

Fine Woodworking

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- Drawer slides
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- Modern coat rack
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Armchair with a wood tile seat, p. 34

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Mid-century style and hardwood scraps combine in a cool, comfortable chair

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All finishes hinder wood's ability to self-clean

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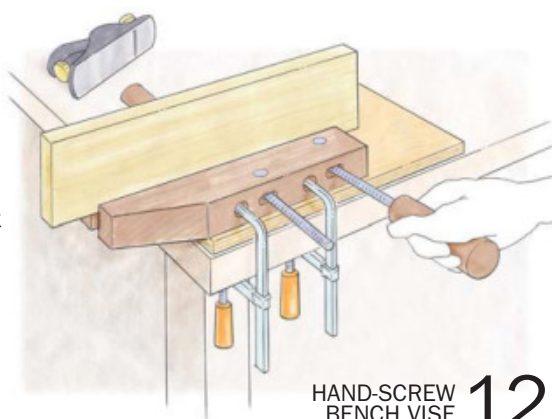
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Vessels of Life



Shaper's Masterclass Video Series

LEARN HOW EXPERT WOODWORKERS USE THE SHAPER ORIGIN IN THEIR OWN WORK

There are loads of instructional videos online today for woodworkers, but for the last year Shaper has been building a unique (and free to access) catalog of its own. Fun to watch and packed with expert tips, Shaper's Masterclass series offers quality instruction and an honest look at how top craftspeople have adopted Shaper Origin into their practice.

Each Masterclass comes with in-depth videos as well as drawings and key measurements for projects.

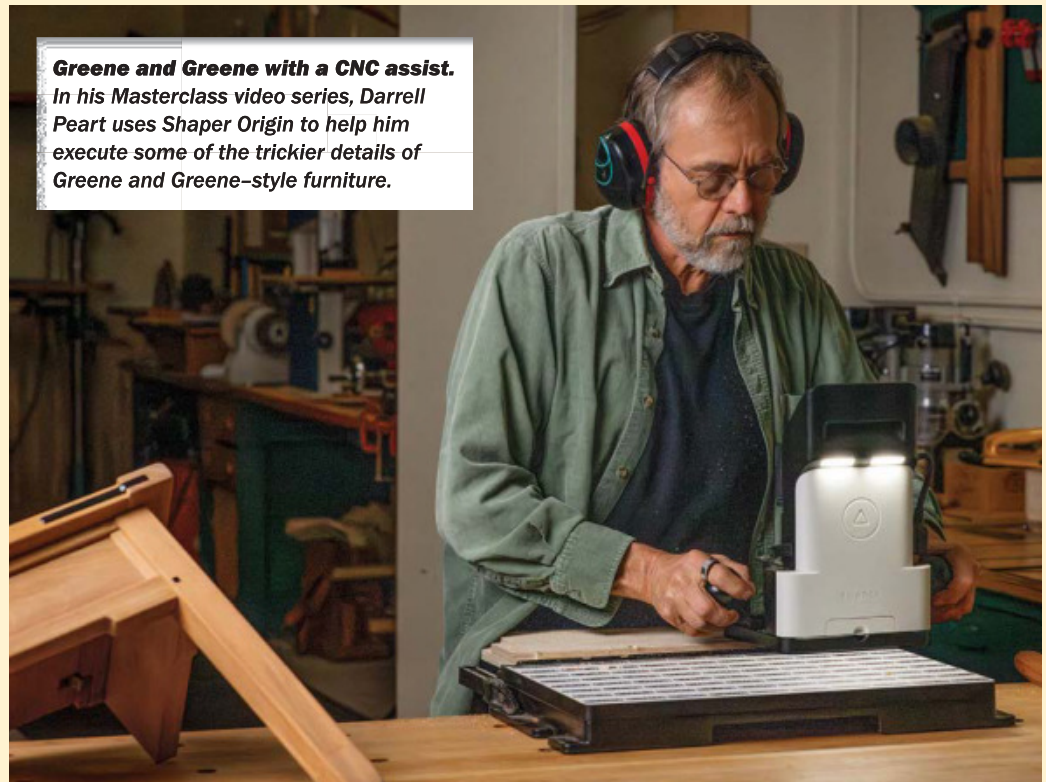
U.S.-based experts include Aspen Golann, Roland Johnson, Matt Kenney, and Darrell Peart—all well-known to readers of *Fine Woodworking*. Their Masterclasses combine traditional woodworking techniques with the unique capabilities of Origin, to make new things possible and known things easier to execute. Topics include chairmaking, marquetry, hand-plane restoration, guitar building, box making, and bent lamination.

Darrell Peart employs the Origin router—and a number of its key accessories—to help him execute trademark details of Greene and Greene-style furniture, including cloud-lift drawer handles and a pierced tsuba detail with ebony inlay. Quoting Stickley, Peart says, "I let the machines do what they do best and the hand do what it does best."

For the drawer handles, he holds the workpieces in several positions on Shaper Workstation, using the Origin router to machine the main elements. He follows up with traditional hand-shaping techniques to complete the pillowed look of these classic pulls.

