

WOODCRAFT[®]

Projects, Techniques, and Products

magazine

Build this

Asian-Inspired Jewelry Box p.34



MORE PROJECTS

- **Turned Ornament**
- **Monogrammed Hand Mirror**

SKILLS

- **Chisel Transformation**
- **Joinery Class: Splined Miters**

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22 Turn a Terrific Tree Ornament

Segmented, polychromatic turning can produce dazzling objects like this distinctive ornament. Now you can learn how to assemble small, precisely cut parts and produce a geometric blank that can be turned into a unique and beautiful bauble.



50 Make a Monogrammed Hand Mirror

We love projects that provide maximum impact from minimum materials. A handmade mirror can be delightful to hold and behold. Learn how to personalize each mirror you make with incised lettering that's created using a freehand routing technique.



34 Asian-Inspired Jewelry Box

Wenge, bocote and bird's-eye maple combine in a treasure box that includes velvet-lined interior dividers and a unique shop-made handle. Construction involves spline joinery, a hinge mortising jig, and a tiny tapering jig for the legs.

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Helical cutterheads offer definite advantages over straight planer knives, and now you can get this performance on affordably priced portable machines. Check out our test results.

28 Chisel Rescue

Bringing a beat-up chisel back to life takes elbow grease and the right sequence of flattening, grinding and honing operations. Old chisels (and some new ones, too) will reward your restoration work with years of sharp service.



43 Woodworker's Wish List

Don't miss these editors' gift picks for budgets big and small. They're certain to increase accuracy, enjoyment, and sawdust production.



57 Joinery Class: Splined Miters

Small strips of wood can improve strength add visual interest, and keep joints aligned during assembly. Here's how to get spline joinery done right.

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The Triton Oscillating Spindle Sander is supplied with matching rubber drums and table inserts, and is well-equipped to provide a professional finish to internal and external profiles. The optimum sleeve size can be matched to the precise needs of each woodworking project.



Contributors



Don Russell's love for woodworking came early and has yet to diminish, even after 40 years of running his own shop. Though polychromatic turning remains a favorite activity (see p. 22), Don has built furniture and museum exhibits, while also taking on restoration projects. A past president of the Woodworker's Guild of Georgia, Don

has taught aspiring woodworkers of all ages – at the Mark Adams school, the John C. Campbell Folk School, and the Dogwood Institute.

"I enjoy the challenges and opportunities that woodworking presents," Don says. "I want to keep sharing my knowledge with others and instill in them a desire to create in wood."



Larissa Huff is an instructor at the JD Lohr School of Woodworking in Schwenksville, Pennsylvania. A Journeyman woodworker, she apprenticed under master craftsmen Jeffry Lohr and Robert Spiece and now

designs and builds her own custom furniture as well as accessories like the monogrammed hand mirrors on page 50. With a strong math background, she finds fun and passion in the fine details and functionality of woodworking, and is in the process of building a cohesive collection of her own unique pieces. You can get a peek at some of her woodworking adventures by visiting her blog at www.lohrschool.blogspot.com. Check out the school at lohrwoodworkingstudio.com.

On the Web



If you're impressed by the jewelry box **Jim Downing** built for this issue (page 34), you'll be dazzled by the Arts & Crafts Style makeover of his living room in West Des Moines, Iowa. Working out of a small basement shop, Jim built and installed the cabinetry, the riftsawn oak wainscot, and the light fixtures; then he proceeded to fill the room with equally impressive furniture. Check out our blog for more on this talented woodworker.



Great gifts in action. Check out the videos at woodcraftmagazine.com to learn more about some of the products featured in our Woodworker's Wish List (page 43).

Turned Ornament Pattern

Visit us online and click on the "Project Plans" tab for a full-sized pattern of the turned ornament featured in this issue.



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Woodworking is a universal language

Have you ever heard of stinkwood? I hadn't either, until I spent a year as an exchange student in South Africa, where *Celtis Africana* grows in abundance. Early Dutch settlers built much of their furniture from this dense, tight-grained wood, which loses its foul smell with age and the application of finish.

The variety of wood species around the world is even more impressive than the different customs, clothing styles and languages a traveler can encounter. But as woodworkers, we share some common values that override differences in geography, culture, and lumber. Our appreciation for sharp-edged tools and precise layout is universal. We're all motivated by the joy and challenge of building. We measure our work by standards of craftsmanship that have existed for thousands of years across all cultures: pleasing proportions, beautiful wood grain, and tight-fitting joints.

As one year ends and another begins, I want to encourage woodworkers everywhere to celebrate our craft. We can do so by making gifts in our workshops like the projects featured in this issue.

We can also share our knowledge with aspiring woodworkers, or give a present that helps someone out.

OK, I know you've been wondering about the jacket. Though it looks like a wacky ad from an awning manufacturer, it's actually part of the school uniform I wore during my year in Johannesburg. I'm making an appeal for some South African subscribers to *Woodcraft Magazine*. We've got subscribers in 25 other countries, including such faraway places as Laos, Bulgaria, Australia, Brazil, and the Czech Republic. Who needs

more proof that woodworking is an international language? Come on, South Africans—start subscribing and sending in photos of stinkwood furniture!

—Tim Snyder



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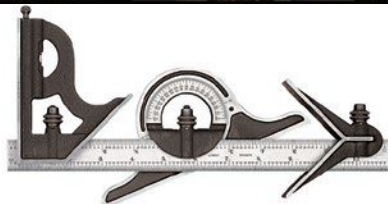
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Women in Woodworking

As the father of three women, and grandfather of two girls, I commend you for the article by Nancy Hiller in the Oct/Nov issue. It is certainly time that more magazines recognize the capabilities of women and address the many hours of recreation and self-fulfillment that lie ahead in woodworking for

anyone, regardless of gender.

—Winston Barney, Fort Worth, Texas

Editor Tim Snyder replies: *Talented woodworkers are the “hidden gems” in countless communities across the country and around the world. Bringing these gems to light on the pages of the magazine and on our website is the best part of our job. Stay tuned, Winston. We hope to keep celebrating the diversity of our craft and all those who strive to become better woodworkers.*

How to reach us.

Email editor@woodcraftmagazine.com, or write to Woodcraft Magazine, 4420 Emerson Ave., Suite A, Box 7020, Parkersburg, WV, 26102-7020.

Please include your full name, address, and phone number. Published letters are edited for length and clarity.



Corrections

Issue #67; p. 76; Buyer's Guide: The phone number listed for the test tube (Asian Inspired Vase project) should be 410-557-0864.

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Busting Rust

I recently acquired some old metal rulers. The rust makes reading the numbers almost impossible. Is there a method to clean the rulers and enhance the markings?

—Mike Polak, via email

Senior Editor Joe Hurst replies:

After testing every product I could get my hands on for "Rust Busters" (#51, Feb/Mar 2013), I prefer zapping rust via electrolysis for major cleanup, but I also keep a set of Klingspor Sandflex blocks below my plane cabinet for spot-cleaning. These abrasive-impregnated erasers (avail. in coarse, medium, and fine grits) cost only \$5 each, don't require gloves or a mask to use, and last a long time. To make the tools shine, steal a sprinkling of Bar Keeper's Friend (\$2/can) from the kitchen. If the numbers don't pop after a polishing, simply brush on some oil-based paint, and then wipe it off so that a little remains in the etchings.

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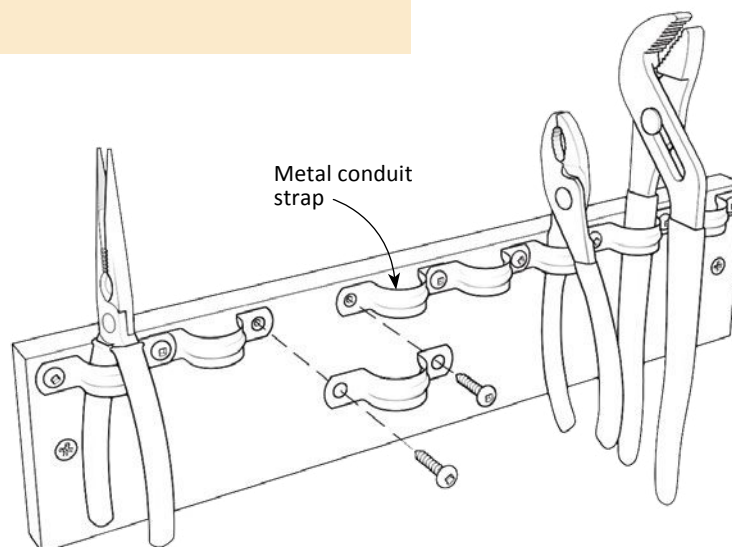
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TOP TIP

Twin-handled tool rack

I use a lot of pliers, nippers, wire cutters, and other “twin-handled” tools at my bench. To keep them sorted out and at-the-ready, I took a tip from my electrician dad and created a rack for them on my bench wall using conduit clips. These inexpensive, commonly available saddle-shaped metal clamps, or “straps,” are typically used to surface-mount electrical conduit. Available in various sizes, they’re perfect for holding one handle of a tool solidly to a wall, leaving the opposite handle extended for easy



grabbing. Installing them side-by-side sharing a mounting screw consolidates the tools into a small area. And unlike some pegboard hooks made for the purpose, the straps won’t accidentally pull away from the wall.

—Bil Mitchell, Riegelsville, Pennsylvania



Share a Slick Tip. Win Cash or a Prize!

Here’s your chance to help someone become a better woodworker and get rewarded for the effort. The winner of next issue’s **Top Tip** award will receive a **Woodcraft Gift Card worth \$250**. All others will receive **\$125** for a published illustrated tip, or **\$75** for a non-illustrated tip. Published tips become the property of *Woodcraft Magazine*. Send your ideas to:

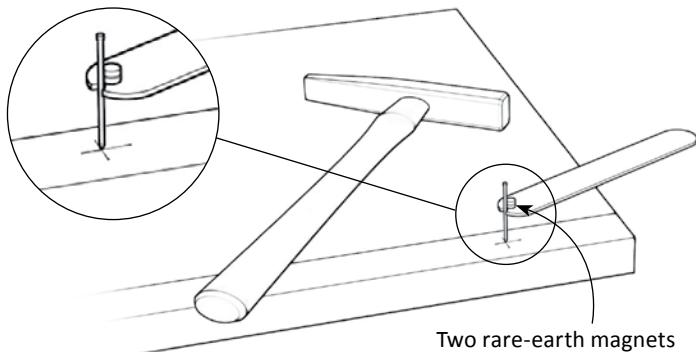
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Two rare-earth magnets

Small brad holder

We've all seen tips for holding brads and small nails to avoid whacking your fingers—including using a slotted piece of cardboard, a comb, etc.—but here's a better approach. It's a holder that's very quick to use, and one that easily positions the brad in a vertical position for accurate starting taps. All you need is a tongue depressor or popsicle stick and two ¼"-diameter rare-earth magnets. Simply cut a small V-shaped notch in one end of the stick, and then epoxy a magnet in place so that its edge is tangent to the bottom of the notch. To use the tool, position the brad against two stacked magnets, as shown, to hold it in place as you give it a starting tap or two.

—John Cusimano, Lansdale, Pennsylvania

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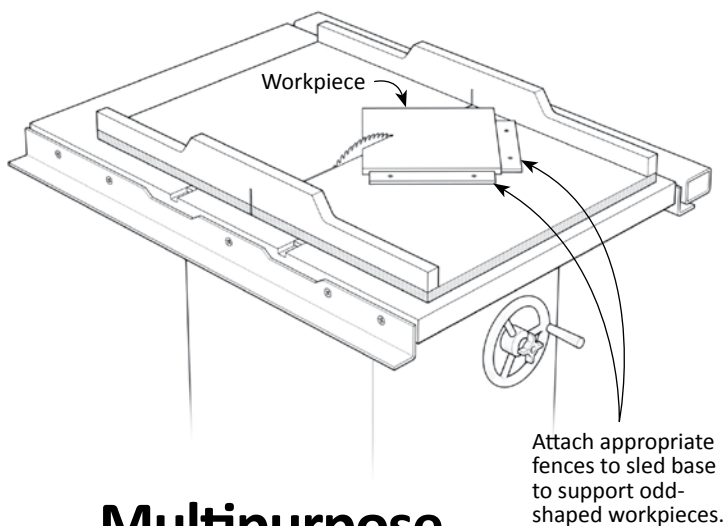
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If you have a crosscut sled for your tablesaw, you actually have much more than a crosscut sled. What you have is a sliding base to which you can attach all sorts of custom fences and hold-downs to accommodate specialty cuts. For example, say you need to saw multiple plywood gussets for a project. Simply tack or screw two fences to your sled base, as shown, to quickly and accurately make the cuts. You can even outfit the sled with fences and hold-downs to safely cut tapers on small workpieces like those shown on page 36. Using a sled like this can be a great labor-saving alternative to making dedicated jigs that will see service only once or twice.

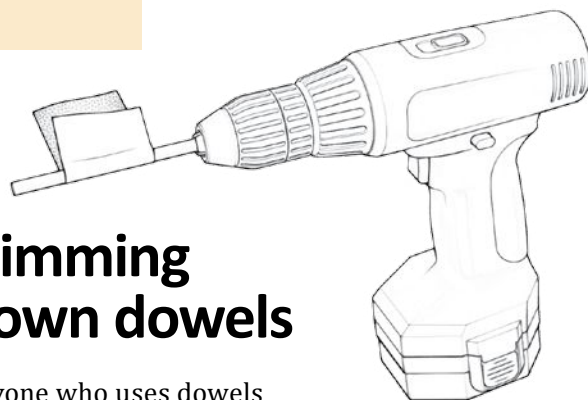
—Paul Anthony, senior editor

Tennis ball bumpers

For years, I've used heavy-duty shop shelving systems like those featured in issue #67. These systems, with their wall-mounted standards and heavy metal arm supports, serve as great lumber racks. However, I've found that the arms can be pretty sharp. To prevent accidentally bumping into them, I outfitted each with a brightly colored tennis ball, slitting it, and then slipping it onto the projecting end of the arm.

—James Kajpust, Freeland, Michigan

Slimming down dowels



Anyone who uses dowels knows that they seldom match their stated diameter. They're almost always slightly oversized and have to be sanded down a bit to fit their holes. Unfortunately, this can be pretty tedious work to do by hand. I've found that a great way to speed it up is to chuck a short length of dowel stock into a drill, and then wrap a sheet of coarse sandpaper around the spinning dowel. After a bit of testing and fitting, you have a perfectly sized dowel. This technique also works great when you need to undersize a dowel enough to create a freewheeling axle in a wooden vehicle or other toy.

—John Hutchinson, Delaware, Ohio

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WOODCRAFT AIMS FOR SMALLER MARKETS

Parkersburg, WV (September 2015) **Woodcraft, the nation's largest woodworking tool retailer**, with over 70 stores nationwide, primarily in major metropolitan markets, has developed a new concept store for smaller cities and markets throughout the country.

"Woodcraft is working hard to bring our best-selling woodworking tools, accessories, supplies and, most importantly, a quality shopping experience to areas not currently serviced by our traditional store's concept and layout. And allow woodworkers the opportunity to touch, feel, and ask questions from a knowledgeable staff, all in an effort to help the customer make the best buying decisions," Woodcraft President Jody Garrett stated.

