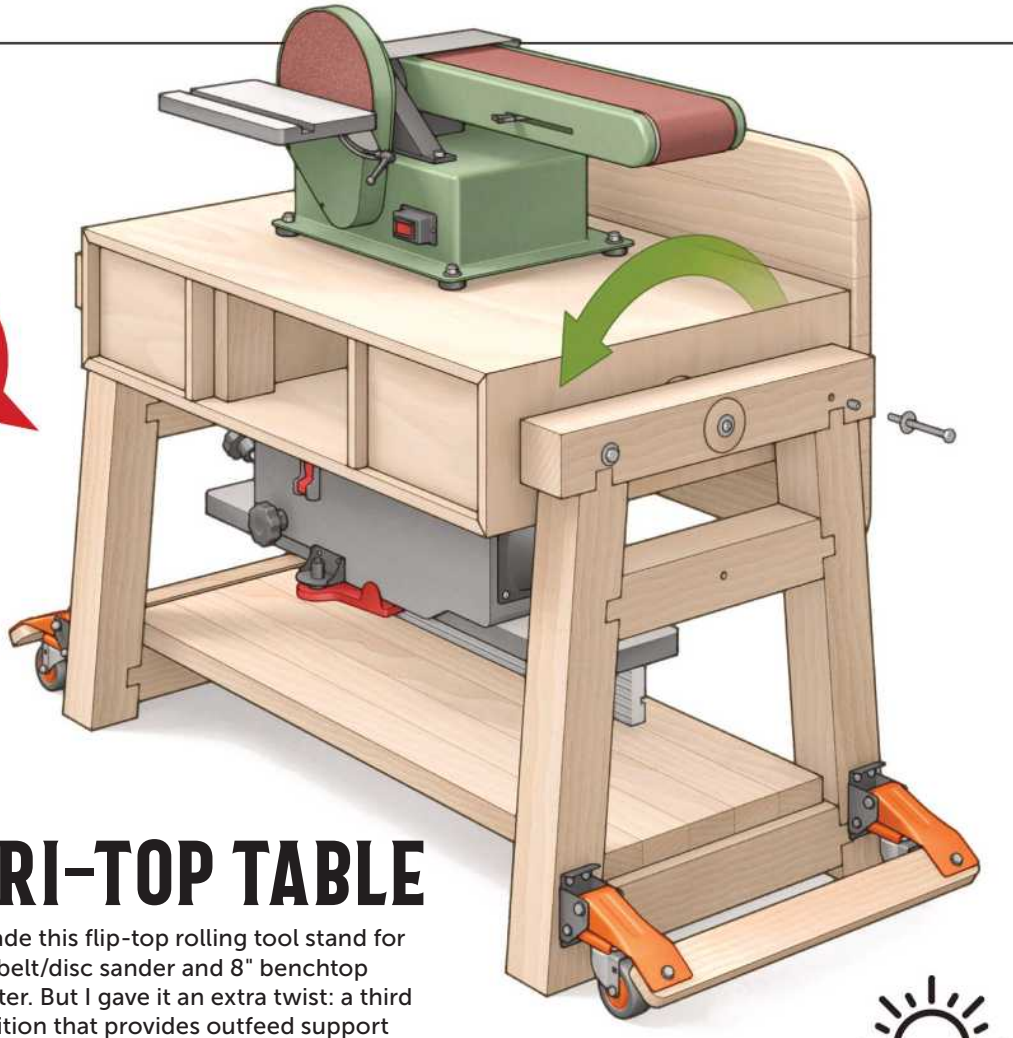
TOP SHOP TIP



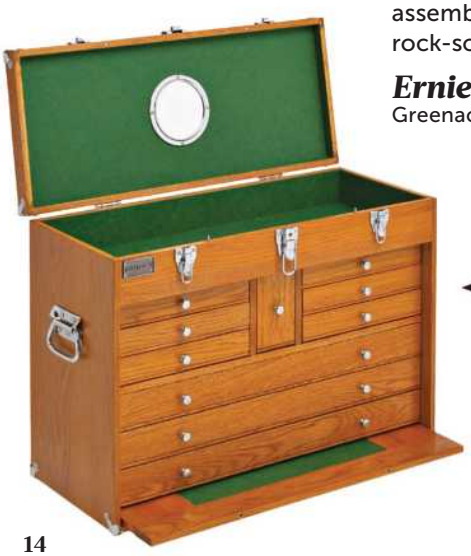
TRI-TOP TABLE

I made this flip-top rolling tool stand for my belt/disc sander and 8" benchtop jointer. But I gave it an extra twist: a third position that provides outfeed support for my tablesaw.

I started with the heavy-duty base, making the legs from 4×4s, utilizing tongue-and-dado joinery for strength. Edge-glued 2×4s make up the tabletop.

A pivoting box with internal bracing made from ¾" Baltic birch plywood creates the surfaces for mounting the tabletop and tools. The box pivots on 2" dowels and locks using ⅜" bolts threaded into T-nuts mounted in the box. The assembly is easy to rotate and remains rock-solid in any of the three positions.

Ernie Torres
Greenacres, Washington



◀ For his tip, Ernie wins a 26" 10-Drawer Red Oak Tool Chest from Grizzly Industrial worth $359.

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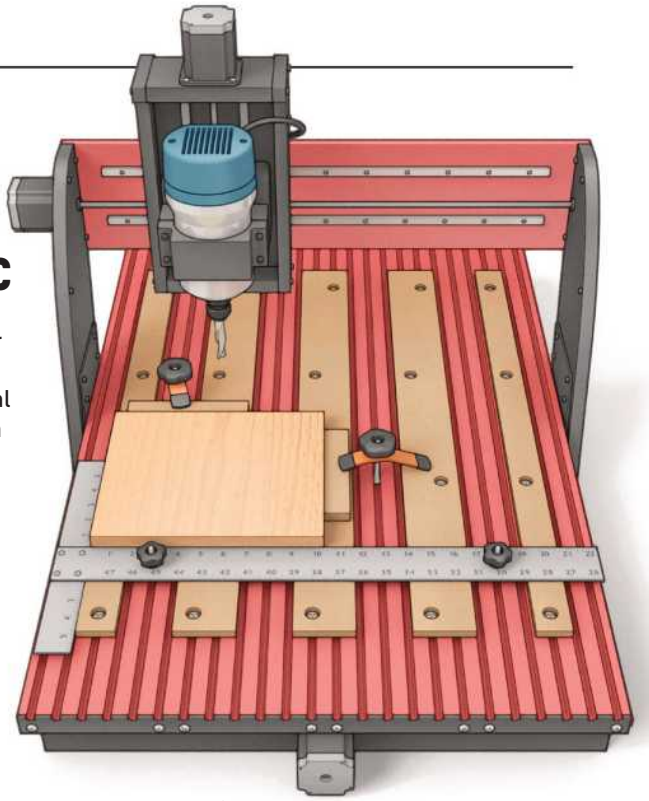
ILLUSTRATOR: CHRISTOPHER MILLS



SQUARED-UP CNC

Clamping a workpiece securely on my CNC router can be challenging. And when I need to cut identical parts, registering the origin consistently is hit or miss. I found an inexpensive drywall square helps in both cases.

I first cut the long leg of the square to match the width of the CNC table. Then I drilled holes aligned with the table's T-slots to make clamping and adjusting the square an easy task.

Clamping the workpiece against both legs of the square holds it securely. Plus I know the origin of the workpiece will be the same from part to part.

Vince Montefusco
Spring Hill, Florida

INSERT HERE

I recently used my 3D printer to make inserts for my tablesaw. I designed mine using Autodesk Fusion software. There's a free version available for home use, as well as other low- or no-cost design software options, and the cost of small 3D printers is within reach of most budgets. I designed my inserts with ribs on the underside for strength as well as extra material where I needed to drill and tap threads for leveling setscrews.

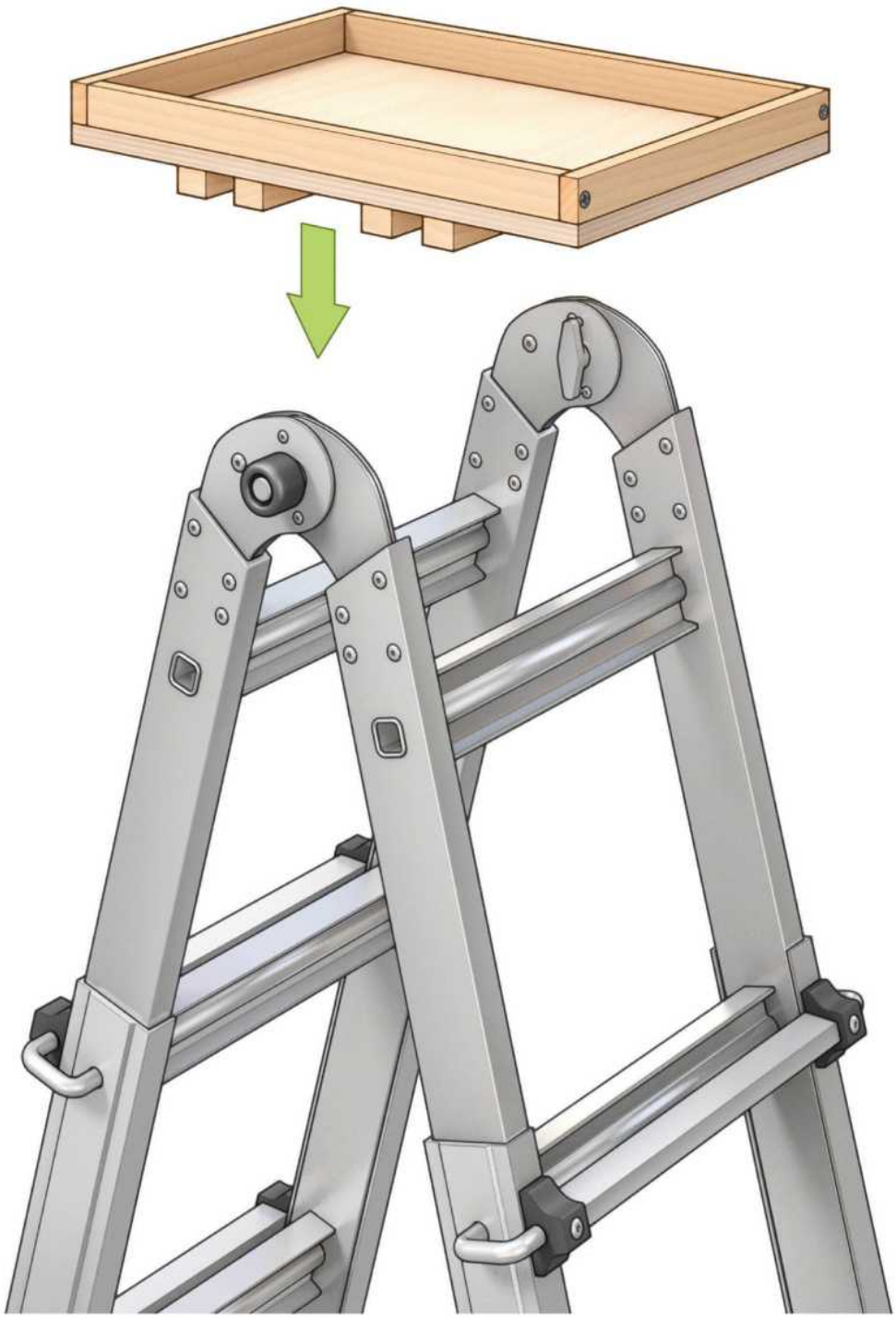
David Eichblatt
Houston, Texas

continued on page 17

A-FRAME TRAY TOPPER

When I saw John Hoerner's A-frame ladder tray in issue 305 (October 2025), I realized great minds think alike. My approach was to build a simple box with cleats underneath to fit over the top rungs of my A-frame ladder. It's handy for storing tools and accessories while using the ladder.

William Hertwig
Plymouth, Massachusetts



SCALLOPED-BASE NIGHTSTAND

Undulating aprons add flair to this simple case, bringing understated elegance to any bedroom.

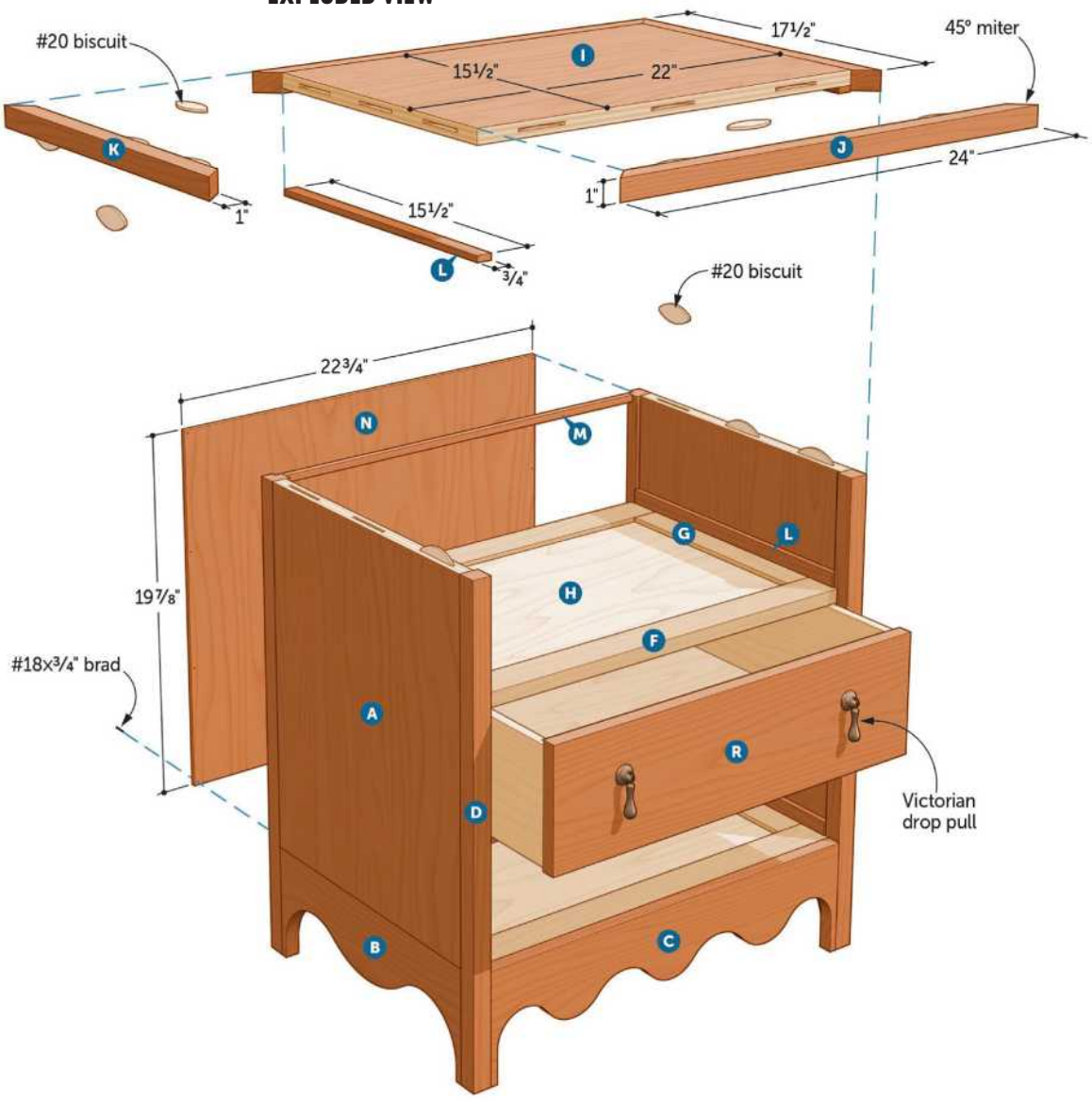
WRITER: CRAIG RUEGSEGGER
DESIGNER/BUILDER: KEVIN BOYLE

OVERALL DIMENSIONS
24"W × 17½"D × 26½"H

PHOTOGRAPHER: JASON DONNELLY; **ILLUSTRATOR:** CHRISTOPHER MILLS

Rest easy; this simple-to-build case won't cause you any sleepless nights. Sturdy solid-wood legs and aprons cover the edges of the plywood used for the sides, while solid-wood edging hides the plywood top. Templates ensure you shape the scalloped aprons perfectly. And the simple joinery for the spacious drawers is cut on the tablesaw.

EXPLODED VIEW



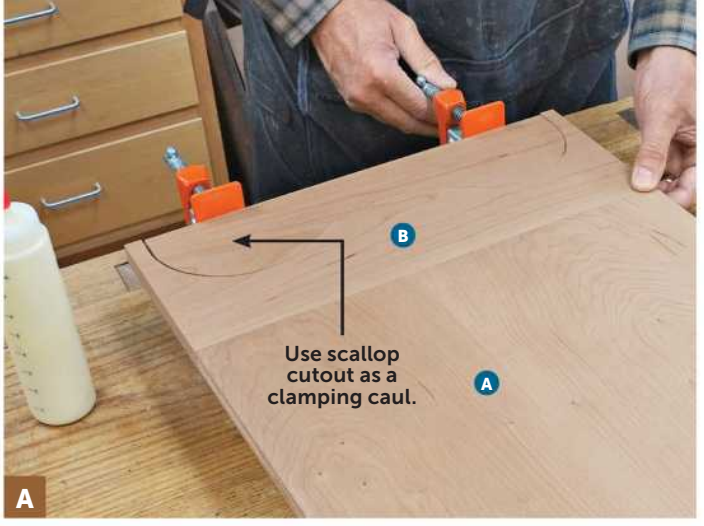
FIRST, CHOOSE SIDES

1 From ¾" cherry plywood, cut the side panels (A) to size **[Drawing 1]**.

2 From solid cherry, cut the side aprons (B) and front apron (C) to size. Cut two pieces of ¼" MDF to the same sizes as the aprons to use as templates for the apron edges. Enlarge the apron patterns **[Drawing 2]**, then spray-mount them to the MDF. Cut and sand the templates to shape.

3 Trace the apron templates onto the front and side aprons. Bandsaw about 1/16" outside the line and save the cutoffs from the side aprons.

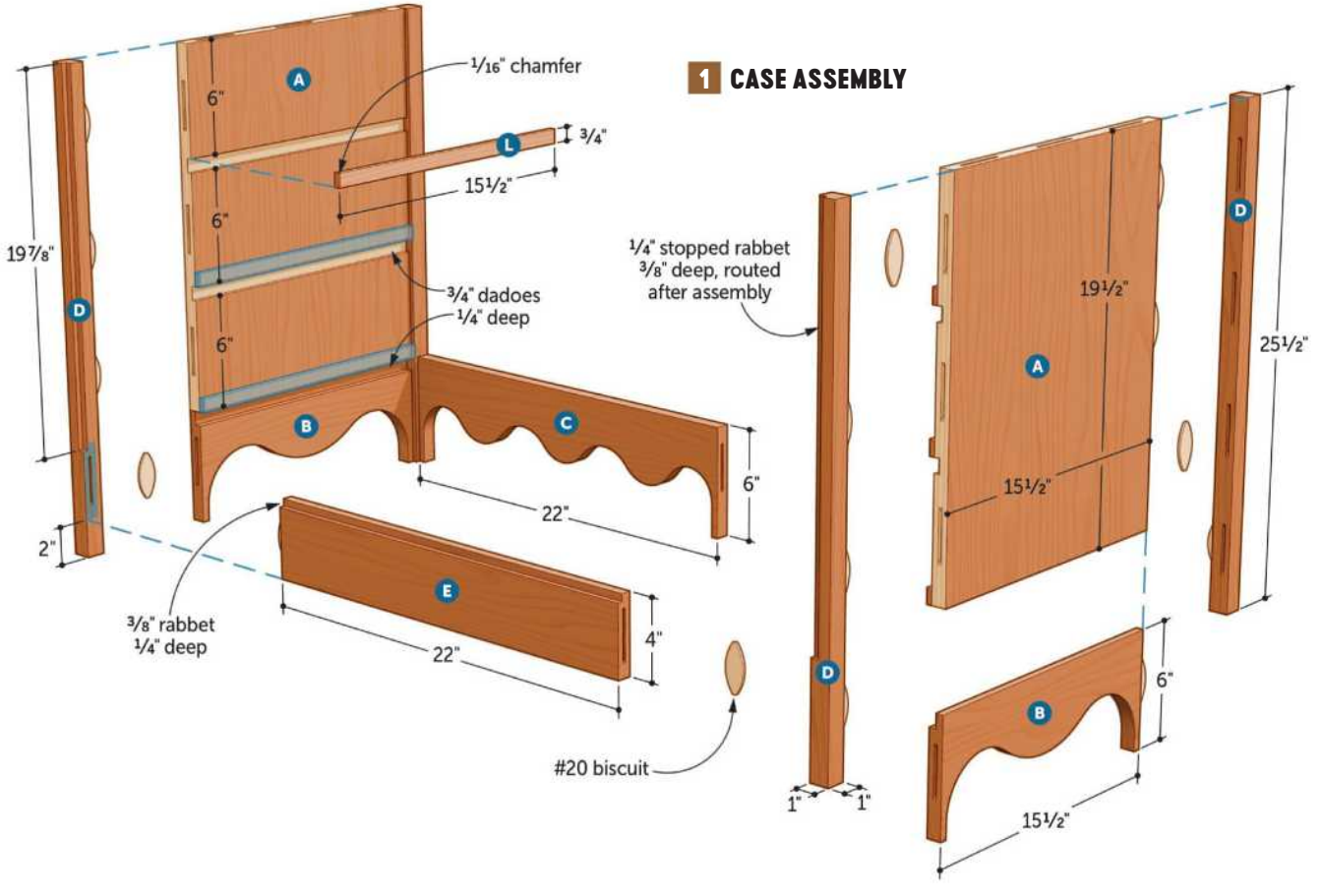
4 Using double-faced tape, attach the template to a side apron with the ends and edges flush. Use a flush-trim bit in your router to finish shaping the scallops. Repeat for the other side apron and the front apron.



Place the side panel (A), side apron (B), and scallop cutout on the clamps. Apply glue to the top edge of the apron and clamp it to the side panel, keeping the faces flush. Clamp against the cutout.

