

THANK YOU FOR 48 GREAT YEARS!

WOODWORKER'S JOURNAL

America's leading woodworking authority™

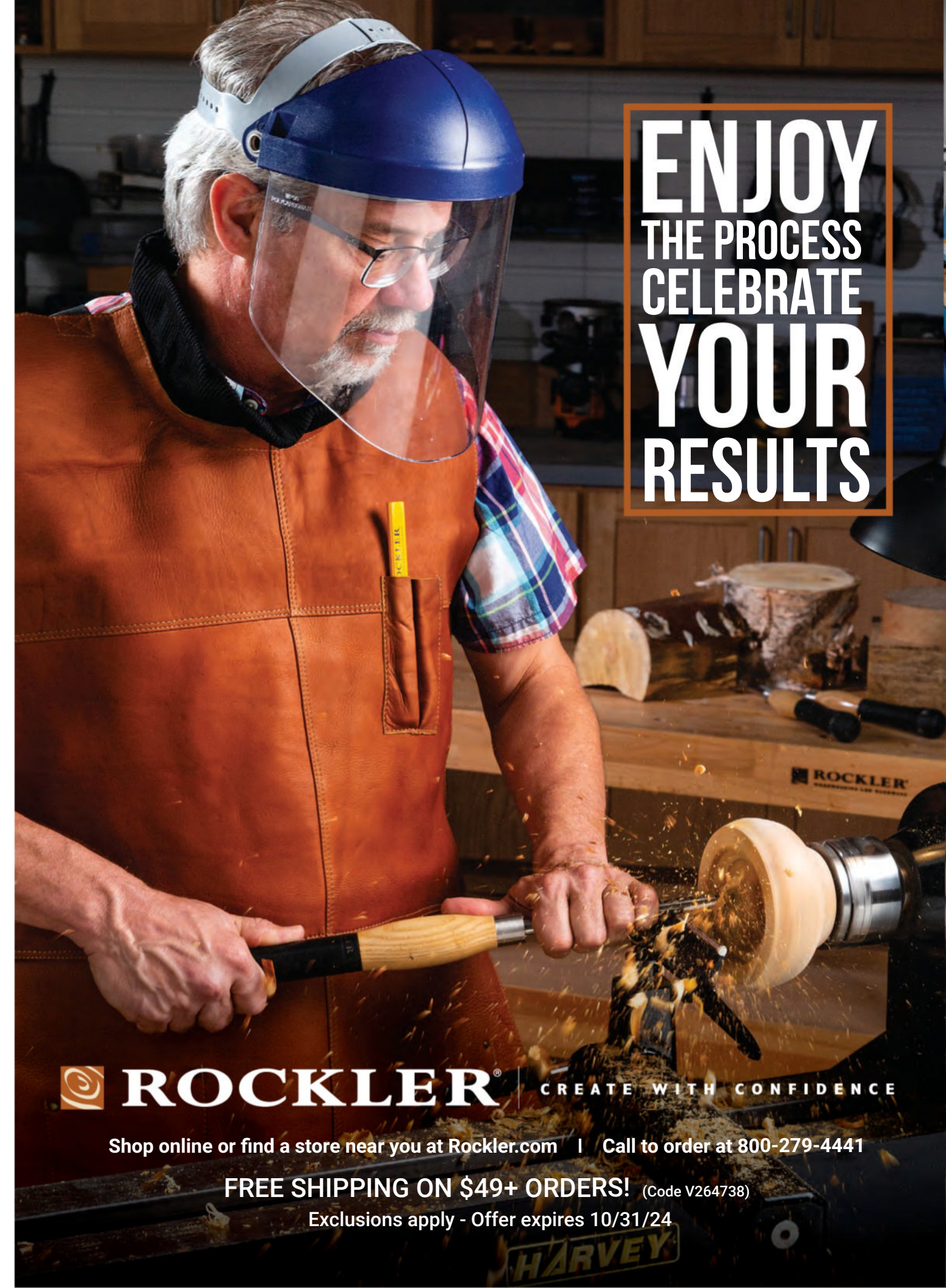


October 2024

\$7.99



7 33175 77731 5



**ENJOY
THE PROCESS
CELEBRATE
YOUR
RESULTS**



ROCKLER®

CREATE WITH CONFIDENCE

Shop online or find a store near you at [Rockler.com](https://www.rockler.com) | Call to order at 800-279-4441

FREE SHIPPING ON \$49+ ORDERS! (Code V264738)

Exclusions apply - Offer expires 10/31/24

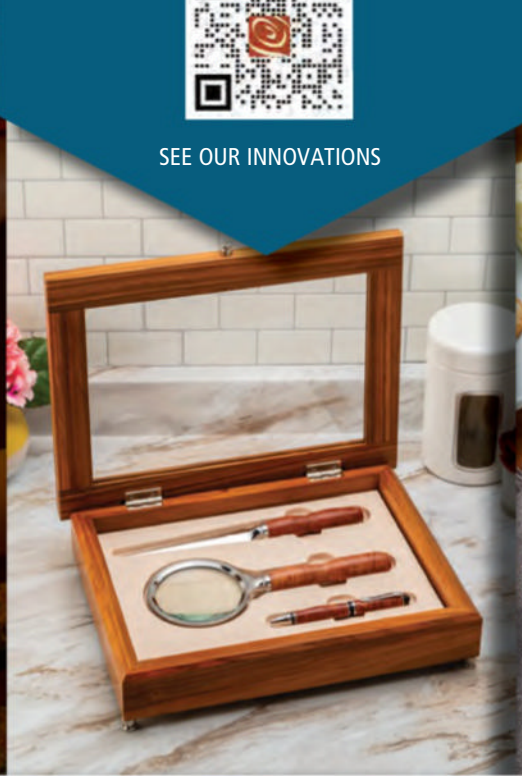
HARVEY



**THE STEADY HUM OF
A PRECISION LATHE,
ERGONOMIC TOOLS THAT
NEVER NEED SHARPENING,
A ONE-OF-A-KIND BURL
THAT WILL SOON TAKE
THE SHAPE OF A BOWL,
CREATE WITH
CONFIDENCE!**



SEE OUR INNOVATIONS



WOODWORKER'S JOURNAL

CONTENTS

OCTOBER 2024

VOLUME 48, NUMBER 5



24 TAMBOUR CONSOLE CABINET



16 WINE BOX



40 CUSTOM KNIFE

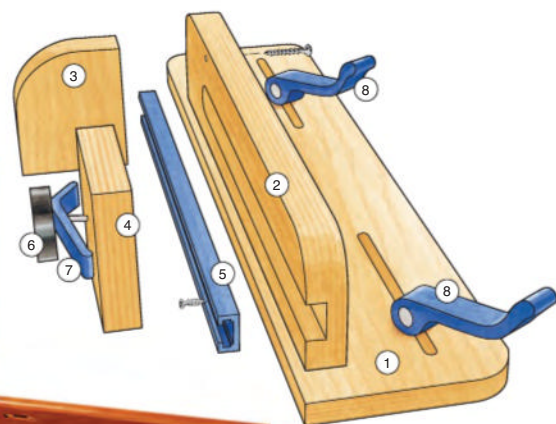


48 ROLLING PINS



42 PLANT STAND

22 VERTICAL DRILLING JIG



8 GINKGO LEAF TABLE



32 CLASSIC CHERRY CHEST

⚠ WARNING: Drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov/wood.

FROM OUR READERS

Keep on Learning, Building and Enjoying!



SIGNING OFF WITH SOME SPECIAL PROJECTS.

This October magazine brings 48 years of *Woodworker's Journal* to a close. And that fact has had me pondering what content should fill the very last issue.

If you're a longtime subscriber, you know that this publication has provided a rich source of first-rate woodworking education from Ian Kirby, A.J. Hamler, Ernie Conover, Bill Hylton, Michael Dresdner, Sandor Nagyszalanczy, Carole Rothman, Betty Scarpino, Mike McGlynn, Kimberly McNeelan, Ralph Bagnall, Willie Sandry and many other excellent woodworkers. I hope you've also found our tool reviews and sneak peeks into what's coming from Rockler and other manufacturers informative and helpful when shopping. Perhaps at one time or another, we've answered your woodworking question in an email or in *From Our Readers*. Maybe you've opened a new issue and been pleasantly surprised to see your name listed for a *Stumpers* guess or a clever shop trick we published. Over these many years, we've tried our level best to provide a magazine that enriches your woodworking knowledge, encourages you to explore all sorts of fun techniques, and most of all, gets you out into your shop as much as possible!

With this in mind, I finally decided that a fitting way to say so long is to share eight of our best projects we've published over the last decade or so. I hope they will inspire you to take this last issue out to the shop and get busy cutting parts, building joints, applying finish and enjoying your hobby to its fullest. That's also the intent of our special final cover photo — it's a reminder to get out there and keep doing what you love! Because in the end, woodworking is all about staying actively involved and building things we find meaningful. From all of us at *Woodworker's Journal* past and present, please continue making sawdust! We'll be doing the same in our shops as we continue forward with you all in spirit.

—Chris Marshall

Editor Picks: Taper/Straight Line Jig



Cutting tapers is a bread-and-butter woodworking technique you'll need sooner or later, and it requires a jig. But while tapering jigs are easy to make, few offer the simplicity of setup or the added safety features of Rockler's Taper/Straight Line Jig (item 21597; \$99.99). Two hold-down clamps and miter slot guidance keep your hands safely out of harm's way while making taper-cutting accurate and easy.

—Chris Marshall

ROCKLER PRESS
THE VOICE OF THE WOODWORKING COMMUNITY

OCTOBER 2024
Volume 48, Number 5

ALYSSA TAUER Associate Publisher
CHRIS MARSHALL Senior Content Editor
VERN JOHNSON Art Director
DAN CARY Senior Content Strategist
NICK BRADY Project Builder/Designer
MATTHEW HOCKING Internet Production Coordinator

Founder and Chairman
ANN ROCKLER JACKSON

Publisher Emeritus
ROB JOHNSTONE

Advertising Sales
ALYSSA TAUER Advertising Sales

Editorial Inquiries
editor@woodworkersjournal.com

Subscription Problems/Inquiries

(800) 765-4119 or
www.woodworkersjournal.com
Write *Woodworker's Journal*, P.O. Box 6211,
Harlan, IA 51593-1711
Email: WWJcustserv@cdsfulfillment.com

Book Sales and Back Issues

Call: (800) 610-0883
www.woodworkersjournal.com

Other Questions or Problems

atauer@woodworkersjournal.com

Safety First Learning how to operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary guards have been removed from equipment shown in our magazine. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturers' instructions and safety precautions.

Woodworker's Journal (ISSN: 0199-1892), is published in February, April, June, August, October and December by Rockler Press Inc., 4365 Willow Dr., Medina, MN 55340. Periodical postage paid at Medina, Minnesota and additional mailing offices. Postmaster: Send all address changes to *Woodworker's Journal*, P.O. Box 6211, Harlan, IA 51593-1711. Subscription Rates: One-year, \$19.95 (U.S.); \$28.95 U.S. funds (Canada and other countries). Single copy price, \$7.99. Reproduction without permission prohibited. Publications Mail Agreement Number 0861065. Canadian Publication Agreement #40009401.

©2024 Rockler Press Inc. Printed in USA.

October 2024 *Woodworker's Journal*



Some Jobs Are Monsters All On Their Own.

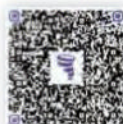
Dust collection doesn't have
to be one of them.



Up to **99.9%**
of dust and
debris here

SUPER DUST DEPUTY® CYCLONE SEPARATOR KIT

Stops clogged filters so your dust collector
runs stronger for longer.



SEE HOW
oneida-air.com



Derek A. Verified Buyer



The separation is amazing. There is
nothing visible in my pleated filter.

THE BEST PINNER JUST GOT BETTER

NEW GREX P635L 23 GAUGE PINNER

The **P635** wasn't just a tool; it was a revolution. Launched in 2004, it redefined the meaning of fine woodworking. With its unmatched level of features, precision and reliability, it quickly set itself apart as the "lexus of pinners" for the past two decades.

As we celebrate the 20th anniversary of the iconic P635, we're propelling into the future with the introduction of the enhanced **P635L**.

Get your own P635L and experience 20 years of innovation and craftsmanship with a tool that's built to last.

FIND YOUR DEALER



888-447-3926



604-534-3688

www.grexusa.com



GREX USA®



Ginkgo Leaf Table

By Willie Sandry

While this table is the author's original design, he drew inspiration from Japanese furniture and architecture.



Although it's my original design, the inspiration for this Ginkgo Leaf Table draws heavily from Japanese influence. Tapered elements that are wider at the base, and rafter-like members that project through legs and posts, are common in Japanese designs – in both furniture and architecture. Other elements of the table, such as the solid panels with leaf cutouts, are reminiscent of Dutch designs dating back hundreds of years. I found that this table's angled joinery makes it both a joy and a challenge to build.

Mine is constructed from solid walnut lumber. If you're fortunate enough to have 8/4 stock available, you can simply cut the legs from a plank of walnut. My best-looking stock was only 7/8" thick, so I laminated leg blanks from two strips of wood. Rip eight strips of walnut 1 3/4" wide, and glue them together in pairs to make four legs. Once the glue cures, flatten and plane them to a finished size of 1 5/8" square by about 19 1/2" long (the legs will be trimmed to final length later).

Unless you're fortunate enough to have a plank of 8/4 walnut, this table's legs will need to be made of glued-up laminations.



The author created 1 3/4"-thick leg blanks from two strips of 7/8"-thick stock glued together. He then planed the flattened blanks to 1 5/8" square.

Leave their ends square for now, as the notch at the top of each leg needs to be cut before the legs are angled. Use a tenoning jig and dado blade to form those 3/4"-wide x 2"-deep notches at the table saw. I installed a 5/8"-wide dado stack and cut each notch in two passes, flipping the legs to opposite faces for the second cut. This centers the notches perfectly.

Once the notches are completed, go ahead and miter-cut the top and bottom ends of the legs at a 5-degree angle. This operation can be tackled at either the table saw or on a miter saw. I chose to use a standard blade and my miter gauge equipped with a long auxiliary fence at the table saw. First, miter-cut the top of the leg, then slide the leg down the miter gauge fence, making sure to keep the leg in the same orientation. Set a stop block on the auxiliary fence, and trim the leg to a final length of 18 7/8" (measured "long-to-short").

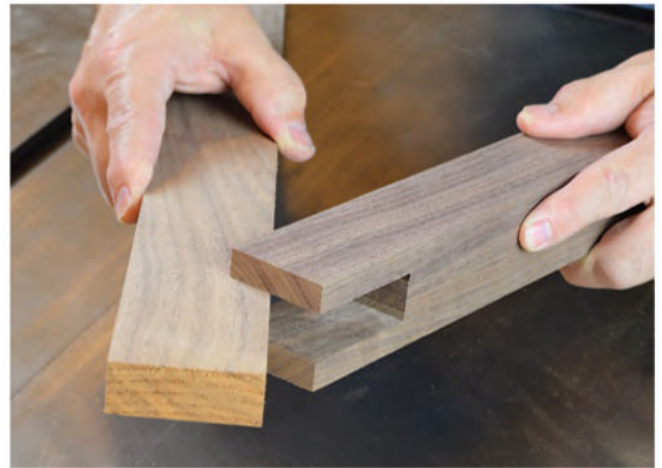
Creating the Side Assemblies

Next, glue up a pair of side panels from 3/4" stock. Trim these panels to overall size. Their pleasant tapered shape is 5 degrees along each edge, so set a bevel gauge and draw layout lines to mark these taper cuts. I used a shop-made tapering sled at the table saw to cut the angles uniformly. If your shop isn't equipped with one, a circular saw with edge guide could also work fine. When you trim off these edges, be sure to save the offcuts for use as the table's corbels.

There are a number of ways you can attach the legs to each side panel. Loose tenons or biscuits typically work well for this sort of application, as do splines and grooves. Dowel joinery would be problematic because it wouldn't allow any adjustment to align the parts. I decided to go with loose splines fitted into grooves in the legs and panel edges. To mill the stopped grooves, install a 1/4"-wide dado blade in your table saw. Start by setting the blade height to 1/4", and position the rip fence for a centered cut on the panels. Clamp a stop block to your table saw's rip fence to limit the length of cut to 15", so the groove stops about an inch from the bottom of the panel. Complete



Using a tenoning jig and dado blade, form a 2"-deep x 3/4"-wide notch in the top of each leg. Cut from both sides of the leg to center these bridle joint notches.



Plane a test board to 3/4" thick, and use it to gauge the width of the leg notches. Incrementally adjust the rip fence as needed, and make more passes until the test board eases into the notch.



With a miter gauge swiveled to 5 degrees, trim the top ends of the legs. Remove just enough material to create the required angle.



Now slide the leg down the auxiliary fence and set a stop block to trim all four legs to the same length. Keep their orientation the same for this cut.



A shop-made tapering sled handily slices the side panels to their 5-degree tapers. This one is guided by a wooden strip riding in the miter slot.



Form stopped grooves in the side panels with a 1/4"-wide dado stack. Note the clamp on the rip fence here, which acts as a stop block.

all four grooves this way, before adjusting the rip fence for a centered cut on the legs. Each leg receives one groove, also approximately 15" long. Make some spline stock to fit these grooves, and test-fit the legs with the side panels. Don't glue the side assemblies together just yet, as we have a couple more steps to complete first.

A template is useful to make matching ginkgo leaf cutouts that dress up the side panels. I made a full-size template for them from 1/4" plywood. Lay out the ginkgo leaf shape on the template using a set of French curves and following the gridded *Drawing* on page 12. Cut out the template's shape with a jigsaw or scroll saw, and refine it with files. Once the template is complete, clamp it to a side panel, and rough out the shape with a router. I used two different router setups to cut out the leaf shapes. My first was a 1/4" spiral bit paired with a 7/16" outside diameter (O.D.) guide bushing. Make several clockwise passes to remove the material, increasing the depth of cut with each pass. This will invariably leave some lines and ridges, so there's one more step to clean up the cut: I switched to my 3/8" O.D. guide bushing and made one final clockwise pass around the template cutout. This left a nice clean surface that only required some light hand sanding.

Through mortises in the side panels for the lower shelf come next, and that's another job for the router. Carefully lay out the mortise locations on both faces of the side panels. Outfit your router with an edge guide and a 1/2"-diameter spiral bit, and cut just short of your layout lines. I plowed the 3"-long x 1/2"-wide mortises into the outside face first. Then maintaining the same edge guide settings, I flipped the side panel over and extended the mortises to an overall length of 7 1/2" (I trimmed the material between the mortises to a depth of 1/4" on the inside face as well to preserve the strength of the panel). Finish the job by squaring up the four mortise ends.