These stores may be smaller in size and product offering, as compared to current stores. However, Woodcraft Vice President of Sales and Marketing, Vince Grlovich states, **"Customers will still find the most popular products, along with a solid**

selection of power tools. As for those products which may not be stocked, they can be ordered by the staff for either in-store pick up or home delivery."

Woodcraft has taken years of retail experience with the standard, larger market stores and has **"carefully tweaked"** it into a different franchise model in Chattanooga, TN. "Not all markets are the same," noted Gary Lombard, Vice President of Retail and Franchise Development for Woodcraft. "In bringing the Woodcraft franchise offering to smaller markets, we must change and adapt, do things slightly different. The variables of population base, location, hours of operation, inventory, as well as other overhead costs, all must be taken into careful consideration. **However, the one constant is Woodcraft will always be a customer-service operation first and foremost."**

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Two New Benchtop Planers



Easy-to-replace inserts are a cinch to install, but is it time to kick your old planer to the curb?

By Joe Hurst-Wajszczuk and Tim Snyder

The problem with standard planers isn't just that installing fresh knives costs time and money, but that knives don't stay fresh for long. A stray staple, grain of sand, or even a hard knot can create a nick, resulting in a raised line that will haunt you until the blade is shifted or replaced. Many woodworkers settle for a less than perfect cut.

Insert-tooth technology offers an alternative. Instead of two or three long (full width) knives, the machines featured here use 26 small, square-shaped cutters (inserts) that can be changed individually. Now, fixing a nick is a two-minute operation: remove the chip deflector, loosen the set screw and rotate the damaged insert to expose a fresh edge.

Until now, woodworkers wanting this convenience had two options: installing an aftermarket cutterhead (\$500) or buying a \$3,000 stationary machine. Now there's a third: benchtop planers equipped with segmented cutterheads. Surprisingly, these cutting-edge machines cost about as much as a straight-blade planer. To investigate the claims about segmented cutterheads, we put the Rikon and General to to the test. For comparison purposes, we ran pieces of the same boards through the shop's straight-bladed DeWalt DW735x.

Simpler segmented cutterheads make the cut

There is a difference between these two planers and pricier planers. On most high-end cutterheads, the inserts are arranged along a spiral; a few also use curve-edged teeth for smoother shearing cuts. The Rikon and General employ a less



Rikon 25-130H \$649.99

Inserts: 26/2-sided HSS
Max. thickness: 6"
Max. width: 12"
Max. depth of cut:
(full width) $\frac{1}{8}$ "

Feed speed: 26 ft./min.
Cutterhead speed:
10,000 RPM
Motor: 120V/15A
Weight: 73 lbs.

What we liked: The machine features a repeat cut lever for standard stock thicknesses, a depth cutting gauge, and a dual-sized dust-collection hookup (2½" and 4") that can be paired with a shop vac or dust collector. The Rikon performed almost as well as the General, but is easier to carry around.



Chalk tells the story. Tiny cutters leave telltale tool marks that are easily sanded smooth.



Segmented head, simply done. The cutterheads on both the General and the Rikon are almost identical. Both employ six rows of alternating cutters to replicate spiral cutterheads found on pricier planers.

costly means to the same end: a six-sided cutterhead with a staggered tooth arrangement that mimics a helical cut.

One other difference between these two cutterheads and pricier versions is that the inserts are sharpened on only two edges. The unsharpened edges are used for registration (making change-outs a cinch), but another pair of fresh edges would have been appreciated.

Compared to our freshly-set DeWalt, the Rikon and General left more tool marks on straight-grained stock (see photo above) but it's important to remember that a planer isn't a finishing tool.

These marks quickly disappeared with a light sanding. We didn't appreciate the insert-tooth advantage until we planed some curly maple. The new planers weren't perfect but they edged out the Dewalt. Neither created any deep patches of tearout that might trash a treasured board. Feeding boards against the grain resulted in significantly less tearout with the segmented-head planers than the straight-bladed competitor. (This isn't something that you'd want to do, but with figured stock, like crotches and burls, it's unavoidable.)

Bottom line

A straight-blade planer can hold its own at first, but when a nick happens, the new planers take the lead. The ease with which you can replace the damaged tooth is downright revolutionary.

If you're looking to buy a new planer, or foresee reclaimed or figured wood in your future, these models offer two affordable entries into cutting-edge technology. When the included HSS teeth wear out, consider stepping up to carbide. From there, you'll be ready to run hundreds of feet of stock.

General 30-060HC \$699.99

Inserts: 26/2-sided HSS
Max. thickness: 6"
Max. width: 12"
Max. depth of cut:
(full width) $\frac{1}{16}$ "

Feed speed: 26 ft./min.
Cutterhead speed:
10,000 RPM
Motor: 120V/15A
Weight: 84 lbs.

What we liked: This model offers the same features as the Rikon, plus a few more. The cutterhead lock reduced snipe and seemed to improve the overall cut quality. Weighing in at 84 lbs., you'll want attach this machine to a cart before calling it "portable."



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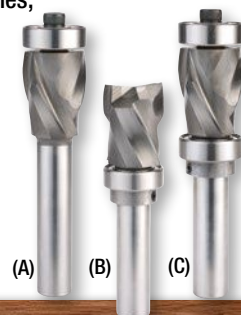


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Turn a terrific tree ornament

Try your hand at polychromatic turning with a beautiful holiday project

By Don Russell



From the first time I started to turn wood in high school shop class, I've been fascinated with polychromatic turning. Instead of turning a blank cut from a single log, my preference is to glue up a variety of geometric shapes, using different wood species and strips of veneer. The result is a multicolored blank that can be turned into an object of unique beauty.

A good way to learn about polychromatic turning is to make tree ornaments like the ones shown here. These ornate turnings make excellent gifts and craft sale items. Although every ornament I make is unique, they all share the same basic anatomy, and are usually assembled from 3 parts that are turned separately: a top cap, an icicle, and a polychromatic globe that contains two end caps. I don't use patterns when turning the parts. In fact (as you'll see on the pages ahead), turning is the easy part of the project. Once you learn how to cut and assemble a polychromatic blank, you'll be able to apply these techniques when making other polychromatic projects like bowls, urns and plates.

Cut tiny wedges to create a multicolored blank

The globe of the turned ornament I'm making here contains 48 pieces: 24 wedge-shaped pieces (12 padauk, 12 yellowheart) and 24 pieces of green veneer that go between the wedges. Wedges are identical in size, and each one contains two $7\frac{1}{2}^\circ$ angles. To arrive at this cutting angle, you divide 360° by the desired number of wedges

($360/24 = 15$), then divide the result in half.

Though I prefer to use my radial-arm saw to cut tiny parts (see sidebar, below), the same job can be done on the tablesaw or chopsaw. Whatever tool you use, plan to spend some time getting the wedge angle exactly right. Otherwise, your blank won't have the tight joints required for a good-looking globe.



Get set for perfect cuts. With the blade tilted $7\frac{1}{2}^\circ$, I cut an angled stop block and clamp it to the radial arm saw's fence to establish wedge size. Note that the bottom of the stopblock is cut back to provide clearance for sawdust. Once you've cut one $7\frac{1}{2}^\circ$ end, simply flip the workpiece to make the next cut and create a new wedge. I make sure to remove each wedge carefully.

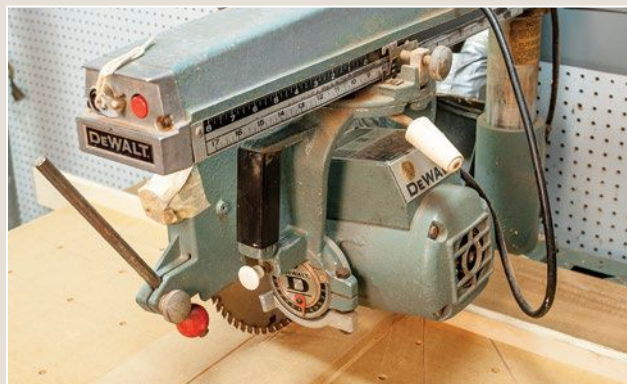


Test and adjust as necessary. Cut enough test wedges to form a quarter circle (6 wedges in this case), then see how the assembled wedges fit against a square. A gap like the one visible here indicates that the saw's bevel angle is too steep. Keep testing and adjusting until no gaps appear.

Why I love my radial-arm saw

I've got a fine tablesaw in my shop, but I prefer using my 1960s-era DeWalt radial-arm saw for many crosscutting operations. The absence of a blade guard demands close attention to hand position when cutting. But if you pay attention to safety, you'll come to appreciate these vintage machines for a number of reasons, just like I have.

- **No problems with tiny parts.** A RAS offers the same benefits as a power mitersaw or SCM saw: You can set up a stopblock and rapidly produce identical parts with excellent precision. Small parts can't jam between the blade and the fence, or be pulled into the throat plate opening.
- **Compound angles are easy.** The adjustability of the DeWalt's turret and carriage assembly provides excellent compound angle cutting capability for parts of all sizes. Dadoes in wide boards can also be cut easily.

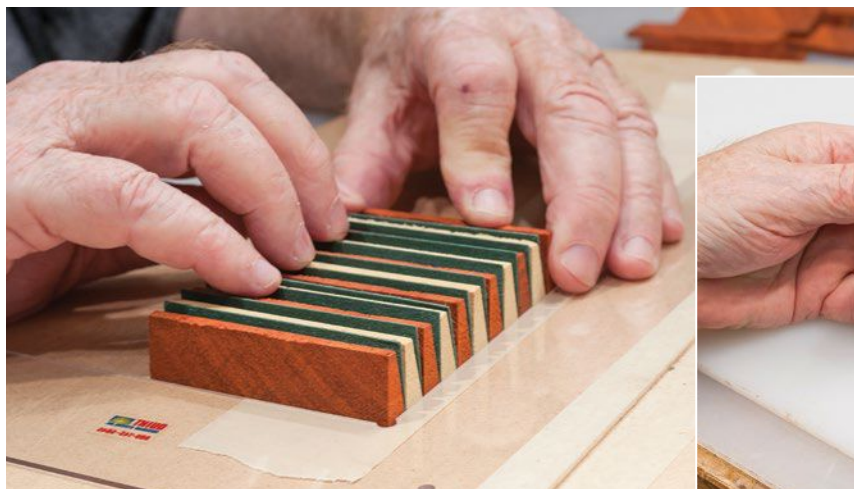


- **Excellent build quality.** Over 50 years of use have done little to diminish the accuracy of the DeWalt saws in my shop. I get mirror-smooth cuts with a Forrest Woodworker I blade. I also find it amazing that spare parts for these antique machines are still available online. I can't think of a better example of a quality-built, American-made product.

Glue up the globe & tape it twice

When I've got all the wedges and green veneer strips to create my blank, I lay down a wide strip of masking tape on a flat work surface and along one leg of a plastic square (a metal square works just as well). With the sticky side of the tape

facing up, you can place your wedges and veneer strips in a continuous line, ready for glue-up. The clear, stretchy "clamping" tape I use is made by 3M; it's called 8884 Stretchable Tape—great for clamping when regular clamps won't work.



Place the parts. Use the legs of a square to keep parts aligned as you press them onto masking tape.



Glue & assemble. After spreading glue in every opening and on the exposed ends, bend the parts into a cylinder and secure the assembly with masking tape.



Flatten as needed. If wedges have shifted out of alignment, apply hammer persuasion.



Clamp with stretchy tape. Wrapping the cylinder with 3M's special tape provides more clamping pressure than you can achieve with masking tape alone.

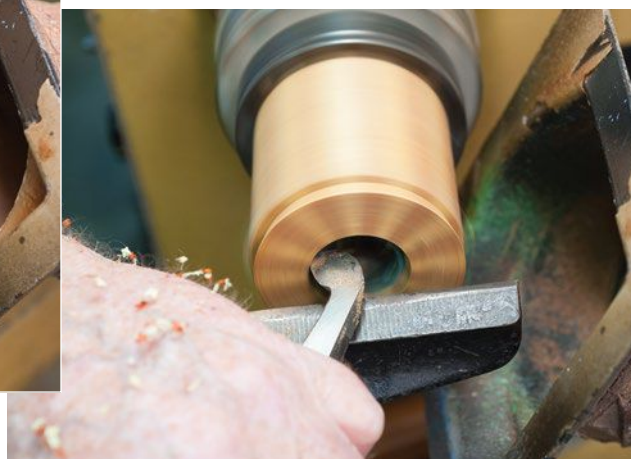
Flatten & hollow the globe, then add top pieces

I use a SuperNova2 chuck to grip the cylindrical blank for the rough shaping that needs to be done at this stage. The goal here is to flatten both ends of the blank and then hollow out the interior so the

ornament won't be so heavy. I also need to create a 45° bevel joint for attaching the two end pieces. The beveled connection will create a cleaner line than a butt joint when the globe's final shape is turned.



Cut a dovetail. After flattening one end of the globe blank with a $\frac{1}{2}$ " gouge, I use a scraper to dovetail the end, as shown above. The dovetail can be grabbed solidly in the chuck when I flatten the opposite end of the blank.



Hollow it out. A side-cutting, roundnose scraper makes quick work of hollowing the globe to make it lighter. I aim for a wall thickness of $\frac{3}{8}$ " - $\frac{1}{2}$ ".



Match the bevels. By pressing the globe's bevelled opening against the bevelled end piece while it's spinning in the lathe, I can tell when bevels match to make a good glue joint. A dark burn mark indicates good contact. Before removing each end, bore a centered hole with a tailstock-mounted bit. The bit's diameter should match that of the mandrel you'll use to turn the completed blank (see following page).

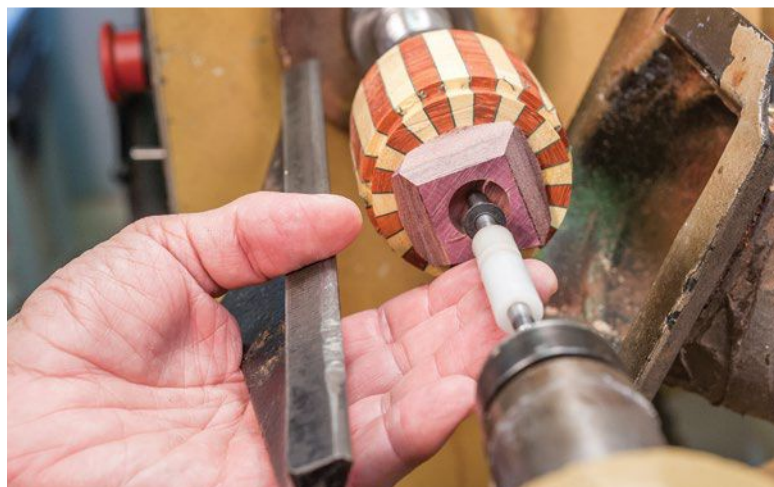


Glue with a screw. The centered holes in the end pieces make it easy to glue these parts to the globe body using a long, $\frac{1}{4}$ " machine bolt. Use washers and a wing nut to apply even pressure.