To make a tsuba-shaped cord opening in a tabletop (*tsuba* are the guard plates on Japanese swords), Peart guides Origin with Shaper Plate, which can lie directly on any flat surface. This lets him rout the precisely curved opening as well as a surrounding rabbet and matching inlay, tasks that would be extremely difficult to do with traditional techniques.

The Masterclass videos include not only the Origin-related techniques but all of the woodworking techniques needed to complete the projects, demonstrating how Origin is just another powerful tool in a modern workshop.



Greene and Greene with a CNC assist.
In his Masterclass video series, Darrell Peart uses Shaper Origin to help him execute some of the trickier details of Greene and Greene-style furniture.



Pierced tsuba detail with ebony inlay. Shaper Plate brings the Origin router to any surface, and Origin does the rest. All that's left is a bit of work to soften the edges of the inlay.



Cloud-lift drawer handles. Origin handles the bulk of the shaping on these drawer pulls, making them more uniform and much faster to manufacture.

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at [ShaperTools/Masterclass](https://www.shapertools.com/masterclass)**



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Plans: Smart templates make an easy chair

Scott McGlasson (p. 34) provides two sets of templates to make his chair: one with oversize parts and extra notches to help with clamping, and one to use on the fully assembled sides of the chair.

Blog: Perfect reveals

Mark Edmundson (p. 60) reveals his favorite hardware for attaching drawer fronts, whether they are overlay or the much less forgiving inset drawer. This small kit provides movement in any direction.

VIDEO

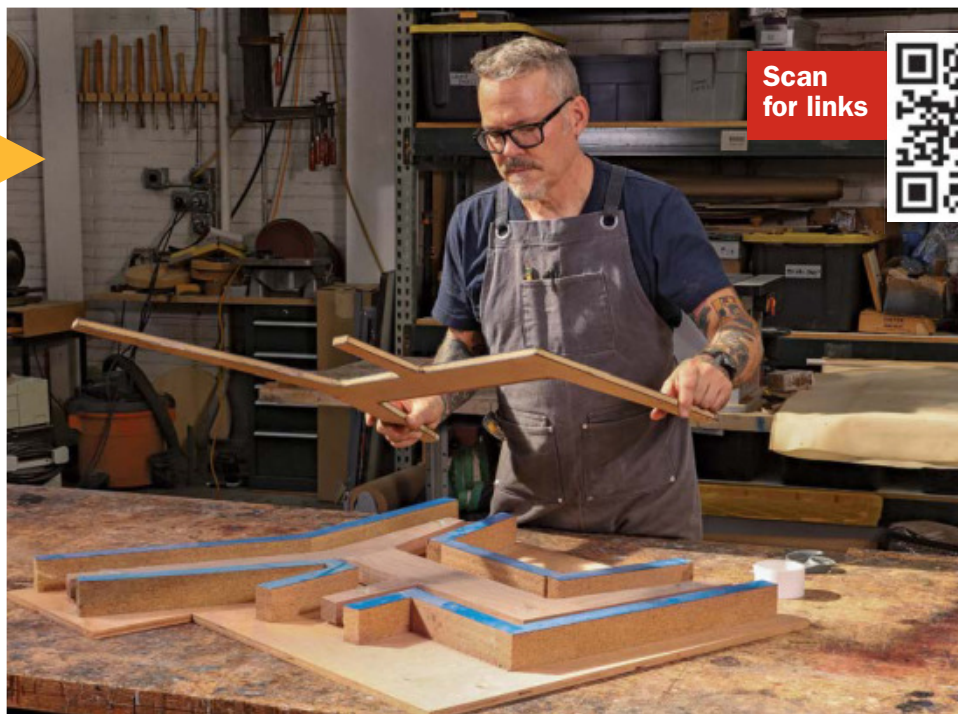
Drill-gauge dowels

Highlighting one of the workshop tips in this issue (p. 15), Ben makes use of an old drill gauge he found at a flea market to make perfectly sized dowels.

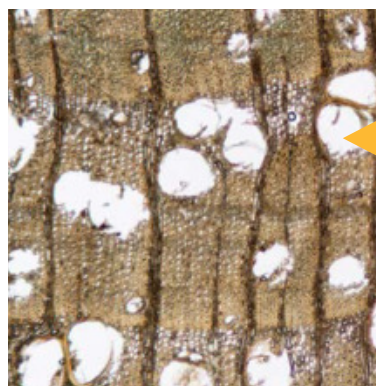
VIDEO

Slide to side

Mark Edmundson (p. 60) compares three different types of commercial drawer slides and discusses their best applications. Each type has advantages, depending on whether it's used in utility applications, high-end cabinetry, or something in between.



Scan for links



VIDEO

Podcast: Lumber under a lens

Seri Robinson (p. 42), a professor of wood anatomy at Oregon State University, joins Ben and Amanda for a special episode of *Shop Talk Live* all about wood science.