At this point, all the joinery for the side assemblies is complete. Go ahead and sand all the parts you've made, and glue a pair of legs to each side panel with the splines installed. Use your panel offcuts as clamping cauls when you bring each side assembly together. Once the glue sets up, trim the panel offcuts to a length of 12", and install one on each leg as corbels. I used a pair of #20 biscuits to center and attach these corbels on the legs. Align the corbels flush with the top of the legs, and glue them in place.



Reset the rip fence for a centered cut on the legs, and make one stopped groove in each leg. A featherboard and push pads help control the cut.



Shape the ginkgo leaf template with flat and round files. Make sure the stem portion of the design is at least 7/16" wide.



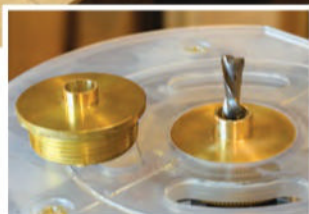
Start with a 7/16" bushing installed in your handheld router to rough out the inner waste material in several clockwise passes. Then switch to a 3/8" guide bushing with the same router bit for a final cleanup pass. The resulting shape needs very little sanding.



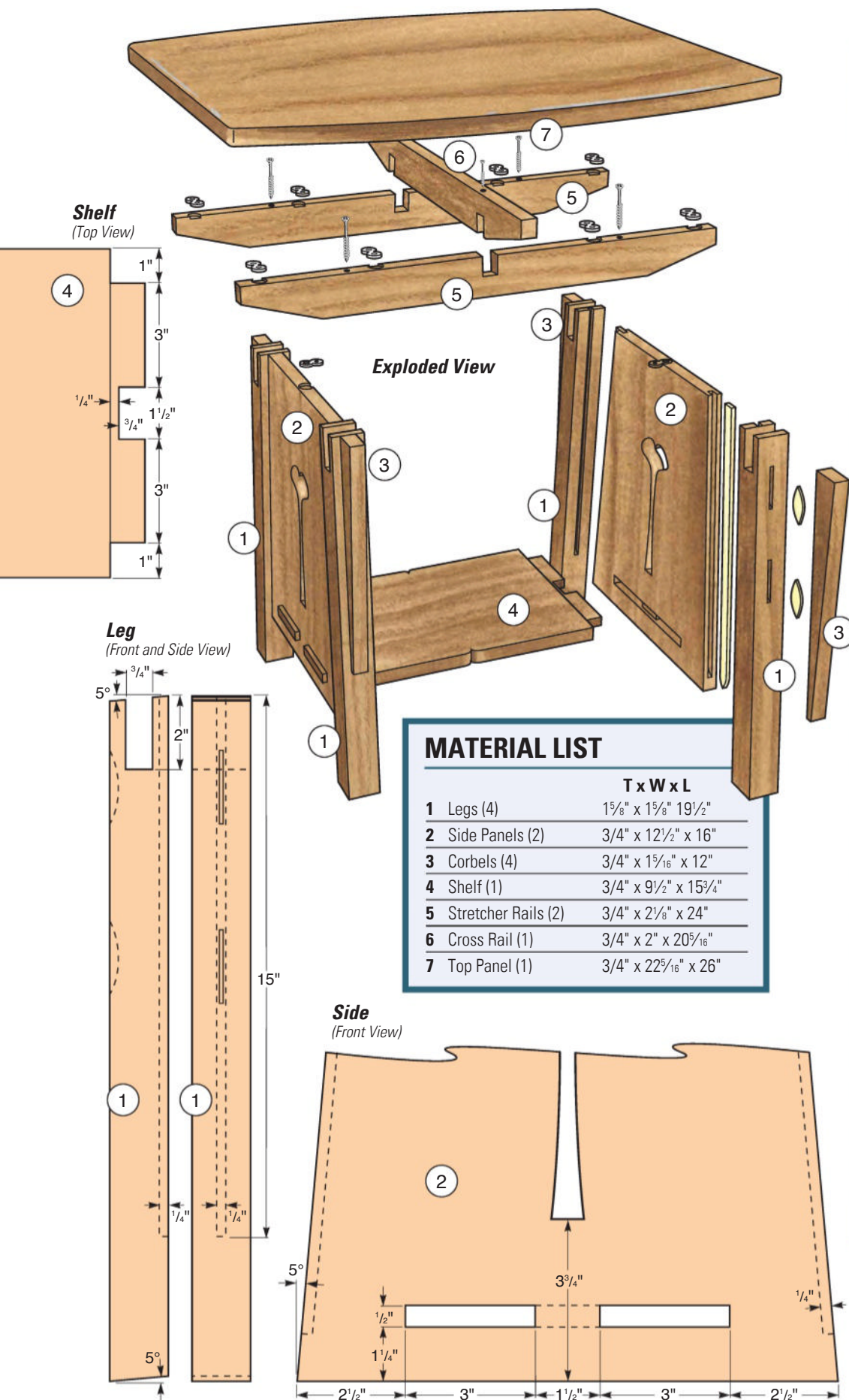
A router equipped with an edge guide and 1/2" spiral downcut bit handles the mortises. After the through mortises are cut from the outside face, flip the panel over and extend the mortises on the inside face (shown here).



A plunge router removes the waste inside the leaf cutout in a multi-step process. The author used two guide bushing sizes and a 1/4" spiral bit.



Chisel the corners of the four through mortises square. Make these cuts into the outside faces of the panels to reduce the chances of chipping the mortise edges. That damage would show after final assembly.



MATERIAL LIST	
	T x W x L
1 Legs (4)	1 5/8" x 1 5/8" x 19 1/2"
2 Side Panels (2)	3/4" x 12 1/2" x 16"
3 Corbels (4)	3/4" x 1 5/16" x 12"
4 Shelf (1)	3/4" x 9 1/2" x 15 3/4"
5 Stretcher Rails (2)	3/4" x 2 1/8" x 24"
6 Cross Rail (1)	3/4" x 2" x 20 5/16"
7 Top Panel (1)	3/4" x 22 5/16" x 26"

Ginkgo Leaf Cutout Template

(Front View)





Glue a pair of legs to each side panel using splines. Note the panel offcuts temporarily attached with painter's tape to act as clamping cauls (right). Then glue the offcuts to the legs to act as corbels (above).

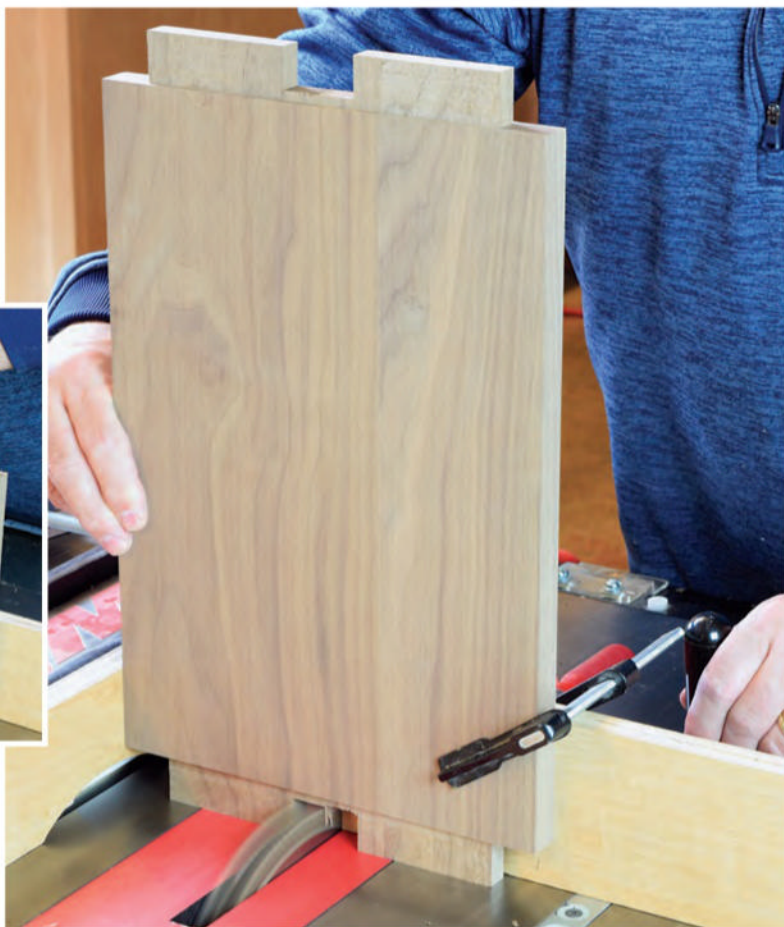


Making the Shelf

Glue up a panel for the shelf, if you're working with narrow stock, then cut it to 9½" wide and 15¾" long. Now switch to a wide dado stack, and install an auxiliary fence on your miter gauge so you can raise a 1"-long tenon on each shelf end. Make multiple passes until the tenons ease into the mortises from the outside face. Once the tenon thickness is established, turn the shelf on edge and raise the dado blade to a height of 1" to form its outer shoulders. Finally, turn the shelf up on end, lower the blade to ¾" and make side-by-side cuts to separate each long tenon into two with a ¼"-tall shoulder in between.



Once the shelf's long tenon thickness is established with a dado blade and miter gauge, turn the shelf on edge to cut the end shoulders (above). Next, lower the blade height to ¾" and turn the shelf on end to divide the tenons (right). Test the tenons against the mortises frequently, aiming for a snug fit.





The shelf receives a V-notch detail on both long-grain edges. Here, a template is clamped beneath the shelf and the shape is routed with a 1/4"-diameter flush trim bit.



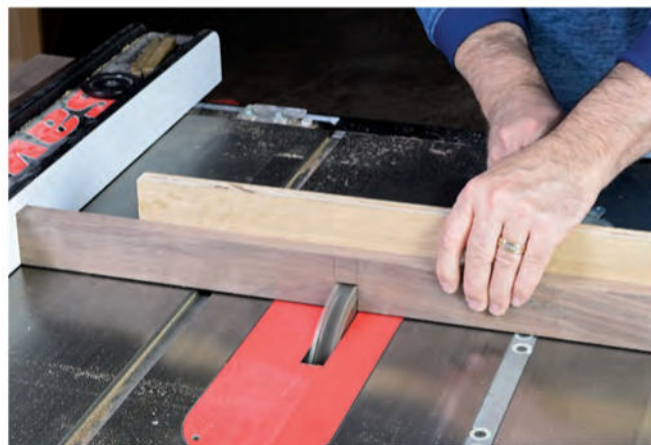
Test-fit the stretcher rails in the legs' bridle notches. The stretcher rails project 31⁵/₁₆" beyond the legs, so make sure to center the rails for the next step.



Clamp the side assemblies together with the shelf using parallel clamps. The middle clamp bears on a wooden block to direct pressure between the tenons. Use just enough pressure to close the joints.



Tilt a dado blade to 5 degrees to cut opposite-facing notches in the cross rail. Use a full 3/4" dado stack plus a .004" shim to ensure the parts will come together without a wrestling match.



Make a centered notch in the stretcher rails with a dado blade. Since the edge of this part receiving the notch has already been angled, it's important to hold the rail flat against an auxiliary fence.



Due to the fact that the rail joinery is angled, the parts won't drop right together. You may need to use a clamp, reversed as a spreader, to gently flex the stretcher rails apart to ease the half-lap joints into place.

I added a V-notch detail in the long edges of the shelf to echo the ginkgo leaf motif. You could make a template for pattern-routing these notches or simply make the cuts at the band saw and sand them smooth. Use a file to refine the point of the “V” where the bit can’t reach, if you rout the notches.

You’re rounding third now and on the home stretch with this intricate little table! For the final glue-up, bring the two side assemblies together with the shelf. Small blocks may be helpful to direct clamping pressure between the protruding tenons. Ease the edges of the clamping blocks to avoid denting or damaging the side panels.

Next up, make the two stretcher rails that will nestle into bridal joints atop the legs. These 3/4"-thick rails are 2 1/8" wide x 24" long. The only wrinkle here is that the top edges of the rails need to be angled to sit flush with the legs. So tilt your table saw blade to 5 degrees and rip the stretchers to width as needed until the parts fit. Then crank the blade back to 0 degrees and cut the cross rail to size.

Forming Half Laps and Adding the Top

Go ahead and install a 3/4"-wide dado stack so you can form the table’s half-lap joints. Set the blade height to about an inch, and cut a centered notch on the top edge of each stretcher rail. Now two complimentary notches need to be formed in the bottom edge of the cross rail. For this part of the half-lap joint, tilt the arbor on your table saw to 5 degrees, and make the two opposite-facing notches. To locate these notches correctly, install the stretcher rails on the table legs and measure directly from these parts. Use a bevel gauge to mark the exact location of the angled notches.

While the cross rail is still a loose component, drill it for the figure 8 tabletop fasteners. You’ll also need one centered and two elongated pilot holes for screws at each end. Then you can create tapered ends on all three rails. Mark a line that leaves their ends about 7/8" tall. Cut these angles at the band saw, and plane them smooth.

If the half laps fit together correctly, you’re ready to permanently attach them with screws and glue. Countersink and pre-drill the stretcher rails for #8 x 2 1/2" screws, driven into the legs from the top. The cross rail can be attached in a similar fashion to the stretcher rails with a pair of #8 x 1 1/2" screws.

All that’s left to make is the tabletop. It starts out as a 22 5/16"-wide x 26"-long panel. Lay out a curved treatment along its edges with a bowstring so the ends of the tabletop are reduced by the curves to 18 3/4" wide. Band-saw these barrel-shaped curves and sand the top smooth. Round over any sharp edges, and give the table a final inspection with a shop light to check for any imperfections.

As far as finishing goes, I often use a medium color “fruit-wood” oil-based stain on walnut projects. While some may argue that walnut doesn’t need stain, I find that it darkens the wood in a pleasant way and tends to unify the parts. If you choose a liquid stain as opposed to a gel stain, the natural grain of the walnut won’t be obscured. After the stain on my table dried overnight, I sprayed on a top coat of pre-catalyzed lacquer in a satin sheen. Attach the top with figure 8 fasteners to allow for seasonal movement, and this Asian-inspired side table is ready to display your favorite vase.



Tidy up the tapers on the ends of each rail by making repeated passes with a block plane. Hold the plane at a skewed angle while making these smoothing passes to minimize tearout.



The solid-walnut top is attached with figure 8 fasteners to allow for seasonal movement. Three screws through the cross rail offer additional anchor points.



Willie Sandry is an avid woodworker who builds furniture and dries his own lumber in Camas, Washington.

Wine Presentation Box

By Sandor
Nagyszalanczy

Special beverages given as a gift deserve a special presentation.

This box features a unique mechanism that literally “pops up” three wine bottles as the lid is opened.



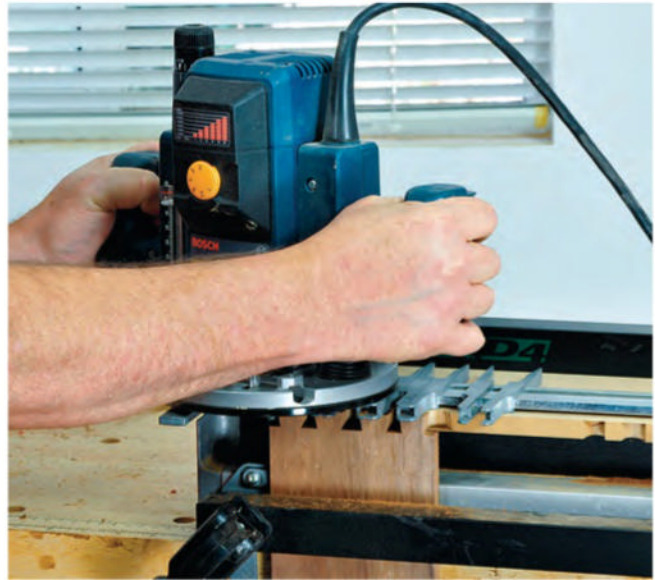
A good friend celebrated a milestone birthday this year, and since he’s a real wine aficionado, I wanted to give

him a few very nice bottles of wine presented in a special way. I’ve seen expensive vintage wines sold in wooden presentation boxes, but I wanted to make something that’s well beyond the ordinary. So I designed a box that presents the wine bottles by tilting them up as the lid is opened.

Most of this project is a very straightforward build and requires no special hardware. The box itself has sides joined with dovetails and a solid-wood bottom set into a groove. The hinged lid is made with a mitered frame that holds a floating raised panel. The bottle-lifting mechanism attaches to the underside of the lid and has a pair of bullet catches that keep the lid in the open “presentation” position when it’s fully lifted. The top of the lifting mechanism, as well as a bottle rack at the bottom of the box, keep the three bottles aligned and prevent



For the presentation box, the author resawed stock that he cut from an old-growth redwood stump on his property. After hand-sawing, each piece was surfaced and edged with a jointer and thickness planer.



The corners of the wine box were joined with through dovetails cut using a Leigh jig and an 8-degree dovetail bit chucked in the router. The tails and pins were spaced evenly to create a visually pleasing pattern.

them from shifting or clunking together. My box is proportioned to hold regular wine bottles, but you could adapt it to hold other kinds of bottles or containers.

Resawing the Stock

The box, as shown in the *Drawing* on page 18, is mostly made out of 1/2"-thick stock. Since I didn't have any stock that thin on hand, I decided to cut a couple of 2'-long bolts from one of the first-growth redwood stumps on my property in California's Santa Cruz Mountains. These trees are more than a thousand years old and yield wood that's a beautiful reddish-brown color with very tight grain (it's also much harder than newer redwood lumber). I resawed the bolts on my band saw and produced more than enough 1/2" stock for my project, as well as a few pieces of 1/4" stock to glue up for the box's bottom. While most of the stock was quartersawn, I plainsawed (cut parallel to the tree's annular rings) the bolt with the most attractive grain figure to use for the box lid's raised panel.

Routing Dovetails and Building the Box

Once all the parts were cut to the dimensions shown in the *Material List* (see page 18), I set about building the basic box itself. To make the box more attractive, I chose to join the sides with dovetails cut using a router and an adjustable finger-style dovetail jig. Alternatively, you may choose box joints or miter the corners together. After spacing the jig's fingers to create three full pins and two half pins across the width of the front and back, I cut test pieces using stock scraps, tweaking the jig until it produced perfect, tight dovetails. I marked the outside face and orientation of each piece, to help assure that the joints would be cut correctly, then routed the pins on both ends of the box's front and back pieces using a router fitted with a collar bushing and straight bit. I then cut the four matching tails in both ends of the box's left and right side pieces using an 8-degree dovetail bit in the router. For both cuts, I set the depth of the bit so that the pins/tails ended up slightly proud of the surface with the joint assembled.