Turn the globe, then sand & finish

The globe blank is ready for its transformation, but mounting it on the lathe is a little tricky. The ends are already drilled to fit over a pen-turning mandrel, but I also counterbore each end, drilling

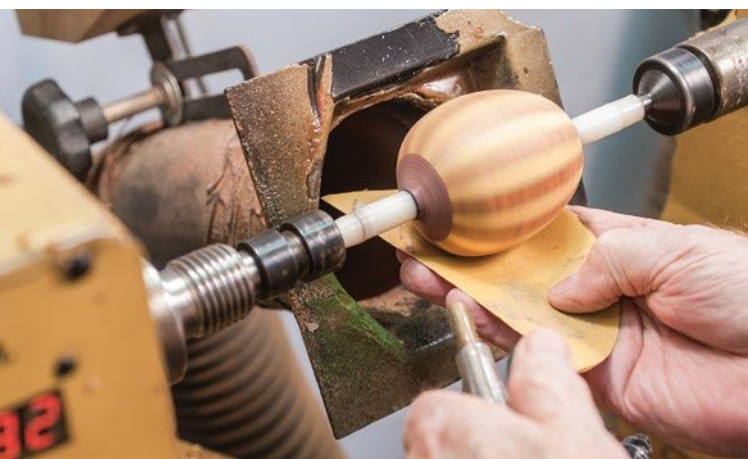
$\frac{1}{2}$ " deep with a $\frac{3}{4}$ "-dia. bit. This makes it easier to turn the ends down to their shallow profiles. Plastic bushings forced tight against the workpiece hold it fast, while also providing clearance for turning tools.



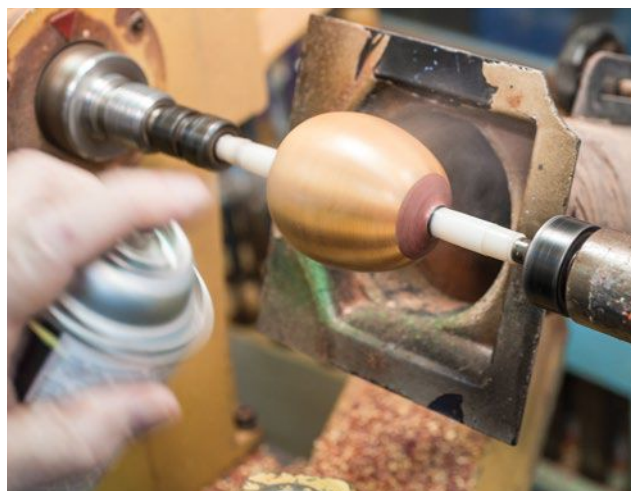
Set up for a spin. A pen-turning mandrel extends through the blank, held in the headstock and in a ball bearing tailstock. Plastic bushings and a pair of rubber washers grip the workpiece so that it doesn't rotate on the mandrel.



No pattern required. I use a $\frac{1}{2}$ " gouge with a standard fingernail grind to rough out the globe's shape. I aim for a pleasing form, judging by eye rather than relying on a pattern. To smooth the globe, I use a scraper.



Sand with an air assist. The globe needs to be sanded, but dark sawdust can get into the pores of the globe's light-toned wood. To avoid contamination, I blow compressed air over the workpiece while sanding at 180 grit.



Start to finish with sanding sealer. Four light coats prevent dark resin & dust from bleeding into the lighter wood. I go over each coat lightly with a white ScotchBrite pad, then apply two light coats of spray lacquer. The final touch: a buffed coat of suntan lotion to prevent UV damage.

Turn the icicle & cap

I like to use ebony for the icicle and cap because the dark wood contrasts nicely with the globe colors. Whatever wood you use for these small parts, make sure it's got ebony-like characteristics—clear, dense and strong. Since I've done so many of these

ornaments, I don't need a pattern to create a pleasing icicle or cap shape. If you're new to a project like this, you might want to create a pattern. Remember to turn a tenon on these two parts so they can fit in the holes bored in the ends of the globe.



Work back from the tip. The point of the icicle isn't supported by the tailstock, so it needs to be shaped first. I use my $\frac{1}{2}$ " gouge for this work.



The $\frac{1}{4}$ " tenon comes last. An open-end wrench that matches the diameter of globe holes is the perfect measuring device as I turn the tenon with a parting tool.



Sanding = finishing. Thanks to ebony's resinous makeup and tight grain, it can gain a polished appearance simply by sanding with 220-grit sandpaper. I fold the paper to get into contoured sections of the profile.

Finish up with hook & line

Completing the ornament calls for a couple of unusual ingredients: some monofilament fishing line and a medium-size fish hook. The small eye in the hook is just the right size to hold the plastic line used to hang the ornament. With a pair of wire nippers, I snip off the curved section of the hook so the straight length can extend through a hole drilled in the cap. Bending the end of the metal over holds it in place.



Fine work. When the cap piece has been fitted with its string and steel hanger, you can glue cap and icicle to the globe.

A tree for tiny turnings

I turned a tree-type display to show off some of my ornaments at craft shows. Once you get the hang of cutting tiny parts and assembling them in different geometric arrangements, there's no end to the variety of ornaments you can create.



Tools & Supplies:

See Buyer's Guide on Page 66.

Chisel Rescue

A grinder, honing stones, and some elbow grease can save a good tool from the scrap heap

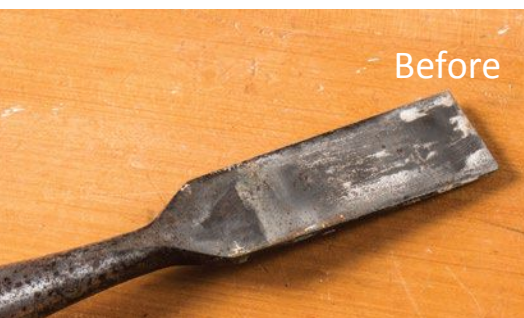
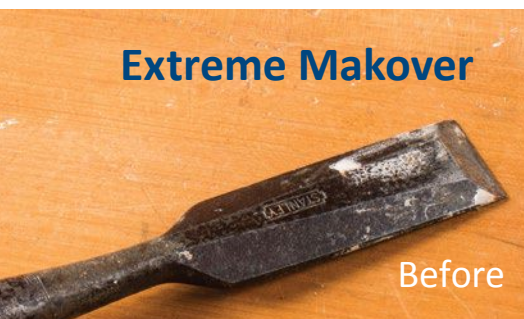
By Paul Anthony



Far too many chisels, plane irons, and saws face a premature death or dismissal. Scrap heaps and flea markets are full of tools discarded simply because they're ugly with rust or battle scars. But any savvy woodworker recognizes that there's good life, and even honor, in many "trashed" tools, especially older ones. In fact, the quality of the metal in an old chisel or plane iron often surpasses the steel used in new tools.

Chisels are among the best candidates for restoration. As a woodworker, you may already have most of the sharpening equipment you need for the job. As for me, I use an 1800 RPM "slow-speed" grinder for shaping, and waterstones for honing. It's basically a 3-step process that involves honing the back to a flat, polished surface, reshaping the edge at the grinder, and then finishing up by honing the bevel to a polish. Whether you use waterstones, sandpaper, diamond stones, or oilstones for honing, the basic process is the same. (By the way, some or all of the processes I show you here often need to be applied to brand-new chisels, which usually don't come with polished backs and nicely honed bevels.) So have at it. Do yourself a favor, and save a chisel in distress. It will pay you back big dividends over its new life.

Extreme Makover



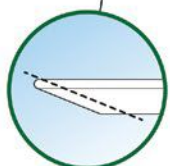
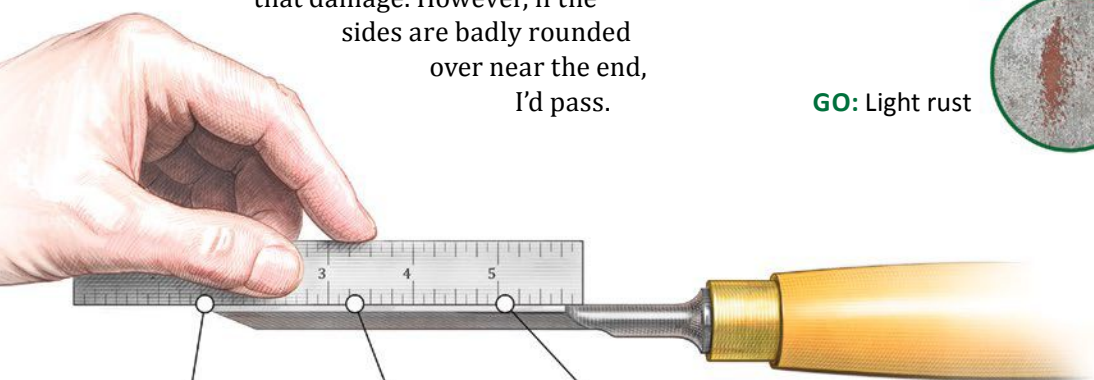
This once neglected and abused chisel is now proud, looking sharp, and ready to take on a job.

Assess the damage: Is it worth the work?

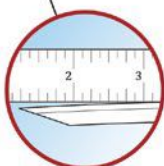
Before investing time in resurrecting a chisel, scrutinize it to make sure it's not too far gone. First, clean and inspect the back. It's crucial that you'll be able to flatten at least the endmost $\frac{1}{2}$ ", and remove any shallow rust pits or scars at the same time. Check the flatness with a small straightedge. If it's very slightly concave, it's still a candidate. But if it's convex at all, it won't be worth the work.

Likewise, if it has deep rust pits or scars near the far end of the back, forget it, as these will eventually intersect the cutting edge, compromising sharpness. That said, any deep pits or nicks at the very end of a candidate chisel can be eliminated by grinding the tip down past them. Don't worry if the back is rounded over at its

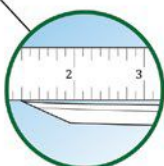
end; the steel can also be ground past that damage. However, if the sides are badly rounded over near the end, I'd pass.



GO: Rounded edge can be ground back.



NO GO: Convex back



GO: Flat or slightly concave back

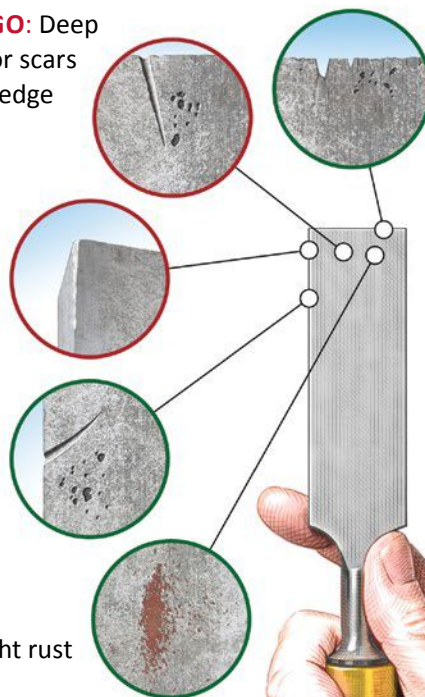
NO GO: Deep pits or scars near edge

NO GO: Badly rounded side near end

GO: Deep pits and scars at least $\frac{1}{2}$ " from edge

GO: Light rust

GO: Deep pits or nicks at edge



Don't look naked. Sharpening involves peering into a small world. Don't expect your naked eye to see what's important. Use a 10x eye loupe to inspect your sharpening progress under a strong light. If the magnified surface looks good, the tool should work well.



Step 1: Flatten and polish the back for precise cutting and keen honing

For a chisel to work well and hone properly, the back must be flat and polished. If it's badly pitted or out-of-flat, start with a good quality coarse stone like the 220-grit made by Norton. Rub aggressively, working the entire surface of the stone in full-length strokes to minimize hollowing it, and dress it flat occasionally. Apply strong pressure with your fingers spread out across the endmost 1½" or so of

the chisel. Be careful not to lift up or you'll round over the area near the cutting edge. After you've produced a consistent scratch pattern on the back of the chisel, move to an 800-, and then a 1200-grit stone, repeating the process. Finally, finish up on a 6000- or 8000-grit stone for the final polish.



Stay dressed. Waterstones cut quickly, but must regularly be flattened, or *dressed* in use. Here, a 220-grit stone is rubbed across a slotted “flattening stone” to get rid of the slight hollow caused by working the chisel on the stone.



Slurry up. For the most aggressive cutting, keep the stone clean. But as you achieve a consistent scratch pattern, let the slurry of metal particles build up on the stone to serve as an intermediate grit before moving on to the next stone.



Finished back. Finish up the back by polishing it on an 8000-grit stone. Afterward, it should reflect nicely when viewed from an angle like this. Although you'd probably see the light scratch pattern looking straight at it, this is a great polish.

Step 2: Head to the grinder to square the edge and create the bevel

To true the cutting edge and shape the bevel cleanly without burning (bluing) the metal, you'll want a slow-speed grinder outfitted with a soft-bond 80- or 120-grit wheel. I highly recommend replacing most stock tool rests with a much more adjustable aftermarket rest such as the Veritas model seen



Dressed with diamonds. In preparation for grinding, use a diamond-faced dresser to clean and true the edge of your grinding wheel. For best grinding, give the wheel a slight crown.

in these photos. Before grinding the bevel, swipe it with a marker to help you hit your center-of-bevel target, and then maintain your exact chisel pinch throughout the process. To prevent burning the metal, keep the tool moving, don't be heavy handed, and cool the steel occasionally.



Nose to the grindstone. To square the edge while removing any nicks, set the tool rest level, and very slowly press the edge against the wheel, moving it slowly side to side. Check your progress occasionally with a small machinist's square.



Slide side to side. When grinding the bevel, pinch the chisel firmly, using the second section of your index finger as a fence against the tool rest. Place a finger lightly on the back of the blade to apply pressure against the wheel as you move the chisel slowly back and forth without leaning it left or right.



Blunt assessment. Proper grinding technique results in the blunted end of the blade gradually and consistently narrowing until it's just a hair's width.



Computer cool. Avoid water-quenching, which can fracture a thin edge. Instead, use a heat sink like this one, scavenged from an old computer.

Step 3: A few swipes over your finer stones, and you're killer sharp!

To hone a freshly ground edge, begin with your 1200-grit stone (using a honing guide if you like). As soon as you've honed a narrow facet completely across the cutting edge, spritz water on a freshly dressed 6000- or 8000-grit finish stone, and work the bevel on it in a similar

manner until the facet is evenly polished, as shown in the photo on page 28.

To remove the fine wire edge created in the honing process, lay the chisel on its back, work it back and forth a few times, then give the bevel a few more strokes. Finish with a few final strokes on the back, and you're done.



Training wheels. A honing guide will hold your chisel at a steady angle for neatly polishing the end of the newly ground bevel. For the first couple of strokes on a 1200-grit stone, pull the chisel toward you. Then push it back and forth, applying pressure at the tip, until you have established a narrow flat completely across the width of the cutting edge.



Nice slice. A truly keen edge will allow you to cleanly pare softwood end grain without struggle or crumbling.