VIDEO WORKSHOP

Take a seat

David Johnson combines techniques he's learned from restoring various woven and caned chairs to make a contemporary stool with a Danish cord seat.

- Use a combination of machines and hand tools to make precise mortise and tenons.
- Apply an authentic soap finish.
- Weave the warp-and-weft pattern of the seat.



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contributors

Scott McGlasson (“Walnut Easy Chair with a Slung-Tile Seat” and Skills Spotlight) has been woodworking full-time since 2000 under the name Woodsport. He found his way into the field after studying English at the University of Minnesota and teaching for several years in public schools. As a teacher, he had access to free woodworking classes at Minneapolis Community and Technical College, and through them he became a trained cabinetmaker. He builds furniture in a repurposed industrial facility with 28-foot ceilings in the Midway neighborhood of St. Paul. When he’s not in the shop, he might be found delivering new furniture to customers across the country, backpacking in the Sierra Nevada, or riding his Triumph motorcycles.



Following his studies in architecture and industrial design, **Gerard Furbershaw** (Designer’s Notebook) cofounded Lunar, an industrial design and engineering firm. He transitioned from industrial designer to artist after his tenure at Lunar, launching Furbershawworks to create and make his art furniture. His pieces are made of high-end plywood fabricated using CNC machining. When he’s not engaged with his art-furniture creation or daily activities, Gerard can be found working out in preparation for his winter-season passions: snowshoeing and cross-country skiing.



Israel Martin (Handwork) makes furniture in an 18th-century stone house he renovated in a tiny town in the Cantabria region of northern Spain. After studying forest engineering in Madrid, he worked in that field for several years but decided he wanted to become a furniture maker. He took some hand-tool classes with a Spanish artisan and traveled to Germany twice to take short workshops with Garrett Hack, but he is otherwise self-taught. In addition to building cabinets to commission, he teaches hand-tool woodworking in his shop. In summer 2024 he taught courses at the Center for Furniture Craftsmanship in Maine.

Mark Edmundson (“Mechanical Drawer Slides”) lives in Sandpoint, Idaho, in a house he built from the ground up. His latest shop building affords him even more room for his custom woodworking business and includes a large spray room. Edmundson studied for two years with James Krenov at the College of the Redwoods before starting his woodworking business in Sandpoint, which is the ideal location to indulge in his other favorite activities: hiking, mountain biking, snowboarding, and skiing with his family.



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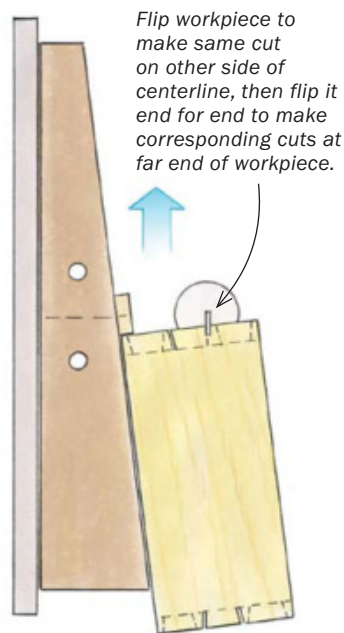
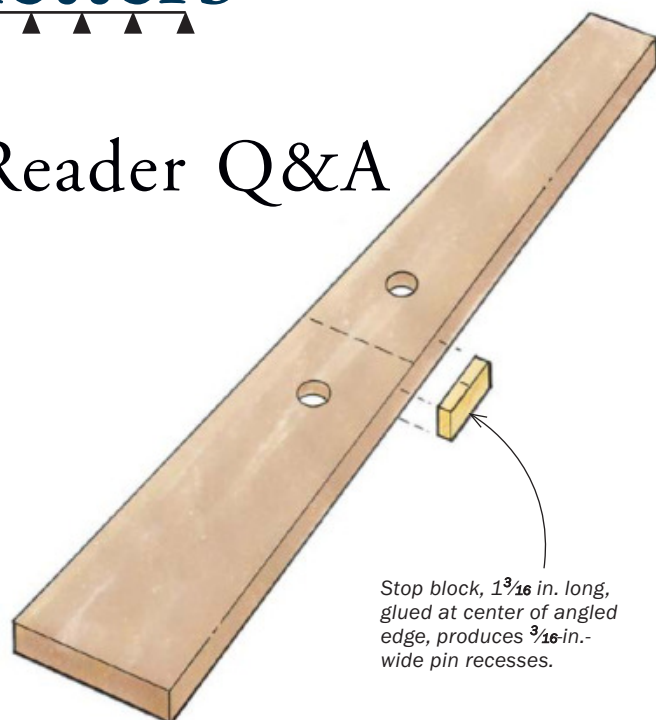


SCAN & WATCH

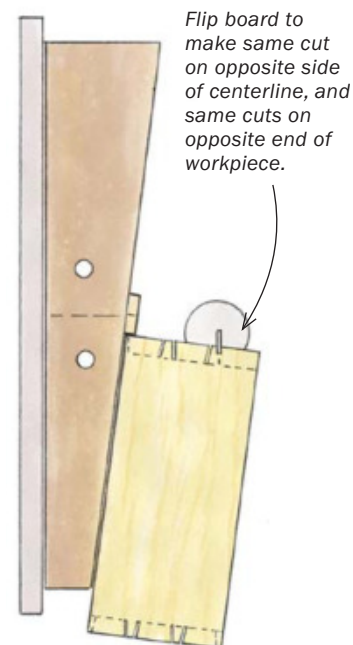
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Reader Q&A



FIRST SETUP
Narrow end of jig faces forward. Hold workpiece tight against jig, and slide both along bandsaw fence.