Small pine blocks cut from scrap were arranged to provide clamping pressure to the tail portion of the joint. A light coat of glue applied to all joint surfaces produced only a small amount of squeeze-out.

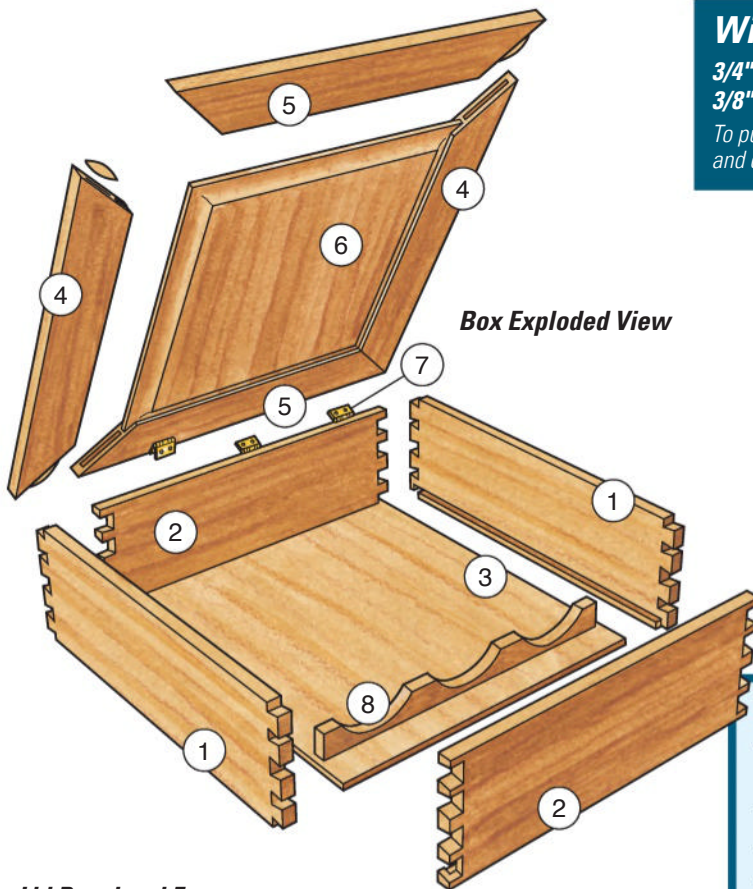


The box sides were assembled in two stages: The front and right side were first glued together, then back and right side. After glue-up, the author checked to make sure that each of the subassemblies was square.

Wine Box Hard-to-Find Hardware

3/4" x 3/4" Butt Hinges, Brass (2 pr.) #49165 \$2.99 pr.
3/8" Bullet Catches (1 pk.) #28464 \$9.99 pk.

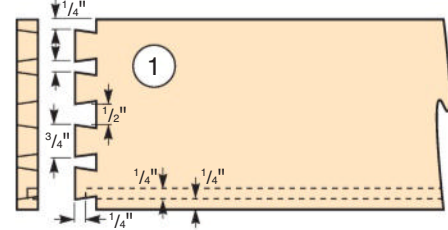
To purchase products online, visit www.woodworkersjournal.com and click on the "Store" tab. Or, call 800-610-0883 (code WJ1466).



Box Exploded View

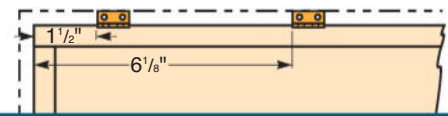
Dovetail Layout

(Side View)



Hinge Locations

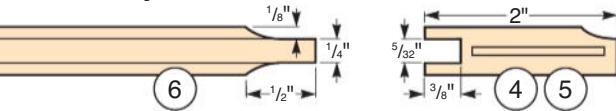
(Top View)



MATERIAL LIST (Box)

	T x W x L
1 Box Sides (2)	1/2" x 4 1/2" x 14 1/4"
2 Box Front and Back (2)	1/2" x 4 1/2" x 13"
3 Box Bottom (1)	1/4" x 12 3/8" x 13 5/8"
4 Lid Side Frames (2)	1/2" x 2" x 15"
5 Lid Front and Back Frames (2)	1/2" x 2" x 13 3/4"
6 Lid Panel (1)	1/2" x 10 3/8" x 11 5/8"
7 Hinges (3)	3/4" x 1"

Lid Panel and Frame
(Edge View)



In the second stage of assembly, the two box side subassemblies were glued together. At the same time, the box's solid-wood bottom was slipped into a groove routed around the lower inside surface of each side.

Next, I cut the groove on the inside of all four box sides to hold the box's bottom. I did this on the router table using a 1/4" spiral-fluted straight bit. I set the table's fence so the groove would end up 1/4" from the bottom edge of each workpiece and adjusted the bit's cutting depth so the grooves would be just over 1/4" deep. To prevent the grooves from showing through at the dovetailed corners, each cut had to be started and stopped



A gap left in the joint by a corner that broke off one of the tails was repaired with a small plug cut from a redwood scrap with a similar grain. After applying glue with a pipe cleaner, the plug was pressed into the gap.

just shy of the end of the stock. I did this by marking the stock's start and stop positions on the table fence, then dropping and lifting the stock at the beginning and end of each cut.

To make the box bottom, I planed several narrower pieces to a final thickness a hair under 1/4", jointed their edges square and glued them up to create a 12 3/8"-wide bottom. Once the glue was dry, I scraped off the squeeze-out, then trimmed the bottom

to its final dimensions. I sanded the bottom as well as the inside faces of the box sides up to 240-grit, in preparation for assembly. I took care not to sand the dovetail surfaces to prevent accidentally spoiling their fit.

I assembled the sides of the box in two steps: First, I glued up the right side of the box with the front, applying yellow glue to all joint surfaces before carefully pressing the corner together. Before clamping, I arranged four small pine blocks over the tails, then set a larger block over them, to apply pressure only where it's needed to clamp the joint together. I repeated this procedure with the box's left side and back, then used a try square to check that the parts were square.

After these subassemblies dried, I glued them together while simultaneously capturing the bottom in its groove. It helps if you trim off just the very tips of the bottom's corners so they'll slip into place more easily. After applying the clamps, I checked the box for square before setting it aside to dry.

Once the glue squeeze-out was rubbery hard, I belt-sanded each side of the box until the slightly protruding pins and tails were flush. Upon careful inspection, I discovered a few places where corners of the tails had broken away, leaving unsightly gaps. I repaired the smaller gaps with filler mixed from redwood dust and glue; for bigger gaps, I carefully cut redwood plugs that I glued in place. After the joints were corrected, I finish-sanded all the outside surfaces and edges of the box.

Making the Frame-and-Panel Lid

The lid for the box is made much in the same way I'd make a frame-and-panel door for a cabinet. The frame has 45-degree mitered corners joined with plate joinery biscuits. A groove on the frame's inside edge holds a panel whose edges have been "raised" (shaped to be thinner at the edge to fit the groove).

After cutting the frame stock to width, I mitered the ends on the table saw using a sliding miter jig to assure that the ends were all a perfect 45 degrees. I also made sure that the opposite pairs of frame members were exactly the same length. I then used the router table fitted with a 5/32" slot cutter bit to slot the ends of the miters for #10 plate joinery biscuits. I set the table's fence so that slots were centered on the mitered ends. I then used the same bit to rout a 5/32" wide, 3/8"-deep groove on the inside edge of each frame piece for the center panel.

As mentioned earlier, I cut some highly figured redwood pieces for the lid's center panel. For a decorative look, I glued together two narrower pieces that were consecutively cut from the bolt to create a book-matched panel with a mirror-symmetrical grain pattern. Once the panel was glued up, scraped and sanded, I cut it to final dimensions and shaped its edges on the router table. In lieu of a traditional panel-raising bit, I used a finger pull bit, the top portion of which created the desired 1/4" radius cove cut (a cove bit also works fine). I set the bit's height to leave 1/8" of thickness after the panel's edge had been shaped on both sides. To avoid grain tearout, I routed the shorter ends of the panel first, then the longer edges. After shaping both sides of the panel, I sanded all surfaces smooth.

To assemble the box lid, I applied glue to all the biscuits and slots on the ends of the miters. I assembled one corner first, set the panel into its groove and then put the remaining frame members in place. To make the process easier, I used a quick-



The ends of the box lid's mitered frame were slotted for plate joinery biscuits on a router table fitted with a 5/32" slot cutter bit. The same bit grooved the inside edges of the frame for the lid's raised center panel.



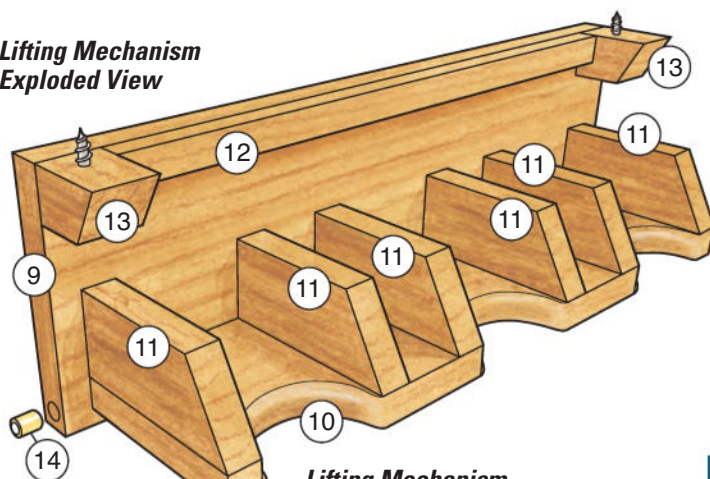
The top curved portion of a finger pull bit was used in the router table to raise the lid's book-matched panel. Each side of each edge was routed so as to reduce the panel's edge to about 1/8" thick.



The author used a quick-release frame clamp to draw the mitered corners of the lid's frame together. After spreading glue into each biscuit and its corresponding slot, the frame members were assembled around the raised panel and each corner of the clamp tightened (inset).

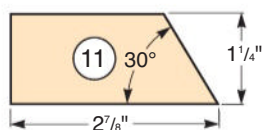


Lifting Mechanism Exploded View

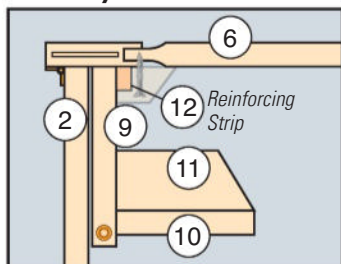


Mechanism shown as if positioned in closed box.

Lift Dividers (Front View)

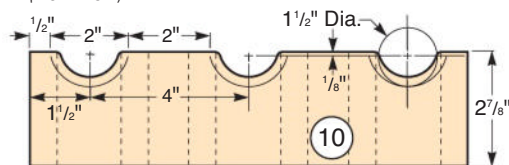


Lifting Mechanism Assembly Detail

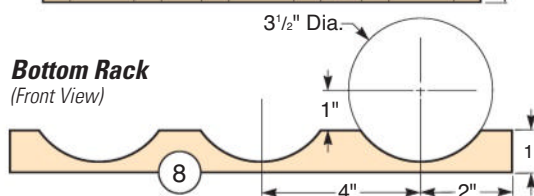


Note: The Reinforcing Strip is glued to both the Rear Lid Frame and the Vertical Support.

Lifting Strip (Front View)



Bottom Rack (Front View)



MATERIAL LIST (Lifting Mechanism)

	T x W x L
8 Bottom Rack (1)*	1/2" x 1" x 12"
9 Vertical Support (1)	1/2" x 3/4" x 11 7/8"
10 Lifting Strip (1)	1/2" x 2 7/8" x 11"
11 Lift Dividers (6)	1/2" x 1 1/4" x 2 7/8"
12 Reinforcing Strip (1)	1/2" x 5/16" x 10 1/8"
13 Mounting Blocks (2)	3/4" x 7/8" x 1 1/4"
14 Bullet Catches (2)	3/8"

*See Exploded View on page 18



A 1 1/2"-diameter Forstner bit chucked in the drill press bores three semi-circular holes in the front edge of the wine box's lifting strip. A scrap strip clamped to the strip's edge prevents the bit from wandering.



Bullet catches fitted onto the ends of the lifting mechanism are used to hold the lid and wine bottles up when the lid is lifted open. The catches are glued into their 3/8"-diameter holes with a small dab of epoxy.

release frame clamp set, which keeps all four corners aligned as it applies clamping pressure. I scraped off any squeeze-out after the glue had dried. To add detail to the lid, I shaped a small cove around the entire top edge of the frame and then sanded both sides of the frame to final smoothness.

The lid is attached to the box with three small brass hinges. After centering the lid atop the box, I clamped it temporarily in place, then inverted the assembly on my benchtop (atop an old towel, to prevent dings and scratches) and positioned hinges as shown in the *Drawing* (see page 18). After marking and drilling pilot holes, I drove all 12 screws to install the hinges.

Forming the Lifting Mechanism

The lifting mechanism that stands the bottles up is constructed from 11 different pieces, dimensioned as shown on the *Material List* above. All but the 3/4"-thick mounting blocks are made from 1/2" stock. After cutting these parts to size, I bored three semicircular notches into one long edge of the lifting strip (spaced as shown in the *Drawing* above) using a 1 1/2"-diameter Forstner bit chucked in the drill press. As these three holes are centered only 1/8" from the edge, I temporarily clamped on a scrap strip to keep the bit aligned during drilling. I rounded over both edges of each notch with a 1/4"-radius roundover bit in a small router. Next, I drilled a 3/8" hole in each end of the vertical support strips (for the bullet catches), as well as a single countersunk 1/8" hole through each of the mounting blocks.

Assembly of the lifting mechanism takes a few steps. First, I attached the six dividers to the top of the lifting strip, with the two end dividers flush with the ends of the strip. The other four are aligned adjacent to the edges of the notches, as shown in the *Drawing*. After applying just a touch of glue to each

www.woodworkersjournal.com
MORE ON THE WEB

For an online video showcasing the assembly and function of the Wine Presentation Box's lift mechanism, visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

divider, I carefully positioned it square to and flush with the strip's back edge and clamped it down. Once this assembly dried, I glued it to the front of the vertical support strip, locating it 1/4" up from the support strip's bottom edge and centering it lengthwise. I also glued the mounting blocks and reinforcing strip in place.

When everything dried, I strengthened the connections between parts with 1"-long 23-gauge pin nails driven with a pneumatic pin gun. Next, using my oscillating spindle sander, I rounded over the corners of the notches in the lifting strip so their outer edges come flush to the dividers. Finally, I fitted the two bullet catches, gluing each into its hole with a small dab of two-part epoxy.

To mount the lifting mechanism, I started by using a scrap block to mark a line on the underside of the lid that's in line with the inside of each of the box's sides. I set the box upside down atop a towel on the benchtop and opened the box so it stood upright. I then placed two shim strips, one 1/2" thick, the other 3/32" thick, against the edge where the box's hinges are. I set the lifting assembly onto the lid and centered it between the marks I just made. With the mechanism's back edge pressed against the shims, I slipped a sharpened piece of wire into the mounting block holes to mark their positions. I then used the marks to drill small pilot holes for the #6 x 1" screws, repositioned the lifting mechanism and screwed it into place. After flipping the box over, I closed the lid, using a pair of scrap blocks to depress the bullet catches. After making sure the mechanism functioned properly by testing it with three wine bottles, I positioned the lid with the bullet catches about 1/2" below the top edge of the box and marked their positions. Using a Dremel tool fitted with a 1/4"-diameter round burr, I created a shallow dimple at each bullet catch mark, then tried the mechanism again: The lid should click and stay in position when the catches engage the dimples. To make it a little easier for the catches to disengage when closing the box, you may want to sand or file a slight "ramp" on the lower side of each dimple. The last step is to unscrew the lifting mechanism, apply glue to its top edge and screw it back onto the lid.

There's just one more part to add: the bottle rack to hold bottles. After cutting it to size, I sawed out three 3 1/2"-diameter semicircles on the band saw and then went over the edges with a 1/4"-radius roundover router bit. I glued and nailed the rack to the bottom of the box, positioning it parallel to and 1 1/2" from the box's front side. To finish my presentation box, I applied several coats of Danish oil, which revealed the redwood's grain figure beautifully. I then waxed the outside surfaces to bring them up to a bright semi-gloss finish. All that was left was to pick out three really good bottles of wine to put into the box!

Sandor Nagyszalanczy is a furniture designer/craftsman, photographer and widely published woodworking author.



To prepare for mounting the bottle lifting mechanism, the inside edges are marked on the underside of the lid. The mechanism is then positioned between the lines and the holes are marked for mounting screws (inset).



The author tested the operation of the lifting mechanism (temporarily screwed in place) with three bottles. With the lid fully open, he marked the position of the bullet catches and used a Dremel tool to create divots.



Once the lifting mechanism was operating smoothly, it was glued and screwed to the underside of the lid. The dividers between the notches keep bottles from shifting sideways inside the box.

Dual Stop Vertical Drilling Jig

By A.J. Hamler

Properly adjusted, nothing beats a drill press for boring perfectly vertical holes. With your stock flat on the table, held by hand or with a clamp when needed, as long as your table's square to the chuck, you'll get spot-on vertical holes.