Honing by hand

Although honing jigs certainly work, there is a downside to depending on them: they take time to set up. Freehand honing is quicker because you don't have to mount and adjust your tool in the jig. Of course, in the latter case, you do have to invest the time into learning the process, which simply requires practice.

The secret to successful freehand honing is to concentrate all of your attention at the business end of the chisel, applying strong downward pressure above the bevel with your left hand. Use your right hand to power the chisel, pinching its sides between your index finger and thumb, keeping your fingers dry for good friction. Curl the remaining fingers under the blade, applying just enough lift to keep the handle from falling. (Lefties, reverse all these directions.)





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By Jim Downing

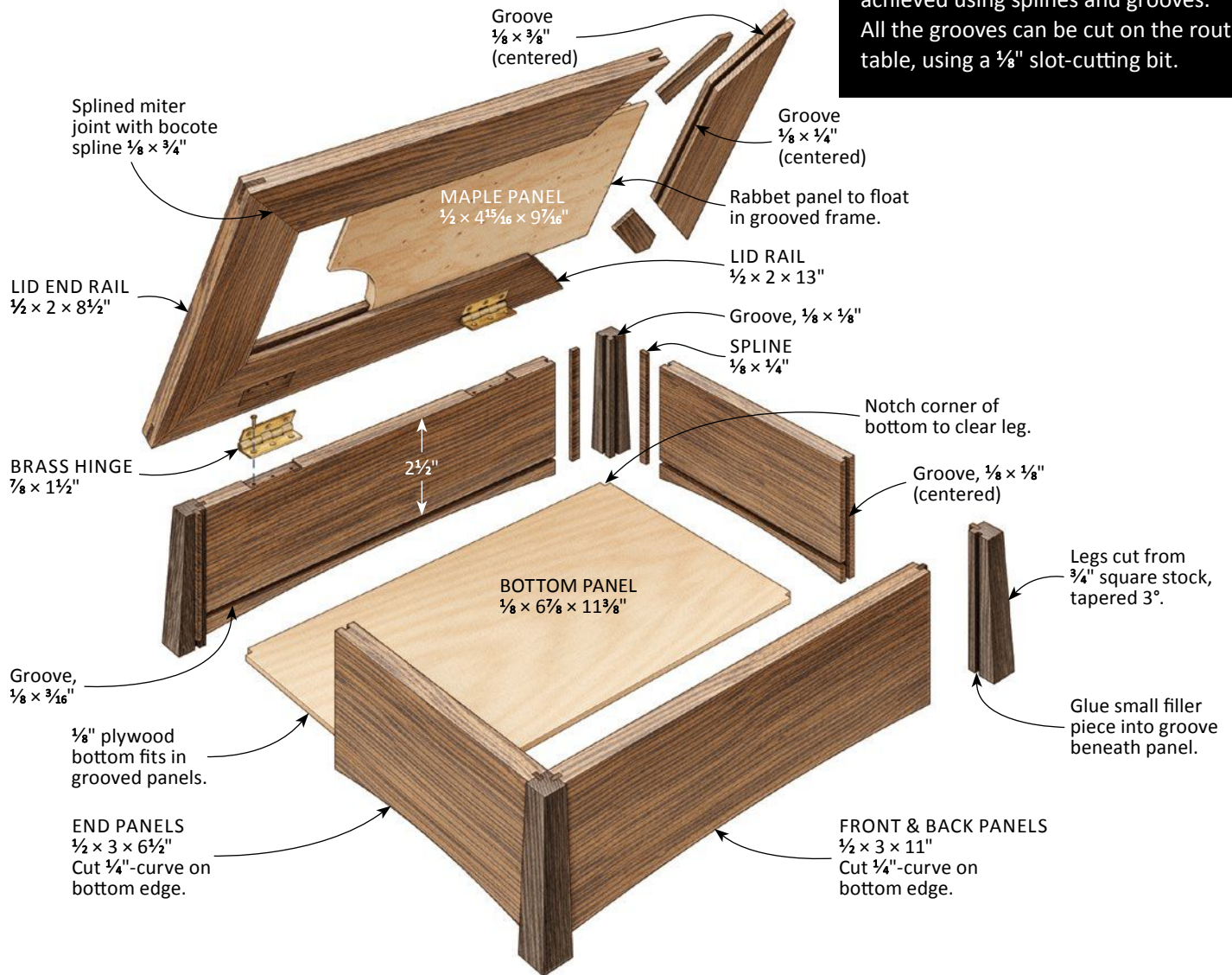


Color and pattern. Dark wenge is used for the legs and handle posts. The box panels and lid frame are made from bocote. The top panel is bird's-eye maple. Inner trays are made from clear maple.

Jewelry boxes are fun to design and satisfying to build. If there's a nicer way to make use of small pieces of precious wood, I haven't discovered it yet. The design for this box began as a discussion about alternatives to corners that feature dovetail or miter joinery. I was also interested in creating visual interest by using contrasting wood tones and grain patterns. Eventually the design evolved into what you see here—a composition of bocote, wenge, maple and $\frac{1}{8}$ " plywood that has an oriental flair. I added a curved, shop-made handle to build on this theme.

The box contains two jewelry trays designed to hold a velvet ring insert and cardboard tray liners covered with velvet (inset photos). A project like this lends itself well to a spray lacquer finish, and that's what I used (see Buyer's Guide, page 66). A pair of brass hinges is the only hardware required. When building your own version of this project, keep in mind that many other contrasting wood combinations are possible. Since a couple of jigs are needed for tapering the legs and routing hinge mortises, I recommend gathering enough stock to make more than one box.

Major dimensions & details

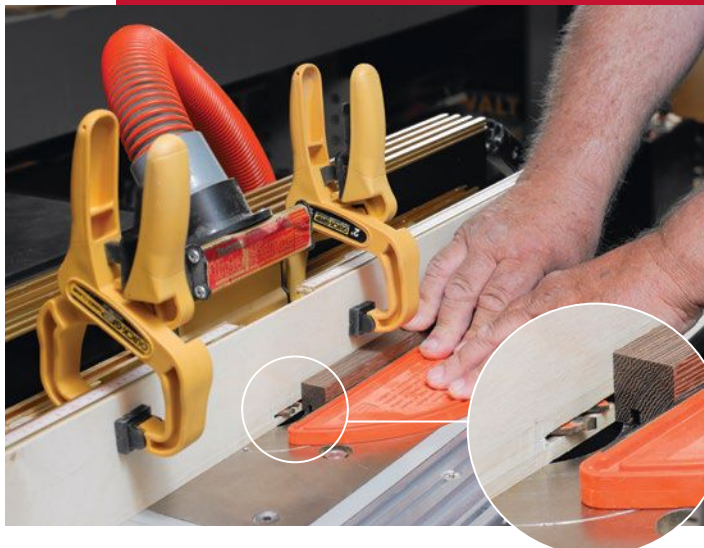


The joinery on this jewelry box is achieved using splines and grooves. All the grooves can be cut on the router table, using a $\frac{1}{8}$ " slot-cutting bit.

Basic Construction Sequence

1. Make the box.
2. Make the lid.
3. Hinge the lid to the box.
4. Make & install the handle.
5. Make the trays.

Small slots. The spline joinery that holds the box together begins with a $\frac{1}{8}$ " slot-cutting bit that extends through a zero-clearance auxiliary fence clamped to my router table's fence. The bit's depth and height stay the same for routing spline slots in the legs and in the panels that form the sides of the box. Rout slots in a pair of $\frac{3}{4}$ "-square $\times$ 7"-long leg blanks, as shown here, using a pushstick to protect your fingers.



Making the box: Tapered legs, tiny splines, panels & a plywood bottom

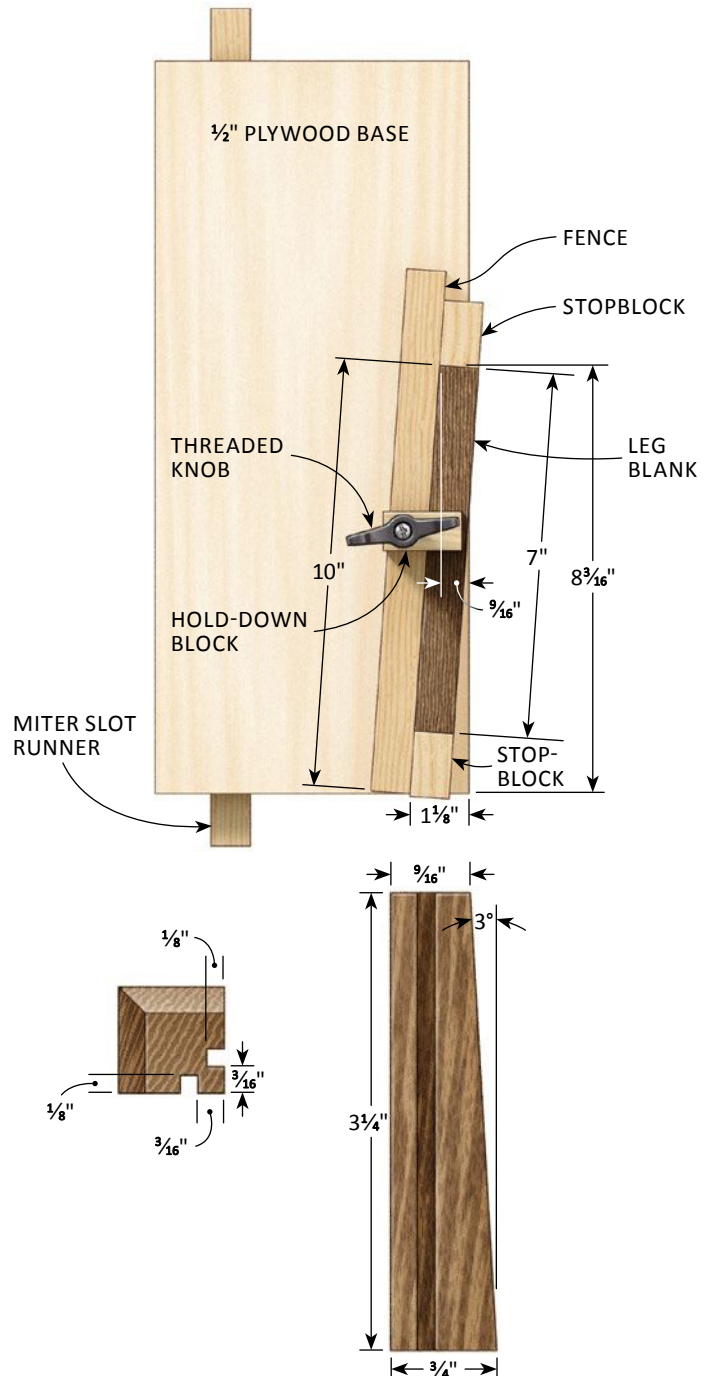
Box-building tips

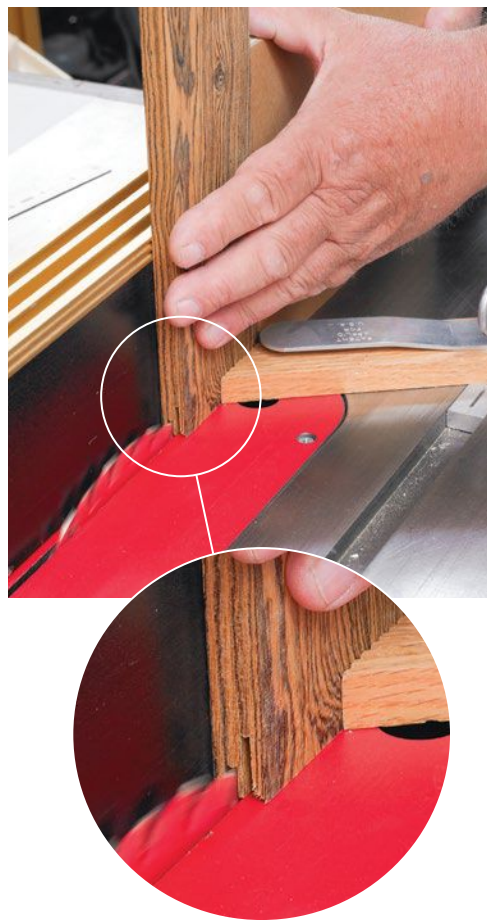
- It's easier to groove and taper two 7"-long leg blanks than to work with four shorter legs. That's why the leg tapering jig is designed to work with a 7"-long blank.
- Cut the legs to their final length after the grooves and tapers have been cut.
- Run a length of masking tape along the bottom of each panel so that you can easily see layout lines for the curved cuts you'll make on the bandsaw.
- Don't glue all the legs and panels together at once. Instead, glue the legs to the end panels first. When the glue dries, finish the assembly by inserting the bottom panel and joining the front and back panels to the end assemblies.

Taper 2 leg blanks on a small, sled-type jig

Tapered legs reinforce the oriental style of this treasure box, but it can be challenging to cut precise tapers in such tiny parts. My solution was to fashion a small tapering jig that rides in the table saw's miter gauge slot and has a "working" edge that's cut flush with the blade. Fasten stopblocks to the base of the jig as indicated in the drawing, and install a clamp to secure the workpiece during the cut.

4 cuts in each blank. Make sure the grooved faces are hidden when making each taper cut. When you've made 4 taper cuts in each blank, the 4 legs can be cut to their final length.





Cut splines to fit snugly. Run the workpiece on end over a zero-clearance insert to make the first two cuts for a pair of splines. Cut each spline free by guiding the workpiece against the miter gauge.

Pause to prefinish. Protect the end grain of box panels with masking tape before applying two light coats of spray lacquer. The bottom of the box can also benefit from finishing prior to assembly.



Two-stage glue-up. Spread glue in the spline grooves to glue the legs to the end panels, then clamp these two assemblies. When the glue dries, finish assembling the box by inserting the bottom panel and gluing the front and back panels to the end assemblies. Check the corners for square while tightening your clamps.