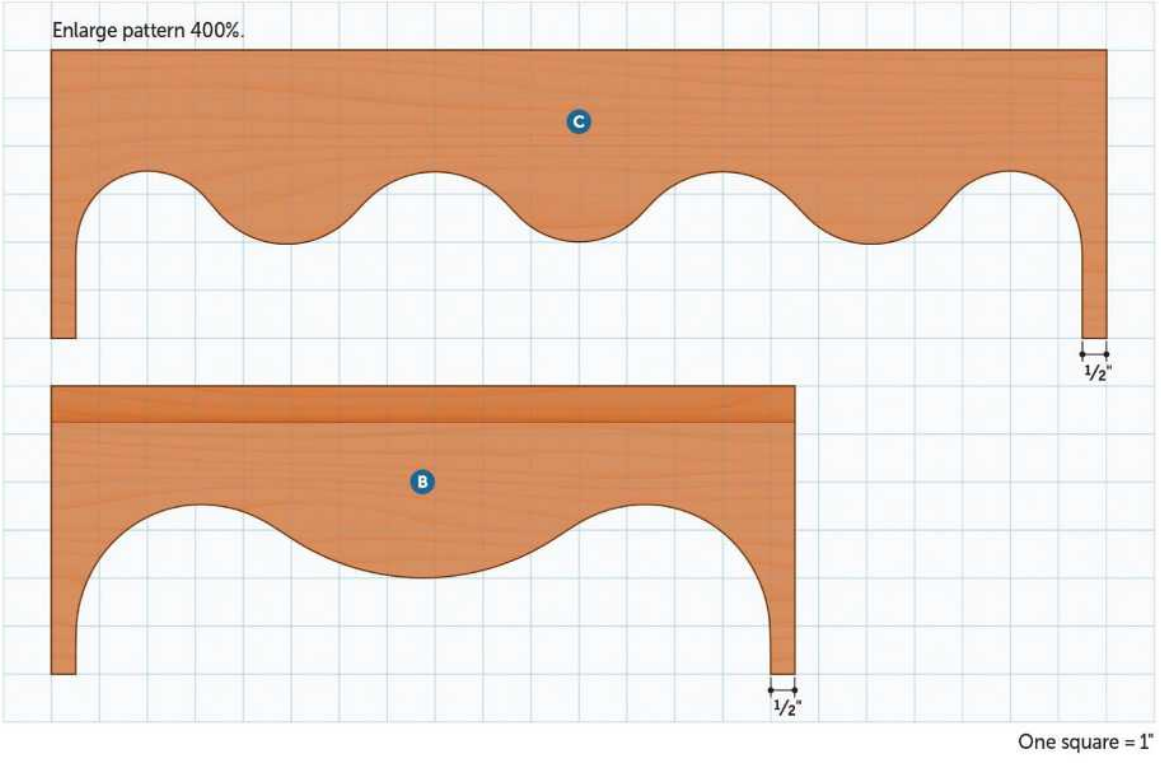
5 Retrieve the scallop cutouts and use them to help you clamp the side aprons (B) as you glue them to the side panels (A) **[Photo A]**.

6 Install a 3/4" dado stack in your tablesaw. Cut the three dadoes on the inside face of each side panel assembly (A/B) **[Drawing 1]**.



> **WITH THEIR LARGE DRAWERS, A PAIR OF THESE NIGHTSTANDS COULD ALMOST REPLACE A FULL-SIZE DRESSER.**
>
> ***-KEVIN BOYLE, SENIOR DESIGN EDITOR***

2 APRON PATTERNS



Here's how to enlarge gridded patterns accurately. woodmagazine.com/griddedpatterns

7 Cut the legs (D) to size from 1" cherry **[Drawing 1]**. Dry-clamp the legs to the side panel assemblies (A/B) and lay out four biscuit slot locations in each. Cut the biscuit slots for one leg and glue it into place **[Photo B]**. When the glue dries, repeat for the opposite leg.

8 Install a 1/4" straight bit and an edge guide, or a 1/4" rabbeting bit in your router. Rout the stopped rabbets on the inside rear face of each back leg (D). Square up the corners of the rabbets with a chisel.

Elevate the side panel assembly (A/B) on scraps to provide room for the clamp heads. Glue one leg (D) to the assembly at a time, keeping the ends of the leg flush with the ends of the panel (A) and apron (B).

ADD APRONS AND PANELS

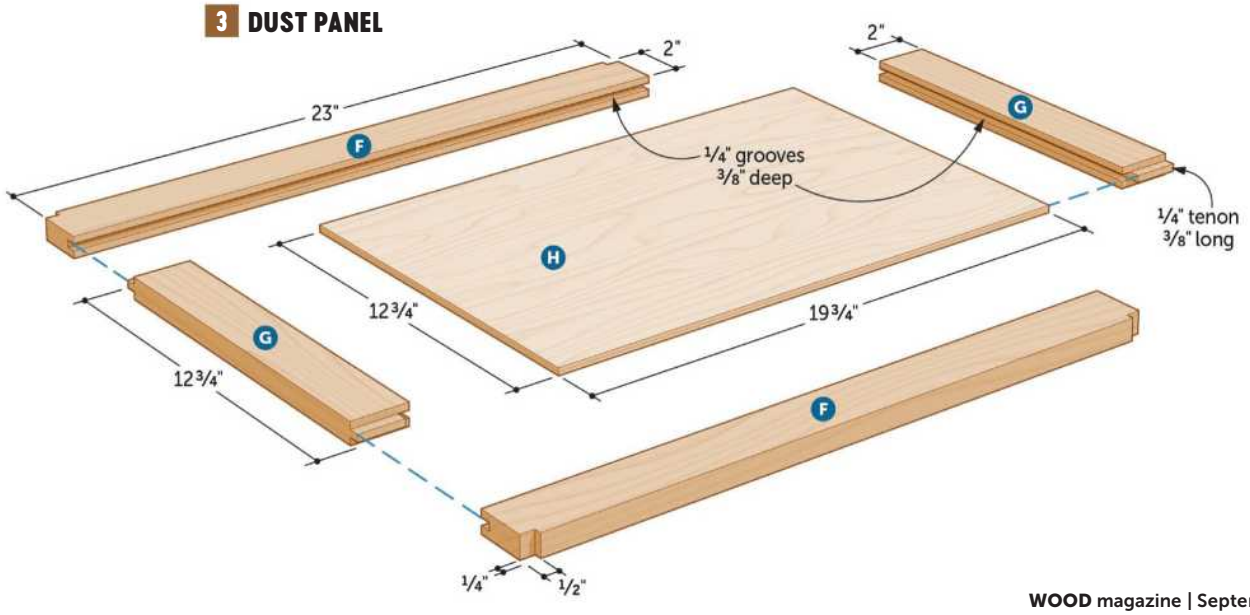
The carcase sides are joined by maple frames that stiffen the assembly, support the drawers, and hold dust panels that prevent items from falling from one drawer to a lower one.

1 From ¾" cherry, cut the back apron (E) to size **[Drawing 1]** and rabbet the top edge. Retrieve the front apron (C) and dry-clamp the front and back aprons between the legs (D). Mark biscuit slot locations and cut the slots.

2 Plane stock for the dust panel stiles (F) and rails (G) to fit the dadoes in the side panel assemblies (A/B). Cut the rails and stiles to size **[Drawing 3]** along with a couple of test pieces to help set up the tablesaw for joinery.

3 Set the tablesaw blade to make a ⅜"-deep cut, and set the fence to roughly center the blade on the thickness of the stiles and rails. Cut a centered groove in the edge of a test piece by making a pass with each face of the piece against the fence. Adjust the fence as needed to cut a groove that fits the plywood to be used for the dust panels (H). Then groove the inside edges of the stiles and rails.

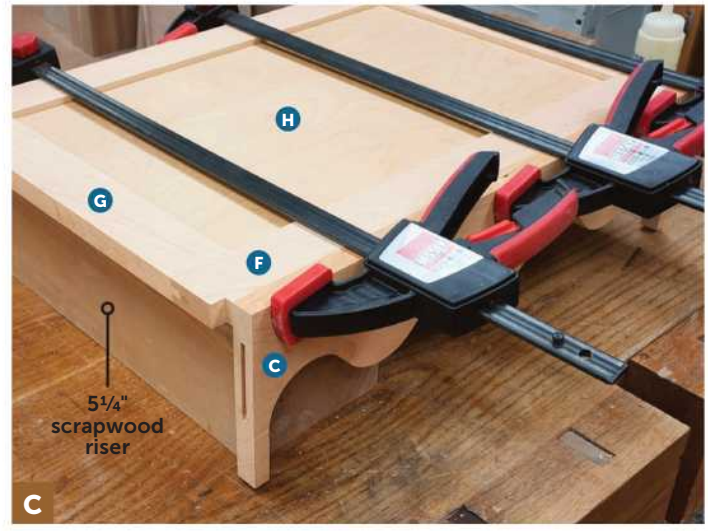
3 DUST PANEL



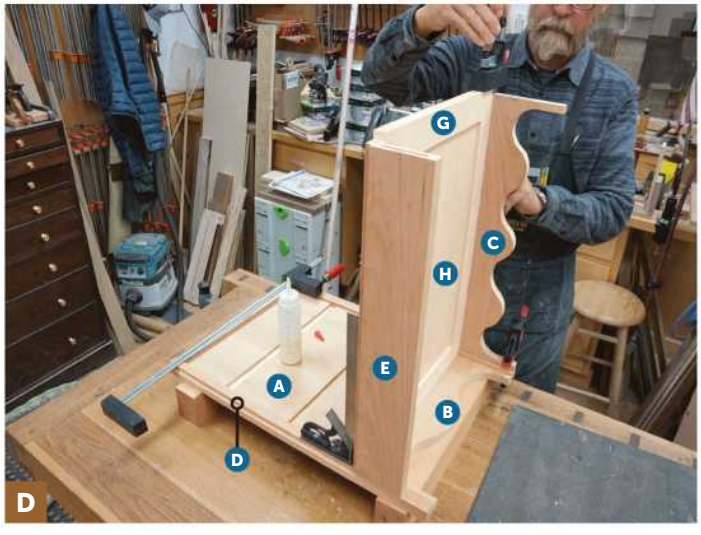
4 Lower the blade to just under 1/4" and set the rip fence 3/8" from the outside edge of the blade. Make cuts on both faces of your test piece to create a centered tenon that fits the grooves in the stiles (F) **[Drawing 3]**. Then cut a tenon on each end of the rails (G).

5 Cut the dust panels (H) to size and glue the stiles and rails around the panels. After the glue dries, notch the corners of the stiles. The distance between the shoulders of the notches should match the length of the front and back aprons (C, E). Refer to **Photo C**.

6 Dry-fit the panels (F–H) to a side assembly (A/B/D), then add the bottom aprons (C, E), using a few biscuits to keep things aligned. Add the other side assembly. Check the fit and make any necessary adjustments, then undo the assembly and finish-sand the dust panels.



Elevate a dust panel (F–H) on risers. Glue and clamp the front apron (C) to the dust panel stile (F), aligning the apron's ends with the shoulders of the notches in the stile.



Apply glue to the bottom dado in a side assembly (A/B/D). Clamp the dust-panel assembly (C/E–H) into the dado. Check the assembly for square, and let the glue dry.

GET IT ALL TOGETHER

1 Glue the front apron (C) to a dust panel (F–H) **[Photo C]**. After the glue sets, glue the back apron (E) to the opposite edge. Let the glue dry.

2 Place a side assembly (A/B/D) on risers and glue the dust panel assembly (C/E–H) into the bottom dado **[Photo D]**. Then glue the remaining dust panels (F–H) in place one at a time.

3 Glue and clamp the remaining side assembly to the dust panels.

4 While this assembly dries, cut the top (I) to size from 3/4" plywood.

5 For the top edging (J, K), cut two 1×1×26" cherry blanks and two 1×1×19" cherry blanks. Miter-cut the blanks to fit around the top (I). Dry-fit them around the top, mark biscuit slot locations **[Exploded View]**, and cut the slots. Then glue the edging in place.

6 Mark and cut biscuit slots in the top ends of the side panels (A) and in the short edging (K). Glue and clamp the top (I–K) to the side panels.

7 Plane solid cherry to 5/16" thick for the drawer guides (L) **[Drawing 1]**. Cut the guides to size **[Parts List]** and plane a slight chamfer on the front end of each one. Glue the guides in place above each dust panel and glue two to the underside of the top (I).

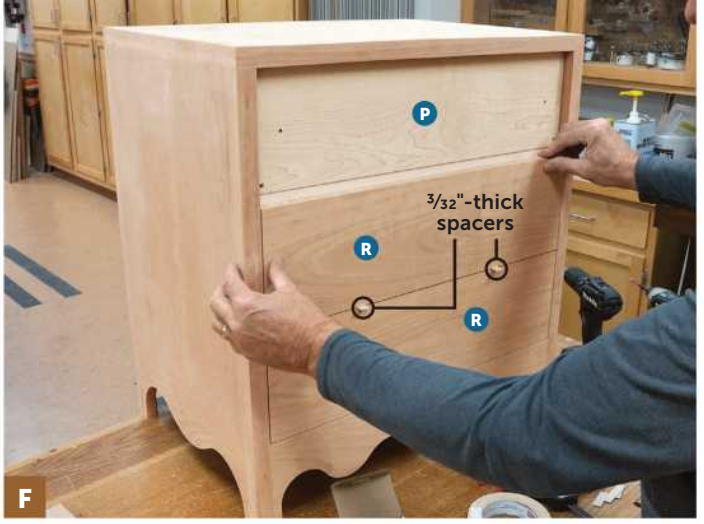
8 Cut the back stop (M) to size and glue it into place, flush with the rabbets in the legs (D) **[Exploded View]**.

9 Cut the back (N) to size and set it aside for now.

> **WE STAINED THE NIGHTSTAND TO GET A BETTER COLOR MATCH BETWEEN THE PLYWOOD AND THE SOLID CHERRY.**
>
> ***-KEVIN BOYLE, SENIOR DESIGN EDITOR***

Learn a cool way to get airtight miters.
woodmagazine.com/insideout

Screw a scrap of plywood that spans all three drawer openings to the back of the dust panel stiles (F). Push the drawers against this scrap before installing the drawer faces (R).



After attaching the lowest drawer face (R), reinstall the drawer and use the spacers again to position the middle drawer face. After screwing it to the drawer box, repeat for the top drawer face.

ADD A TRIO OF DRAWERS

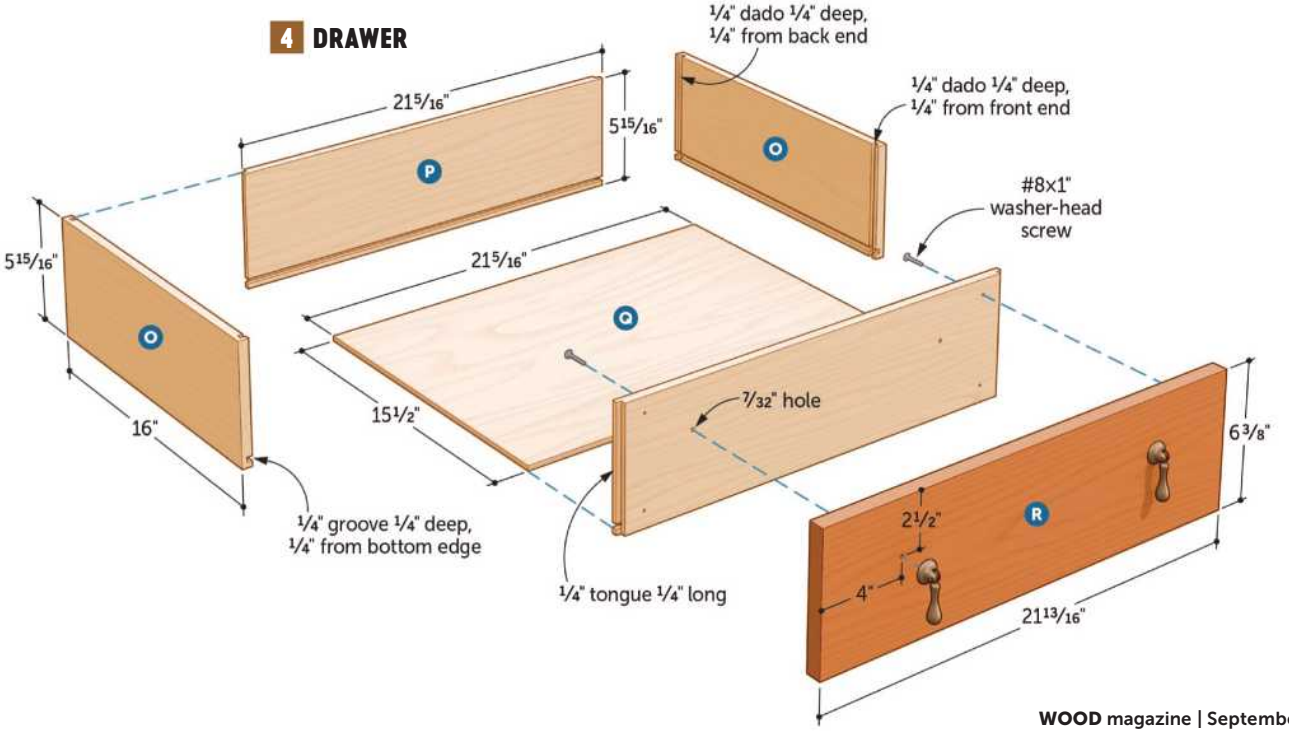
Build the drawer boxes from maple and attach a cherry face to match them to the rest of the case. Cut simple lock-rabbet joints on the tablesaw.

1 From 1/2" maple, cut the drawer sides (O) and fronts and backs (P) to size [Drawing 4].

2 Install a 1/4" dado stack in your tablesaw and raise it 1/4" above the table. Position the rip fence 1/4" from the blade and cut the dadoes across the ends of each drawer side. With the same setup, cut the grooves for the drawer bottoms (Q) in the sides, fronts, and backs [Drawing 4].

3 Attach an auxiliary rip-fence face and position the face so it just brushes the dado blade. Lower the blade slightly and cut a rabbet on one end of a drawer front to test the fit of the resulting tongue in the dado in a side. Adjust the blade height as needed, then form the tongues in the drawer fronts and backs (P).

4 Cut the drawer bottoms (Q) to size. Finish-sand the inside faces of the drawer parts, then glue up the drawers. Finish-sand the exteriors after the glue dries and fit the drawers into the carcase.



5 Cut the drawer faces (R) to size from 3/4" cherry [Parts List], then finish-sand them. Cut a couple of 3/32"-thick spacers to use when installing the drawer faces.

6 Temporarily screw a scrap to the back of the dust panels to position the drawers [Photo E].

7 Apply two short strips of double-faced tape to the back of a drawer face (R). Rest the face on the 3/32" spacers and center it in the opening. Press the face against the lowest drawer box. Push the drawer out from the back, clamp the face to the drawer front, drill pilot holes, and drive four washer-head screws to secure the face. Reinstall the drawer, and in similar fashion, attach the remaining faces [Photo F]. Remove the temporary spacer from the rear of the case.

8 To drill the holes for the drop pulls [Source], clamp a scrap inside the drawer to prevent blow-out, then drill the holes [Drawing 4]. Finish-sand the case and drawers, wipe away the dust, and apply a finish. We applied Warm Vintage stain from PureColor, then wiped on three coats of satin polyurethane.

9 After the finish dries, nail the back (N) in place [Exploded View], install the drop pulls, and say good night.

PARTS LIST

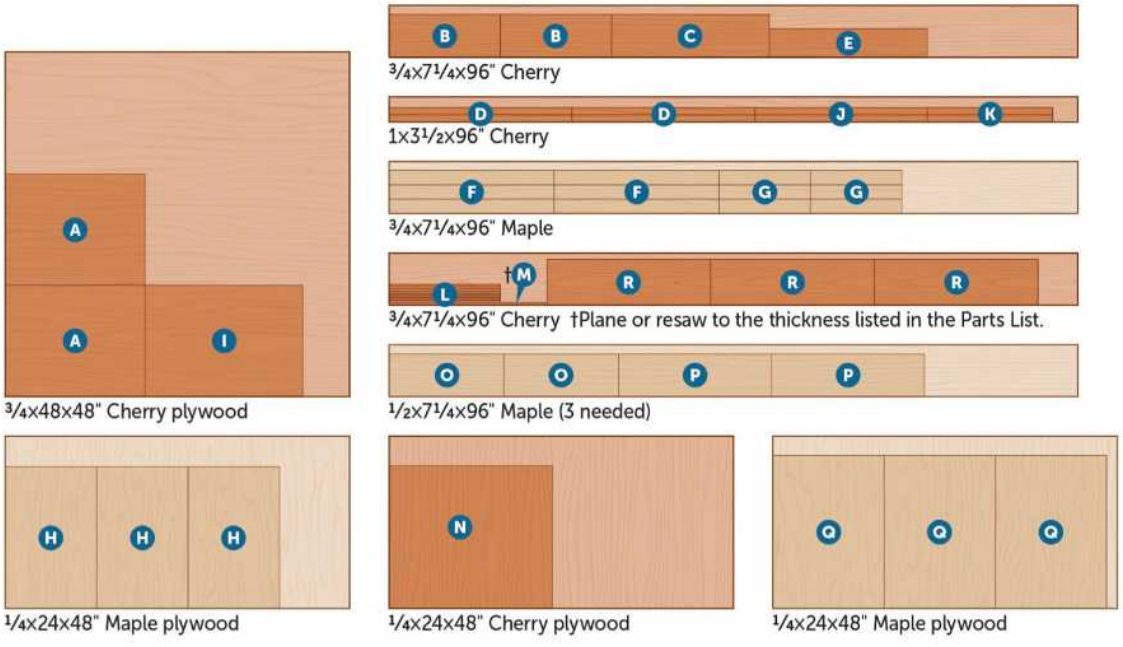
PART		FINISHED SIZE T	W	L	Matl.	Qty.
A	SIDE PANELS	3/4"	15 1/2"	19 1/2"	CP	2
B	SIDE APRONS	3/4"	6"	15 1/2"	C	2
C	FRONT APRON	3/4"	6"	22"	C	1
D	LEGS	1"	1"	25 1/2"	C	4
E	BACK APRON	3/4"	4"	22"	C	1
F	DUST PANEL STILES	3/4"	2"	23"	M	6
G	DUST PANEL RAILS	3/4"	2"	12 3/4"	M	6
H	DUST PANELS	1/4"	12 3/4"	19 3/4"	MP	3
I	TOP	3/4"	15 1/2"	22"	CP	1
J*	LONG EDGING	1"	1"	24"	C	2
K*	SHORT EDGING	1"	1"	17 1/2"	C	2
L	DRAWER GUIDES	5/16"	3/4"	15 1/2"	C	8
M	BACK STOP	3/8"	3/8"	22"	C	1
N	BACK	1/4"	22 3/4"	19 7/8"	CP	1
O	DRAWER SIDES	1/2"	5 15/16"	16"	M	6
P	DRAWER FRONTS/BACKS	1/2"	5 15/16"	21 5/16"	M	6
Q	DRAWER BOTTOMS	1/4"	15 1/2"	21 5/16"	MP	3
R	DRAWER FACES	3/4"	6 3/8"	21 13/16"	C	3

*Parts initially cut oversize. See the instructions.

MATERIALS KEY: CP–cherry plywood, C–cherry, M–maple, MP–maple plywood.
SUPPLIES: #20 biscuits, #8x1" washer-head screws, #18x3/4" brads.
BLADE AND BITS: Dado set; flush-trim and 1/4" straight router bits.
SOURCE: 18x52mm Victorian drop pulls (6) no. 01A7230, $8 each, leevalley.com.
PROJECT COST: It cost us about $500 to build this project. Your cost will vary by region and source.

CUTTING DIAGRAM

We purchased 10 board feet of 4/4 cherry, 4 board feet of 6/4 cherry, and 20 board feet of 4/4 maple. Before cutting parts to size, we planed them to the thicknesses shown in these example boards.



COLORS TO DYE FOR

Break free of basic browns and add vibrant colors to your woodworking with easy-to-use dyes.