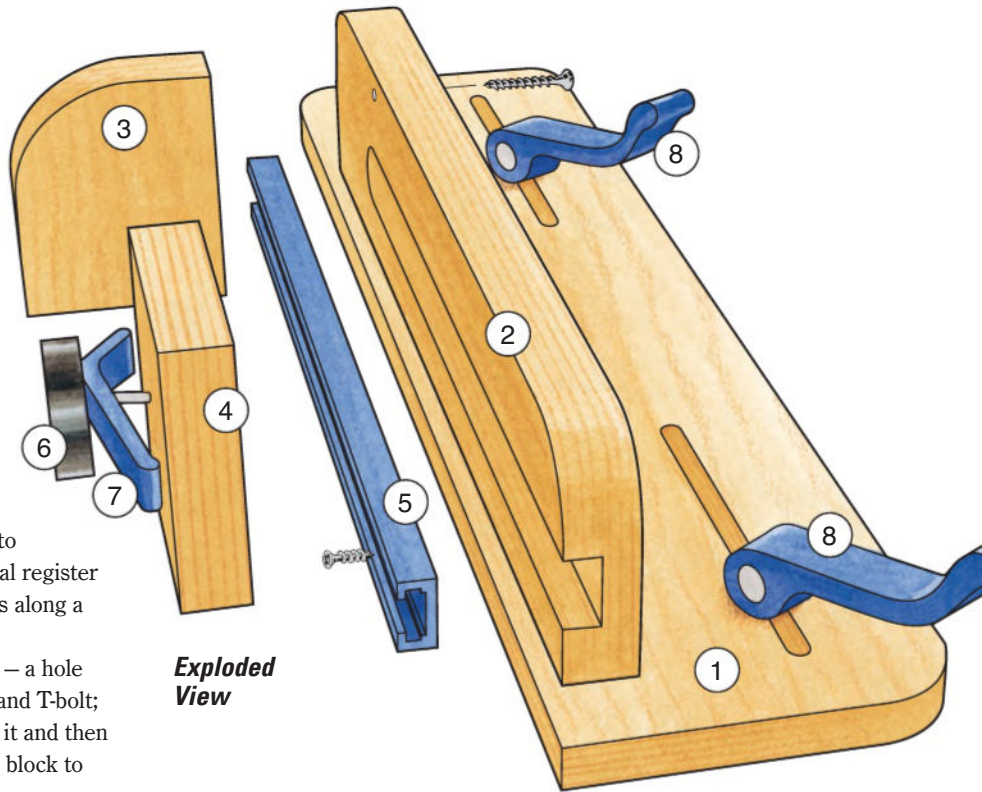
However, when drilling holes into the ends of a workpiece, turning the work on-end and keeping it rigidly vertical while drilling creates a delicate balancing act. A vertical drilling jig like this one makes the process easy again.

This jig works with the drill press's table (properly adjusted so it's square, of course) to hold your workpiece vertically with a dual stop system — one stop permanently affixed to the jig's 90-degree fence serves as the vertical register for the workpiece, while a sliding stop adjusts along a T-track to hold the workpiece upright.

Sliding stops and T-tracks go well together — a hole drilled through the stop accepts a star knob and T-bolt; slide it along the track to wherever you want it and then just snug it up. I offset the hole in the sliding block to add versatility.

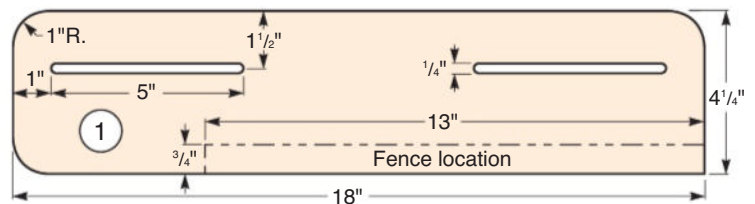
For simple drilling of shallow holes, just use the sliding stop and knob by itself to orient your workpiece against the jig's fixed stop. The jig provides the verticality while you simply hold the piece in place. For deeper drilling (especially for things like pen blanks that tend to get "stuck" on the drill bit), add a hold-down clamp beneath the star knob. Slide the whole thing over against your workpiece and clamp everything down securely.

Because the T-bolt hole is offset in the sliding block, you can orient the long tang of the hold-down to one side or the other of the block and orient the block with the hole to the right or left, all of which provides versatility and efficient clamping power for differently sized workpieces (see photos, bottom of next page).

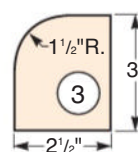


Exploded View

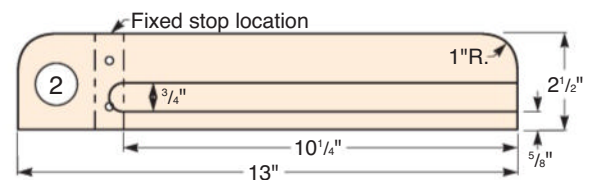
Jig Base (Front View)



Fixed Stop (Front View)



Fence (Front View)



MATERIAL LIST

	T x W x L
1 Jig Base (1)	1/2" x 4 1/4" x 18"
2 Fence (1)	3/4" x 2 1/2" x 13"
3 Fixed Stop (1)	3/4" x 2 1/2" x 3"
4 Sliding Stop (1)	3/4" x 3" x 3"
5 T-Track (1)	(see hardware box)
6 Star Knob (1)	(see hardware box)
7 Hold-Down Clamp (1)	(see hardware box)
8 Cam Clamps (2)	(see hardware box)

Drilling Jig Hard-to-Find Hardware

2 Ft. Universal T-Track (1) #22104 \$12.99
 Hold-Down Clamp with Star Knob (1) #35283 \$12.99 ea.
 1/4"-20 Cam Clamp (1) #58244 \$9.99 pk.

To purchase products online, visit www.woodworkersjournal.com and click on the "Store" tab. Or, call 800-610-0883 (code WJ1411).

Making the Jig

You can make your jig from just about any flat material, but I chose 1/2" birch plywood for the jig base and 3/4" for everything else. I've sized the jig and its components for my drill press, so you may want to adjust sizing to best fit your machine. Also, my drill press has a pair of T-tracks in the cast-iron table that I took advantage of with T-bolt cam clamps, but if your drill press lacks those you can also use the cam clamps with regular bolts and large washers in the open slots in your table. If that does not work, you can simply clamp the jig to your drill press table to hold it securely.

Begin by cutting the base to size and routing a pair of 1/4" x 5" slots for the cam clamps. Place these about 1 1/2" from the back edge and 1" from each end. (This placement and slot length gave the movement range that worked best for my drill press, but adjust yours as needed.) The router table works best for this task. Mark the router fence so the bit lines up with the slot's starting point, then mark the workpiece where you want the slot to stop. To cut the slot, line up the workpiece on the fence mark and drop the wood onto the bit. Then just slide the workpiece along the fence until you reach your stop mark, and lift the workpiece off. Repeat the process for the other slot. With that done, round off three of the corners with a band saw or jigsaw as you can see in the *Drawings* — the right/front corner of the base remains square for placement of the fence shortly.

Now, cut and round off the jig fence and mark the location of the fixed stop onto the fence face as shown in the *Drawings*. Rout a 3/8" x 3/4" dado along the length of the fence, stopping the dado in the middle of the stop location. This allows you to attach the T-track so the end is hidden underneath the fixed stop once it's in place.

Attach the fence to the front of the jig as shown in the *Drawings* with glue and screws, and then glue the fixed stop into place on the front of the assembly. Note: The fixed stop holds the key to keeping your workpiece vertical, so check for squareness as you do this glue-up. Once the glue has cured, reinforce the fixed stop with a pair of screws countersunk from the back of the fence.

Finally, drill a hole for the star knob through the sliding stop centered top-to-bottom and about 1" from the edge.

You can leave the jig unfinished if you like, but two coats of polyurethane will help the sliding stop move more smoothly along the face of the fence (and make the jig look terrific).

A.J. Hamler writes frequently for Woodworker's Journal.



To make a routed slot inside a workpiece, line it up with your start mark on the fence. Then just drop, rout to your stop mark and lift up. The location of the slots may need to be adjusted to accommodate your drill press.



By routing the dado slightly long, the end of the T-track is neatly hidden underneath the fixed stop — a nice touch. The T-track is held in place by screws driven in through prepared countersunk holes.



For more holding strength, install a hold-down clamp underneath the star knob on the sliding stop. For wider workpieces, flip the sliding stop and hold-down clamp as needed. Because the hole for the star knob is offset on the sliding stop, the blue hold-down clamp can be flipped 180 degrees to accommodate differently sized stock. When drilling shallow holes, you can remove the hold-down to speed up your drilling.



Tambour Console Cabinet



By Rob Johnstone

Great details like waterfall corners, handmade tambour doors and tapered legs are an inspiration to get into the shop!

As I was growing up, the furniture in our home was Mid-Century Modern style. Of course, then it was just furniture ... period. So that may be one reason that I am drawn to the style. Not everything Mid-Century Modern strikes my fancy, but this console certainly does.

When you first look at the piece, it is easy to miss many of the fine details. And that is one of the truly pleasurable things about this console — the more you look, the more you like. The wood grain of the solid walnut flows around the carcass. The tambour doors provide excellent access to the interior and are a stunning collection of vertical lines when closed. The angled and tapered legs (also of solid walnut) have the mass to balance the carcass and draw your eyes up from the floor. The interior of the console is made from naturally finished maple plywood, making the most of the light that bounces into the recesses of the cabinet. And, while certainly not last, the finish on the hand-selected walnut lumber brings out the rich color of this truly American wood. There are many more lovely details, but I will leave them for you to discover.

You Can Build This!

The techniques required to build this console are not overly difficult and are within the skill level of most woodworkers. The biggest challenge is surfacing the wide walnut panels. This task can be achieved using a variety of solutions, but it should be considered before you start.

Go ahead and get your solid lumber and bring it into your shop for a week or so to get it acclimated to its surroundings. Purchase about 30 percent more 5/4 roughsawn walnut than you think you will need to allow for regular waste and an “oops” here or there. To accommodate the waterfall miter joinery, you will need boards of sufficient length: just a bit under 8' of length as long as there are no serious flaws in the stock. Surface the lumber to just a bit thicker than 1", say a scant 1/16" over, so you can flatten the glued-up panel later and retain the 1" thickness. Joint the edges of the lumber to flatten and square them 90 degrees to the faces of the stock.

Now you need to compose the panel (put the boards together so the grain pattern is most pleasing) and do a bit of noodling regarding how you will glue and clamp the panel together. We used biscuits to help keep the boards' edges nicely aligned



Waterfall joints are a subtle but lovely design feature that has gained popularity lately. Featured on kitchen islands in some home improvement shows, this particular type of mitered corner has become nearly ubiquitous. That's really what we are talking about: mitered corners, conceived in such a way as to allow the grain of your panel to “flow” around the corner.

So, what are the details to keep in mind when you are considering a waterfall joint? Let's start with the most obvious: the panel from which you'll cut your corners has to be long enough to have continuous grain — in our example here, the “waterfall” flows between the sides and the top. Our bottom panel does not have continuous grain.

Next, if you are using a solid-wood panel, aligning the stock as you glue up the large panel can be a challenge. Splines or biscuits can make that task easier, but be careful not to locate them where future machining will expose them to view. Take time to “compose” the panel, arranging the boards for the most pleasing blend of grain.

Additionally, you will need a way to accurately cut the miters in your panel. This is critical. (Here we constructed a crosscut sled for the table saw to make that happen.) Finally, you'll need a way to accurately align the miter joints while wrangling a really large project. Again, splines or biscuits are lifesavers here. Having a friend around during the glue-up is also a good idea.



This project's waterfall joinery requires a very long panel. Mark the miter locations as well as where the biscuits will be inserted to help plan your panel's layout.

during the gluing and clamping phase. I also chose Titebond® III for this task, as it has a longer open time. Every little thing can be helpful. One note about the biscuits used to align the long boards: plan ahead and keep their locations out of the area where the mitered corner joints will occur. At this time, I also glued up the stock to make the bottom panel of the console.

Once the glue has cured and you've removed the glue squeeze-out, it is time to cut the miters. The crosscut sled we built for this task had a couple of special features. Purpose-built cleats and a toggle clamp held the panels securely. I first cut the panels to their exact size and then tilted the blade over to form the miters on the smaller pieces. Between those two cuts, I surfaced the panels to their 1" thickness.

There is a video online that documents nearly every step of building this console. View it by clicking on "More on the Web" at woodworkersjournal.com.

Ready to Rout

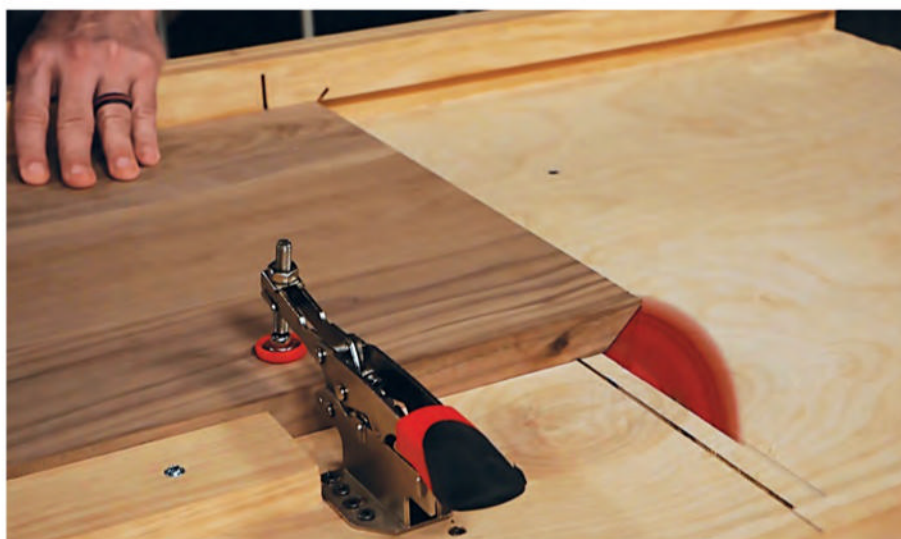
With the four large walnut carcass components cut to size and mitered, form a 1/4" x 3/8" rabbet on their interior back edges. When that's done, it is time to rout their inside faces. But before you can do that machining, you need to construct a template to guide the router. In the *Drawings* on the next page, you'll find the details to create the template. It allows you to plow the tracks that the tambour doors will slide in as they open and close. I used a

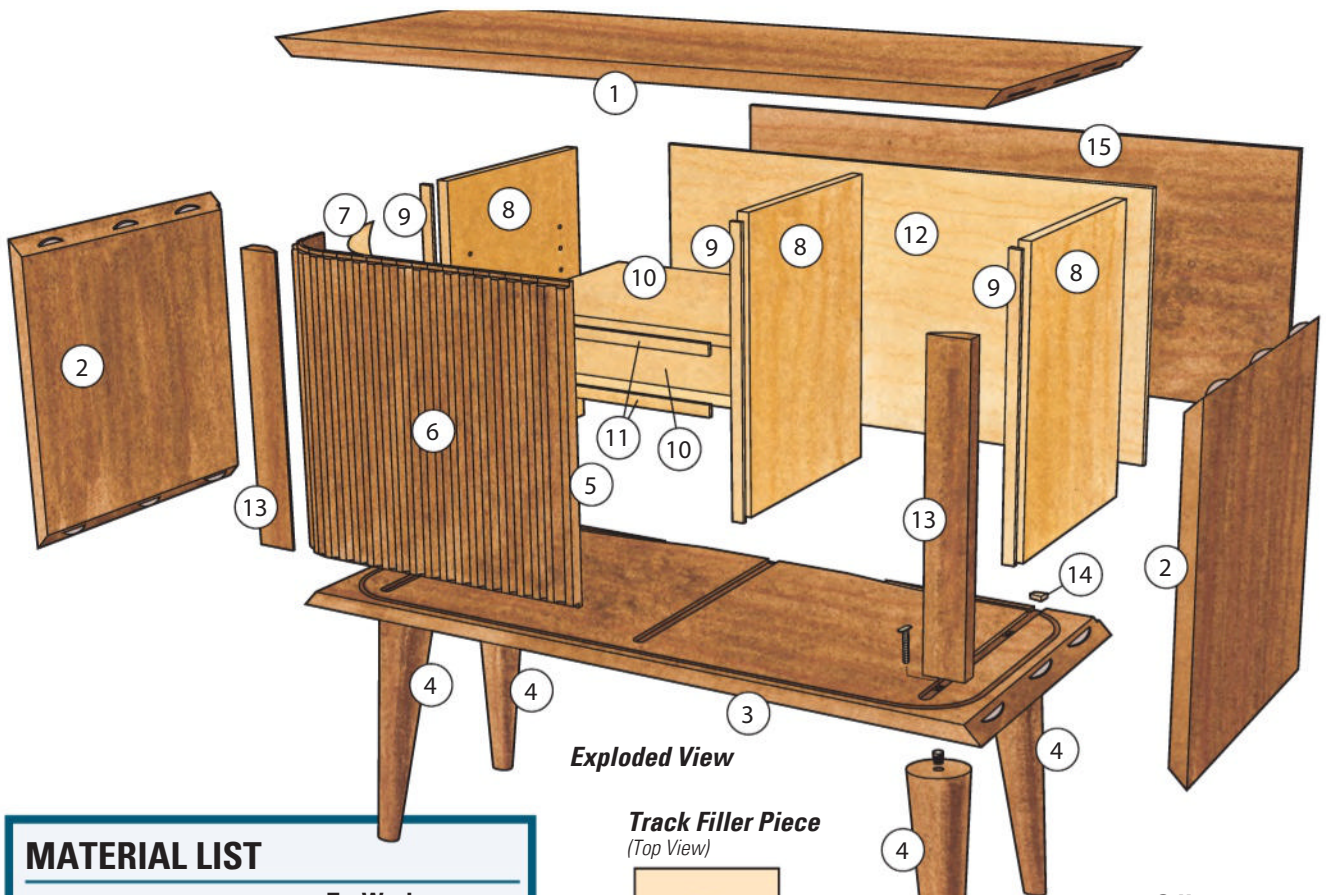
5/16" straight bit chucked in my router and a properly sized rub collar to guide the tool. Because the interior will not be seen, I screwed the template in place to be certain it would not move as I routed.

And here is an important point. Try as you might, when you create the template, it is unlikely to be exactly symmetrical. Because of that inaccuracy, if you were to trace the shape of the template onto a large piece of paper, then flip the template over and trace its shape again, you would see that the lines would not match perfectly. To avoid plowing mismatched tracks into the top and bottom panels, mark the opposite faces of the template "top" and "bottom." When you plow the track in the top, you should see the word "top," and you should see the word "bottom" when routing the bottom. Doing that will keep the tracks correctly aligned and oriented despite template irregularity.

For the last bit of routing, plow the dadoses that will later accept the vertical dividers. These are stopped dadoses sized to match the plywood thickness. See the *Drawings* for details. With that done, you have just a couple more tasks before you can glue the carcass together. The first is to form the angled leg mortises

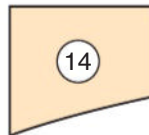
To accurately miter-cut panels this large, the author employed a crosscut sled with cleats and a hold-down clamp to secure the stock as it was being cut.





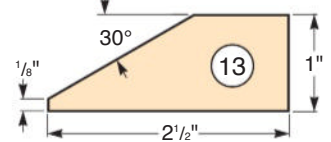
Exploded View

Track Filler Piece
(Top View)



Note: This small piece fills in the wood removed when routing the vertical divider dadoes.

