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INNOVATION

“WITHOUT TRADITION, ART IS A FLOCK OF SHEEP WITHOUT A SHEPHERD. WITHOUT INNOVATION, IT IS A CORPSE.” —WINSTON CHURCHILL

Whether it's your intention when you step into the shop or not, you're choosing to participate in a lineage of tradition nearly as old as humans. We chose to demonstrate the mortises in the Hall Tree on *page 54* using a mortising machine. You, of course, are free to choose the “more traditional” method of hand paring them with chisels, or some combination of a power drill and hand chisels. The nitpicky arguments we often have in the woodworking community about the purity of where we've planted ourselves along the spectrum of that tradition can sometimes blind us to its continuity.

But the constant that has driven the creation of that spectrum in the first place is innovation.

So, while every issue we create at *WOOD*® magazine is a celebration of tradition, the issue you hold in your hands is the one where we excitedly celebrate innovation. On *page 32*, you'll find our annual Innovation Awards, showing our top picks for products we think will move the needle in 2024.

By its nature, innovation is an often-disruptive break with tradition. But beyond that, every year, we find it difficult to define what else makes a product truly innovative in our woodworking world. This year's crop of winners demonstrates that break with tradition in a variety of ways, though.

We chose a router bit that offers an elegant solution to a decades-old problem. We chose a tool brand implementing a manufacturing process that impacted ease-of-use. We chose a tool offering new ways to ramp up precision without ramping up fussiness. We chose advances in safety. We chose tools that had never existed until now. And some of them, when it came down to it, we chose just because they were cool.

I hope you'll enjoy our picks. And I'd love to hear what woodworking innovations you've found to be most impactful to your own woodworking. Drop me a note at woodmail@woodmagazine.com.

Then get out to the shop and make something. We'll help. 🌲

Lucas
LUCAS PETERS

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📷 @peters.lucas

WOOD

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WOOD®

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PLANS

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Three cyclones, two motors and one impressive tower of suction power. Vanquish shop sawdust affordably.
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Spirit away your bottles, glassware, and accessories in this gorgeous storage cabinet.
- 54** **COMPACT COAT RACK**
Practice mortise-and-tenon joinery when you build this accommodating hall tree that works in any entryway.
- 58** **MAGIC GRAIN MATCH BOX**
It's no illusion: The grain on this box matches at all four corners for mind-bending beauty. We'll show you how.
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This monitor riser and laptop shelf multiplies your desk space and organizes your accessories.

ON THE COVER



24 This shop-made cyclone features inexpensive shop vacuum motors with alarming power, a huge drum for ravenous capacity, and—you bet your sweet bippy—we put it on wheels.



TOOLS & TECHNIQUES

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A tablesaw in a box, an automated rip fence, and a dust-busting router base star in our list of hot, new tools.
- 66** **FINISHING ESSENTIALS**
You can tackle any finishing task when you have the right supplies and accessories. Stock up on these essentials.
- 48** **SHOP TEST: 12-VOLT DRILLS**
Do 12-volt drills still deserve a place in your shop? We tested 10 models. Spoiler alert: We were pleasantly surprised.
- 70** **TOOLS & MATERIALS**
Shop sawhorses needn't be one-trick-ponies. Take a look at some workshop workhorses that do more.



EVERY ISSUE OF WOOD® MAGAZINE IS A CELEBRATION OF WOODWORKING TRADITION, BUT IN THIS ISSUE, WE EXCITEDLY CELEBRATE INNOVATION.

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DEPARTMENTS

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Innovation vs. tradition? *WOOD* celebrates both.

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CNC: Love it or hate it? Our readers weigh in.

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A shop with a view.

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CNC CONUNDRUM

I was interested in your editorial on CNC woodworking (issue 292, November 2023). I am neither a hand-tool nor power-tool purist. My take on CNC is that it requires just as much creativity as older approaches to be an effective tool for woodworking.

Sometimes, for pure pleasure, I build things using both power and hand tools that I cannot make with the CNC. This scratches my creativity itch. However, when I need to flatten a slab or need identical, high-tolerance parts, I use the CNC.

Let's teach the younger ones how to make things with the CNC but also teach them how to use hand tools and traditional power tools. They will learn how to plan and execute a woodworking project, CNC or not.

Kevin Zook

via email

In my opinion, using a CNC machine is not real woodworking. Sure, a woodworker needs to know basic skills like machining, wood grain, gluing, etc. But let's see him try inlay work without the CNC—that's real woodworking. I'd never want a CNC machine, even if it were free.

Paul Higginbotham

via email

I love this question of whether CNC machines or power tools constitute "real" woodworking. Power tools, like digital cameras, have democratized a craft that previously took years of training to create a quality piece.

Does using a handheld router disqualify a beautiful piece of edge work? At the end of the day, enjoying the finished product is the most important thing of all, for the creator and the recipient. If the product is appreciated, nobody really cares how it was made.

Ed Sayer

via email

As I reiterate in this issue's editorial, even so-called traditional woodworking is a spectrum—a house with many rooms, so to speak. If you are hoping to invite a next generation of woodworkers into your favorite room, it is encouraging mentorship rather than scorn for their entry door that will ensure they don't make a hasty exit from the house. Many of the replies I received on this topic reflected the courteousness that I've come to expect from the woodworking community. Thanks!

Lucas Peters

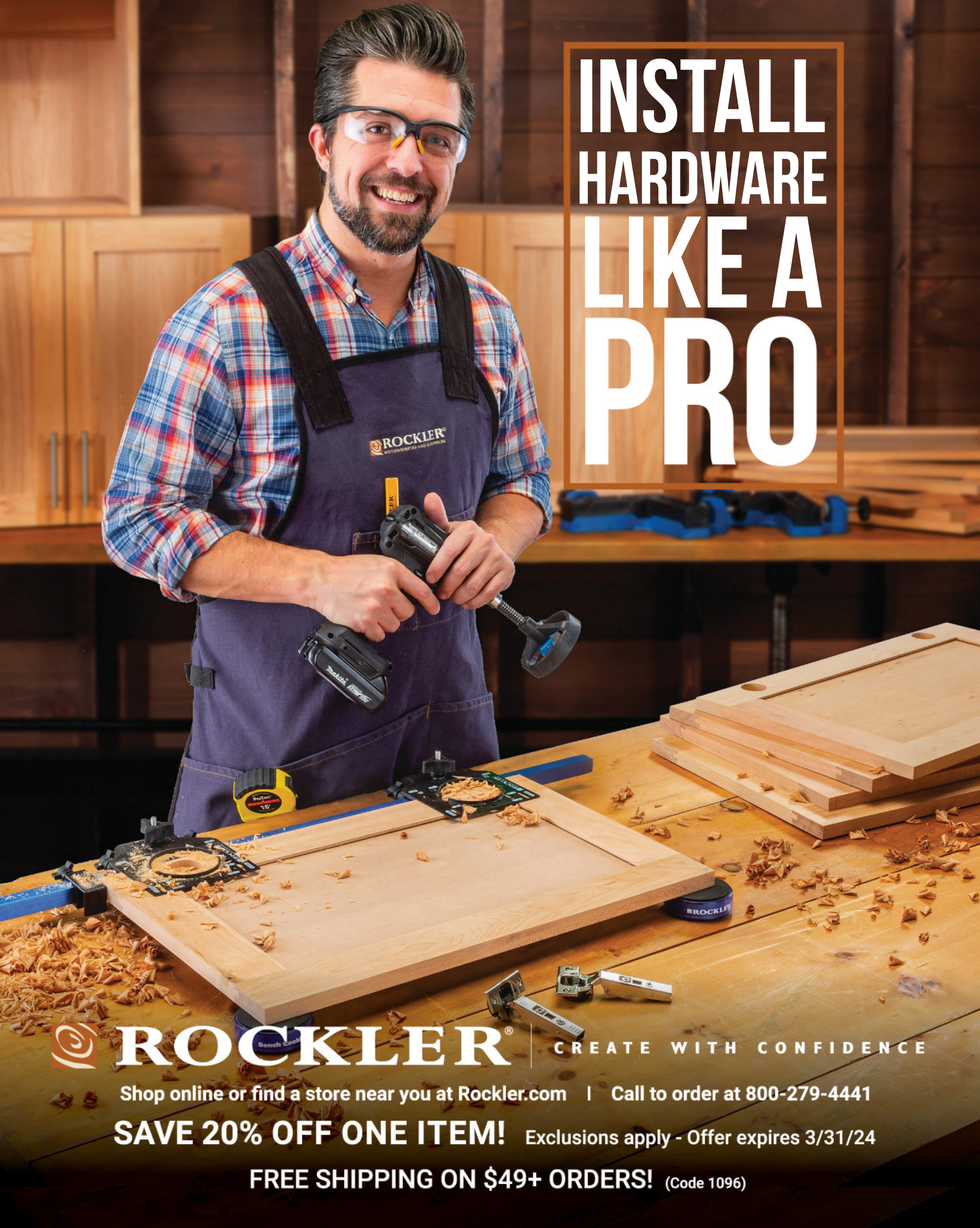
Editor-in-Chief

I decided to try my first CNC inlay project using Randy Johnson's trivet in issue 292 (November 2023). Since it was a test, I used MDF scraps rather than hardwood. I'm glad I did. It worked great until the very end. Randy warned about using light passes at the end. I wanted to avoid sanding, so I thought just one more pass at 0.050" would be safe. Just as Randy warned, I lost all the fine detail from the inlay. Thanks for the great directions. For my next attempt, I'll follow them to a T.

Tim Rogers

via email





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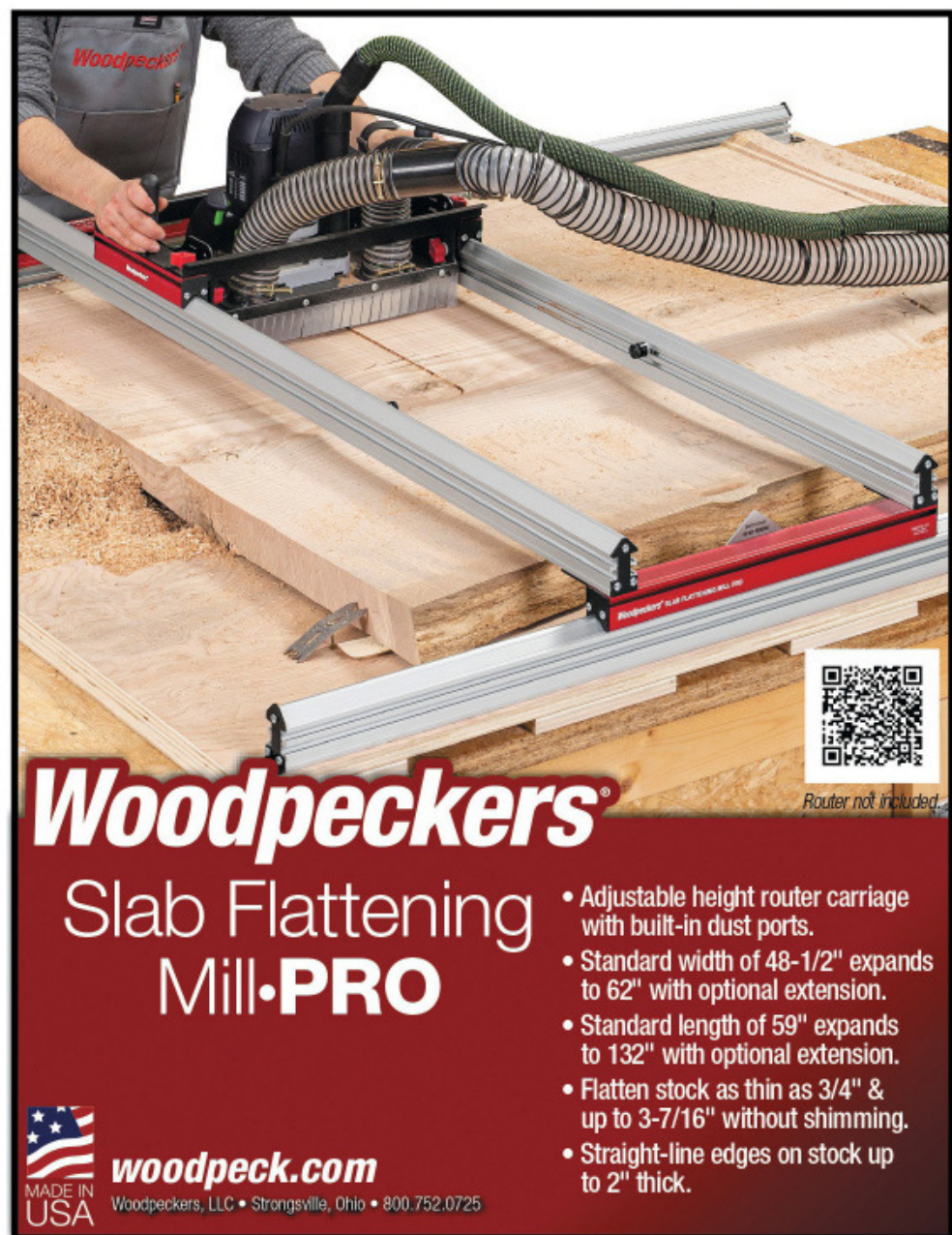
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YOUR VOICE

OFF OUR ROCKER

Dave Weinrich built the "Heirloom Child's Rocker" in issue 278 (November 2021) and found a couple of mistakes.

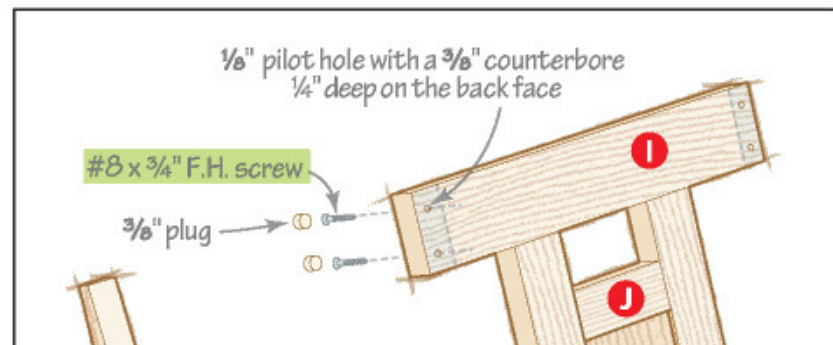
In Drawing 1, the screws fastening the back top rail (I) to the back legs (B) should be #8x3/4".

In Drawing 7, the bevels on the bottom of the back stiles (H) should be 10°.

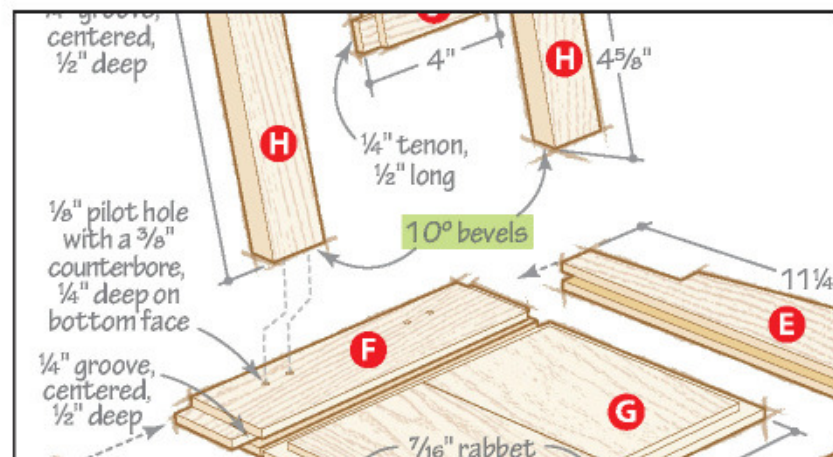


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DRAWING 1



DRAWING 7



ONE JEWEL OF A BIRTHDAY GIFT

Issue 286 (December 2022/January 2023) inspired me to build this heirloom jewelry box for my granddaughter, Jocelyn, for her 12th birthday. I crafted much of it from Philippine mahogany harvested from our old family home. My brother-in-law etched the glass top using a laser CNC.

Ed Talbott

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Having made a commitment to build a dresser for each of his grandchildren, **RICK PERCY** of Lewis Center, Ohio, crafted this one for his last grandchild, Brook. It is made from gummy cherry and curly ambrosia maple with rosewood pulls. Rick applied 10 coats of hand-rubbed finish on the dresser and 15 coats on the pulls.



Fourteen-year-old **PJ RUTHERFORD** from Cleveland, Texas, built this hammock as her entry for a competition at the county fair. She based her version on the design featured in issue 280 (March 2022), and built it from cedar and black walnut.



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.

• With his house already full of furniture built from plans in *WOOD*® magazine, **CLYDE PATTERSON** of Lake Jackson, Texas, decided to build this table from issue 152 (November 2003). He had already built the chairs featured in issue 154 (March 2004). Clyde admits the table was a challenge but he is pleased with the end product.



Purchase plans for the classic dining table at woodstore.net/classictable



• Greatly saddened by the loss of his 14-year-old golden retriever, retired carpenter **MIKE YOUNG** of Mora, Minnesota, constructed this casket for her. She was his best friend, companion, and loyal shop dog.



Purchase plans for the glass-topped coffee table at woodstore.net/displaytable

• By the time **DAVID FORTNER'S** wife in Houston, Texas, inherited the piano on which she learned to play, it was beyond repair. Except for the keyboard. Using modified plans for the Collector's Coffee Table (issue 81, September 1995), David put the keyboard on display. As he says, "The instrument is long gone, but the portion that touched, and was touched by, so many lives on." 🌳

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RIVER WALKOUT RETREAT

This basement shop became the owner's private paradise thanks to an organized, flexible layout to maximize space on the inside, along with a double-door walkout to beautiful scenery on the outside.

WRITER: RANDY MAXEY



Ted Stephens has been a woodworker for over 25 years. He retired from broadcast television and now owns a consulting company.



SHOW US YOUR SHOP

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

Some basement workshops are afterthoughts or simply tolerated because other options for shop space aren't available. That's not the case with Ted Stephens's workspace. He included his workshop in the architect's plans for their new home in central Iowa.

The 635-square foot shop features French doors looking out over a riverbank and a stand of walnut trees. The doors provide easy access for loading in shop supplies and for moving out finished projects. The trees they open

onto aren't harvested for wood, but when a tree comes down or has to be removed, Ted employs a local sawmill to mill and kiln-dry the logs into lumber. Ted built a variety of tables and other projects using these harvested boards.

The concrete exterior walls of the shop support a 9' ceiling, allowing room to easily maneuver long boards. His decision not to insulate the interior walls or ceiling stands as Ted's one regret. "When I'm planing a board you can hear it upstairs," he says.

ILLUSTRATORS: ROXANNE LEMOINE, LORNA JOHNSON



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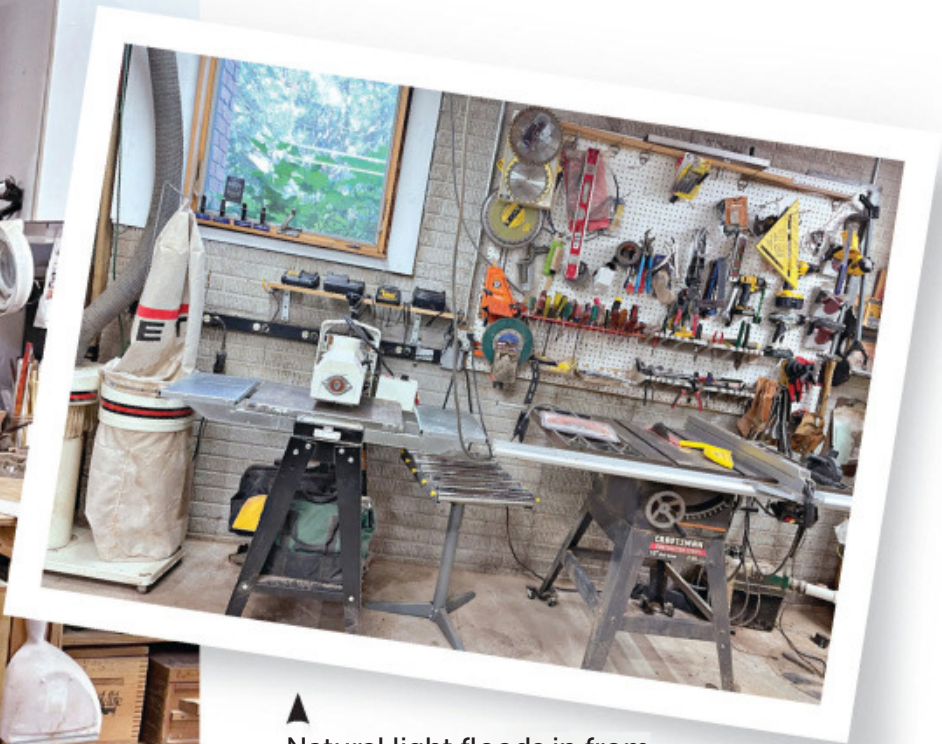
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Ted's eclectic collection of workbenches and repurposed cabinets enable him to utilize every available space.

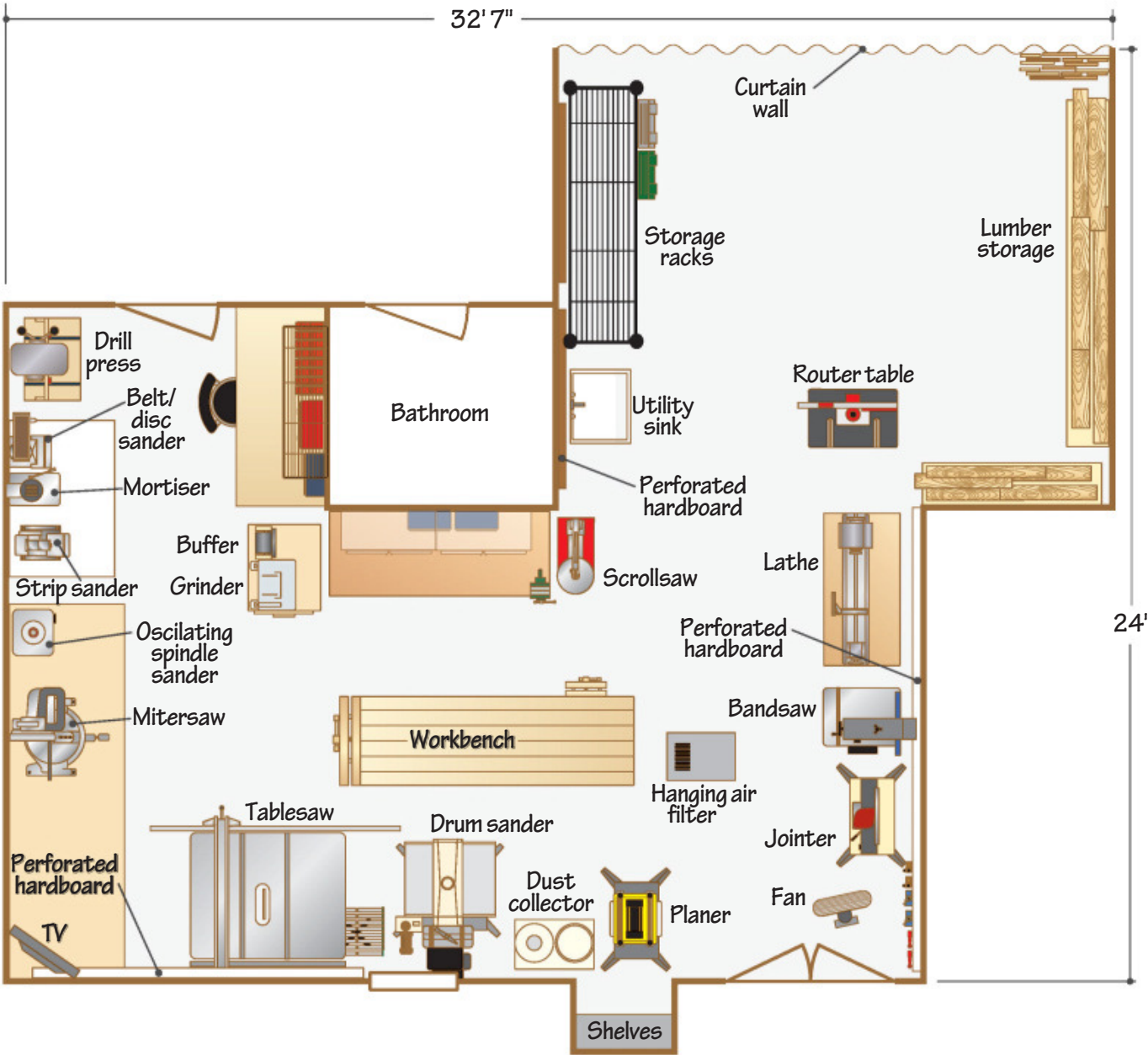


Natural light floods in from the large window and French doors, augmenting the overhead LED shop lights.

Power for the shop comes from dedicated circuits in the main house panel. The house HVAC system heats and cools the shop space. Ted closed off the cold-air return from the shop to prevent sawdust from entering the house.

When Ted generates a lot of sawdust, he relies on an overhead dust filter to help clear the air. In warmer weather, he also opens the double doors and directs a ceiling-mounted fan to blow dust out of the shop. A 1-hp dust collector connects to the planer, router, or drum sander when they're in use.

Ted says the best decision he made was to mount heavy-duty casters on most of his equipment. He replaced the stock casters on his contractor saw with 3-wheeled dolly swivel casters. "Now, rather than the tablesaw dominating the center of my shop, I simply glide it out to do the work and stow it out of the way along the wall when I'm done."





In a recessed area tucked into one corner of the shop, heavy-duty shelf brackets provide storage for lumber and cutoffs.

Ted hung a heavy curtain to separate the shop from the furnace and workout room. He says it does a good job of keeping dust from going into that area.

A finished bathroom cuts into the shop space, presenting some layout challenges. But staying organized and keeping his tools mobile helps to mitigate any difficulties. And if space ever gets too tight, he can step outside and enjoy his expansive view. 🌳

Ted uses shop-made wedges as wheel chocks under the dolly casters to lock the tablesaw in place.



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CAN YOUR CUTTING BOARD MAKE YOU SICK?

A lot of attention gets paid to using food-safe finishes on wood bowls, cutting boards, and utensils, but what about the wood itself? Is there such a thing as food-safe wood?

Ben Hicks

Muncie, Indiana

A: That's a great question, Ben, and one that's not easily answered because there's not a lot of data on the toxicity levels of all species of woods. Most woodworkers have heard of, or personally experienced, allergic reactions when cutting or working with certain species of woods (walnut and many exotic woods are examples). These woods contain allergens and sensitizing agents that can cause reactions in some people, sometimes quite severe. So it's only natural to question how safe they are to use for food contact.

But just like food allergies, not everyone experiences a reaction with these woods. And some people develop a reaction only after repeated contact. Additionally, while the sawdust of some of these woods may cause a reaction if it is inhaled or makes contact with the skin, the wood itself may not pose any risk by coming into contact with food. And any finish used, even if it's just an oil finish, provides an additional barrier between the food and the wood.

Despite these variables, if we look at various wood species on a spectrum, there are definitely some that stand out as being "safer" than others. Maple, beech, and most fruitwoods (cherry, apple, pear) have very limited reactivity in humans and are all good choices for food-contact items. Most oaks fall into this category as well, but the open pores of oak present other issues.

Steer clear of reclaimed or repurposed lumber, particularly wood that has been previously painted or finished, barnwood that may have been in contact with animals, or palletwood that may be contaminated with grease, oil, or chemicals. And although epoxy may look beautiful in a table, epoxies are not considered food-safe and should not be used in cutting boards or other utensils that will come into contact with food.

Even though toxins may not be a concern with some woods, bacteria is. Select a wood that's less prone to harboring bacteria growth. As a general rule, choose woods with a closed-grain structure, such as maple, walnut, beech, and cherry, for cutting boards, bowls, and utensils. Avoid open-grain woods like oak, hickory, and ash. These woods have larger pores where food can lodge, leading to bacteria growth.

Proper care keeps bacteria at bay. Wash your wood utensils and bowls after each use with soap and warm water and dry them immediately. Do not put woodenware in a dishwasher where the heat and harsh environment may crack the wood. (Cracks create an opportunity for bacteria growth.) To prevent the wood from drying out, apply a coat of food-safe oil to your wood utensils every six to twelve months. With a bit of maintenance, your woodenware should be safe to use for years. 🌳



Scroll through our most popular cutting board and kitchen accessory plans at: woodstore.net/woodenware



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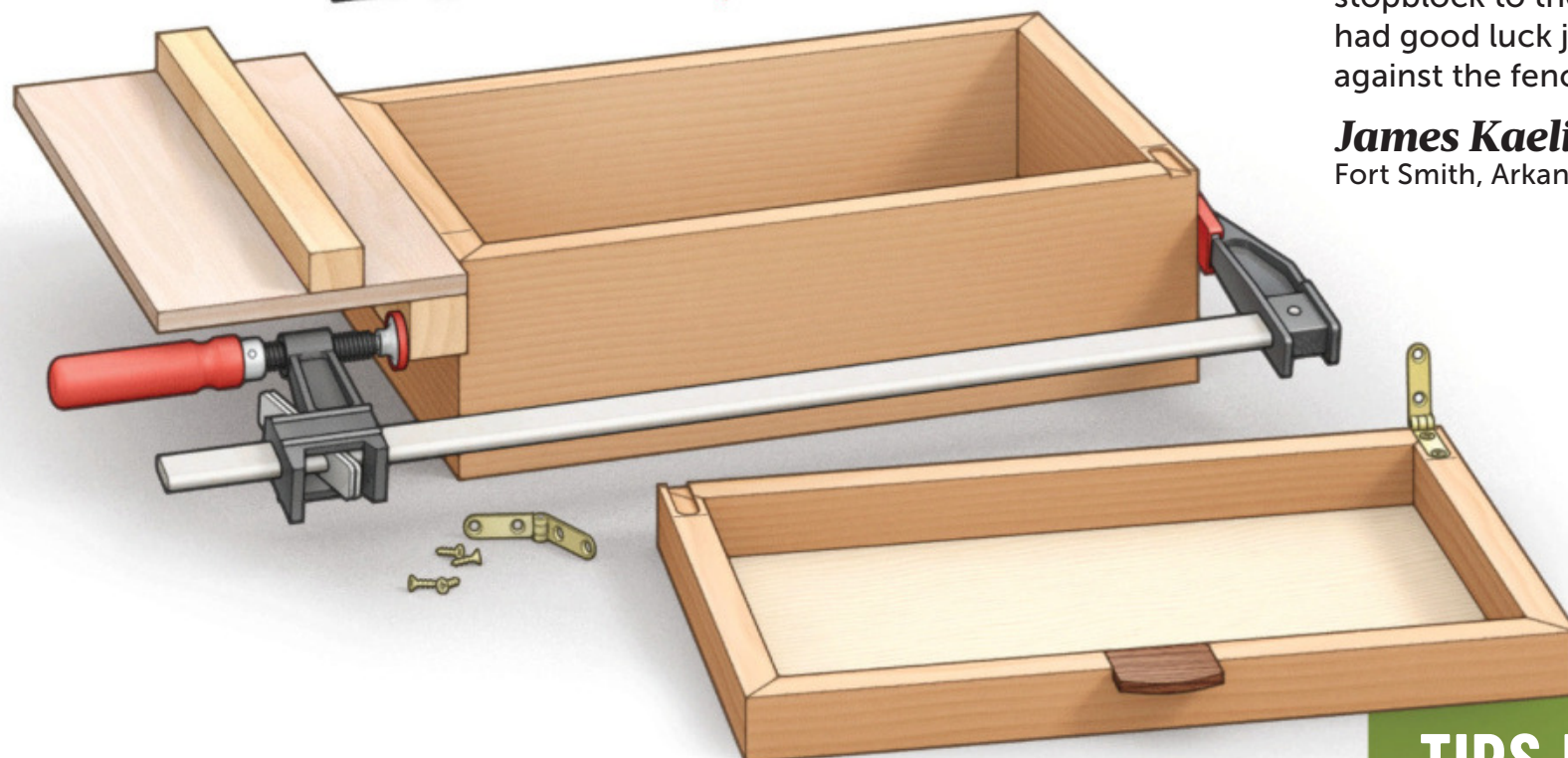
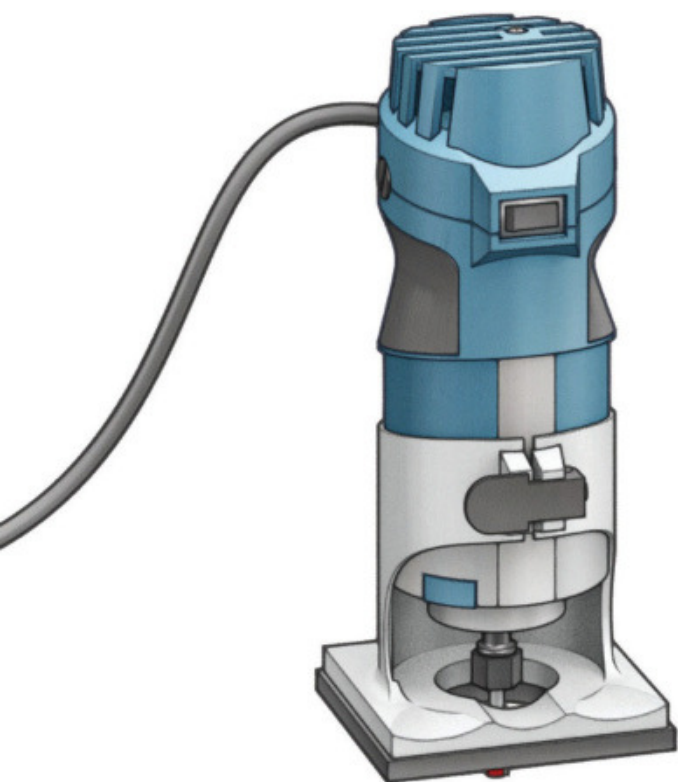
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HINGE HELPER

I build many small boxes using side rail hinges. They require precise mortises in the lid and box for a gap-free, flush fit. This router jig makes it easy to cut the mortises with repeatable accuracy.

Simply build a straightedge guide with a cleat for clamping the jig to the box. Add a fence to the jig to guide a small handheld router, locating it to center the router bit on the thickness of the box and lid sides. Use a bit with a diameter that matches the width of the hinge and set the depth to match the thickness of one of the hinge leaves.

To make the mortises, I mark the length of the mortise on the box or lid edge, clamp the jig in place with the base flush to the box lip, and rout to the line. You can add a stopblock to the fence if you like, but I've had good luck just keeping the router firmly against the fence and stopping at the mark.

James Kaelin
Fort Smith, Arkansas



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For his tip, James wins an Oneida Benchtop Mini Variable-Speed MERV-12 Personal Dust Collector worth \$340



PUT AN O-RING ON IT

I came across an inexpensive and easy way to add non-slip feet to small projects like cutting boards, coasters, and jewelry boxes: short sections of rubber or silicone O-rings.

You can find O-rings in home centers and farm supply stores in widths as large as $\frac{3}{8}$ " for just a few dollars, or even scrounge used ones from water purifiers and pool filters.

Just drill holes that match the thickness of the O-ring; a fit that's a little snug is better than one that's loose. I put a few drops of cyanoacrylate glue in the hole and twist in an extra-long piece of the O-ring. A hole drilled in an old credit card makes a great thickness gauge to slice off the excess to a consistent length using a sharp razor blade.

Jim Cox

East Aurora, New York

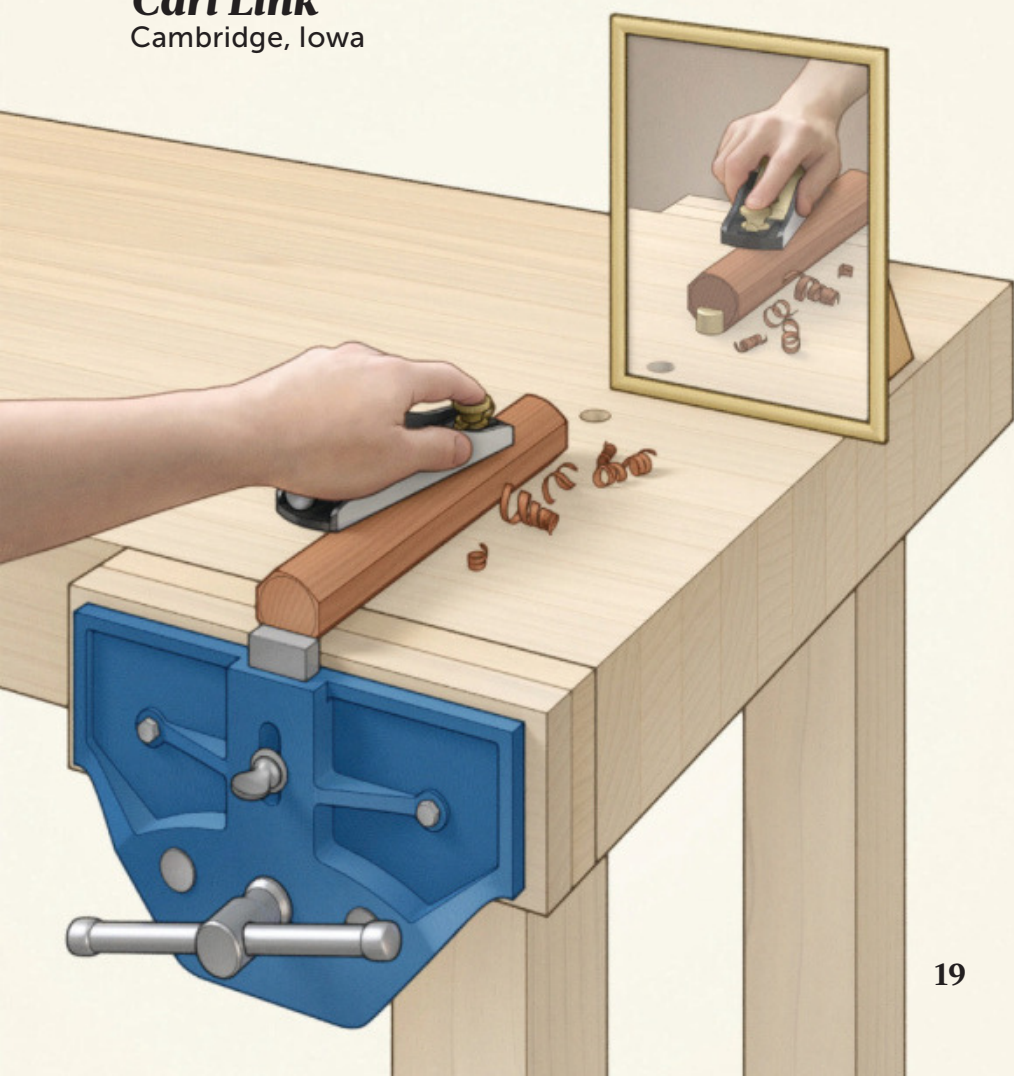


MIRROR, MIRROR ON THE...BENCH?