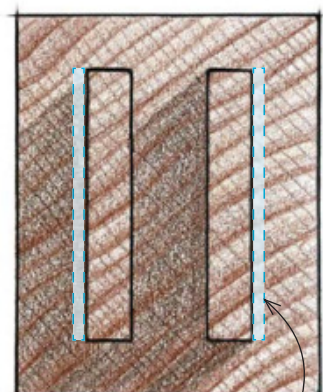
SECOND SETUP
Without moving the fence, flip the jig so the wide end is forward. This cut completes the first pin socket.

Tip confusion

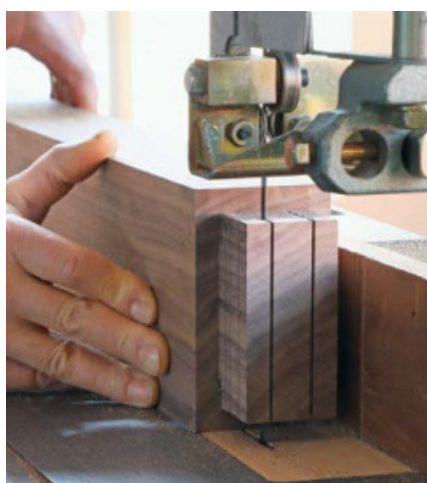
I have read a recent best tip ("Smart jig for bandsawn dovetails," FWW #311) many times, but it is still not clear to me why the stop-block length matters. The recommended length is $1\frac{3}{16}$ in., but since the workpiece and jig move together, why does that length matter? This is driving me crazy, so I hope someone will explain it to me.

—BUD RUBY, Healdsburg, Calif.

Asa Christiana replies: *It's definitely a bit confusing, but it all comes down to how you use the jig. The author developed it in such a way that you can leave the bandsaw fence in place for a bunch of symmetrical cuts, which are done by flipping the board over side to side and also end to end, and flipping the entire jig end for end as well. If you use the jig that way, the length of the stop block determines the width of your pins. If you don't use the jig that way, the length of the block won't really matter. It's all up to you.*



When widening tenons from $\frac{7}{16}$ in. to $\frac{1}{2}$ in., add material to the outer faces.



OK to change tenon sizes?

The mortises for Thomas Throop's English-inspired trestle table (FWW #310) are $\frac{7}{16}$ in. wide. I have $\frac{3}{8}$ -in. and $\frac{1}{2}$ -in. mortising chisels. Would the strength of the mortises or tenons be compromised by making them either $\frac{3}{8}$ in. or $\frac{1}{2}$ in.?

—DAVID MERZEL, Park City, Utah

Thomas Throop replies: *I think $\frac{1}{2}$ in. would be fine. I would make the tenons thicker to the outside. The mortises are going into a much wider piece, the foot or top brace, so there should be plenty of meat around them to maintain structure. This, of course, assumes traditional mortise and tenons and not loose-tenon construction.*

About your safety

Working wood is inherently dangerous. Using hand or power tools improperly or ignoring standard safety practices can lead to permanent injury or even death. Don't perform operations you learn about here

(or elsewhere) until you're certain they are safe for you. If something about an operation doesn't feel right, find another way. We want you to enjoy the craft, so please keep safety foremost in your mind.

More tests wanted for hard-wax oils

Thank you for Adam Godet's fine article on hard-wax oil finishes in *FWW* #311. I knew it was merely a matter of time before you published an article on those finishes. Before Mr. Godet disposes of his samples, would you consider a follow-up article indicating how the finishes hold up to a variety of other common spills (beyond water)? For example, in my own tests I like to see how a finish will hold up to a drop of dish soap (both straight and diluted), mustard, grape juice, the wet bottom of a tin can, and even a bit of alcohol. I do two tests of each: one wiped up within 10 minutes, the other left for over an hour.