Stile
(End View)



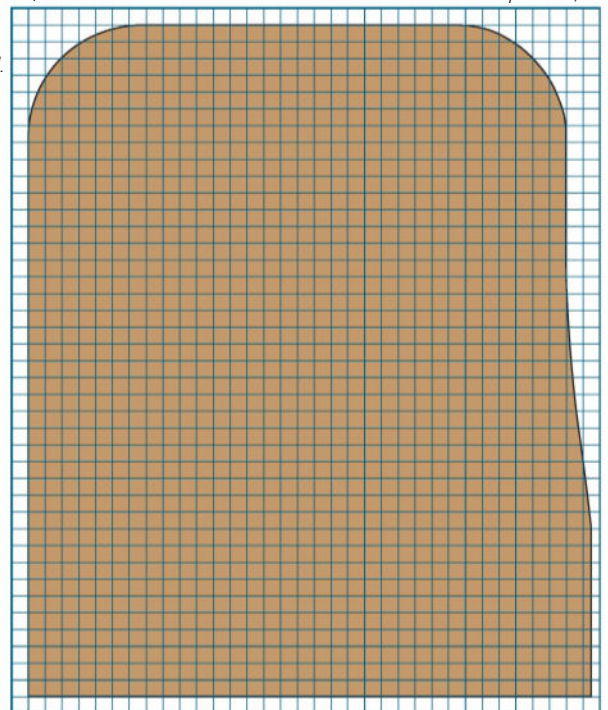
MATERIAL LIST

	T x W x L
1 Top (1)	1" x 18" x 44"
2 Sides (2)	1" x 18" x 20"
3 Bottom (1)	1" x 18" x 44"
4 Leg Blanks (4)	3" x 3 1/4" x 17"
5 Tambour Handles (2)	7/8" x 2 1/8" x 18 1/2"
6 Tambour Sticks (40)	3/4" x 13 1/16" x 18 1/2"
7 Canvas Tambour Backing (2)	Duck Canvas Fabric
8 Vertical Dividers (3)	3/4" x 14 1/4" x 18 1/2"
9 Vertical Divider Trim (3)	1/4" x 3/4" x 18"
10 Shelves (2)	3/4" x 14 1/4" x 16 13/16"
11 Shelf Trim (2)	1/4" x 3/4" x 16 13/16"
12 Inner Case Back (1)	1/4" x 18" x 35 1/4"
13 Stiles (2)	1" x 2 1/2" x 18"
14 Track Filler Pieces (4)	1/4" x 3/4" x 3/4"
15 Back Panel (1)	1/4" x 18 1/2" x 42 1/2"

Groove Routing Template
(Top View)

Each square = 1/2"

Note: Make the template from 1/4" plywood or hardboard. Screw it to the console pieces to keep it secure while routing.



Tambour Console Hard-to-Find Hardware

TransTint® Orange Dye (1) #22307 \$26.99 ea.
1/4" Antique Brass Pin Supports (1) #22765 \$6.99 pk.
Rockler Tambour Router Bit Set (1) #61896 \$120.99 ea.
T-Slot Bolts 5/16" - 18 Thread 1" Long (4) #33965 \$1.99 ea.
Hex Drive 5/16" - 18 Threaded Inserts (1) #31880 \$7.99 pk.

To purchase these and other products online,
 visit www.woodworkersjournal.com/hardware or
 call 800-610-0883 (code WJ1577).



Plowing the track that the tambour doors will slide in requires a template to guide the cut. Screw the template in place for routing.



Cut three dadoes into the top and bottom panels to house the vertical dividers. Where the dadoes interrupt the tambour track, small fillers will be added to allow the doors to slide smoothly.

in each corner of the bottom. I did that by building a jig to hold the bottom at the 7-degree angle on top of my drill press table. As you can see in the photos below, I made use of a 2 $\frac{7}{8}$ "-diameter Forstner bit to excavate the round mortises. I tested the setup using some scrap plywood before I drilled into the walnut bottom (better safe than sorry). Later, the legs will be turned to fit tightly into the angled recesses.

Before you leave the drill press, take the time to bore a hole through the bottom at the center of each leg mortise. You can use the same jig as you drill these 3/8"-diameter holes. Later, you will use these holes when you mount the legs with threaded inserts. Don't be alarmed when the 3/8" holes intersect with the dadoes; they're supposed to do so. In fact, now would be a good time to chop out the four tiny mortises to fit the ends of the T-nuts that will be installed later.

Glued-on Clamping Cauls

Gluing and clamping together a large mitered cabinet like this is no small challenge. I took two steps to make it easier. First, I sliced three biscuit mortises per corner, to once again aid in keeping the joints perfectly aligned. Second, I made clamping cauls from scrap plywood. I glued those cauls in place on the outside corners of the sides, bottom and top, using a single squiggly line of liquid hide glue. I just rubbed the cauls back and



A drill press jig will help bore the leg mortises at the proper 7-degree angle. Turn the top diameter of the legs to fit these mortises tightly — it will add strength to the joints.



A thin bead of liquid hide glue attaches the temporary clamping cauls to the carcass components. These cauls will then be easy to break loose without damaging the wood. Simply scrub away the dried glue.



Managing the glue-up of a large carcass requires careful preparation. Here, the author dry-assembles the console to test-fit the corner joints and to practice the clamping order and procedure.

forth until they “grabbed,” employed a couple of Rockler Bandy Clamps to hold them securely and then let them cure for an hour or so.

I can almost hear you saying, “Why in the world would you glue those ugly chunks of plywood to the cabinet?” Don’t worry, they are just temporary: after the console is assembled, you will take a chisel and break the cauls away. A little sanding and scrubbing with some water (a big advantage of hide glue’s reversibility!) and you will never know the cauls were there — except that the miter joints will be as tight as can be.

It is always a good idea to do a dry assembly to check out your joinery. That also gives you a test run to determine how complicated the glue-up process will be. The clamping cauls make this gluing and clamping process so much easier to do. If the glue joints fit well, go ahead and apply glue and clamp the carcass together, and measure the diagonals to verify it is square. Allow the glue to cure for several hours, overnight if possible. After the glue cures, use a wide chisel and a mallet to pop the cauls off of the walnut. Do this by laying the flat back of the chisel on the walnut, and use the bevel of the chisel as a wedge to pop and pry the cauls free. Then sand and wash the hide glue residue away.

Now go ahead and build the legs. They are made from glued-up walnut blanks measuring 3" x 3 1/4" x 17". Their shape is a straight taper that starts at 2 7/8" at the wide end and reduces to a 1" diameter at the narrow end. I mounted mine on the lathe by drilling a hole for a threaded insert at the wide end and then using a mandrel in the headstock of the lathe. (The threaded inserts and bolts are optional, but I found them to be a good idea.) A standard live center in the lathe’s tailstock will work at the narrow end. Start with a spindle roughing gouge, get the



A combination of glued-on cauls and alignment biscuits turn this challenging assembly job into a very manageable task.

shape close and then switch to a square-end scraper. If you are comfortable with it, finish the task with a skew chisel. Sand the legs smooth all the way up to 600-grit paper. With that, the shaping is done, but before you set them aside, take a few minutes and seal the end grain of the wide end of the legs with hide glue. Later, you’ll use the same glue to secure the legs in their mortises. This step will make the leg joints much stronger.

Tambour is Terrific!

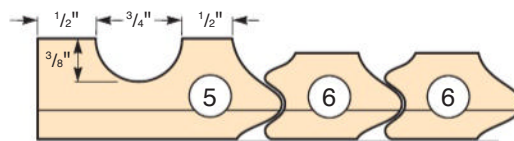
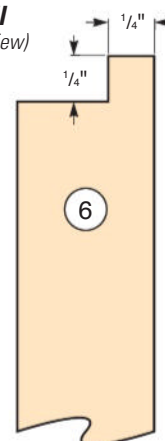
If you have never made a tambour panel before, it can seem a bit tricky and even overly complicated. But in truth, it is really pretty easy, especially when you use Rockler's tambour cutting router bits. Following the directions on the tambour bit packaging, cut your stock to its width and thickness. I chose to leave the pieces long rather than cut them to length before I machined them. I think it saved time. Each piece needs to be machined twice. Make sure you shape enough stock to have a few extra pieces, then cut the pieces to length.

The next step is to cut a small rabbet into the front-facing ends of each piece of tambour. These rabbets will allow the pieces to fit and slide in the top and bottom tracks. I made a little jig to hold each piece and used a dado stack to form the rabbet on the table saw. See the *Drawing* at right for the tambour details.

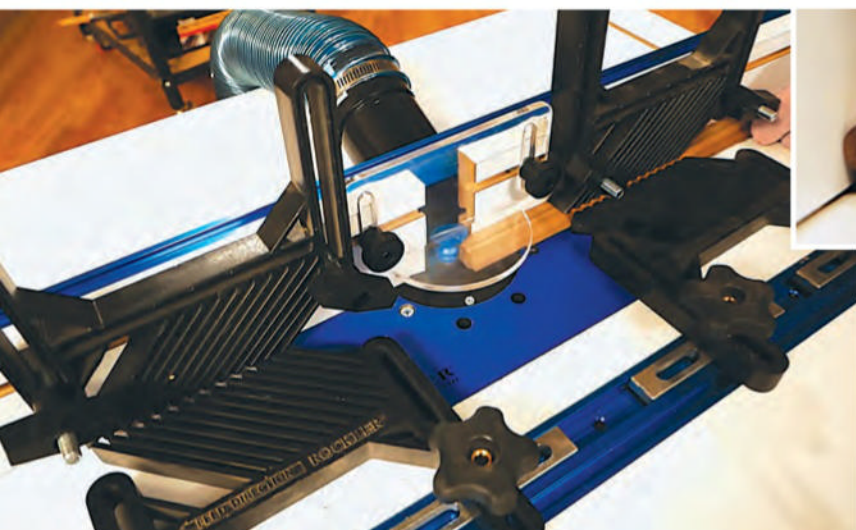
With the machining done, you'll need to hold the tambour together as you assemble the separate sticks into a sliding door. You join them by gluing them to a canvas backing. I used liquid hide glue to glue the canvas to the tambour, but the tambour sticks need to be tightly held together as that process happens.

So build a frame on a plywood substrate as shown in the photo below. Keep one of the three frame pieces removable so that you can screw it in place and apply pressure — compressing the tambour pieces together (with the additional tambour “door handle” piece in place). With the sticks in their jig, use blue masking tape to create a boundary for the hide glue when it is applied. Cut your canvas oversized and spread the liquid hide glue onto both the canvas and the tambour assembly with a small roller. Put a heavier coat of glue on the canvas and a light coat on the assembly. Then carefully lay the canvas, glue to glue, on top of the tambour panel and vigorously rub it smooth with your hand to help the bond form. After the glue has cured, use a razor knife to trim the canvas at the perimeter you formed with the masking tape. Remove the panel from the jig and test the fit in the console. Repeat the process for the second panel.

Tambour Rabbet Detail
(Side View)



Tambour Assembly
(End View)



Rockler's tambour router bit set makes the two-step routing process easy and manageable. Be sure to use featherboards to keep the tambour stock well-controlled while shaping the edges.



With the tambour sticks tightly held in a frame, apply liquid hide glue to both the tambour assembly and the canvas backing. A small foam roller will allow you to control the amount of glue applied.



Adding the Interior Components

Take some time now to cut the vertical dividers and their shelves. I drilled 1/4" holes for shelf pins in just the left-hand compartment, but you can make the shelves in both compartments adjustable if you prefer. I applied a hardwood strip to their front edges, as well as on the vertical dividers. I stopped those strips to create two small notches at either end of the dividers (see the *Drawings*) so these strips would hide the end of the routed dadoes. Create the plywood back panel for the internal compartment, and set all those pieces aside for now.

Next, make the walnut stiles that are located on both sides of the carcass, where they are set back in the opening about 1/4" to hide the curve in the tambour track. They need to fit tightly and are attached with pocket-hole screws. The carcass's back panel is 1/4" hardboard – very typical of this construction style. Go ahead and cut a piece to fit.

There are four tiny track filler pieces that you need to make now as well. They fill in small gaps in the tambour track that were incidentally formed when the dadoes for the vertical dividers were cut. See the *Drawing* for details.

Finishing and Final Assembly

Well, you've been waiting for it ... it is time to sand! I sanded all the hardwood pieces of the console up through 600-grit, because I wanted a specific finish that is slightly out of the norm. For me, the beauty of the walnut was paramount. So, my plan was as follows: sand ultra-smooth, apply an orange dye (suspended in water) to the walnut, use #0000 steel wool to polish down the grain that the water-based dye raised, apply a thinned coat of Zinsser® SealCoat™ to seal the wood cells, and then apply three coats of clear BRIWAX® using more #0000 steel wool,

Add Orange to Your Walnut



Walnut lumber that has been kiln-dried sometimes ends up looking gray and wan. Our finishing expert, Michael Dresdner, recommends using an orange dye on bland-looking walnut to pop the colors that may have been muted by the drying process. The dye is easy to use: mix it with water, flood it onto the wood and then wipe it off. In the case of our console, the outcome was stunning.

allowing the wax to dry between coats and buffing it with a soft clean cloth. In my opinion, this delivers a perfect Mid-Century Modern finish and truly enhances the piece.

After the finish was applied, I assembled the components, starting by attaching the legs with hide glue and T-bolts. Then I added the interior components, slid the tambour doors into their tracks, installed the track spacers and finally tacked the back panel in place.

While I am taking credit for this project, it was truly a group effort. The good news for you is that we figured out all the details, and you can build it and properly get all the credit.

Rob Johnstone is publisher emeritus of Woodworker's Journal.

As beautiful in 2024 as it would have been in 1950, this tambour door walnut console is a piece of furniture to use and enjoy.

www.woodworkersjournal.com
MORE ON THE WEB



To watch a video of the author building the Tambour Console Cabinet, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.





Classic Cherry Chest



This project's hand-cut dovetails aren't as tricky as you may fear, thanks to a helpful aluminum sawing guide.

By Chris Marshall

Whether you use this moderately sized chest for storing bedding, photo albums and other keepsakes or off-season clothing, it's also just the right height to serve as a quick seat for putting on your slippers or shoes. I think every woodworker should eventually build a Shaker-inspired chest like this, because it's one of those enduring woodworking classics. It also provides a good opportunity to practice your dovetailing skills. If you haven't built a chest like this before, here's your chance to give one a go!

Starting Out with Dovetails

Let's get this project underway by gluing up panels for the chest's front, back and sides. Flatten their glue seams by scraping or hand-planing, sand the panels up to 120-grit and then cut them to final size, making sure their ends are square. Mark the outside "show" faces on the panels, and label the corner joints to keep their orientation clear.

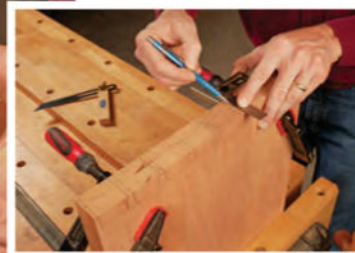
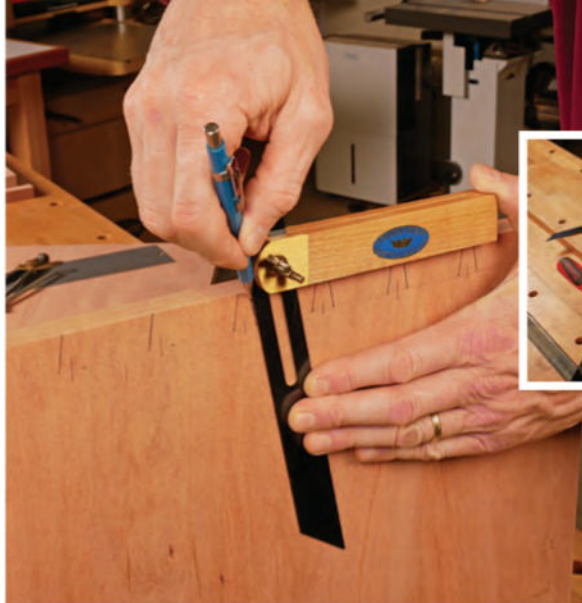
The next step is to cut through dovetail joints to bring the chest panels together. You could machine these with a router and dovetail jig, which is a perfectly acceptable option. But for this project, I wanted to make narrower pins than my dovetail jig will allow. I also wanted the freedom to space the pattern as I liked, so I decided to cut them by hand instead.

If you like the look of my pin and tail pattern (see the *Drawings* on page 35), lay out the tails on the front panel. Start by scribing a baseline for the tails all the way around both ends of the panel with a marking gauge. Set these scribe lines about 1/32" deeper than the thickness of the side panels (this way, the tails will protrude ever so slightly when the joints are assembled so you can plane or sand them perfectly flush). Then lay out the center points of the pins with a half pin on the top end of the chest

only. I laid mine out with eight pins, spaced 1 7/8" apart, on center. The bottoms of the pin sockets are 1/2" wide, and I set the angles of the tails to a 1:6 slope (about 10 degrees). Use a sliding bevel and a sharp fine-point or mechanical pencil to draw the tail shapes.

Extend the tail reference lines across the ends of the front panel with a sharp pencil and a square. Scribe baselines for the tails onto the back panel. Then clamp the back panel to the front panel with their inside faces against one another and so the ends and edges are even. Transfer the tail lines from the front panel to the back panel. Use these lines as references to draw a matching pattern of tails on the outside face of the back panel.

Next, unclamp the panels and saw the tails down to the baselines with a dovetail saw, following your layout lines. If you're skilled with hand-sawing, you'll do these freehand. But, if you're less than confident that you can saw squarely and accurately, I tried out a clever and simple one-piece



Draw the angled tails on the ends of the front panel with a bevel gauge set to 10 degrees. Then clamp the back panel to it, and transfer the tail lines across the end grain (inset) so you can replicate the same tail pattern on the back panel.



Mark the pin socket waste areas with Xs, and saw the tails down to their baselines. David Barron's magnetic Dovetail Guide (inset) made this process easy.



Remove the pin socket waste by sawing out the bulk of the material with a fret or coping saw and then chopping or paring away the remainder to the baselines.

aluminum jig that I'll highly recommend to you. Designed by British woodworker David Barron, it guides these precision cuts to make both the tail- and pin-cutting process more foolproof. Rare-earth magnets in the jig hold the saw blade at the correct angle while you saw, to virtually eliminate angle-cutting errors. Learn more about it at davidbarronfurniture.co.uk and in his YouTube videos.