When hand-planing smaller workpieces, I use a mirror to make it easy to gauge my progress on the far end without having to frequently stop and take a look. This is particularly handy when planing a piece to width or thickness using a scribed line as a reference.

Carl Link

Cambridge, Iowa



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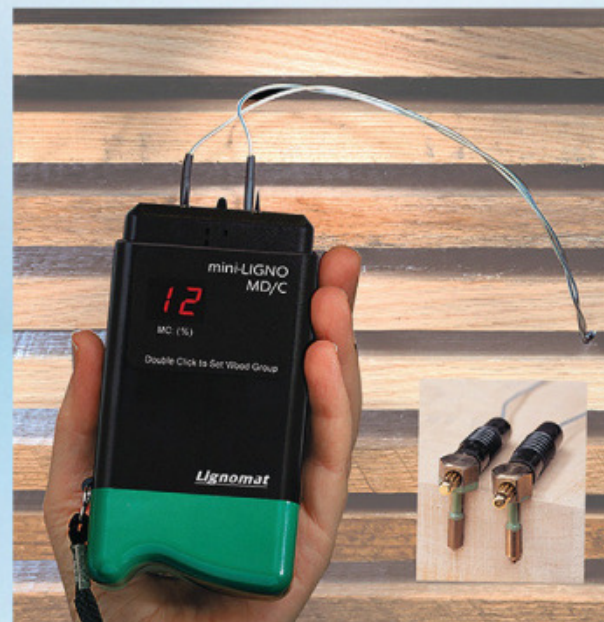
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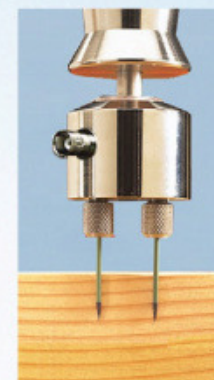


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MINI SANDER CONVERSION

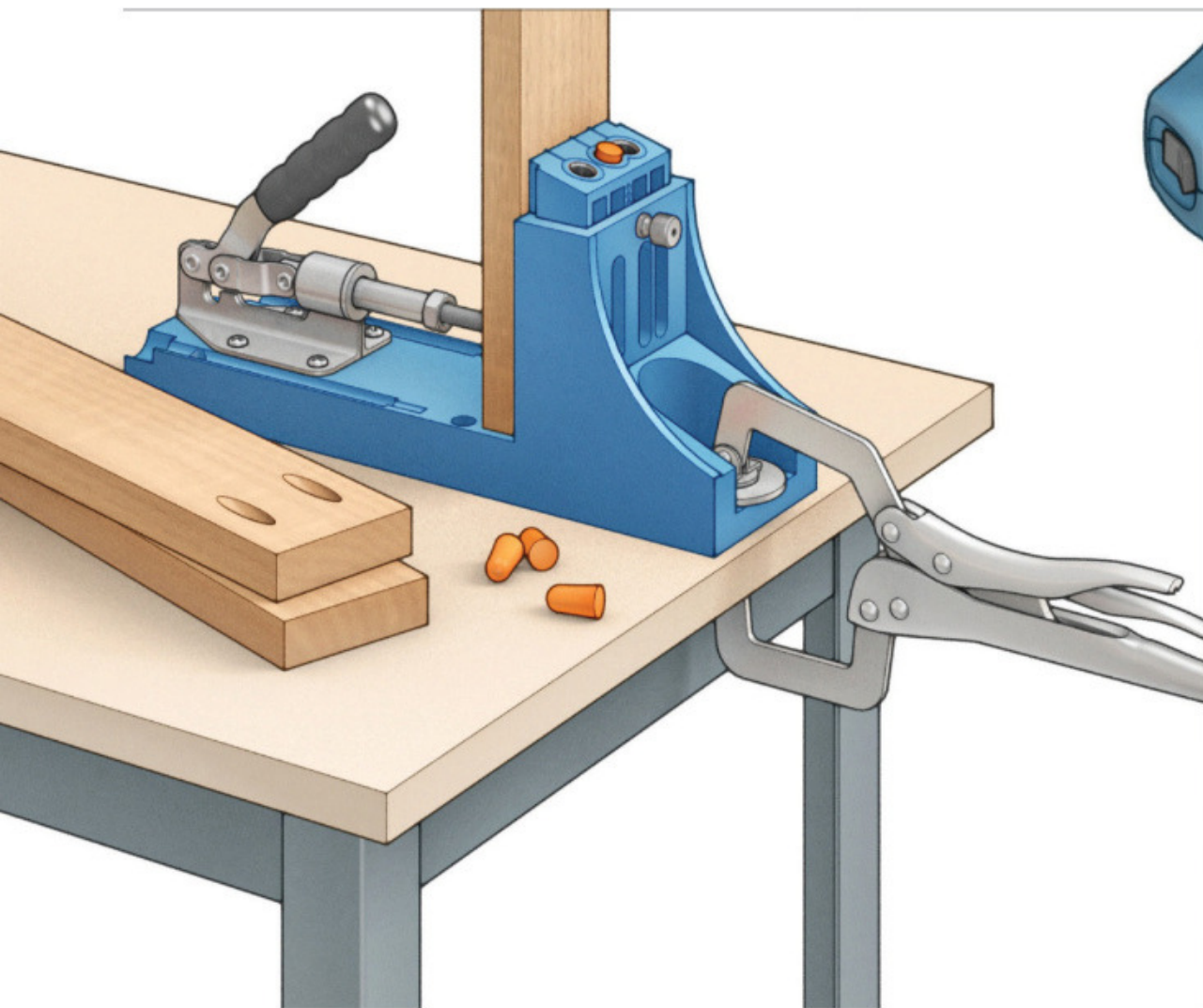
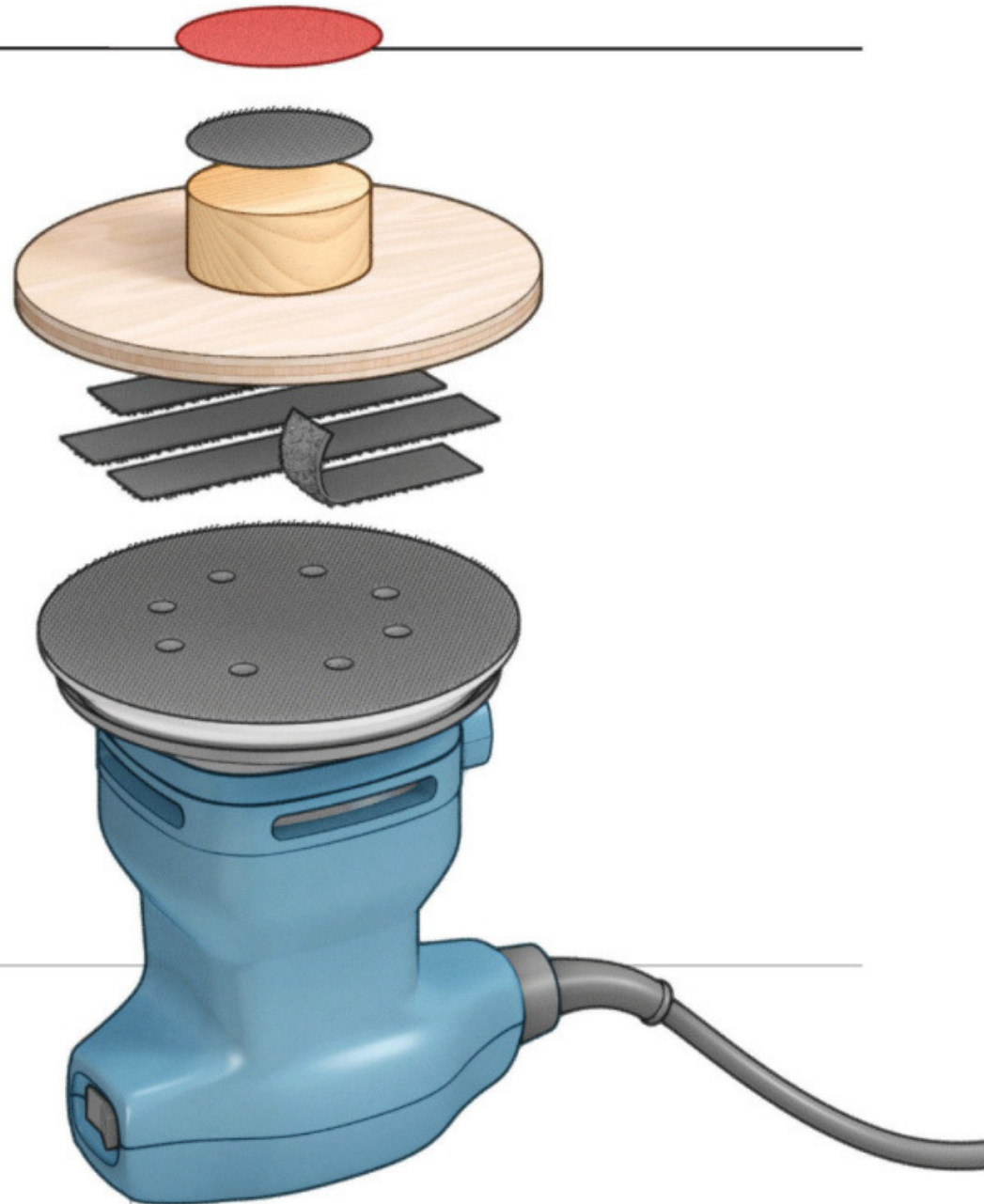
I make bowls and trays but could never get the results I wanted when sanding on the lathe. What I needed was a miniature version of a random-orbit sander. So I made an adapter for my handheld sander that can reach into tight areas.

I started with a $\frac{1}{4}$ " plywood base cut to the same diameter as the sander's pad. Next, I glued a $1\frac{3}{4}$ "-diameter puck from $\frac{3}{4}$ " stock to the center of the plywood base to serve as the base for the mini sander. The thickness of the puck determines the sanding depth.

I covered the bottom of the base and top of the puck with adhesive-backed hook-and-loop material. With the base fastened to the sander's pad, I adhere 2" sanding disks to the puck to create my mini sander. The slight overlap reaches into inside corners without creating ridges.

Sid Buxton

Corcoran, Minnesota



DO-NOT-DRILL MARKER

I often use a pocket-hole jig to build projects. Mine has several drill-guide holes, which makes it easy to accidentally drill extra holes or drill in the wrong location.

Disposable foam ear plugs provide a simple solution: I simply place a plug in the drill guide holes that I don't want to use.

Jeff Hoepker

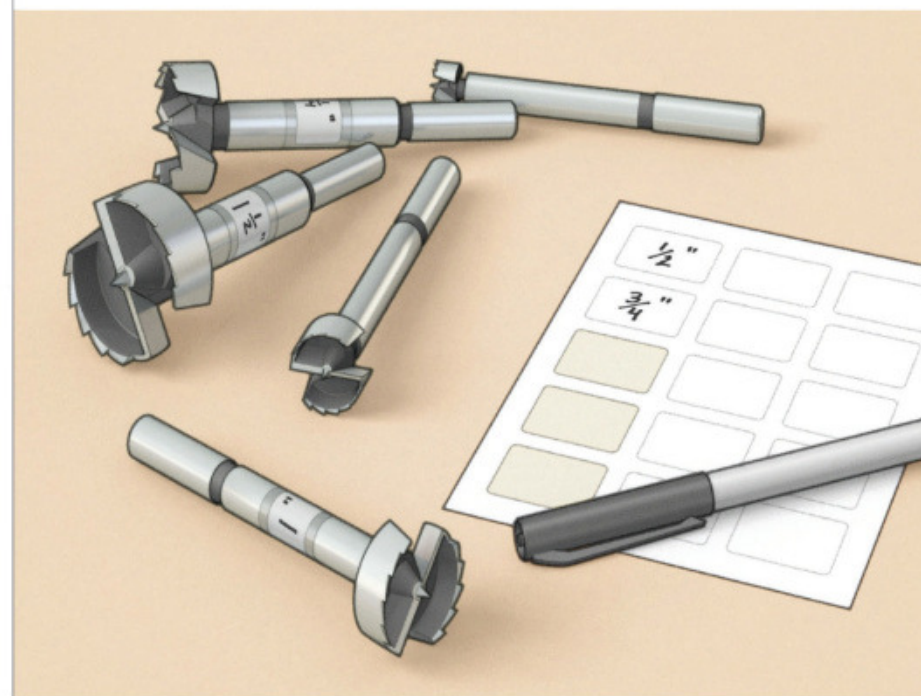
Highland, Illinois

LEGIBLE LABELS

Reading the laser-etched diameter markings on Forstner bits can be a challenge. I mark the size of the bit on a small label using a permanent marker. After wrapping the label around the bit shank, I use transparent tape to protect it. Now I can tell at a glance what bit I need without having to squint.

John Baker

Normal, Illinois



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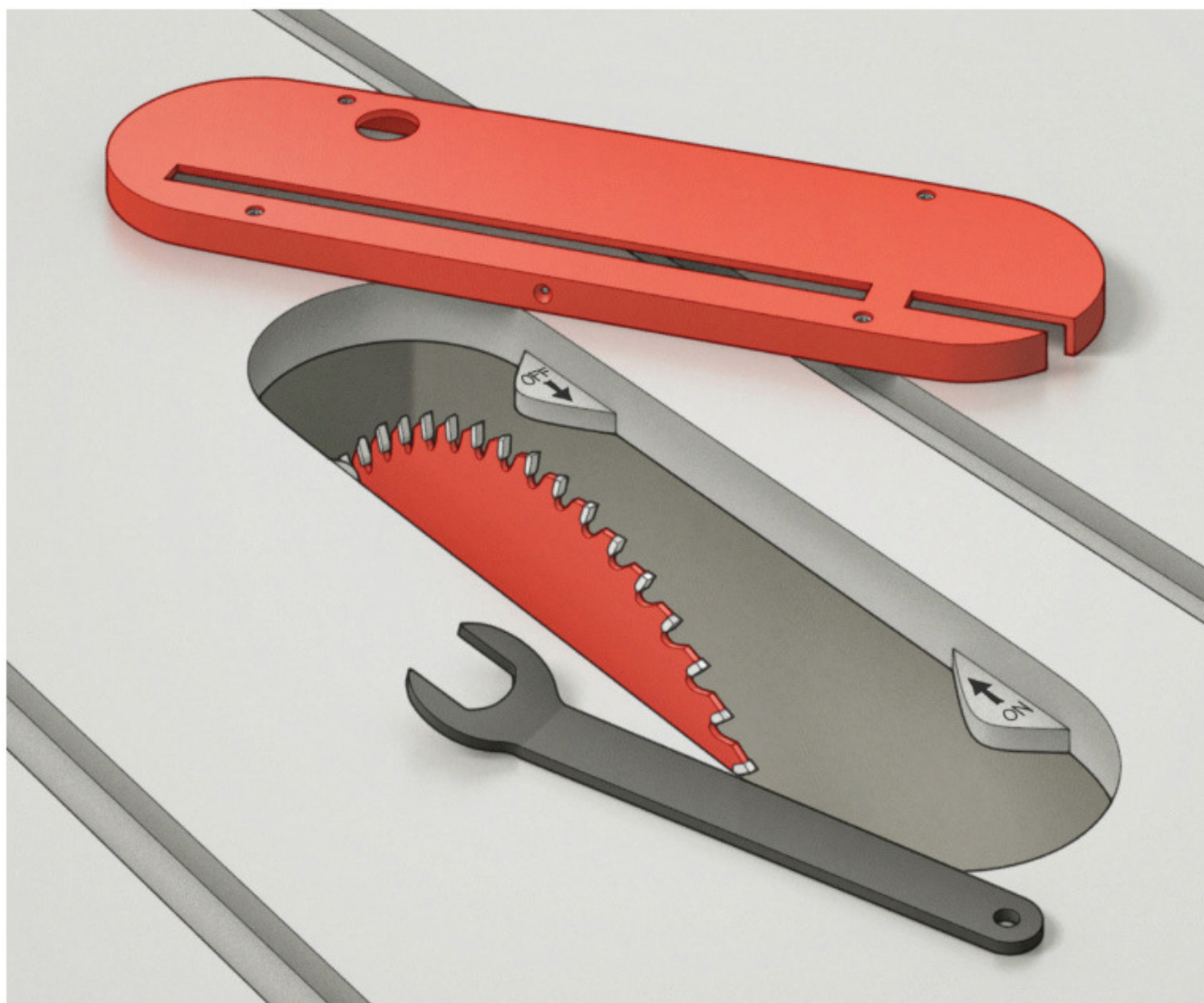
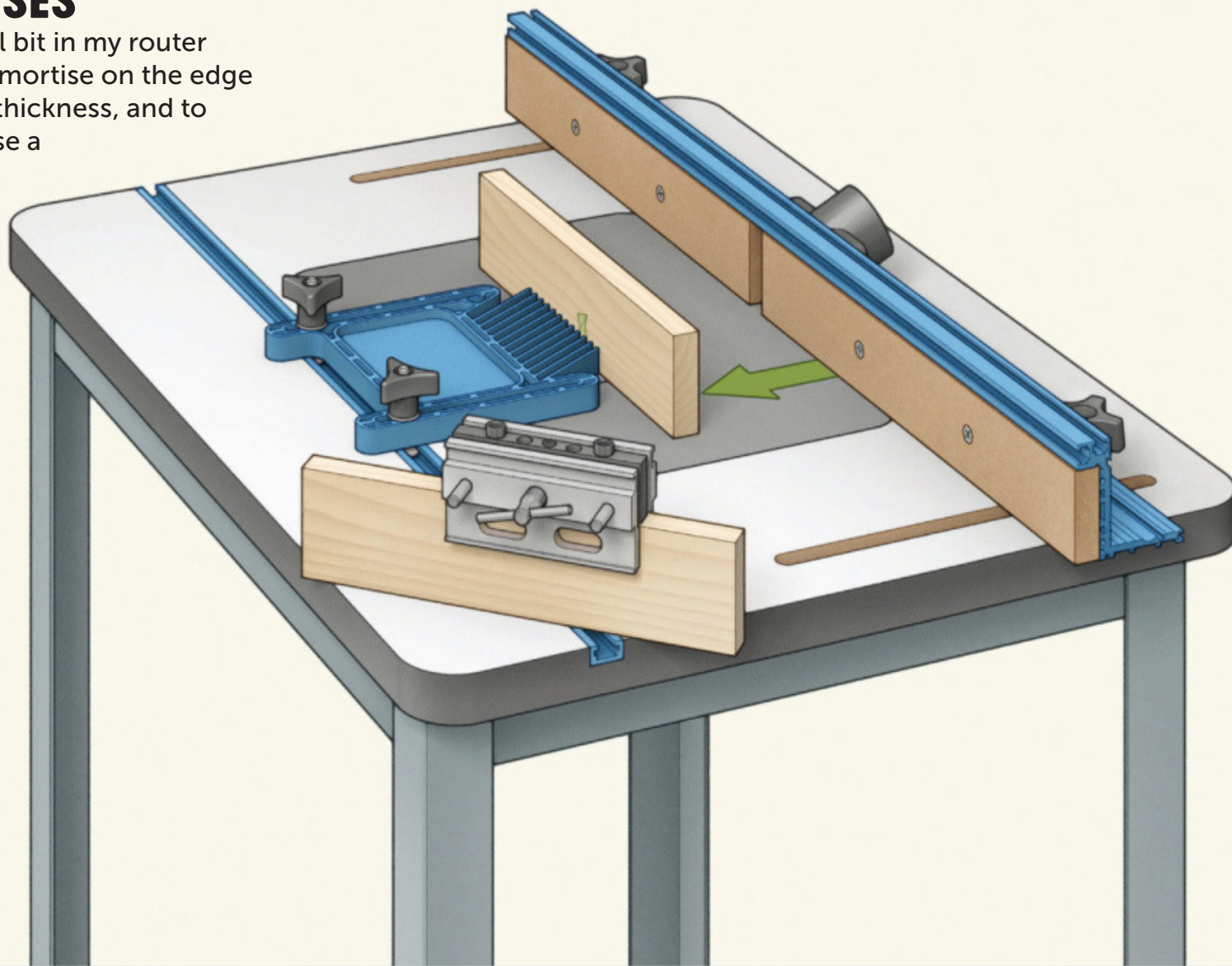
See the Adaptive Cutting System in action at kregtool.com.

DO THE JIG FOR MORTISES

I like to rout mortises using a spiral bit in my router table. To automatically center the mortise on the edge of the workpiece regardless of its thickness, and to define the ends of the mortise, I use a self-centering doweling jig. Using a drill bit that matches the diameter of the router bit, I drill the ends of the mortise.

At the router table, I raise the bit, then slide the workpiece onto it in the hole on the infeed side. Next, I slide the fence up to the workpiece and lock it down. While maintaining a secure hold on the workpiece, I start the router and rout to the opposite hole. For deep mortises, I start with a low bit depth and rout the mortise to final depth in several passes.

Don Osborn
Neosho, Missouri



FIND YOUR DIRECTION

When I change the blade on my tablesaw, I invariably forget which direction to turn the wrench on the arbor nut due to the left-hand threads.

To remind me, I used a permanent marker to draw arrows on the insert-support tabs to indicate which way to turn the wrench.

Barry Onorato
New Milford, Connecticut

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SUPER SUCKER CYCLONE

Three cyclones and two motors make for one impressive dust collector.

WRITER: CRAIG RUEGSEGG
DESIGNER: JOHN OLSON
BUILDER: BRIAN BERGSTROM



OVERALL DIMENSIONS
54"W x 24"D x 67½"H

With two small, affordable shop vacuum motors pulling gobs of air through three mini-cyclones, this unit can easily serve as the main dust collector for a small shop. A kit [\[Sources\]](#) provides the cyclones. Find the motors and most everything else at the home center and hardware store.



Find instructions for making a simple trammel at woodmagazine.com/routertrammel

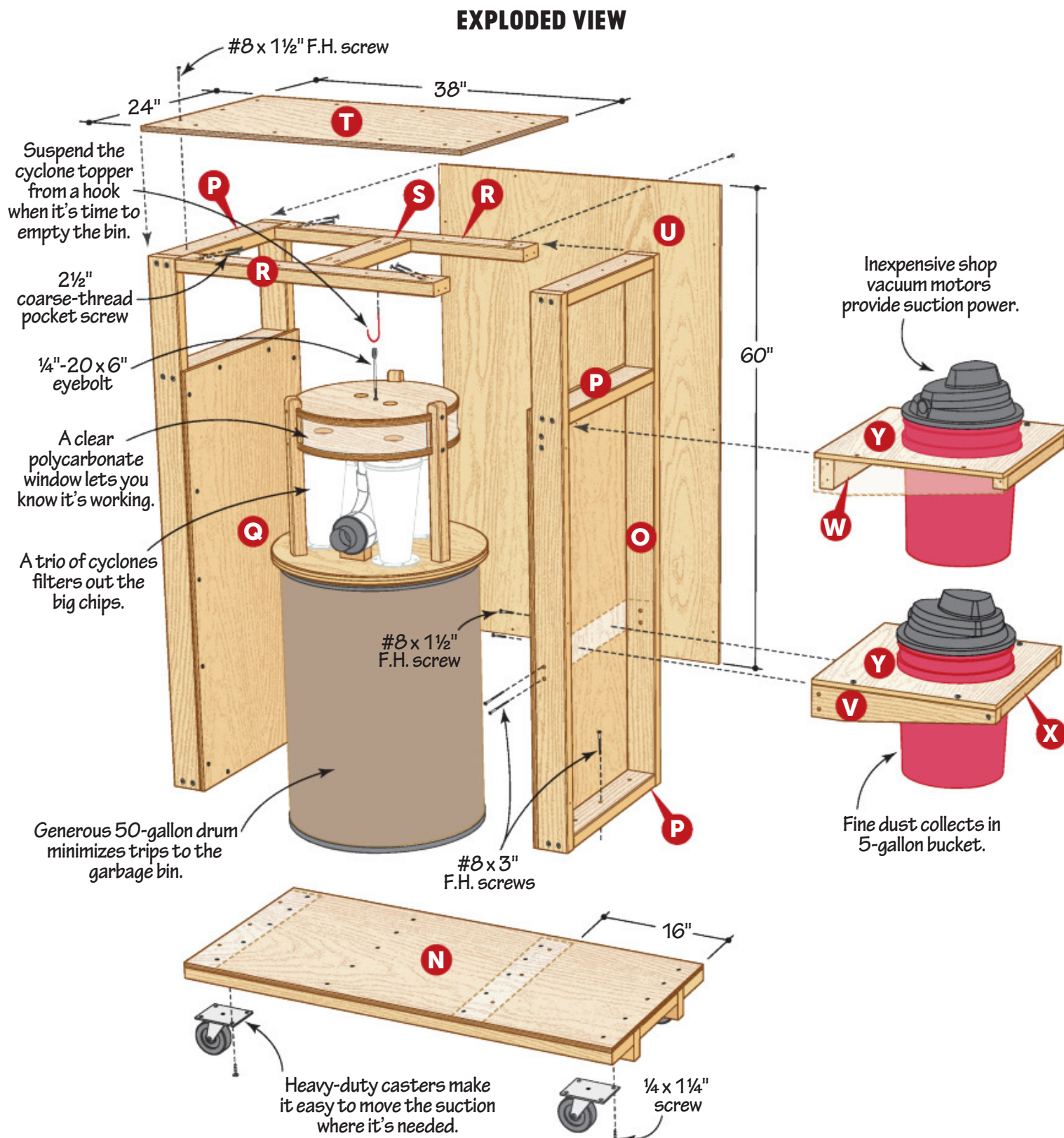
ROUND UP THE DEPUTIES

Start with the lid assembly that joins the cyclones and positions them over the drum [\[Exploded View\]](#). You'll rough-cut several circles and trim them to final shape with your router mounted to a trammel.

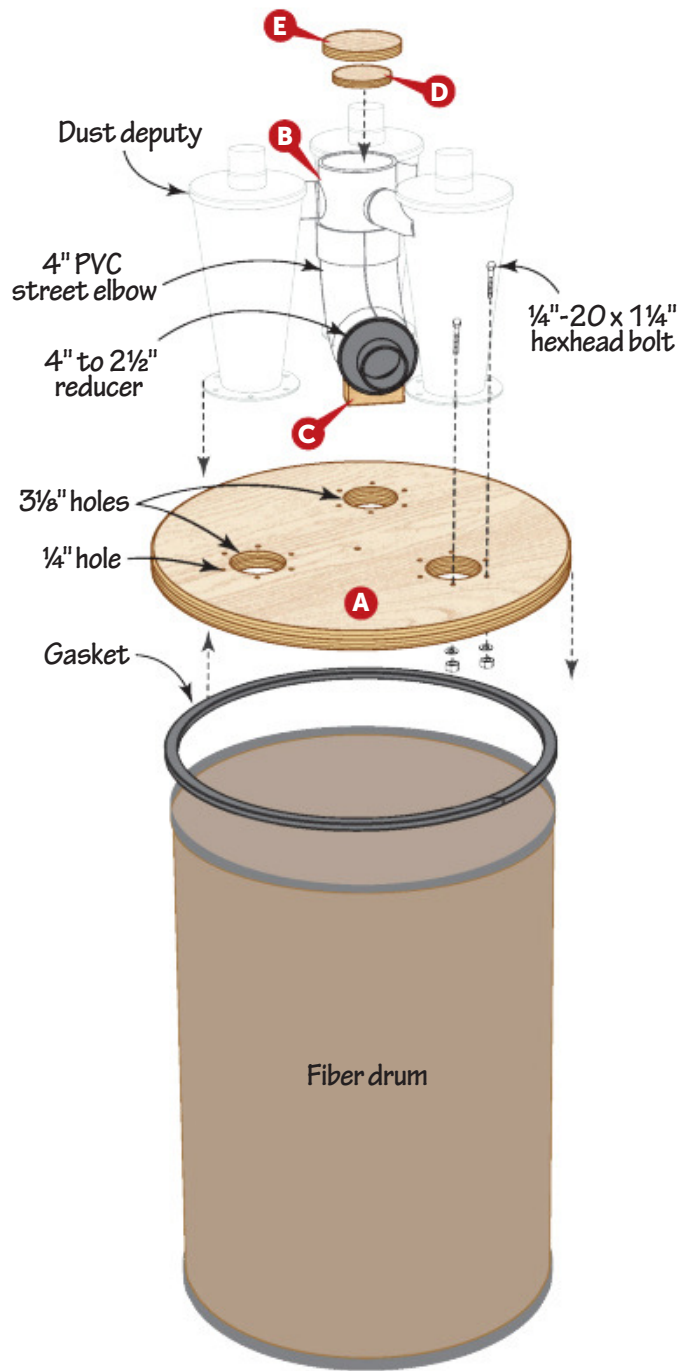
1 Rough-cut two 1/2" plywood blanks to 24" diameter. Laminate the pieces, then trim them to finished diameter for the lid (A) [\[Photo A, Materials List\]](#).



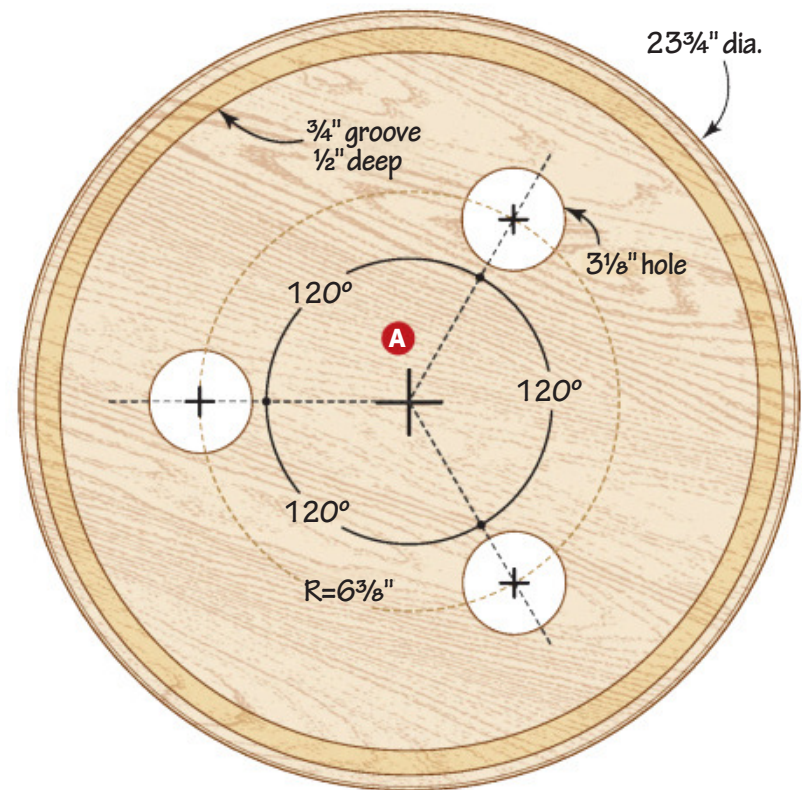
Mount your plunge router to a trammel and install a straight bit. Then trim the laminated lid (A) blank to 23 3/4" diameter.



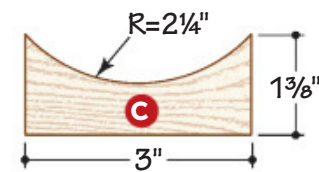
1 CYCLONE ASSEMBLY



1a LID HOLE PATTERN (bottom view)



1b ELBOW SUPPORT



2 On the bottom face of the lid, rout a $\frac{3}{4}$ " groove to accept the gasket material provided with the kit [Drawing 1a, Photo B].

3 To make the riser (B), mark a line around a piece of 4" PVC pipe $1\frac{3}{4}$ " from the end. Then lay out and drill evenly spaced holes to accept the Dust Deputy inlets [Photos C-E]. Cut the riser to length.

4 Join the Dust Deputies around the riser (B), checking for fit and spacing. Dry-fit a 90° elbow to the bottom of the riser. Center this assembly on the ungrooved face of the lid (A) and scribe the inner and outer circumference of the cyclone bases as well as their bolt-hole locations on the lid. Before removing the cyclone assembly, measure the gap between the lid and the elbow to determine the center thickness of the elbow support (C). Drill $\frac{1}{4}$ " holes for the bolts and $\frac{3}{8}$ " holes for the cyclones.



B Make multiple passes to rout a groove $\frac{1}{2}$ " deep at a diameter to fit the rim of your dust-collection drum.



On an 11" length of masking tape, lay out marks at $4\frac{3}{4}$ " and $9\frac{1}{2}$ " for the centerpoints of the holes.



Align the top edge of the tape with the line on the pipe as you wrap the tape around.



Drill 2" holes at the end point of the tape and at the two marks, centering the pilot bit of the holesaw on each mark.

5 Cut the elbow support (C) to size and form the arc to fit the elbow [Drawing 1b]. Cut the plug (D) and plug cap (E) to size and glue them together, centered on each other [Drawing 1].

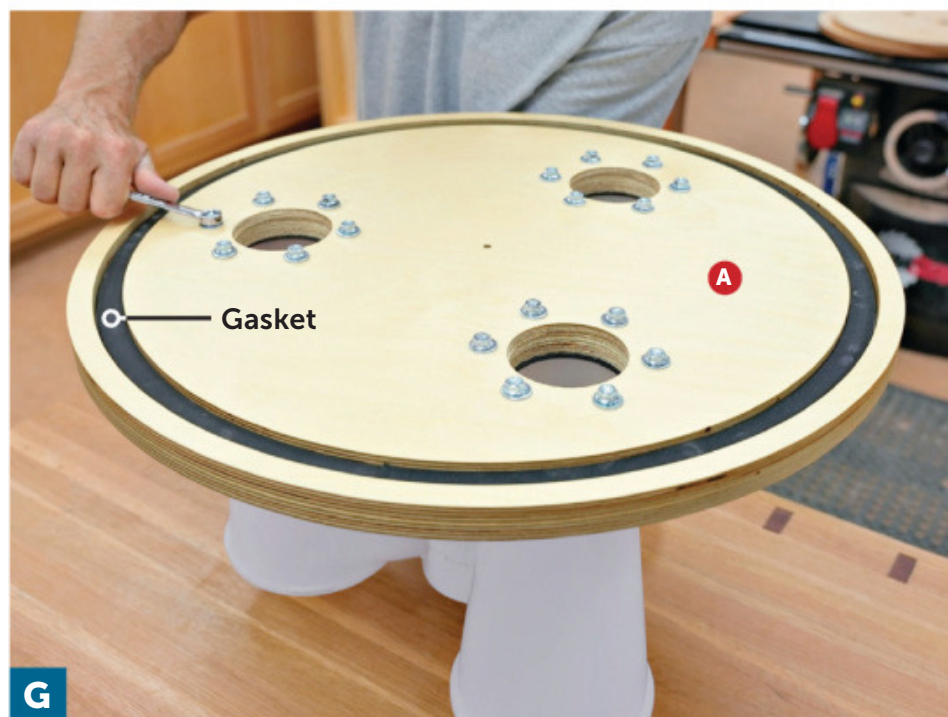
6 Using silicone to seal the joint, insert the riser (B) into the elbow. Then silicone the cyclones into the riser. Place the gaskets from the kit between each cyclone and the lid (A) and loosely bolt the cyclones in place [Photo F].

7 Insert the gasket into the lid groove, then snug the bolts for the cyclones [Photo G].

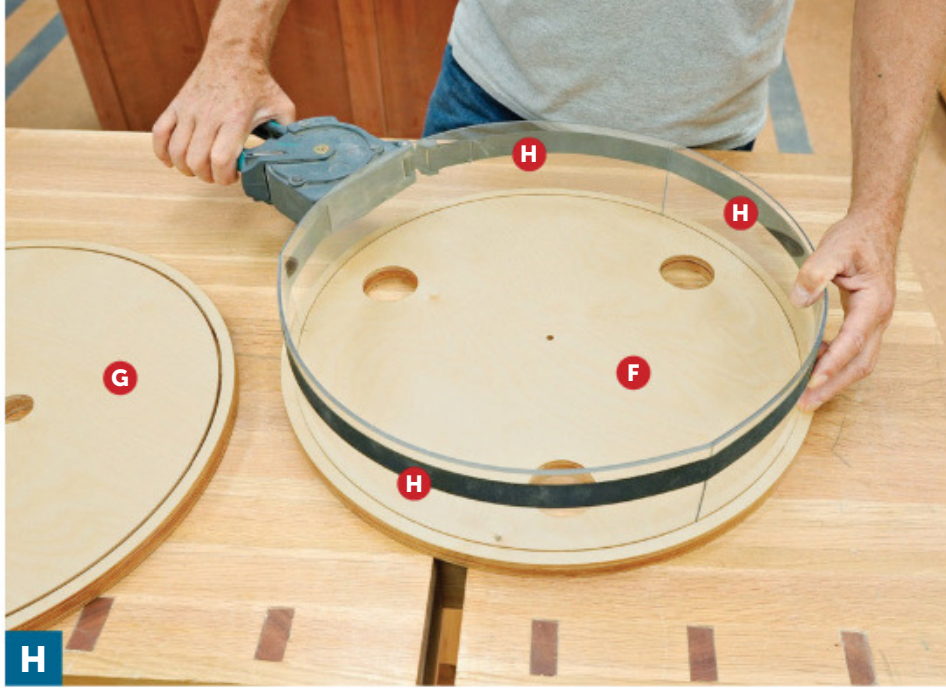
8 Silicone the plug cap (D/E) into the top of the riser (B).



Hand-tighten the nuts. Make any final adjustments to the cyclone and elbow positions, then let the silicone caulk cure.



If the large gasket fits too loosely, secure it with a few dots of silicone. Snug the nuts just enough to lightly compress the cyclone gaskets.



H Insert the windows (H) into the groove and wrap a band clamp around them. With the ends butted together, they should fit into the groove. If needed, trim each window so they all remain the same length.



I Space the legs (J) evenly around the bottom (F). Dry-fit the cleats (I) and mark the centerline of each cleat onto the bottom. You will align the window seams on these marks later.