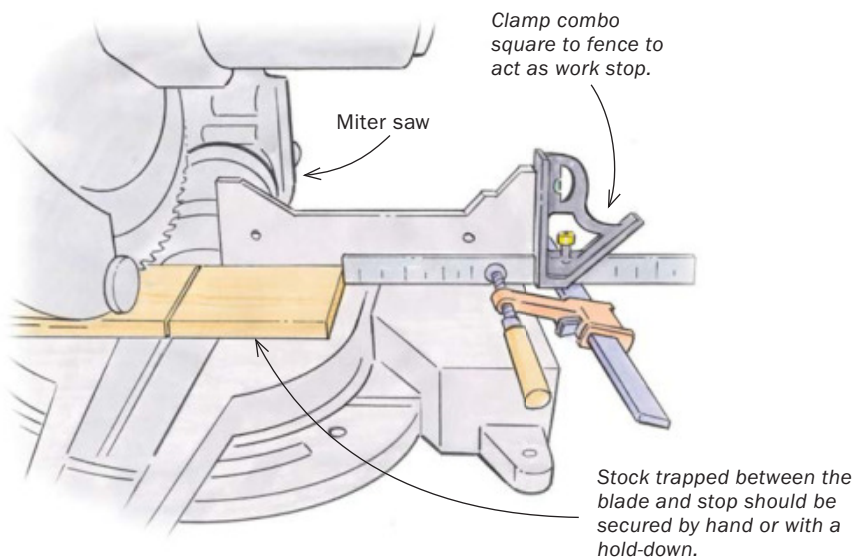
Such tests really tell the whole story and provide the kind of comparison needed when thinking of finishes for kitchen islands (or countertops), tables, and the like.

—MARTIN VENDRYES, Vienna, Ont., Canada

Asa Christiana replies: *Our test with steel and water was a tough one, and the author and I expect that the results from the other tests you suggest would track that one relatively closely. That said, if you would like to continue your own testing, we would love to know what you come up with. Be sure to apply two coats of each hard-wax oil, as we did.*



Tough test. To assess the durability and protection of hard-wax oil finishes, the author wet the surface of each test board and placed a steel nut on top, checking the effect in 3-hour intervals.



A trapped workpiece?

When Michael Pekovich looks at the tip "Combo square makes a handy work stop" (*FWW* #312) and asks, "Is the workpiece trapped between the blade and the fence?" (in this case the work stop), what is the answer? It seems to me this setup could be prone to binding.

—CHRIS RICHARDS, Camano Island, Wash.

Asa Christiana replies: *Thanks for your sharp eye. Anytime you use a stop, you have to control the piece that's trapped between the blade and the stop, either with your hand or a hold-down of some sort. We left that out of the drawing in order to show the setup more clearly, but we did not mean to imply that the trapped piece should be left uncontrolled.*

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workshop tips

Hand-screw bench vise is great for beginners or kids

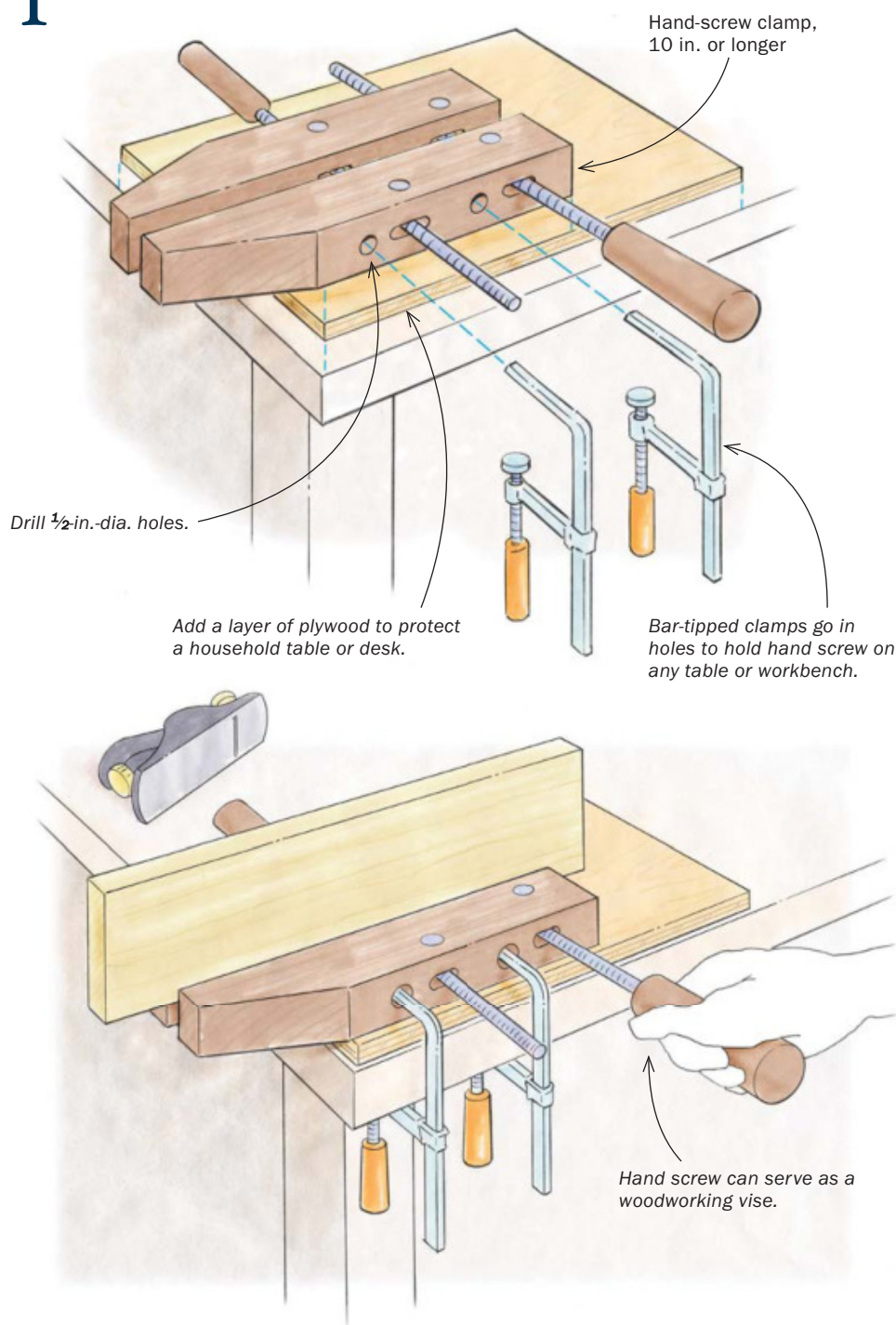
In my early days as a woodworker, when I lacked a proper woodworking vise, I held workpieces using a simple arrangement of hand-screw clamps. I've used a similar setup to help teach woodworking to kids and other newcomers to the craft.