WRITER: VINCE ANCONA

PHOTOGRAPHER: JASON DONNELLY

Woodworkers typically use stains to impart subtle changes to wood tones, making light woods darker or evening out variations in color. But if you want to make a bold statement with color, dyes are the way to go. Aniline dyes are available in virtually every color of the rainbow. Compared to stains, dyes also offer a great deal of versatility. Use a single color or layer and overlap different colors to create multi-color gradients, sunbursts, or other effects. This technique is ideal for projects like musical instruments, small boxes, or even door panels or drawer fronts. While it takes practice to get a feel for working with dyes in this way, it's surprisingly easy to get decent results after just a few attempts.

Learn about the difference between dye and stain
woodmagazine.com/wood-dyes

HUE-IT YOURSELF FINISH

To get started, you'll need to choose your dye. You'll find dyes in powder and liquid concentrate form; both require mixing with an appropriate solvent before use. Powdered dyes are sold specifically for use with water or alcohol. Water-soluble dyes are more lightfast than alcohol-soluble dyes. They also dry a little slower, giving you more time to blend and mix the colors. Their downside is that they tend to raise the grain of the wood. But if you're new to using dyes, water-based dyes are a good choice because they're more forgiving than alcohol dyes. If you don't like the color of the dye or it goes on too dark, you can usually lift most of the dye by wiping the area with a wet rag.

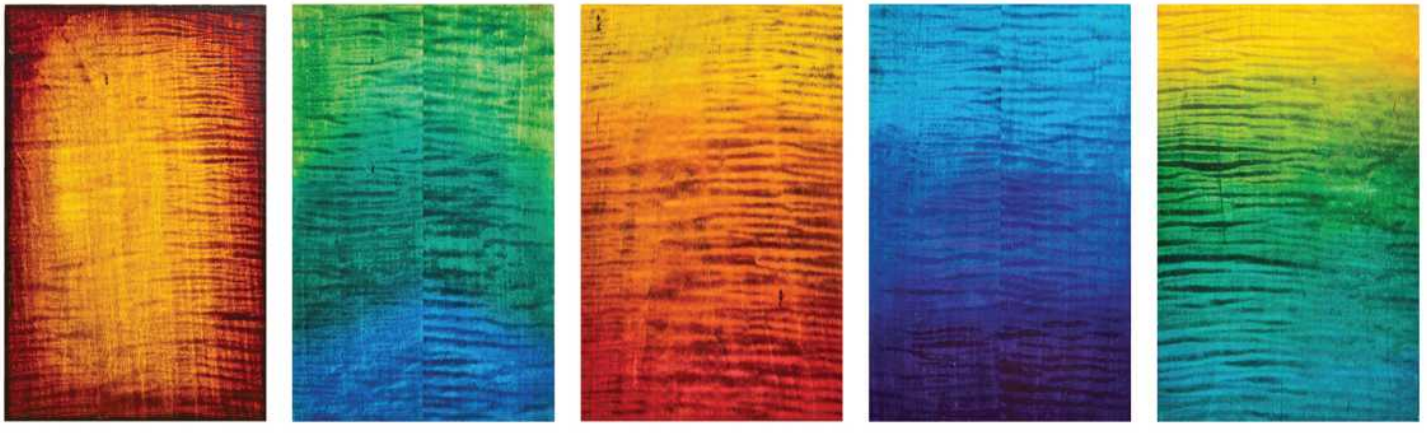
Liquid concentrate dyes can be added to either water or alcohol. They can also be used to tint lacquer. Although they're not available in as many colors as powdered dyes, you can mix colors to get the tint you want. Liquid concentrate dyes are a little more expensive, but they're easier and quicker to mix than powdered dyes.

If you want to avoid mixing altogether, a third option is to use leather dyes. These prepared liquid dyes are available in water- or alcohol-based formulations, and can be used straight out of the bottle. Although marketed as leather dyes, they work on wood as well. They're also available in a wide range of colors.

In addition to the dye and appropriate solvent, you'll need a few other items: glass or plastic containers for mixing the dyes, stirring sticks (tongue depressors), nitrile gloves, newspaper or kraft paper to protect your bench, and a supply of clean, cotton rags for applying the dye. Old cotton T-shirts cut into squares work well for applying the dye because the repeated washings make them lint-free.

Wood selection is equally as important as choosing the right dye. Although dyes work with any wood, bright color dyes work best on lighter-colored woods like maple, birch, beech, or sycamore. These lighter toned woods allow the true color of the dye to shine through, unlike darker woods. For the most dramatic effect, choose wood with intriguing grain patterns, such as curly, ribbon, or quilted figure. Dyes will accentuate the figure of these woods and bring out their natural chatoyance. Figured veneer is a great option if you can't find figured solid wood.

CHATOYANCE
The shimmering, three-dimensional effect of some woods when viewed from different angles.



A

Mix a small amount of the dye powder in hot water, stirring until the powder is dissolved. Test the color on a piece of scrap and add dye to darken the color or solvent (water) to lighten it.

B

To create a color gradient, start with the lightest color (in this case, yellow). Dip a clean rag into the dye and saturate the upper third of the board, applying a second coat if necessary.

Learn how to create veneered panels
woodmagazine.com/easyveneering

GRADIENT FINISH

Before diving in on an actual project, practice on some scrap pieces to get a feel for working with the dye. A good exercise is to create a gradient of three different colors. If you're using water-based dyes, start by dampening the wood with water to raise the grain. Let the wood dry and then level the grain with sandpaper and a sanding block.

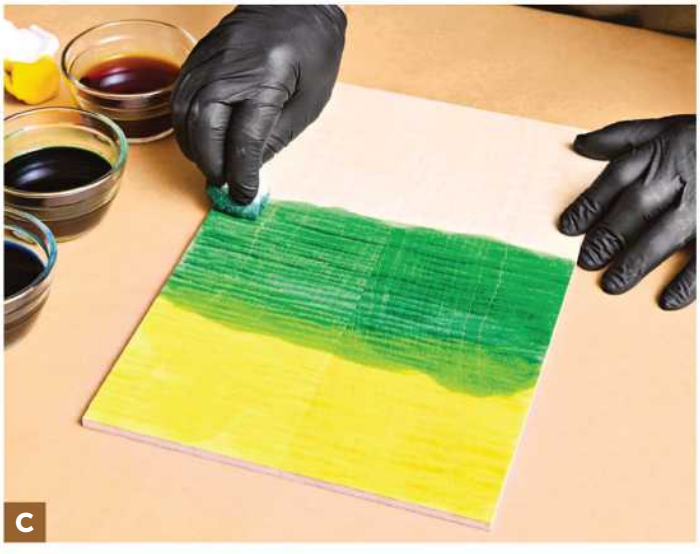
Mix the dyes you intend to use in hot water, stirring thoroughly until the powder is completely dissolved **[Photo A]**. (Undissolved particles will leave darker specks of color in the dyed surface.) Dip a balled-up rag into the lightest color dye and apply it to the top third of the sample panel, covering the area evenly **[Photo B]**. If the color seems too faint, go over the area again with more dye, making sure to saturate the area evenly.

Next, use a fresh rag to apply the second color to the middle third of the panel **[Photo C]**. While the dye is still wet, use the first rag with the lighter dye to blend the colors together by making small, swirling strokes, rubbing the dye in to erase the hard line between the two colors **[Photo D]**. With another fresh rag, add the third color to the lower section of the panel and repeat the process of blending the colors together **[Photo E]**.

Switch back and forth between the rags (and add more dye if needed), pulling the lighter color down into the

TIP!

If you're finding it difficult to fully dissolve the powder, strain the dye through a coffee filter.



C

Add the second color (green) to middle third of the panel, slightly overlapping the first color.

> **PRACTICING ON SOME PIECES OF SCRAP WOOD WILL GIVE YOU A GOOD FEEL FOR HOW TO BLEND THE DYES TO CREATE A SEAMLESS TRANSITION.**
>
> ***-VINCE ANCONA, CONTRIBUTING EDITOR***

Add more yellow dye to blend the transition between the yellow and green areas. Rub the dye on in circular motions to erase the hard line between the colors.

Add the third color (blue) at the bottom of the panel and blend the color into the green. Add more of both colors as needed to get an even transtion.

Continue to blend and refine the transitions, switching back and forth between the different colors as needed. Remove excess dye with water if you put down too much color in one area.

Use small swirling motions to blend the transition lines, pulling one color into the next. Alternate between the yellow, green, and blue wiping rags.

color below and the darker color up to the one above to create a gradual transition from one color to the other **[Photo F]**. Keep working the area over, adding more dye as needed, to create a gradual fade **[Photo G]**.

If you put down too much color, use a rag dipped in water to remove some of the dye. Or go over the area with another layer of the lighter color. After allowing the dye to dry, if you still have hard divisions between the colors or areas that seem too dark, use 0000 steel wool or a non-woven abrasive pad to soften the transition lines and lighten the color. You can also add more dye to any areas that need it. One of the beauties of working with dye is that even after it's dry, adding more dye (or water) will reactivate the dye that has already dried, allowing you to further manipulate the colors to your liking. There's no right or wrong here; just keep working the dye until it looks good to your eye.

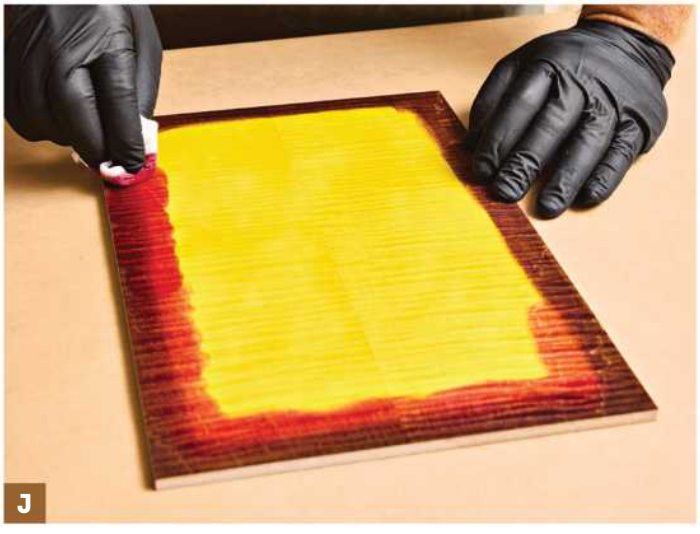
To create a tobacco burst finish, start by wiping on two coats of yellow dye as a base layer. (Here, we're using alcohol-based leather dyes.) Allow the base layer to dry to the touch.

Using a clean rag, add a narrow border of brown dye around the perimeter of the panel, slightly feathering the edge. If the color seems too light, go over it with a second coat of dye.

TOBACCO BURST FINISH

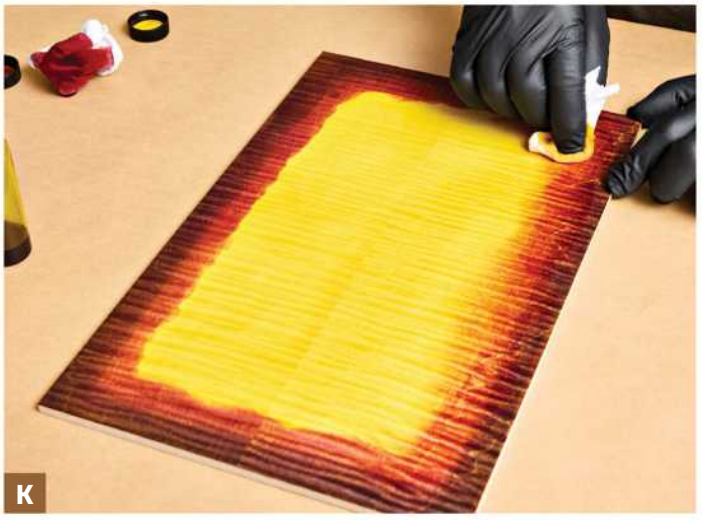
Once you have a feel for blending and transitioning colors, you're ready to attempt a sunburst finish. In this type of finish, a bright, central burst of color fades into darker shades around the edges, similar to what you often find on classic American-made electric guitars and basses.

Sunburst finishes go by different names depending on the colors they contain. One that has been used for years by Gibson guitars on their Les Paul model is a "tobacco burst," in which a yellow or amber center fades into browns and blacks at the perimeter. Although guitar factories use shaded spray lacquers to create sunburst finishes, it's possible to emulate the look using wipe-on dyes. And you can use this effect on more than just guitars and musical instruments.

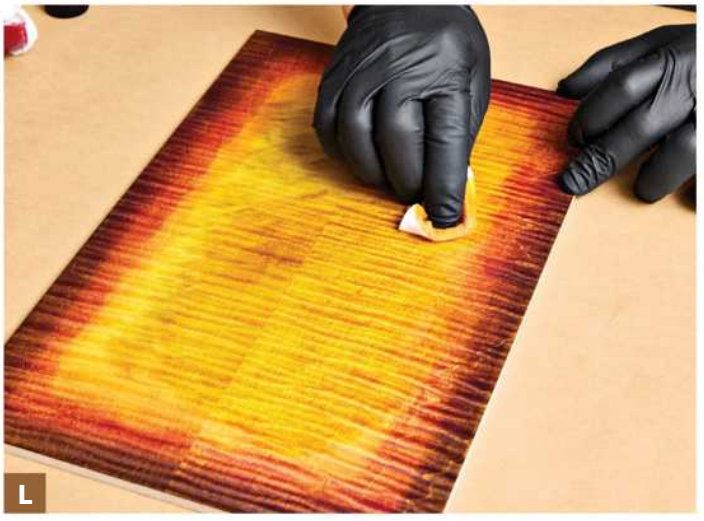


Overlap the area where the brown and yellow meet with a lighter shade of brown dye. (We used mahogany.)

Leather dyes also work well on wood and can be used straight out of the bottle with no mixing required.



Go over the border area with additional yellow dye, blending the colors together to soften the hard line between the brown and mahogany dyes.

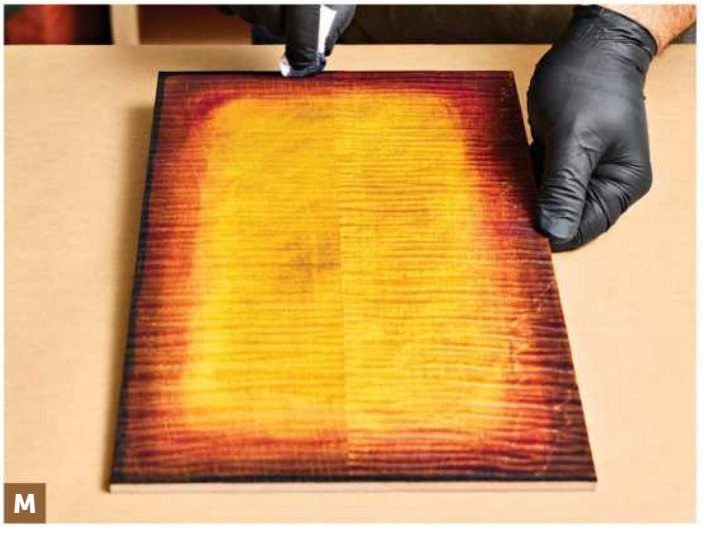


Add a small amount of brown dye to the yellow dye rag and lightly work it over the center field of the panel to add some brown highlights, toning down the yellow color.

Creating a tobacco burst finish is essentially a four-step process. Begin by applying the light-colored (yellow) base coat to the entire surface, adding a second coat if needed **[Photo H]**. After allowing the base coat to dry, add a border of medium or dark brown dye around the edge **[Photo I]**. Then add an inner border using a lighter shade of brown **[Photo J]**. Blend the transitions between the three colors to create a gradual shift from dark to light **[Photo K]**.

To tone down the bright yellow of the central area of the panel, apply a small amount of brown dye over the yellow and immediately wipe most of it off by going over the surface with more yellow dye, leaving just subtle traces of the brown **[Photo L]**.

Finally, to give the panel some added depth, add a narrow band of black dye around the extreme outer edge and blend it into the brown layer **[Photo M]**.



Wipe a thin border of black dye around the edge of the panel for added depth.

FINISH WITH A TOPCOAT

Once dry, dyes look flat, dull, and lifeless. But applying a topcoat brings them back to life. The key is to use the right topcoat. Water-based finishes will lift the dye, so skip those. Choose a clear, non-yellowing finish such as lacquer or super-blond shellac. For most projects, a spray coat of sanding sealer followed by two or three coats of spray lacquer does a great job of bringing out the beauty of the wood figure as well as protecting the dyed surface.

> **DON'T BE AFRAID TO EXPERIMENT WITH DIFFERENT COLOR COMBINATIONS AND PATTERNS. PART OF THE FUN IS IN ALLOWING YOUR CREATIVITY TO TAKE OVER.**
>
> ***-VINCE ANCONA, CONTRIBUTING EDITOR***

ARBOR BENCH

Frame a backyard spot for quiet moments outdoors.

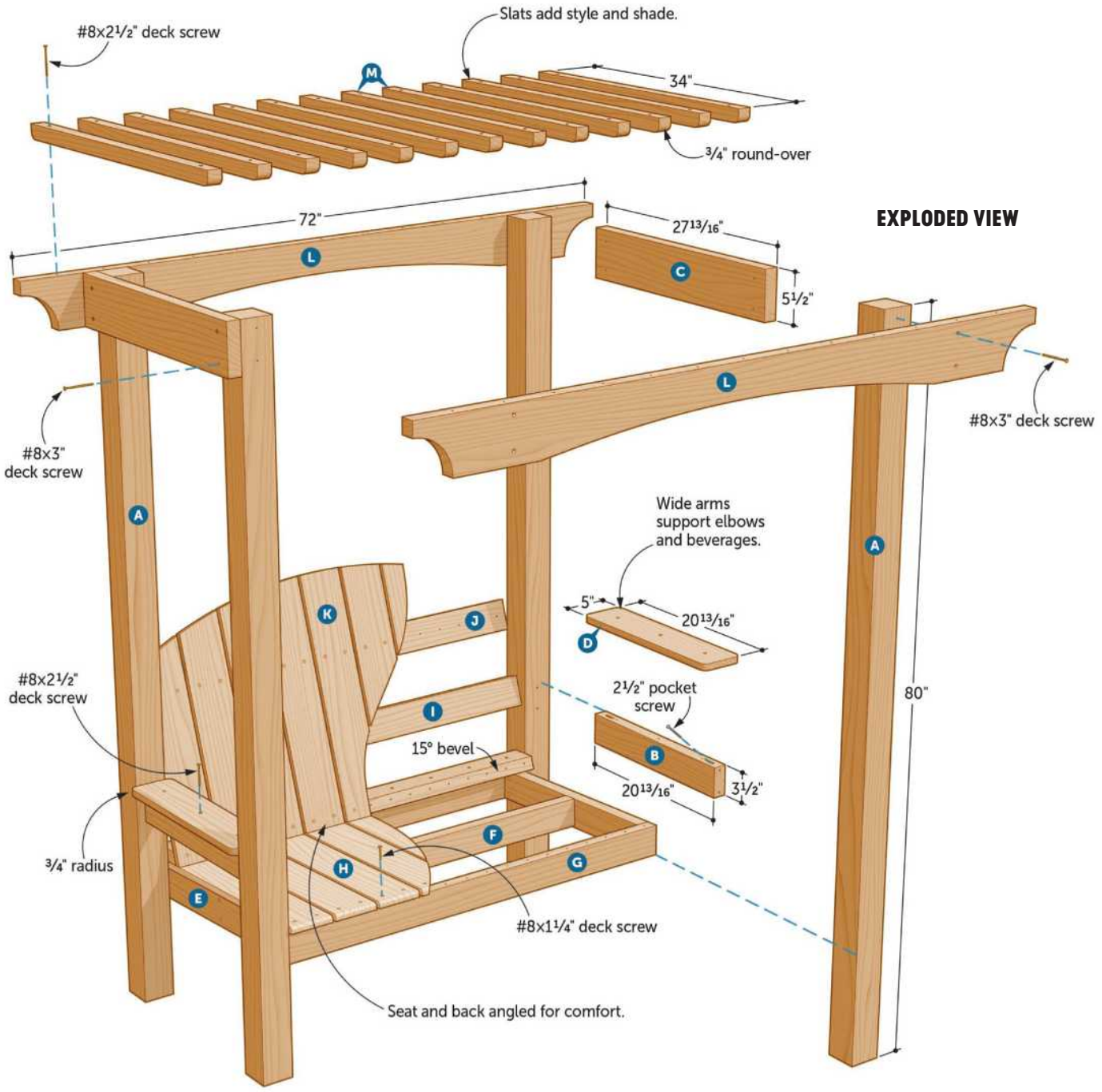
WRITER: CRAIG RUEGSEGGER
DESIGNER/BUILDER: KEVIN BOYLE

OVERALL DIMENSIONS
72"W x 34"D x 81½"H

PHOTOGRAPHER: CARSON DOWNING; ILLUSTRATOR: CHRISTOPHER MILLS

This simple arbor with a two-person bench invites you to sit a spell, rest a beverage on one of the wide arms, and lean back with a good book or a cozy conversation with a companion. Rather than dominate the landscape, it's sized to sit comfortably within it, providing a perfect perch to soak in some sun or shade and a few birdsongs.

Build the arbor as five subassemblies that you then put together on-site: two side assemblies, the seat, the seat back, and trellis. We built our arbor from prestained pressure-treated lumber. Learn more about selecting the right wood in *Pick the Right Pressure Treated* on *page 38*. Redwood, cedar, or white oak would also be good choices, as would fir if you want to paint your arbor.



POST ABOUT IT

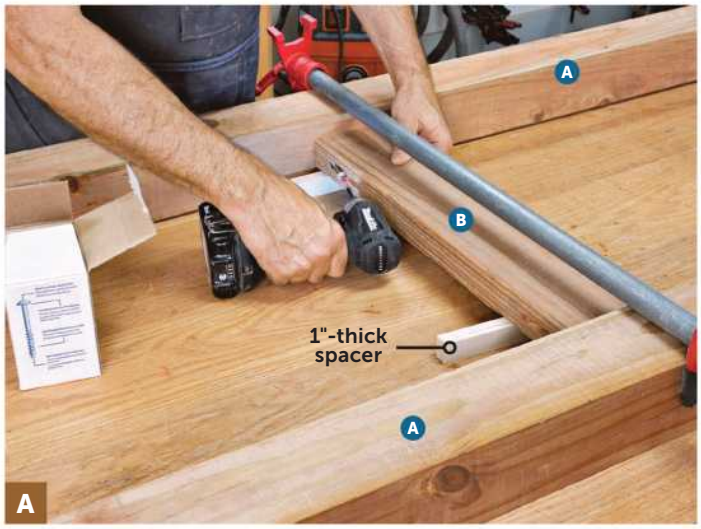
We built our arbor to rest on and be secured to an existing concrete pad or concrete piers under each post (A). If you want to install your posts in the ground, make them longer to accommodate any frost line and code considerations for your area.

Note: We don't usually finish-sand pressure-treated lumber, but if you used a different wood, sand parts to 150 grit before assembling.

1 Cut the 4×4 posts (A) to length [Exploded View, Parts List].

2 From treated 2×4s, cut the lower stretchers (B) to length. Drill pocket holes in the top and bottom edges of the lower stretchers. Cut the upper stretchers (C) to length from treated 2×6s.