Get tips for cutting polycarbonate cleanly and without cracking it.
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LOOK AT ALL THE DUST IN HERE

Clear $\frac{1}{8}$ " polycarbonate bends enough to serve as the windows of the round airbox, and lends a bit of "cool" factor as you get to watch the finer dust swirl.

1 Cut the airbox bottom and top (F, G) to size [Drawing 2]. Rout a groove on one face of each to accept the windows. Then drill holes in the top (G) to fit your vacuum hoses. Use the cyclone assembly to locate the holes in the bottom (F) and drill them. Round over the edges.

2 In the top (G), drill a centered $\frac{5}{16}$ " hole to accept a T-nut. Install the T-nut.

3 From $\frac{1}{8}$ " polycarbonate, cut the windows (H) to size and test the fit in the groove of the bottom (F) [Photo H].

4 Cut the airbox cleats (I) and legs (J) to size. Dado the legs [Drawing 2a] and round over the edges. Shape the arcs on the cleats [Drawing 2b]. We used an oscillating spindle sander.

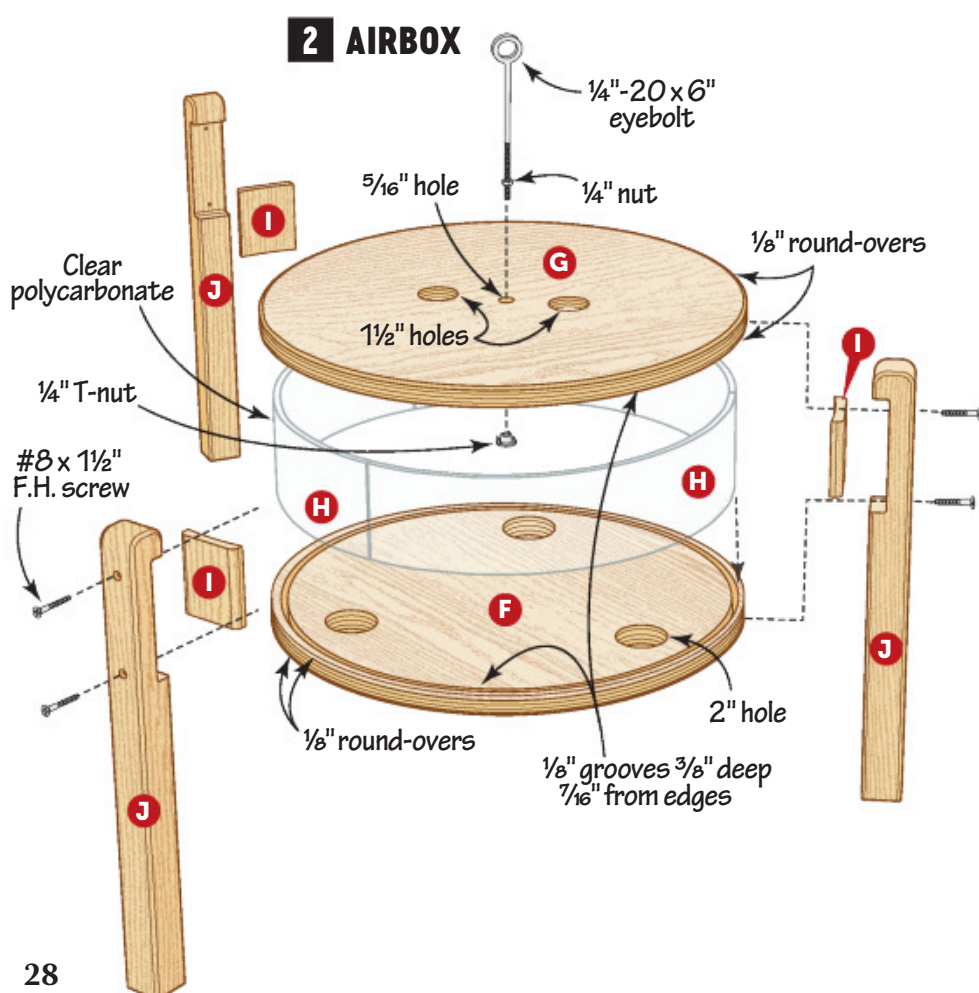
5 Dry-fit the cyclone assembly, bottom, legs, and cleats [Photo I]. Seal around the cyclone inlets with silicone caulk.

6 Remove the legs and cleats. Insert the windows, then install the top (G) [Photo J]. Remove the band clamp, silicone the outside of the window seams, then install the legs and cleats, centered on each window seam. Screw the legs to the bottom (F), top (G), and lid (A).

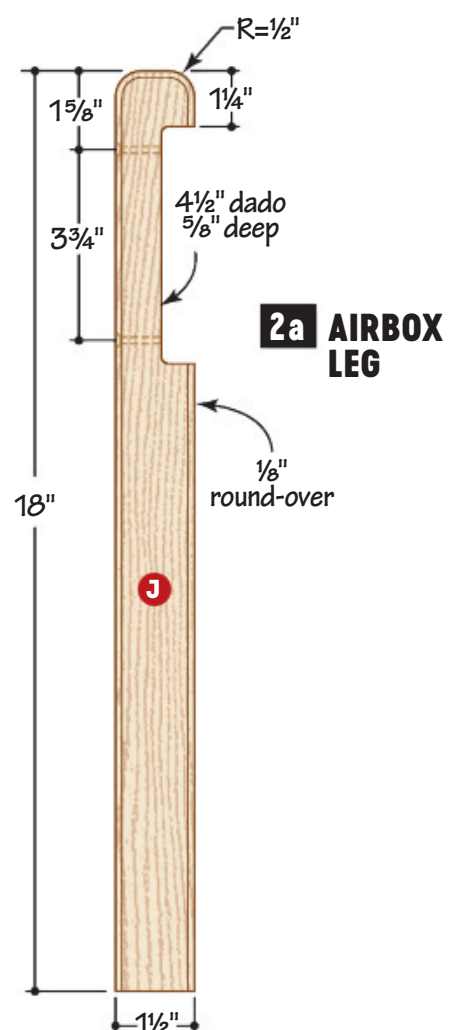
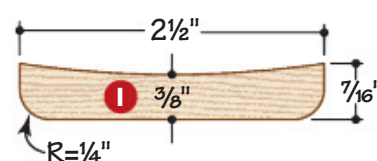
7 Screw a nut onto a $\frac{1}{4}$ "-20x6" eyebolt and screw the eyebolt into the T-nut in the top (G). Tighten the nut against the top to secure the eyebolt. The eyebolt allows suspending the airbox and cyclone assembly from a hook (installed later) when emptying the drum.

TIP!

If the windows don't fit snug in the grooves, apply a bead of silicone in the grooves.

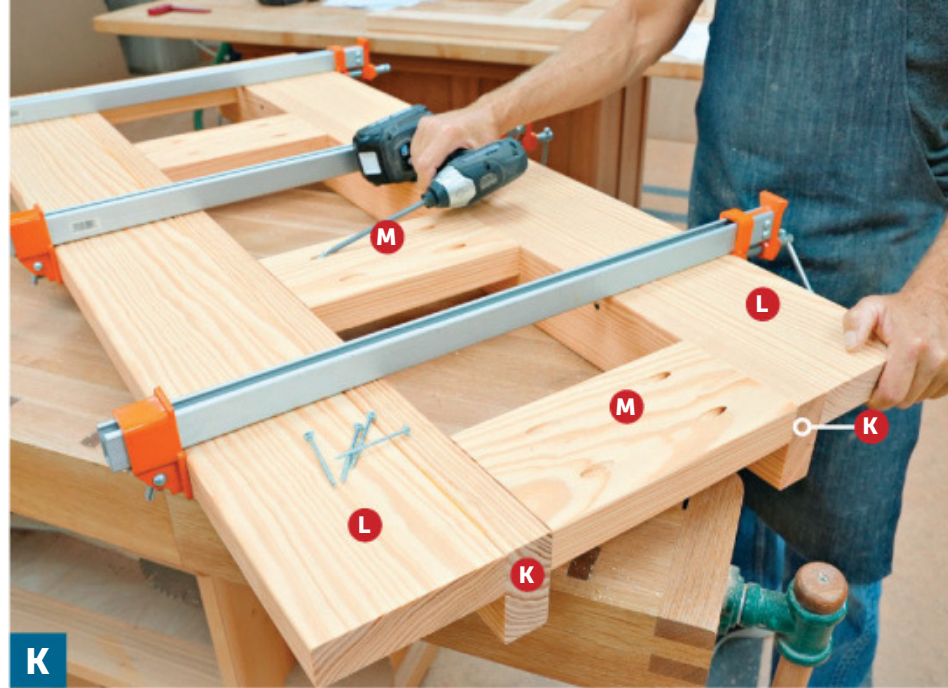


2b AIRBOX CLEAT





J Adjust tension on the band clamp to help align the windows with the groove in the top (G).



K Drill pocket holes in the short rails (M). Then, glue and screw the short rails to each beam/long rail assembly (K/L).

SUPPORT THE CYCLONES

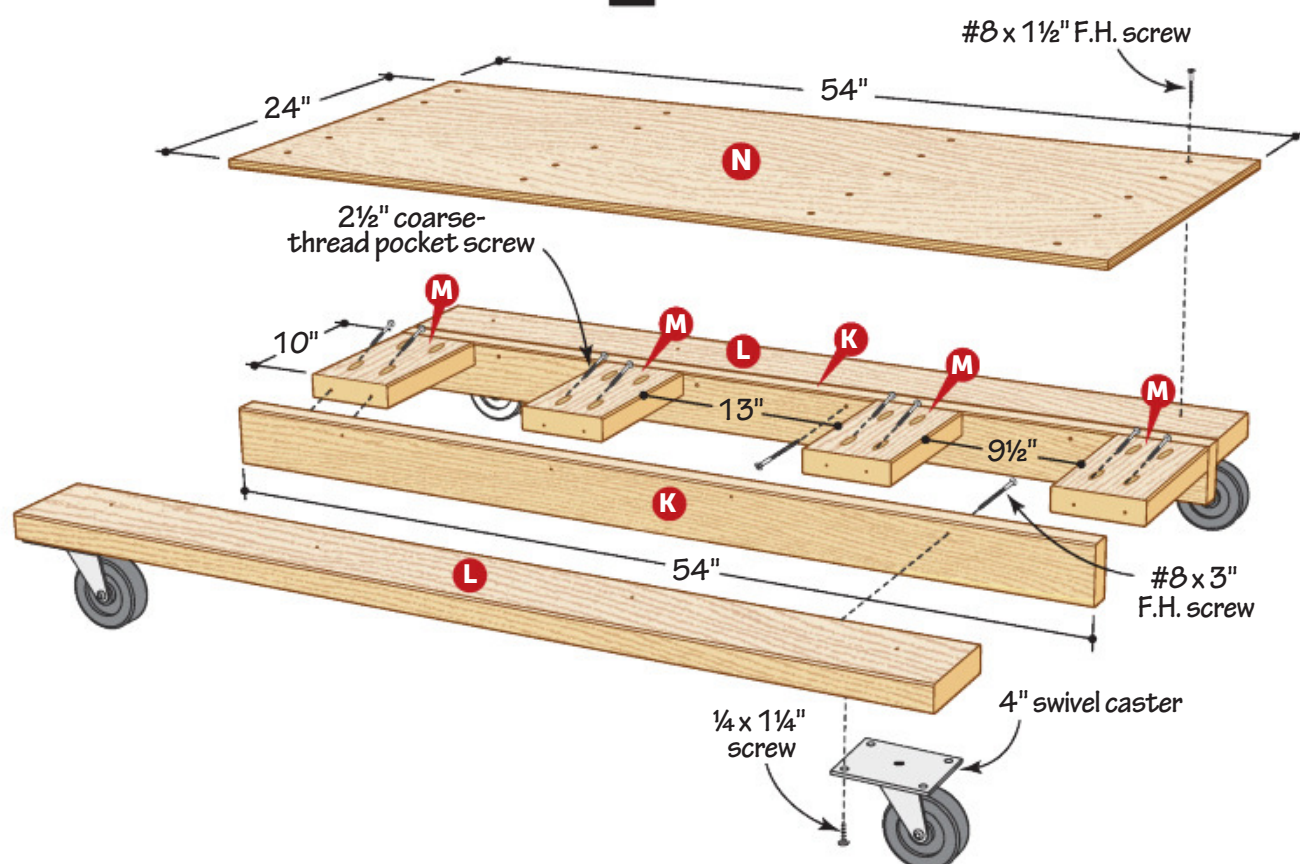
1 Cut the base beams (K) and long and short rails (L, M) to size [Drawing 3]. Glue and screw a beam to each long rail, then join the assemblies with the short rails [Photo K].

2 Cut the base panel (N) to match the base size and glue and screw it in place. Then, screw a 4" swivel caster near the corner of each long rail.

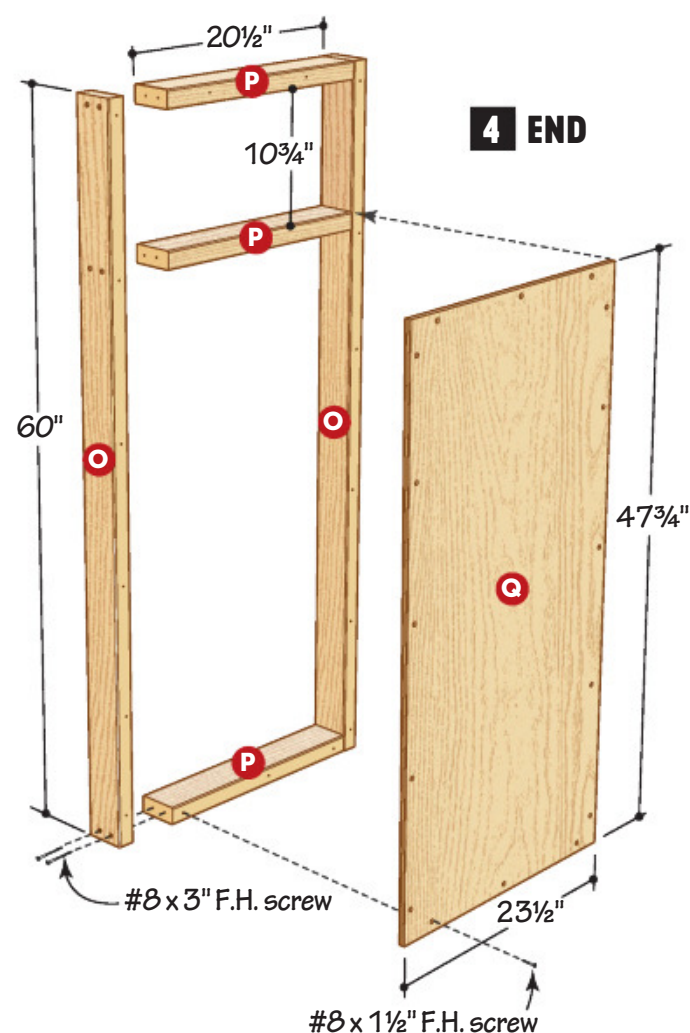
3 Cut the end-frame sides and rails (O, P) to size and assemble them [Drawing 4]. Cut the end panels (Q) to size and glue and screw them in place on the end frames. Glue and screw the end assemblies to the base, flush with the front edge [Exploded View].

4 Cut the top-frame sides (R) to fit between the end assemblies, and the middle (S) to fit between the sides (R) [Exploded View]. Assemble the frame sides and middle with glue and pocket screws; then screw this assembly between the ends, flush at the top.

3 BASE



4 END



- 5

From 1/2" plywood, size the top and back panels (T, U) to fit; then glue and screw them in place.
- 6

From 2-by stock, cut the shelf sides, backs, and fronts (V, W, X) to size, and taper the sides [Drawings 5, 5a]. Glue and screw the fronts and backs between the sides.
- 7

Cut the shelf panels (Y) to size and rout an opening in each to support a 5-gallon bucket. Secure the panels to the shelf frames.
- 8

Glue and screw the shelves to the sides [Exploded View], providing enough space to lift out each motor and bucket for emptying. Make sure the hose from each motor will reach the holes in the airbox. We drilled a hole in the upper shelf to allow the lower hose to pass through.

Note: We tested several combinations of shop vacuums that all successfully powered this cyclone. If you sub out your own, eliminate the hole in the shelves and stack your vacs.

THE FINAL TOUCHES

- 1

Screw a 5" hook into the top-frame middle (S) above the eyebolt in the airbox. Adjust the eyebolt to allow about 1" between the hook and eye.
- 2

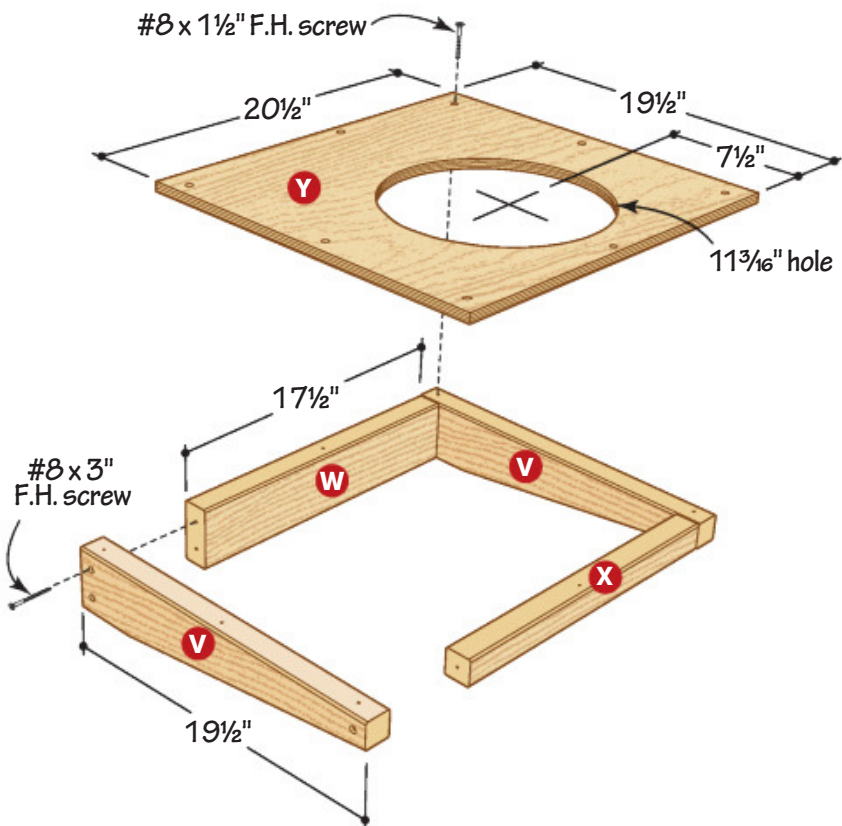
Fit a 4" to 2 1/2" reducer to the end of the 90° elbow. Attach a 2 1/2" hose to the reducer to connect to your machine.
- 3

Secure a power strip with an on/off switch to the cart to start and stop the vacuums.
- 4

For improved filtration, upgrade to cartridge filters on each motor. Then, plug the collector into one of your machines and prepare to be impressed. 🌳

Note: The dust collector performs well with a short length of 4" hose, but really shines when connected to 2 1/2" hose.

5 SHELF

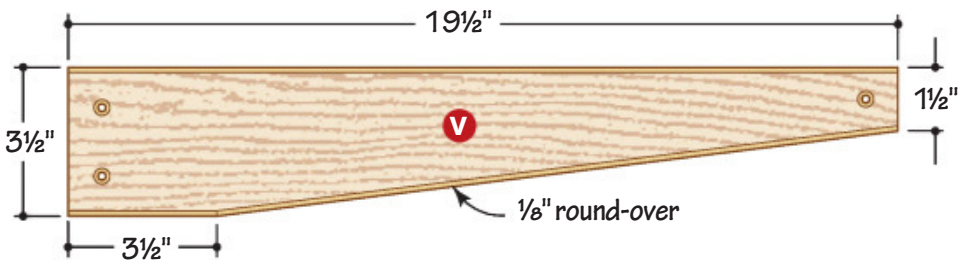


MATERIALS LIST

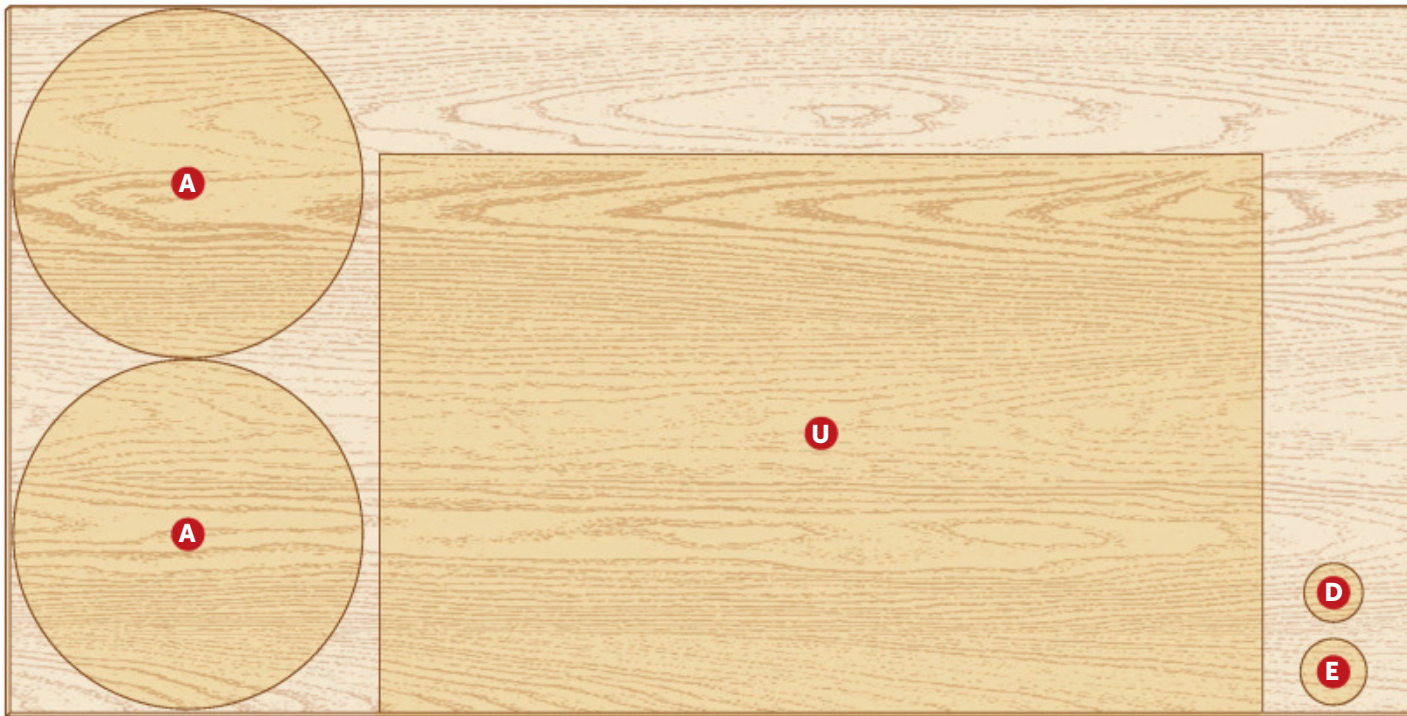
PART		FINISHED SIZE			Matl.	Qty.
		T	W	L		
A	LID	1"	23 3/4" diam.		LBP	1
B	RISER	4" diam.		5"	PVC	1
C	ELBOW SUPPORT	1 1/2"	1 3/8"	3"	P	1
D	PLUG	1/2"	4" diam.		BP	1
E	PLUG CAP	1/2"	4 1/2" diam.		BP	1
F	AIRBOX BOTTOM	3/4"	18" diam.		BP	1
G	AIRBOX TOP	3/4"	18" diam.		BP	1
H	WINDOWS	1/8"	3 3/4"	18"	PC	3
I	AIRBOX CLEATS	7/16"	2 1/2"	3"	P	3
J	AIRBOX LEGS	1 1/2"	1 1/2"	18"	P	3
K	BASE BEAMS	1 1/2"	3 1/2"	54"	P	2
L	BASE LONG RAILS	1 1/2"	5 1/2"	54"	P	2
M	BASE SHORT RAILS	1 1/2"	5 1/2"	10"	P	4
N	BASE TOP	1/2"	24"	54"	BP	1
O	END-FRAME SIDES	1 1/2"	3 1/2"	60"	P	4
P	END-FRAME RAILS	1 1/2"	3 1/2"	20 1/2"	P	6
Q	END PANELS	1/2"	23 1/2"	47 3/4"	BP	2
R	TOP-FRAME SIDES	1 1/2"	3 1/2"	31"	P	2
S	TOP-FRAME MIDDLE	1 1/2"	3 1/2"	16 1/2"	P	1
T	TOP PANEL	1/2"	24"	38"	BP	1
U	BACK PANEL	1/2"	38"	60"	BP	1
V	SHELF SIDES	1 1/2"	3 1/2"	19 1/2"	P	4
W	SHELF BACKS	1 1/2"	3 1/2"	17 1/2"	P	2
X	SHELF FRONTS	1 1/2"	1 1/2"	17 1/2"	P	2
Y	SHELF PANELS	1/2"	19 1/2"	20 1/2"	BP	2

MATERIALS KEY: LBP—laminated birch plywood, PVC—PVC pipe, P—pine, BP—birch plywood, PC—polycarbonate.
SUPPLIES: #8x1 1/2" flathead screws, #8x2" flathead screws, #8x3" flathead screws, 2 1/2" coarse-thread pocket screws, 1/4x1 1/4" lag screws (16), 4" PVC 90° street elbow, 1/4"-20x6" eyebolt, 5" screw hook, 1/4"-20 T-nut, 1/4"-20x1 1/4" hexhead bolts, washers, and nylon locking nuts (18), 4" swivel casters (4), power strip with on/off switch, 5-gallon buckets (2).
BLADES AND BITS: 1/8" and 3/4" straight router bits, 1/8" and 1/2" round-over router bits, 1 1/2", 2", 3 1/8" holesaws.
SOURCES: 2-hp vacuum motors (2) no. PS18180, \$35, lowes.com; 50-gallon fiber drum, no. 4142T7, \$63, 1/8x12x24" polycarbonate, no. 8574K41, \$17, mcmaster.com; Multi-cyclone DIY Dust Deputy Kit includes: Dust Deputy cyclones and gaskets (3), 4" to 2 1/2" reducer, 2 1/2" hose 5' long, 3/4"x7' neoprene gasket, 1 1/4 oz silicone caulk, no. AXD990003, \$150, oneida-air.com.
PROJECT COST: It cost us about \$500 to build this project. Your cost will vary by region and source.

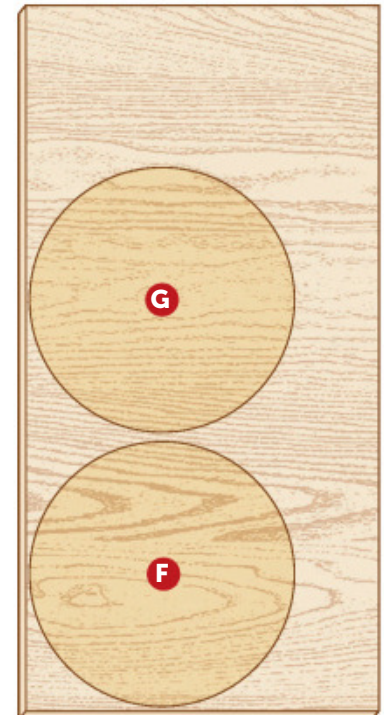
5a SHELF SIDE



CUTTING DIAGRAM



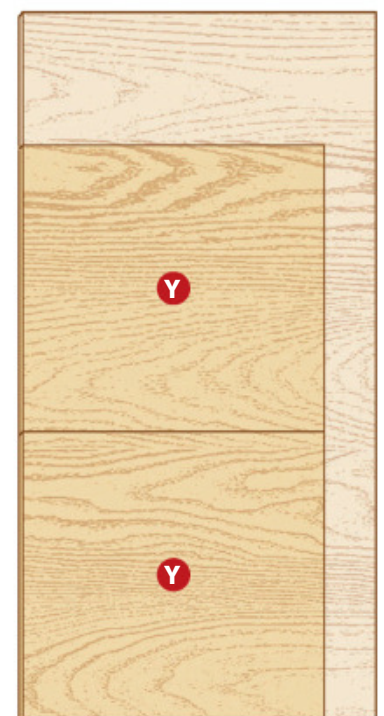
1/2 x 48 x 96" Birch plywood



3/4 x 24 x 48" Birch plywood



1/2 x 48 x 96" Birch plywood



1/2 x 24 x 48" Birch plywood



1 1/2 x 5 1/2 x 96" Pine



1 1/2 x 5 1/2 x 60" Pine



1 1/2 x 1 1/2 x 96" Pine



1 1/2 x 3 1/2 x 120" Pine (2 needed) *Plane or resaw to the thickness listed in the Materials List.



1 1/2 x 3 1/2 x 120" Pine



1 1/2 x 3 1/2 x 84" Pine (4 needed)

WOOD INNOVATION AWARDS

2024

This year we found innovative ideas across a spectrum of woodworking products and prices. These 11 topped our list of favorites.

WRITER: DAVE STONE

GIVE YOUR MITERSAW WINGS

Mitersaws offer versatile cutting capabilities, but they fall short of their full potential for precision cutting without good extension tables, measuring scales, and stops. That's what drove a few passionate guys to create EZ-Wings mitersaw stations. Made from anodized cast aluminum, the wings are supported by foldout legs and feel hefty and stiff enough to handle any weight you throw at them. They lock together and mount to the saw as well as to most stands using a patented base and locking system. Dual T-tracks add versatile attachment points for jigs as well as the included stops.

The removable fence system aligns with the saw fence or can move in front of the saw fence. That allows sliding the fence faces inward against the blade to create a zero-clearance opening. The system is available in several different sizes (EZ-Wings Pro shown), is expandable, and can easily be attached and removed with the twist of a cam-knob as your cutting needs or location change. A heavy-duty divided carrying bag allows protected stowing and transport.

EZ-WINGS MITER SAW STATIONS
Red House Tools, redhousetools.com
\$630 to \$1,350; no. EWP-48 shown, \$880

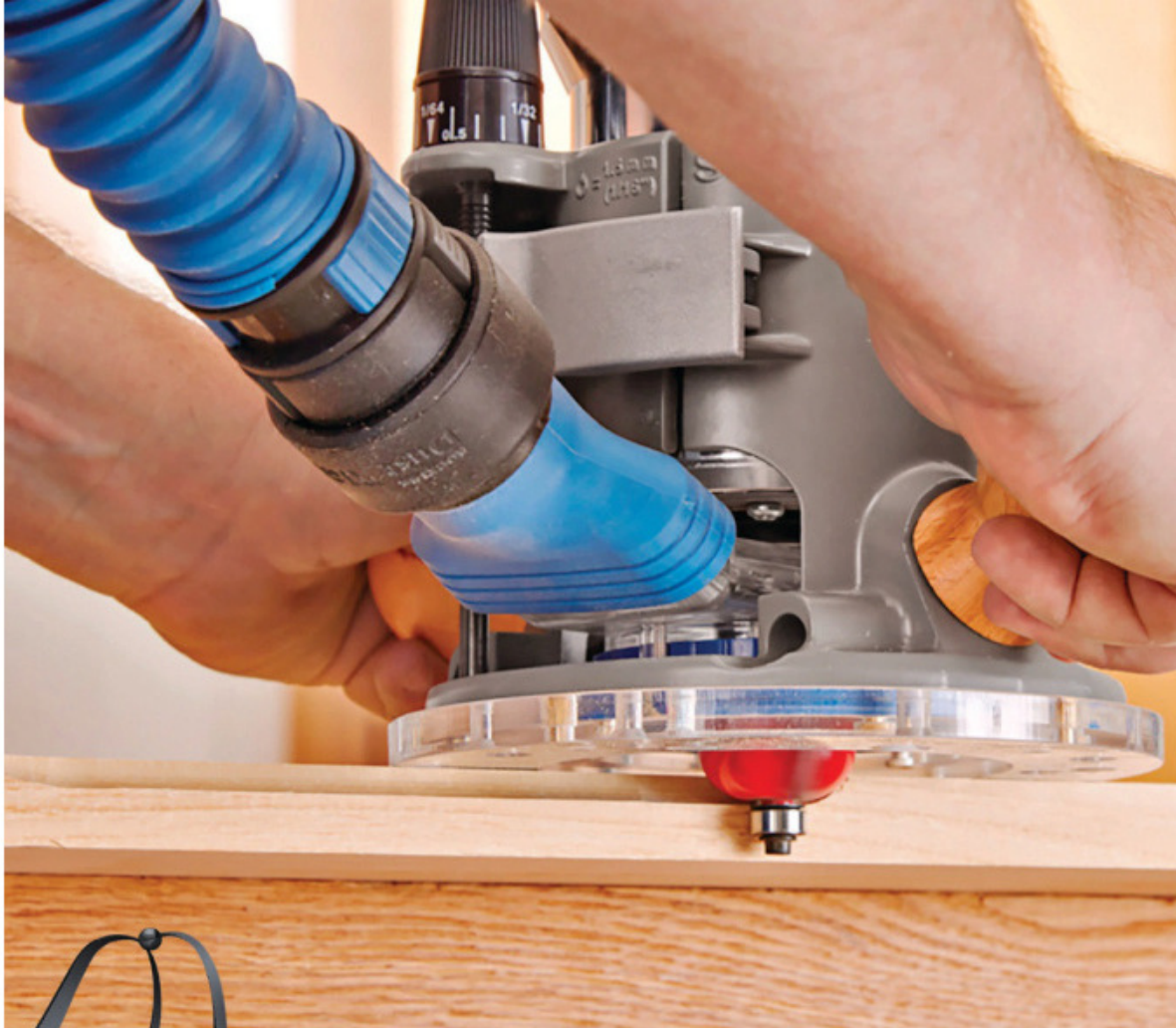
DEFEAT FLYING CHIPS WHEN ROUTING HANDHELD

No tool makes as much mess as quickly as a handheld router. This baseplate with an integrated dust port from Rockler does a great job of gobbling it up, even when edge routing. We often like to show photos of routing operations for the dramatic spray of chips. But as you can see from the unaltered photo, *right*, nary a chip escaped while routing this $\frac{3}{8}$ " cove.

The 6½" round base is sturdy and surprised us with its substantial feel and quality workmanship for the price. Machined holes match the screw configurations of most routers and insert plates, allowing you to use it with a handheld router or include it in your table-mount setup. A pivoting dust port fits through an opening in your router base and connects to Rockler's Click-Connect hose system, sold separately.

DUST RIGHT CLICK-CONNECT ROUTER DUST PORT AND PLATE

Rockler, rockler.com
No. 62148, \$35



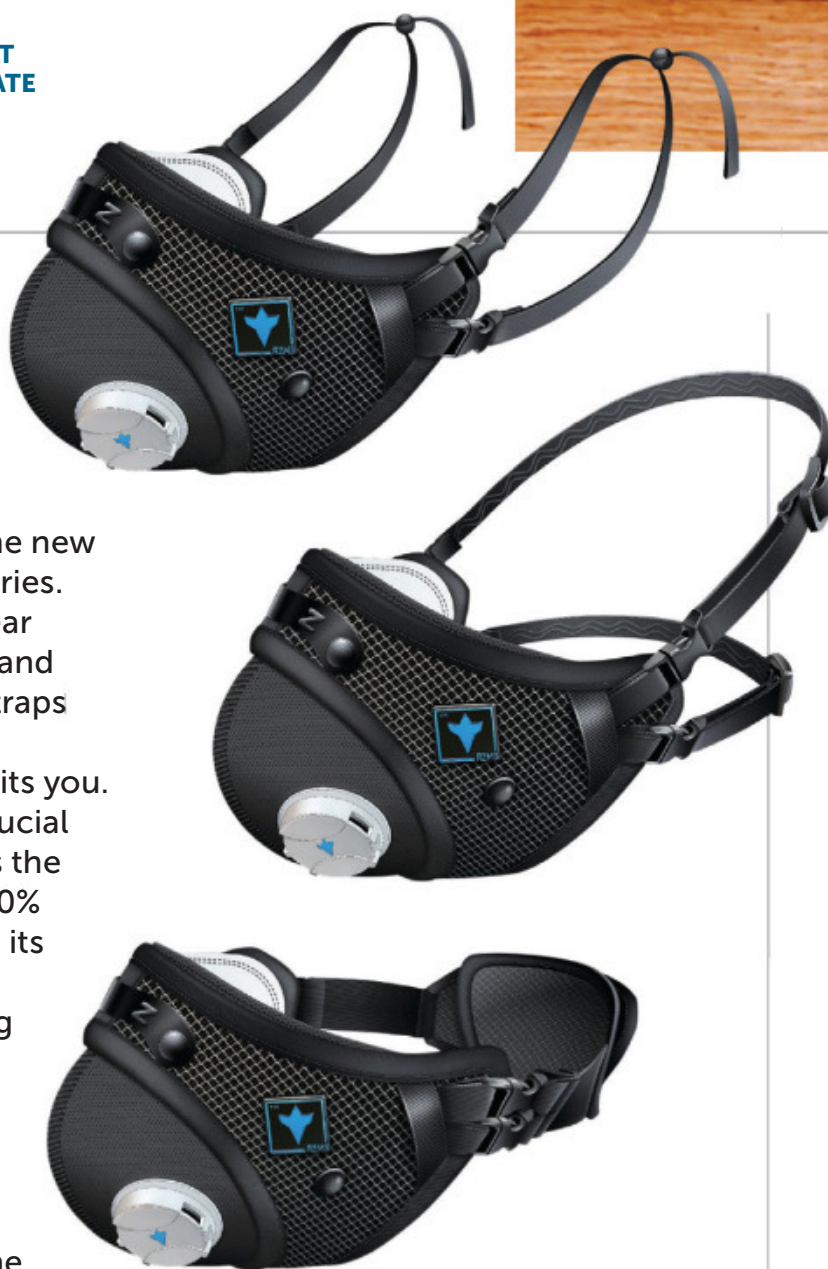
PROTECT AGAINST DUST

Three strap options stand out as the most visible new feature on the new M3 Mask from RZ Industries. The included over-the-ear straps, wide neck band, and double over-the-head straps let you choose the configuration that best fits you. Less visible, but more crucial are new high-flow filters the company says provide 50% better breathability than its standard filters, and are 99% effective at blocking particles as small as 0.1 micron.