Mike Taylor of Taylor Toolworks recently alerted me to a helpful variation on my approach. Instead of using additional hand screws to hold down the one that's acting as a vise, you can simply drill holes in it and secure it to a bench or tabletop using F-style clamps with a bar-type tip. These specialty clamps are sold for holding down T-tracks and securing fences. Manufacturers include Milescraft and MicroJig.

To protect the surface of a desk or table, place a piece of plywood underneath the hand screw. (This step is particularly important when working with kids, or on your dining-room table.)

Since it's nearly impossible to drill the necessary holes on the drill press, I used a doweling jig to guide my cordless drill. But you can also guide the drill by eye.

—DOUG STOWE, Eureka Springs, Ark.



Best Tip



Doug Stowe has been a self-employed woodworker in Eureka Springs, Ark., since 1976 and a contributor to FWW for much of that time. He taught a program called “The Wisdom of the Hands” at the Clear Spring School in Eureka Springs and then summed up the experience in a 2020 book, *The Guide to Woodworking with Kids* (Blue Hills Press). His latest book is *Designing Boxes* (The Taunton Press, 2024).

A Reward for the Best Tip

Send your original tips to fwtips@taunton.com. We pay \$100 for a published tip with illustration; \$50 for one without. The prize for this issue's best tip was a Veritas Angle Block Plane.

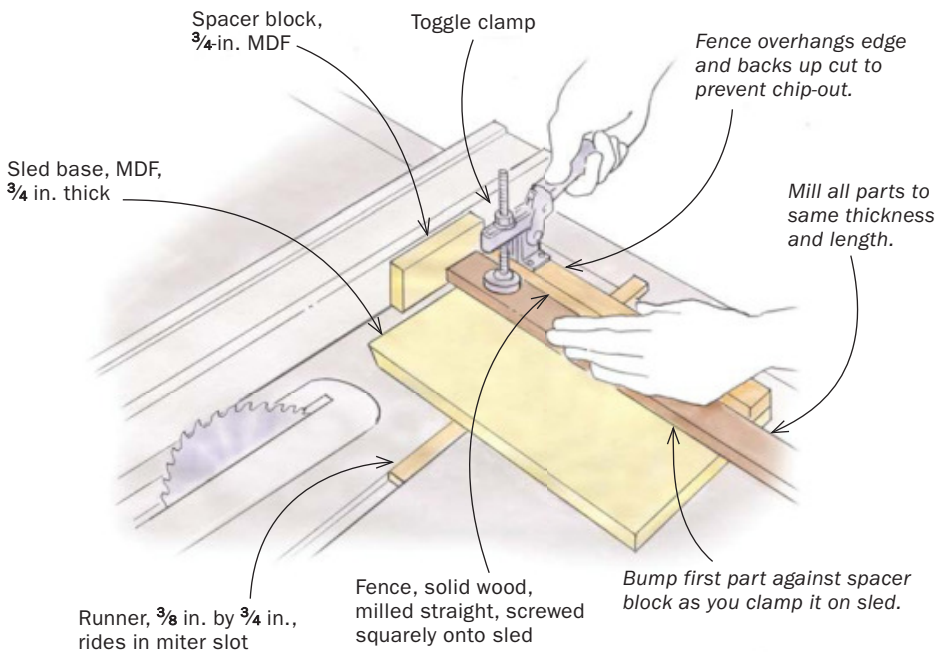


Sled and spacer produce flawless mitered boxes

I make a lot of mitered boxes and trays. After trying a number of setups for mitering the parts safely, cleanly, and accurately, I happened on the following method. I tilt the table-saw blade to 45° and use a simple sled to support the parts, with a toggle clamp added to help keep them in place.