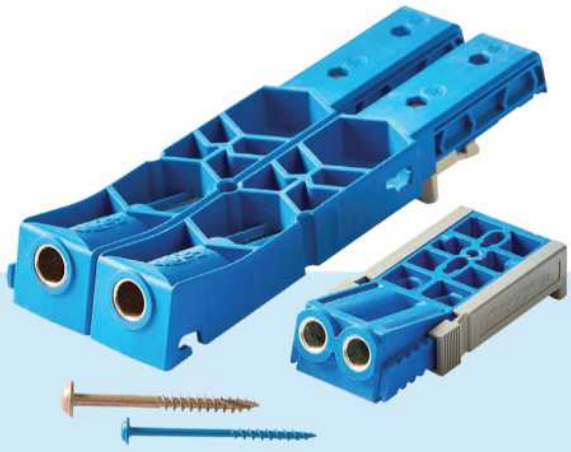
3 Lay two posts (A) parallel to each other and with their ends flush. A framing square works great for aligning the ends. Rest a lower stretcher (B) on 1"-thick spacers between the posts and pocket-screw the stretcher to the posts [Photo A]. Repeat for the other posts and lower stretcher.



Rest a lower stretcher (B) on 1"-thick spacers and 21" from the bottom of the posts (A). Drive 2½" pocket screws to secure the stretcher to the posts.

4 Screw the upper stretchers (C) to these assemblies flush with the top ends of the posts [Exploded View].

5 From treated 1×6s, cut the armrests (D) to size and form the ¾" radius on each corner [Exploded View]. Center the armrests on the lower stretchers (B) and screw them into place.



BIG PROJECTS, BIG POCKETS

An outdoor structure built with construction lumber benefits from sturdy joinery, and the deck screws used throughout most of the arbor provide it. For the handful of pocket-hole joints, we used Kreg's XL pocket-hole jig and XL pocket screws because they are designed to join project parts 1½" thick and thicker. The XL jig drills a ½"-diameter pocket, instead of a standard ⅜"-diameter hole. The larger XL screws are beefier than typical pocket screws and have a protective coating to endure outdoor exposure.

The arbor has only a dozen pocket screws, so you don't need to invest in an XL jig to build it; standard-size pocket holes and screws will work. But choose pocket screws with a protective coating meant for outdoor use.

SOURCE: Kreg XL pocket-hole jig no. KPHJ920 $60, 2½" XL pocket-hole screws, no. SML-C2X250-30 (30-pack) $10, kregtool.com.

BEGIN BENCH BUILDING

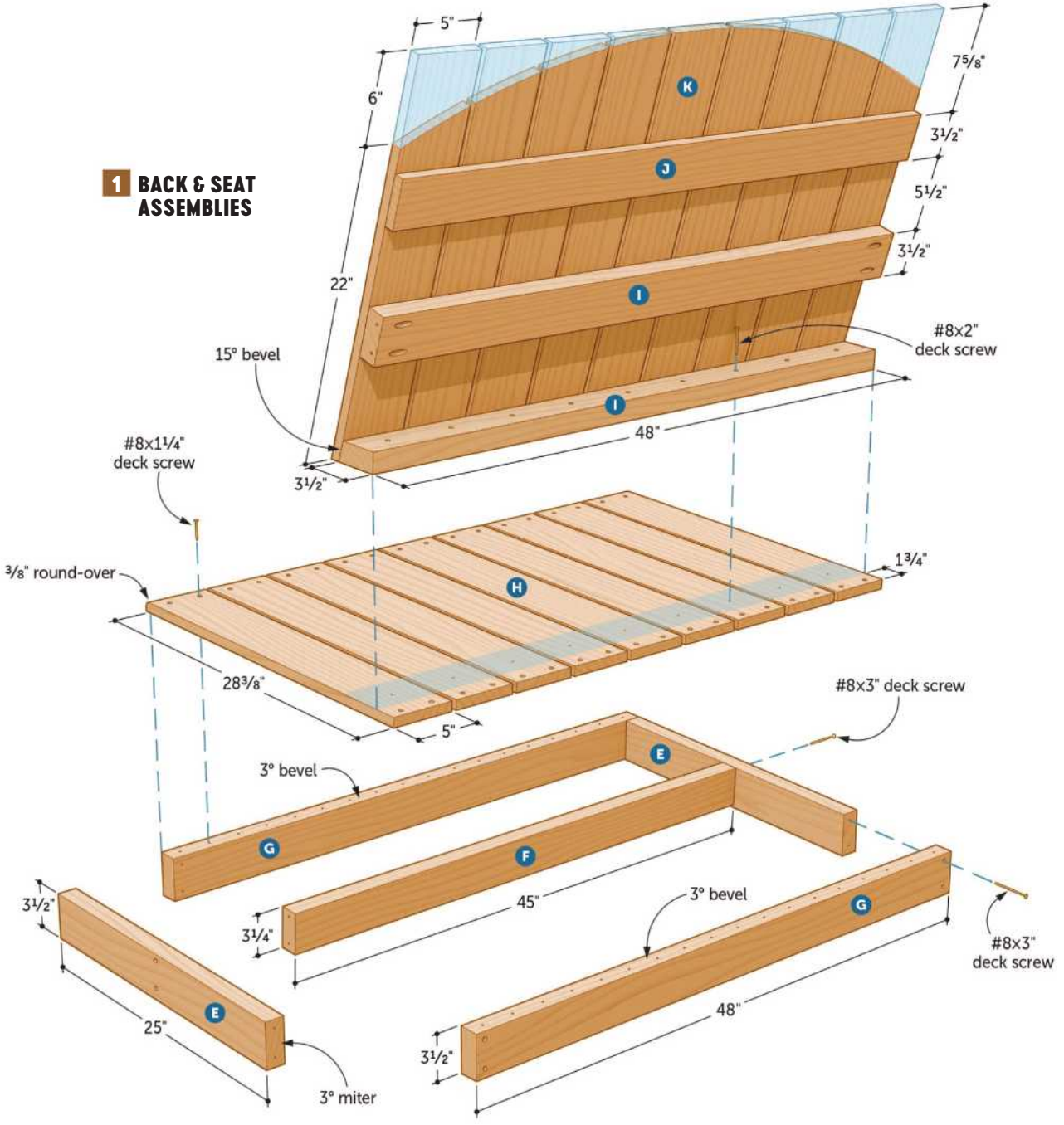
1 To give the seat a comfortable downward slope toward the back, cut the bench ends (E) to length with parallel 3° miters on the ends **[Drawings 1 and 2]**. Cut the center support (F) to length and ripcut it to 3¼" wide.

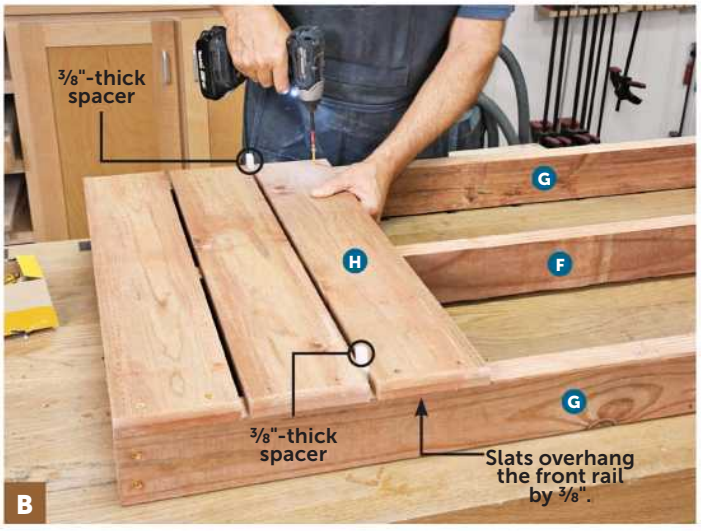
2 Cut the bench rails (G) to length. Bevel-rip the top edge of each rail at 3°, removing only enough material to create the bevel.

3 Dry-clamp the bench ends (E) between the bench rails (G) with the beveled edges of the rails flush with the top edges of the bench ends **[Drawing 2]**. Drill pilot holes for 3" deck screws and screw the frame together **[Drawing 1]**.

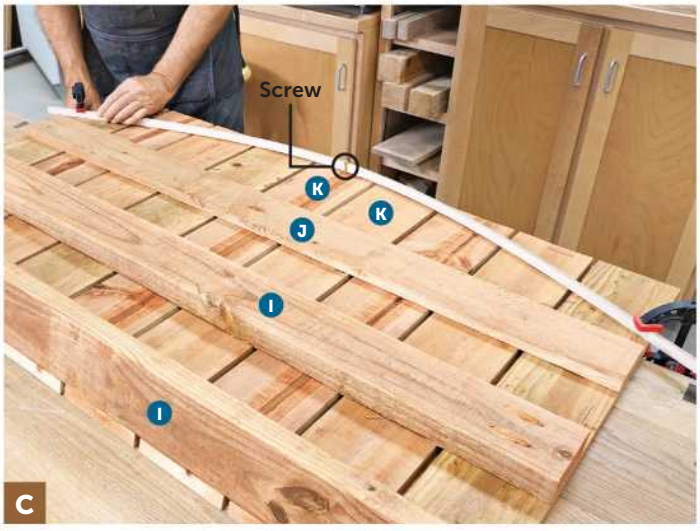
4 Cut the seat slats (H) to size from 1×6 stock. Rout a ⅜" round-over on a top end of each one **[Drawing 1]**.

1 BACK & SEAT ASSEMBLIES





Use ⅜" spacers to position the slats (H). When you get to the last three slats, check the remaining space and adjust the spacing so the outside slat sits flush with the bench end (E), as with the first slat.



Drive a screw at the centerpoint of the arc, then flex a piece of thin scrap to touch the outside points. Trace along the scrap, then remove it and the screw before cutting along the line with a jigsaw.

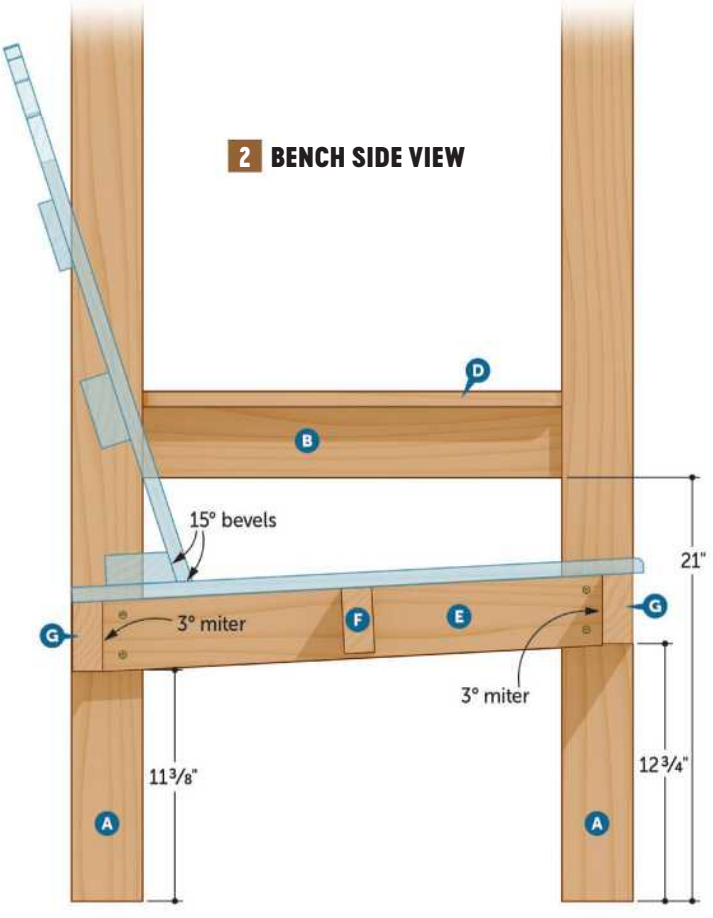
5 Place a slat (H) on the bench frame (E–G) flush with the outside face of the bench end (E) and with the square slat end flush with the rear of the bench frame. Drill pilot holes through the slat and into both rails (G), then screw the slat in place. Space and attach the remaining slats **[Photo B]**.

6 For the back assembly, cut the lower and upper back supports (I, J) to size **[Parts List]**. Bevel-rip the edge of one lower back support (I) at 15° **[Drawings 1 and 2]**. Drill pocket holes in the face ends of the other lower back support.

7 From 1×6 stock, cut nine back slats (K) to 5×28", bevel-cutting one end to 15°. Use 1¼" deck screws to secure one slat to the beveled edge of the bottom lower back support (I), flush with the end and bottom edge, making sure it sits square. Use ⅜" spacers to help position the remaining slats, as you did with the seat slats.

8 Clamp the other lower back support behind the back slats with the pocket-screw holes facing away from the back slats **[Drawing 1]**. Drive 1¼" deck screws to fasten the slats to this support. Then, screw the upper back support (J) in place.

9 Lay out the arc on the back slats (K) **[Drawing 1, Photo C]**. Jigsaw and sand the arc smooth and ease the sharp corners with a light sanding.



WATCH THE OVERHEAD

Next, build the joist assembly that ties the tops of the posts together, provides a bit of shade, and can serve as a trellis for climbing plants.

1 Cut the joists (L) to size. Lay out the arc on the bottom edge and the radius on each end **[Drawing 3]**. Cut and sand these curves to shape.

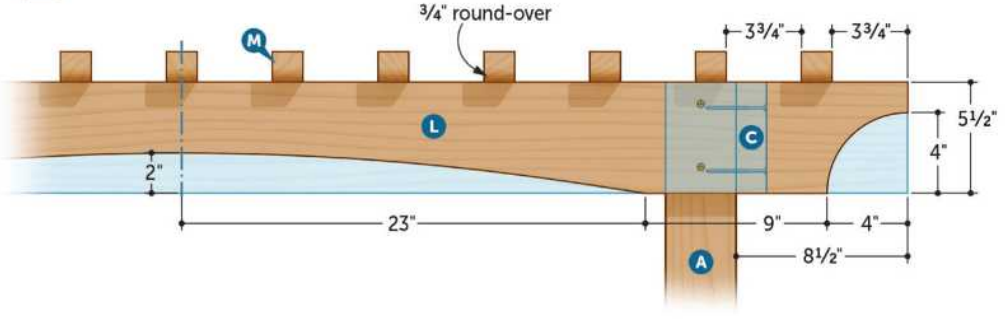
2 Cut the top slats (M) to size. Rout or sand the 3/4" round-over on the bottom face at each end.

3 To help with assembling the top slats (M) on the joists (L), measure the distance between the outside faces of the posts (A) along the lower stretchers (B). Stand the joists on edge on a flat surface this distance apart and with their ends flush.

4 Cut two 3 3/4" spacers from scrap material. Use the spacers to position the first top slat (M) 3 3/4" from the ends of the joists (L) with the slat overhanging equally at each end. Drill pilot holes and screw the slat in place. Then space and secure the remaining slats **[Photo D]**.

Use spacers to position the top slats (M) equidistant from each other. Drill pilot holes before driving screws. Use a straightedge to keep the ends of the slats aligned as you work.

3 ARBOR DETAIL



With the bench assembly (E–H) resting on spacers clamped to all four posts (A), drive 3" deck screws through the bench ends (E) and into the posts.

Clamp the joists (L) to the posts (A) with their top edges flush and the joists centered side-to-side. Drive two 3" deck screws through the joists into each post.

TAKE IT TO THE YARD

New to setting posts? Here's the easy way to do it.
woodmagazine.com/postmaster

Get a helper or two to assist with moving and installing the arbor subassemblies. If your build involves setting posts in the ground, dig the holes now and drop the post assemblies in. Stake the posts plumb temporarily, but wait until you have the bench and trellis installed before pouring concrete and backfilling the holes. Then skip Steps 1, 3, and 7.

1 To provide a level spot for our arbor, we poured concrete piers for each post to rest on. To do this, dig 6"-diameter holes centered where each post will rest. Then drop in tubular concrete forms (available at home centers). Level the tops of the four forms to one another, supporting each one by screwing it to a pair of scrap boards lying across the hole. Mix and pour the concrete and allow it to cure for at least 24 hours before removing the scraps.

2 To support the seat during installation, bevel-cut one end of four 13"-long scraps at 3°. Then crosscut two of them 12¾" long and two 11⅜" long. Clamp the long scraps to the inside of the front posts (A) flush at the bottom and with the high point of the bevel at the top front. Clamp the short scraps to the inside of the rear posts.

Note: **If you chose to set the posts in concrete, level a line on them at about 12¾" above the ground, clamp short scraps to the front posts at that line and to the back posts 1⅜" below it.**

> **IF YOU CHOOSE TO STAIN OR PAINT TREATED LUMBER, LET THE ASSEMBLED ARBOR DRY FOR SEVERAL WEEKS FIRST.**
>
> ***-KEVIN BOYLE, SENIOR DESIGN EDITOR***

PICK THE RIGHT PRESSURE TREATED

We used cedar-tone pressure-treated (PT) lumber from Home Depot. It costs a bit more than standard "green" treated wood, but we prefer the look. Treated lumber is often very wet, making it heavy and prone to shrinkage and warping as it dries. To avoid this, select the driest boards available. They'll be noticeably lighter than wet boards of the same size. To avoid wetness and instability, check with your home center or a specialty lumber dealer about ordering lumber that has been kiln-dried after treating, designated KDAT.

3 Stand the post assemblies on the piers. Have your helpers support them, or secure them with stakes and kickers.

4 Remove the two outer seat slats (H) on each end of the bench assembly (E–H). Rest the bench assembly on the spacers and screw it to the posts (A) **[Photo E]**. Remove the spacers and reinstall the seat slats.

5 Position the back assembly (I–K) on the seat 1¾" from the rear edge **[Drawing 1]**. Drive 2" deck screws through the bottom lower back support (I) and into the seat slats (H). Then drive pocket screws through the other back support (I) and into the posts (A).

6 Clamp the joist assembly (L/M) to the posts (A) with the joists' top edges flush with the tops of the posts. Screw the joists to the posts **[Photo F]**.

7 Attach L-brackets to the piers next to each post (A) using concrete anchors. Then secure the posts to the L-brackets with 3" deck screws. Have a seat and enjoy the new view.

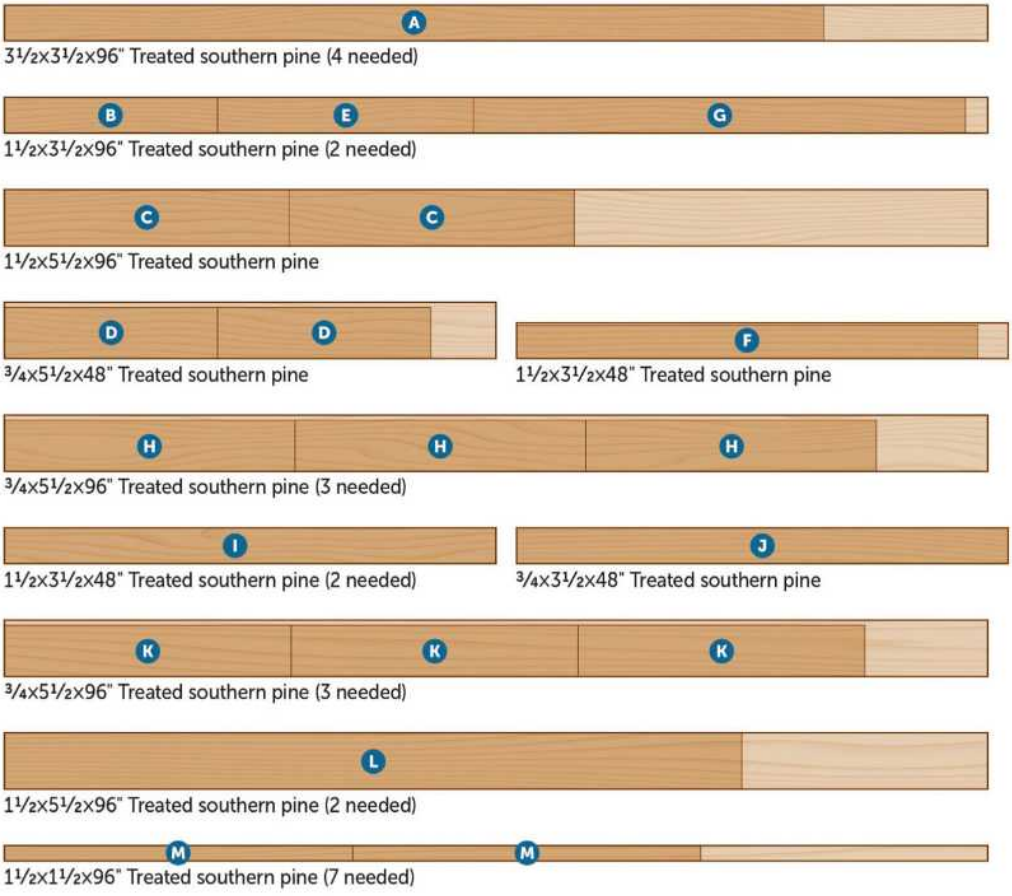
PARTS LIST

PART		FINISHED SIZE			Matl.	Qty.
		T	W	L		
A	POSTS	3½"	3½"	80"	T	4
B	LOWER STRETCHERS	1½"	3½"	20 13/16"	T	2
C	UPPER STRETCHERS	1½"	5½"	27 13/16"	T	2
D	ARMRESTS	¾"	5"	20 13/16"	T	2
E	BENCH ENDS	1½"	3½"	25"	T	2
F	CENTER SUPPORT	1½"	3¼"	45"	T	1
G	BENCH RAILS	1½"	3½"	48"	T	2
H	SEAT SLATS	¾"	5"	28⅜"	T	9
I	LOWER BACK SUPPORTS	1½"	3½"	48"	T	2
J	UPPER BACK SUPPORT	¾"	3½"	48"	T	1
K	BACK SLATS	¾"	5"	28"	T	9
L	JOISTS	1½"	5½"	72"	T	2
M	TOP SLATS	1½"	1½"	34"	T	13

MATERIALS KEY: T–treated southern pine.
SUPPLIES: 2½" pocket screws, 1¼", 2", 2½", 3" deck screws, 3" L-brackets (4), concrete anchors (4).
BITS: ⅜", ¾" round-over bits.
PROJECT COST: It cost us about $300 to build this project. Your cost will vary by region and source.