The filters keep you safe, but only if you're willing to wear it. Fortunately, we found the M3 seals well, is comfortable, and allows easy breathing without creating excess heat and sweating. With the snap-in filter removed, the mask is washable. Two filter sets are included, and replacements are available in three-packs. You can even subscribe to have filters delivered at a regular cadence so you'll never run out.

M3 MESH MASK

RZ Industries, rzmask.com
No. M3, \$50



AUTOMATE TABLESAW SETUPS WITH A MOTORIZED RIP FENCE

We haven't been able to get our hands on the Rip-it motorized tablesaw fence yet, as the company is still working on launch with a Kickstarter campaign. We've seen it at a couple of tradeshow, though, and are intrigued. The fence moves under its own power to any setting you enter on its digital display. You can choose imperial or metric measurements with decimal as well as fraction options, and store presets for common measurements, which could simplify cutting tasks that require multiple setups.

RIP-IT TABLESAW FENCE

Rip-it Fence Company, rip-itfence.com
\$1700 (Kickstarter special: \$1250)

ADD A RIP FENCE WITH THOUGHTFUL FEATURES

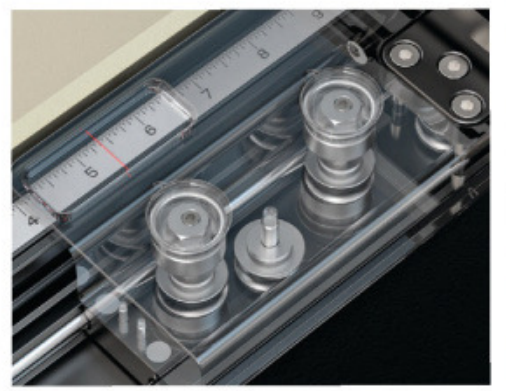
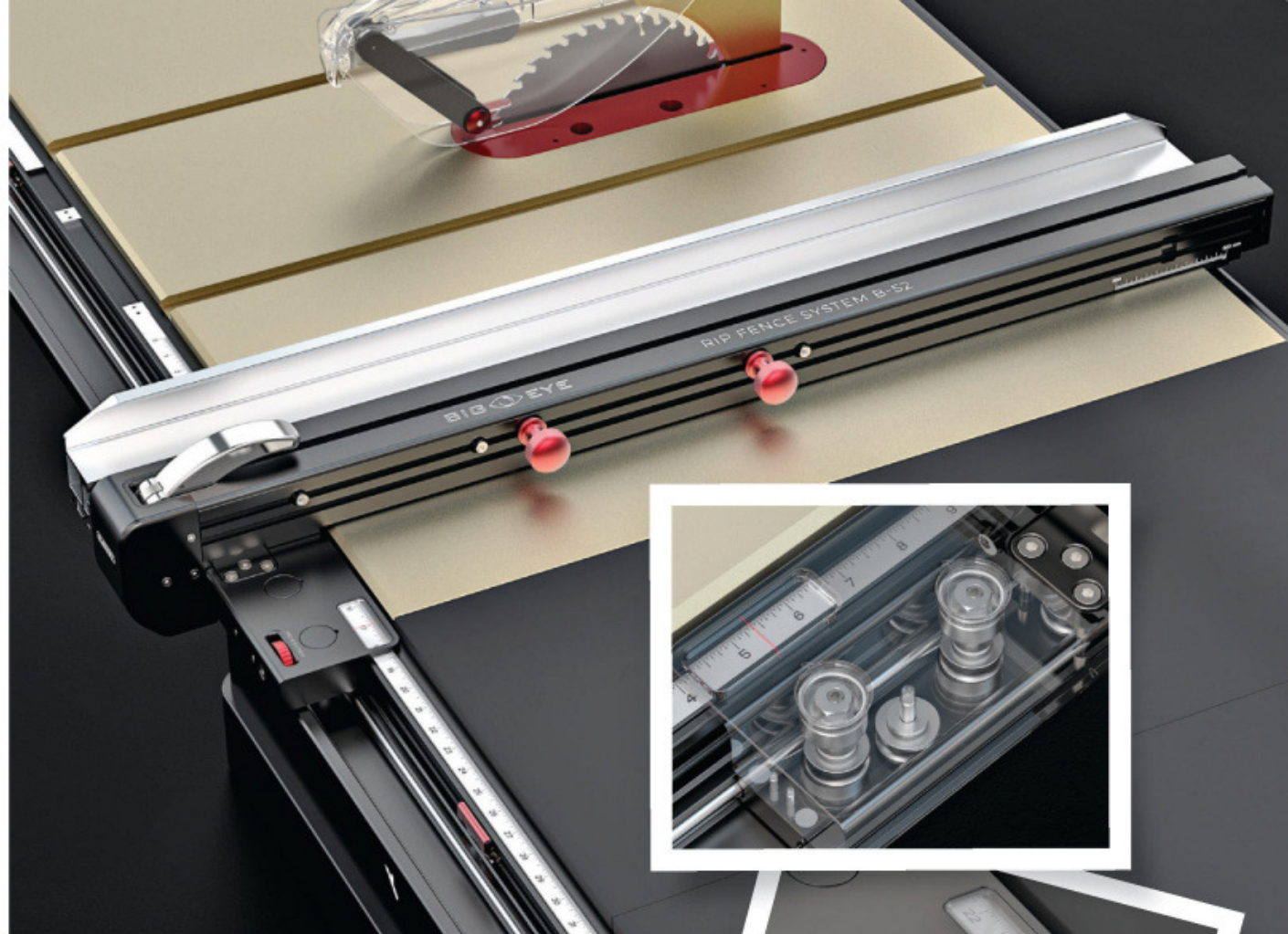
The new Big Eye Rip Fence System from Harvey Industries shows a thoughtfulness of design that we appreciate. The fence rides on multiple adjustable bearings that provided, in the quick demonstration we saw, impressively smooth sliding allowing for easy travel but, more importantly, on-the-money microadjustment. Front and rear locks are controlled by a top-mounted lever that doesn't snag your shop apron or bruise your hip, making us wonder why all fence locks aren't located there.

The fence face mounts high or low on either side of the fence body, and the measuring scales adjust for accuracy in either position. We also really like the integrated stops that slide in the fence rail. They lock in position and flip easily out of the way when you want to bypass them, allowing you to switch between multiple cutting operations while retaining your settings.

This fence system sells at a premium price, but offers impressive features as well as a build quality that appears to match.

BIG EYE RIP FENCE

Harvey Industries, harveywoodworking.com
No. BIG EYE B-36, \$1249; no. BIG EYE B-52, \$1299



TAKE THE TRIAL AND ERROR OUT OF LOCK-MITER SETUPS

The lock-miter joint proves strong for creating corner joints in hollow posts and other structures. It's bedeviling to set up, though. For the joints to align, you have to set the bit height at precisely half the material thickness, a trial and error (and error, and error) process.

MicroJig created an elegant solution with its new lock-miter bit. They machined a small platform into the bit that works in conjunction with the company's FitFinder tool (one of our Innovations for 2023). The FitFinder's gauge automatically adjusts to half your material's thickness. Then you simply raise the lock-miter bit until the platform contacts the gauge. Set the fence using your material and a straightedge, and you're all set. Following these simple steps yielded the very passable joint shown, *left*, on the first attempt, which is far less fussiness than this joint usually requires.

FITFINDER LOCK MITER BIT

Microjig, microjig.com
No. MB-050-0750LM, \$95

STICK YOUR NECK OUT TO GRAB DUST AT THE SOURCE

One of the biggest challenges in dust collection can be reaching the source of the dust. The ThirdHand Boom from Mullet Tools provides a clever solution. The boom consists of sections of PVC pipe you can cut to lengths to suit your needs. Three included elbows rotate 360° and lock, directing the boom where you need it. The elbows have seals and secure the pipes with a friction-fit, making it easy to reconfigure the height and reach for different applications.

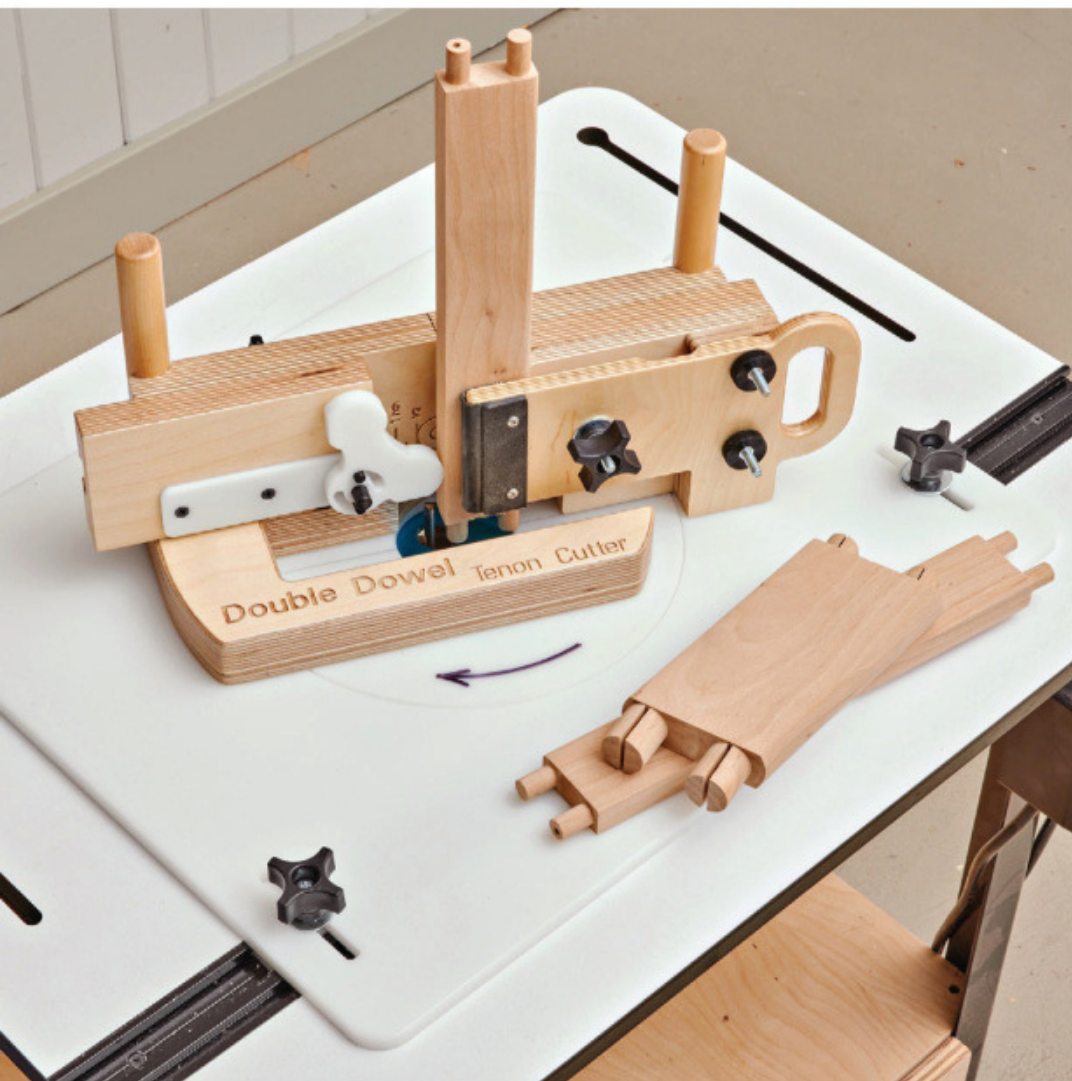
Mullet offers the boom by itself that mounts directly to your dust-collection ducts, or you can choose it with accessories. One mounts the boom on your workbench. Another includes a steel base with casters that connects the boom to your shop vacuum. Or buy the boom with Mullet's High-Speed Cyclone. We like the way this one separates most of the chips and dust before they enter the vacuum. A customizable mount simplifies matching the position of your vacuum inlet.

THIRDHAND BOOM

Mullet Tools, mullettools.com

\$150 (boom only), \$375 (as tested with cyclone)





BUILD PROJECTS WITH STURDY DOUBLE TENONS

The inventor of the Double Dowel Tenon Cutter developed it after returning from a mission trip to Africa, where his efforts to build chairs and desks were thwarted by a lack of dowel availability. The invention mothered by necessity is a router jig that creates integral dual round tenons, from $\frac{3}{8}$ " to 1" in diameter, using a single $\frac{3}{4}$ " straight bit in a table-mounted router.

We were drawn to the system's homegrown look combined with quality Baltic birch construction. Then we watched it demonstrated and saw how foolproof the flip stops and rotating base make the process. Clamp your workpiece in the jig and, with the router running, slide it against one stop, then rotate the jig in its base one full revolution to rout the first tenon. Flip the stop, repeat the process, and you've created two consistently spaced round tenons. The system also includes a companion flip stop that attaches to your drill-press fence to create the matching mortises. We had to elbow our way through crowds of tradeshow attendees and manufacturing reps to get our demonstration, but it was worth the wait.

DOUBLE DOWEL TENON CUTTER
Double Dowel, doubledowel.com
\$600

CARRY A CORDLESS TABLESAW IN A BOX

Festool's new tablesaw promises to put precise cutting capability in the space of a Systainer. We haven't been able to put one through its paces yet, but we're intrigued by the specifications and videos we've seen so far. While not intended to replace your workshop tablesaw, the CSC SYS 50 packs a lot of innovative features in a compact package.

Powered by two 18-volt batteries, the motor is capable of different speed settings to match the blade type and material—wood, plastic, laminates, or aluminum. A dial and digital display operate motorized controls that automate cutting depth (up to $1\frac{7}{8}$ ") and bevel angle (-10° – 47°). Four presets are available for saving common setups. Festool claims the saw dials in accuracy within $\frac{1}{256}$ ". The saw shares the same blades with the company's tracksaw to make rip-cuts up to 11" and crosscuts materials over 17" wide. We look forward to putting one through a full test and sharing our impressions soon.

CSC SYS 50 CORDLESS TABLESAW
Festool, festoolusa.com
No. CSC SYS 50, \$1,499 to \$1,798

“**THIS YEAR WE FOUND INNOVATIVE IDEAS ACROSS A SPECTRUM OF WOODWORKING PRODUCTS AND PRICES.**

—DAVE STONE, MANAGING EDITOR





SET PRECISE MITER ANGLES WITH THE TURN OF A DIAL

SawStop puts their own twist on setting accurate miter angles with the new Revolution Miter Gauge. The large dial gives away this gauge's secret. Just turn it (give it a few revolutions, get it?) to rotate the miter gauge head to the angle you need. The smaller dial behind the main one sets how often those clicks occur—at every full, half, quarter, or tenth degree, or free (no detents). We're impressed by how positive the clicks are, even at $\frac{1}{10}^\circ$ and how intuitive it is to switch back and forth between increments to dial in a precise angle. Markings on the dial intersect the scale on the miter-gauge head at 1° increments allowing visible reading of your angle setting.

The Revolution isn't a one-trick pony, though. SawStop added a beefy fence that telescopes to 37". The included flip stop is double hinged to both work on the stock fence as well as to straddle shop-made auxiliary faces up to $\frac{3}{4}$ " thick. Included hardware doubles for easily attaching those faces and for locking in custom settings for the flip stop. The price of entry is high, but the fence is intuitive and easy to use.

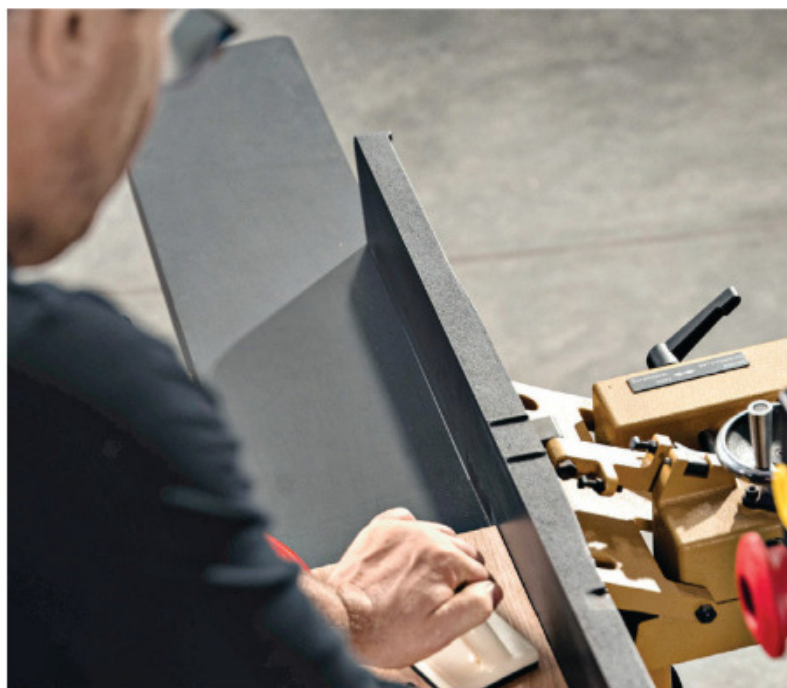
REVOLUTION MITER GAUGE

SawStop, sawstop.com
no. TSA-RMG, \$499



Dial is sized so that its diameter acts as the angle indicator.

Tick marks align with the arc of the angle indicator at each whole degree, with common woodworking angles labeled.



REDUCE FRICTION AND PROTECT AGAINST RUST

Machined cast-iron tops provide the dead-flat surfaces needed for accuracy on stationary tools. But those tops have to be maintained to keep rust at bay and minimize friction. Powermatic aims to combat both with ArmorGlide coating, available as an option on their tablesaws, bandsaws, and jointers. This baked-on coating reduces friction by a claimed 50%. We can tell you the reduction was dramatic when we made a few passes across an ArmorGlide-equipped jointer. As a bonus, the coating prevents rust from ambient moisture, sweaty hands, and carelessly laid coffee cups. Expect an upcharge of about 10% over the price of the same coating-free tool model. 🌿

ARMORGLIDE COATING

Powermatic, powermatic.com

LIQUOR CABINET

Raise a glass to this all-in-one wine and spirit storage cabinet and serving station.

WRITER: VINCE ANCONA
DESIGNER/BUILDER: KEVIN BOYLE

Belly up to the bar and enjoy your favorite adult refreshment from this attractive liquor cabinet. When closed for business, it appears to be an unassuming armoire. But open the doors to reveal your own private speakeasy, including space for bottles, glassware, and mixing and serving accessories. And like any traditional saloon, there's even a mirror on the back wall so you can keep an eye on your guests.

OVERALL DIMENSIONS
46³/₄"W x 19⁵/₈"D x 77¹/₄"H

PHOTOGRAPHER: CARSON DOWNING
ILLUSTRATORS: ROXANNE LEMOINE, LORNA JOHNSON

BOTTOMS UP

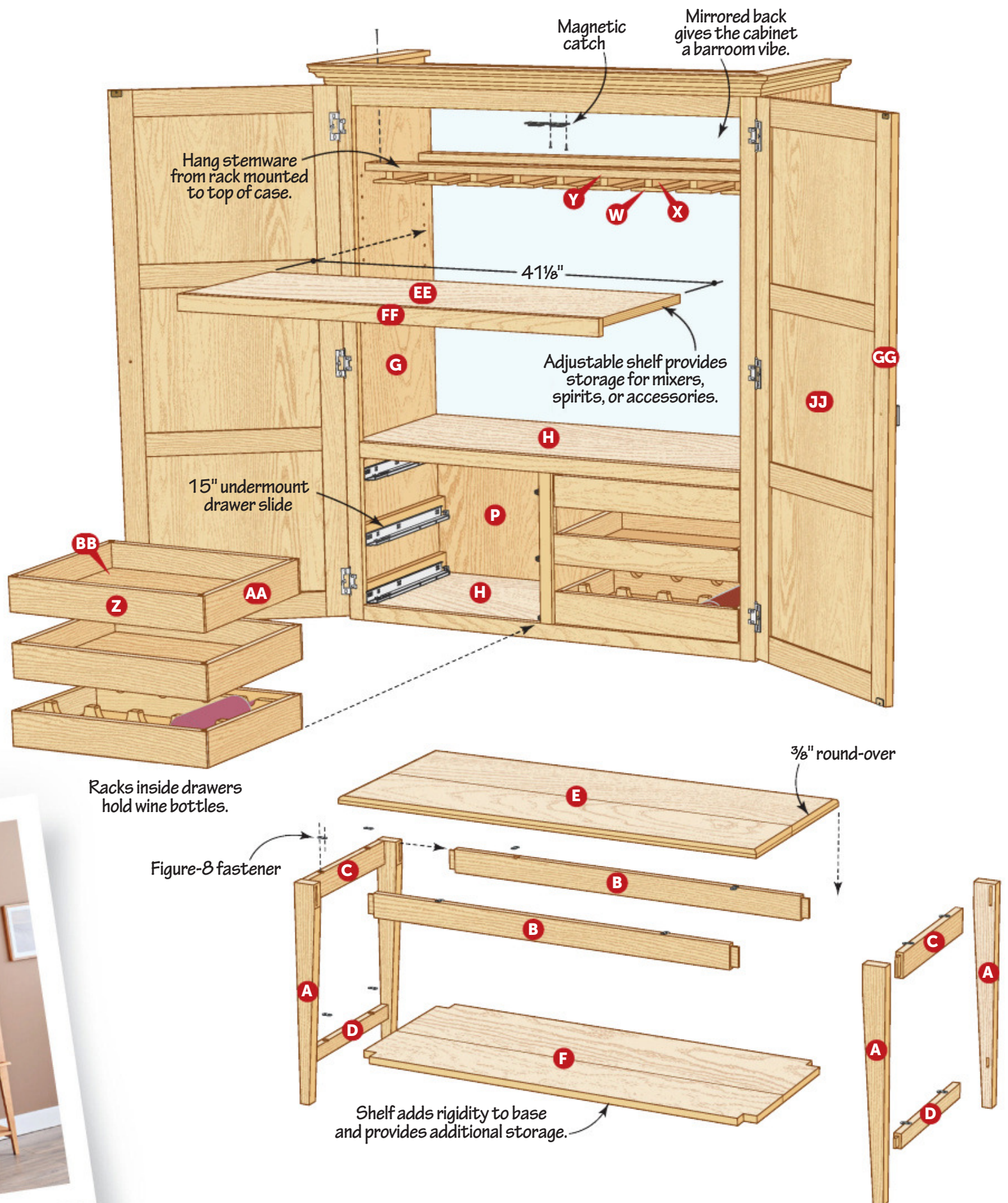
Start from the ground up by building the base [\[Exploded View\]](#). Mortise-and-tenon joints give it the strength to support the case, even after it's fully loaded.

1 Plane the stock for the legs (A) to thickness (1 $\frac{1}{4}$ ") and cut the legs to overall width and length [\[Materials List, Drawing 1\]](#). Lay out and form the mortises on the legs, creating two mirrored sets.

2 Lay out the taper on each leg and, using a bandsaw, cut just outside the layout lines. Smooth the cuts down to the layout lines using a jointer or hand plane. Finish-sand the legs.

3 Cut the long and short aprons (B, C) and the stretchers (D) to size [\[Drawing 2\]](#). Using a dado blade, cut the tenons on the ends of the aprons and stretchers [\[Drawing 3\]](#).

EXPLODED VIEW

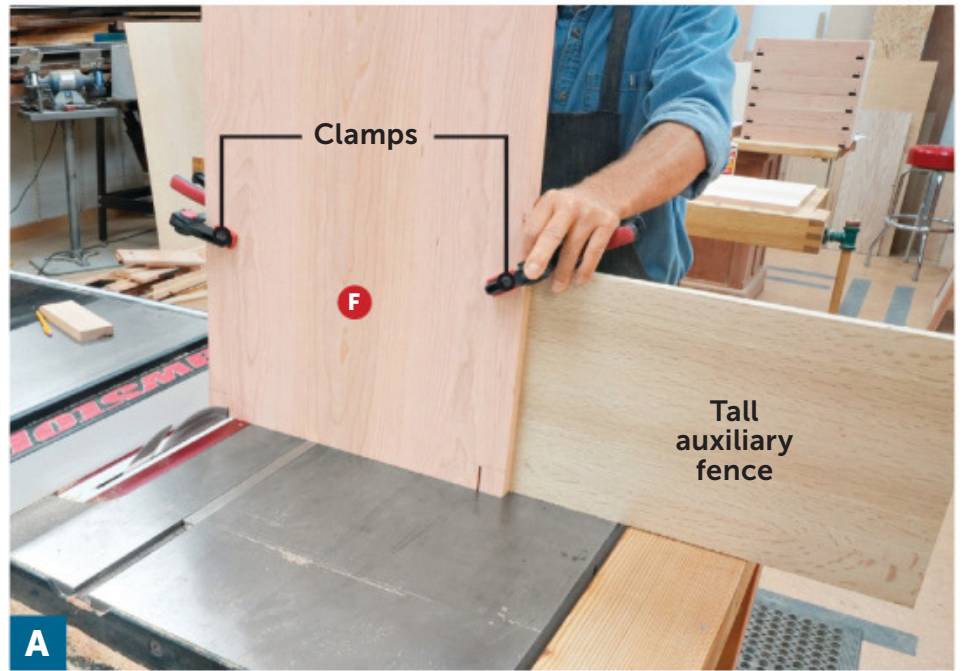


4 Drill counterbores for figure-8 fasteners in the top edges of the aprons and stretchers. Finish-sand the aprons and stretchers.

5 Glue together the end assemblies (A/C/D). After the glue dries, glue the long aprons (B) between the two end assemblies, checking for square.

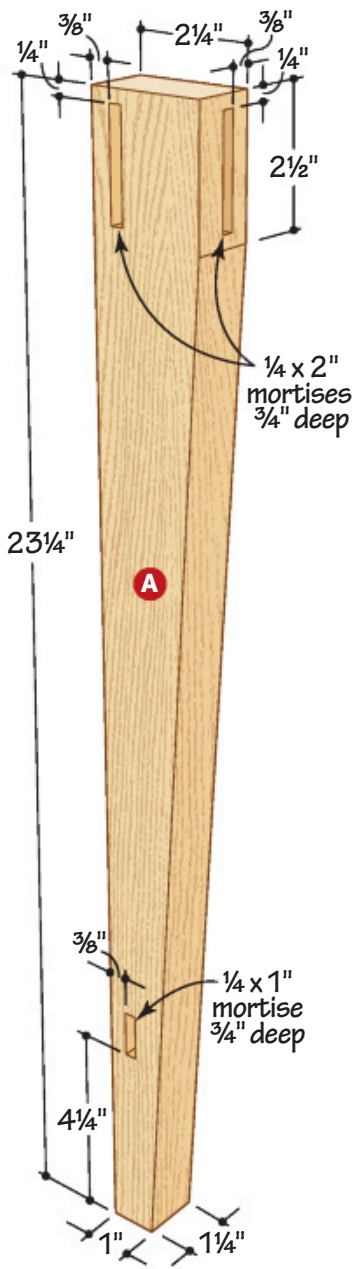
6 Edge-glue blanks for the top (E) and shelf (F). Cut these two parts to size [**Drawing 2**]. Rout a round-over on the upper edge of the top (E).

7 Notch the corners of the shelf (F) to fit around the legs **[Photo A]**. One edge of each notch has a 3° bevel to match the leg taper. To cut these bevels, angle your miter gauge and complete the notch in two diagonal corners. Then angle your miter gauge in the opposite direction to complete the notches in the other two corners. Finish-sand the top and shelf and set them aside for now.

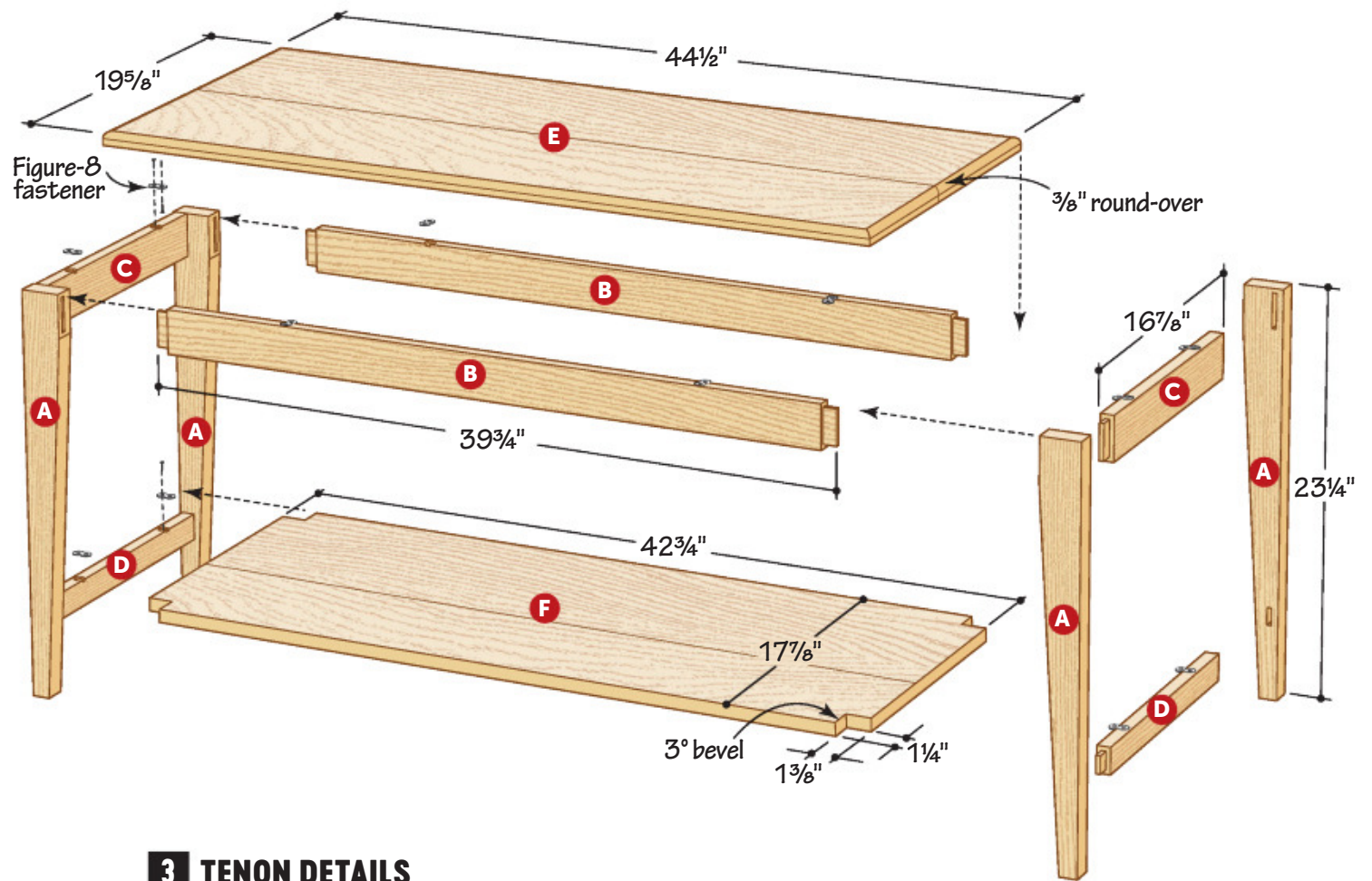


Clamp the shelf (F) to an auxiliary fence when cutting the leg notches. The cuts on the shelf ends are square, but when making the cuts on the edges to complete the notches, angle your miter gauge 3° .

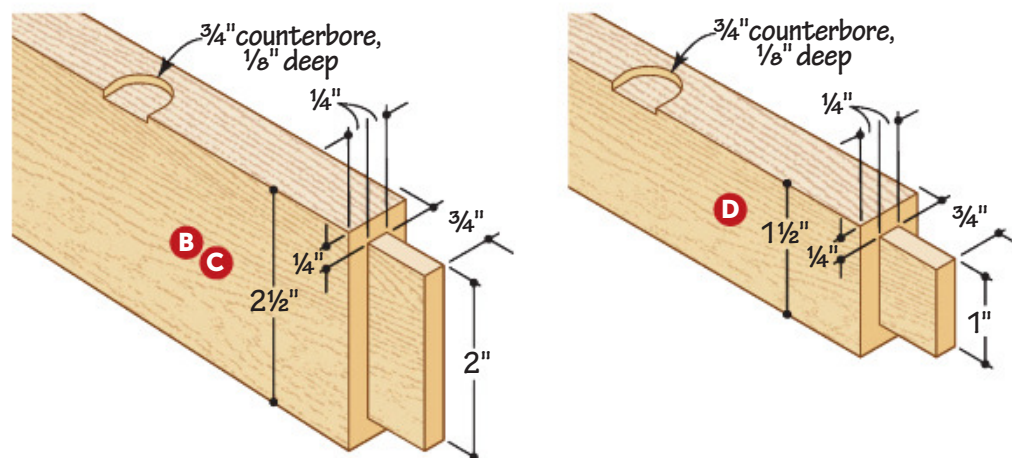
1 LEG (left rear leg shown)

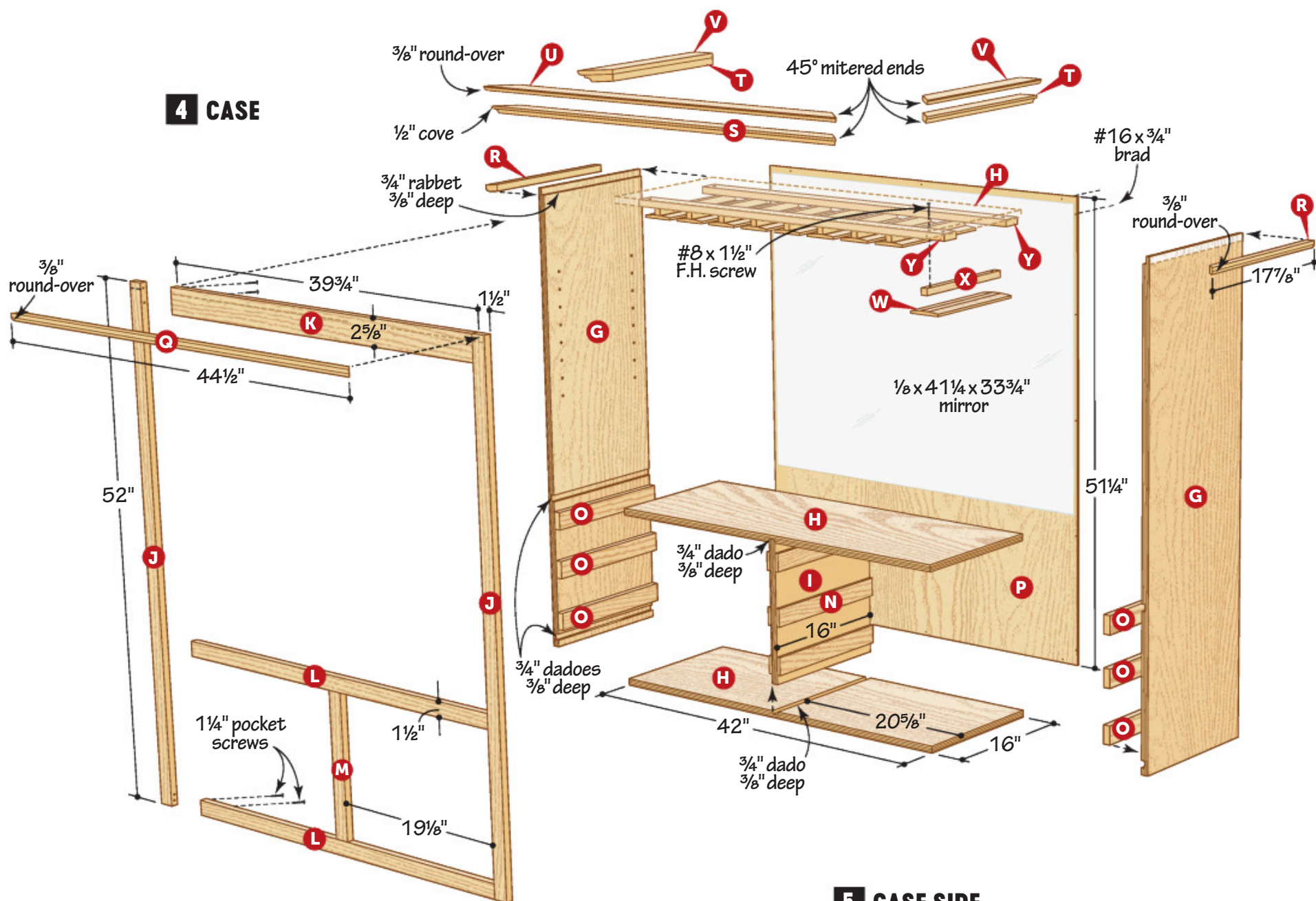


2 BASE



3 TENON DETAILS



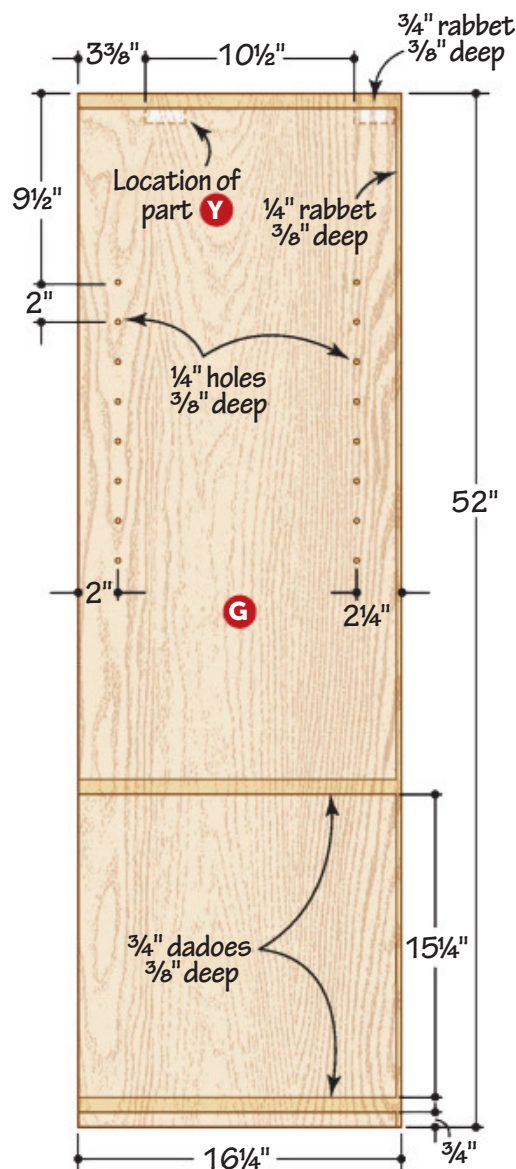


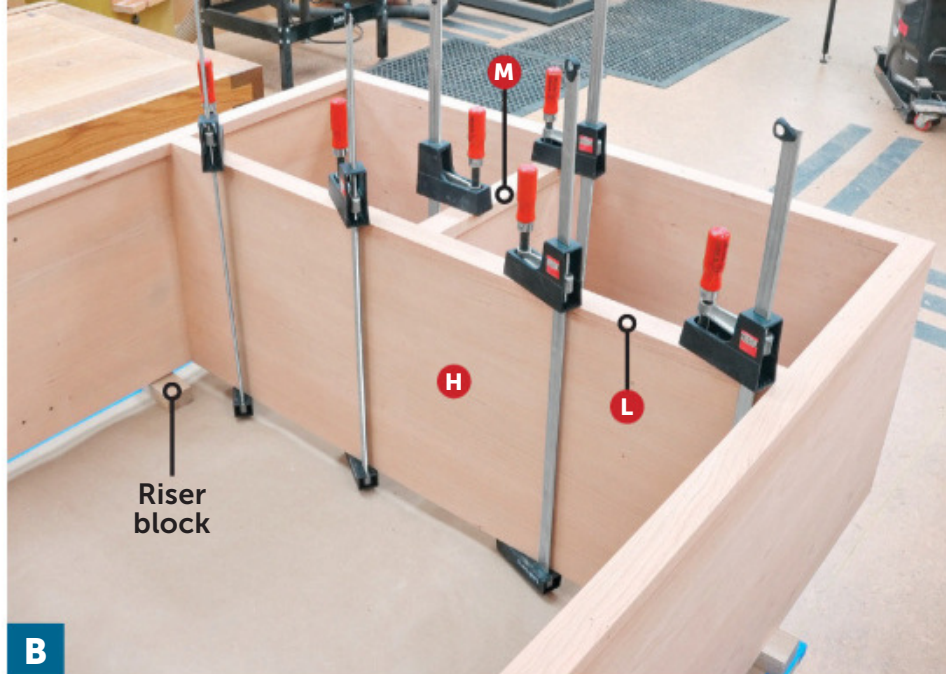
CASE THE JOINT

A plywood case reinforced with a face frame forms the shell of the cabinet.