The sled isn't anything new; my breakthrough was to place a ¾-in.-thick MDF block against the rip fence and set the fence so the tip of the miter will be right at the end of the workpiece. This spacer block also lets me tilt the blade without having to bury it in a sacrificial fence. All of the pieces are milled to the same thickness and length beforehand, and I use one of them to creep up on the right rip-fence placement. After that, all of the pieces can be quickly mitered, cleanly and accurately, with each one ending up at precisely the same length.

—PHIL GRUPPUSO, Seekonk, Mass.



Using first workpiece, adjust rip-fence setting (and spacer block) to creep up on perfect miter, with tip at end of stock.

Miter other ends of all parts with same rip-fence setting and same spacer block.

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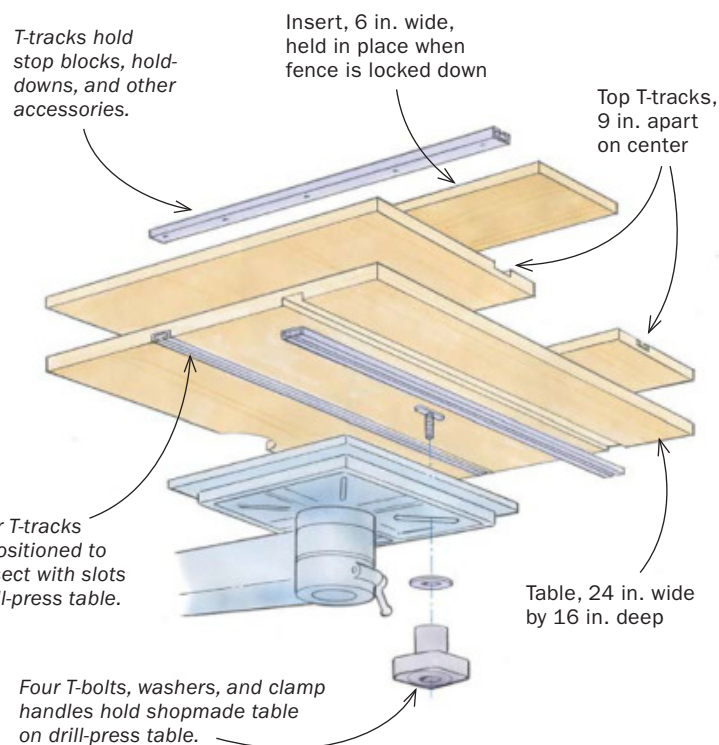
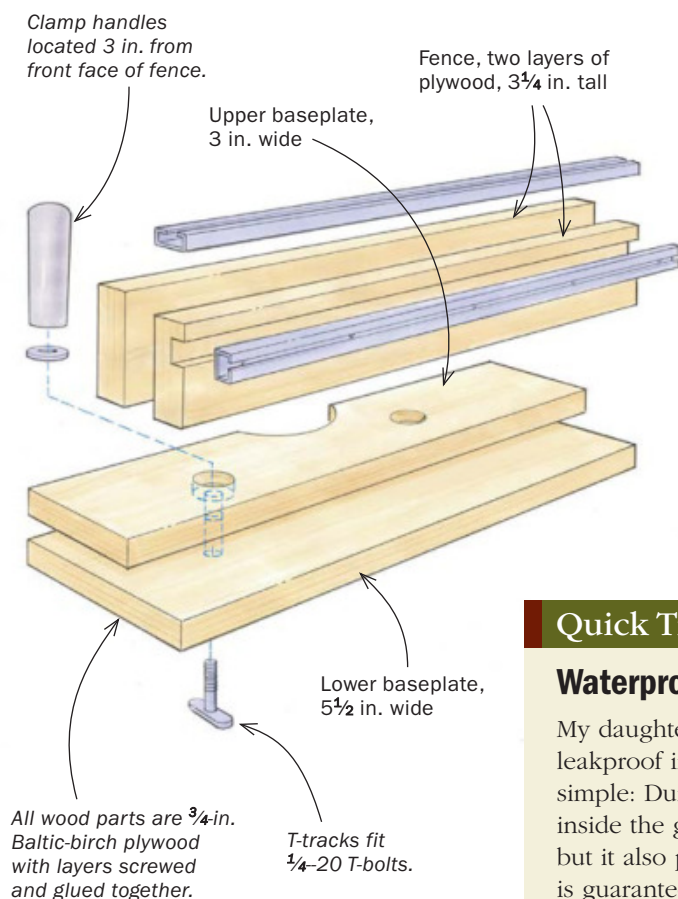
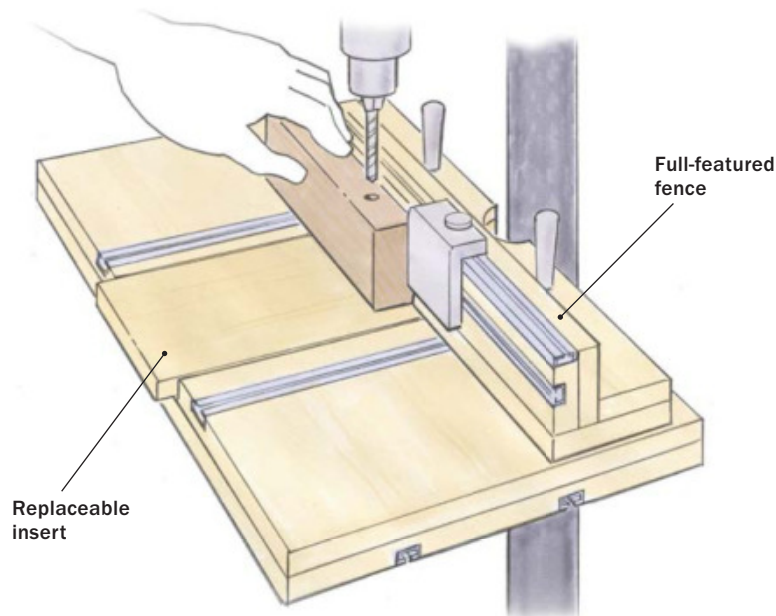
Drill-press table has replaceable insert and full-featured fence