CUTTING DIAGRAM

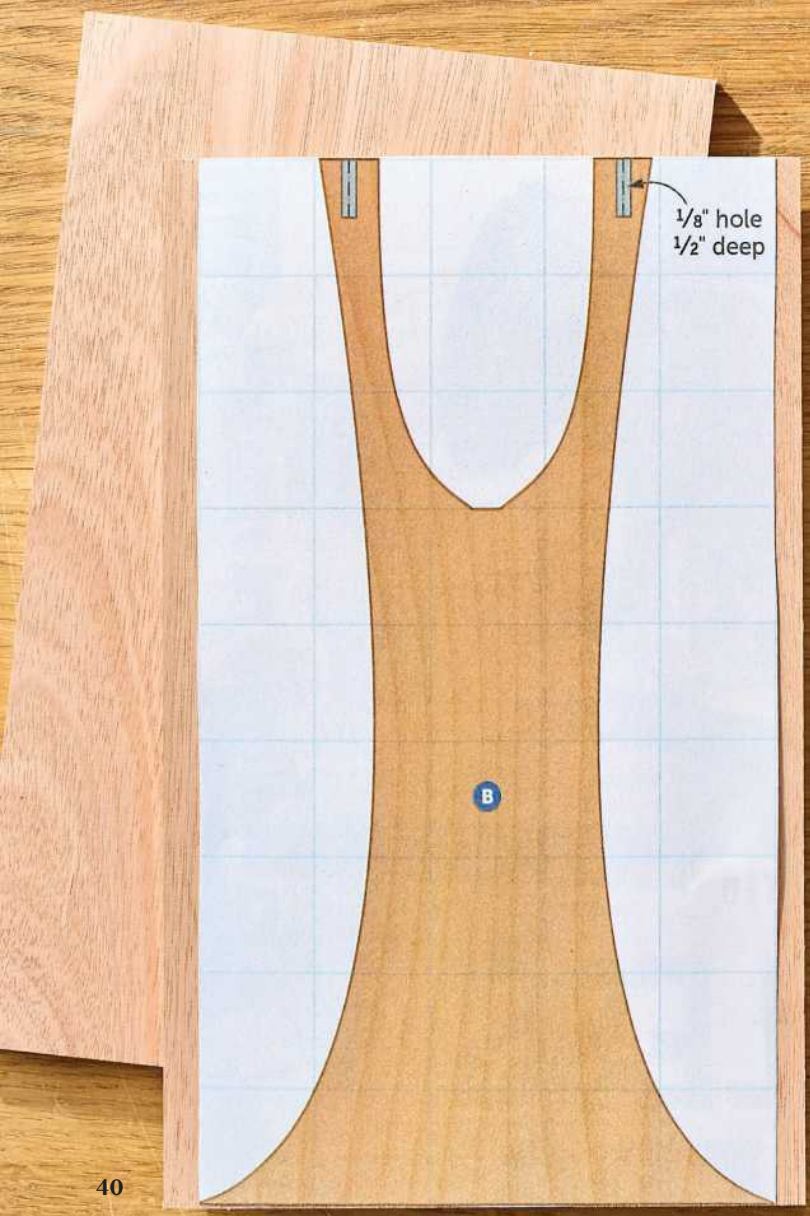
We purchased treated dimensional lumber in the sizes shown. If you're buying rough lumber instead, you'll need at least 30 board feet of 4/4 stock and 97 board feet of 8/4 stock, laminating two layers for the posts (A). Plane rough boards to the thicknesses shown in these example boards.



16 TOP TIPS FOR PROJECT-BUILDING SUCCESS

Whether it's your first project or your fiftieth, building from plans can be intimidating. Here are some suggestions for a smooth build.

WRITER: VINCE ANCONA



When Robert Burns penned the line, "The best-laid plans of mice and men often go awry," he very well could have been talking about woodworking. Although a woodworking plan provides a road map to building a project, it doesn't necessarily guarantee success. For that to happen, you need to apply attention to detail, some organizational skills, and a dose of critical thinking. To help you in your quest, here are some pointers for building a project from plans.

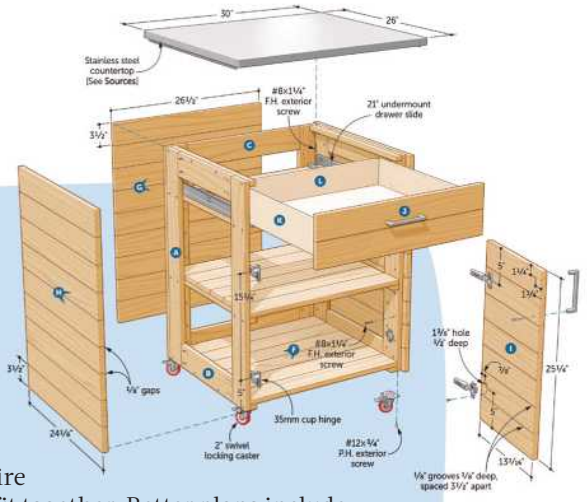
PHOTOGRAPHER: CARSON DOWNING

1

KNOW YOUR SOURCE

Published plans tend to be tested and vetted more thoroughly than free plans you find floating around on the internet. To test each *WOOD*® project, we build them from the same drawings you see. And at least three different people check the dimensions. While this doesn't guarantee a mistake never slips through, it makes errors far less likely. Although it may cost a little more upfront, purchasing a vetted plan from a trusted source can save you time and resources, and help to avoid frustration during the building process.

2



TAKE IN THE VIEWS

Once you have your plan in hand, start by studying the exploded view drawing. This will give you an overview of the entire project and how the parts fit together. Better plans include additional drawings that break the project down into subassemblies. Study these as well, looking at each subassembly as a separate unit. Breaking large projects down into separate components makes them less intimidating.

3

READ, THEN READ AGAIN

Read through the steps of the plan entirely, mentally building the project in your head to make sure you understand the build sequence. Go back and reread any sections that don't make sense or that you think may be challenging.

Most plans are written in a step-by-step fashion in order to make them easy to follow and understand. Sometimes, this can lead to unnecessary repetition of tool setups and operations. Reading through the entire plan ahead of time allows you to identify places where you can gang processes to reduce setups and work more efficiently.

4

TAKE A TOOL INVENTORY

While reading through the plan, identify the tools required to build the project and make sure you have everything you need. There's usually more than one way to do something in woodworking, so if you don't have a specific tool the plan calls for, think about how you can complete that step using a different tool. Or, use it as the perfect opportunity to justify a new tool purchase.

5

PERUSE THE PARTS LIST

At the back of most *WOOD*® plans, you'll find a cutting diagram along with a list of parts and supplies needed. Look through the parts list and locate each part in the exploded view or other drawings to familiarize yourself with the part names. For each part, verify the dimensions in the parts list against the dimensions shown in the drawings. Also note the quantity of each part.

PARTS LIST

PART		FINISHED SIZE T	W	L	Matl.	Qty.
A	LEGS	1⅜"	1⅜"	18"	M	4
B	STRETCHERS	1⅜"	1⅜"	17"	M	4
C	RAILS	1⅜"	1⅜"	17"	M	4
D	TOP	¾"	7⅞"	15¾"	M	1
E	ROD FILLER BLOCKS	⅜"	⅜"	½"	M	4

MATERIALS KEY: M–mahogany.
SUPPLIES: ⅜×36" steel rod.
BLADES AND BITS: ½" and ⅜" hollow chisels or ½" and ⅜" brad-point drill bits, ¼" router bit, 45° chamfer router bit.
SOURCES: 3mm hole punch, no. 97K0950, $5; rivet anvil, no. 97K0965, $18; 7mm Small Brass Rivets, no. 91Z5123 (pkg. of 25), $5; 9mm rivet setter, no. 97K0961, $9; leevalley.com; Russet milled leather, 3×2' piece, $40, montanaleather.com.
PROJECT COST: It cost us about $115 to build this project. Your cost will vary by region and source.

6

COPY THAT

If the plan includes any scaled patterns, enlarge them on a photocopier or draw them out full scale on a large sheet of paper. For photocopied patterns, double check the scale after printing to make sure it's correct. Some photocopiers automatically scale originals down slightly to fit on a page. The difference is often too minor to notice without using a rule to check.

In addition to patterns, you may also want to make a copy of the entire plan so you can hang the pages up in your shop and check off each step as you build the project.

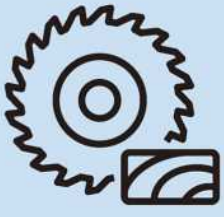
7

SEEK PROFESSIONAL ADVICE

If you get stuck on some aspect of the project, don't hesitate to ask for help. Try emailing the publisher of the plans with your questions. Or pose your question on a woodworking forum, where there's a good chance someone else has built the same project and may be able to offer assistance.

8

THIS IS ONLY A TEST

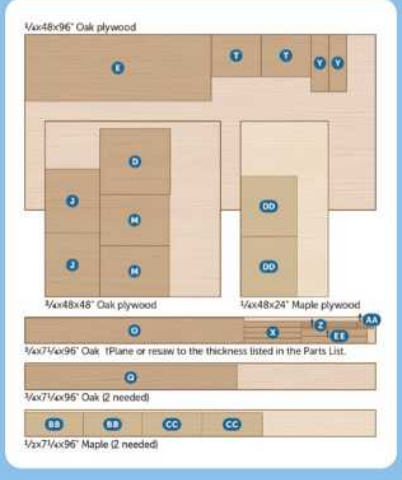


Better plans (like those in *WOOD*®) point out when to make test cuts. But even if your plan doesn't suggest it, it's a good idea to check the fit of a joint or part by making test cuts or using test pieces.

9

CONSIDER THE CUTTING DIAGRAM

While studying the parts list, take a look at the cutting diagram as well. Consider the cutting diagram as an idealized depiction rather than a hard-and-fast arrangement. Use the cutting diagram as a visual approximation of how much lumber you'll need. Add about 25% to any hardwood purchase to work around waste, defects, or mistakes.



10

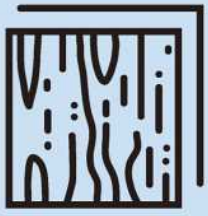
DO THE MATH

When cutting parts to size, instead of going strictly by the dimensions off the plans, cut parts to fit, following the adage of "measure twice, cut once." You may find that you have to slightly alter some dimensions in order for the parts to mate up with another part you've already cut. This is especially true when working with plywood and other sheet goods, which usually measure less than their nominal thickness shown in plans.

Pay particular attention to joinery dimensions. Here, it's even more important that you cut parts to fit rather than simply cutting to a given dimension.

11

STOCK UP ON SUPPLIES



Next, make a trip to your local lumber dealer or home center to buy the materials for your project. Unless the project uses dimensional lumber or plywood, don't get too hung up on finding boards that are the exact sizes shown in the cutting diagram. Hardwood lumber is usually sold in random widths, so focus on the part lengths, making sure you have enough overall board length to lay out all your parts. It's fairly easy to edge-glue narrow stock for wider parts, but you can't do the same if your stock is too short.

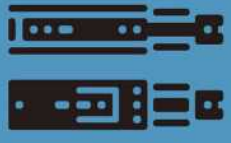
12

GIVE IT A REST

Avoid the temptation to immediately jump into building your project as soon as you get the lumber unloaded into your shop. Instead, sticker and stack the lumber and let it sit for a week or two to acclimate to the humidity level in your shop.

13

HAVE HARDWARE IN HAND



Purchase any hardware required before starting on the project in case you have to make modifications based on the hardware. Custom or handmade hardware can vary in size, so it's always easier to have the hardware on hand in order to test the fit in your project. In addition to the hardware, purchase any bits or blades you'll need to build the project.

14

GO WITH THE FLOW

Once the lumber is ready to start being worked, take a few minutes to roughly lay out the project parts on your boards, with an eye toward matching grain and color. Most plans will show grain direction in drawings, but sometimes it's not entirely clear, especially in cases where a part is wider than it is long.

A common mistake made by some woodworkers is to immediately cut all the parts to the dimensions given on the parts list. This is never a good idea.

Instead, cut each part only when it's called for in the plan and verify the dimensions before making the cut.

The exception to this is if you have several identically sized parts that are used in different stages of a project. In this case, it makes more sense to cut all of these parts at the same time, using the same saw setups.

15

MAKE IT YOUR OWN

Don't be afraid to change the wood species, substitute your favorite finish, or even make changes to the style or overall dimensions of a project to suit your needs. There's nothing wrong with using a plan as a springboard to creating your own design. Just make sure to take into account how changes affect the dimensions of all the parts of the project.

16

SHOW IT OFF

Once you've completed your project, take the opportunity to show it off. Send high-resolution photos of your finished projects to woodmail@woodmagazine.com. We may showcase them in the pages of *WOOD*®.

WALL-HUNG
SHOP IN A BOX

It's no Studley, but this handy tool chest packs in a full 26 square feet of storage on the perforated-hardboard panels while taking up little more than 7 square feet of wall space!

WRITER: OWEN DUVALL
DESIGNER: JEFF MERTZ
BUILDER: BRIAN BERGSTROM

PHOTOGRAPHER: JASON DONNELLY; **ILLUSTRATOR:** CHRISTOPHER MILLS

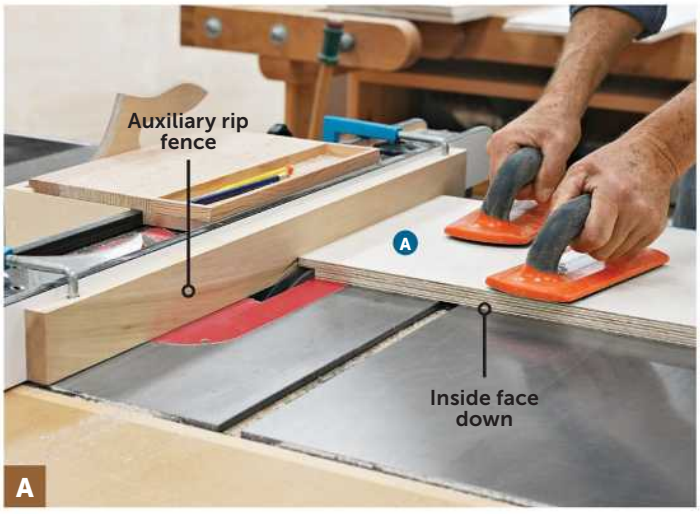
Looking for an easy-to-build project that makes a really big impact on reducing shop clutter and improving work efficiency? Here it is. With identical case and door construction using simple rabbet-and-groove joinery, you can make this cabinet in a few evenings or a weekend. For materials, you need only a 4×8 sheet of 1/4" perforated hardboard and a sheet of 3/4" plywood.

START WITH THE CASE

Made from perforated hardboard, even the case back provides storage. Setting it 3/4" from the back edge provides clearance for hangers and a French cleat.

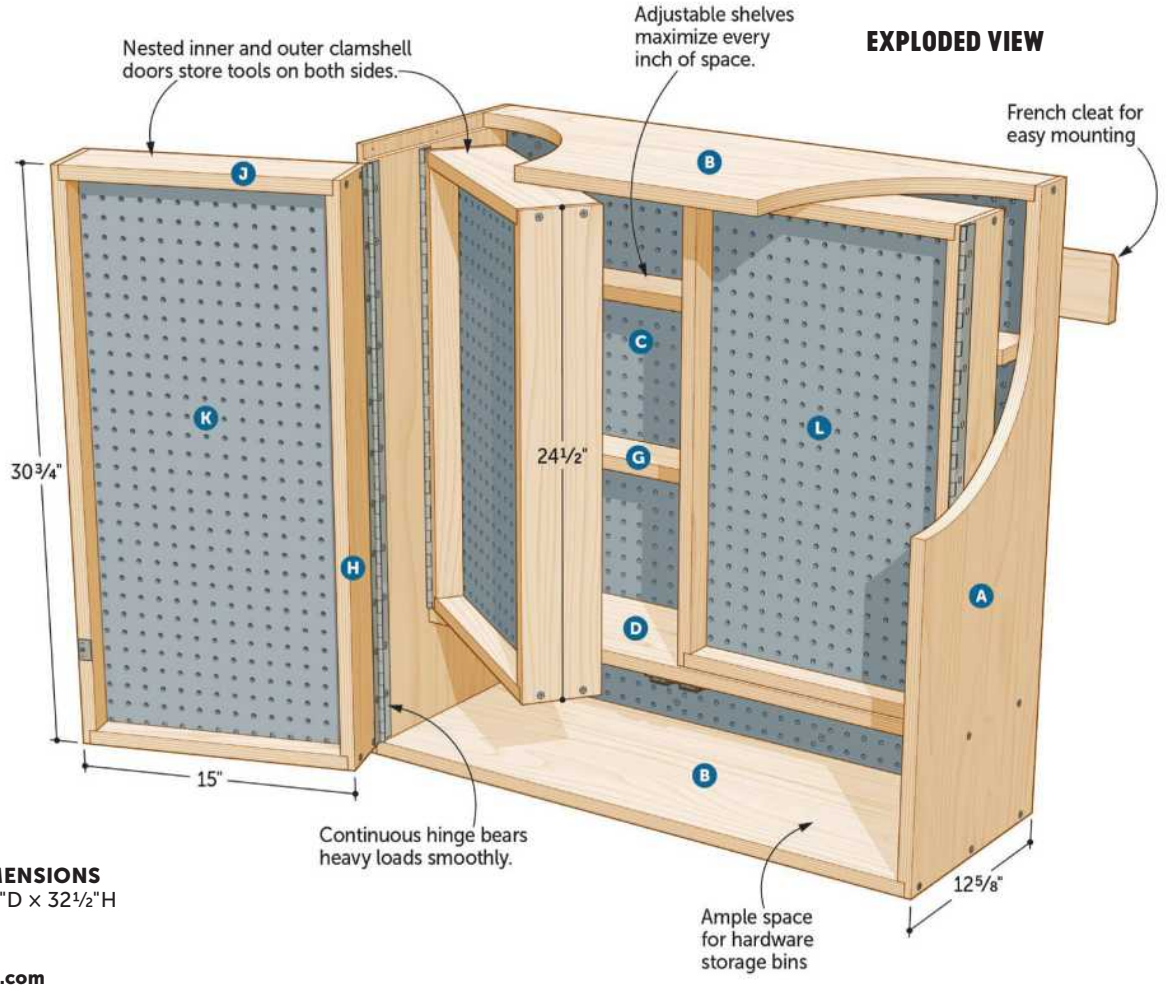
1 From 3/4" plywood, cut the case sides (A) and case top and bottom (B) to size **[Parts List]**.

2 Mark centerpoints for 1/4" holes for shelf supports on the inside faces of the sides (A) **[Drawing 1]**. Drill the holes 3/8" deep using a brad-point bit in your drill press, using the depth stop to maintain consistent drilling depth. Or use a shelf-pin jig.

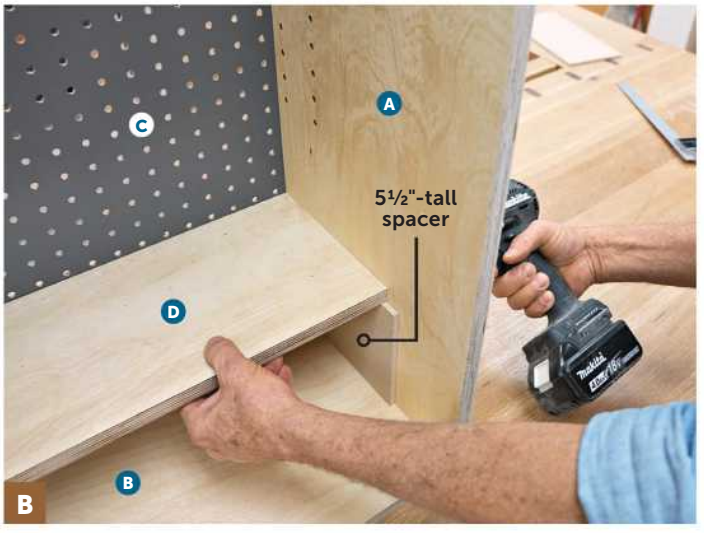


Add an auxiliary fence to your tablesaw fence and position it so that it just touches the dado blade. Keep the side (A) tight against the auxiliary fence to cut a rabbet across each end of the inside face.

3 Install a dado stack in your tablesaw matching the thickness of your 3/4" plywood. Then cut a 3/8"-deep rabbet across the inside faces of the sides (A) at each end **[Photo A]**.



OVERALL DIMENSIONS
32½"W × 12¾"D × 32½"H



Mark the location of the shelf (D) on the outside faces of the sides (A). With the shelf resting on spacers and tight against the back (C), drill countersunk pilot holes at your marks then attach it with screws.

Note: For added wear-resistance, we painted our perforated hardboard. If you choose to do the same, paint the front and back of each piece before assembly.

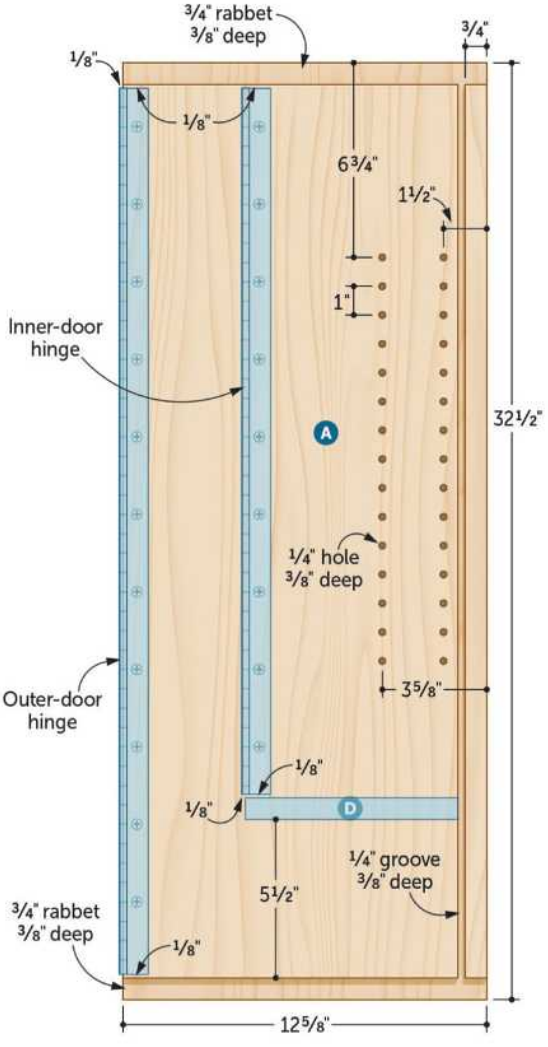
4 Switch to a standard blade raised to 3/8". Use a scrap of your 3/4" plywood between the fence and the teeth of your blade as a gauge to position the fence. Then cut a groove along the rear inside faces of the sides (A) and top and bottom (B) **[Drawings 1 and 2]**. Reposition the fence to widen the grooves slightly to snugly fit the 1/4" perforated hardboard. Sand the plywood parts to 180 grit.

5 Dry-assemble the sides (A) and top and bottom (B). From 1/4" perforated hardboard, cut the case back (C) to size. Then glue and clamp the case together, checking for square. When the glue dries, drill countersunk pilot holes through the sides and into the top and bottom **[Drawing 2]**, and drive the screws.