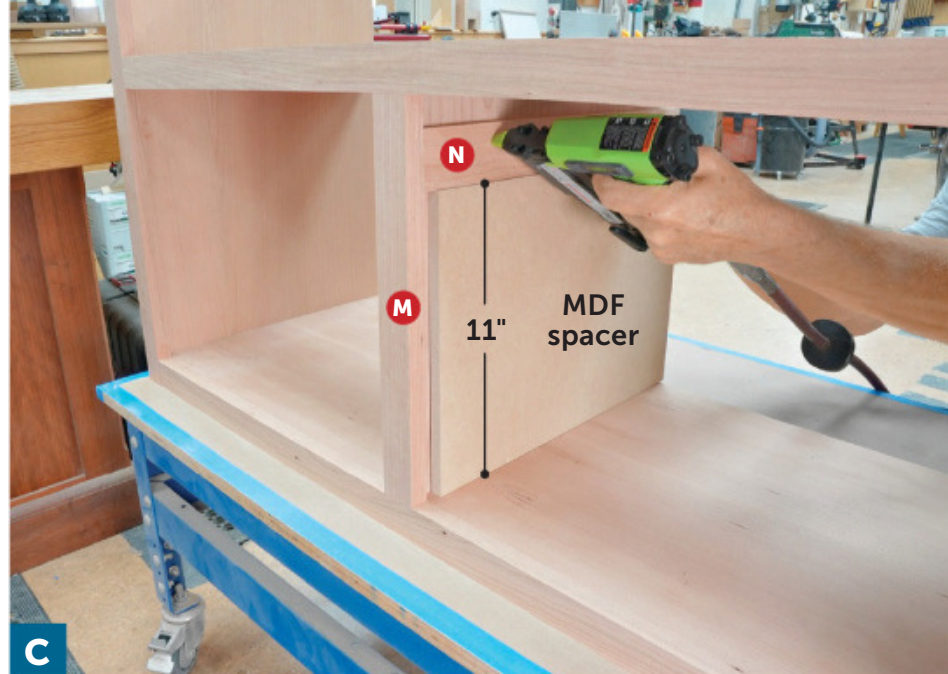
- 1 Cut the case sides (G), top/fixed shelf/bottom (H), and divider (I) to size [Drawing 4, Materials List]. Set up a dado stack in your tablesaw to match the thickness of your plywood and cut the dadoes and rabbets in the sides, fixed shelf, and bottom [Drawings 4 and 5].
- 2 Cut a rabbet along the inside back edge of the sides (G). Lay out and drill the shelf-pin holes [Drawing 5]. Finish-sand all the panels (G-I).
- 3 Glue the divider between the fixed shelf and the bottom, using clamping squares to hold the assembly square. Add the sides and top, again using clamping squares.
- 4 Cut the face-frame stiles (J) to length and about $\frac{1}{16}$ inch overwidth. Cut the upper and lower rails (K, L) to size.
- 5 Drill pocket holes in the upper rail and one of the lower rails. Assemble the outer face frame.

5 CASE SIDE





B Set the case on riser blocks to clamp the remaining lower rail (L) and center stile (M) into place. Clamp the lower rail flush with the fixed shelf (H) and center the stile on the vertical divider (I).



C Cut scrap pieces to length to position the center drawer spacers (N) while gluing and nailing them to the vertical divider. Use the same spacers to position the outer drawer spacers (O) on the case sides.

6 Glue the face frame to the case so the lower rail is flush with the upper face of the bottom (H) and the stiles (J) overhang the case equally on both sides.

7 Glue the remaining lower rail to the case so it is flush with the top face of the fixed shelf (H) [Photo B]. Cut the center stile (M) to size and glue it to the vertical divider (I) and lower rails (L). Using a router and a flush-trim bit, trim the stiles (J) flush with the outside of the case.

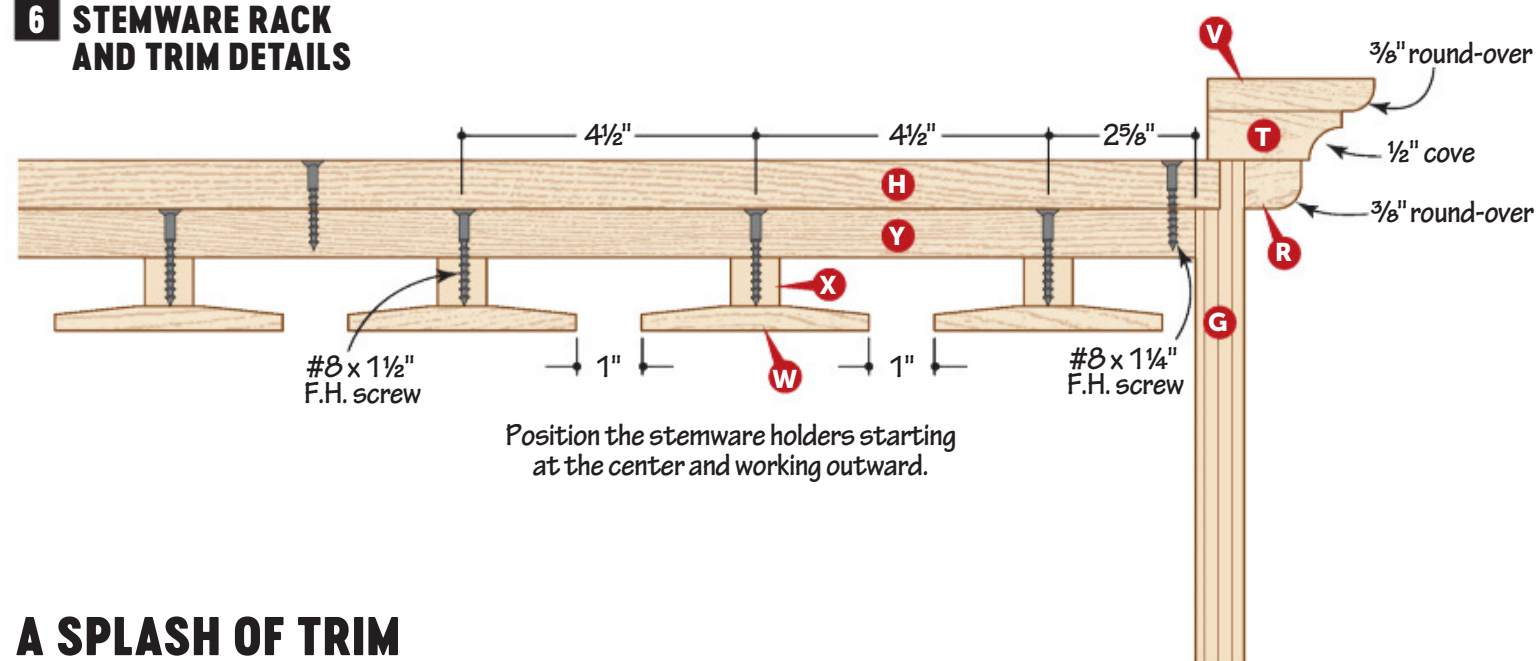
8 Cut the center (N) and outer (O) drawer spacers to size. Position and install the spacers using MDF scrap. Cut the first piece of scrap 11" long and use it to position the top spacers [Photo C, Drawing 4]. Cut a second piece of scrap 5⁵/₈" long and use it to position the middle spacers. Then cut a third scrap piece to 5⁵/₈" to install the lower spacers.

9 Cut the case back (P) to size. Set it aside until you're ready for final assembly of the case.

TIP!

Save the pieces of scrap to use later when installing the drawer slides.

6 STEMWARE RACK AND TRIM DETAILS



A SPLASH OF TRIM

Built-up moldings garnish the top of the case and complete the outside of the cabinet, like an olive completes a martini.

1 Cut the lower trim pieces (Q, R) to width and about 3" overlength [Materials List, Drawings 4 and 6]. Round over one edge of each piece.

2 Miter-cut the front lower trim piece (Q) to length and glue it to the face frame, flush with the top [Drawing 4]. Miter one end of the left- and right-side

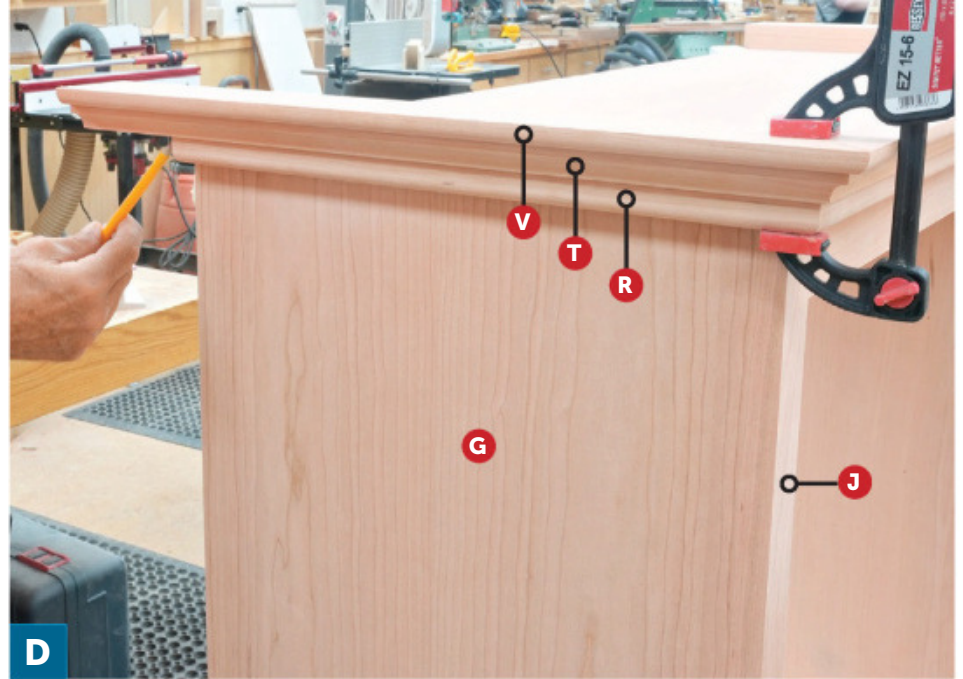
lower trim pieces (R), then mark and cut the opposite ends to length. Glue the side lower trim pieces to the case.

3 Plane and cut to width a blank approximately 86" long for the front (S) and side (T) cove trim [Materials List, Drawings 4 and 6]. Rout a cove along one edge of the blank.

4 Plane and cut to width a blank approximately 88" long for the front trim cap (U) and side trim caps (V) [Materials List, Drawings 4 and 6]. Round over one edge of the blank. Glue the trim cap blank (S, T) to the cove trim blank (U, V) so the back (square) edges are flush.

5 With the glue dry, miter-cut the front trim assembly (S/U) to length and glue it to the front of the case.

6 For the two side trim assemblies (T/V), miter-cut one end of each assembly to create a left and right side. Dry-fit the assemblies and mark the back ends for length [Photo D]. Trim the assemblies to length and glue them to the case.



After miter-cutting one end of the side trim assembly (T/V), clamp it to the case and mark the end for length. Cut the assembly to length and glue it into place, then repeat the process on the opposite side.

RAISE A GLASS

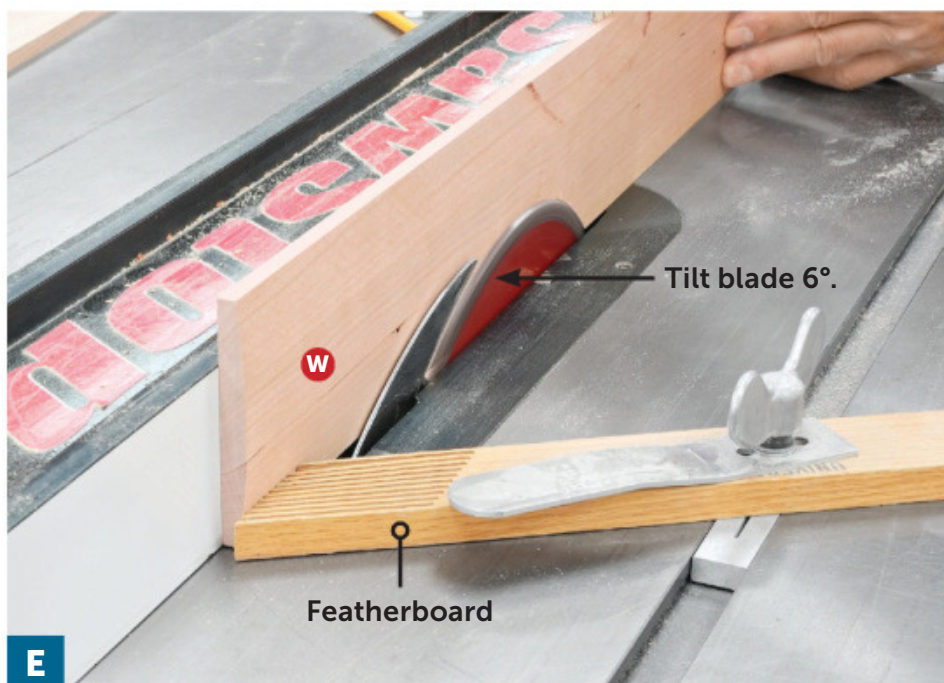
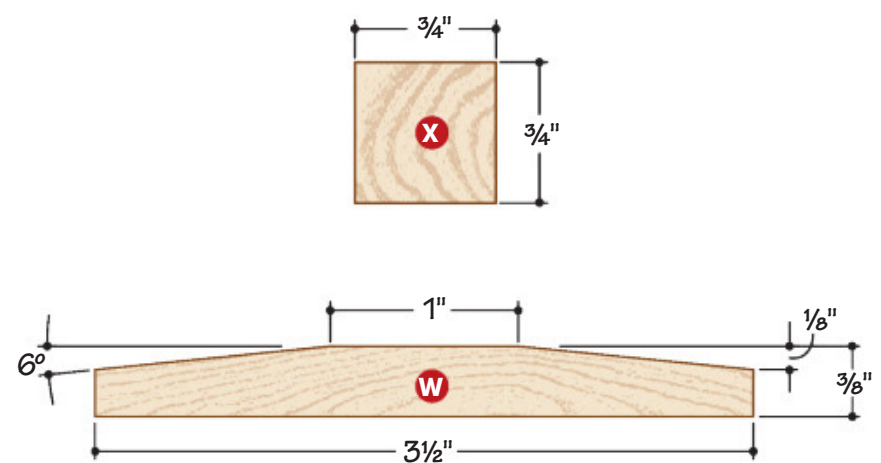
A stemware rack mounted to the underside of the case top provides convenient storage for wine glasses.

1 From stock planed to $\frac{3}{8}$ ", cut three $3\frac{1}{2} \times 39$ " blanks for the stemware holders (W) [Drawing 7]. Bevel-rip the edges of the blanks [Photo E] and then cut the holders to length.

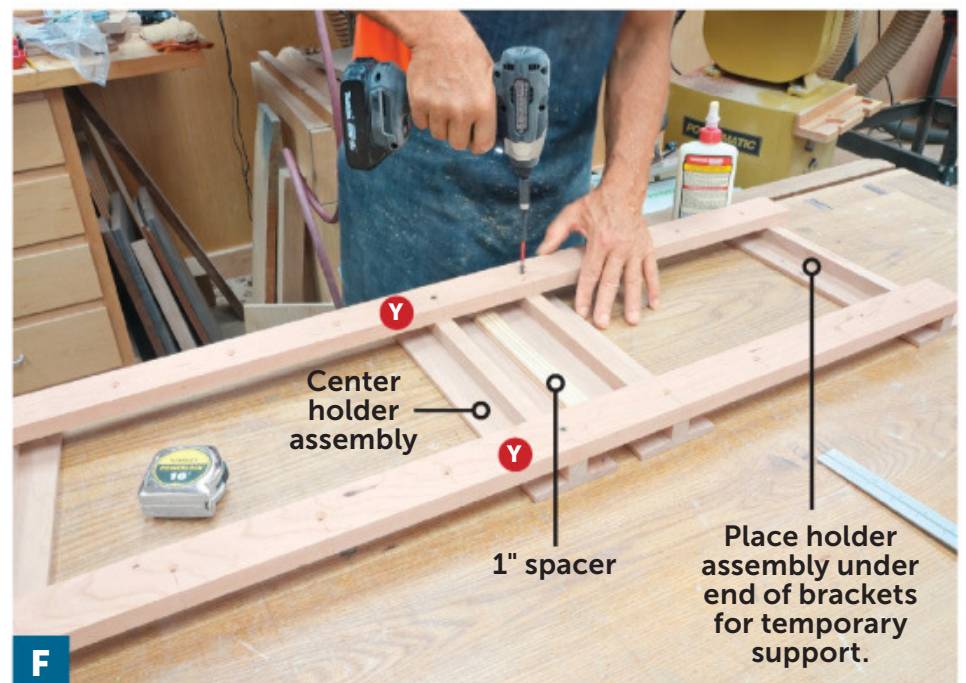
2 Cut the stemware spacers (X) to size [Drawing 7]. Finish-sand the holders and spacers, then glue the spacers to the holders, centering them on the width.

3 Cut the stemware mounting brackets (Y) to size and drill countersunk holes for the holder assemblies [Drawing 6]. Screw the center holder assembly (W/X) to the brackets, checking for square [Photo F]. Then, working out from the center, attach the remaining holder assemblies, using a spacer to position them. Set the rack aside for now.

7 STEMWARE HOLDER ASSEMBLY



With your saw blade tilted 6°, cut a bevel along both edges of one face of the blanks for the stemware holders (W). A featherboard holds the piece tight against the rip fence.



Temporarily support the brackets (Y) with a stemware holder assembly at each end. Screw the center holder into place, making sure it's square. Then use a spacer to position the remaining assemblies.

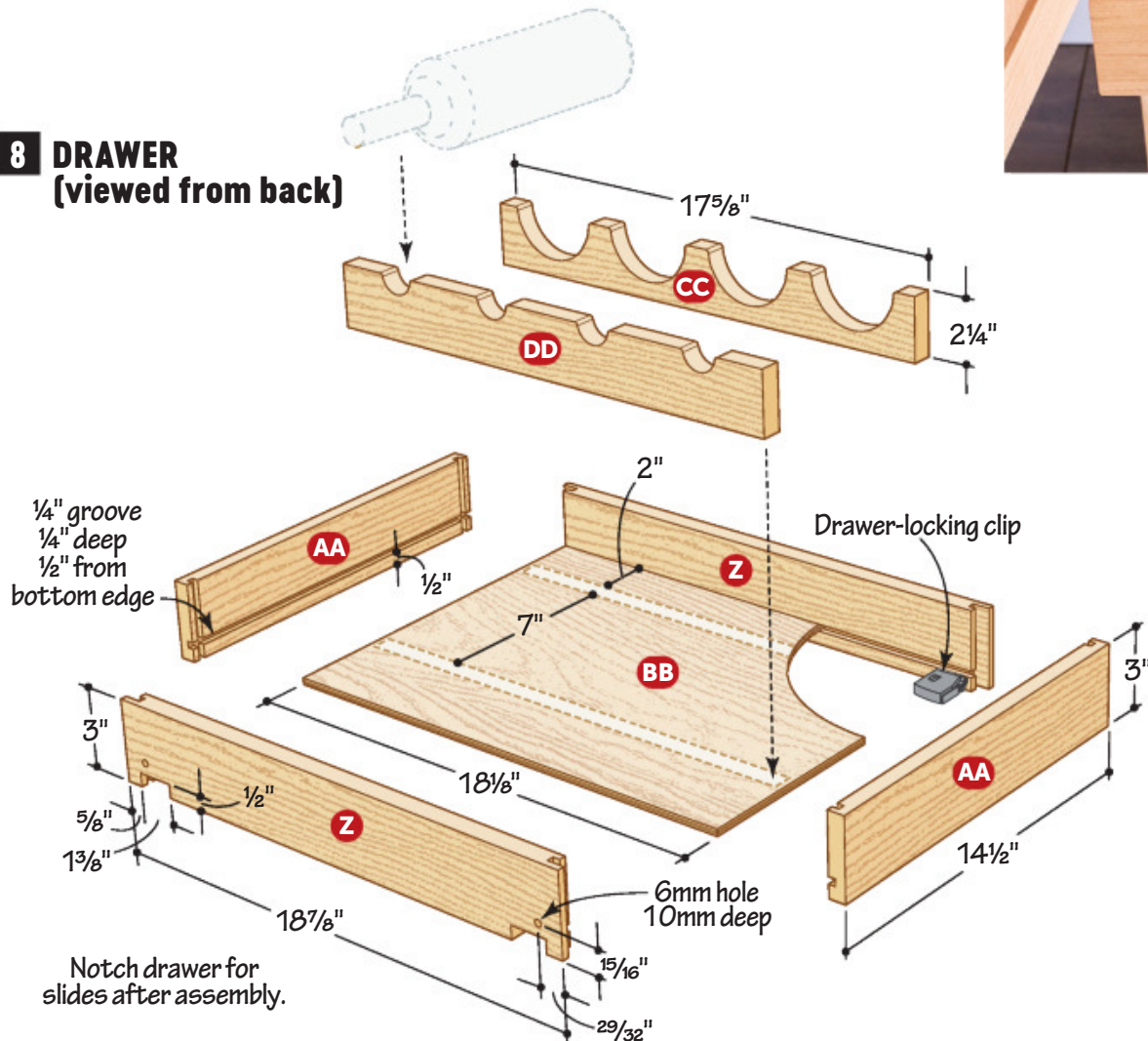
LEAVE THE BOTTLE

The case houses half a dozen drawers and an adjustable shelf. If you're a wine lover, build wine-bottle holders for the drawers.

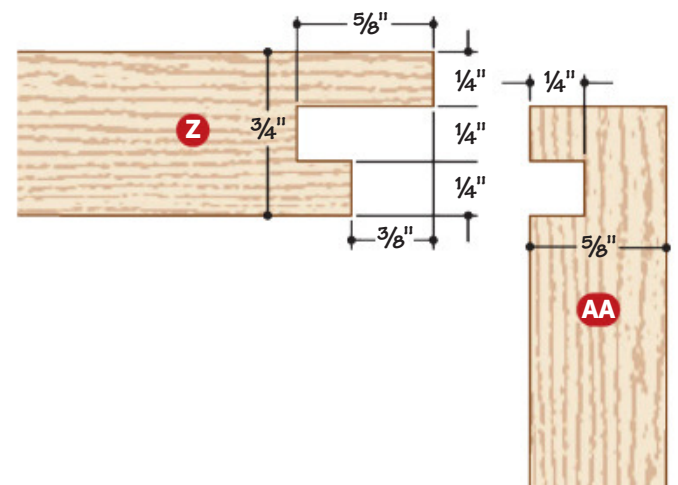
- 1 Cut the drawer fronts/back (Z) and drawer sides (AA) to size [Materials List, Drawing 8]. (Note that the sides use thinner stock than the fronts and backs.)
- 2 Using a $\frac{1}{4}$ " dado blade, cut the joinery for the drawers [Drawing 9].
- 3 Cut a groove on the inside face of the fronts/back and sides for the drawer bottom. Cut the bottoms (BB) to size and assemble the drawers.



8 DRAWER (viewed from back)



9 DRAWER JOINT DETAILS



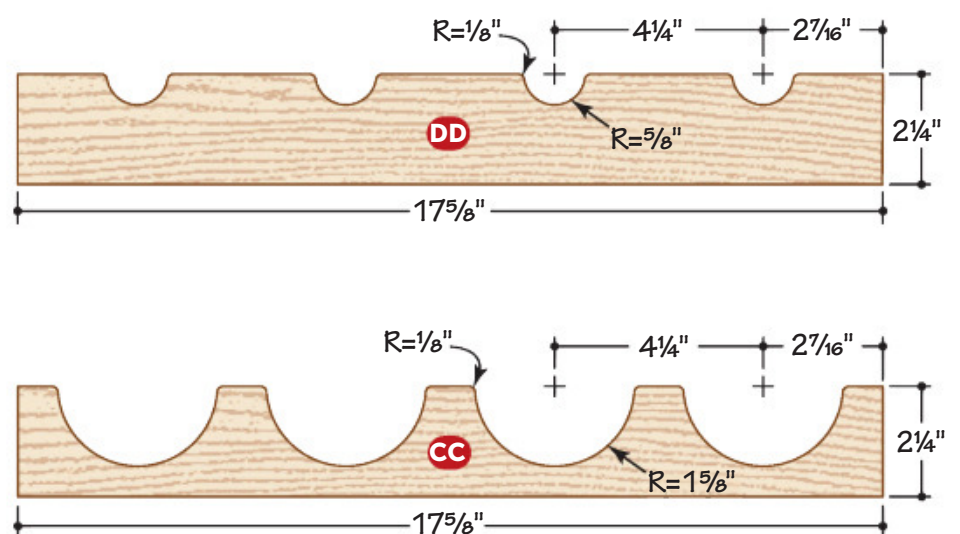
- 4 Using a handsaw and a chisel, notch the back of each drawer for the drawer slides [Drawing 8]. Drill stopped holes in the drawer backs for the slides. Finish-sand the drawers.

TIP!

To avoid chip-out when flush-trimming the wine-bottle holders, back-rout the end of each cutout first.

- 5 Cut the wine-bottle holders (CC, DD) to size [Drawing 10]. Make a couple of templates out of MDF and use them to lay out the cutouts on the holders.
- 6 Bandsaw away the bulk of the waste. Attach the templates to the blanks and trim the holders flush with the templates using a flush-trim bit at the router table. Finish-sand the holders and glue them into the drawers [Drawing 8].
- 7 Cut the adjustable shelf (EE) and shelf edging (FF) to size [Exploded View]. Glue the edging to the shelf. After the glue dries, finish-sand the shelf.

10 WINE-BOTTLE HOLDERS

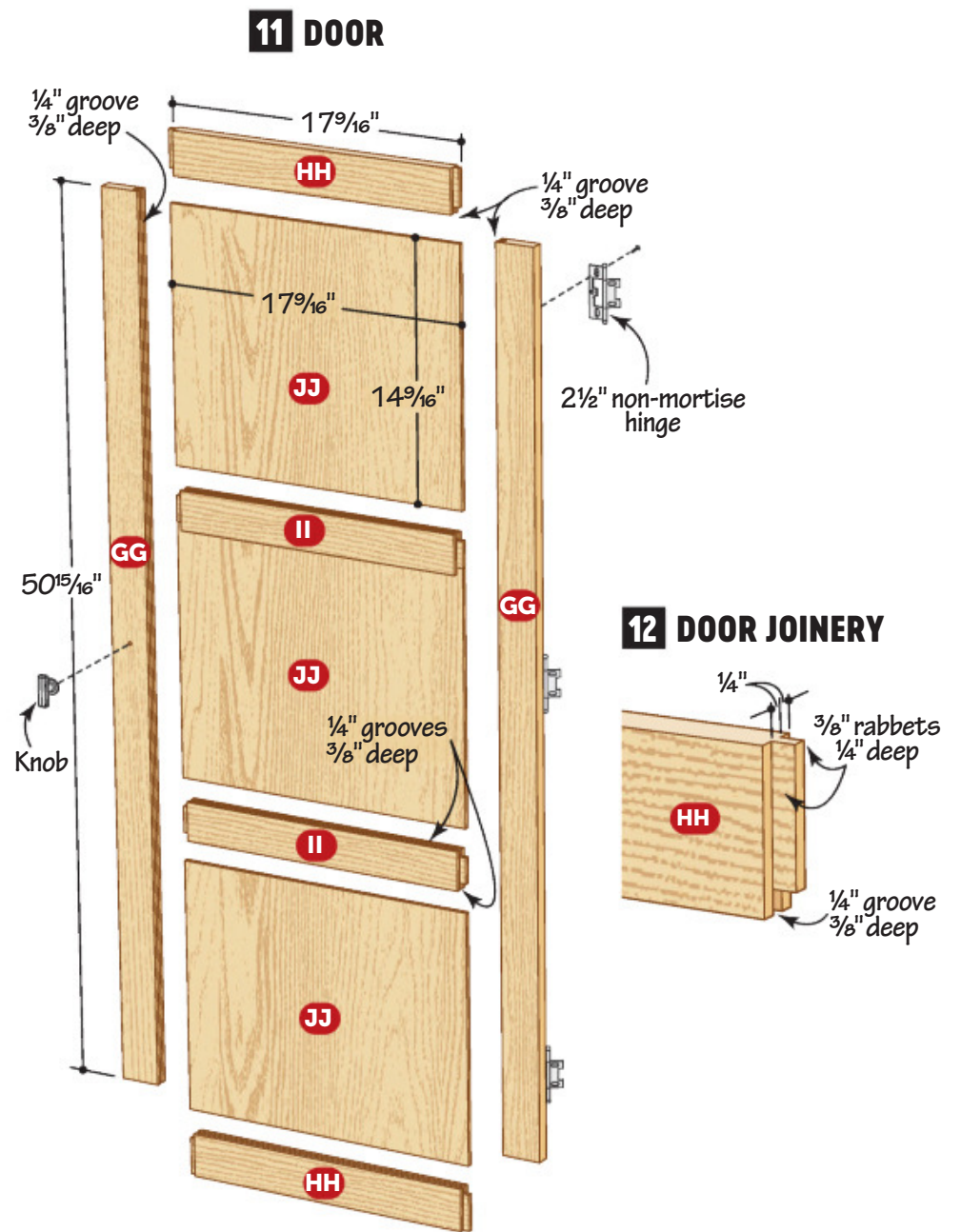


SWINGIN' SALOON DOORS

- 1 Cut the door stiles (GG) and rails (HH, II) to size [Drawing 11]. Cut a groove for the door panels on the inside edge of the stiles and upper/lower rails, and in both edges of the intermediate rails. To do this, use a single blade, flipping the pieces end for end between cuts to center the grooves.
- 2 Form tenons on the ends of the rails to fit the grooves in the stiles [Drawing 12].
- 3 Cut the door panels (JJ) to size [Drawing 11]. Dry-assemble the doors and mark the position of the intermediate rails. Glue and assemble the doors, gluing the panels into place. Finish-sand the doors.

CLOSING TIME

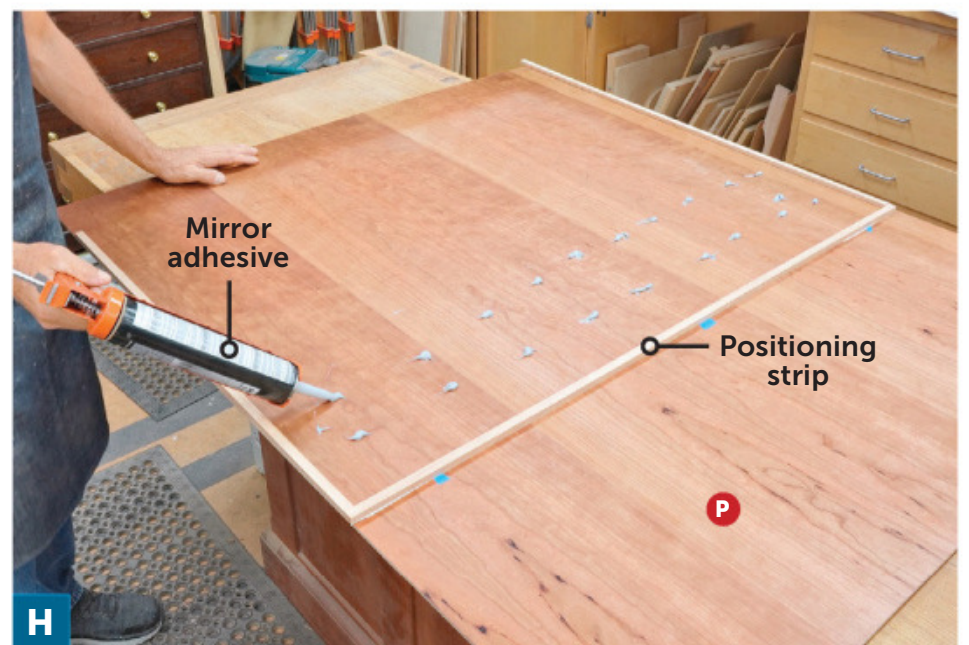
- 1 Finish-sand any remaining parts of the cabinet and base and apply a finish. We used three coats of spray lacquer (Magna Max Dull), sanding lightly between coats.
- 2 Install the drawer slides using the same scrap pieces you cut to install the drawer spacers (N, O) [Photo G]. Attach the front drawer clips to the underside of the drawers [Drawing 8].
- 3 Attach the stemware rack by driving screws through the top of the case, positioning it toward the back to allow front clearance to insert and remove the glasses [Drawing 6]. Mount the doors to the case and install the catches to the doors and upper rail (K). Install the knobs.
- 4 Lay the case back (P) on a flat surface and attach the mirror with adhesive [Photo H]. Allow the adhesive to dry overnight before installing the back with brad nails.



- 5 Center the cabinet on the base and drive screws through the base top (E) into the case. Fill the cabinet with your favorite adult beverages and then pop a cork to celebrate completing this project. 🍷



Use the scrap pieces you cut earlier to locate the upper two sets of drawer slides. The lower slides simply rest on the case bottom. Mount the slides $\frac{5}{16}$ " back from the front of the face frame.



Using double-faced tape, temporarily mount narrow strips of scrap to the case back (P) to position the mirror. Then affix the mirror to the back with dabs of adhesive.

MATERIALS LIST

PART		FINISHED SIZE			Matl.	Qty.
		T	W	L		
A	LEGS	1 1/4"	2 1/4"	23 1/4"	C	4
B	LONG APRONS	3/4"	2 1/2"	39 3/4"	C	2
C	SHORT APRONS	3/4"	2 1/2"	16 7/8"	C	2
D	STRETCHERS	3/4"	1 1/2"	16 7/8"	C	2
E	TOP	3/4"	19 5/8"	44 1/2"	EC	1
F	SHELF	3/4"	17 7/8"	42 3/4"	EC	1
G	CASE SIDES	3/4"	16 1/4"	52"	CP	2
H	CASE TOP/FIXED SHELF/BOTTOM	3/4"	16"	42"	CP	3
I	CASE VERTICAL DIVIDER	3/4"	16"	16"	CP	1
J*	FACE FRAME STILES	3/4"	1 1/2"	52"	C	2
K	FACE FRAME UPPER RAIL	3/4"	2 5/8"	39 3/4"	C	1
L	FACE FRAME LOWER RAILS	3/4"	1 1/2"	39 3/4"	C	2
M	FACE FRAME CENTER STILE	3/4"	1 1/2"	14 1/2"	C	1
N	CENTER DRAWER SPACERS	3/8"	2"	16"	C	6
O	OUTER DRAWER SPACERS	3/4"	2"	16"	C	6
P	CASE BACK	1/4"	42"	51 1/4"	CP	1
Q*	FRONT LOWER TRIM	3/4"	7/8"	44 1/2"	C	1
R*	SIDE LOWER TRIM	3/4"	7/8"	17 7/8"	C	2
S*	FRONT COVE TRIM	3/4"	2 1/8"	45 3/4"	C	1
T*	SIDE COVE TRIM	3/4"	2 1/8"	18 1/2"	C	2
U*	FRONT TRIM CAP	1/2"	2 5/8"	46 3/4"	C	1
V*	SIDE TRIM CAP	1/2"	2 5/8"	19"	C	2
W*	STEMWARE HOLDERS	3/8"	3 1/2"	12 1/2"	C	9

PART		FINISHED SIZE			Matl.	Qty.
		T	W	L		
X	STEMWARE SPACERS	3/4"	3/4"	12 1/2"	C	9
Y	STEMWARE MOUNTING BRACKETS	3/4"	2"	41 1/4"	C	2
Z	DRAWER FRONTS/BACKS	3/4"	3"	18 7/8"	C	12
AA	DRAWER SIDES	5/8"	3"	14 1/2"	C	12
BB	DRAWER BOTTOMS	1/4"	14"	18 1/8"	CP	6
CC	FRONT BOTTLE HOLDERS	3/4"	2 1/4"	17 5/8"	C	4
DD	REAR BOTTLE HOLDERS	3/4"	2 1/4"	17 5/8"	C	4
EE	ADJUSTABLE SHELF	3/4"	15"	41 1/8"	CP	1
FF	ADJUSTABLE SHELF EDGING	3/4"	1 1/2"	41 1/8"	C	1
GG	DOOR STILES	3/4"	2 1/4"	50 15/16"	C	4
HH	DOOR UPPER/LOWER RAILS	3/4"	2 1/2"	17 9/16"	C	4
II	DOOR INTERMEDIATE RAILS	3/4"	2 1/4"	17 9/16"	C	4
JJ	DOOR PANELS	1/4"	17 9/16"	14 9/16"	CP	6

*Parts initially cut oversize. See the instructions.