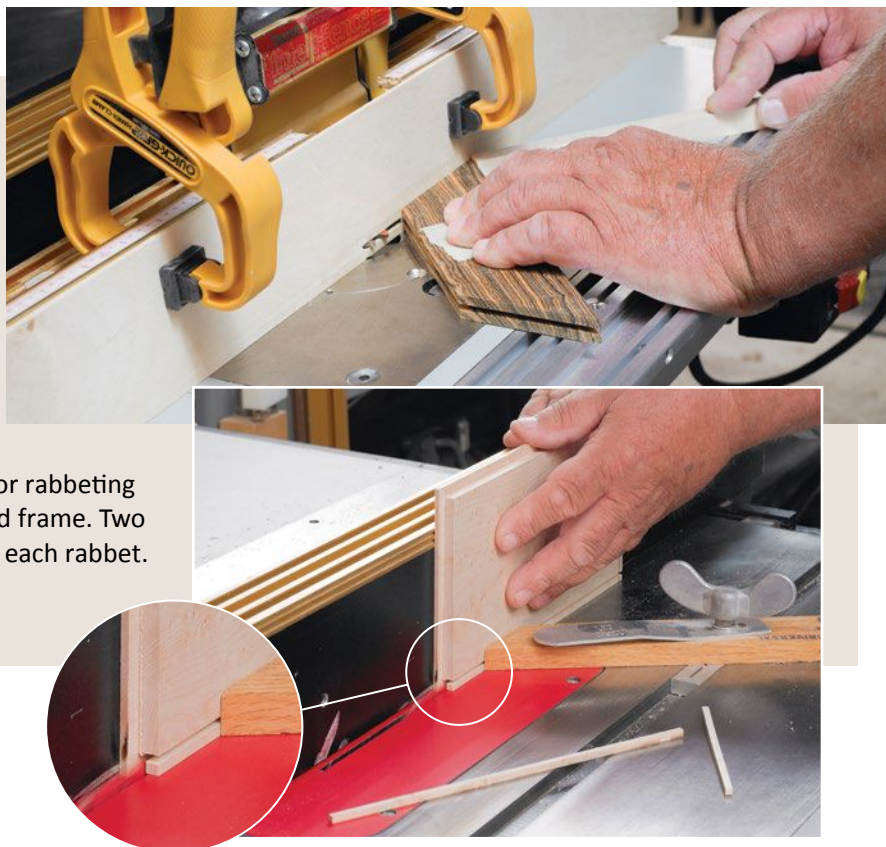
Making the lid: Mitered frame & maple panel

Because of the distinctive striping in the bocote, I cut all four frame members from the same board to keep the grain as continuous and consistent as possible. The miter joints in the frame

are grooved to accept reinforcing splines and the rabbeted panel. All of these grooves can be cut using a single setup with a $\frac{1}{8}$ " slot-cutting bit on the router table.

Cut miters, grooves & rabbets.

After making test cuts in scrap stock to check and fine-tune the setting on my tablesaw miter gauge, I used the miter gauge to guide all 8 miter cuts in the lid's frame pieces. Then I used the $\frac{1}{8}$ " slot cutter in my router table to groove the miter joints and the inside edges of all four frame pieces. I used the tablesaw for rabbeting the panel edges to fit in the grooved frame. Two passes through the blade complete each rabbet.



Careful clamp-up. Complete a dry assembly of the lid to make sure the glue-up will go smoothly. Allow the splines to run long, as shown in the photo. Apply at least one coat of finish to the panel before assembling the lid, and let the panel float in the frame; don't glue it. Masking tape will help keep joints aligned as you assemble the lid. Tighten the clamps just enough to close the miter joints. Excess pressure can shift joints out of alignment.



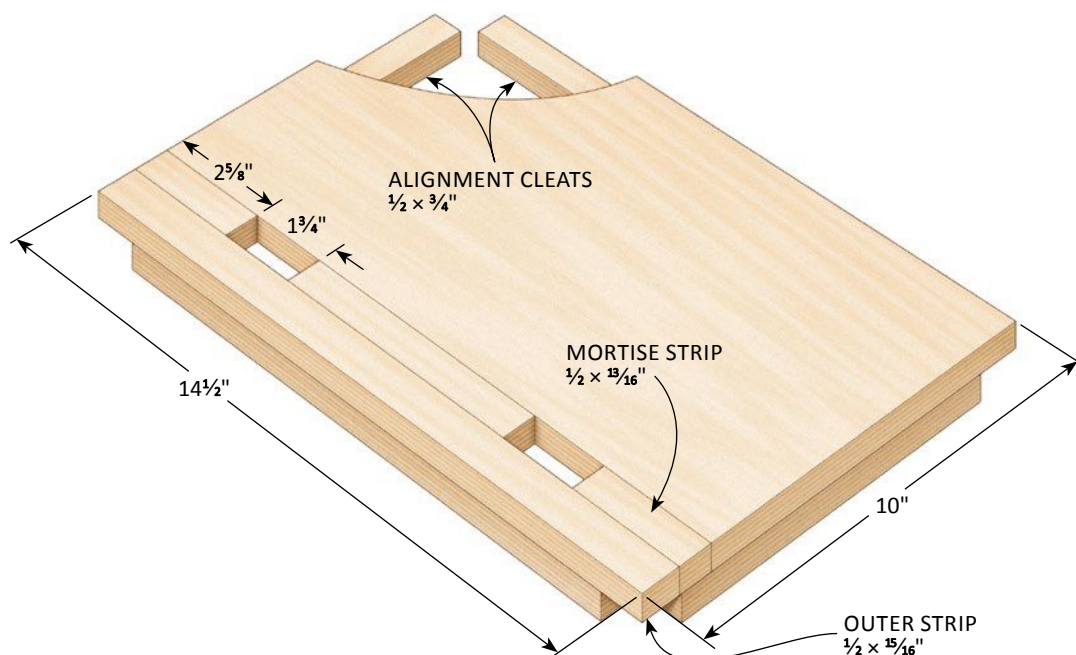
Joining the lid to the box

A nice box deserves good hardware, which is why I used a pair of high-quality brass hinges. With this design, the lid overhang provides a built-in stop when the lid is opened, so it's not necessary to use stopped hinges. Although hinge mortises can be cut by hand with a chisel, I decided to do the job with a simple jig that I can reuse whenever I want to make another box like this one.



Steel and brass. I chose stainless steel screws because I like the combination of silver and gold, and because steel screws aren't as prone to twisting off as brass screws are.

Use a jig to rout hinge mortises. Made from $\frac{1}{2}$ " plywood, my jig is designed to work with a plunge router fitted with a $\frac{1}{4}$ " straight bit and a $\frac{1}{2}$ " O.D. bushing. I positioned each hinge 2" in from the box corners. With this setup, the rectangular template opening to guide the bushing needs to be $\frac{1}{4}$ " larger than the dimensions of the hinge leaf that will fit in the mortise. Cleats fastened to the jig keep the jig aligned on the lid. To properly align the jig over the box, insert $\frac{1}{2}$ " spacers between the box panels and the cleats.

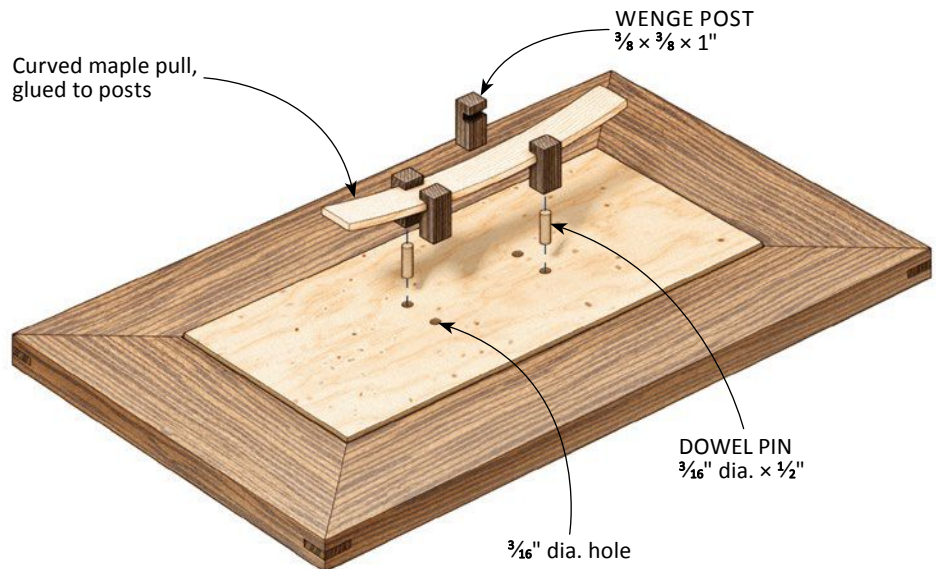


Handle construction: Posts, pull & pins

Full-Sized Handle Template



This oriental-style handle could look just as nice on a cabinet as it does on this jewelry box. To make the posts, cut $\frac{3}{16}$ "-deep dados angled at 4° in a 7"-long blank that's $\frac{3}{8}$ " square in section. Then cut individual posts from the blank. When cutting the maple handle on the bandsaw, allow extra thickness so the handle can be finish-sanded to fit in the slotted posts. Instead of boring mounting holes directly in the lid's panel, I made a drilling jig with exact hole locations that could be placed over the panel.

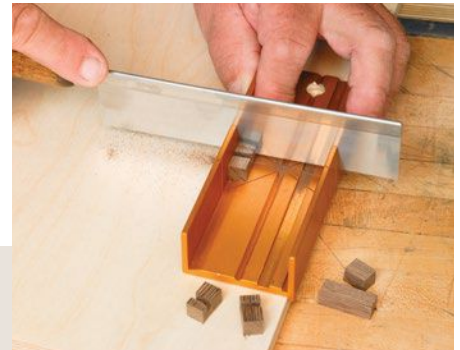
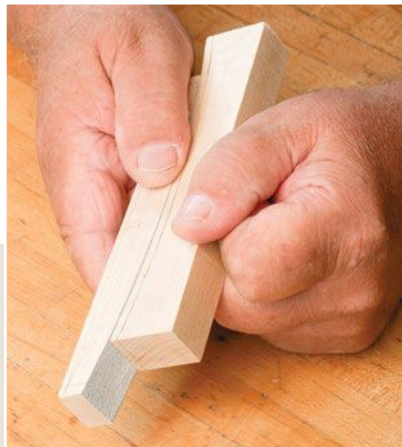


This part of the project requires **5 basic steps:**

1. Make the posts.
2. Cut & sand the handle.
3. Glue handle & posts together.
4. Make & use drilling jig to bore holes in lid panel.
5. Install handle with dowel pins & epoxy.

Handle, slots and holes.

Sand the handle to remove saw marks and achieve a snug fit in the slotted posts. A mini miter box and saw are useful for cutting posts to final size. To drill an installation hole in each post, I wedge the post in a larger hole made in some scrap stock clamped to my drill press table. The alignment jig I made for gluing the maple pull to the posts can be reused to drill matching handle installation holes in the lid panel.

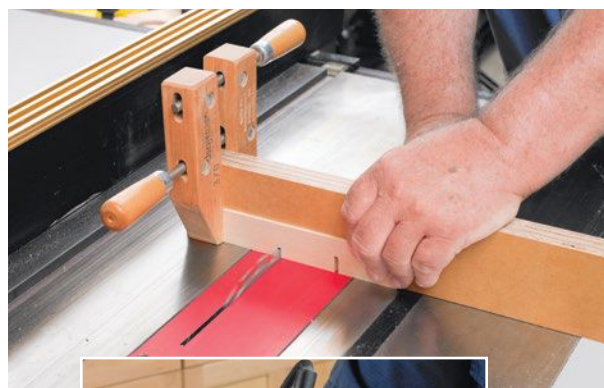
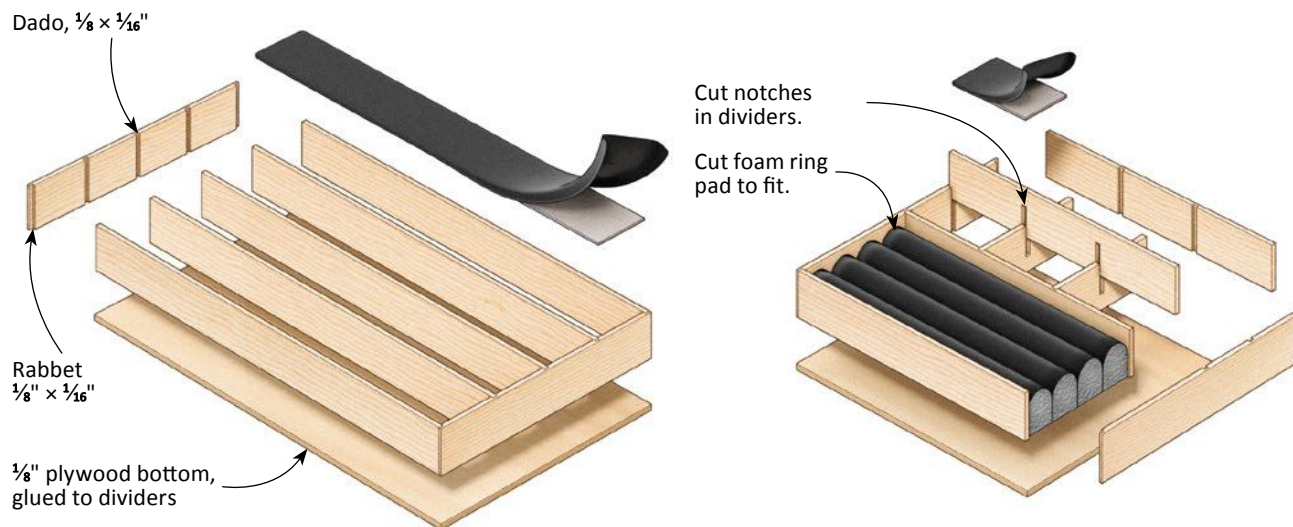


Tray details: Maple strips & velvet lining

Internal trays are important in a jewelry box like this one. Feel free to configure your dividers based on the items that need to be stored. For best results, follow these guidelines:

- Start with maple strips 1" wide and exactly as thick as the table saw blade you plan to use for cutting notches. The trays for my box require 4 strips of maple 36" long.

- I cut slots, dadoes and rabbets using the outer blade from my stack dado set, because it creates a flat-bottomed kerf. Another option is to use a finish-cutting blade or rip blade that does the same.
- Size your tray frames to be $\frac{1}{8}$ " smaller than the inside dimensions of the box, but cut tray bottoms oversized so they can be flush-trimmed with the router.



Cut, assemble, trim, and line. Notch the dividers with the blade raised to half the divider width. Keep joints square when gluing up each tray, and make



the $\frac{1}{8}$ " plywood bottoms slightly oversized. Once the glue has dried, trim the bottoms flush with a flush-trim bit in the router. After finishing the assembled boxes with spray lacquer, you can cut cardboard inserts for the trays and wrap them with velvet.

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A Woodworker's Wish List

Brighten the holidays with these great gifts

By Joe Hurst-Wajszczuk

Having a woodworker on your gift list is both a blessing and a curse. While there is no shortage of new tools and accessories, the trick is selecting items that will get used, rather than sit on a shelf.

For inspiration, we collected gift-giving advice from fellow woodworkers and added our own insights about the tools

and accessories we wish we had bought sooner. The result is a selection suitable for woodworkers of all skill levels. So if you've got family members or friends who are woodworkers, skip the ties, socks, scarves, and cologne. Give some gifts that keep on giving, now and for years to come.



Marking & Measuring

Go to the Buyer's Guide on p. 66 for prices and ordering information for featured items.

Super-stable square \$40

Compared to a combination square, the **Veritas Sliding Square's** 3"-wide blade provides a more substantial reference face for transferring measurements. With the collar removed, the accurately machined blade is also useful as a flat square.

Make your mark \$15

The name's a curve ball, but the benefits go straight to the heart of precise layout. The **Pica-Dry Pen** is a mechanical pencil that works on most surfaces, including wet wood, glass, and tile. A built-in sharpener helps keep your markups on the money.

Tighter tolerances \$42

The **Wixey Dual Display Caliper** simultaneously displays decimal and fractional measurements (to the nearest 64th of an inch). Adding a **WoodRiver Depth Gauge** (\$20) turns any caliper into a super-accurate depth gauge.