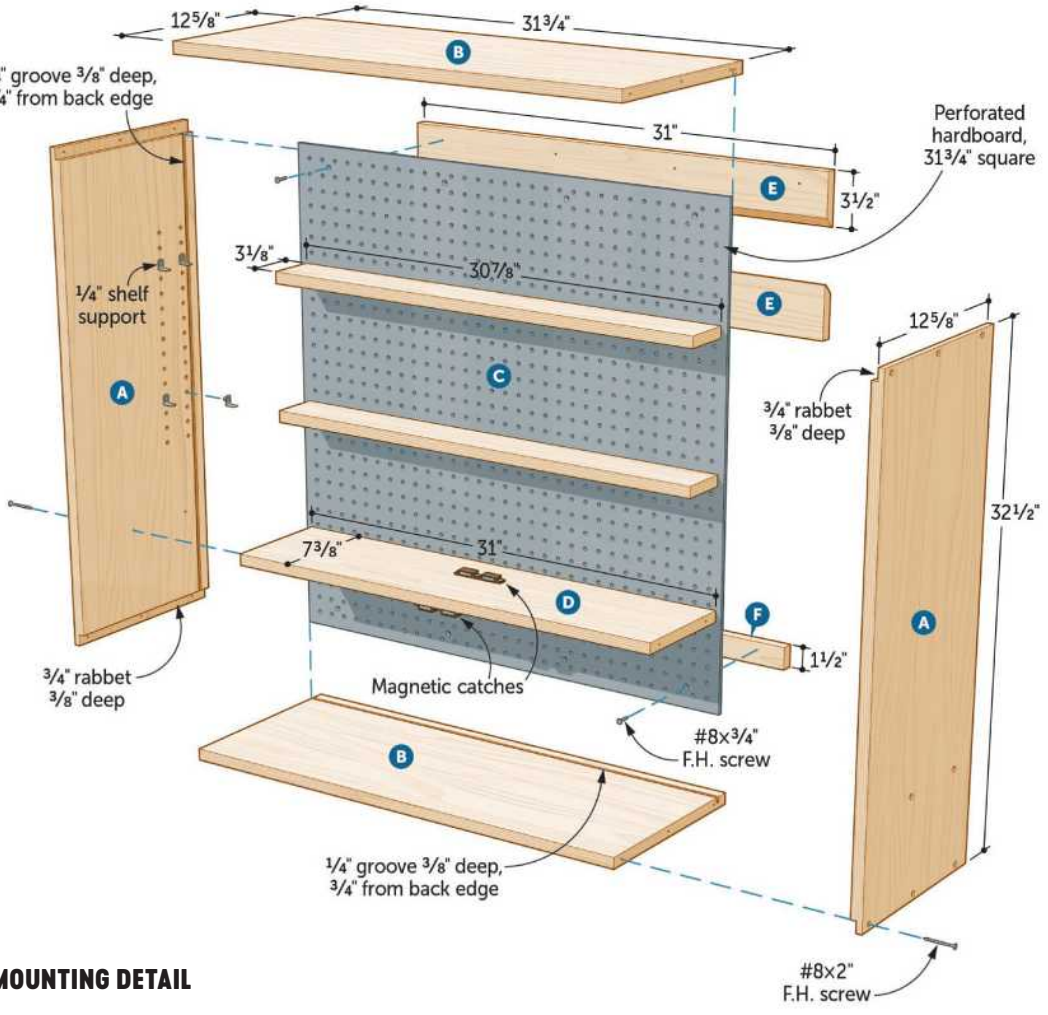
6 Cut the fixed shelf (D) to size and use scrap spacers to position and install it in the case assembly (A–C) **[Photo B, Drawing 1]**.

7 From 3/4" plywood, cut the mounting cleats (E) and spacer (F) to size. Bevel-rip one edge of each cleat at 45°, leaving a 1/8" flat on the nose **[Drawing 2a]**.

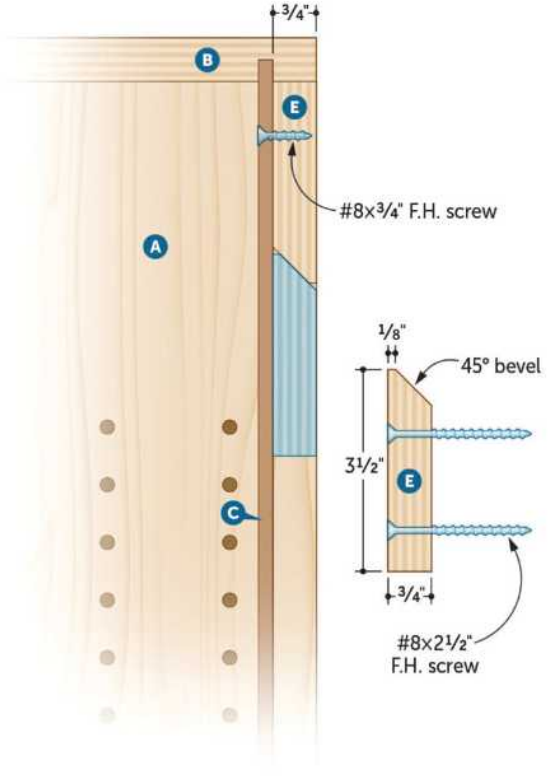
1 CASE SIDE



2 CASE



2a CLEAT MOUNTING DETAIL



8 With the case assembly (A–C) on your workbench face down, glue and clamp a mounting cleat (E) in place on the back, tight against the top (B) and the spacer (F) tight against the bottom. After the glue has dried, flip the case and drill countersunk pilot holes into the cleat and spacer between the holes of the perforated hardboard. Then drive screws to reinforce the attachment **[Drawing 2]**.

9 From ¾" plywood, cut the adjustable shelves (G) to size, and set them aside.

Note: **Be sure to install the mounting cleat with the bevel facing down and inward as shown in Drawing 2a.**

> **PERFORATED HARDBOARD STILL OFFERS A LOT OF BANG FOR THE BUCK WHEN CREATING SHOP STORAGE.**
>
> ***-KEVIN BOYLE, SENIOR DESIGN EDITOR***

NOW BUILD THE DOORS

1 Measure the openings between the case top and bottom (B) and between the top (B) and fixed shelf (D) and cut outer- and inner-door sides (H, I) to size and 1/4" shorter than the measured openings **[Parts List, Drawing 3]**. Also cut the door tops and bottoms (J) to size.

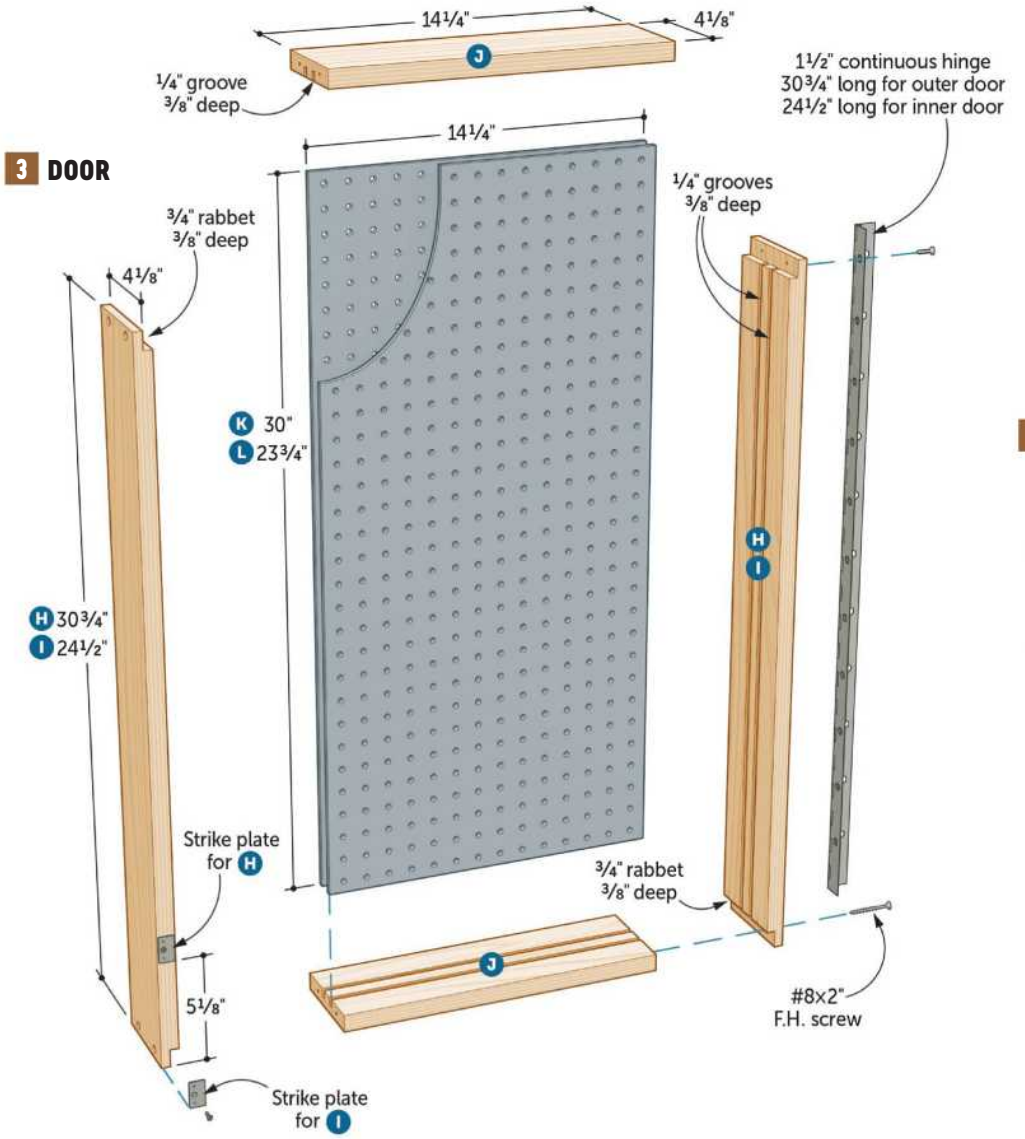
2 From 1/4" perforated hardboard, cut the outer- and inner-door panels (K, L) to size.

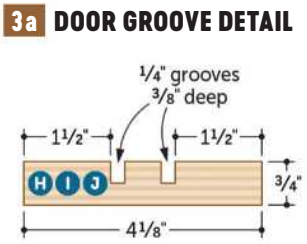
3 As you did with the case sides (A), cut a 3/4" rabbet 3/8" deep across the ends of each outer- and inner-door side (I, J) on the inside face **[Drawing 3]**.

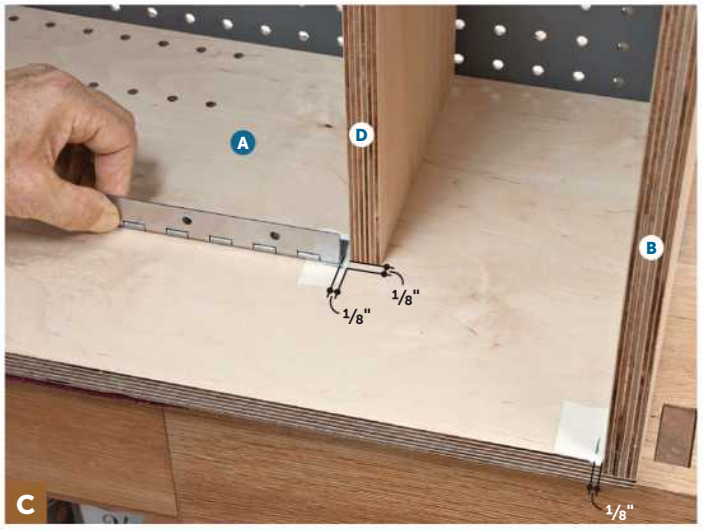
4 Switch to a standard blade raised to 3/8". Position the fence 1 1/2" from the inside of the blade. Cut a pair of grooves along the inside face of the door sides, tops, and bottoms (H–J) **[Drawing 3a]**, rotating each part end for end between cuts. Then move the fence away from the blade as needed to widen the grooves for a snug fit of the door panels (K, L).

5 Sand the plywood door parts to 180 grit. Then glue and clamp each door together, checking for square. Once the glue dries, drill countersunk pilot holes through the door sides and into the door tops and bottoms **[Drawing 3]**, and drive the screws.

6 Touch up any sanding as necessary and ease any sharp corners, then apply a clear finish to all assemblies. We wiped on three coats of General Finishes semi-gloss Arm-R-Seal, buffing between coats with 0000 steel wool.







Double-faced tape the inner-door hinge aligned with the marked lines, ⅛" away from and forward of the shelf (D). Then drill mounting holes in each screw location using a self-centering bit.

COMPLETE THE ASSEMBLY

Some easy marking and alignment tricks ensure that the beefy clamshell doors nest properly and swing freely.

1 Using a hacksaw, cut continuous hinge **[Sources]** to length—two to match the length of the outer-door sides (H) and two to match the length of the inner-door sides (I). Mark the uncut ends as "top."

2 Place the case on its left side. Referring to **Photo C**, add masking tape and draw alignment lines ⅛" from the top and bottom (B) for the outer-door hinge and ⅛" from the top and top face of the fixed shelf (D) for the inner-door hinge. Then add a mark for the inner-door hinge offset ⅛" forward of the shelf and use a combination square to transfer this line to the top of the case.

3 Position and tape the inner-door hinge to the case side (A) **[Photo C]** and drill mounting holes. Drive the supplied screws in two of the top and bottom holes to prethread them. Then remove the screws, hinge, and tape. Repeat for the outer-door hinge, positioning it so that the barrel overhangs the front edge of the case by ⅛". Then repeat the hinge marking and mounting process on the opposite side of the case.

Note: **In order to avoid stripping the pilot hole, use a screwdriver rather than a drill or impact driver to hand-snug the small screws included with the continuous hinge.**

HOOKS THAT HOLD

Perforated hardboard hangers are notorious for flying off along with the tool you're reaching for. For standard metal wire hangers, use M-style hanger retainers, *below, top*, that strap the hanger in place by locking into adjacent holes. The retainers release easily so you can reposition hangers. However, they occupy the surrounding holes making tight hanger spacing impossible.

Rockler's Hang-Tight hooks **[Sources]** solve the problem in a different way. They feature a chunky plastic screw that twists into perforated metal or hardboard holes to secure their plastic hangers, *below, bottom*. Because the screws are positioned below the hook, they don't displace other hangers.

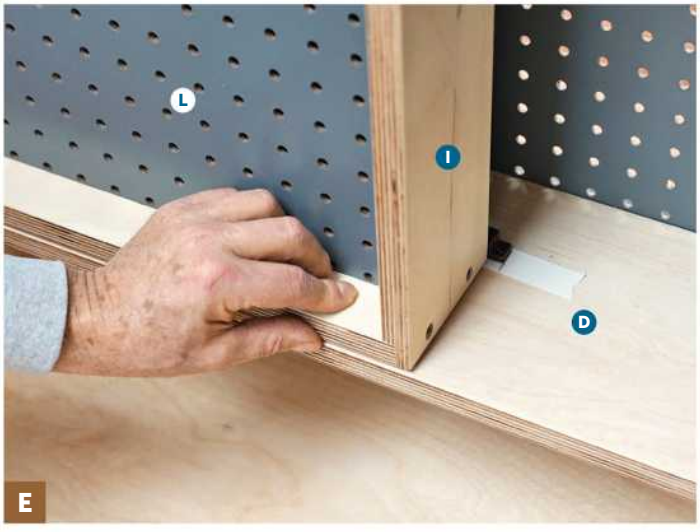
Note: **As you mount the hinges on the door, be sure to match the hinges and their orientations from their corresponding case locations.**

4 Double-faced tape the hinges to the front edges of the doors with the barrel overhanging 1/8" and the ends flush **[Exploded View]**. Drill mounting holes at each screw location using a self-centering bit. Drive all the screws to secure the hinges to the doors. Then attach the doors to the case **[Photo D]**.

5 To mount the magnetic catches **[Sources]**, attach the strike plates on the back edges of the door sides (H, I) **[Drawing 3]**. Mark the center of the shelf (D) on masking tape placed behind the inner doors. Mate a catch to the strike plate on an inner door, then align and attach it **[Photo E]**. Repeat with the other inner door. Then mount the catches for the outer door in the same manner on the bottom face of the shelf **[Drawing 2]**.

6 Fasten the remaining mounting cleat (E) to the wall, leveled and with the bevel facing the wall **[Drawing 2a]**, using at least four #8×2 1/2" flathead screws driven into studs. Along with a helper, hang the toolbox. Install the shelves (G), add hardware bins and hooks **[Sources]**. (For a look at our favorites, see *Hooks That Hold, previous page.*) Then tidy up your shop by filling the cabinet with tools, hardware, and supplies.

With the case on its side, align and attach the inner-door hinge by driving screws into the prethreaded holes. Then drive the rest of the screws. Mount the outer door next, flip the case, and repeat.



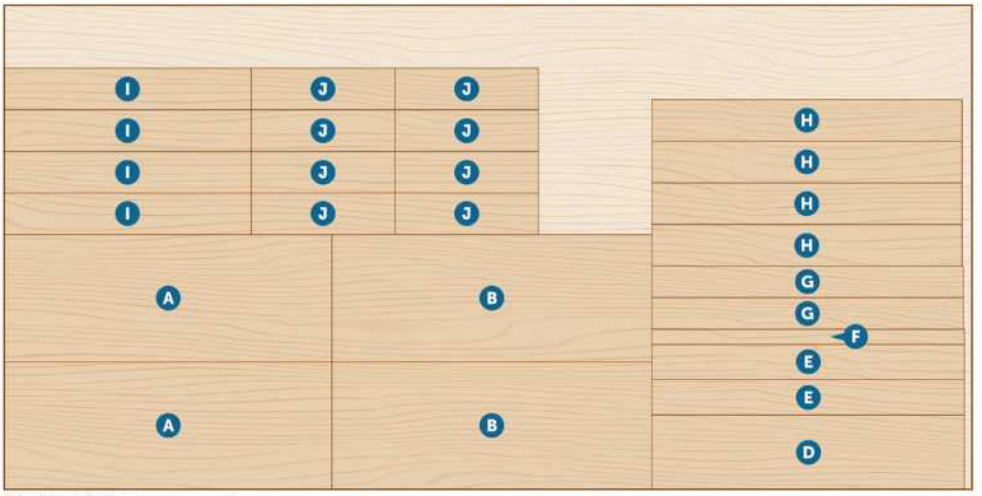
With the door flush with the shelf (D), align the catch with the centerline and mark its location. Separate, then realign the catch to drill pilot holes. Then remove the tape and mount the catch with screws.

PARTS LIST

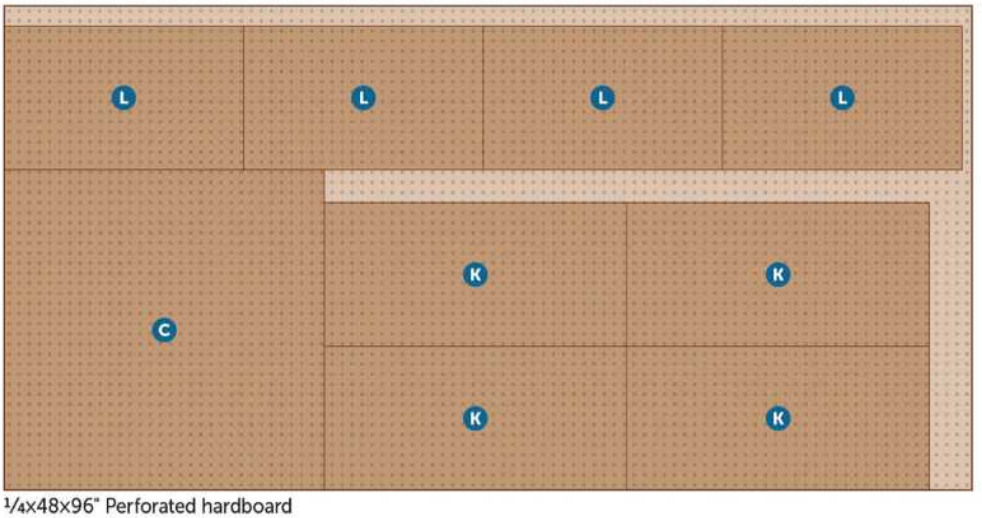
PART		FINISHED SIZE T	W	L	Matl.	Qty.
CASE						
A	SIDES	¾"	12⅝"	32½"	BP	2
B	TOP AND BOTTOM	¾"	12⅝"	31¾"	BP	2
C	BACK	¼"	31¾"	31¾"	PH	1
D	FIXED SHELF	¾"	7⅜"	31"	BP	1
E	MOUNTING CLEATS	¾"	3½"	31"	BP	2
F	SPACER	¾"	1½"	31"	BP	1
G	ADJUSTABLE SHELVES	¾"	3⅛"	30⅞"	BP	2
DOORS						
H	OUTER-DOOR SIDES	¾"	4⅛"	30¾"	BP	4
I	INNER-DOOR SIDES	¾"	4⅛"	24½"	BP	4
J	TOPS AND BOTTOMS	¾"	4⅛"	14¼"	BP	8
K	OUTER-DOOR PANELS	¼"	14¼"	30"	PH	4
L	INNER-DOOR PANELS	¼"	14¼"	23¾"	PH	4

MATERIALS KEY: BP–birch plywood, PH–perforated hardboard.
SUPPLIES: #8x¾", #8x2", #8x½", #8x3" flathead wood screws; paper-backed double-faced tape.
BLADE AND BITS: Dado blade set, ¼" brad-point bit, self-centering bit.
SOURCES: 1½x72" continuous hinge (1) no. 39170, $30; 1½x36" continuous hinges (2) no. 30085, $23 each; magnetic catches (4) no. 26559, $2 each; Hang-Tight pegboard starter pack no. 66336, $25; L-shaped shelf pins (24 pack) no. 75894, $5; rockler.com; pegboard accessories kit no. NC0202, $18; 5x4x3" storage bins (6 pack) no. 08212YELLO, $20; amazon.com.
PROJECT COST: It cost us about $200 to build this project. Your cost will vary by region and source.

CUTTING DIAGRAM



¾x48x96" Birch plywood



¼x48x96" Perforated hardboard

TAILGATE KITCHEN

Whether you're spending a day in the stadium parking lot or a week in the wilderness, you can take it all with you—including the kitchen sink—to cook up your favorites.