MATERIALS KEY: C—cherry, EC—edge-glued cherry, CP—cherry plywood

SUPPLIES: #8×1 1/4" flathead screws, #8×1 1/2" flathead screws, 1 1/4" pocket screws, #16×3/4" brads, 1/4" shelf pins, figure-8 fasteners, 1/8×41 1/4×33 3/4" mirror, mirror adhesive.

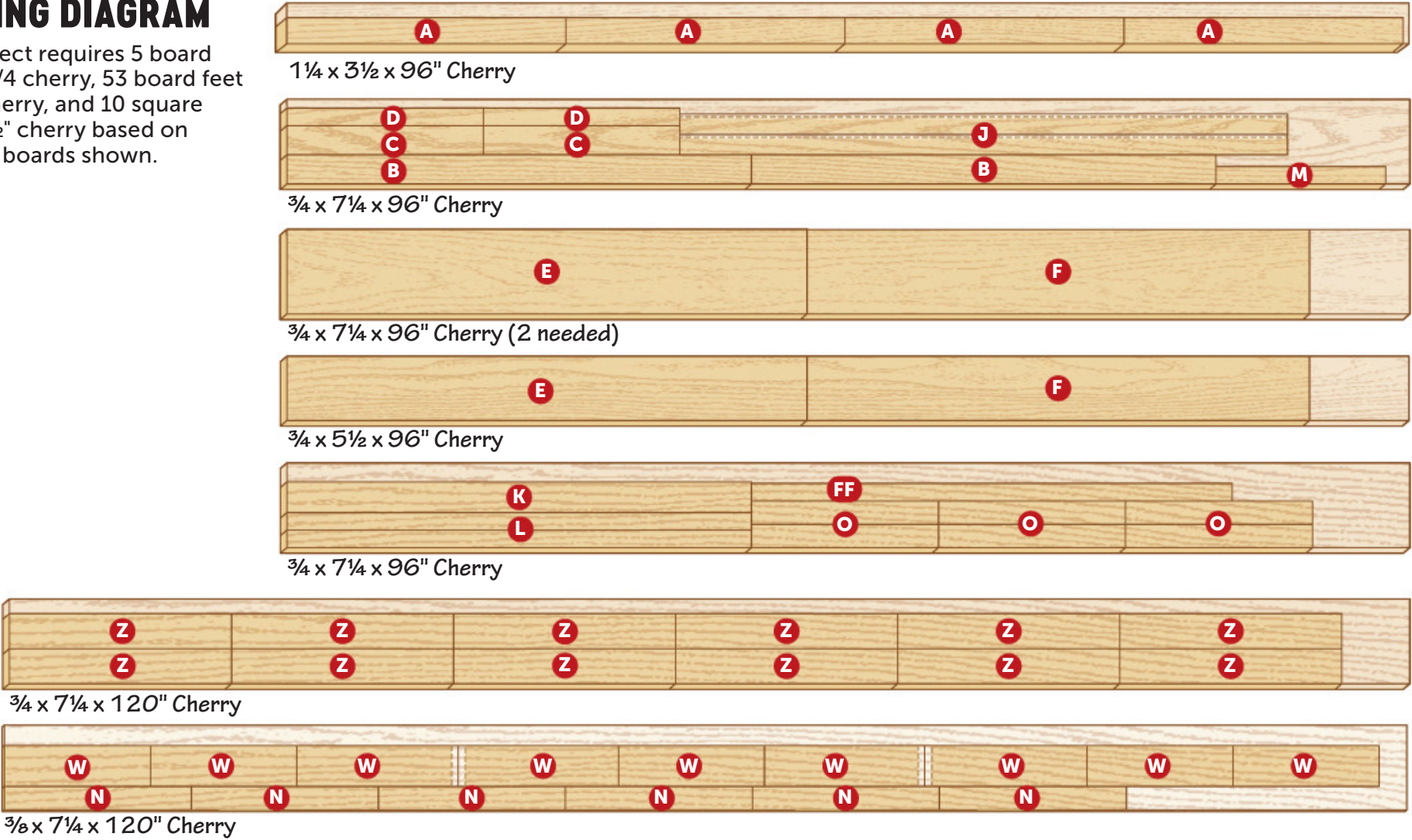
BLADE AND BITS: Dado blade, 3/8" round-over router bit, 1/2" cove router bit, 1/4" spiral upcut router bit, flush-trim router bit, 3/4" Forstner and 6mm drill bits.

SOURCE: 15" drawer slides no. BS563F3810B (6 pairs), \$44 pair; left-hand drawer locking clips no. BST51.1801L (6), \$2 each; right-hand drawer locking clips no. BST51.1801R (6), \$2 each; 2 1/2" non-mortise hinges no. SHC-1100B-PN (6), \$19 each; 1 7/16" magnetic catches no. BK-P109-2C (2), \$3 each; 1 3/4" cabinet knob no. AM-BP37100PN (2), \$12 each, cabinetparts.com.

PROJECT COST: It cost us about \$815 to build this project. Your cost will vary by region and source.

CUTTING DIAGRAM

This project requires 5 board feet of 8/4 cherry, 53 board feet of 4/4 cherry, and 10 square feet of 1/2" cherry based on example boards shown.

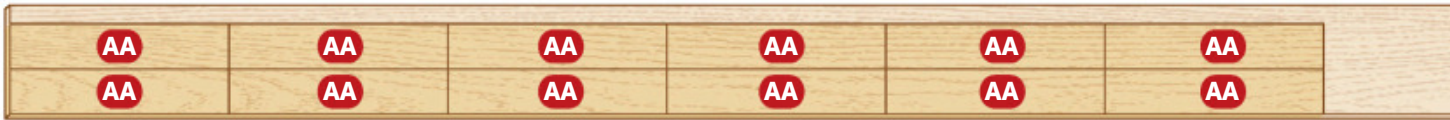




$\frac{3}{4}$ x $7\frac{1}{4}$ x 96" Cherry



$\frac{1}{2}$ x $3\frac{1}{2}$ x 96" Cherry



$\frac{5}{8}$ x $7\frac{1}{4}$ x 96" Cherry



$\frac{3}{4}$ x $5\frac{1}{2}$ x 60" Cherry (2 needed)

$\frac{3}{4}$ x $5\frac{1}{2}$ x 72" Cherry

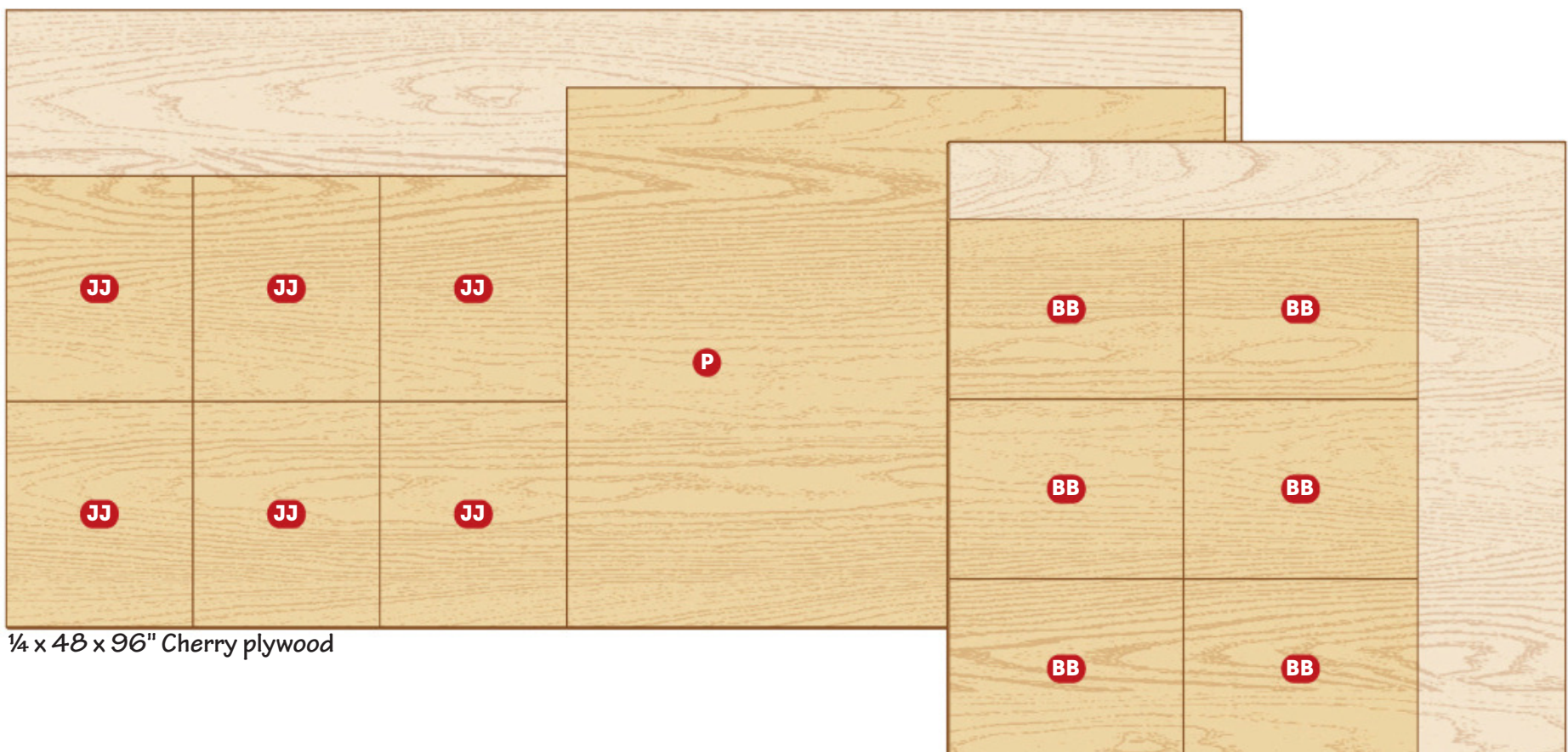


$\frac{3}{4}$ x $5\frac{1}{2}$ x 72" Cherry



$\frac{3}{4}$ x 36 x 48" Cherry plywood

$\frac{3}{4}$ x 48 x 96" Cherry plywood



$\frac{1}{4}$ x 48 x 96" Cherry plywood

$\frac{1}{4}$ x 48 x 48" Cherry plywood



• SHOP TESTED •

12-VOLT DRILLS

We put ten 12-volters through torturous tests to measure their mettle. The results left us impressed.

WRITER: DAVE STONE
TOOL TESTERS: WOOD MAGAZINE STAFF

PHOTOGRAPHERS: JASON DONNELLY, KELSEY HANSEN

Not too long ago, 12-volt power stood as the go-to platform for cordless drills. Today, 18-volt drills dominate the cordless marketplace, leaving fewer 12-volt models to choose from. We wanted to know whether this lower voltage still makes sense, so we gathered ten to test.

We stuck with brands you'll recognize and find in home centers and hardware stores: Black & Decker, Bosch, DeWalt, Hercules, Makita, Milwaukee, and Skil. Yes, there are some big brands you don't see, such as Craftsman, Porter-Cable, and Ridgid, but that's because they no longer offer 12-volt models.

Then we put these drills through tests that tasked the drills more than you likely ever will. To measure runtime, we

first drilled holes in rapid succession with $\frac{3}{4}$ " spade bits through pine 2×6s until the batteries were exhausted. Then we drove $\frac{1}{4}$ ×3" lag bolts (without pilot holes) to exhaust the batteries again. We performed each test twice with each drill and averaged the results in *Performance by the Numbers* on page 53.

To gauge power, we drove progressively larger lag screws into pilot holes to measure power. Spoiler alert: If you want to drive lag screws larger than $\frac{3}{8}$ ", opt for an 18-volt drill.

Of course, we also examined how well the chucks and clutches work, monitored battery charging times, and judged ergonomics. Here are some of the more interesting things we learned.

SIZE STILL MATTERS

While 18-volt drills, and especially their batteries, have shrunk in size, 12-volt drills are still generally a bit smaller, *left*. They won't necessarily fit into smaller spaces, though, because the length required for the chuck, clutch, and motor can only be compacted so much. But the size difference makes them notably easier to handle and at least a bit lighter—largely due to differences in battery weight.

Sizes within our test group vary greatly, too, *below*, and correlate inversely to price. The less expensive Skil DL6290A-10 and DL529002, the Hercules HD91B, and the Black & Decker BDCCDD12C were all larger than their costlier counterparts. If you want to keep your drill as small as possible, a 12-volt platform provides great options.

Tested drills varied in size, from the Bosch GSR12V-300 at 6 $\frac{1}{8}$ " long by 7" tall to the Skil DL529002 at 7" long by 9" tall. All others fell in between. Consider size if you commonly use your drill in tight spaces.



Compared to its 18-volt counterpart (*back*), the Makita FD07R1 (*front*) is smaller, though length from chuck jaws to the motor tail remains similar. The 12-volt is almost 40% lighter, though, at 2.3 lbs. vs 3.7.



BRUSHLESS
ADDS BRAWN

We were impressed, even a bit surprised, with the runtime and power of all of our tested drills except one. A common big-box-store brand, the Black & Decker BDCDD12C was outgunned in this group. Though it never failed, we felt it a tool better suited for occasional use around the house than in the shop.

Six of the remaining nine drills are equipped with brushless motors, and we definitely recommend going that route. In our tests, brushless models drove more lags and drilled more holes than their carbon-brush-equipped counterparts, right (see *Running for Runtime*, below). Brushless drills also spun faster and maintained higher speeds under load.

During our rapid-fire drilling and driving tests, we did run into one more factor that can limit capacity: overload protection. This electronic circuit monitors battery temperature, and shuts the battery down to protect it if heat rises too high. In our admittedly overtaxing tests, we experienced shutdown once with the DeWalt DCD701F2, a couple times with the Makita FD07R1 and FD09R1, and once with the Skil DL6290A-10. The Milwaukee 3403-22 kicked into overload shutdown



The brushless Makita FD07R1 (left) and carbon-brush FD09R1 (right) use the same batteries. But the brushless model drilled almost twice as many 3/4" holes per charge (46 vs 27 on average).

several times. In all cases, we were able to continue our tests after the battery cooled. In normal use, you may never experience overload shutdown.

Brushless made a slight difference in power, but not a big one. In our attempts to drive progressively larger lag screws, all the drills sunk 1/4x3" lags into pilot holes in 4x4 pine, and all but the Black & Decker handled 5/16x3" lags. None seated 3/8" lags completely, but the brushless models drove them farther than the drills with carbon-brush motors.

RUNNING
FOR
RUNTIME

To measure runtime, we drove 1/4x3" lag screws into 4x4 pine boards until the batteries were depleted, repeating the test twice for each drill. We also drilled 3/4" spade bit holes through 2x6s averaging two tests. The results are shown at right.



LAG SCREWS DRIVEN
[1/4x3", no pilot holes, average of two tests]



BATTERIES & CHARGERS VARY

Most of our test field come with 2.0 amp-hour (Ah) batteries. Black & Decker includes a 1.5 Ah battery. The Hercules sells as a bare-tool only, with the 2.0- (tested) or 4.0-Ah battery and charger sold separately. Milwaukee includes a 2.0- and 4.0-Ah battery with the drill. We tested with the 2.0 to level the playing field, but used the 4.0-Ah battery to achieve much longer run times. Only Bosch and Milwaukee use stick-style batteries, *right*. These make the handles fatter, especially on the Bosch drills, and provide less-stable footing for standing the drill up than flat-pack batteries. We found no power performance differences, though, that we could attribute to battery style.



Milwaukee (shown) and Bosch use stick-style batteries that slide into the handle, making the grip area fatter. DeWalt (shown) and the other tested drills use a flat-pack battery that sits below the handle.

“

THESE DRILLS WON’T REPLACE AN 18-VOLT DRILL FOR BRUTE FORCE, BUT PACK AMPLE POWER FOR ALL OF OUR EVERYDAY WOODWORKING TASKS.

-DAVE STONE, MANAGING EDITOR

”

HOLES DRILLED

[3/4" spade bit, average of two tests]

BLACK & DECKER

BDCDD12C

10

BOSCH

GSR12V-300

42

BOSCH

PS31-2A

28

DEWALT

DCD701F2

43

HERCULES

HD91B

33

MAKITA

FD09R1

43

MAKITA

FD07R1

47

MILWAUKEE

3403-22

37

SKIL

DL6290A-10

44

SKIL

DL529002

49



Manufacturers with two models in our test field used the same batteries for both tools, as well as the same chargers. So, we swapped them around to ensure we kept them random for those drills.

Chargers come in several styles, *right*. Skil chargers add a unique “power jump” feature that charges a depleted battery to 25% capacity in five minutes. Those and other chargers refreshed batteries completely in 40–60 minutes except the small Black & Decker that required close to 3.5 hours.



Skil's chargers (*left*) offer a rapid partial charge and a USB port. Bosch chargers (*middle*) required slightly longer charging time—60 minutes on average—than all except the Black & Decker (*right*).



LEDs mounted near the drill base, such as the DeWalt (*left*) create smaller shadows than LEDs mounted beneath the clutch like the Bosch (*right*). LED power ranged from disappointingly dim to helpfully bright.

ERGONOMICS, LEDS, & MORE

Use a drill on occasion and you may not notice much about ergonomics. Drill and drive hundreds of times with ten models over the course of a few days, though, and you'll find little things can make a big difference. Bosch handles are fatter than the others, for example, which fatigued our hands faster. But they, and especially Milwaukee, position the drill body at an angle to the handle that keeps your wrist in a more-natural position, which we appreciate.

Overall balance was good across all tested drills, and other features we thought might vary were consistent. For example, all the clutches were easy to adjust and performed well in our tests of driving large and small screws. The triggers were easily variable. And the chuck jaws all firmly held onto tiny bits ($\frac{1}{16}$ ") as well as the largest bits the drills could handle ($\frac{3}{8}$ " or $\frac{1}{2}$ "). So, none of those factored into our overall ratings.

LED light performance, though, affected our ratings more than expected. You may not drill or drive in the dark often, but when you do, you'll appreciate having an effective light, *left*.

DRILLING DOWN TO THE WIN

Heading into this test, we had some doubts whether 12-volt drills could perform comparably to higher voltage models. We were impressed, though, with how well these tools did. They won't replace an 18-volt drill for brute force, but they pack ample power for all of our everyday woodworking tasks. And their lower weight reduces fatigue compared to their higher-volt cousins. That means a 12-volter can absolutely earn a spot in our shops.

In the end, we award Top Tool to the DeWalt DCD701F2. It performed at or near the top in every test, and offered good ergonomics. The Milwaukee 3403-22 earns an honorable mention. Including a 4.0-Ah battery is a bonus with this model, but we wish it had a less-zealous overload overlord.



Top Value goes to the Skil DL529002. It costs less than half as much as the DeWalt, it consistently outperformed our expectations and it had some handy features built into its charger. Its size and lack of a second battery were the main things keeping it out of Top Tool contention. 🌳



PERFORMANCE BY THE NUMBERS

MODEL	PERFORMANCE (1)				MOTOR TYPE (2)	SPEED RANGE, RPM	MAXIMUM BIT CAPACITY	STATED TORQUE, IN/LBS (3)	NUMBER OF BATTERIES	BATTERY AMP HOURS	BATTERY CHARGE TIME, MINUTES (4)	WEIGHT (LBS WITH BATTERY)	WARRANTY	PRICE AS TESTED (5)
	RUNTIME	POWER	ERGONOMICS	LED LIGHT EFFECTIVENESS										
BLACK & DECKER BDCDD12C	C	C-	C	C	C	0–550	3/8"	NR	1	1.5	206	2.2	2 YRS	\$40
BOSCH GSR12V-300	B+	B	B	D	BL	0–460/0–1,750	3/8"	300	2	2.0	59	2.2	1 YR	\$140
BOSCH PS31-2A	B-	B	B	D	C	0–350/0–1,300	3/8"	265	2	2.0	61	2.3	1 YR	\$109
DEWALT DCD701F2	A-	A	A	A	BL	0–425/0–1,500	3/8"	250	2	2.0	50	2.4	3 YRS	\$149
HERCULES HD91B	B	B	B	D	C	0–400/0–1,500	3/8"	312	0*	2.0*	48	2.5	90 DAYS	\$110*
MAKITA FD09R1	B+	B	B	D	C	0–450/0–1,700	3/8"	250	2	2.0	54	2.4	3 YRS	\$109
MAKITA FD07R1	A	B	B	C	BL	0–450/0–1,500	3/8"	280	2	2.0	54	2.3	3 YRS	\$199
MILWAUKEE 3403-22	A-	A	B	B	BL	0–450/0–1,550	1/2"	400	2	2.0, 4.0	40	2.5	5 YRS	\$169
SKIL DL6290A-10	A-	A-	B-	A	BL	0–450/0–1,700	1/2"	350	1	2.0	48	2.5	5 YRS	\$70
SKIL DL529002	A	A-	B-	A	BL	0–450/0–1,700	1/2"	350	1	2.0	46	2.3	5 YRS	\$70

1.

A

Excellent

B

Good

C

Fair

D

Poor

N/A

Not applicable
2.

(BL) Brushless motor

(C) Carbon-brush motor
3.

(NR) Torque not stated
4.

Average of charging fully depleted, room-temperature batteries two times.
5.

Prices current at time of article production and do not include shipping, where applicable.

(*) Drill sold as a bare tool only; 2.0-Ah battery (\$25) and charger (\$45) sold separately.



HANDY HALL TREE

Boost coat storage in any entryway with this elegant, compact, floor-standing coat rack.

WRITER: ZACH BROWN

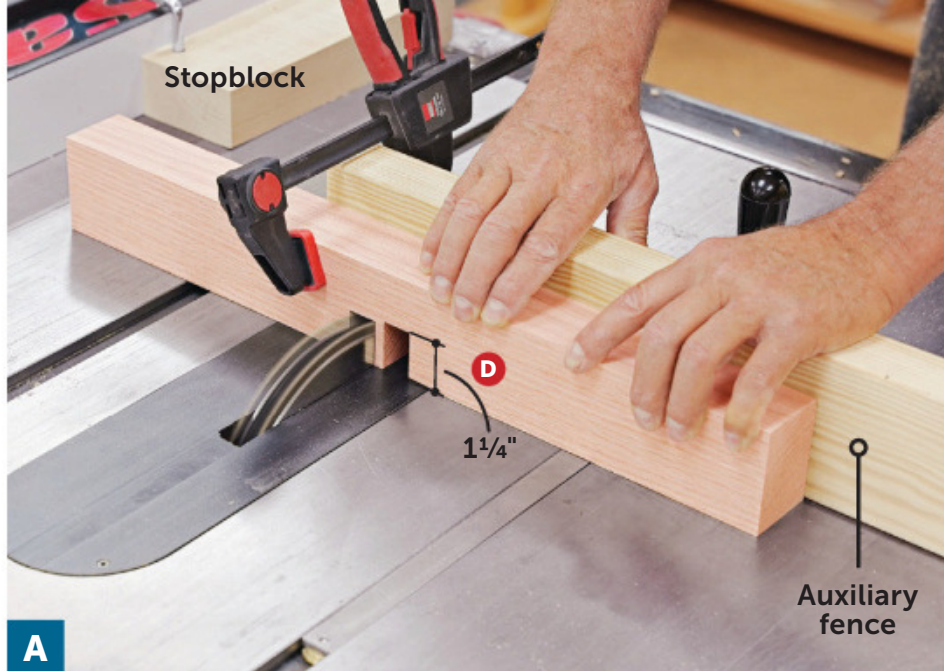
DESIGNER: JOHN OLSON

BUILDER: BRIAN BERGSTROM

With a sturdy base, this coat rack is beefy where it counts before transitioning to a minimal tapered post. We've included a pattern for the braces so you can easily lay out our curved design, or you can choose your own brace adventure. Either way, you'll end up with a project you can hang your hat on.

OVERALL DIMENSIONS
20"W x 20"D x 66³/₄"H

PHOTOGRAPHER: JASON DONNELLY; ILLUSTRATORS: ROXANNE LEMOINE, LORNA JOHNSON



A Attach a stopblock to the tablesaw fence to position one end of the centered notch and make the first cut. Flip the workpiece end-for-end, cut the other end of the notch, then remove the waste in between.

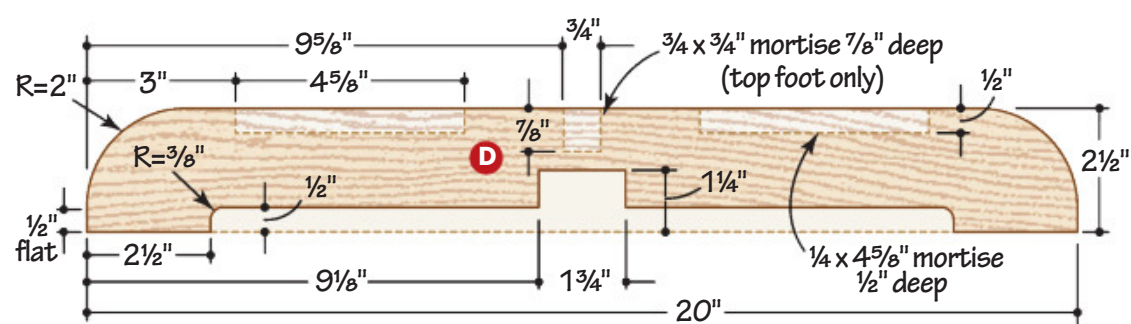
B Install a $\frac{1}{4}$ " chisel in the mortising machine and position the fence to center the mortise on the feet (D). Mortise the notched face of the lower foot (above) and the face opposite the notch on the upper foot.

JUMP INTO JOINERY

- 1** Cut the post, hooks, braces, and feet (A–D) to size [Materials List]. Install a dado set in the tablesaw raised to $1\frac{1}{4}$ " and cut the centered notch in each foot (D) [Drawing 1, Photo A].
- 2** Lay out and cut the $\frac{1}{4}$ " mortises in the top face of each foot (D) [Drawing 1, Photo B] and the lower mortises on all four faces of the post (A) [Drawing 2].
- 3** Cut the $\frac{7}{8}$ "-deep square mortise on the upper foot (D) and the through-mortises on the post (A) [Drawings 1, 2]. We used the same $\frac{1}{4}$ " chisel at the mortising machine and adjusted the fence between passes to achieve the required width.

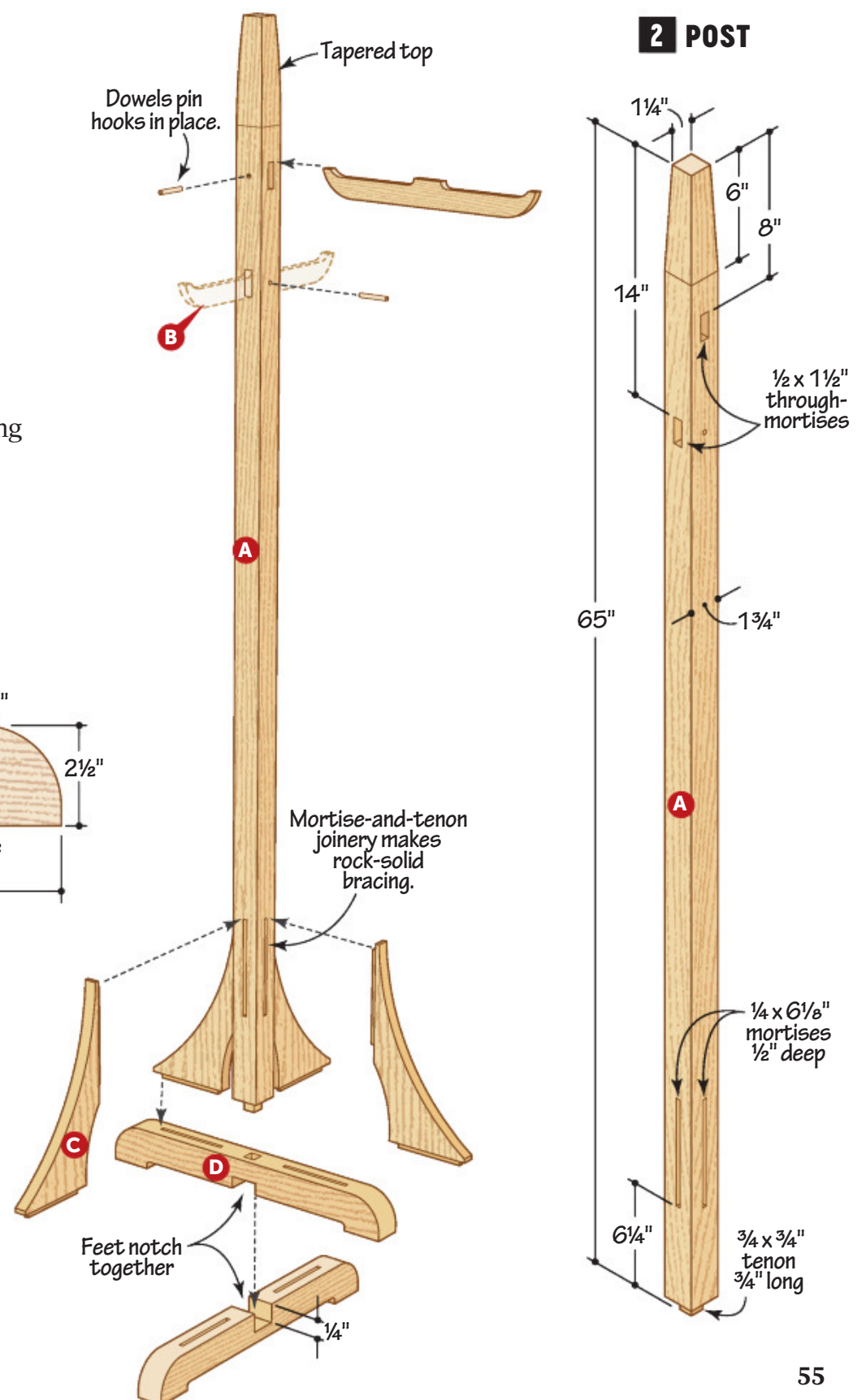
EXPLODED VIEW

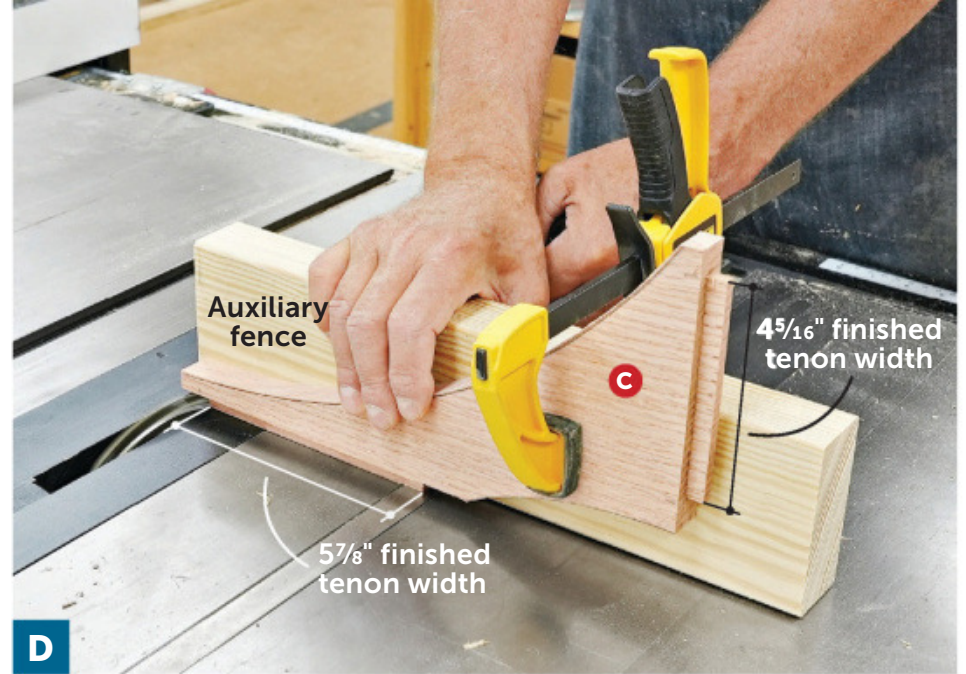
1 FOOT (upper foot shown)



Learn three ways to master mortises with or without a mortising machine.
woodmagazine.com/
mortisemastery

2 POST





Bury the dado blade in an auxiliary rip fence leaving $\frac{3}{8}$ " exposed, and raise the blade for a $\frac{1}{4}$ "-deep cut. Make a tenon in scrap of matching thickness and test the fit. Then cut the tenons on each brace.

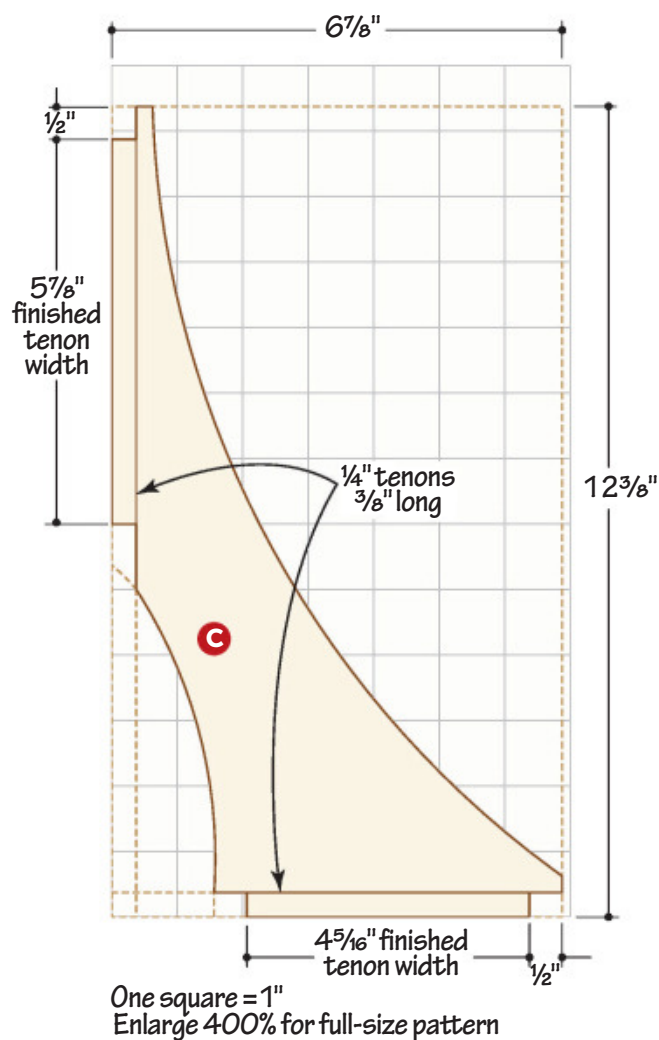
Use the dimensions shown in the pattern to lay out the tenon location. Then adjust the dado blade height to $\frac{3}{8}$ " and use a miter gauge to trim the brace (C) tenons to width.

Note: The mortises in the post and feet are longer than the finished tenon width on the braces to ease assembly later.

4 Retrieve the braces (C) and use the gridded pattern to lay out the curves [Drawing 3], but don't cut them yet. Form the tenons [Photo C]. Bandsaw the curves and sand them smooth, then trim the tenons to final width [Photo D].

5 Form the tenon on the bottom end of the post (A) [Drawing 2]. Lay out and cut the taper on the top of the post [Photo E], then sand the cuts smooth.

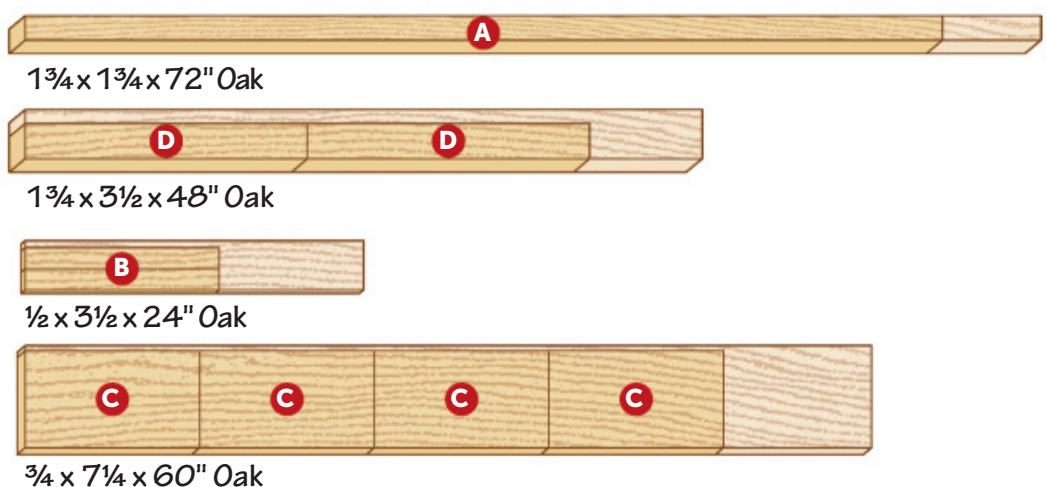
3 BRACE GRIDDED PATTERN



Lay out the taper on one face of the post (A) and bandsaw those cuts. Then, rotate the post 90°, lay out the taper on the newly sawn surface, and make the last two cuts (above).

CUTTING DIAGRAM

This project requires 4 board feet of 8/4 oak, 3 board feet of 4/4 oak, and 1 square foot of $\frac{1}{2}$ " oak based on example boards shown.



SHAPING AND ASSEMBLY

1 Lay out the relief cuts on the bottom of each foot and the top edge of the hooks (B) [Drawings 1 and 4]. Bandsaw the cuts to rough shape, staying $\frac{1}{16}$ – $\frac{1}{8}$ " away from your layout line, then move to the router table to finish the job [Photos F and G].

2 Lay out the round-overs on the feet (D) and hooks (B) [Drawings 1 and 4], then bandsaw and sand them to shape.

3 Begin assembling the coat rack by gluing and clamping the feet (D) together at the notch joint [Exploded View]. Once the glue dries, glue the post tenon into the mortise on the top foot, checking for square with the top faces of the feet. Then add the braces (C) [Photo H].