Once the tail cuts are made, remove the waste between them to create the pin



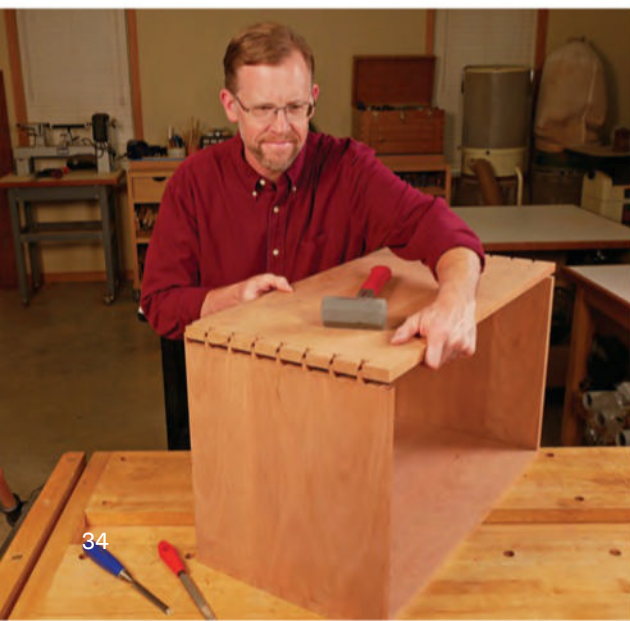
Align the front and back panels carefully over the side panels in order to knife between the tails for the pin locations on the end grain. Mark the waste areas, too.



Carefully cut away the tail socket waste, just as you did for the pin sockets. Swivel the blade sideways to make these horizontal cuts.



The knifed baselines register the chisel's edge, and they ensure that the bottoms of all the sockets are evenly aligned.



sockets. You could chop the waste out with a 1/2" chisel, working in from both faces of the panels and down to the base lines. Or, you can saw it out with a coping or fret saw first, leaving just a bit of waste at the bottom of each pin socket. Then, pare or chop this waste away, working carefully and in from both faces. When the sockets are cleaned out, make sure their baselines are flat through the panel thickness so the pins will slide into them squarely. Check the baselines with the blade of a square extended through the sockets; it should rest evenly across them. Carefully trim off the half-pin waste on the top end of the panels.

With the tails now cut to shape on both the front and back panels, clamp a side panel to the edge of your bench with an end facing up, and align the correct tail board over it. Carefully transfer the angled tail pattern onto the end of the side panel to mark for the pins. Use a sharp pocketknife or a marking knife to scribe these lines. Repeat for the other three corner joints.

Grab your marking gauge, again set 1/32" deeper than the thickness of the front and back panel, to scribe baselines across the faces of the side panels so the pins will protrude slightly beyond when the joints are assembled. Darken the knifed pin lines with a sharp pencil to make them easier to see when sawing. Then draw straight lines down from the knifed lines on the end grain to the baselines to complete the pin shapes.

With each side panel clamped at a comfortable working height for hand-sawing, cut straight down to the baselines to form the angled

faces of the pins. Again, my Barron Dovetail Guide, flipped to its pin orientation and held in place, was able to help me guide these cuts easily. Aim as best you can to literally split these knifed layout lines with the saw blade – it will help to minimize the amount of paring you'll have to do next to refine the fit of the joints.

Saw or chop out the waste in the tail socket areas. Effectively, the process is the same as when clearing the pin socket areas, but here there's more waste to remove. Use wider chisels to help speed the process along, and work carefully when you're chiseling up to the baselines to keep them straight and evenly aligned with one another. The scored baselines will give your chisel edge accurate registration here.

Now, fit the corner joints together one joint at a time. If you've cut carefully, the pins and tails should engage one another at least partially, right from the start. If they don't, you've got some paring to do to improve the fit. The important point of note here is to pare as little material away as possible so the joints will close snugly. Remove too much, and you'll open up gaps that will show. Remove too little, and the panels can crack if it takes excessive force to close the joints. Pare only from the angled, inside faces of the pins, leaving the tail pattern alone. One trick to identify where to pare is to rub pencil graphite onto the tails and assemble the joints. Then pare where the graphite rubs off on the pins. Work slowly and carefully. Continue to test-fit the joints until they close easily enough to tap together by hand without force.

Forming Rabbets and Grooves

Notice in the *Drawings* that the chest's bottom panel fits into a 3/4"-wide, 3/8"-deep rabbet that runs around the bottom inside edge of the chest. Each of these rabbet cuts must stop before it reaches the ends of the panels, or the cuts will

Even with careful cutting and chiseling, you'll probably need to do some paring before the dovetails fit together well. Pare only from the pin walls — not the tails — and remove as little material as possible to prevent gaps.



The chest's plywood bottom panel recesses into a 3/4"-wide, 3/8"-deep rabbet in the bottom inside edge of the carcass panels. The author milled these rabbets with a wide straight bit in the router table. Cut the rabbets in several deepening passes to prevent tearout or overloading the machine and router bit.



Scrap clamping cauls with short protrusions for the tails help to press these joints together during glue-up. Taping the inner joint faces makes squeeze-out easier to wipe or peel away.



show through when the dovetails are assembled. With the chest carcass dry-fitted together, mark out the rabbeted areas.

I used a 3/4"-diameter straight bit in a router table to mill these rabbets in a series of progressively deeper passes. Make sure to mark the cutting limits of the bit on your router table's fence so you'll know where to start and stop these cuts. Square up the rounded ends of the rabbets with a sharp chisel.

And since you're at the router table, there's also a 1/2"-wide x 1/8"-deep groove

that runs along the inside faces of the front and back panels to fit two cleats that will support the chest's movable tray. Rout these two grooves now as well. I terminated the grooves 1/4" from the ends of the panels.

Finish-sand the inside faces of all four chest panels up to 180-grit. Now go ahead and assemble the chest carcass with glue and clamps, making sure the box is square by measuring across its diagonals. Don't rush the job — I glued up the back corner joints in one session with the front panel dry-fitted as a spacer. Then, when those joints dried, I glued the front corner joints together.

A pair of cleats that support the tray extend the length of the front and back panels. They fit into shallow grooves that must be cut before the carcass is assembled. Glue and tack them in place.

Once the carcass comes out of the clamps, clean up the outside faces of the corner joints by planing or sanding until the ends of the tails and pins are flush.

Cut a 16 3/4" x 29 3/4" plywood bottom panel to fit the chest's rabbeted recess. Sand the inside face of the plywood smooth. Then glue and brad-nail the panel into place. Make up some wood tray cleats, too, and install them in their grooves in the front and back panels.

Building the Base

The chest's base consists of four 1 1/2"-thick workpieces beveled to 45 degrees on their ends. Start out by ripping them to a final width of 4 1/4" and cross-cutting them overly long by a few inches. Bevel joints are invariably tricky to cut accurately so they close tightly, and the wider the joints or thicker the material, the more exacting your saw setup needs to be. I made a long scrap fence of doubled-up MDF and attached it to two miter gauges in order to provide plenty of stout backup support for these long workpieces. I also used a 1/8" full-kerf blade on my table saw — the thicker and stiffer the blade, the flatter the cuts will be. However you choose to make these angled cuts, test your saw setup by making practice cuts first and adjusting the blade's tilt angle as needed until the joints meet at 90 degrees. Then, bevel-cut the parts to final length, using a stop block and clamps to control the part lengths accurately.

Glue alone won't offer enough strength on these end-grain joints, so I reinforced them with two 10 x 50-mm Festool Domino tenons at each joint. Dowels, biscuits, short splines or shop-made loose tenons would be good options here if you don't have a Domino joiner. Dry-fit the



Take every precaution to ensure that your 45-degree bevel joints on the base components will close accurately. The author added a thick fence to two miter gauges, used a full-kerf saw blade for stiffness and clamped on a stop block before making these end cuts to guarantee matching part lengths.

base together with these reinforcements in place so you know the joints will close correctly.

Next, it's time to cut the base's curved feet. I made a pair of scrap plywood templates — one for the cutout on the base's front and back and another for the base sides. I used them first as tracing guides and rough-cut the feet to shape at the band saw. Then, I adhered the templates to each workpiece with double-sided carpet tape in order to trim the contours to final shape with a long piloted flush-trim bit at the router table.

Sand these curves and the rest of the part surfaces up to 180-grit, and glue the base together. Use strap or bar clamps to pull the joints tight.

Give the base joints several hours to dry, then go ahead and fasten the chest carcass and base together. Do this by attaching 3/4" x 3/4" cleats to the inside faces of the base with countersunk screws. Position the top edges of the cleats flush with the top edges of the

base. The base projects 1" out from the chest carcass all around; invert the chest carcass and position the base over it carefully. Clamp the carcass and base together, then drive countersunk attachment screws through the cleats and into the chest bottom.

All that's left to do on the base is to make and install moldings around its top edges to create a pleasing visual transition here. I chose a 5/8"-radius cove profile for my moldings and milled it into 3/4" x 3/4" strips of leftover cherry at the router table. Finish-sand the moldings, miter-cut them to length and install them — it's a good idea to cut and fit these pieces one at a time so you can make any necessary adjustments as you proceed.

Mounting the Lid

The chest's lid overhangs the carcass by 3/4" all around. In back, the overhang helps to hide the large torsion hinges

from Rockler that I used for this project (they hold the lid open through much of its travel without further support and prevent it from slamming down). Glue up a lid panel, and flatten the glue joints when it comes out of the clamps. Then, cut it to final width and length.

Locating these non-mortising hinges accurately on the lid is a bit of a "blind" operation if you mount them to the carcass first. That's because they're inset from the lid's back edge and don't benefit from the registration advantage that mortises would offer. So, to make things easier, I started by mounting the hinges to the lid instead of to the carcass back. That way, there's no guesswork about where the hinges should then be attached to the lid. If you do the same, make sure the hinges are perfectly aligned along a penciled layout line when you screw them to the lid. I spaced them 4 3/4" in from the ends of the lid and positioned the front



Festool Domino tenons are one option for reinforcing the base's corner joints, but you could use lots of alternatives, too, including shop-made loose tenons, splines, biscuits or dowels. The choice is up to you.



The author used long and short templates to trace, cut and shape the base's curved cutouts for the feet. Here, the longer template is affixed to one of the workpieces with double-sided tape for a final template-routing pass.



The chest's upper carcass sits on the overhanging base. Attach these two components with four 3/4" x 3/4" cleats and countersunk screws driven through them into the base and the chest's bottom panel.

of wide mortises into the top back edge of the carcass to recess the hinge bodies. A trim router, shallow piloted mortising bit and a simple edge guide made it easy to do this accurately.

Install the hinge leaves into the chest mortises with a few screws so you can test the lid's fit and

edge of their hinge leaves 2 1/4" in from the lid's back edge.

With the hinges in place, set the lid on the chest and mark the carcass back for the hinge locations. When closed, these hinges are about 3/16" thick, which will prevent the lid from resting completely flat on the chest if they are simply screwed to the top edges of the carcass. I didn't want to see a gap under the lid, due to the hinge thickness, so I cut a pair

hinge action. If you're satisfied with the result, remove the hinges from both the chest and lid so you can add a decorative profile to the lid's front and side edges. I shaped the bottom edges with a 3/8"-radius piloted roundover bit to complement the cove molding on the base and to make the lid more pleasant to grasp. Along the lid's back, I just eased the sharp edges and corners slightly with a sanding block and left it at that.

Adding the Sliding Tray

The tray is simply an open-topped box with a 1/4" plywood bottom that gives this chest a second level of internal storage. I made mine from 1/2" maple, which provides a splash of brighter wood color to the rest of this project's dark cherry. Once its front, back and sides were cut to size, I brought the corners of the tray together with 1/4" box joints to add some decorative flair and strength. Be careful to stop the bottom panel grooves accordingly when you rout them so they won't show through on the assembled joints. I positioned these grooves 1/4" up from the bottom edges of the tray framework. Sand the tray parts, and glue it together.

Final Hardware and Finishing

To give this chest a bit of security, I added a keyed lockset. Rockler provides a step-by-step instructions page for installing it, which is available as a downloadable PDF. But briefly, here's how the process goes. I centered the lock on the



Cove molding creates an appropriate transition between the carcass and the wider base. It also adds attractive shadow lines. Attach the moldings with glue. Pin nails can help to hold them in place while the glue sets.



While you could chisel hinge mortises into the chest's top back edge by hand, routing them with a simple clamp-on mortising jig and a trim router guarantees that these wide recesses will have flat, clean bottom surfaces.



The author opted to make the chest's removable storage tray from maple. He used 1/4" box joints to provide a contrasting geometry to the chest's dovetails. They form rock-solid connections for this application.

chest's front wall, then bored a 1½"-deep, 1⅞"-long mortise for the lock body using a 5/16"-diameter brad point bit and a clamp-on doweling jig.

The lock has a 3/8"-wide, oblong selvedge plate on top that requires a shallow mortise to recess it into. I routed that mortise with a shop-made, clamp-on slotted jig, 3/4" O.D. guide collar and a 3/8" straight bit. Once the selvedge mortise was cut, I switched to a long 5/16"-diameter straight bit and, using the same shop-made jig, cleaned up the walls of the deep mortise. But a chisel would do the job just fine, too.

A 1/4"-diameter hole, drilled through the face of the chest, and a little chiseling below that, provided access to the lock for the skeleton key. Install the lock body in the chest with screws.

A brass strike plate attaches to the chest lid to engage the lock bolt. Mark the underside of the lid carefully to position this strike plate — you only have one shot to get it right! I knew I was on target by using a simple trick: I colored the top edge of the raised lock bolt with a black permanent marker and closed the lid down onto it to transfer the bolt's exact location. Another shop-made jig with a shorter slot helped me rout the strike plate mortise accurately.

The bolt also requires extra clearance behind the strike plate so it can pivot up into the locked position. For that, I switched to a 3/16"-diameter straight bit and used the same mortising jig to

excavate the bolt's deeper recess. Attach the strike plate to the lid to wrap up the hardware installation. Then remove the lock components and hinges to prepare for finishing.

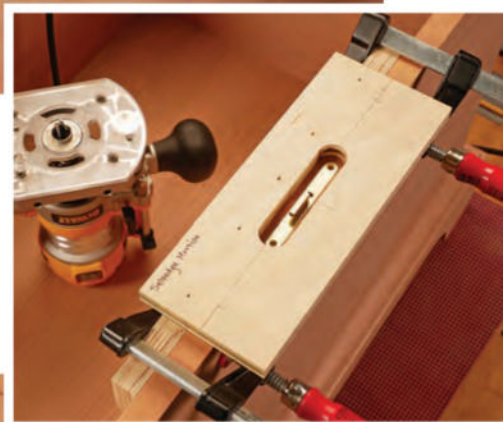
A good way to warm up the color of cherry and accentuate its figure is to apply a drying oil first. I wiped on a heavy coat of Rockler's 100 percent pure tung oil and gave that 24 hours to dry, followed by a barrier coat of dewaxed shellac and then four coats of satin lacquer.

To keep the maple tray as blonde as possible, I used a water-based non-yellowing varnish from General Finishes called High Performance. It dries incredibly fast and imparts very little color to the wood. My hope is that, whenever this chest is unlocked and opened, the lighter-colored tray with its showy corner geometry will be a welcomed surprise waiting inside.

Chris Marshall is senior content editor of Woodworker's Journal.



Installing the lock hardware involves cutting deep and shallow mortises for the lock body and selvedge plate. Most of the deep mortise was drilled out first with a doweling jig (not shown). A slotted router jig (inset) cut the selvedge mortise.



A shorter-slot mortising jig made quick work of routing a shallow recess in the lid for the lock's strike plate. Notice the dark rectangular marker imprint of the lock's bolt: it helped make locating the strike plate easier.

Custom Knife Kit



By Chris Marshall

Open one of these kits Saturday morning, and by lunch-time you'll have a custom-made knife ready for finishing. Cut, drill, sand and glue — that's about all there is to it.

A folding pocketknife or fixed blade is handy to have around the house or in the field, and stainless steel knife kits from Sarge and Camillus (see facing page) are fun to build, even if you have only modest skills or no knife-making experience. Alternately, consider giving one of these kits to a fellow woodworker as a unique gift!

Simple Templating, Drilling

There's no metalsmithing involved in building these knives; you're simply making the two wooden handle halves, called scales, that attach to the metal liners (on



Resaw and plane down a piece of attractive stock for the two knife scales. Tape it to a carrier board to keep the wood flat as it gets thinner.

www.woodworkersjournal.com
MORE ON THE WEB



For a video covering the step-by-step process for making this folding knife, visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.



Trace the scale shapes and mark the screw hole locations with a finish nail or drill bit. Wrap the blade with thick tape first to protect yourself.

folding knives) or the tang (on fixed-blade knives). We'll make the larger folding knife here. Start by jointing and planing a piece of stock for the scales down to about 1/4" thick. Make it long enough to lay out two scales end-to-end and wider than necessary. On the folding knife, the flat ends of the scales fit against raised metal bolsters. Their intersection forms about a 7-degree angle, so crosscut the two ends of the scale blank to this angle. Doing this will help keep the grain pattern of the wood running parallel to the knife body.

The knife blade is razor-sharp. Before you start handling it for the building process, wrap the blade with three layers of electrical or duct tape for safety. Then lay the knife on the scale blank so the bolster is snug against the angled end of the wood. Trace around the edge of the liner to form two opposing scale shapes. Draw the shapes on the "show" side of your workpiece, and mark the scales with an "L" and "R" to orient them clearly.

Each scale will be attached to the metal liners with two tiny machine screws and epoxy, so drilling for those screws is your next step. Use a finish nail or 1/16"-diameter drill bit to mark a center point for each screw hole, tapping the nail or bit through the liner holes as a reference. Now, search your drill bit collection for a 3/16" brad-point bit to counterbore the screwheads and a 3/32" twist bit for drilling the screw shank pilot holes.



Sarge, Camillus Knife Kits

Rockler (rockler.com) offers numerous variations of folding and fixed-blade knife kits from Sarge and Camillus. The Large Folding Knife (item 53335) shown in this article sells for \$26.99. Regardless of style, each kit involves creating and attaching the knife scales of your choice.



Sarge's instructions recommend that, when fully seated in the scales, the screw shanks should not extend more than 5/64" through the back side of the scale material. So, drill a couple of 3/32" pilot holes through a piece of scrap liner stock, then follow with the 3/16" counterbore to adjust your drill press for the correct counterbore depth. Slip



Drill counterbores in the scales for tiny machine screwheads. Set the drilling depth so the screw shanks will project no more than 5/64" through.

a screw into the test holes and measure the amount of protruding thread. Once you've got an accurate test hole, drill the four counterbores into the two scales at the center points you marked previously. Switch to the 3/32" bit and, aligning it with the spur center points created by the brad point, drill a pilot hole through each counterbore.