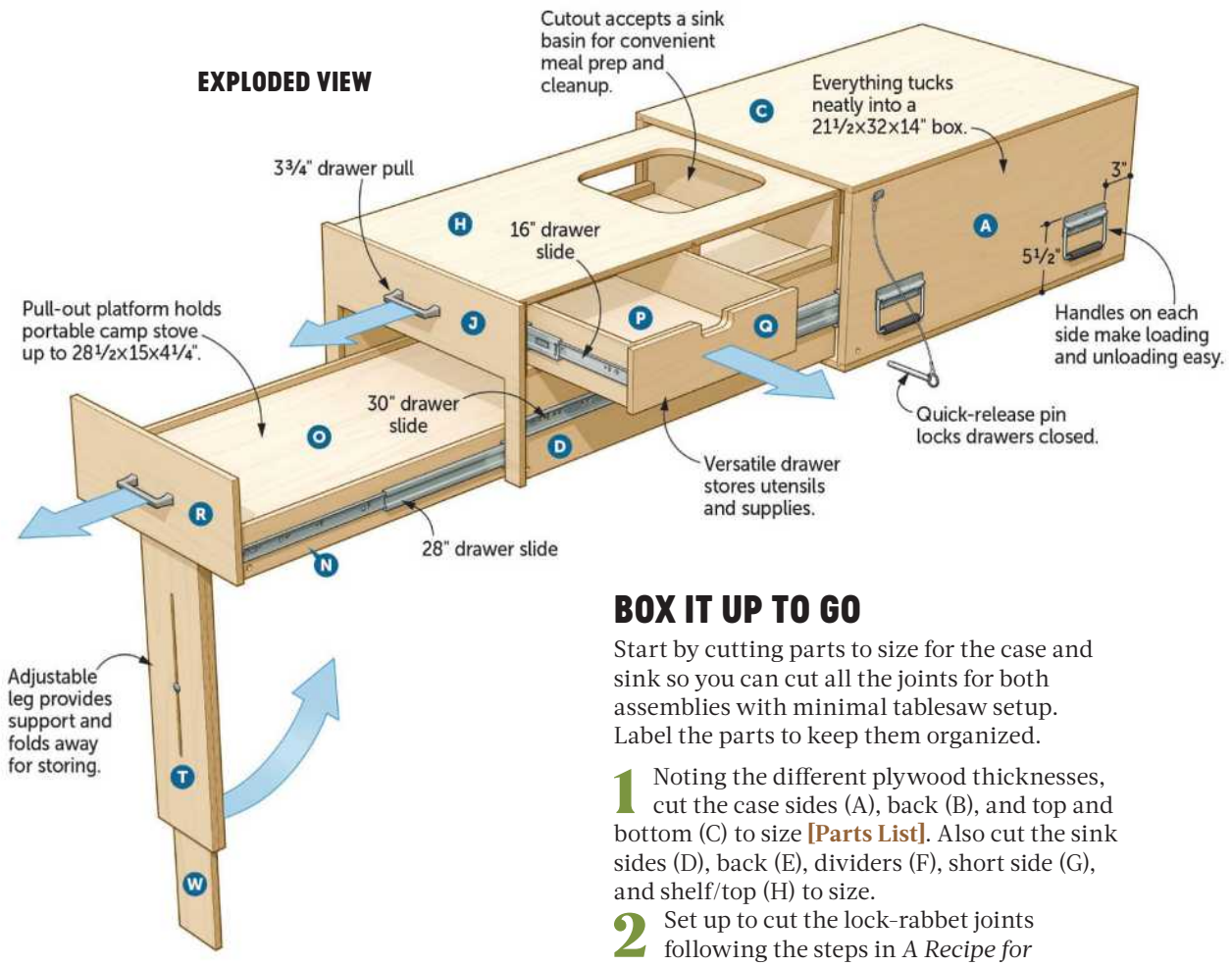
WRITER: CRAIG RUEGSEGGER
DESIGNER/BUILDER: JOHN OLSON

PHOTOGRAPHER: BRIE GOLDMAN. ILLUSTRATOR: CHRISTOPHER MILLS

Closed, this kitchen-in-a-box fits easily in a variety of vehicles–even the back seat of a compact car. Then at mealtime, like nesting dolls, it reveals one surprise inside another. Tug on the top pull to slide open a countertop with an opening for a collapsible sink basin. Below, a drawer stores needed cooking utensils. A third drawer extends the kitchen further, revealing a spot to park your camp stove, while an adjustable leg drops down to provide support.

The entire project is built from plywood using lock-rabbet joints cut entirely on the tablesaw for the case and drawers. Find tips for setting up and cutting this joint on *page 56*. And don't sweat installing drawer slides. We have tips for rolling through that process on *page 60*.

Note that the dado is not centered on the sink shelf and top (H). Maintain downward pressure above the center of the panel to ensure consistent dado depth all the way across.



OVERALL DIMENSIONS
22½"W x 33¼"D x 14"H stored;
63¼"D with sink extended, 91¼"D fully extended.

BOX IT UP TO GO

Start by cutting parts to size for the case and sink so you can cut all the joints for both assemblies with minimal tablesaw setup. Label the parts to keep them organized.

1 Noting the different plywood thicknesses, cut the case sides (A), back (B), and top and bottom (C) to size **[Parts List]**. Also cut the sink sides (D), back (E), dividers (F), short side (G), and shelf/top (H) to size.

2 Set up to cut the lock-rabbet joints following the steps in *A Recipe for Rabbets* on *page 56* by first installing a ¼" dado stack in your tablesaw and using a scrap of ¾" plywood to position the rip fence. Cut a dado along one end of each case side (A), sink side (D), and two sink dividers (F), making sure you create mirrored pairs **[Drawings 1 and 2]**. Then cut the grooves along the edges of

the case top and bottom (C) and the dadoes along the ends of the sink shelf and top (H). Set the sink top aside, then cut grooves along the underside edges of the sink shelf.

3 Reposition the rip fence and cut the dado across the sink shelf and top (H) **[Photo A]**.

4 Add an auxiliary face to your rip fence and, dialing in the fit on scrap first, cut a rabbet along both edges of the case sides (A) and sink dividers (F) to leave a tongue that fits snugly in the grooves **[Drawings 1 and 2, Photo B]**. Cut an identical rabbet along one edge of each sink side (D).

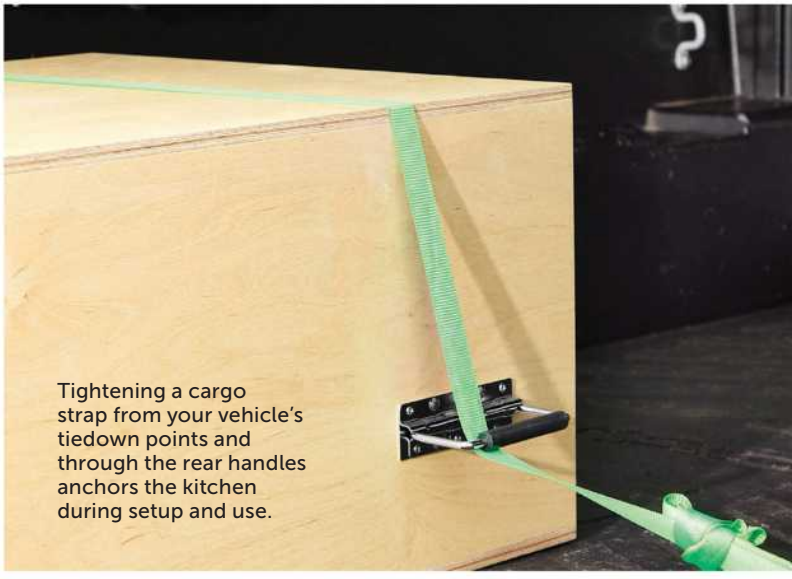
5 With the same setup, rabbet the ends of the case back (B), sink back (E), and sink short side (G). Dry-fit the case and sink assemblies to check their fit and for square.

Note: **Have your sink tub in hand so your opening matches its size and shape. See Sources for the collapsible tub we used.**

6 Lay out the sink cutout on the sink top (H) **[Drawing 2]**. Elevate the workpiece on scrap risers and jigsaw the opening **[Photo C]**.

7 Glue and clamp a case side (A) to the case bottom (C) **[Drawing 1]**. Add the case back (B), then the remaining side, and the case top. Check the assembly for square.

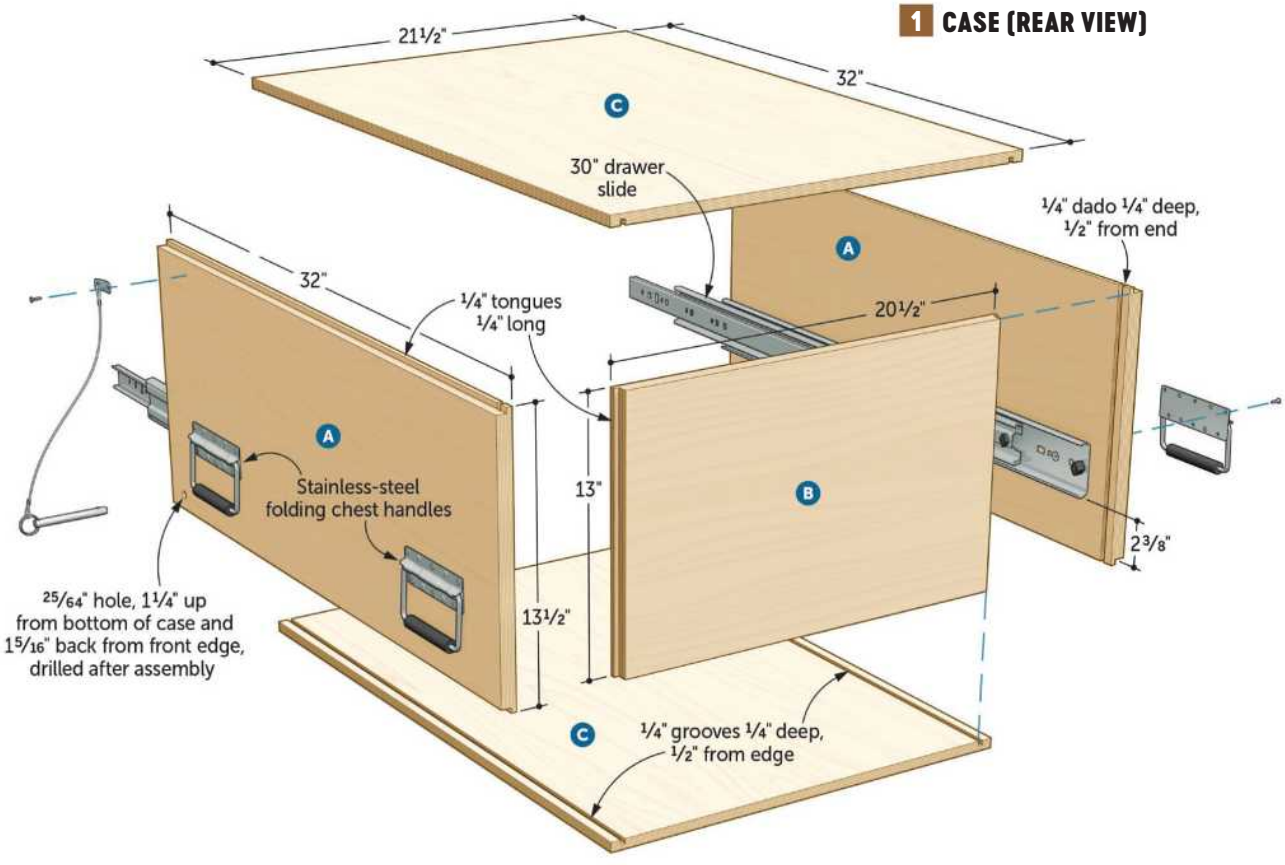
8 In a similar fashion, glue and clamp the sink sides (D), back (E), and sink shelf (H). After the glue dries, add the dividers (F), short side (G), and sink top (H).



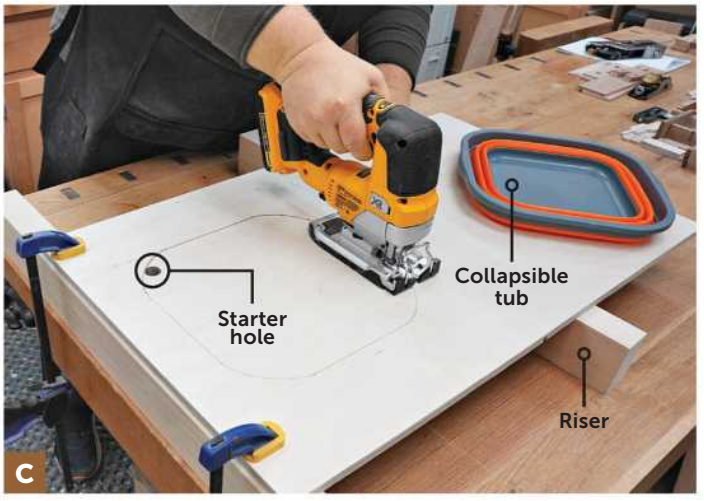
Tightening a cargo strap from your vehicle's tiedown points and through the rear handles anchors the kitchen during setup and use.

9 Cut the sink stops (I) to fit between the sink dividers (F) below the opening in the sink top (H). Glue them in place. Then cut the sink false front (J) to size and create the opening **[Drawing 2]**. Glue and clamp the false front in place. After the glue dries, finish-sand each assembly (A–C, D–J) to 150 grit.

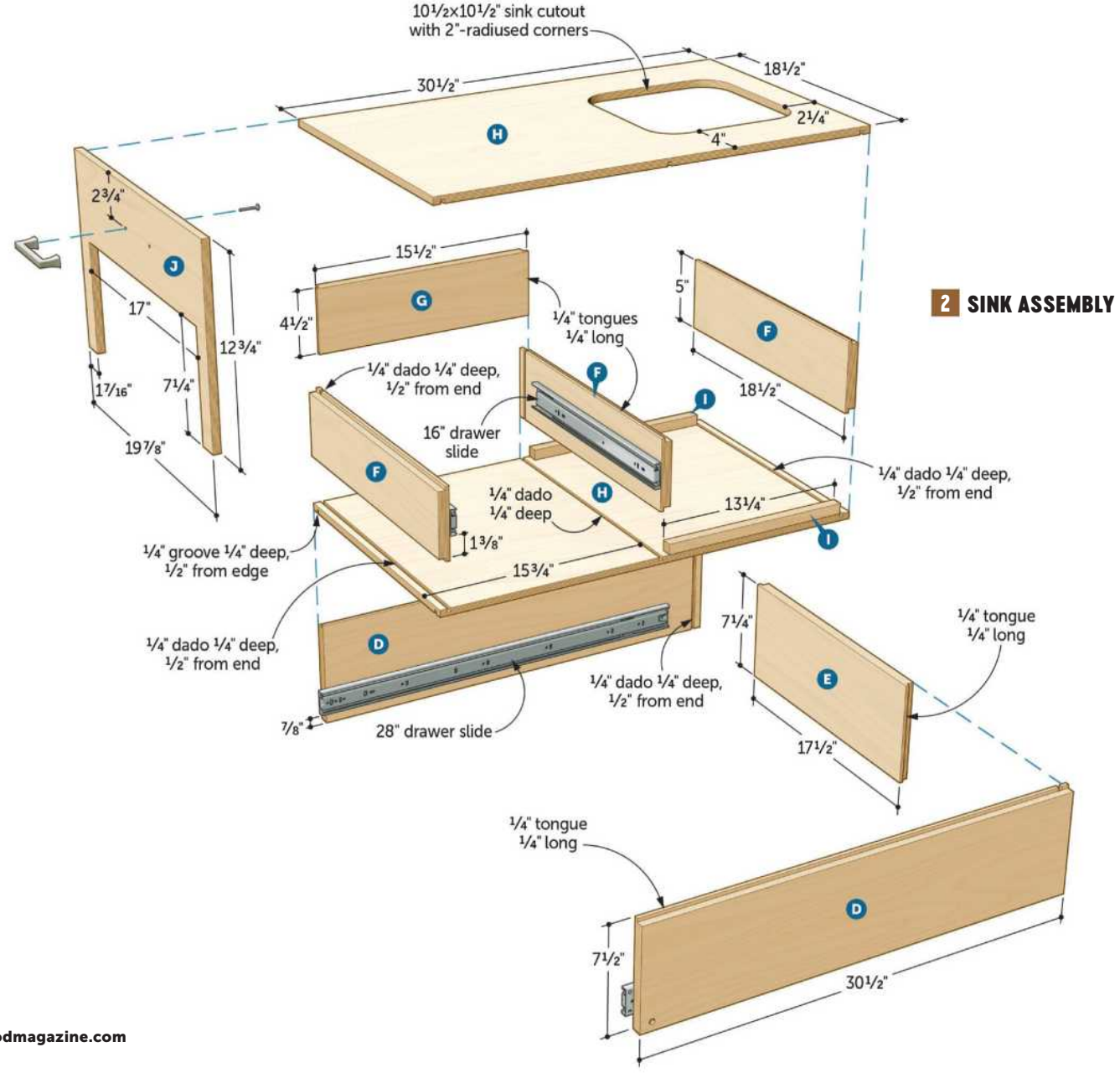
1 CASE (REAR VIEW)



With the outside face down, guide the edge of the case sides (A) and sink dividers (F) against the auxiliary rip fence face to cut a rabbet that leaves a ¼"-thick tongue.



Lay out an opening to fit your tub. Drill a starter hole inside the layout lines, then jigsaw with a fine-tooth blade just inside the line. Sand up to the line, and ease the sharp edges of the opening.



2 SINK ASSEMBLY

A RECIPE FOR RABBETS

A lock-rabbet joint consists of a rabbet on one piece creating a tongue that fits into a groove or dado in the mating piece. They are quick to cut, help lock workpieces in place during glue-up, and add resistance against torque, making them great for drawers.

Which to cut first—the groove or rabbet—might depend on your application, but we most often prefer to cut the groove first because it lets you avoid fussy measuring and instead form the joint by using the established thicknesses of your plywood and dado stack as setup gauges.

The joints in this project all have ¼"-thick tongues that fit into ¼"-wide grooves or dadoes. This means you can cut each part of the joint with a ¼" dado stack. Install the stack in your tablesaw and set it for a ¼"-deep cut.

Use a scrap of the plywood that will be rabbeted as a gauge to position the fence for the groove, *top right*. This ensures that the case parts will be flush after assembly. (You'll revisit this setup step for each thickness of rabbeted plywood.) Then cut all the grooves, *right*.

To cut the rabbets that form the tongues, first add an auxiliary face to the rip fence, securing it with F-style clamps, double-faced tape, or fence clamps, *bottom left*. Position the fence so the blade just brushes against it.

Set the height of the blade so that test cuts on a scrap of the plywood you'll be using form a tongue slightly thicker than ¼". Test the fit of the tongue into a groove. Adjust the blade height as needed and make additional test cuts to get a snug fit. Then cut all of the rabbets, *bottom right*.

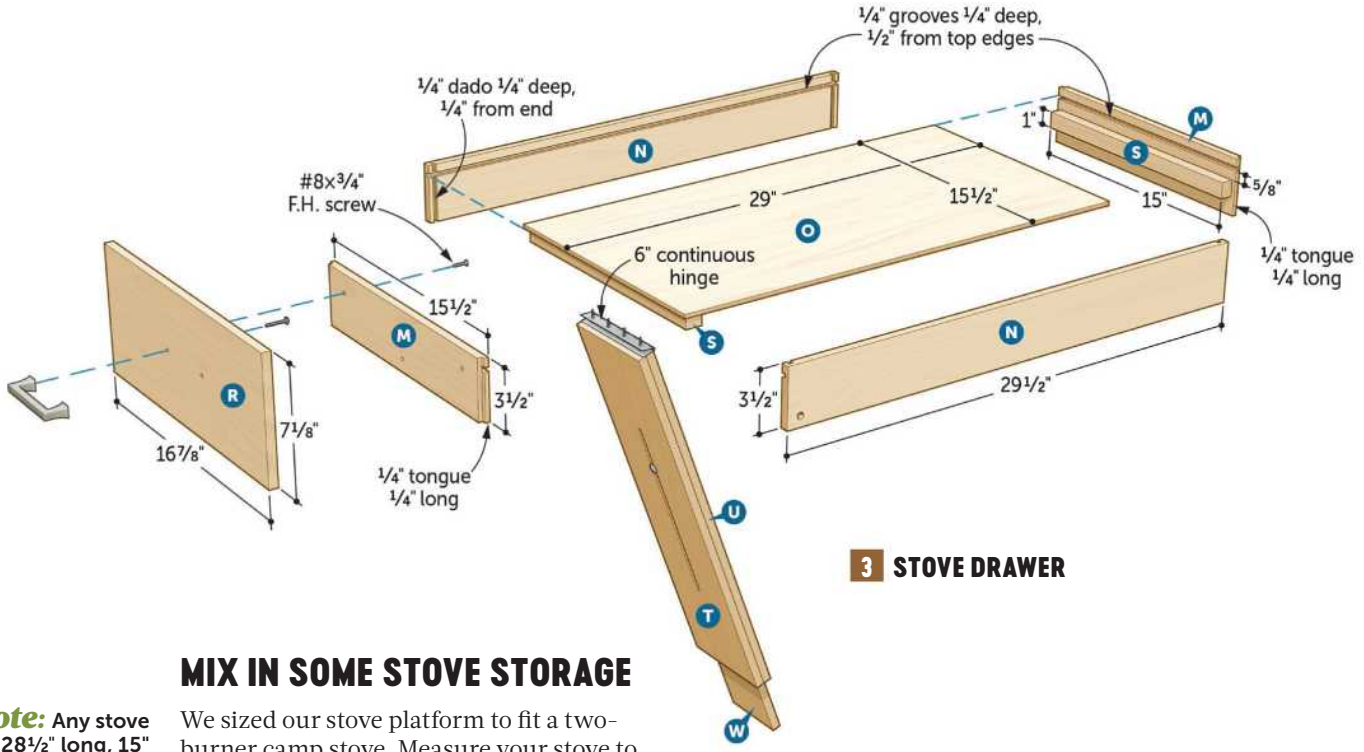
SOURCES: Fence clamps no. 75668, $20/pair, rockler.com.

Place a piece of the stock that will be rabbeted against the rip fence. Adjust the fence so the outside face aligns with the outermost tooth of the dado stack.

Guide narrow workpieces with your miter gauge with the workpiece end butted against the fence. A pushblock keeps the workpiece firmly against the saw table throughout the cut.

These fence clamps fit into ⅜" holes drilled in the edge of the auxiliary face so workpieces or an auxiliary miter gauge face can pass by without interference.

Butt the end of the workpiece against the auxiliary face. Guide the workpiece with your miter gauge and apply downward pressure with a pushpad to maintain a consistent depth of cut.



MIX IN SOME STOVE STORAGE

Note: **Any stove 28½" long, 15" deep, and 4¼" tall or smaller when stored will fit. See Sources for the stove we show.**

We sized our stove platform to fit a two-burner camp stove. Measure your stove to make sure it will fit the platform shown.

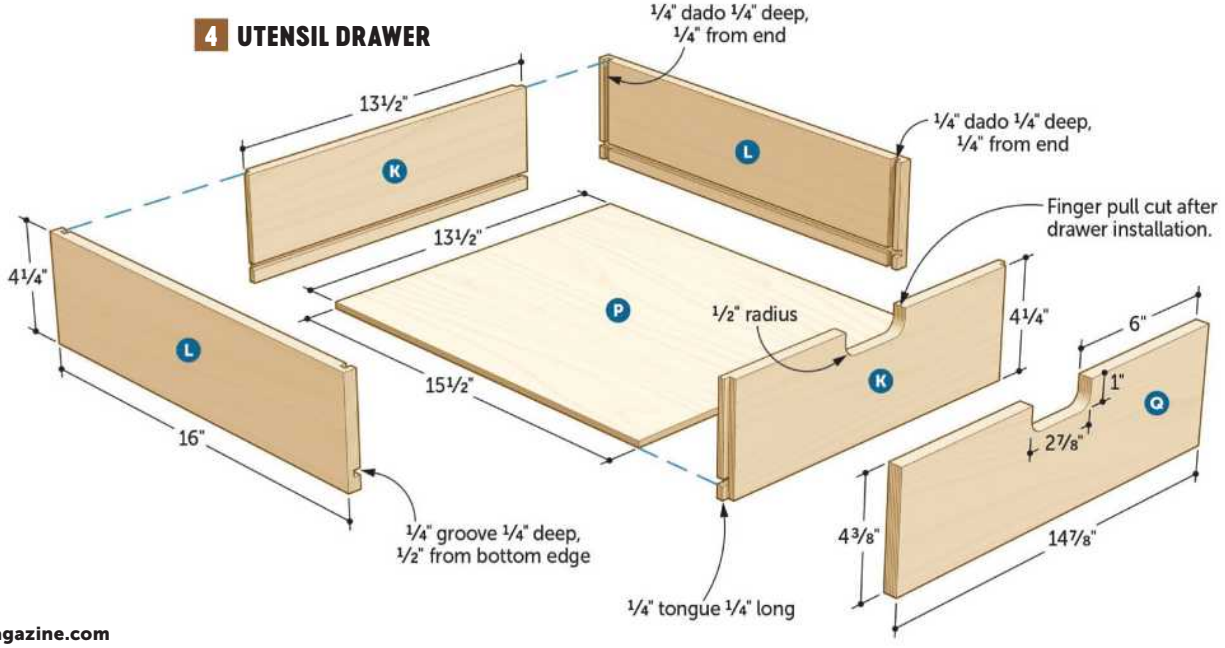
1 From ½" plywood, cut the sides, fronts, and backs for the utensil drawer and stove drawer (K–N) to size **[Parts List, Drawings 3 and 4]**.