TIP!

Use a sharp brad-point bit, and masking tape on the exit side of the holes to prevent tear-out on the post.

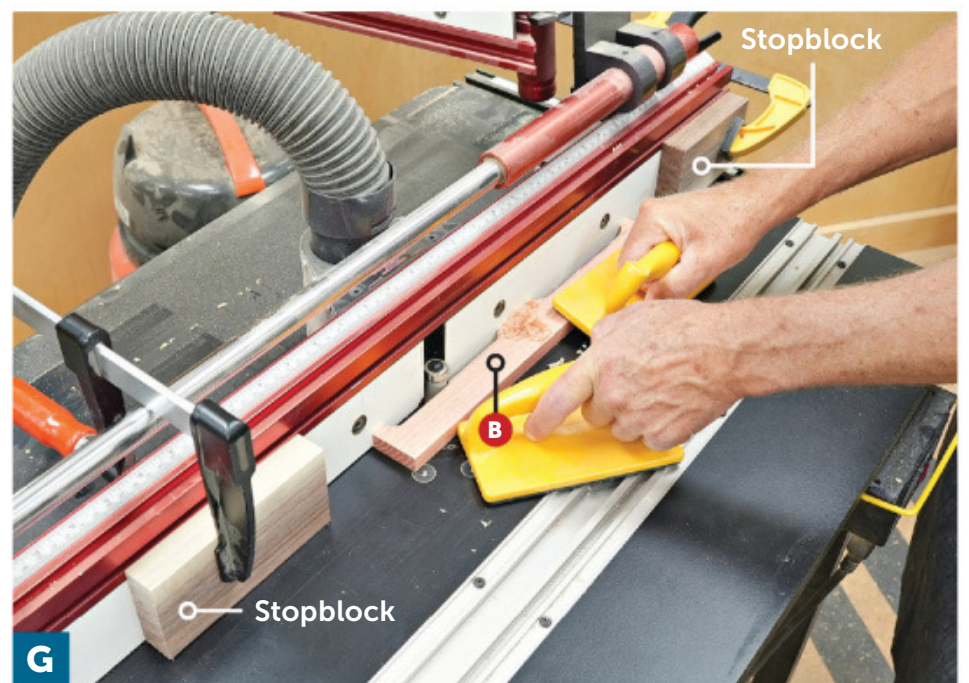
4 Insert the hooks (B) into the through-mortises in the post (A) [Exploded View]. Drill a $\frac{1}{4}$ " hole through the post and hooks at the center of each hook. Glue a $\frac{1}{4}$ " oak dowel into each hole and trim it flush.

5 Finish-sand the coat rack, easing any sharp corners, then apply a finish. We stained our coat rack with Varathane Fast-Dry (Kona color), then sprayed on three coats of matte lacquer, buffing between coats with fine steel wool.

6 Set up your coat rack in your entry and use it for years of handy hanging. 🌲

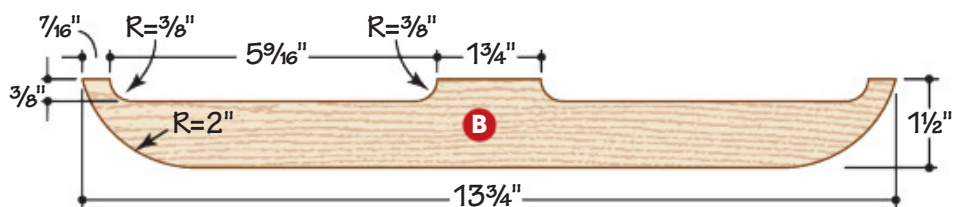


Install a $\frac{3}{4}$ " flush-trim bit in the router table. Attach stopblocks to a long auxiliary fence to set the starting and stopping points of the cut. Position the fence $\frac{1}{2}$ " behind the face of the bit to make a $\frac{1}{2}$ "-deep cut.



Remove the auxiliary fence, lower the bit height, and adjust the router table fence to make a $\frac{3}{8}$ "-deep cut. Reposition the stopblocks and rout the hook (B) reliefs to final shape.

4 HOOK



MATERIALS LIST

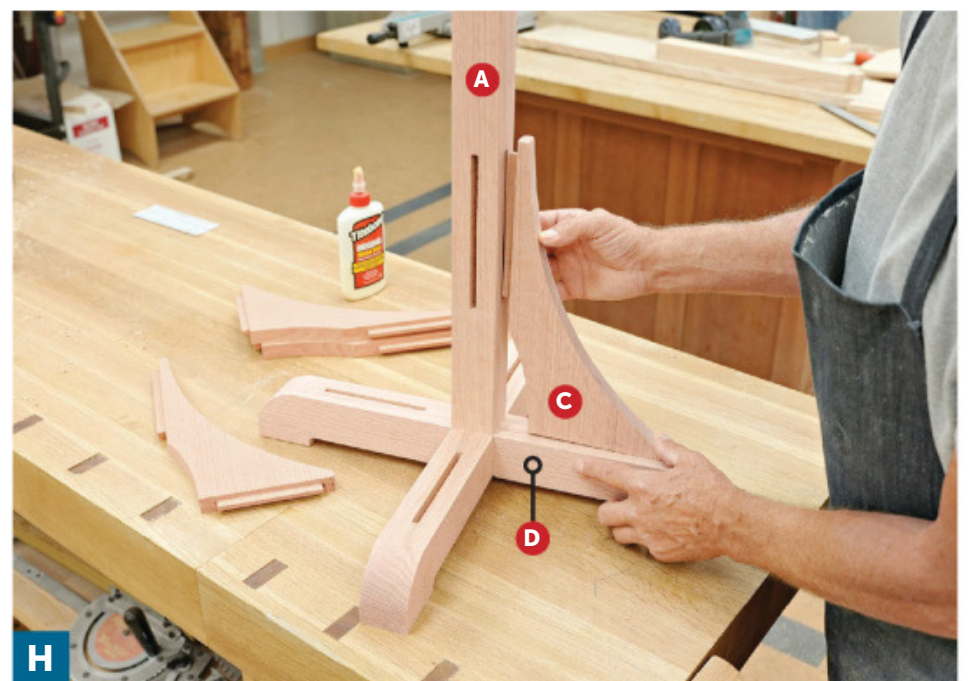
PART		FINISHED SIZE			Matl.	Qty.
		T	W	L		
A	POST	1 3/4"	1 3/4"	65"	O	1
B	HOOKS	1/2"	1 1/2"	13 3/4"	O	2
C	BRACES	3/4"	6 7/8"	12 3/8"	O	4
D	FEET	1 3/4"	2 1/2"	20"	O	2

MATERIALS KEY: O—oak.

SUPPLIES: $\frac{1}{4}$ " oak dowel.

BLADE AND BITS: Dado set, $\frac{1}{4}$ " mortising bit, $\frac{3}{4}$ ×2" flush-trim router bit.

PROJECT COST: It cost us about \$75 to build this project. Your cost will vary by region and source.



Apply glue to the brace (C) tenons and the mortise in the foot (D) and post (A), then slip the braces into place. The mortises are longer than the tenons to allow you to fit the braces in place without interference.



4-CORNER MATCH GAME

Making a box with matched grain on all four corners seems impossible. But it's actually pretty simple once you know the secret.

WRITER: VINCE ANCONA

A small box presents the perfect opportunity to showcase that special piece of wood you've been saving. Cutting the sides of the box in sequence from a single board highlights the natural beauty of the wood by creating a box where the grain runs around three of the four corners. But the fourth corner, where the two mismatched ends of the board meet, can be a letdown. That is, unless you know the secret of a four-corner match or continuous-grain box.

In a mindbender worthy of Escher, this technique lets you wrap the grain around all four corners of the box in an endless path. As impossible as that seems, the solution is actually pretty simple. Resawing a single board into book-matched panels results in two mirror-image blanks. Cutting the four sides of the box from these two blanks in sequence creates the appearance of continuous grain around all four sides of the box. Let's look at how it's done.

PHOTOGRAPHERS: JASON DONNELLY, KELSEY HANSEN
ILLUSTRATORS: ROXANNE LEMOINE, LORNA JOHNSON

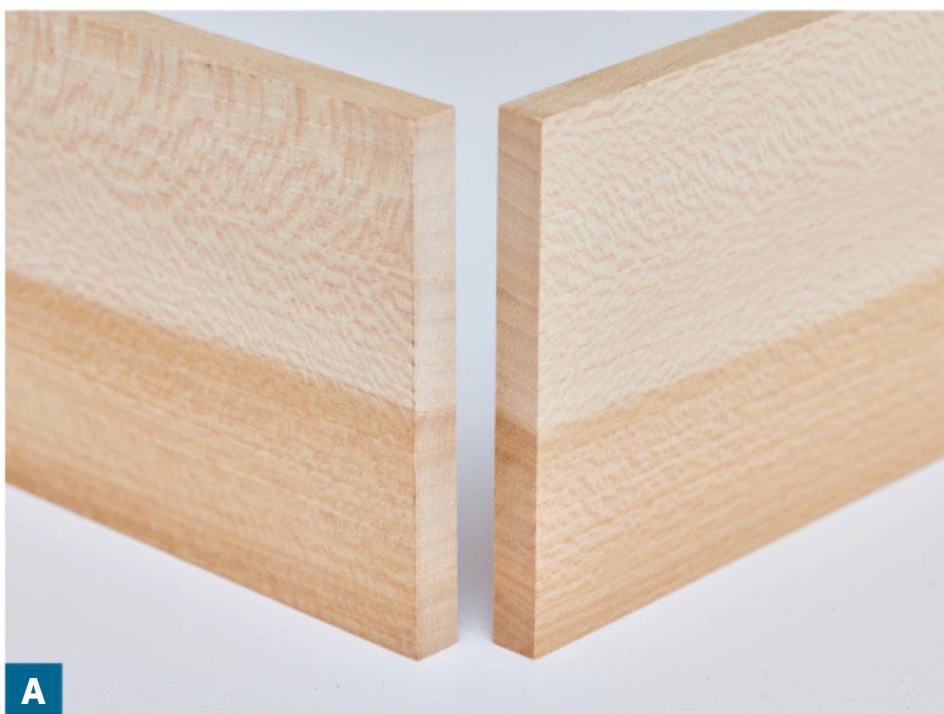
CHOOSE & PREP YOUR BLANK

This technique works best with boards that have a distinctive grain or color pattern. Streaks, sapwood, or wild grain are all fair game. Avoid featureless, plain vanilla boards. Quartersawn boards with vertical end grain will result in a nearly perfect grain match [Photo A]. Riftsawn or plainsawn boards won't be a spot-on match, but passably close [Photo B].

Choose a board that is twice the desired thickness of your finished box sides, plus another $\frac{3}{16}$ " to $\frac{1}{4}$ " for resawing and surfacing. For the box shown on the *previous page*, we started

with $\frac{13}{16}$ " lumber, which yielded box walls that are approximately $\frac{5}{16}$ " thick.

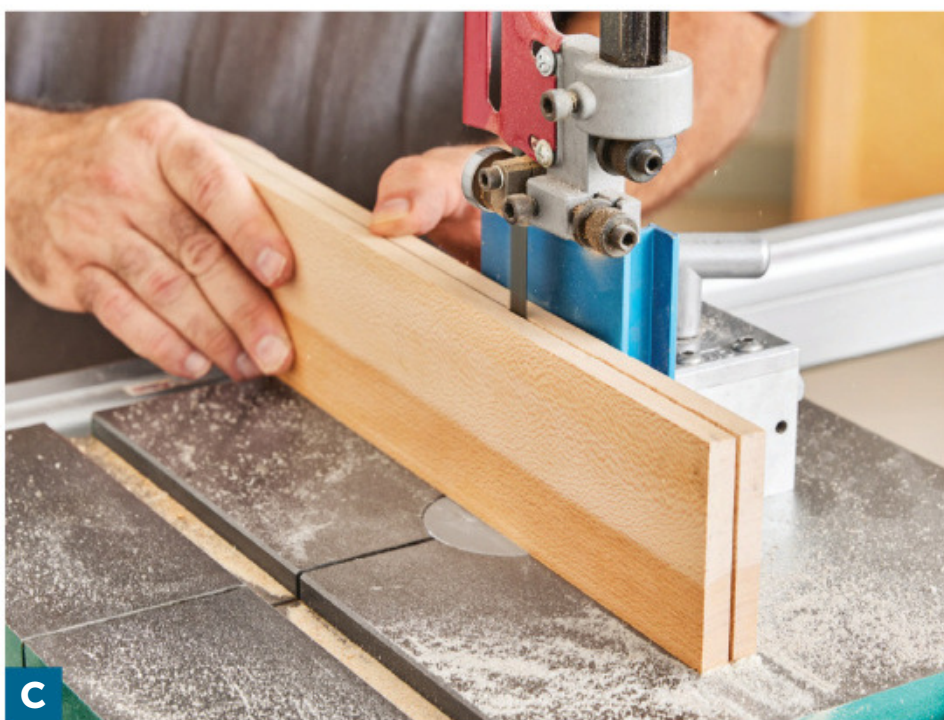
After choosing your board, prepare it for resawing by jointing one edge and one face and then planing the opposite face parallel with the first. Rip the blank to width, which determines the height of your box. To calculate the blank length, add the length of two adjacent sides of the box, plus another $\frac{1}{4}$ " to $\frac{1}{2}$ " to account for the saw kerfs. To make the 6×9" box shown here, we started with a blank $15\frac{3}{8}$ " long. Square one end of the blank and then cut the other end to length.



After resawing, quartersawn lumber yields a nearly perfect grain match due to the end grain running 90° to the faces of the board. The tight flecking of this sycamore further camouflages any discrepancy.



The end grain of plainsawn or riftsawn boards runs diagonally. Due to the kerfs created during resawing and mitering, the grain pattern shifts slightly, resulting in a close, but not-quite-perfect, match.



Using a single-point fence or rip fence, resaw the board into two halves following the centerline. A wide blade tracks straighter, leaving cleaner faces on the boards that require less cleanup.

RESAW AND LAY OUT

The key to maintaining the flow of the grain pattern is to remove as little material as possible when resawing, surfacing, and mitering the sides of the box. The other challenge is keeping track of the orientation of the box sides so that you can put them together in the correct sequence.

Start by drawing a cabinetmaker's triangle on the end of the board. This will help you orient the pieces properly after resawing. Draw a line down the center of the board along one edge.

At the bandsaw, resaw the board, cutting as straight as possible [Photo C]. These resawn faces become the outer faces of your finished box.

Remove any blade marks using a drum sander or thickness planer, removing as little material as possible from the resawn faces [\[Photo D\]](#). If you wish to reduce the thickness of the boards further, plane the faces opposite the resawn faces.

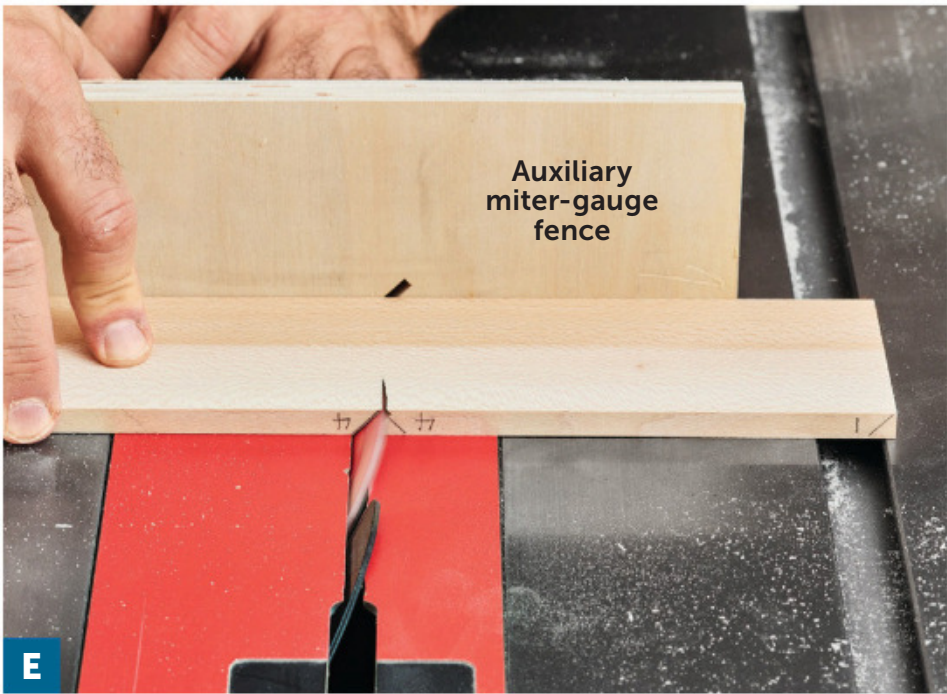
To lay out the sides of the box, place the boards face to face in their original configuration by lining up the triangle you drew and lay out the miter cuts on the top edges [\[Drawing\]](#). Number the mating corners of the box so that you'll be able to properly arrange the boards at assembly time.



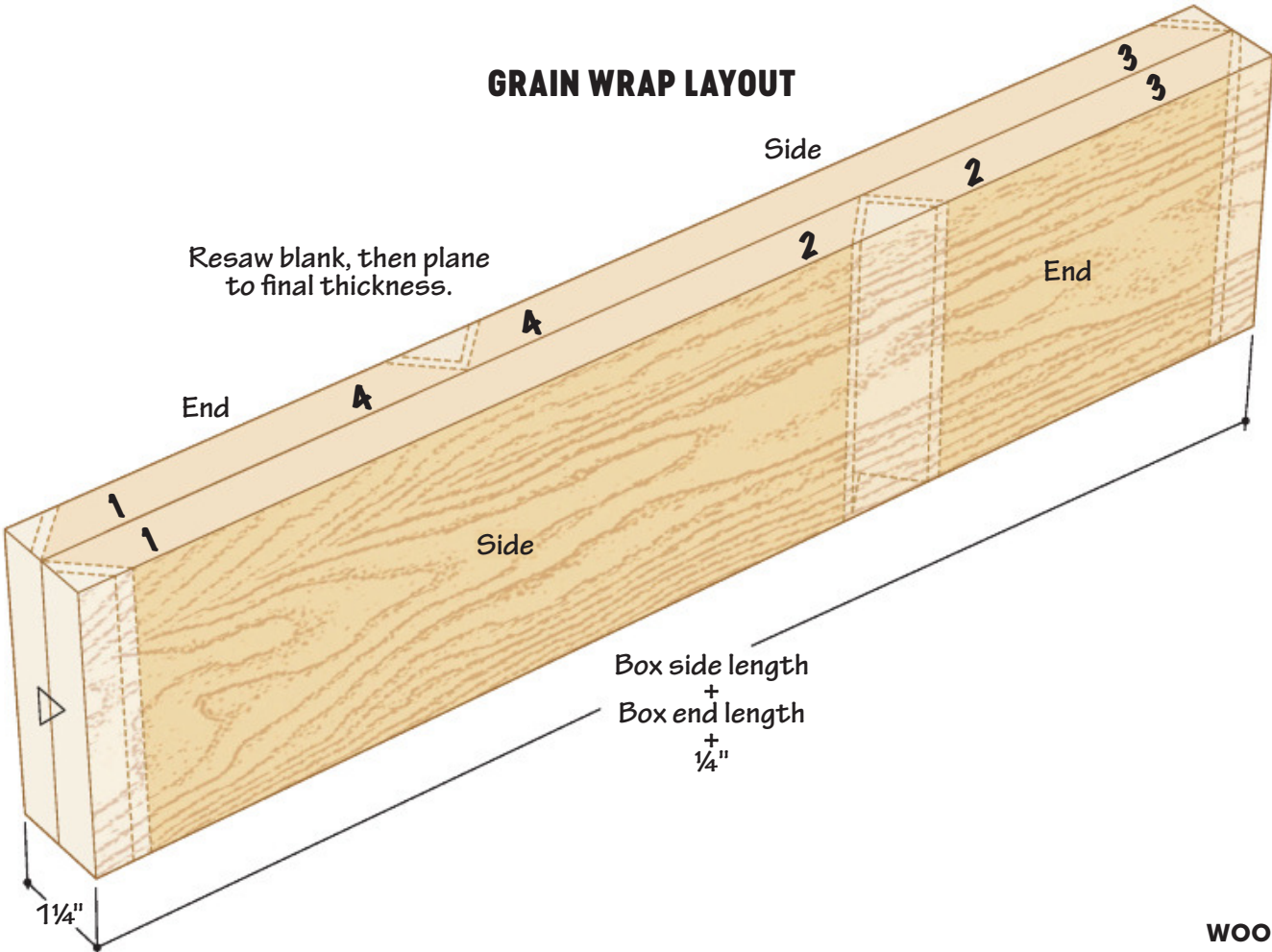
D With a planer or drum sander, remove any saw marks from the resawn faces of the blanks. Remove only enough material to make the surfaces smooth.

MITER THE SIDES TO LENGTH

We used a tablesaw to miter the box sides to length. Tilt the blade to 45° and raise it high enough to just break through the surface of the blank in order to keep the width of the kerf between the two adjoining box sides as small as possible. Paying attention to your layout marks, miter the mating ends of the two sides on each blank [\[Photo E\]](#). Then set up a stopblock to miter the opposite ends of each opposing pair of box sides, ensuring they are identical in length [\[Photo F\]](#).



E With your blade tilted 45° and raised just high enough to barely cut through the blank, miter cut one end of each box side, removing as little material as possible.





F Once all the pieces are mitered at one end, set up a stopblock to miter the other end and ensure that opposing sides of the box are identical in length.



G Lay the box sides out in order, end to end with the outside faces up. Place painter's tape across the joints to act as hinges when gluing the box together.

Cut a groove on the inside face of all four box sides to accept the box bottom. (Pay attention to which edge is top and which is bottom when cutting the grooves.) After cutting a bottom panel to size, finish-sand the inside faces of the box sides and glue them together around the bottom [\[Photos G-J\]](#).

ADD A LID

Because the continuous grain is the star of the show, we kept the lid simple. We used a flat panel, rabbeted to fit the opening of the box and chamfered on the edges. You could add a small handle to the top of the lid if you're so inclined. After sanding the lid and exterior of the box, add a finish. Then show off the magic continuous-running grain to your friends and family. 🌲



H Flip the taped box-side assembly over and apply glue to the miter joints with a glue brush. Use a sparing amount of glue to avoid excessive squeeze-out.



I Fold the taped sides around the bottom of the box and add tape to the last corner of the box to hold it together. Check that the miter joints line up at each corner.



J The painter's tape should provide enough clamping pressure while the glue dries. But if the box is slightly out of square, apply clamps to pull the corners square.



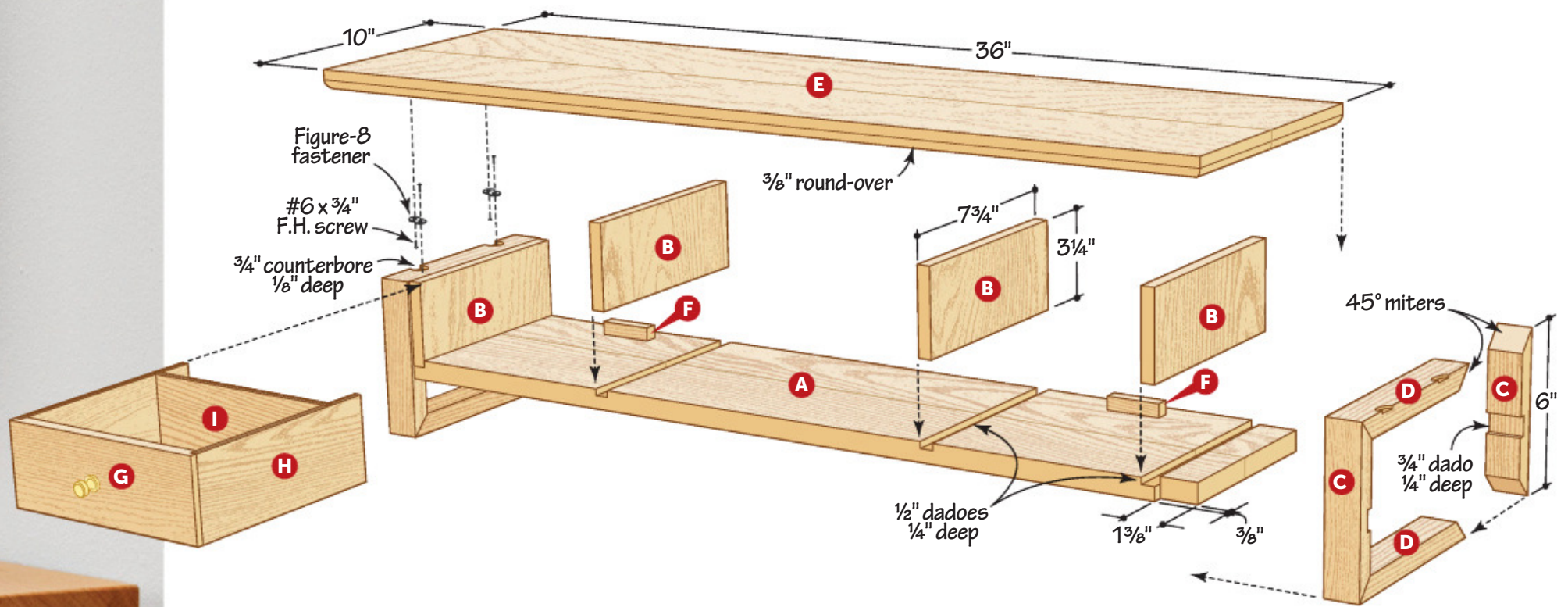
SPACE-SAVING MONITOR STAND

Clean up your workspace by parking a monitor on this handy riser and your laptop on the shelf. Drawers and a cubby offer bonus storage, and your keyboard slips underneath.

WRITER: KERRY GIBSON
DESIGNER/BUILDER: KEVIN BOYLE

OVERALL DIMENSIONS
36"W x 10"D x 6³/₄"H

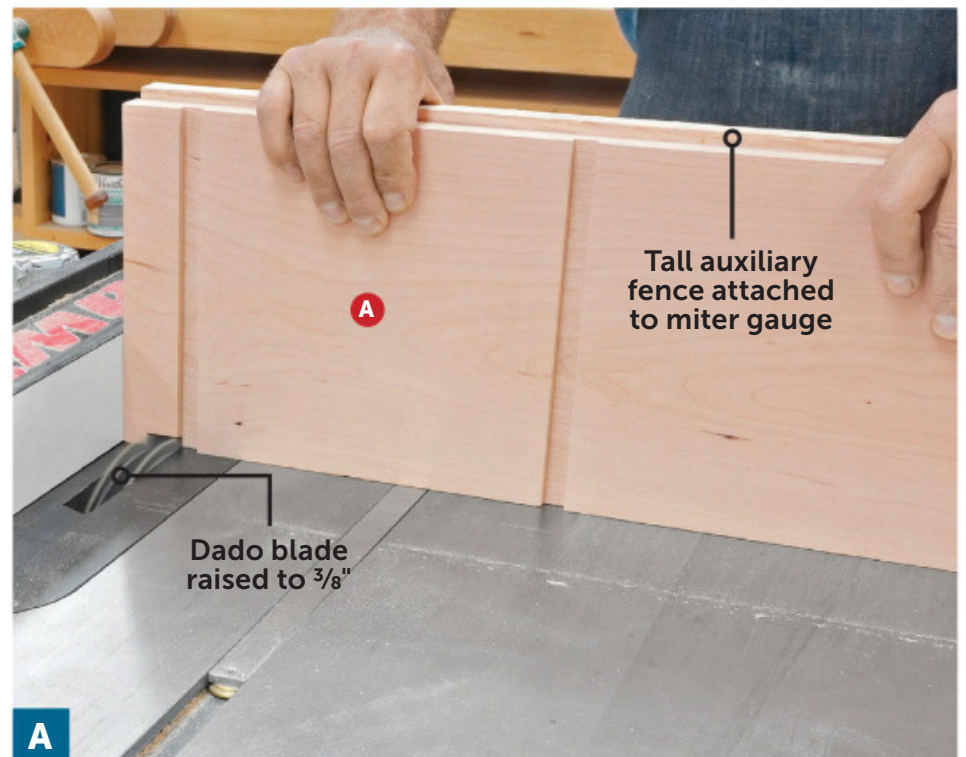
EXPLODED VIEW



Working remotely doesn't have to mean sacrificing office ergonomics. This stand supports one or more monitors and boosts them above the desktop. Drawers on each side add storage for desktop essentials. Space between them holds your closed laptop. If yours measures wider than 13¹/₄", you can lengthen the stand to suit.

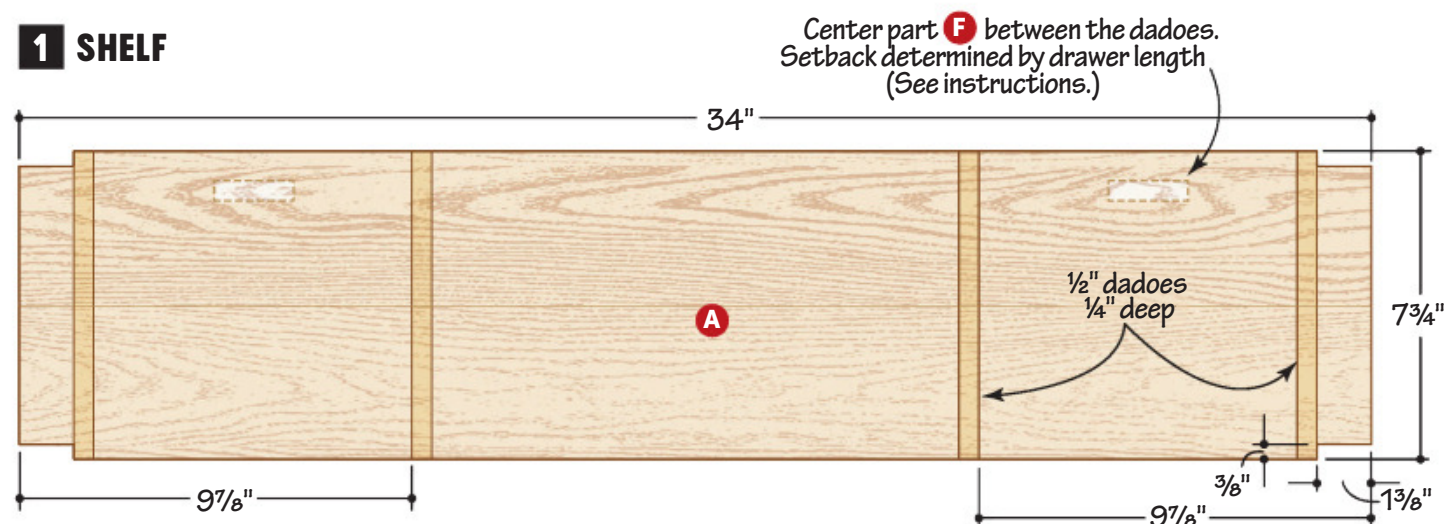
START WITH THE CASE

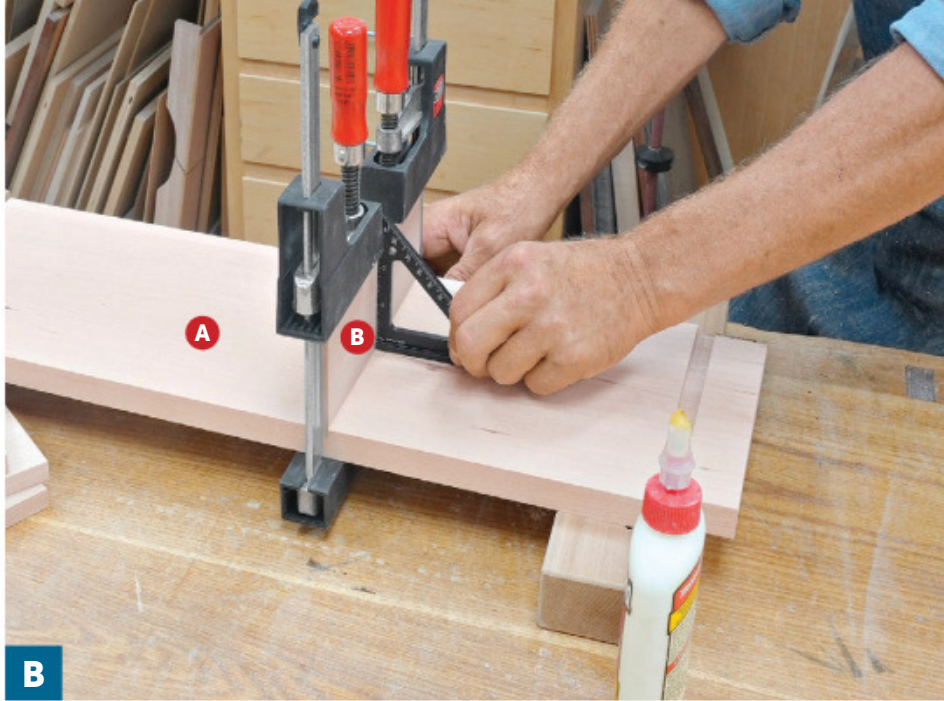
- 1 From 3/4" stock, edge-glue blanks for the shelf (A) and the top (E). Set the top aside. When the glue dries, cut the shelf to finished size [Materials List].
- 2 Install a 1/2" dado set in your tablesaw and set the blade height at 1/4". Then cut the dados for the dividers (B) [Drawing 1].
- 3 Add a tall fence to your miter gauge and raise the dado blade to 3/8". With the shelf on edge, cut the notch in each corner [Photo A].



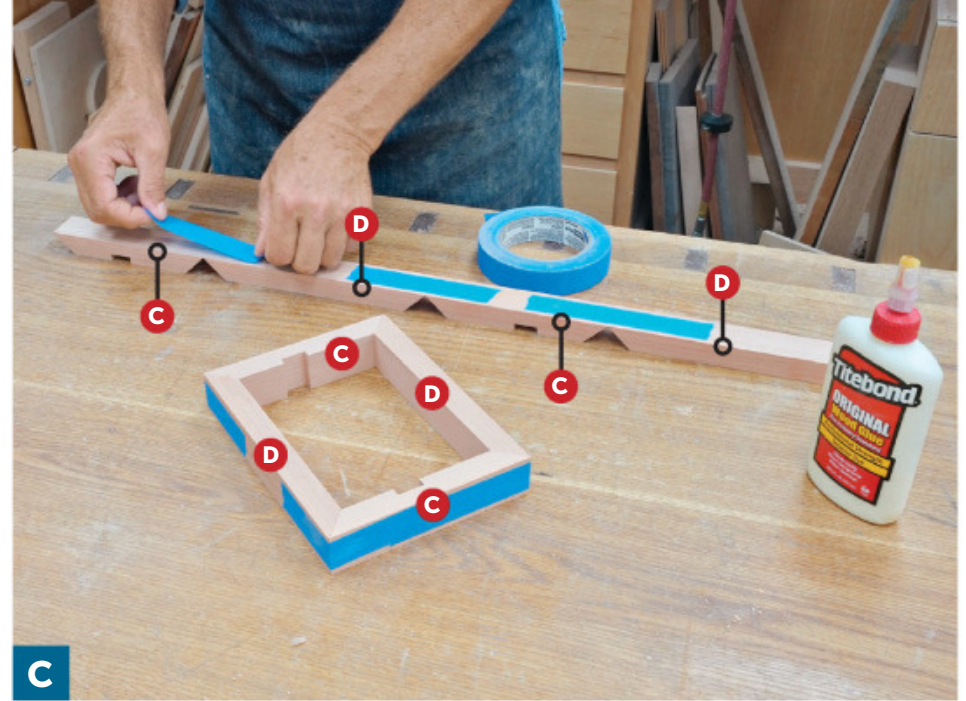
Set your rip fence to align the notch with the outer shoulder of the outermost dado, make a pass, then nibble away the remaining waste. Repeat for each corner.

1 SHELF





Apply glue sparingly to the dadoes in the shelf (A) and clamp the dividers (B) into place. Use a square to make sure the dividers sit perpendicular to the shelf.



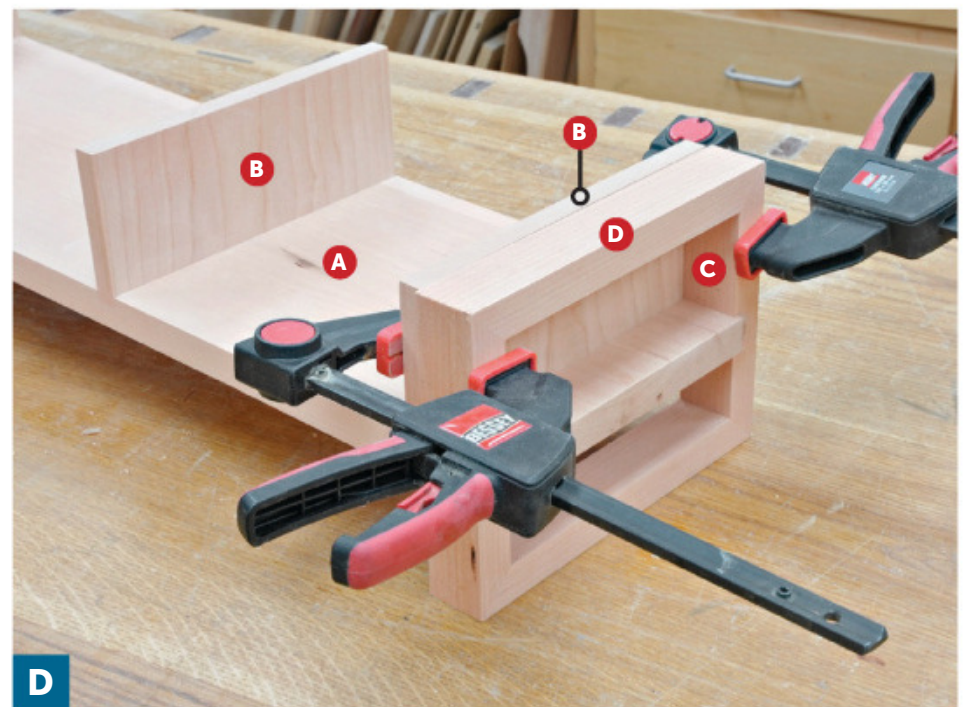
Align the rails (D) and stiles (C) end to end, orienting the stiles so the dadoes will properly align. Put masking tape across each joint, apply glue to the miters, and assemble the frames with a final piece of tape.