Never too many tapes \$5-12

Woodcraft's 16' tape is a bargain-priced stocking stuffer for kids who haven't figured out fractions. FastCap's tapes are problem-solvers: the **Flatback** excels at measuring curved surfaces; the **Lefty/Righty** can be easily read from either side. Both FastCaps include a pencil sharpener and erasable writing face for recording important dimensions.



Hand Saws

Honey I shrunk the saw \$25

Olsen's 24 TPI saw is great for making the exacting cuts required for inlay, toys, models, and musical instruments. The companion **miter box** ensures perfectly square or mitered ends.

Dovetailer's delight \$60

Don't let its space-age appearance fool you, the **Veritas Standard Dovetail Saw** is comfortable to use, and performs as well as saws costing twice as much.

Gem of a saw \$25

An **adjustable frame fretsaw** is the tool for removing waste between pins and tails. It's also great for cutting veneers, plastics, and thin metals.

Precision pull saw \$50

For most woodworkers, a Japanese pull saw, like this **Z-Saw Dozuki**, is a major game-changer. The thin blade and razor-sharp teeth make it easy to develop line-splitting accuracy. The 26 TPI blade cuts fast and clean.



Planes & Chisels



First in class \$120

Patterned after the smallest bench plane in Stanley's plane line, this **WoodRiver No. 1** is akin to a block plane with a comfortable handle. For those who collect planes by the numbers, this tool can fill out the collection.



Side shaver \$150

A **shoulder plane** is good for more than just shoulders. This open-sided plane is perfect for cleaning tenon cheeks, rabbets, and other joinery adjustment chores. It's so useful, you'll wonder how you ever did without one.



Perfect parer \$21

The **WoodRiver Bent Blade Paring Chisel** shaves in spots that are beyond the reach of standard straight chisels. It's a problem-solving tool that's sure to come in handy on different projects.

Beautiful butts \$60 (set)

This set of 6"-long **butt chisels** is easy to carry in a tool apron or toolbox. The compact size enables them to fit where longer chisels can't, while offering excellent control. With good edge retention and palm-friendly bubinga handles, these toolbox chisels may become your shop favorites.



Sharpening Accessories

Straight and narrow \$85

The challenge with sharpening narrow chisels is that there isn't a lot of metal to hold on to. With top-clamp jigs, the chisels tend to spin as you sharpen, resulting in a skewed edge. **Veritas' Narrow Blade Holding Guide** clamps on the sides for a skew-proof grip.



Second skin \$30

Most rust inhibitors fall into two camps: thick coatings that must be removed prior to use, or thin films that don't last long. **Bora Metalguard** is a "barely there" coating that doesn't affect tool usability, and defends tools as effectively as gummier coatings.

Sweet starter stone \$40

The **King 1000/6000** is a perfect waterstone for those who haven't yet experienced the effectiveness of these traditional sharpening tools. After grinding, establish the bevel on the coarser side, then flip the stone for final honing.

Honing helpers \$30 (set)

DMT's **Dia-Sharp Honing paddles** offer a speedy solution for knives, router bits, and other edge tools. The offset handle helps tackle touch-ups without getting fingers too close to sharp edges.



Router stuff



Terrific trimmer \$120

More than just a laminate trimmer, the 1 HP **Bosch Colt Palm Grip Router** is perfect for tackling inlay, hinge mortises, edge work, and more. Partnering the fixed-base Colt with the full-featured **Pro011 Plunge Base (\$80)** converts this trimmer into a precision plunge router for any jobs using $\frac{1}{4}$ " bits.



Sanding savers

Get super-smooth edge treatments that don't require sanding. Thanks to an extra pair of carbide tips, **Freud's Quadra Cut bits** produce glassy smooth edges without the tearout or burning common with regular bits.



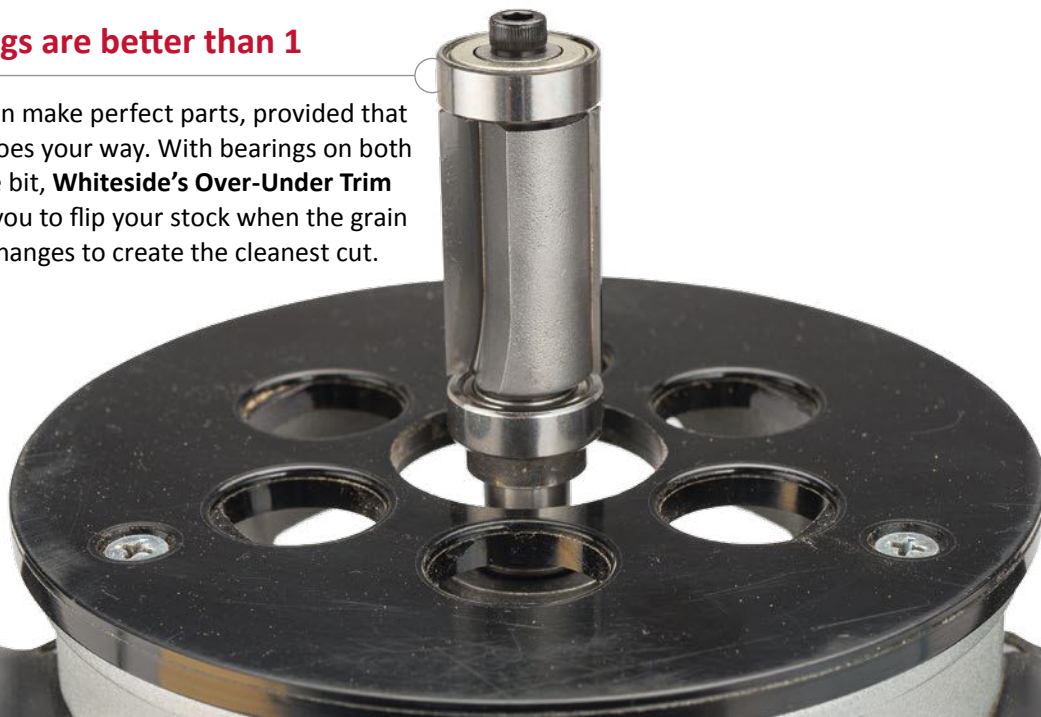
Edge master \$35

Beaded edges add elegance and tactile delight when used on cabinetry and furniture. **Freud's Quadra Cut $\frac{1}{8}$ "** beading bit provides an attractive way to embellish edges and face frames.



2 bearings are better than 1 \$36

Patterns can make perfect parts, provided that the grain goes your way. With bearings on both ends of the bit, **Whiteside's Over-Under Trim Bit** allows you to flip your stock when the grain direction changes to create the cleanest cut.



Miscellaneous

For the woodworkers who have been really good this year, go to woodcraftmagazine.com to see higher priced items and power tools.



Get a grip \$22

Set the clamping pressure on **KREG's Automaxx Clamp**, and it will apply the same pressure to anything that fits within its jaws. A perfect partner to all sorts of jigs and fixtures.

Power play \$30

Plug the **FastCap Remote Control's** receiver between the tool and outlet, and you'll have power in the palm of your hand. This time- and step-saving device is most useful as a remote control for a shop vac, but it can be used to control an air cleaner, fan, or A/C unit.



Back saver \$50

This **Gorilla Gripper** pinches onto panels as you lift upward on its handle, allowing you to single-handedly carry large sheets at your side without straining your back.



Super sander \$21

Twenty bucks may seem like a lot for a sanding block, until you try a **Preppin' Weapon**. This soft-faced sanding block clamps sandpaper quickly and allows use of nearly the entire sheet.

The contoured grip is comfortable, too.





Make a Monogrammed Hand Mirror

Personalized gifts reflect your craftsmanship and creativity

By Larissa Huff

During my first few months as an apprentice at the JD Lohr School of Woodworking, I was assigned the job of making a few unique hand mirrors for a local salon. Being new to the craft, it was an intimidating task, but a perfect project because it demanded imagination and a wide range of core machine- and hand-tool skills. When the mirrors proved a hit, I was inspired to make a few more as gifts. They were well received, and provided the perfect use for small boards of figured wood I had squirreled away.

As my woodworking chops developed, so did my ambitions. Inspired by classic, Victorian-style mirrors, I wanted to create more unique versions by adding personalized details. My love of the plunge router dovetailed nicely with this plan. I started using V-groove bits to cut initials and tidings into my mirrors to create gifts and keepsakes for holidays, weddings, and special occasions.

Making a mirror doesn't take long, and it's fun to play with handle shapes of various sorts. You'll find the mirror itself to be a well-loved gift. Add someone's initials to it, and you've just given them something they can't get anywhere else, and that carries handmade memories of you.

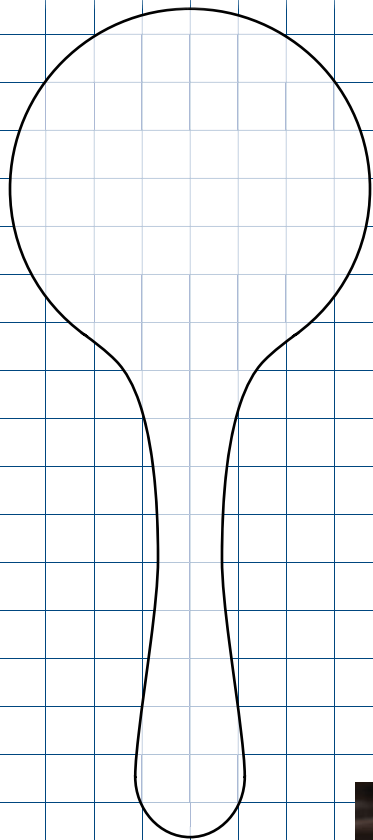


Play with the profile and rout the recess

Using a $\frac{7}{8}$ "-thick board, lay out the mirror profile and $6\frac{1}{16}$ "-diameter mirror recess. Then template-route the $\frac{1}{4}$ "-deep recess. My router

base won't span a 6" opening, so I use three successively larger templates in turn, attaching them to the workpiece with double-faced tape.

Mirror pattern



Pattern shown at 25%. 1 square=1"
For the full-sized pattern visit
www.woodcraftmagazine.com

Buying mirror.

It's important to buy good quality mirror and to get it before starting work on a piece, in case there is any significant size variation. I order 6"-diameter double-strength ($\frac{3}{32}$ ") mirror with eased edges. This thickness safely sits a bit below the surface in a $\frac{1}{4}$ "-deep recess. Beveled-edge mirror can add a nice touch, but remember that it slightly reduces the effective viewing area.



Drilling on the fly. Use a fly-cutter to drill a hole in each of three $\frac{1}{4}$ "-thick panels to create router templates with diameters of $3\frac{3}{4}$ ", 5", and $6\frac{1}{4}$ ".



Route the recess. Outfit a plunge router with a $\frac{1}{2}$ "-diameter plunge bit and a $\frac{3}{4}$ " OD template guide. Beginning with the smallest diameter template, rout out the innermost section of the mirror recess. Follow up with the two larger templates in turn to complete the work.

Shape, finish, and install the mirror

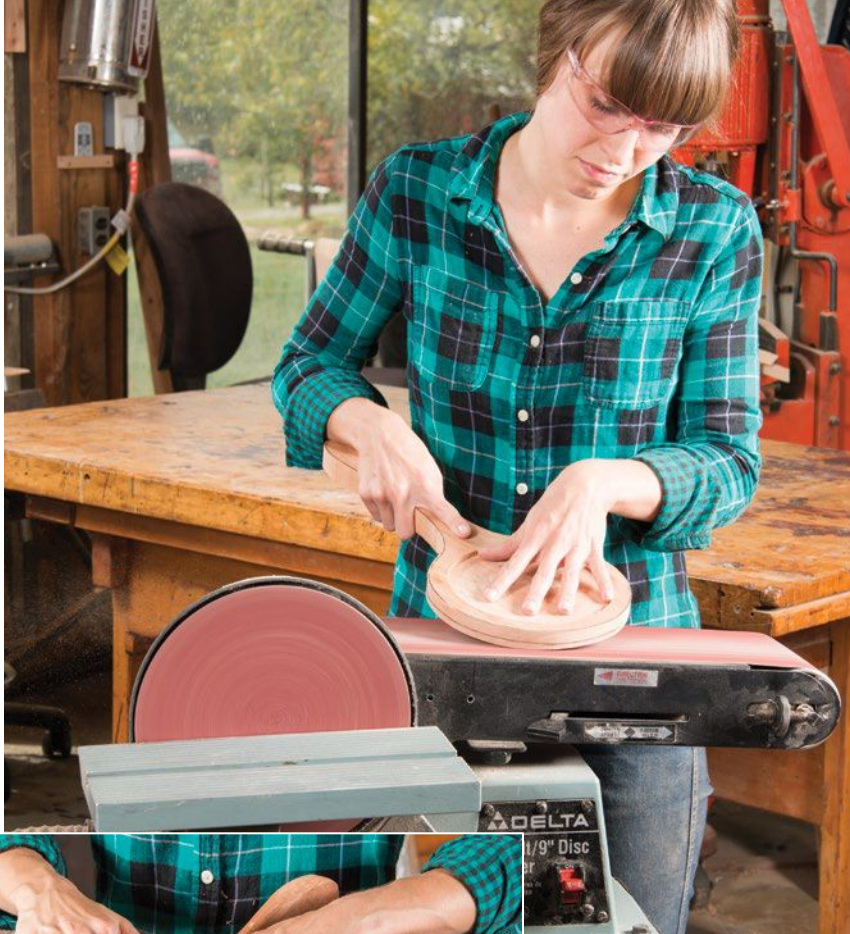
Bandsaw the profile, then smooth the edges using drum sanders. Lay out a 1- to 1½"-wide bevel on the back using a compass. If the mirror is to be monogrammed, make sure to allow enough room for the letters.

Shape the bevel on a stationary belt sander. Do this before routing any monogram to prevent intruding into the lettering area. Then clamp the head in a vise and shape the handle. I do the work with a spokeshave, rasp, and stationary belt sander. (If monogramming, leave the handle flat until afterward to allow clamping the piece when routing.)

When you're done with the shaping, sand everything through 220 grit, and apply finish.

Smooth handling. Shape the handle using a spokeshave, rasp, file, and sandpaper.

Install the mirror and you're done. Apply a 1½"-dia. dollop of mirror adhesive in the center of the recess, and press the mirror in place.



Sand the bevel. Apply consistent downward pressure at the perimeter of the mirror while rotating it slowly.



Monogramming a mirror

Freehand routing of letters might seem intimidating, but it's just a matter of using the right bits and getting comfortable with the process. Stylized lettering is available in books, online (search for "monograms" for starters), and from other sources. I use Photoshop, which offers a wide variety of fonts and allows great manipulation of them. However, other programs are available. When choosing letters for routed monograms, I prefer lettering that isn't

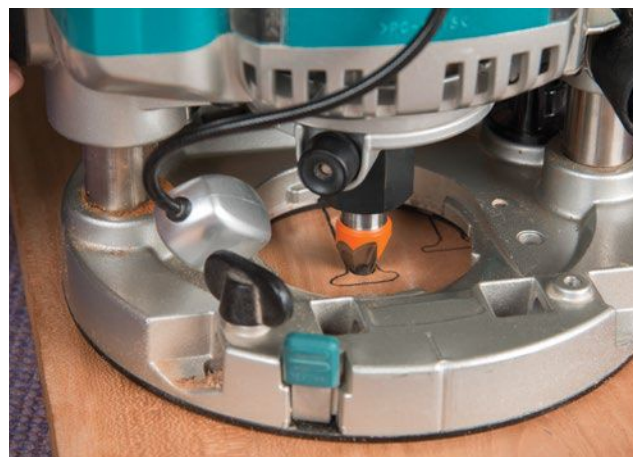
too detailed and that doesn't contain a lot of fine lines. I've tried various methods for transferring the letters to the wood. By far, the best is to use a projector hooked up to a computer to display the letters on the mirror back, which I clamp upright in a bench vise. An alternative is to use good old-fashioned carbon paper. Whatever method you use, make sure your lines are crisp and clear. (When marking dark woods, I use a white pencil.)