Tipping the Scales

It's time to cut out and shape the scales. A scroll saw, band saw or coping saw will do the job. Just make sure you cut about 1/16" outside of the two tracings so there's a bit of extra material all around

the scales for the shaping process. Screw the scales temporarily to the liners.

After wrapping the bolsters with tape to protect the metal, install a coarse sanding sleeve in your spindle sander (or a sanding drum in your drill press) to sand the two scales until their edges are flush with the metal liners. Keep the knife moving to prevent divoting the wood.

Now you're ready to reduce the scales' thickness at the front end so they're even with the metal bolsters and the handle has a uniform contour that's comfortable to hold. I found the quickest way to shape the scales was to invert and clamp my belt sander in a bench vise and use it like a stationary tool. I started the sanding process by holding the leading end of each scale flat against the moving belt near the sander's front wheel and rocking the knife slowly from front to back to form a gentle arch. I continued until the back ends matched the bolster thickness but left the center areas thicker.

From there, I eased the edges of the scales at the spindle sander and then added more contour across the handle's width at the belt sander again. This was easy to do by holding the knife perpendicular to the belt's travel and rolling the knife gently across its width. Once you finish the rough shaping, work up through the grits by hand to remove all surface scratches. Start with 100-grit



Screw the wooden scales in place, then sand them down with a coarse drum or sleeve until their edges are flush with the knife's liners.



and follow with 120-, 150-, 180-, 220-, 320- and 400-grit. Look closely for any scratches and correct them.



Continue to shape and smooth the handle by power-sanding. The author carried out the major shaping work using an inverted belt sander.



Finish and buff the scales as you like, then fix them to the knife permanently with epoxy.

Finishing Up

Any durable wood finish will work for this project. I applied a coat of dewaxed shellac to seal the oily cocobolo I used for my knife scales, then followed with two coats of oil-based polyurethane. After it thoroughly dried, I buffed the finish to a shine with a cloth wheel in the drill press.

Now, unscrew the scales, clean the metal liners with acetone to remove any manufacturing residue and epoxy the scales in place. Install the screws and belt clip. Your new knife is ready to serve as someone's trusty belt companion!

Chris Marshall is senior content editor of Woodworker's Journal.

STICKLEY-INSPIRED PLANT STAND

Curved elements give this Arts & Crafts standard a “lift,” but a fumed finish keeps it true to its roots.

By Chris Marshall

The Stickleys strived for function over flair in their designs, but that early 20th-century sensibility makes some of their furniture seem imposing and “heavy” by today’s standards, particularly with a dark finish. So, we’re giving the conventional Arts & Crafts plant stand a bit of a face-lift here. Instead of straight, wide and thicker cross-pieces, gentle curves and a taller stance make our updated version appear lighter on its feet. And those delicate top rails remind me of velvet cordons showcasing a favorite plant.

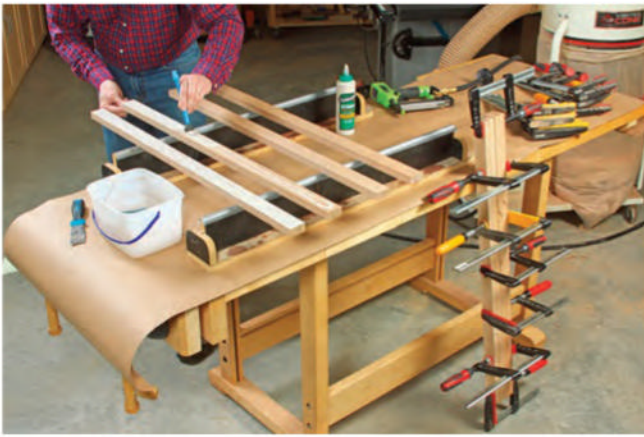
While you can certainly stain this project any “Mission brown” color you like, its compact size makes this project a manageable candidate for traditional ammonia fuming. If you’ve never tried it, there’s no better way to finally know what a fumed finish looks like than to give it a go and see for yourself.

Now that I’ve planted that seed, let it germinate while I show you how to build this plant stand for your home.

www.woodworkersjournal.com
MORE ON THE WEB



For a video covering the process for ammonia fuming, please visit woodworkersjournal.com and click on “More on the Web” under the Magazine tab.



Riftsawn laminations of white oak form legs with an even grain pattern all around. Only a keen eye will see the glue line. A brad nail driven into the waste ends of each leg can keep slippery glue joints aligned for clamping.

Making the Legs

If you have access to 8/4 quartersawn white oak, you could make these 1 $\frac{5}{8}$ "-square legs from solid blanks. But that will only provide quartersawn grain on two faces with flatsawn grain on the other two. I think the difference in grain pattern is distracting. Here's an alternative: save that showy flaked quartersawn grain pattern for the aprons and rails, and downplay the grain on the legs. To do that, I glued my leg blanks up from two laminations of 13/16"-thick riftsawn stock (look for end grain that runs about 45 degrees to the board faces). Riftsawn grain has a linear, uniform pattern on both its faces and edges. If you make the legs carefully from the same board, only a woodworker will notice that these laminated legs aren't actually single pieces of thick wood. It's a really good compromise here.

Once you've ripped and surfaced the legs to final proportions, cut them an inch or so longer than necessary and all to the same length. The tops of the legs will be shaped into pyramids next. In case the pyramid-cutting process produces any tearout, the extra leg length gives you the chance for a "do-over" or two if needed. To set up for cutting the four beveled faces of each pyramid, I screwed a 40"-long fence to my miter gauge and tilted my table saw blade to 19.5 degrees. Draw baselines all around each leg for the pyramids, 5/16" from one end. Now, lightly score along these lines with a sharp utility or marking knife — it helps safeguard against splintering. Clamp a stop block to the miter gauge fence against the flat "foot" end of each leg so the blade lines up exactly with your score lines. Make four cuts to trim the pyramids to shape. If they're crisp and meet your approval, crosscut the legs to final length.

Each leg requires two pairs of 1 $\frac{3}{4}$ "-long mortises on its inside faces for the aprons and one pair of 1/2"-long mortises for the top rails. Choose the "show" faces of the legs first (arrange the laminated edges of the legs so they'll face the sides of the project), and mark the legs to keep their orientation clear. Then lay out these 1/4"-wide mortises according to the *Drawing* on page 45. Chop all the mortises about 9/16" deep.

I like to chamfer the bottoms of legs like these. It's easy to do that with a block plane or a chamfering bit in a trim router, and removing the edges and corners will ensure that the legs won't



A stop block and long fence register the legs precisely with the blade for making four beveled crosscuts that create the top pyramid detail.



While the author used a hollow-chisel mortiser to chop the rail and apron mortises in the legs, you could also use a Forstner bit in a drill press, a router and straight bit or a chisel and mallet. Choose your favorite method.

chip if the plant stand gets dragged across a floor. Chamfering also adds a nice shadow line detail. About a 1/8" chamfer is all you need. Once those are cut, sand the legs smooth, then up to 180-grit, and set them aside.



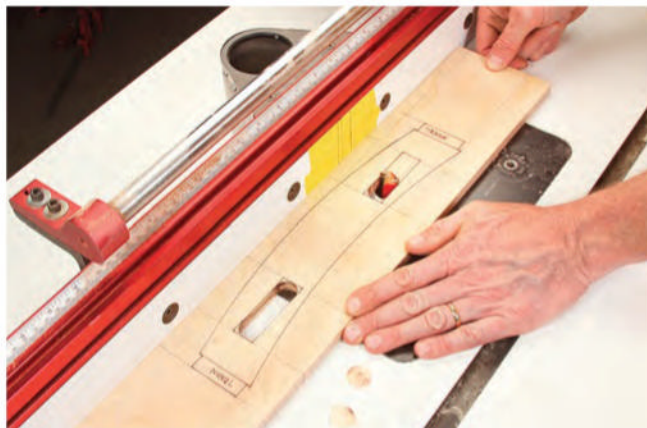
Cut the end shoulders of the rail and apron tenons first. That way, any splintering on the face grain will be removed when you cut the side shoulders next. Here, a top rail blank receives a deep shoulder cut.



Lower the blade to 1/8" for cutting the broad shoulders on the rails and aprons. These final two cuts bring the tenons to their 1/4" thickness. Make test cuts first to ensure that the tenons will fit their mortises a bit snugly.

Machining the Apron and Rail Tenons

Mill nine 3"-wide blanks for the aprons from 1/2" stock, and prepare five 1 3/4"-wide blanks for the top rails (one of each size is a test piece). Crosscut them all to 13" long. While your first inclination might be to start cutting curves into these parts now, save that for last. The right action to begin with is raising tenons on their ends while you still have flat reference edges to bear against. Stack a wide dado blade in your table saw, and



Rout slotted openings in the apron template for guiding the actual mortise cuts later. These are 3/4" wide and 2 1/2" long. Mark the limits of your router bit's edges on the fence to start and stop these "drop" cuts accurately.

bury it in a sacrificial fence so only 1/2" of the blade projects out from the fence. Start by cutting the "end" shoulders of the tenons, using the test pieces to set up these cuts. Raise the blade to 1/8", install a scrap fence on your miter gauge to back up the cuts, and cut one shoulder on all the parts, with the workpieces standing on-edge. Next, crank the blade's height up to 1 1/8", flip the workpieces to their opposite long edges, and cut the other end shoulders into all the parts. This should produce a 1 3/4"-long tenon on the aprons and 1/2" tenons on the top rails (see top photo, left).

Complete the tenons by lowering the dado blade to 1/8" again and cutting the final two broad shoulders of each one, starting with the test pieces (see center photo, left). Aim for a good friction fit of the test tenons in their leg mortises. Slightly tight is always better than too loose: you can refine the fit of a snug tenon easily with a shoulder plane or a file.

Shaping and Mortising with Templates

Our eyes can distinguish even subtle differences between two curves, especially when they're parallel and close together — as they will be on these aprons and rails. So, uniformity is reason enough to make templates for shaping both the aprons and rails. You'll also appreciate having stopped slots on the apron template for locating the mortises that house pairs of faux tenons. That way, you can rout these mortises to exact size easily and quickly with a guide collar and a straight bit.

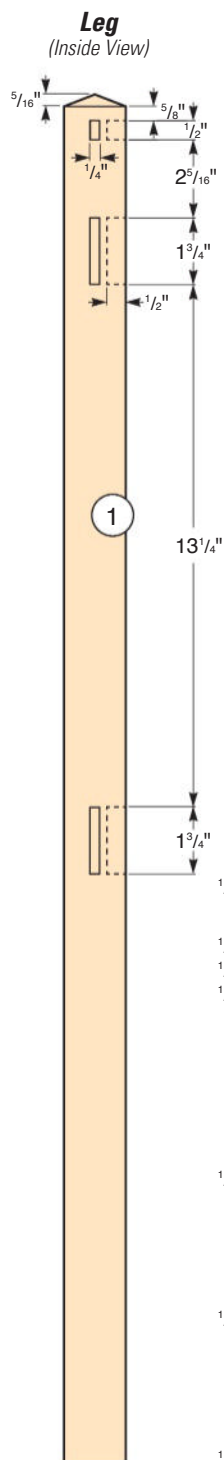
I laid out my apron and rail templates on long strips of 1/2" plywood (see photos, below) so I could leave some extra material at the ends for use as handholds. Bend a flexible batten to draw all the curves, and mark the tenons on the ends of the templates, too. Next, lay out the positions of the mortises on the apron template, then enlarge these two outlines to 3/4" wide and 2 1/2" long. Rout slots through the template to hit your outlines with a 3/4" straight bit in your router table, starting and stopping these cuts carefully (see



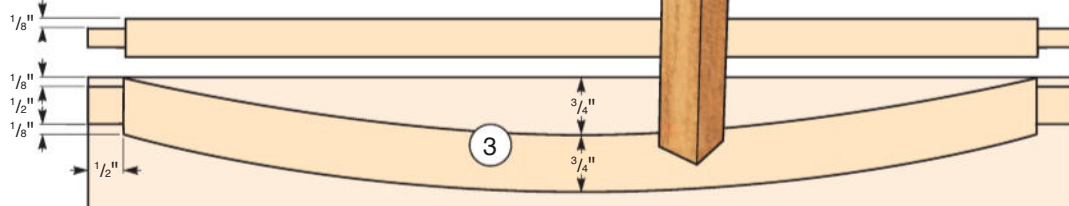
Use the templates to draw curves on the aprons and rails. Rough-cut them about 1/16" outside the layout lines, then tape them beneath the templates. Trim the edges with a piloted flush-trim bit to match the template (inset).

MATERIAL LIST

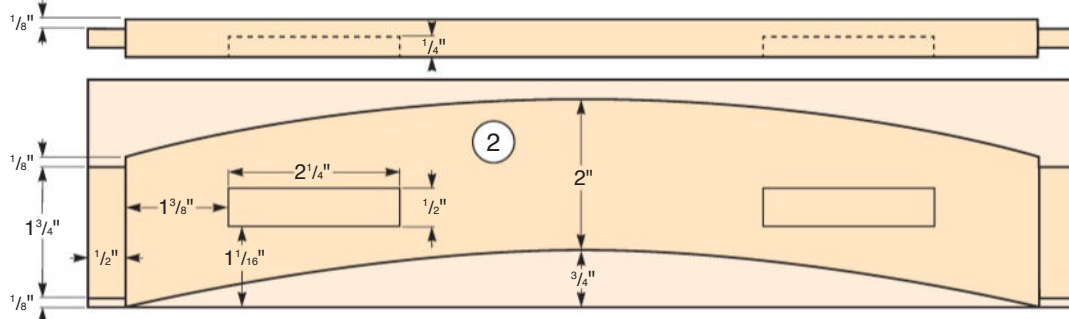
	T x W x L
1 Legs (4)	1 5/8" x 1 5/8" x 36"
2 Aprons (8)	1/2" x 2 3/4" x 13"
3 Top Rails (4)	1/2" x 1 1/2" x 13"
4 Corner Braces (8)	3/4" x 2 1/4" x 6 1/4"
5 Faux Tenons (16)	1/2" x 1/2" x 2 1/4"
6 Tiles (2)	1/4" x 12" x 12"



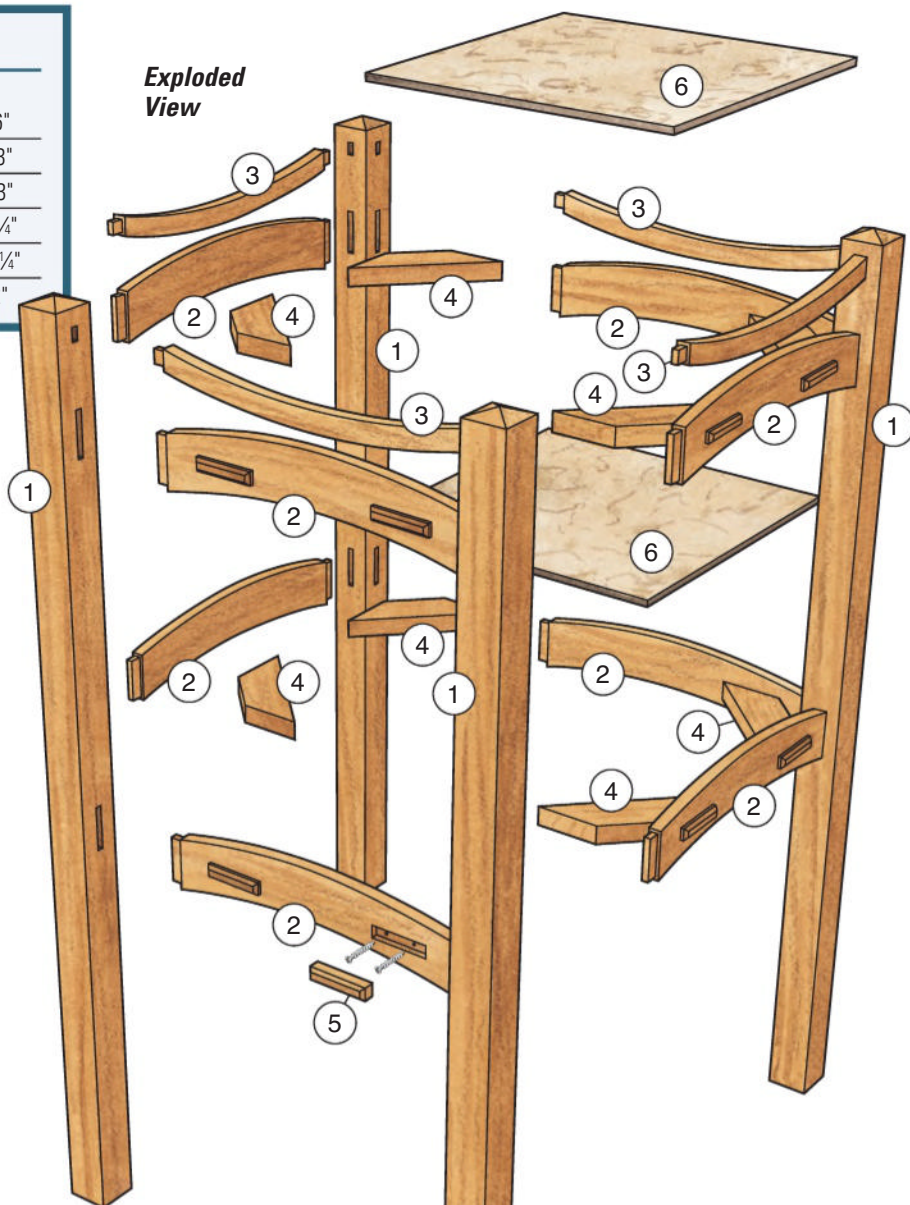
Top Rails
(Top and Front Views)



Aprons
(Top and Front Views)



Exploded View





While an apron is still taped under its template, the author mills two 1/4"-deep stopped mortises with a plunge router, 1/2" O.D. guide collar and 1/4" spiral bit. The offset between the collar and bit creates mortises that are 1/2" wide and 2 1/4" long.

bottom left photo, page 44). Chisel the mortise cutouts square.

Now, grab your jigsaw or head to the band saw to cut the templates to rough shape, and smooth their curves with sanding drums or on a spindle sander. I tacked a pair of 1/2"-thick spacers underneath the handholds of each template to register the aprons and rails automatically and to add some stability during use. Once the templates are ready, use them to draw curves on all the apron and rail workpieces. Cut these parts just outside

of those layout lines. Then stick an apron or rail to its template with double-sided carpet tape, and shave the curves to match the templates with a piloted flush-trim bit in your router table.