Note: To accommodate wood movement, the grain direction of the dividers runs vertically in the case, making them wider than they are long.

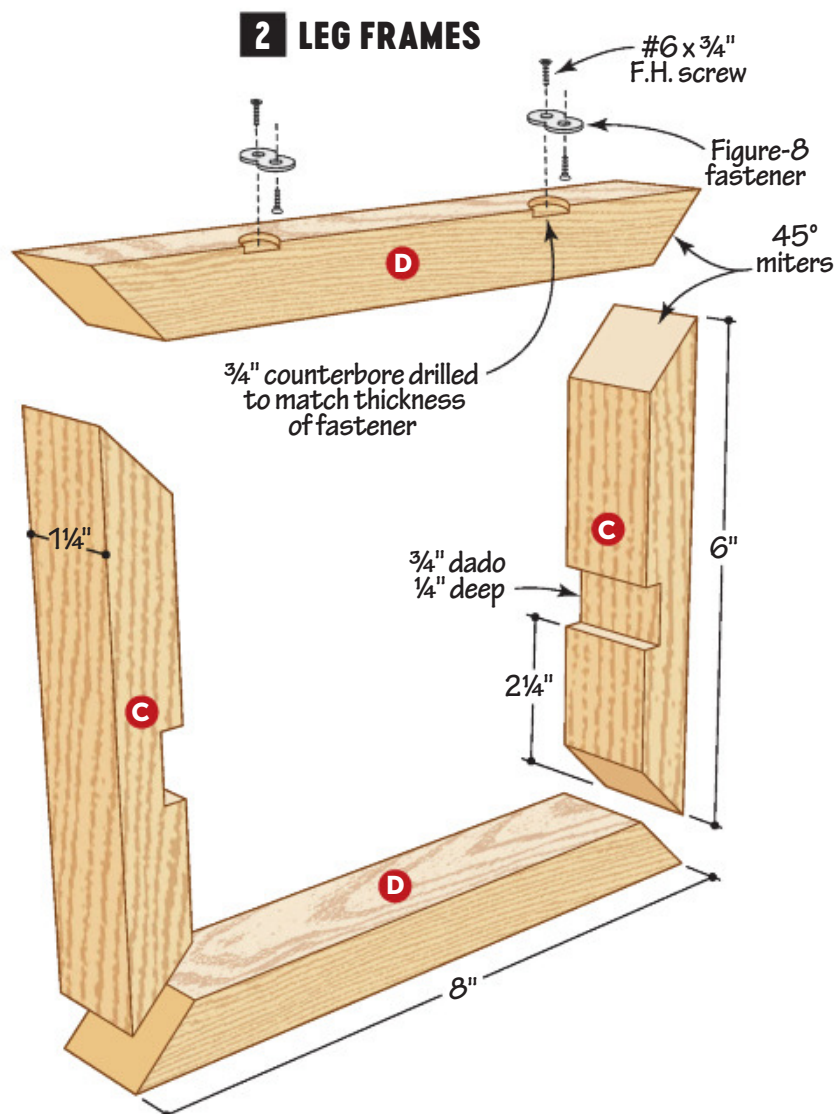
4 From $\frac{1}{2}$ " stock, cut the dividers (B) to size [Exploded View, Materials List]. Finish-sand the shelf and dividers, then glue the dividers into the shelf dadoes [Photo B].

5 Cut blanks for the stiles (C) and rails (D) to width and slightly overlength. Miter-cut the ends to finished length [Drawing 2].

6 Using a $\frac{3}{4}$ " dado blade, cut dadoes for the shelf (A) in the stiles [Drawing 2].



Apply glue sparingly to the dadoes in the stiles (C) and the inside face of the top rail, then clamp the frame assemblies (C/D) to the shelf. The top of the divider should be flush with the top rail.

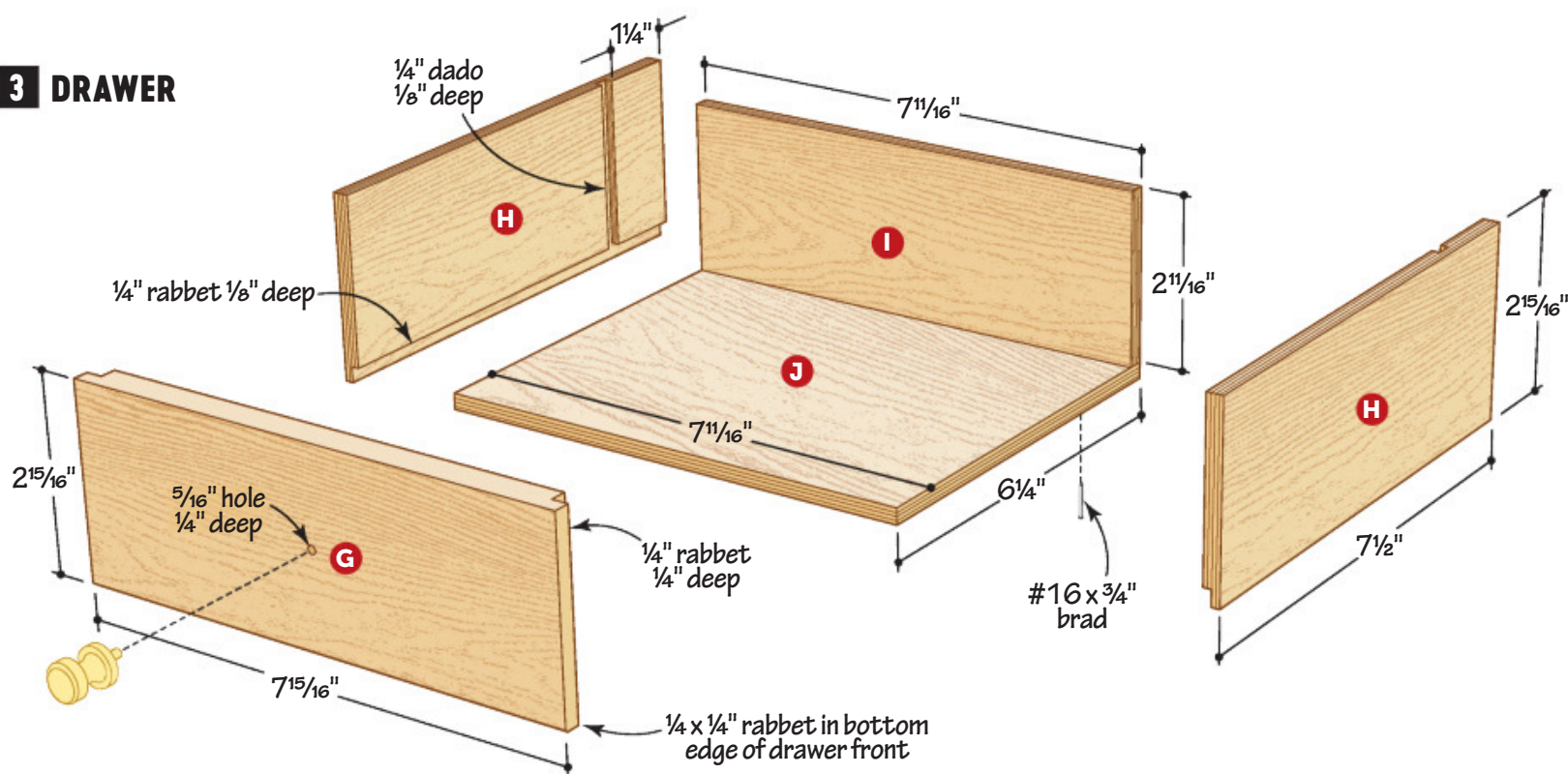


7 Glue up the rails and stiles to form frames [Photo C]. After the glue has dried, drill counterbores for the figure-8 fasteners in the outside edge of each top rail [Exploded View, Drawing 2].

8 Finish-sand the frame assemblies (C/D), then glue them into place on the shelf assembly (A/B) [Photo D].

9 Retrieve the blank for the top (E), cut it to finished size [Materials List], and rout a $\frac{3}{8}$ " round-over on the bottom edges. Finish-sand the top and set it aside.

3 DRAWER



ADD THE DRAWERS

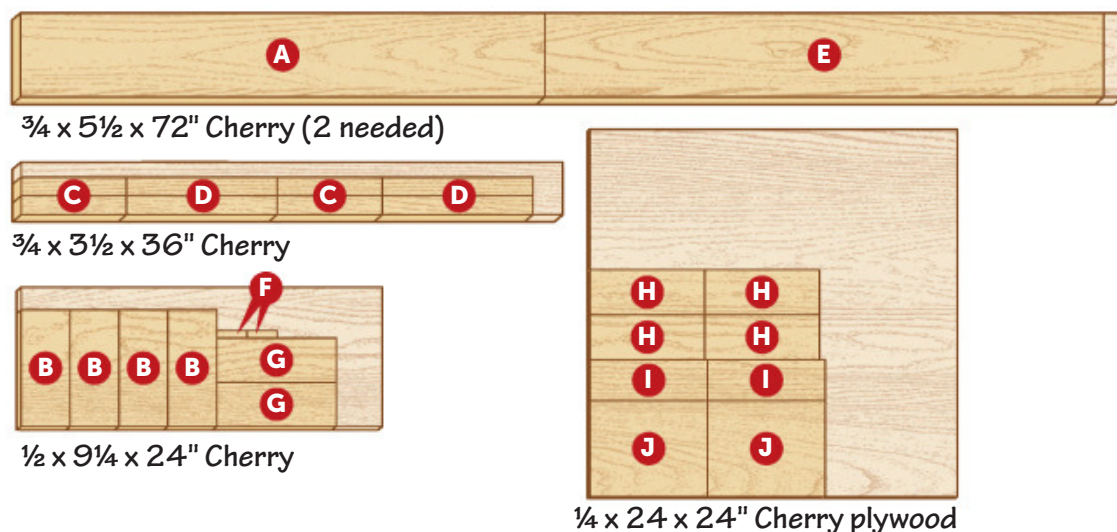
- 1 Measure the drawer openings in the riser assembly and cut the drawer fronts, sides, backs, and bottoms (G-J) to size accordingly [\[Materials List\]](#).
- 2 Install a 1/4" spiral upcut bit in your router table. Rout rabbets 1/4" deep on each end of the drawer fronts (G) and along the bottom inside edge [\[Drawing 3\]](#). Adjust the cutting depth to 1/8" and rout rabbets on the inside bottom edges of the drawer sides (H). Then rout the dados for the back (I) in each of the sides.
- 3 Apply glue sparingly to the rabbets on each end of the fronts (G) and the dados in the sides (H) and clamp the drawer assembly (G-I) together. When the glue dries, add glue to the remaining rabbets and along the bottom edge of the backs (I). Drop the drawer bottoms (J) into position and nail them to the drawer backs.

FINISH IT UP

- 1 Cut the drawer stops (F) to size [\[Materials List\]](#). Slide the drawers into place, and use them to position the stops. Glue the blocks into place [\[Drawing 1\]](#).
- 2 Finish-sand the drawers and touch up any spots on the riser assembly. Apply the finish of your choice to the riser assembly, drawers, and top. We used three coats of wipe-on polyurethane.
- 3 Install the figure-8 fasteners, attach the top centered side to side and front to back, and add the drawer knobs. Then set your monitor in place, boot up your laptop, and get a rise out of your new workspace. 🌱

CUTTING DIAGRAM

This project requires 7 board feet of 4/4 cherry and 2 square feet of 1/2" cherry based on example boards shown.



MATERIALS LIST

PART	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* SHELF	3/4"	7 3/4"	34"	C	1
B DIVIDERS	1/2"	7 3/4"	3 1/4"	C	4
C* STILES	3/4"	1 1/4"	6"	C	4
D* RAILS	3/4"	1 1/4"	8"	C	4
E* TOP	3/4"	10"	36"	C	1
F DRAWER STOPS	1/2"	1 1/2"	2"	C	2
G DRAWER FRONTS	1/2"	2 15/16"	7 15/16"	C	2
H DRAWER SIDES	1/4"	2 15/16"	7 1/2"	CP	4
I DRAWER BACKS	1/4"	2 11/16"	7 11/16"	CP	2
J DRAWER BOTTOMS	1/4"	6 1/4"	7 11/16"	CP	2

*Parts initially cut oversize. See the instructions.

MATERIALS KEY: C—cherry, CP—cherry plywood.

SUPPLIES: Figure-8 fasteners, #6 x 3/4" flathead screws, #16 x 3/4" wire brads.

BLADE AND BITS: Dado blade; 1/4" spiral upcut and 3/8" round-over router bits.

SOURCES: Brass knob no. MC-432, \$14 each, Brusso Hardware, brusso.com.

PROJECT COST: It cost us about \$120 to build this project. Your cost will vary by region and source.



26

MUST-HAVE FINISHING ESSENTIALS

Stock your finishing cabinet with these practical supplies and you'll be ready to go when it's time to finish your next project.

WRITER: RANDY MAXEY WITH VINCE ANCONA

PHOTOGRAPHER: KELSEY HANSEN

The culmination of any handcrafted woodworking project is the finish. It shows off your craftsmanship and protects the piece. A great finish, however, demands a proper start, beginning with the tools and supplies necessary for proper application.

START WITH SAFETY



Purchase any of the items on our finishing list: woodmagazine.com/finishinglist

Finishing may not present the same risks sharp tools and spinning blades do, but it's not a place to let safety lapse.

Start by donning disposable gloves [1] to keep your hands clean and prevent exposure to solvents that can dry or irritate skin. Solvent-resistant nitrile gloves offer decent protection and durability.

Protect your lungs by wearing a dust mask when sanding. A good mask prevents fine, airborne particles from entering your lungs. Disposable masks work fine, but we prefer the comfort and effectiveness of reusable masks with replaceable filters [2]. Most, though, don't protect against solvents. That requires a respirator [3] with replaceable cartridges.

Available in a range of sizes, a half-face respirator covers the mouth and nose. A proper fit is key for a

tight seal. Combination cartridges filter both dust and fumes. Make sure to purchase cartridges appropriate for the chemicals you'll be using. The most common are those for organic vapors found in solvent-based finishes like lacquer, shellac, and most aerosol finishes.

Keep splashes and irritating fumes away from your eyes by wearing safety glasses with side shields [4] or goggles [5].

Protect your clothes by wearing, at least, an old shirt or an apron. We've found inexpensive disposable aprons [6] that store compactly until you need them, then you can toss them when you're done.



SURFACE PREP

Surface preparation proves vital to achieving a beautiful finish. These supplies help you get your wood finish-ready.

A lint-free cloth or shop rag [7] removes the bulk of the dust. Mineral spirits [8] highlights any glue spots that need removing, reveals the grain, and indicates how an oil finish might appear. It evaporates quickly without affecting the finish later.

Before using pore filler on open-grain woods like red oak and ash, seal the surface using sanding sealer [9]. Lightly sand off any raised grain, and excess filler will wipe away cleanly, without discoloring the wood.

To disguise scratches, dents, and dings, stainable wood putty does the trick [10].

Sanding is critical for a smooth finish, so be sure you have all the supplies ready. Use progressively finer grits, heeding the finish manufacturer's recommendations for the final grit. A sanding block [11] used on flat surfaces helps prevent rounding over the edges. Remove the bulk of the dust with an air hose or shop rag. Finally, lightly wipe all surfaces with a rag dampened with mineral spirits or a tack cloth to remove fine dust particles.

FINAL PREP

Depending on the type of finish you choose, there are a few steps needed to prep for application. First, cover your worksurface with kraft paper [12] to block spills, mask off areas, or create a backdrop for spray-applied finishes.

Painter's tape [13] comes in handy for holding the kraft paper in place, masking areas on your project, and labeling parts for ease of assembly.

Before application, decant the finish into a smaller, more manageable container like a disposable mixing cup [14] or glass jar [15]. A glass jar makes saving and storing the finish at the end of the day as easy as putting on a lid. Graduated mixing cups provide a convenient way to measure the ingredients when blending finishes.

Keep paint can openers [16] on hand. Sure, reaching for a screwdriver is easy, but paint-can openers pry lids loose without damaging them, making it easier to reseal the can securely.

A tongue depressor [17] or large craft stick makes a handy stir stick, especially if you're incorporating dyes or thinners into your finish. Available in bulk, these inexpensive tools prove handy for many shop tasks.



THE BEST APPLICATION

Having the right tools on hand for applying your finish makes a difference in the outcome. Many finishes lay down and flow out best during application with a brush [18]. Here, it pays to invest in quality and know what brushes are compatible with the finish. Use brushes with natural bristles for oil-based finishes like varnish. Waterborne coatings require synthetic-bristle brushes.

Foam brushes [19] present a disposable option for most finishes except those with strong solvents that could dissolve the foam. Look for denser, higher-quality foam brushes to get the best results. It's a good idea to test the application with a foam brush on scrap pieces to ensure you get the desired results.

Some oil-based finishes work best with a little elbow grease. For these hand-rubbed finishes, a lint-free cloth makes a practical applicator [20]. Just be sure to properly dispose of oil-soaked rags to prevent a fire. Do this by spreading the cloth out flat to dry or by submerging it in water.

There never seems to be enough light when applying a finish. Besides an abundance of general light, a bright task light [21] is a must-have. Set it to cast a raking light across the surface of your project. This makes it easy to see missed areas, runs, drips, and large dust particles.



BETWEEN COATS

Most finishes yield the best results with multiple coats, so be prepared to address any blemishes and roughness before applying the next coat. Taking time here creates a smooth foundation for subsequent applications.

When using oil-based finishes, fine steel wool (0000) [22] works great for removing dust nibs and smoothing the surface. For waterborne finishes, use non-woven abrasive pads [23] for this task. Avoid using steel wool around waterborne finishes; leftover fragments can rust and ruin the finish. Fine-grit (320-600) wet/dry sandpaper [24] provides a great option to smooth either type of finish.

While examining the surface for defects, remove dried runs and drips with a razor blade [25], scraping them even with the surrounding surface. Razor blades also work great to remove any glue missed during initial prep. Follow up with an abrasive to finish leveling the surface in preparation for the next coat.

Once the final coat cures, you may still feel dust nibs. One helpful trick is to use a paper bag [26] as a buffing pad to remove the dust nibs.

After all the work you put into building the project, don't cut short the time necessary to obtain a beautiful result. Having the right tools on hand puts you on the path to a smooth finish. 🌱



A SAWHORSE OF A DIFFERENT COLOR

A horse is a horse, of course, of course—unless it's meant to do more than simply hold up material while you cut. Here are a few for your stable that speak for themselves.



A Horse with Holding Power

This Wen clamping sawhorse combines a flat surface where materials can rest with a vise that provides versatile holding power. The rear 3x8" jaw slides to allow 40" clamping capacity, while a foot lever locks the jaws shut with clamping force up to 2,200 lbs. A hefty 47-lb weight helped the sawhorse resist moving around, and the single rear leg stayed out of the way while we worked alongside the horse. Weight capacity stands at 600 lbs.

Wen, wenproducts.com

Portable clamping sawhorse, no. WA601, \$178



A Horse with Speedy Legs

The most conventional sawhorse in this stable eliminates the wrestling match that can accompany folding out the legs. Just pull the release lever to swing the legs down which lock in place automatically to support up to 1,500 lbs. You can attach 2x4s to the top as sacrificial cutting surfaces, and add 2x4s on edge to the open jaws at the ends. We appreciate that they'll align with the top-mounted 2x4 to create a flat platform to support sheets or to create a work table.

Bora, boratool.com

Speedhorse, no. PM-4500, \$80

Lots of Legs Handle Loads

With multiple legs and no top bar, the Bora Centipede looks nothing like a traditional sawhorse, but packs a 3,500-lb load capacity into its 10-lb, collapsible aluminum and plastic frame. Expand its frame to hold sheet goods on top for cutting or to create a large work table. Hold-downs help keep the workpiece in place. Or use the included X-shaped cups to hold 2x4s to make a sacrificial cutting surface as you'd find on a more-traditional sawhorse. When you're done, collapse the Centipede down to a roughly 10x10x36" size and stow it away in the included storage bag. Bora offers several sizes from 2x4' to 4x8'. We tested the 4x4' model.

Bora, boratool.com

4x4 unit, no. CK9S, \$145



A Horse with Four Personalities

A rotating head allows this Workess sawhorse to provide several functions: a stationary support, infeed/outfeed support with choice of a long roller or individual balls, and a V-shaped roller support. The head sits atop an adjustable stand with 33½–50" height range. Load capacity ranges from 99 lbs to 440 lbs depending on configuration. We found the unit sturdy and easy to adjust, and we like having one tool that does multiple jobs. We do have one complaint: Rotating the head completely to use the V rollers requires unbolting the stationary support.

Workess, amazon.com

4-in-1 roller stand, no. B0B1ZG94FV, \$93



Prefer to breed your own? Check out our selection of sawhorse plans. woodstore.net/sawhorseplans

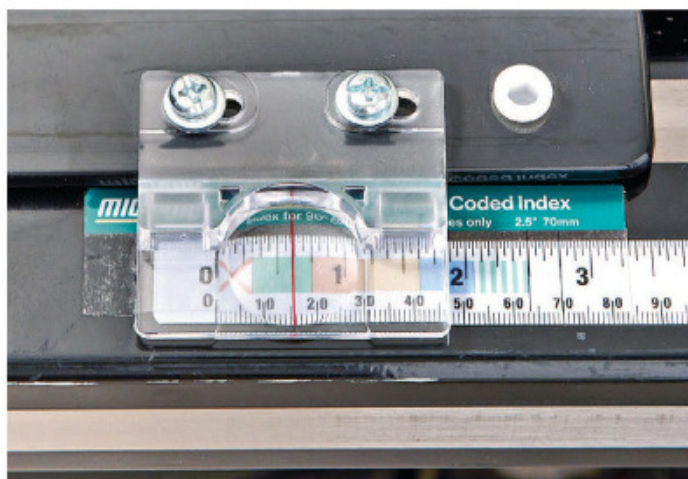


SHOP-TESTED PUSHBLOCK HELPS CUT SMALL PARTS SAFELY

Tester: Dave Stone

I tried the Grr-Ripper 2Go recently while cutting thin, narrow glass stops on the tablesaw. In contrast to the original Grr-Ripper, the narrower 2Go's three grip-coated legs are fixed. Gaps in between let the blade pass through. To ensure that the blade ends up in a gap, an included transparent sticker overlays your rip-fence scale (*inset*), and has colors that correspond with those on the ends of the pushblock. Just check the color under your fence's cursor and orient the matching color on the pushblock toward you when you cut. It's a simple, intuitive system, and the block provided great grip and control, allowing me to cut my small, narrow stops safely.

Microjig, microjig.com
Grr-Ripper 2Go, no. GR2-GO, \$30



SHOP-TESTED RIDGID ROUTER PACKS A CORDLESS PUNCH

Tester: Brian Bergstrom

I put Ridgid's new 18-volt trim router through its paces, flush-trimming as well as routing round-overs and chamfers. The brushless motor offered plenty of power. Equipped with a 6-amp hour battery (it uses any Ridgid 18-volt battery), I still haven't needed to recharge after multiple projects. The big battery made the router a bit top heavy, but never unwieldy. I like the overmolded grip, easy adjustment, and offset base with one straight edge.

Ridgid, ridgid.com
18V Compact router, no. R860444B, \$179



NEW & UNTESTED WOOD-MIZER DEBUTS ENTRY-LEVEL SAWMILL

If you've dreamed of milling logs into lumber but couldn't get past the price of a sawmill, the new Wood-Mizer LX50START warrants a look. At \$2,995, it's their lowest-priced mill ever. It saws up to 8" deep in 26"-diameter logs up to 10'2" long. Bed extensions are available. A Kohler gas engine powers the bandsaw blade, while you power the cutting head along the length of the log. Other features include a laser-cut steel bed with cross-bracing and leveling, log-handling stops, and gravity-fed blade lubrication. 🌲

Wood-Mizer, woodmizer.com
Portable sawmill, no. LX50START, \$2,995

For the Man Who Gives Everything and Expects Nothing

If you're anything like my dad, you give your family everything. Your name, your time, your values — the people in your life know they can depend on you for practically anything. In exchange for imparting all of this energy and experience, you expect nothing in return.

The point? You deserve to treat yourself once in a while. You do so much for the people you care about. Now it's time to focus on you for just a few minutes. That's where the Men's Due Volta Watch comes in. This astonishing innovation provides a digital readout that's powered by a precise quartz engine, combining both analog and digital timekeeping.

Outfitted with a stopwatch, alarm, a.m./p.m. settings, and day, date and month complications, this timepiece stands out from the crowd. With its large face and handsome, masculine design, this watch is perfect for the back nine and the happy hour afterwards. Water-resistant up to 3 ATM, this timepiece won't wimp out if you have a run-in with a water hazard.

Other hybrid watches can sell for thousands of dollars, but because we've built more than 1 million watches, we know how to create real value. That's why we can offer this timepiece for just \$59! If you're not completely satisfied with this watch, return it for a full refund.

Act quickly! This one-of-a-kind watch has been one of our fastest sellers this year. Of our original run of 2,872, we only have 389 left for this ad! In the last couple of years there's been a watch shortage, but Stauer has got you covered. If you're the kind of man who gives everything and expects nothing in return, it's time to treat yourself.

Watch Specifications:

- Complications: stopwatch, alarm, a.m./p.m. settings, and day, date and month
- Precision movement chronograph
- Stainless steel caseback and crown
- Water-resistant to 3 ATM

Men's Due Volta Watch ~~\$399~~ \$59* + S&P **Save \$340**

*Special price only for customers using the offer code.

1-800-333-2045

Your Insider Offer Code: DVW254-03



JOIN MORE THAN 1 MILLION SMART
PEOPLE WHO OWN STAUER WATCHES

Stauer, 14101 Southcross Drive W., Ste 155, Dept. DVW254-03, Burnsville, MN 55337 www.stauer.com

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- Zero Play Miter Bar
- Blade Guard & Handle
- Sturdy Plycore Construction w/ Microdot Laminate

Item # TCS-200

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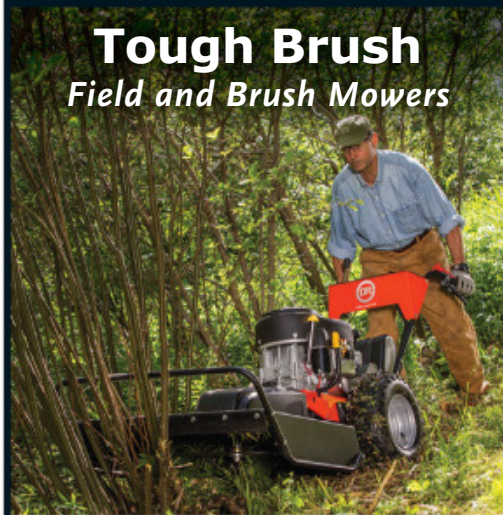


woodstore.net/threebucks

NOTHING Stops a DR[®]

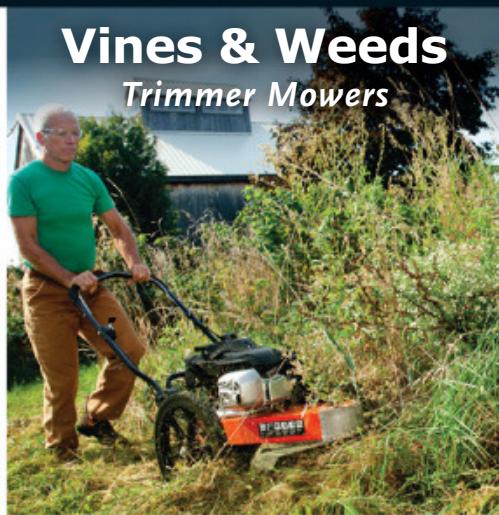
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WHAT'S AHEAD

A GLIMPSE INSIDE THE MAY ISSUE (ON SALE MARCH 1)



MITERSAW STATION
Bring workshop accuracy to the jobsite with this custom-fit mitersaw station. Drop it on your favorite sawhorses for **long-stock support and fence extension.**



CABINETMAKING SPECIALISTS
Ramp up the accuracy and efficiency of your cabinetmaking with our favorite tools and accessories for casework.



GARDEN GEAR STOWAWAY
Garden and lawn gear getting in the way of your woodworking? Build this lean-to shed to stow it all away neatly in your back yard.



COMPACT BOOK NOOK
Build this small book rack to keep your reading material close to your favorite reading spot.

Woodpeckers®

Precision Woodworking Squares

- One-piece central core.
- Stainless model includes scribing guides.
- Lip keeps the square flat on your work.
- Guaranteed perpendicular to $\pm .0085^\circ$ for life.
- Available in inch or metric.



Precision Woodworking Square

Includes a Woodpeckers wall-mountable wooden case

12"\$129.99

12" Stainless Steel....\$139.99

Other Sizes Available on Woodpeck.com

Precision T-Squares

- Scribing guides on 1/16" centers.
- Beveled edge reduces parallax.
- Tight tolerance laser-engraved scale.
- 600mm metric version available.



Precision T-Square

Includes a wall-mountable Rack-It™

TS-12 12"\$119.99

TS-24 24"\$139.99

TS-32 32"\$169.99

in-DEXABLE

Combination & Double Squares

- Push-button index locks head at any full-inch.
- Laser-cut scribing guides for precision parallel lines.
- Retractable support keeps head aligned to your stock.

in-DEXABLE Squares

Includes a wall-mountable Rack-It™

Double 6"\$129.99

Center Finder 6"\$139.99

Combination 12"\$169.99

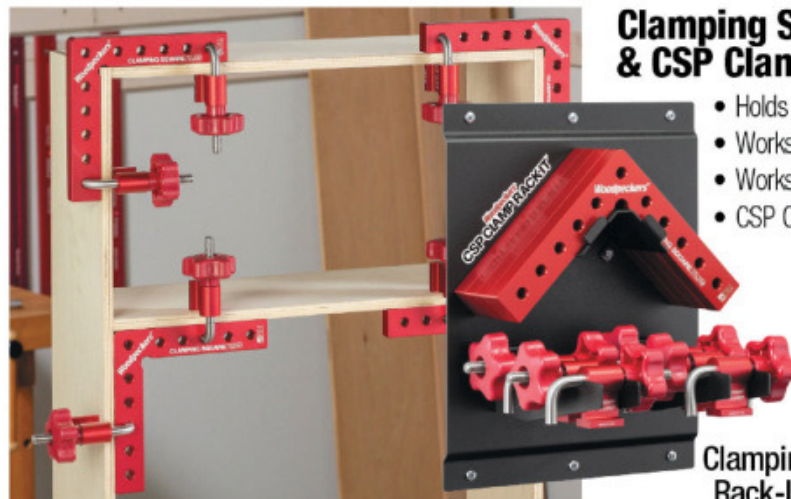
Protractor 18"\$239.99

Other Sizes Available on Woodpeck.com



Clamping Squares PLUS & CSP Clamps

- Holds stock at right angles.
- Works inside or outside.
- Works with any clamp.
- CSP Clamps speed the job.



Clamping Squares PLUS Rack-It™ Kit....\$269.99

CLAMPZILLA™

4-Way Panel Clamp

- Applies pressure both directions.
- Works with material from 5/8" to 4".
- Improved vertical pressure.
- Flatter panels faster.

ClampZILLA

18" Capacity....\$139.99

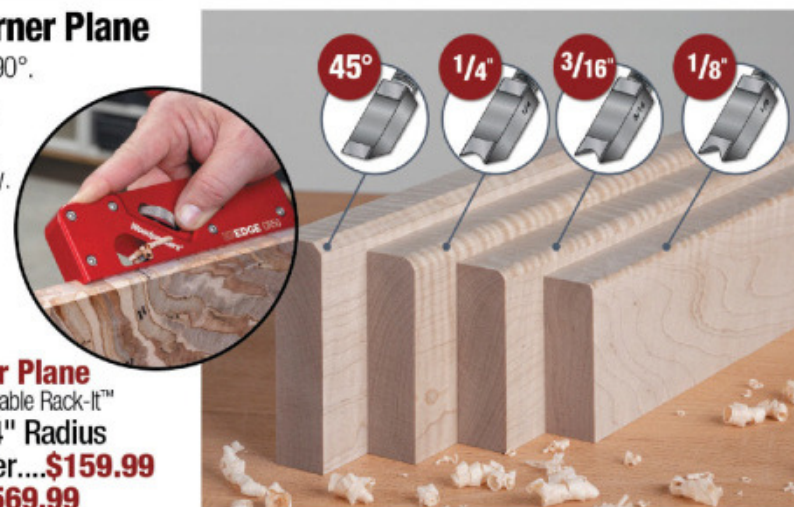
38" Capacity....\$169.99

50" Capacity....\$199.99



EZ Edge Corner Plane

- Sole is a perfect 90°.
- 3 radius profiles.
- 45° chamfer.
- Resharpens easily.



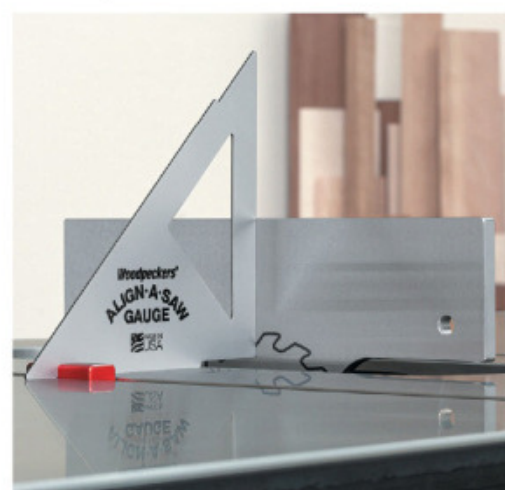
EZ Edge Corner Plane

Includes a wall-mountable Rack-It™

1/8", 3/16", 1/4" Radius

-or- 45° Chamfer....\$159.99

Deluxe Set....\$569.99



Align-A-Saw System

- Plate delivers a flatter, longer reference for aligning table to arbor.
- Precision ground to a flatness tolerance of .002".
- Gives you 12" to check miter groove alignment.
- Gauge measures 90° and 45° accurately.

Align-A-Saw System

Includes a Woodpeckers wall-mountable wooden case

Plate & Gauge Set....\$229.99

Also Available Individually on Woodpeck.com

SANDSTAND™

Tilting Sander Base

- Turn your palm sander into a stationary sander.
- Works with most palm sanders.
- Angle adjusts from flat to 45°.
- Clamps or bolts to any work surface.

SandStand Tilting

Sander Base....\$99.99

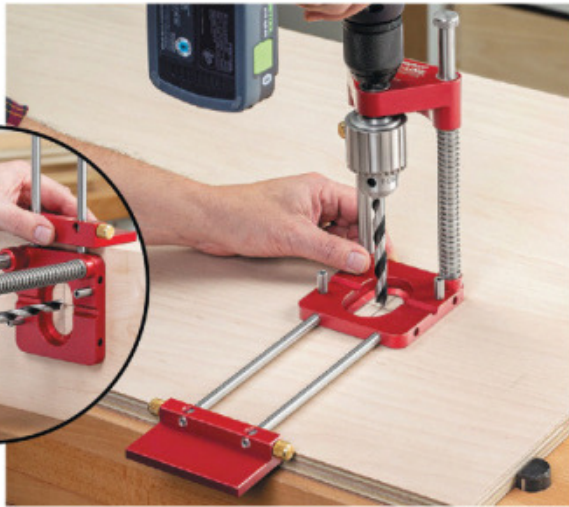


Sander not included.



AUTO-LINE™ DRILL GUIDE

- Perpendicular holes anywhere.
- Fence fits on all 4 sides.
- Works with most drills.
- Deluxe Kit includes extensions.



Drill not included.

Auto-Line Drill Guide
Drill Guide....\$299.99
Deluxe Kit....\$399.99

THIN RIP GUIDE®

- Safe, accurate jig for repeat cutting of thin strips.
- Works with 3/8" x 3/4" T-slot table grooves.
- Easily calibrated scales in both inch & metric.
- Ball bearing contact for smooth feeding.



Table Saw not included.

ThinRip Guide
Includes a wall-mountable Rack-It™
....\$169.99

Iron-Grip™ Small Parts Holder

- Rout small parts safely & accurately.
- Works with bearing guided bits or table-mounted fences.
- Quick-release jaw for fast change over.

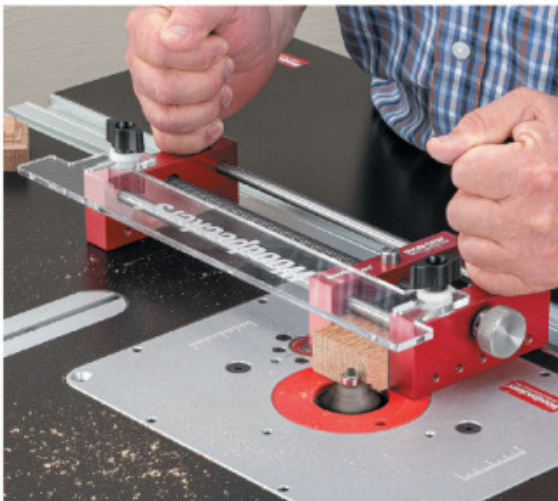


Table Saw not included.

Iron-Grip Small Parts Holder
....\$169.99
Extended Capacity
Fence....\$19.99

MULTI-ROUTER

The Joinery Machine

- Heavy-duty, true 3-axis linear control.
- Machined aluminum templates for flawless joinery.
- Built-in dust collection.



Multi-Router
The Joinery Machine
w/Dust Cabinet....\$2999.00
w/Mortise & Tenon
Package....\$4199.00
More Options Available
on **Woodpeck.com**



Spline Jig

- Works with both table saw and router table.
- Spline grooves or dovetail keyways.
- Cut splines in projects up to 36" long.
- Stops included for repeat positioning.



Spline Jig
....\$149.99



Hold-down clamps sold separately.

StealthStop™ Miter Gauge

- Fits all 3/8" x 3/4" miter gauge slots.
- Patented leaf springs ensure perfect fit.
- Rear fence extends from 21" to 29".
- Micro-adjustable flip stop.
- Positive stops for standard angles.
- Optional zero-clearance inserts.



Table Saw not included.

StealthStop
w/Fence & Stealth Stop
Miter Gauge....\$119.99

HexScale Rules

- Six rules in one!
- Inch & metric scales in 3 layouts.
- Right-to-left, left-to-right & centering.
- Stop simplifies repeat marking.
- 6", 12", 24" & 36" lengths.

HexScale Rule
Includes a wall-mountable Rack-It™
Set....\$159.99
Individual Sizes Available
on **Woodpeck.com**





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