Warm up on a practice board

Before cutting into your finished project, always warm up by working out your routing maneuvers on scrap, using the same type of wood as your mirror. It's important to use a smooth-plunging router that does not lock by default, allowing you to plunge and raise the bit easily. Wax and buff the subbase to minimize travel friction. Set up bright task lighting in an adjustable fixture, or use onboard lighting. (I tape a "Mighty Bright" sewing machine light to my router.) Install a bit, and practice routing the letters. Don't start routing your hand mirror until you're comfortable with the process.



V-tool for the job. 60° and 90° V-groove router bits are great for lettering, producing nice shadows and definition. To create letters that vary in line weight, avoid bits that create a flat at the bottom of the cut.



Step 1: Working near the end of a section, plunge to a depth that spans the full width of the letter. Then, with the router off, set the router's depth-stop to that point.



Step 3: Focusing on one discrete section of a letter at a time, rout an initial shallow groove, which is more easily controlled than a deep cut. This will be your guide groove.



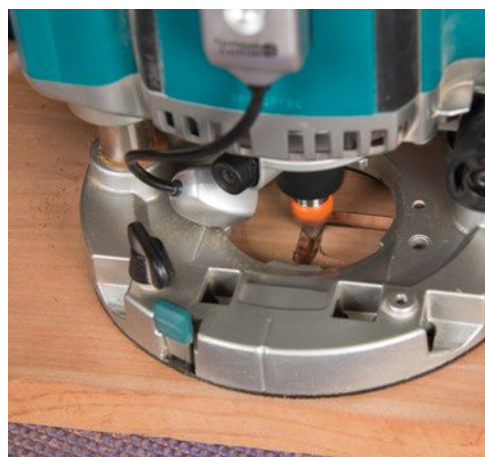
Shine a light. Projecting your design onto the mirror body allows you to easily amend and size the lettering as needed so that you can trace it directly onto your workpiece. You're going to want to practice your routing, so lay out the letters on scrap in addition to your mirror.

Rout the real thing, and then clean up

When you're ready to monogram your hand mirror, prepare some support scrap. Either tape or clamp it and the mirror to the bench, or work on a nonskid pad to keep everything in place. When you're done routing, clean up as necessary with a chisel.



Step 2: Rout any serifs first, beginning at the outermost point, and plunging to full depth while moving inward.



Step 4: Follow up the initial guide groove with a series of subsequently deeper passes until reaching full depth.



Local support. When routing the letters, closely surround the mirror with scraps of the same thickness to keep the router from tipping.



Chisel cleanup. Use razor-sharp chisels to pare away any inconsistencies or clean up rough spots.

Tools & Supplies:

See Buyer's Guide on Page 66.



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Splined Miters

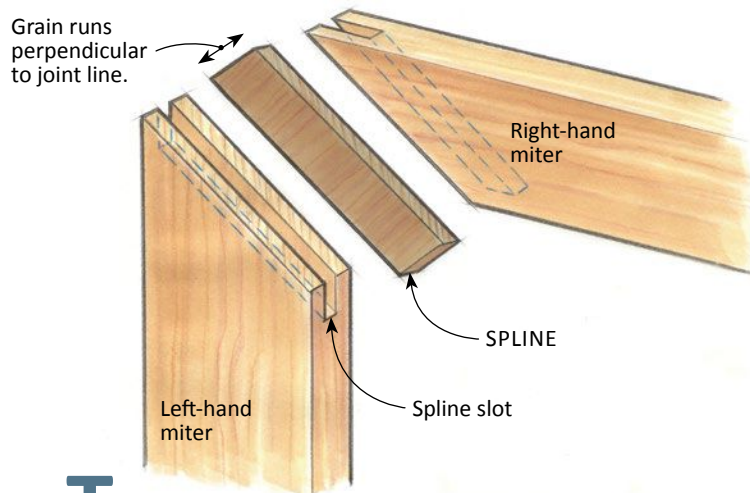
Create stronger corners by partnering your tablesaw or router with one of these simple splining jigs

By Joe Hurst-Wajszczuk

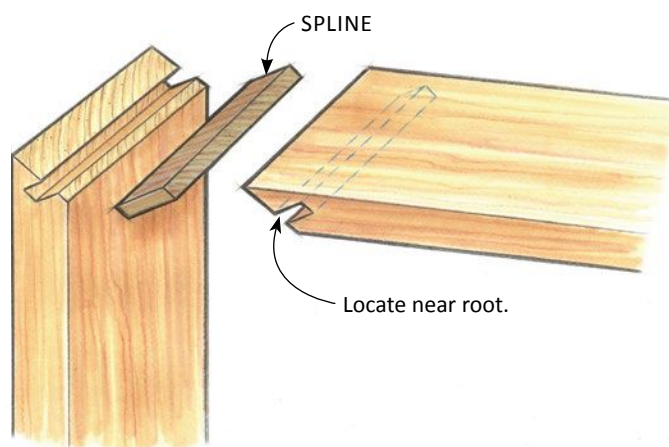
PRIMARY USES

Providing registration and mechanical reinforcement to mitered corners in frames, small boxes, and large cases.

Frame Miters



Case Miters



The trouble with a basic miter joint is that it's more beautiful than brawny. On its own, an end grain-to-end grain glue joint is inherently weak. It needs backup.

Enter the spline. Inserting a strip of wood, plywood, or other material (such as hardboard), into slots cut on the miter's

opposing faces reinforces the joint and helps keep parts aligned during assembly.

These days, the biscuit joiner is the go-to tool for splining, but there are better ways to skin (or spline) the cat. By using your tablesaw or router, you can make full-width splines that can

add strength and detail to your design. Investing a little time to make the trio of jigs shown here will expand your joint-making repertoire by enabling you to produce perfect spline slots with either machine.

Making the Cut – Blade or Bit?

Spline slots can be cut with either a blade or bit, but a flat-bottomed cut is essential for a clean-looking joint. Here's what you'll need to get started.

Tablesaw: Several manufacturers offer special flat-topped, joinery-grade FTG blades for around \$150, but a good ATBR (Alternating Top Bevel with Raker) blade can get the job done for about \$70.

Router: Slot-cutting bits range from \$30 for a single, fixed-width cutter, to \$80 for a multi-cutter set. Cutters are available in widths as thin as $\frac{1}{16}$ ", an advantage for small projects. Bearing-guided bits permit you to take the tool to the work, but even with larger bits, the slot depth will max out at $\frac{1}{2}$ ".



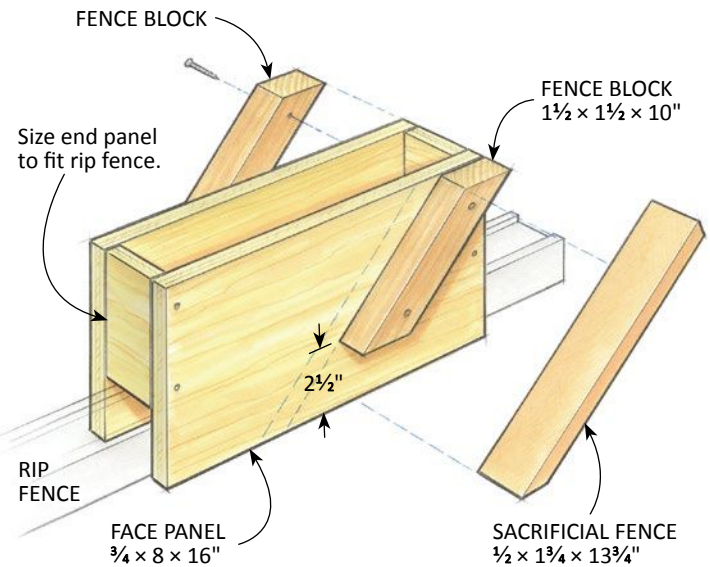
Twin-Faced Tablesaw Jig for Splining Frames

When cutting spline slots, a standard tenoning jig is ineffective because it demands that half the slots must be cut with the workpiece's show face against the jig, and half with it facing away. If the slot isn't perfectly centered, the spline joint will be misaligned.

Designed to straddle the rip fence, this twin-faced jig ensures perfect slot alignment, even when making offset slots. A 4 × 7" hold-down board keeps the workpiece from sliding and serves as a backer when slotting the right-hand miters.



Set up the first slot. Position the right-hand miter against the face panel show face out, and clamp the hold-down to the jig. Slot all of your right-hand miters before changing the setup. (To eliminate the chance of overcutting the slot on the return stroke, remove the workpiece before retracting the jig.)



Block prevents blowout. To set the jig to make the left-hand miter slots, simply turn the jig around on the fence. Positioning the hold-down so that it covers the top end of the slot ensures a clean exit.

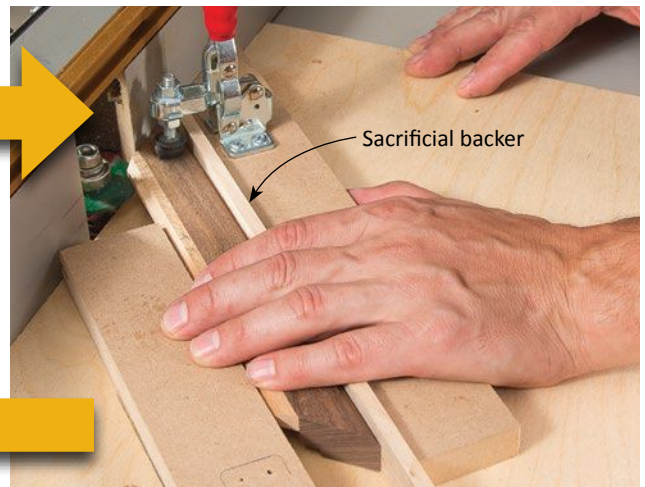
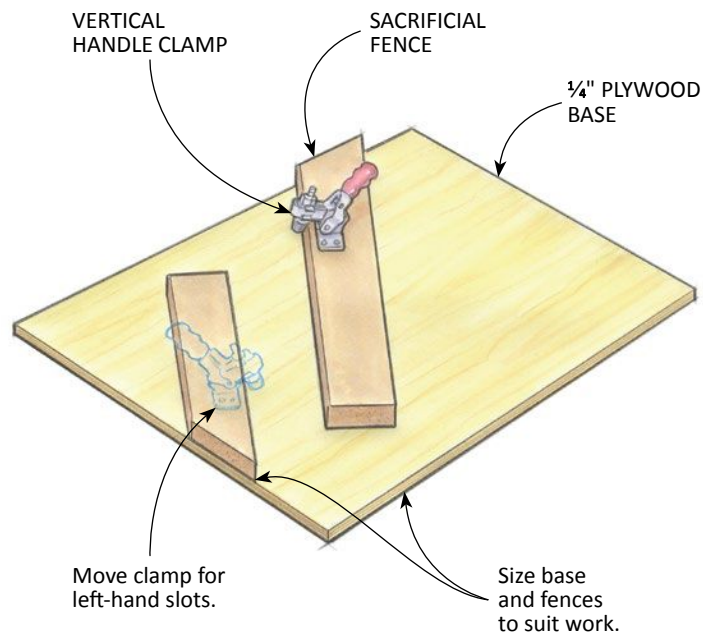
Aligned splines. Again with the show face out, cut the slots on the remaining (left-hand) miters. After cutting the slots, cut the spline to fit.

A Simple Sled for Table-Routed Frames

A router table splining sled may not be as versatile as its tablesaw counterpart, but this jig is well suited for smaller workpieces, and easy to knock together when the need arises. Superior to a simple angled pushblock, the plywood base registers against both fences, eliminating the chance of tipping your workpiece into the bit. In addition, the fence-mounted clamp fixes the work against the fence to prevent tearout.



Use a bar to set the bit. Setup bars offer an accurate means of setting the bit without squinting to read numbers. After setting the height, position a brass block as shown, and adjust the fence so that the bit's carbide tip grazes the test block.



Route the rights. To assemble the jig, register the edge of the base and the end of a sacrificial fence against your router table's fence and tape the two together. To route the right-hand slots, slide the sled past the bit.

Finish with your left. To ready the jig to rout the left-hand miter slots, rotate the sled and reposition the toggle clamp. The clamp's vertical locking handle allows you to put clamping pressure closer to the cut.

A Multipurpose Jig for Case Miters

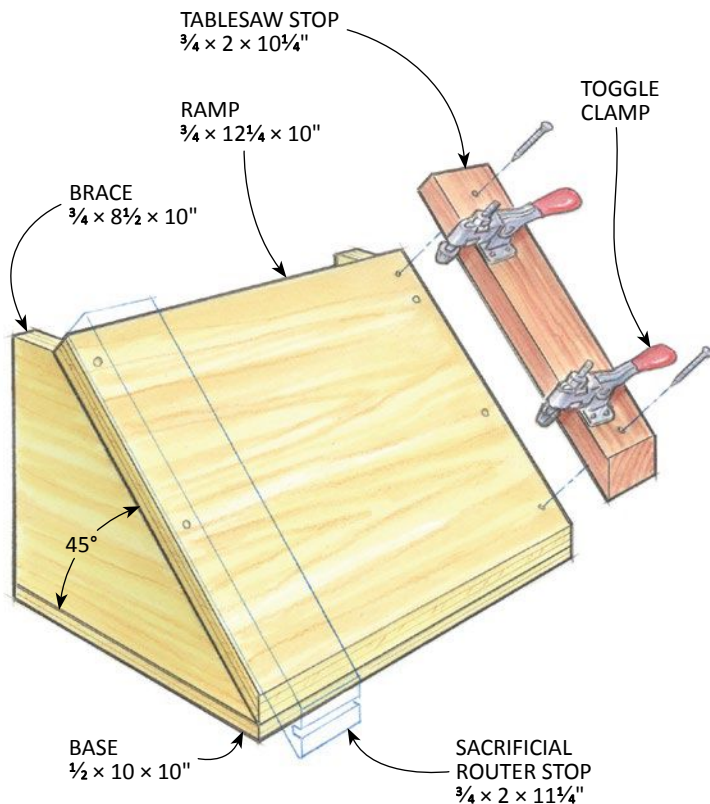
When cutting spline slots on wide case pieces at the tablesaw, you may be able to set the saw blade perpendicular to the face of the miter, lay the work flat on the table, and push the panel over the blade. For smaller pieces however, a jig can be a big help.