2 Reinstall your ¼" dado stack and use the setup method from earlier to cut dadoes in the sides (L, N). Then move the fence ½" from the blade and cut the grooves to accept the ¼" plywood for the stove platform (O) and drawer bottom (P) .

3 Rabbet the ends of the drawer fronts and backs (K, M) to form tongues that fit the dadoes in the sides.

4 Cut the drawer bottom and stove platform to size. Finish-sand the inside faces of the drawer parts, then assemble the drawers, checking for square.

5 Cut the false fronts (Q, R) to size, checking their fit in the openings in the sink box **[Exploded View]**. Mark and cut the finger pull in the utensil drawer false front (Q), then sand it smooth. You'll cut the matching pull in the drawer front (K) later. Finish-sand the drawers and false fronts, easing the sharp edges. Set the utensil drawer and the false fronts aside for now.

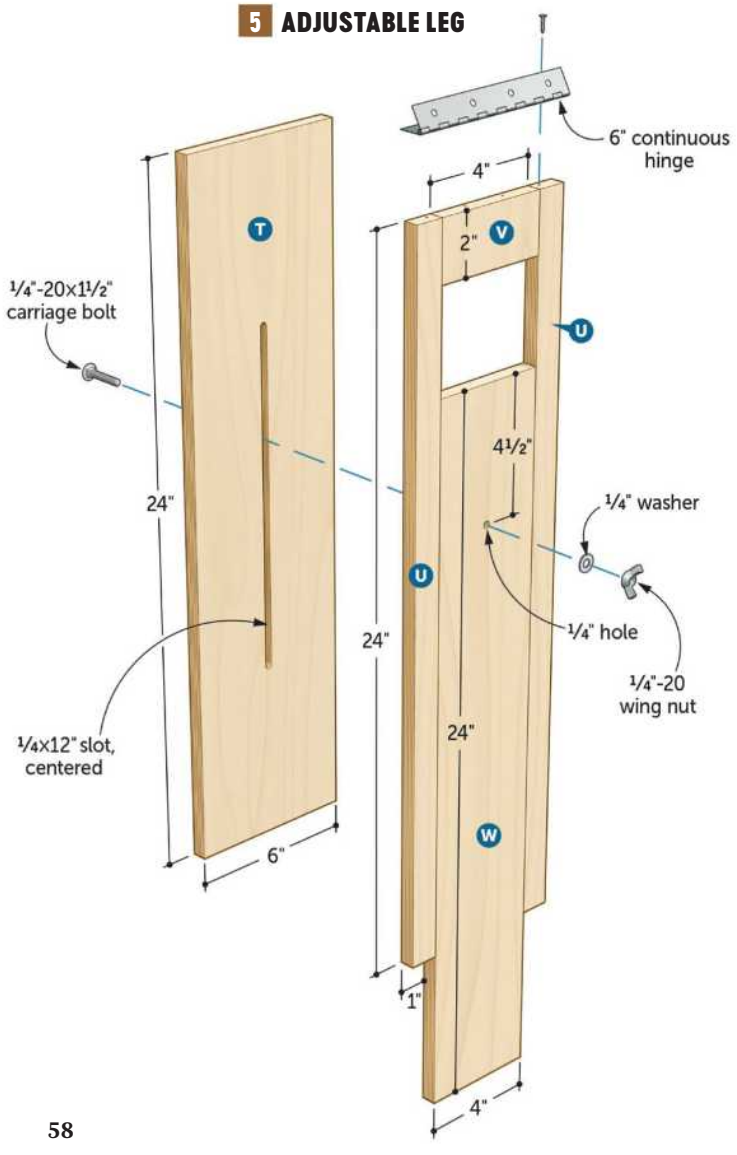


FOLD IN A LEG

An extending leg supports the kitchen when the stove platform is pulled out fully. Adjust the length of the leg to accommodate uneven terrain or different tailgate heights. The leg folds up and stores below the stove platform, supported by a leg block on the drawer back (M).

1 Cut the leg blocks (S) to fit between the stove drawer sides (N). Glue one block to the underside of the stove platform (O) and against the stove drawer front (M) **[Drawing 3]**. Glue the other to the drawer back 5/8" below the platform.

5 ADJUSTABLE LEG



> **THIS KITCHEN'S QUICK SETUP AND EQUALLY QUICK STORAGE MAKE GAME-DAY TAILGATING EVEN MORE ENJOYABLE.**
>
> ***DAVE STONE, MANAGING EDITOR***

2 From 1/2" plywood, cut the leg backer (T), guides (U), stop (V), and leg (W) to size **[Drawing 5]**. Jigsaw or rout the slot centered on the backer. Finish-sand all of the leg parts.

3 Glue and clamp the guides (U) and stop (V) to the backer (T), using the leg (W) to space them so the leg slides smoothly between the guides, but without play. Use the slot in the backer to help locate and drill the 1/4" hole in the leg, then remove the leg. Set the leg assembly aside to dry.

SLIDES WELL DONE

1 Following the instructions in *An Order of Slides on the Side, next page*, mount the 28" slides to the stove drawer sides (N) and the sink sides (D) **[Exploded View, Photo D]**.

2 Install the stove drawer. Apply glue to the stove drawer front (M), then center the stove drawer false front (R) in the opening, and clamp it to the drawer front. Drive screws through the drawer front into the false front **[Drawing 4]**. Then drill holes for the pull mounting screws centered on the false front's width and install the pulls.

3 Screw a 6" length of continuous hinge to the top edge of the leg guides (U) and stop (V) **[Drawing 5]**. Screw the other leaf of the hinge to the leg block (S) under the stove platform. Attach the leg (W) to the leg backer (T) with a 1/4" carriage bolt, washer, and wing nut. Swing the assembly up under the stove platform (O) and extend the leg to rest above the other leg block.

4 Mount the 30" slides to the outside of the sink sides (D) and the interior of the case sides (A) **[Exploded View]**. Install the sink drawer/stove platform assembly into the case to check for smooth operation.

Note: **Our 30" slides did not come with screws. We found #12x3/4" trusshead screws at a hardware store.**

With no bottom to the sink drawer, there's plenty of access for installing the cabinet half of the drawer slides.

Secure the drawers inside the case with a steel pin attached to a lanyard screwed to the case **[Sources]**. The lanyard ensures the pin doesn't get lost.

AN ORDER OF SLIDES ON THE SIDE

Simple layout and a scrapwood support make installing slides easy as pie.

This project uses three different sizes of full-extension ball-bearing drawer slides. These slides allow each drawer to extend fully out of the case, maximizing accessibility and usable surface. Installation is straightforward.

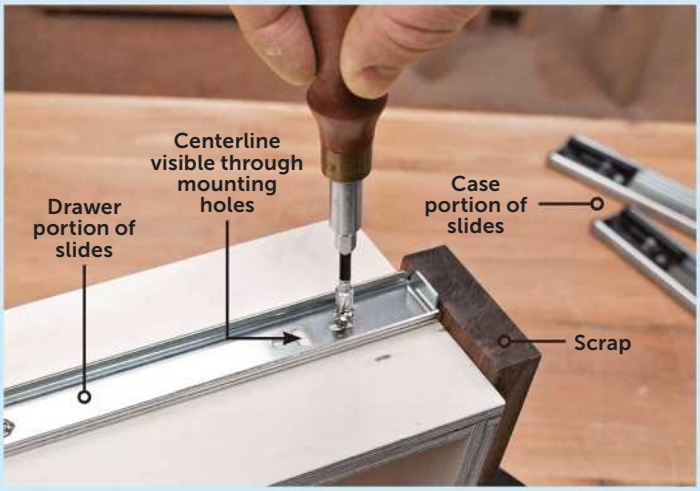
The slides we sourced come in pairs, and either can be mounted on either side of a drawer. Each slide separates into two parts: The smaller mounts on the drawer side, and the larger housing mounts to the case. The drawer portions then fit back into the housings, rolling smoothly on ball bearings.

To start installation, extend the slide fully to expose the release, typically a plastic button or lever on the drawer half of the slide. Trip the lever and pull the two halves apart.

Mount the drawer half of the slide first. To do this, mark a centerline along the length of each drawer side. Center the drawer half of the slide on the centerline. You'll be able to see the line through the various holes and slots in the slide. Align the front of the slide flush with the front of the drawer, *top right*. To allow adjusting the drawer position, the slide has screw holes and slots along its length. For now, drive screws in only two horizontal slots, one near the front and one near the back. This allows you to adjust the position forward and back, if necessary. Repeat this on the opposite side of the drawer, making sure you have the front ends of the slides facing the same way.

Reconnect the case half of a slide to a drawer half and measure from the slide to the bottom edge of the drawer side, *middle right*. Cut a support to proper width, then separate the slide again.

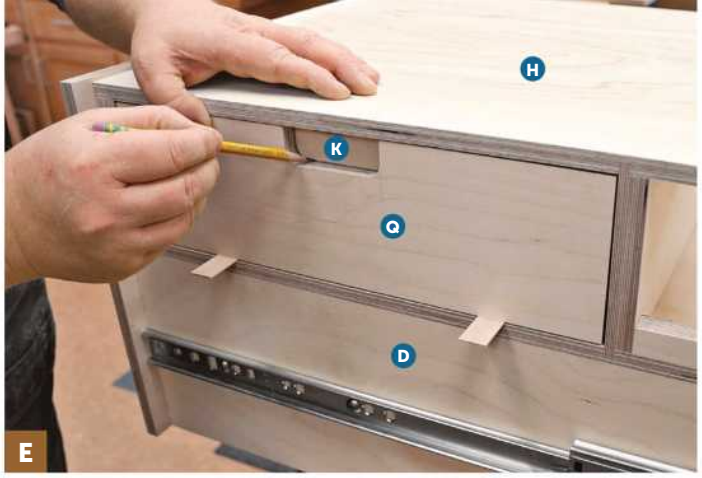
Set the support in the case and place the case half of the slide on it. For an overlay drawer front, the front of the slide would sit flush with the front of the opening. For the inset drawer fronts of the kitchen, position the front of the slide back by the thickness of the plywood used for the false fronts (Q, R), *bottom right*. As with the drawer half of the slide, drive just two screws for now, but this time in vertical slots so you can adjust the drawer up or down. Repeat for the opposite side, then slide the drawer into the opening and check its operation. Make any needed adjustments, then drive additional screws into holes in both halves of the slides to lock them in place.



Clamp a scrap to the front of the drawer and butt the slide against it. Center the slide on the centerline, then drill pilot holes (or use an awl to make starter holes) and screw the slide in place.

With the slide reassembled, measure from the bottom edge of the slide to the bottom edge of the drawer. Add ⅛" to this dimension and rip a scrap of ¾" or thicker stock to this width to use as a support.

The support positions the case half of the slide to allow ⅛" of clearance below the drawer. Move the rolling portion of the slide as needed to access the screw holes and slots.



Use spacers to center the false front (Q) in its opening. Trace the finger pull onto the utensil drawer front (K), then remove the drawer and false front, and cut and sand the pull on the drawer front.

5 Attach the 16" drawer slides to the utensil drawer sides (L) and the sink dividers (F) **[Exploded View, Drawing 2]**. Install the drawer, then dry-fit the false front (Q) and trace the finger pull opening **[Photo E]**. After cutting the finger pull, reinstall the drawer, position the false front, and glue and clamp it in place.

6 Push the drawers in fully, then locate and drill the 25/64" hole for the quick-release pin **[Drawing 1, Sources]**. Secure the lanyard to the case side (A).

7 To prep for finishing, remove all of the drawers and all hardware. Touch up any finish-sanding, then apply a finish. To help the wood withstand spills and drips, we wiped on three coats of water-based polyurethane, sanding lightly between coats with a 320-grit sanding sponge.

8 Reinstall the case hardware and screw the chest handles **[Sources]** to each case side (A) **[Exploded View]**. Then load up good eats and your kitchen utensils, and prepare to enjoy a great meal al fresco.

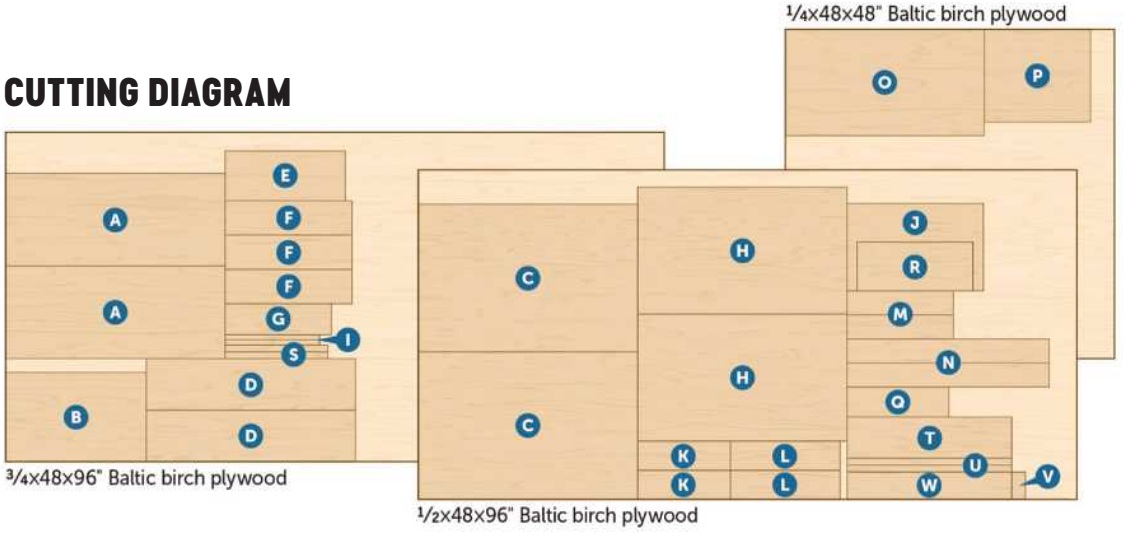
PARTS LIST

PART		FINISHED SIZE T	W	L	Matl.	Qty.
A	CASE SIDES	¾"	13½"	32"	BB	2
B	CASE BACK	¾"	13"	20½"	BB	1
C	CASE TOP/BOTTOM	½"	21½"	32"	BB	2
D	SINK SIDES	¾"	7½"	30½"	BB	2
E	SINK BACK	¾"	7¼"	17½"	BB	1
F	SINK DIVIDERS	¾"	5"	18½"	BB	3
G	SINK SHORT SIDE	¾"	4½"	15½"	BB	1
H	SINK SHELF/TOP	½"	18½"	30½"	BB	2
I	SINK STOPS	¾"	¾"	13¼"	BB	2
J	SINK FALSE FRONT	½"	12¾"	19⅞"	BB	1
K	DRAWER FRONT/BACK	½"	4¼"	13½"	BB	2
L	DRAWER SIDES	½"	4¼"	16"	BB	2
M	STOVE DRAWER FT/BK	½"	3½"	15½"	BB	2
N	STOVE DRAWER SIDES	½"	3½"	29½"	BB	2
O	STOVE PLATFORM	¼"	15½"	29"	BB	1
P	DRAWER BOTTOM	¼"	13½"	15½"	BB	1
Q	DRAWER FALSE FRONT	½"	4⅜"	14⅞"	BB	1
R	STOVE DRAWER FALSE FRONT	½"	7⅛"	16⅞"	BB	1
S	LEG BLOCKS	¾"	1"	15"	BB	2
T	LEG BACKER	½"	6"	24"	BB	1
U	LEG GUIDES	½"	1"	24"	BB	2
V	LEG STOP	½"	4"	2"	BB	1
W	LEG	½"	4"	24"	BB	1

*Parts initially cut oversize. See the instructions.

MATERIALS KEY: BB–Baltic birch plywood.
SUPPLIES: #12×¾" trusshead sheet metal screws, ¼"-20×1½" carriage bolt, ¼" washer, ¼"-20 wing nut, 1½×6" continuous hinge,
BLADE AND BIT: Dado blade, ¼" straight router bit.
SOURCES: 16" Centerline 100-lb full-extension slides (1 pair) no. 45908, $20; 28" Accuride 100-lb full-extension slides (1 pair) no. 69392, $47; 30" Accuride 350-lb full-extension slides (1 pair) no. 67238, $180, rockler.com; 3¾" Allen+Roth satin nickel pulls (2) no. 2280140, $6 each, lowes.com; Quick-release pin with lanyard no. 94975A253, $9, mcmaster.com: 4.9" spring-loaded chest handles (2 pairs), $10/pair; 5.5L SAMMART collapsible tub, $13; Camp Chef Mountain Series Kodiak 20,000 Btu camp stove, $130, amazon.com.
PROJECT COST: It cost us about $630 to build this project. Your cost will vary by region and source.

CUTTING DIAGRAM



SHOP-TESTED

NEW BLADES OFFER TWO PERFORMANCE LEVELS

Tester: Kevin Boyle

Grizzly's new Pro Series saw blades are available in 6½", 7¼", 10", and 12" diameters. All feature C4 carbide teeth that slice a 1/16"-wide kerf. Prices range from $15 to $60, depending on size and tooth count.

We liked the value of the Pro blades, but found them too narrow for the riving knives on our tablesaws. In a mitersaw, these blades perform well.

Extreme Series blades come in 10" and 12" sizes and have teeth made from more-durable C9 carbide. These blades cut a 2.8mm kerf (just over 7/64"), slightly under the ⅛"-kerf blades we normally prefer in our tablesaws. Prices range from $69 to $140.

We installed a 60-tooth Extreme blade in our sliding tablesaw. It has performed admirably in 4/4 and 8/4 stock. Used with a zero-clearance throat plate and an auxiliary fence, the blade produces zero-tear-out crosscuts with smooth ends.

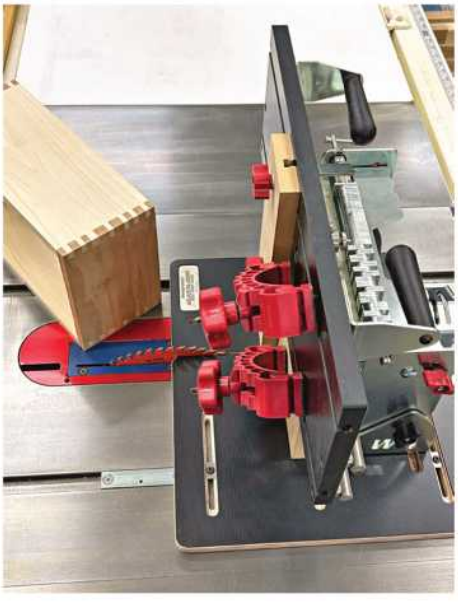
The 40-tooth Extreme blade performs well as a general-purpose tablesaw blade, making clean ripcuts and crosscuts. Just remember to reset your fence scale if you switch from a standard-kerf blade to this one.

Grizzly, *grizzly.com*
Pro Series blades, various item nos., $15-60;
Extreme Series blades, various item nos., $69-140

SHOP-TESTED

BOX-JOINT JIG OFFERS VARIABLE SPACING

Tester: Jim Heavey



I've used box joints on projects for decorative flair and to increase strength provided by the added glue surface each finger joint brings. The new Woodpeckers Adjusta-Joint Box Joint Sled makes this process easily repeatable and allows custom finger spacing.

The jig's vertical fence slides side to side, meaning you never have to unclamp and move the workpiece, eliminating a potential error point. Behind the fence, a rail holds 62 keys, each ⅛"-wide, that flip forward to set finger width in almost infinite variety. Simply set the keys, lower the microadjustable pin between them, and set your blade depth, up to 2½" thick. Cut the sockets on one board, then rotate the rail to flip the keys, positioning them to cut matching pins that fit precisely.

Well-written instructions made assembly and setup easy. The jig works with any tablesaw equipped with a ⅜×¾" miter-gauge slot. My saw's slot is slightly undersized, causing the jig's runner to fit too tightly, but the customer service department quickly sent a narrower runner at no charge that fit perfectly.

This jig provided all the results promised: an attractive, strong joint with precise, repeatable, and variable pin spacing.

Woodpeckers, *woodpeck.com*
Adjusta-Joint Box Joint Sled no. AJAJ, $599

SHOP-TESTED

TRIM-ROUTER EDGE AND CIRCLE GUIDES

Tester: Dave Stone

Kreg's new trim-router guides utilize the same baseplate to create an edge guide in one configuration and a circle cutter in the other. The baseplate has mounting holes that accept most trim routers.

The edge guide adjusts from 0" to 6" from the bit center for routing edge profiles and grooves. A bit-clearance cutout in the subbase requires attention at the end of cuts to prevent router torque from pulling the bit off of its path. An included pin and marked holes allow cutting circles from 3½" to 15" diameter.

The circle guide includes the baseplate along with a long trammel bar with an adjustable centerpoint to cut circles and arcs up to 52" in diameter. This configuration doesn't include the edge guide subbase.

Both guides work well, but I'd love to see an all-in-one kit, or at least for the trammel bar to be available separately.

Kreg, *kregtool.com*
Trim Router Edge Guide no. KRTBP150, $30; Trim Router Circle Guide no. KRTCG100, $50

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Inspired by a Charles Rohlfs design, this diminutive keepsake box is sized perfectly for stamps, paper clips, or your stash of candy.

Better Homes & Gardens® WOOD® magazine (ISSN-0743-894X): September 2026, Volume 43, no.4, is published 6 times a year in March, May, June, Sept, Nov, Dec by Meredith Operations Corporation, 1716 Locust St., Des Moines, IA 50309. Periodicals postage paid at Des Moines, IA, and at additional mailing offices. Subscription prices: $29.99 per year in the U.S.; $69.99 (U.S. dollars) in Canada. Your bank may provide updates to the card information we have on file. You may opt out of this service at any time. POSTMASTER: Send all UAA to CFS. (See DMM 507.1.5.2); NON-POSTAL AND MILITARY FACILITIES: Send address corrections to Better Homes & Gardens WOOD, PO Box 37508, Boone, IA 50037-0508. In Canada: mailed under Publications Mail Sales Product Agreement No. 40069223; Canadian BN 12348 2887 RT. If the Post Office alerts us that your magazine is undeliverable, we have no further obligation unless corrected delivery information is received within two years.

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