After forming the two curves on each apron, I routed its mortises before separating the apron from the template and moving onto the next one. Use a 1/2" O.D. guide collar and a 1/4" straight or spiral bit in a plunge router for this task. Your mortises will end up being 1/2" wide and 2 1/4" long. Rout them 1/4" deep (see top photo at left). Chisel the mortise ends square.

Add some tiny chamfers to the long edges of the rails and aprons, then finish-sand them all to 180-grit.

Assembling the Framework

You're now ready to bring your big stack of parts together into a framework. First, test the fit of all the pieces, then glue and clamp two side subassemblies consisting of two legs, two aprons and a top rail. When those dry, erect the frame with the last four aprons and two rails. Clamp carefully during glue-up to ensure that all four legs stand flat and the frame is square.

Mitered corner braces will support a pair of 12" x 12" floor tiles for the plant shelves. Make the braces by crosscutting eight blanks to 6" long, then miter-cutting their ends to 45 degrees. Measure up from the leg bottoms to set the brace heights from the floor at 17" and 32" (measured to their top faces). Once I had these positions marked, I glued the braces to the aprons with cyanoacrylate for a quick bond. Then I drove pairs of #8 x 1" screws through countersunk holes inside the mortise areas to secure the corner braces permanently.

The last building step is to cover those "secret" screwheads with faux tenons. These tenons look best if you rout or plane tiny chamfers around their ends. Just make up a long blank of 1/2"-thick x 2 1/4"-wide tenon stock. Chamfer both ends however you prefer (I used a chamfering bit in the router table), then



One last detailing step for the rails and mortises: Mill 1/16" chamfers along their long, curved edges to give these parts a softer, finished look.



Glue up two side assemblies for the plant stand framework first. When their joints dry, join them to the remaining top rails and aprons to complete the frame. Remember that top rail and apron curves face one another.



A simple way to install these corner braces is with pairs of screws countersunk into the stopped mortises. The author held the braces in place with CA glue and a clamp before drilling and driving the screws home.

chop the ends off in 1/2" lengths. Repeat this process seven more times. Glue the 16 tenons into their mortises.

Fuming and Finishing

My "More on the Web" video for this article will provide the details of ammonia fuming, but here's the short story: You'll need a plastic "tent" to cover the plant stand for trapping the fumes that turn this project from a raw tan color to a grayish or greenish brown. And, it'll take potent, laboratory-grade ammonia with a 28 percent concentration to do that job; household ammonia is only about 5 percent and too weak to fume oak adequately. You can buy a gallon jug of 28 percent aqueous ammonia online from scientific or cleaning supply sources.

Fuming is a simple process: ammonia reacts with the tannins in the oak to permanently darken it. The longer you leave your project in the tent, the darker it becomes, up to a point. I learned, through a timed test on scraps from the project, that after about 24 hours, darkening slows to a barely noticeable degree. So, after building my tent from fur-ring strips and 4mil sheet plastic, I filled a glass pie plate with 12 oz of ammonia, dropped the tent into place over the project and let the fun begin. I changed it at eight-hour intervals and stopped the reaction 24 hours later.

It is **ABSOLUTELY ESSENTIAL** to wear a respirator with cartridges approved for ammonia gas, goggles, long sleeves, pants and



Chamfered faux tenons hide the screwheads and lend a classic Arts & Crafts detail here. CA glue is more than strong enough to secure these parts in their mortises. A spritz of accelerator shortens the glue's cure time to just seconds.

chemical-safe gloves whenever you handle the liquid. Concentrated ammonia is extremely caustic and should be considered potentially dangerous. But, with proper precautions and good ventilation, I didn't find it problematic to work with.

Once my plant stand came out of the tent, I let it off-gas for two days and then gave it a light final sanding. (Fuming actually penetrates the wood much more deeply than pigment or dye stains will, so touch-up sanding won't remove the color.) I wiped the wood down with Watco® Danish Oil Natural, which turned it immediately to a deep chocolate brown. When that dried, several coats of satin lacquer added a pleasant sheen.

After the finish cured, a trip to the home center for some porcelain floor tiles brought this handsome project to a close.

Chris Marshall is senior content editor of Woodworker's Journal.

Working with concentrated ammonia requires a cartridge respirator, swim goggles and, when handling the liquid, chemical gloves. Once fumed (right), an oil/varnish blend reveals the oak's new deep-brown color (below).



Turning Rolling Pins

Master the challenge of turning a cylinder, and you'll be able to create either a baguette style or a handled rolling pin.

By Ernie Conover



www.woodworkersjournal.com MORE ON THE WEB



For videos on making baguette, American- and pasta cutter-style rolling pins, visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

Any cooking store sells wooden rolling pins and most kitchens still include one. Unfortunately, modern examples are puny and of poor workmanship compared to the ones our grandmothers turned out pies, pastry and cookies with.

Rolling pins make nice gifts and are good sellers at craft fairs. While most hardwoods will make a serviceable rolling pin, I overwhelmingly recommend hard maple. Most of the antique American examples

I have seen are made from this wonderful wood, which is stable, durable and survives countless washings. I like to use curly maple, which is what I used for this article.

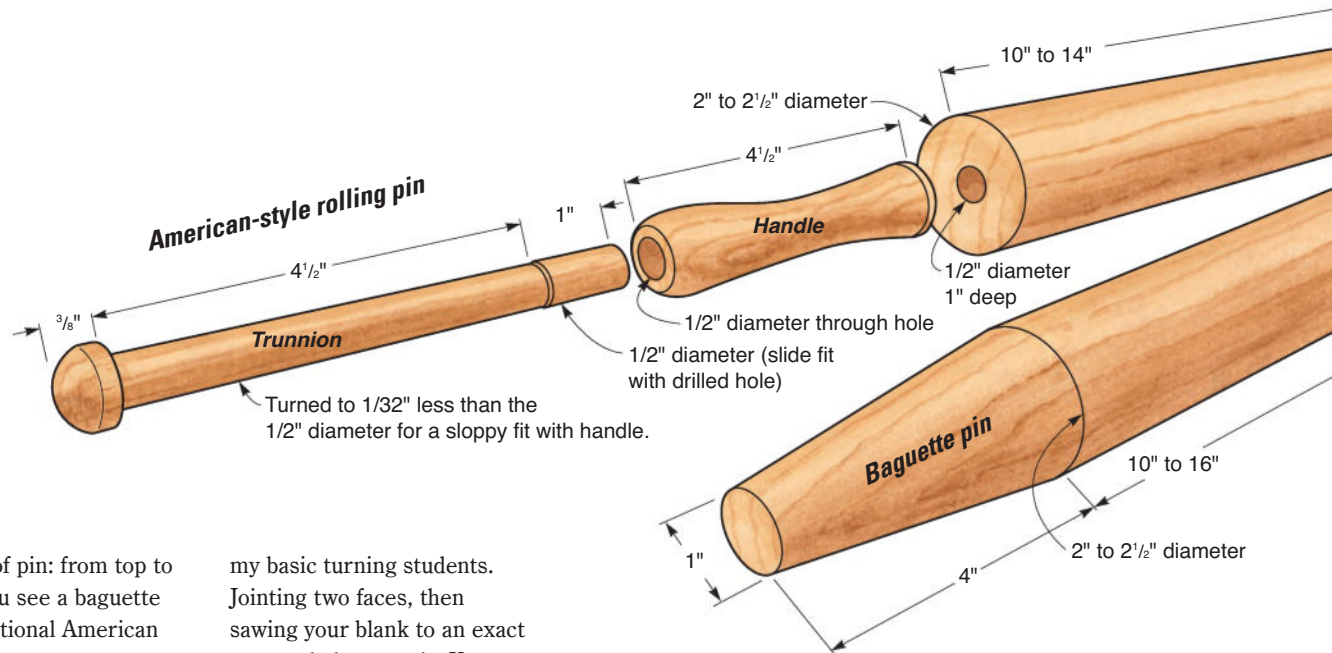
In an example of the exception to the rule, the two pins you see in the upper right of the lead photo were made by my mentor, Rude Osolnik. He laminated many of

his rolling pins from a variety of available hardwoods and cut the blanks on an angle, yielding a unique look.

My maple rolling pins in that photo show three differ-



The author's baguette pin, at top, has a diameter of 2 3/8". The 2" center pin is a fairly standard diameter. The 1 3/4" bottom pin is a bit small for use.



ent types of pin: from top to bottom, you see a baguette pin, a traditional American style and a pasta cutter.

In this article, I discuss how to make the first two types. The traditional American style has trunnions at each end that capture rotating handles. The “French” baguette pin is so-called for its resemblance to a loaf of French bread.

As I hinted earlier, the diameter and the length of rolling pins has decreased in the last half century. It is hard to find a wood example that is over 2" in diameter and has a working length over 10" for a traditional pin or 18" for a baguette pin. Personally, I frequently use a baguette pin to roll pizza dough, so I make mine 20" to 24" long. This gives them a working length of 12" to 16". Likewise, I make my traditional pins 12" to 14" long. While shorter is OK, a longer pin makes for faster work.

The length of your pins will largely depend on the between-center distance of your lathe. Mini-lathes are usually limited to between 12" and 15". This will yield an acceptable French pin, but the distance is much more suited to the American design.

Turn Your Cylinder

Turning an exact cylinder is a challenge, which is why a rolling pin is an exercise for

my basic turning students. Jointing two faces, then sawing your blank to an exact square, helps greatly. You need to end up with at least a 2" square, with 2 1/4" to 2 1/2" being better.

To begin turning, center-punch the exact centers of the billet. Use a speed of 800 to 1,200 rpm and a spindle roughing-out gouge. Be sure to wax the tool-rest so the gouge slides freely. As the piece approaches round, lightly touch the work on the far side with your fingers while holding the gouge down with your thumb. You will feel the flat spots go away. The trick is to move the gouge side to side while just removing the flat spots. You will end up with a perfect cylinder.

If you're adept with a skew, you can now plane the cylinder to a perfect finish. Safer is to turn your roughing-out gouge at about a 30-degree angle to the work and push it down the cylinder, keeping the angle constant. You can see this technique in my “More on the Web” video for this article.

Two Styles of Pin

After you have turned the cylinder common to both pins, you create the differentiations depending on your choice of style. I show the methods for creating both styles in my videos.



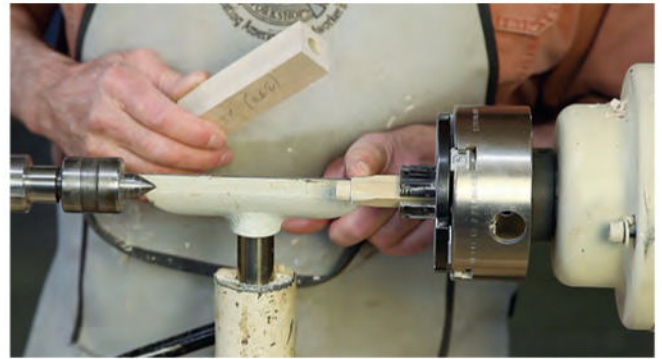
Use a spindle roughing-out gouge to bring the blank nearly round, then lightly touch the back of the piece with your fingers while holding the tool with your thumb. Sweep side-to-side to feel when the flat spots disappear.



Holding the spindle roughing-out gouge at about a 30-degree angle to the work and pushing sideways (maintaining the angle) will give you about as good a finish as that left by a skew, with none of the danger of a catch.



The French baguette pin tapers, starting 4" from each end, to about 1" in diameter. You should be able to set a ruler down and have it touch everywhere on this straight taper.



If you don't have a four-jaw chuck, you can turn the tapered tenon between centers, tap it into the hole in one end of the handle, then mount the tapered tenon to the drive center and the other end of the handle centered on the cone of your live center.



Most of the trunnion shaft needs to be turned at least 1/32" under 1/2" for a sloppy fit in the handle so the handle will rotate on the pin even when soaking wet and swollen. The last 1" has a 1/2" diameter to be a slide fit with the hole drilled in the main cylinder.

To create a baguette pin, you start at about 4" from each end and create a taper that reaches about a 1" diameter at the end of the cylinder. This should be a straight taper, with no curving in or out.

To create an American-style rolling pin, you will need to drill 1/2"-diameter by 1"-deep holes at each end of your

cylinder. You will also need to turn the handles.

The starting blank for the handles of the traditional pin should be 4½" long by 1" square. You need to drill a 1/2"-diameter hole that extends all the way through the handle. You can either drill this in a drill press or on the lathe, which I think is easier. Simply push the blank halfway

onto a drill in the headstock with the live center, drill halfway, then turn your blank around and drill the other way until your hole extends the length of the blank. Hold the blank in a small screw clamp for safety.

Hold off on turning the handles just yet: the next step is to work on the trunnions that extend all the way through the handles. These trunnions start life as a 5/8"-long by 3/4"-square blank. Turn 5½" down the length of the blank to 1/2" diameter, using a 1/2" wrench. Leave the remaining portion at the 3/4" diameter and round it into a half bead to create a button head on the end of the trunnion.

Next, use a skew to bring the area between the head and 1" from the end down to a bit under 1/2". (Leave the last 1" at the 1/2" diameter.) This means that, although it may be hard to get the end of the trunnion shaft through the hole you drilled in the handle, there will be enough play that the handle will turn easily on the shaft once it is through. (You need at least 1/32" of play so that the handle turns easily, even when soaking wet.)

Back to the handles. You need to have

good centering when turning the outside of the handles. To achieve this, I turned a tapered 1/2" tenon on a square of wood held in a four-jaw chuck (photo above). Held against this tenon with a live center, the bore is perfectly centered on the axis of the lathe while I turn it to a handle shape as per the *Drawing* on page 49.

Final Assembly

After you have finished your turnings, sand all parts thoroughly but only to 120-grit. A sanding pad in an electric drill is great for quickly sanding the working cylinder of either pin. It will bring everything smooth and to a constant diameter.

To assemble the American-style pin, push the trunnions through the handles, then apply a bit of waterproof glue, such as Titebond® III, into the 1/2" holes drilled in the pin, and inset the trunnions into them. Remember: the trunnion cannot trap the handle; there needs to be about 1/16" of side-to-side play to allow for swelling when wet.

I finish my rolling pins with a bit of walnut oil or olive oil.

Now, go ahead and bake a pie or make a pizza.

Ernie Conover is the author of The Lathe Book and The Frugal Woodturner.

Making a Pasta Cutter

Cutting grooves into an American-style rolling pin turns it into a pasta cutter. Grind a pointed scraper (the author used an old screwdriver) to cut the grooves, and be sure to scrape with the tool pointed downhill. A pasta-cutting pin should be no more than 10" long.



Scraping grooves into an American rolling pin turns it into a pasta cutter. Careful layout and tool presentation are critical to getting even spacing for good cutting.

I USE A WAGNER MOISTURE METER BECAUSE:

I care about my work



80% of all problems in wood projects are caused by moisture content issues. A quick and simple, non-damaging moisture meter reading can save you from angry customer calls, unnecessary repair time, and a bad reputation. Call today and learn why Wagner's industry-leading Orion meters may just be the most important tool for your shop.



(800) 505-1281 | WagnerMeters.com



EIPI - YOUR LUMBER DRYING EXPERTS

**WITH OVER 46+ YEARS OF LUMBER DRYING EXPERIENCE
CALL FOR PRE-SEASON SPECIAL PRICING**

FD100 DEHUMIDIFIER



TYPICAL DRYING CAPACITIES
LD82 - 1,170 BF Softwood
FD100 - 5,400 BF Softwood

LD82 DEHUMIDIFIER



STC1 CONTROLLER



Ebac Industrial Products Inc

East Coast Office
700 Thimble Shoals Blvd, Suite 109,
Newport News, VA 23606-2575

West Coast Office
2060 Chicago Ave, Suite C7,
Riverside, CA 92507

Toll Free 1-855-873-6800 www.ebacusa.com

FREE



The most complete catalog for woodworkers

- Featuring over 10,000 items
- Innovative jigs and tools
- Router accessories
- Rare hardwood
- Turning supplies

Get your FREE catalog today
at rockler.com/catalog-request or
call 1-800-279-4441 (Code 1071)



TODAY'S
WOODWORKER®
THE COMPLETE COLLECTION

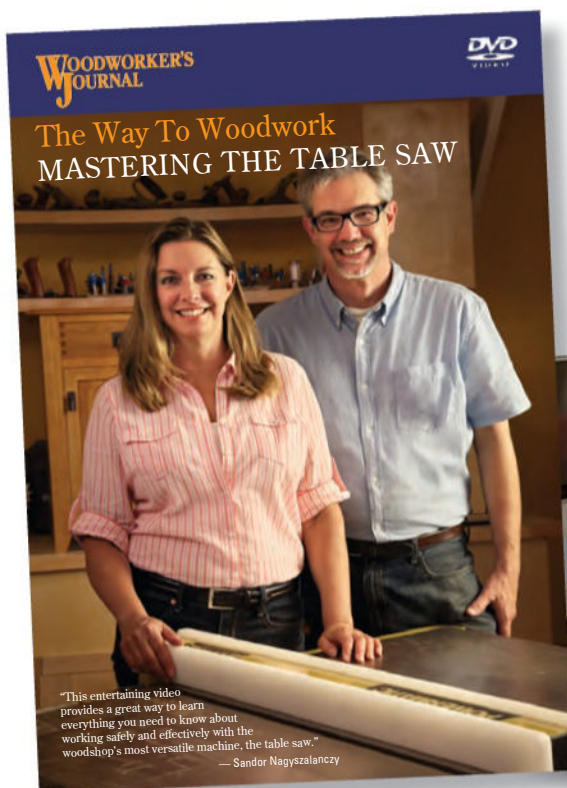


Item 48689

The Today's Woodworker Complete Collection CD compiles everything — from projects (over 200!) to techniques and tips — from over nine years' worth of Today's Woodworker magazine, the predecessor to Woodworker's Journal. Whether you're building for your kids, grandkids, your spouse or yourself, you'll find a project that fits your needs.

www.woodworkersjournal.com/wj2452
or call 800-610-0883 (code WJ2452 & item #48689)

MASTER YOUR TABLE SAW



Learn to confidently operate the most important tool in your workshop – the table saw – with the Mastering the Table Saw DVD from Woodworker's Journal.

Everything is covered, from fundamental cuts to advanced techniques.

Expert or rookie, this DVD has something for every woodworker.



Item #57292

www.woodworkersjournal.com/wj2451
or call 800-610-0883 (code WJ2451)

**WOODWORKER'S
JOURNAL**