What makes this jig worth building is that it can be outfitted to work at the tablesaw or router table. In either operation, the jig registers the workpiece solidly on the face of the miter, instead of on its crushable tip.

Mitering and splining at the tablesaw.

One big advantage to using this jig at the tablesaw is that it enables you to cut both miters and spline slots without fussing with your blade's bevel angle.

After mitering, simply flip the stock so that the opposite face rests on the ramp, lower the blade and adjust the rip fence. For strength, position the slot close to the inside edge, or root, of the miter.



Mighty miterer. Guided by the rip fence, the angled base enables you to cut perfect miters without blade adjustments. The toggle clamps keep the stock secure and fingers safe.



All set to spline. To cut the slots, flip the stock, and adjust the fence and blade height.

Two ways to rout splines.

With minor modifications, this jig can rout spline slots in both large and small case pieces on the router table. Attaching a stop to the ramp turns the jig into an angled sled. Adding an auxiliary panel to the ramp and clamping the base to the router table creates a chute that can help keep long mitered edges registered against the router table's fence.



Slide the jig. For smaller case pieces, attach a stop to the ramp, then hold or clamp the stock in place and feed the ramp past the bit.



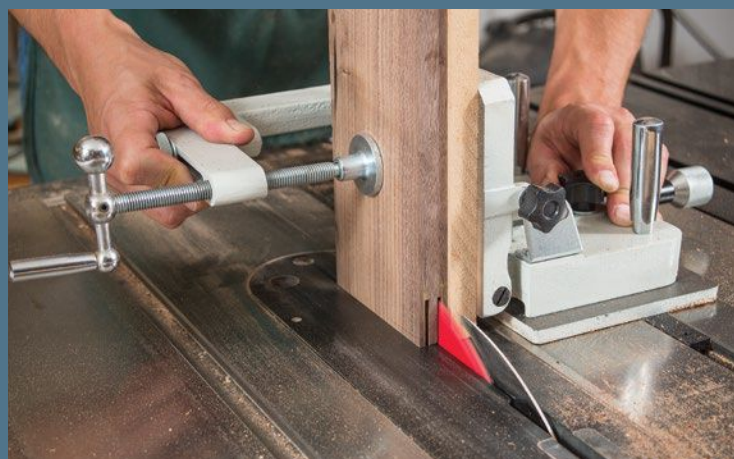
Or slide the stock. For longer splines, attach an auxiliary face to the ramp and clamp the base to the router table.

Splines—Simple or Strong?

Woodworkers will agree that a properly-sized spline should fit snugly, while allowing the joint to close completely. How to cut the strips seems to be a source of some debate.

For maximum strength, a spline's face grain should run perpendicular to the face of the miter. To do this, use a tenoning jig and slice the strips from a piece of stock that's been dressed flat and squared on both ends. Then, saw them to length using a miter gauge and stopblock.

To simplify spline making, some settle with ripped strips. Ripped strips offer registration, but they are more likely to snap if roughly handled. If your project requires long splines and you're pressed for time, consider sizing the slot to fit a plywood spline. If the joint is visible, cap the ends of the slots with solid wood.



Super-solid splines. Using a tenoning jig to hold the workpiece on end, slice the splines from the outer faces. By rotating the board and flipping it end for end, you can quickly cut four splines to the same thickness.



Quicker but weaker. Ripping offers an efficient means of producing long splines, but the installed strips can split along the grain line.

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Spotlight on Cherry

A wonderful wood that's worth a little extra work

By Joe Hurst-Wajszczuk

Does cherry (*Prunus serotina*) need an introduction? Colonial cabinetmakers first substituted this homegrown hardwood for mahogany. Years later, cherry played prominent roles in Shaker and Arts and Crafts furniture. Today, the wood continues to add dazzle to contemporary design. Woodworkers know that cherry's beauty is more than just skin deep. Cherry's characteristics make it wonderful to work by hand or with power tools. Not surprisingly, the demand for the rose-colored wood means that prices for select stock remain high, but thankfully, there's no shortage on the horizon.

Despite its many attributes, cherry poses a few challenges. Few other woods are so demanding from start (selection) to finish. Here's how to avoid a few of the pits.

Cherry Quick Take

Density	Moderate
Hardness	Moderate
Stability	Good
Rot and insect resistance	Poor
Texture	Fine
Toxicity	None
Uses	Furniture, casework, trim, carvings, turnings, musical instruments

Where the wood comes from

North American black cherry primarily grows in the eastern half of the United States. The largest trees are found in the Appalachian and Allegheny mountains of Pennsylvania and New York. But thanks to distribution help from migrating birds who eat the fruit, cherry trees can found from Canada to Florida.

Cherry will often take root when an area returns to forest after logging, farming, or a forest fire. A tree will grow rapidly at first, but as the forest matures, it eventually loses out to taller-growing species, like maple and oak.

How to select the best stock

Success with cherry starts with good wood. Some of these problems are easy to see (as shown, above), but others won't appear until you're making sawdust. Air-dried lumber can be less expensive, but it may host wood-eating organisms. Kiln-dried lumber is a safer bet, since the heat kills these critters and makes wood less palatable by lowering moisture content.

Some problems occur in the kiln. Speeding up the drying process (cherry needs 2× more time in the kiln than poplar)

can lead to checking, honey combing (cracks within a board) and case-hardening (boards that warp when you make the first cut). Your best defense is sticking with a reliable supplier.

Good wood has cosmetic problems that will need to be cut out or culled. Most boards contain a few streaks of gum or pitch (cherry's natural defense against infestation), but larger pockets should be avoided. Mineral streaks, the dark bands that run with the grain, can occur when a tree absorbs minerals from the surrounding soil. If you're matching boards for a top or panel, you may need to wait for another batch. Sapwood may not be a defect, but long wide streaks of white sapwood can affect design. And since it won't darken like heartwood, the contrast will only increase over time. In response, cherry is sometimes graded with heartwood/sapwood percentages. If you're buying boards sight unseen, ask your supplier about how their wood is graded.

Even the best boards come in a range of reds. Purchasing boards from the same tree is a good start, but variations can occur within the same log. For the best color match, compare boards side by side. Wiping down the wood with mineral spirits will help reveal color.

What to watch out for

Bugs

Sapwood

Mineral streaks

Pitch pockets



Avoid tan lines. Cherry's initial color change happens so fast that a misplaced tool can create a shadow line that's hard to sand out. Keep freshly planed boards covered or completely exposed.

Working cherry in the shop

Cherry is slightly softer, and easier to work, than maple or oak, but it's sufficiently hard for case goods and trim. It's also surprisingly supple, making it a good choice for steam-bent projects, such as Shaker boxes. Cherry's smooth texture makes it ideal for carving, although its brittleness does cause it to chip more than some other woods.

The resin that helps turn the wood red makes cherry quick to burn when a bit, blade, or bearing lingers in one spot for too long, so take care to keep boards moving on the tablesaw,

and don't let your router stall in mid-pass. Cherry sands easily, but use fresh abrasives, and do not to let a sander linger, or else you may scorch the wood.

Finishing cherry

Cherry's best color comes with time, so the safest bet is to simply apply a clear finish and watch your work mature to a deep, reddish brown. Most of the color comes within the first two years. To avoid ghost-like imprints from direct sunlight, leave surfaces free of objects for the first six months.

Cherry's tendency to blotch means that even your most

reliable oil-or film-finish may not be foolproof. To counter this tendency, you can test, sand and/or seal as explained in **Simple Solutions**, below).

Staining cherry is particularly tricky. Gel stains or dyes work better than pigment-based stains, but to be safe, seal the wood with a washcoat of shellac to even out the wood's absorption properties. A washcoat will reduce color intensity, so plan on applying an additional coat of gel, or mixing a more concentrated dye. Realize that because cherry darkens over time, stained sapwood will eventually reveal itself.

Simple Solutions

As woods go, few are both as friendly and fickle as cherry. Here are two problems you're likely to encounter, tips for avoiding them, and advice for making the fix when the damage is done.

Scorch marks. Use sharp, clean cutters, and quick, light passes to minimize heat build-up. To remove burns left by a bit, adjust the depth and take a super-light final pass. Alternatively, scrape the trouble spot clean, and then finish-sand.

Blotches. Wipe the wood with mineral spirits or denatured alcohol to reveal blotch-prone areas. For minor blotching, finish-sand through 400 grit. In severe cases, seal the wood with a 1-lb. cut of dewaxed shellac. When dry, lightly sand with 320 grit and then apply a finish.



Buyer's Guide

Two New Benchtop Planers (p. 18)

1. Rikon 13" Benchtop Planer with Helical Cutterhead, Model 25-130H. #863179, **\$649.99**
2. General 13" Benchtop Planer with Helical Cutterhead, Model 30-060HC **\$699.99**
www.general.ca, 1-888-949-1161.

Turned Ornament (p. 22)

1. 3M 8884 Stretchable Tape 1½" x 60 yds., available at office supply outlets **about \$16**
2. WoodRiver 1" Hook Nose Scraper #146224, **\$51.99**
3. Pinnacle Cryogenic Scraper #149348, **\$74.99**
4. Sorby Micro Hollowing Set #149667, **\$79.99**
5. Sorby Micro Swan Neck Hollowing Blade #150279, **\$20.99**
6. Sorby Micro Tool System Handle #149675, **\$29.99**

Chisel Rescue (p. 28)

1. Norton 220-Grit Waterstone #822459, **\$28.99**
2. Norton Flattening Stone #833914, **\$29.99**
3. King 800-Grit Waterstone #11H31, **\$30.50**
4. King 1200-Grit Waterstone #11H11, **\$31.50**
5. Rikon 8" Slow Speed Grinder #158512, **\$139.99**
6. Veritas Grinder Tool Rest #153365, **\$57.99**
7. Diamond Wheel Dressing Tool, 120 Grit #158523, **\$17.99**
8. Honing Guide #03A21, **\$14.99**
9. 8000-Grit Gold Water Stone #60M10.01, **\$58.50**
www.leevalley.com, 1-800-871-8158.
10. Carson LumiLoupe Magnifier Loupe, (LL-10) **\$6.99**
www.amazon.com

Jewelry Box (p. 34)

1. Whiteside ⅝", Three-Wing, Slotting Cutter Router Bit #24D64, **\$20.49**
1. Whiteside A200B Arbor with Bearing, ¾" SH x 2⅝" #24D68, **\$10.79**
3. T-style Knob with ¼"-20 Insert #85J95, **\$1.30**
4. WoodRiver 10-Piece Router Bushing Set With Case #144625, **\$39.89**
5. Brass Small Box Hinge pair #16R60, **\$15.99**

A Woodworker's Wish List (p. 43)

1. Veritas Sliding Square, Imperial #05N32.01, **\$38.50**
www.leevalley.com, 1-800-871-8158.
2. Pica-Dry Longlife Automatic Pen #160111, **\$14.99**
3. Wixey Dual Display Fractional Digital Caliper #147829, **\$41.99**
4. WoodRiver Caliper Depth Gauge Attachment #160116, **\$19.99**
5. FASTCAP Flatback 16' Tape Measure #829311, **\$8.75**
6. FASTCAP Lefty/Righty 25' Tape Measure #829026, **\$12.25**
7. Woodcraft 16' Fractional Tape Measure #153359, **\$4.99**
8. Olson 24 TPI Saw and Mini-Miter Box Set #140347, **\$24.99**
9. Z-Saw Dozuki, 2400mm #12F27, **\$49.99**
10. Veritas Standard Dovetail Saw, 14 TPI #153370, **\$59.99**
11. Olson Adjustable Frame Fret Saw #141410, **\$24.99**
12. WoodRiver No. 1 Bench Hand Plane V3 #159005, **\$119.99**
13. WoodRiver 92 Medium Shoulder Plane #154032, **\$149.99**
14. WoodRiver Bent Paring Chisel, ⅜" #157918, **\$20.99**

15. WoodRiver 4-piece Butt Chisel Set #152169, **\$59.50**
16. Veritas Narrow Blade Honing Guide #160874, **\$84.99**
17. King Combination Waterstone, 8x2x1", 1000/6000 Grit #09C31, **\$38.25**
18. BORA MetalGuard Ultra, 250ml #158703, **\$29.99**
19. DMT Dia-Sharp 2.5" Diamond Offset Mini-Hone Kit #147298, **\$29.99**
20. Bosch 1HP VS Palm Grip Router, CPR20EVSK #831838, **\$119.99**
21. Bosch Pro011 Colt Router Plunge Base **\$79.99**
www.amazon.com
22. Freud Quadra-Cut Bits (¼" & ½" shank) **\$79.99**
Prices range according to size of bit, see woodcraft.com.
23. Freud Traditional Beading Bit, ⅜" R, ¼" SH #828782, **\$33.97**
24. Whiteside 2715 Over-Under Flush Trim Bit, ⅞" D, 1½" CL, ½" SH #149528, **\$36.49**
25. FASTCAP Vacuum Remote Control: #856232, **\$29.99**
26. KREG Automaxx 3" Face Clamp #158503, **\$32.99**
27. Gorilla Gripper #159094, **\$49.99**
28. Preppin' Weapon #833902, **\$20.99**

Hand Mirror (p. 50)

1. Circle Cutter, Small (fly cutter) #145072, **\$38.50**
2. Freud 20-108 V-Groove Router Bit, ¾" D, ½" CL, ½" SH, 90° #828693, **\$31.97**
3. CMT 858.501.11 60° Laser Point Router Bit, ½" SH, ½" D, ⅞" CL, #823911, **\$29.99**
www.mlcswoodworking.com, 1-800-533-9298.
4. Plunge Cutting Straight Router Bit, ½"-dia. #7753, **\$11.95**
www.mlcswoodworking.com, 1-800-533-9298.
5. Mighty Bright Sewing Machine Light **\$11.99**
www.amazon.com
6. Mirror adhesive: available at hardware and home supply stores.

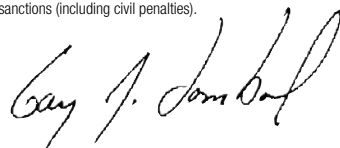
Joinery Class: Splined Miters (p. 57)

1. Freud LU84R011 Perma-Shield Circular Saw Blade, 10" x ⅝" Bore x 50 Tooth Combination #127241, **\$73.47**
2. WoodRiver ½" Arbor Three-Wing Slotting Cutter Router Bit Set #147473, **\$81.50**
3. KREG Automaxx 3" Face Clamp #158503, **\$32.99**
4. Whiteside 5-Piece Brass Set-Up Gauges, 4" #836311, **\$19.49**
5. WoodRiver Vertical Handle Toggle Clamp, 2¾" x 4", 200 lb. capacity #143934, **\$14.19**
6. WoodRiver Low Silhouette Toggle Clamp, 6" x 1¾", 200 lb. capacity #143938, **\$14.19**
7. WoodRiver Tenoning Jig #152712, **\$97.99**
8. Milescraft Push Stick #148419, **\$24.99**

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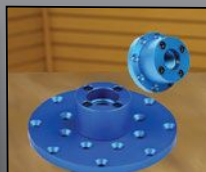
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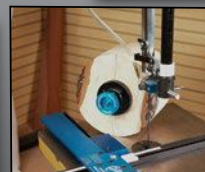
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