Most drill presses come with a small cast-iron table designed for metalworking. Like many woodworkers, I've added a larger plywood table to mine. I made it with two layers of Baltic birch glued and screwed together, which let me build in a sliding insert that can be moved forward and back—or replaced entirely. The insert lets me maintain zero clearance under any drilling operation. The insert is held in place by simply locking down the fence.

The fence has T-tracks for attaching my JessEm router-table accessories—which also work well on the drill press—but the tracks will hold other commercial and shopmade accessories as well. The table has T-tracks also, one pair for attaching it to the cast-iron table below, and the other for attaching the fence on top.

I gave the fence and table a rear cutout so that they could slide closer to the column, allowing more capacity behind the chuck. The various tracks, knobs, and T-bolts all come from Lee Valley.

—WALTER BAZIUK, Ottawa, Ont., Canada



Quick Tip

Waterproof a serving tray

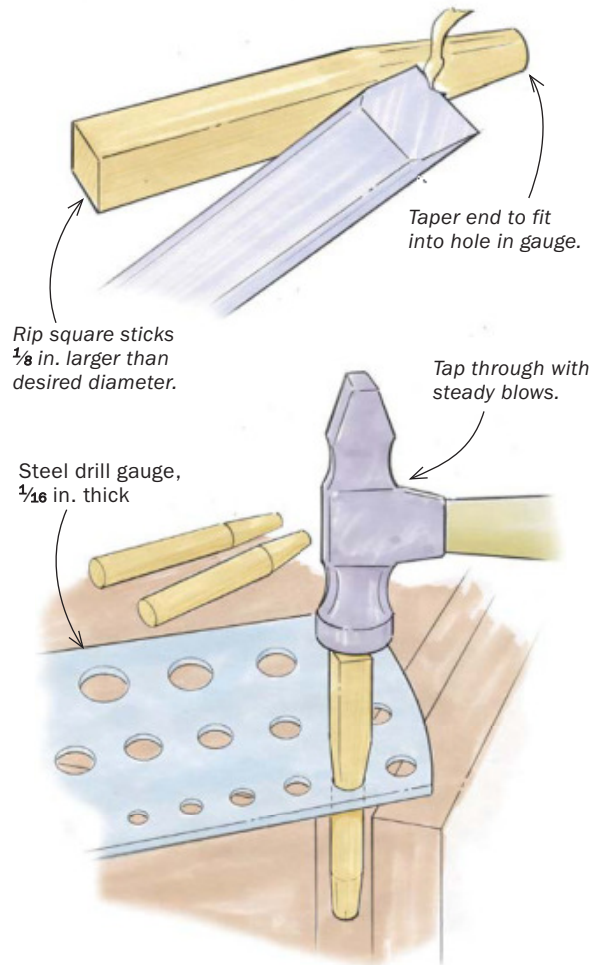
My daughter asked me to make some serving trays, specifying that they be leakproof in case someone were to spill liquid in them. The solution was simple: During assembly I ran a small, continuous bead of siliconized caulk inside the grooves that hold the bottom panel. That not only sealed the tray, but it also prevents the bottom panel from rattling or moving. The caulk is guaranteed by the manufacturer to stay flexible for 35 years, so I'm not worried that wood movement will break the seal.

—FRED GARLAND, Livingston, Tex.

Make dowels with a drill gauge

I don't own a set of dowel formers, so I make the occasional set of dowels and pins by hammering a slightly oversize workpiece through a drill gauge. My gauge is made from $\frac{1}{16}$ -in.-thick steel, so it stands up well to the task. If you don't have a drill gauge like mine, you can drill holes of the desired diameters in a steel plate of similar thickness. To make a dowel, start with a square stick that's roughly $\frac{1}{8}$ in. larger than the desired diameter and about 1 in. longer than the final length. Use a chisel or block plane to taper one end to fit into the hole, and then tap it through with steady hammer blows. Trim the ends to create a perfect dowel.

—CHARLES MAK,
Calgary, Alta., Canada

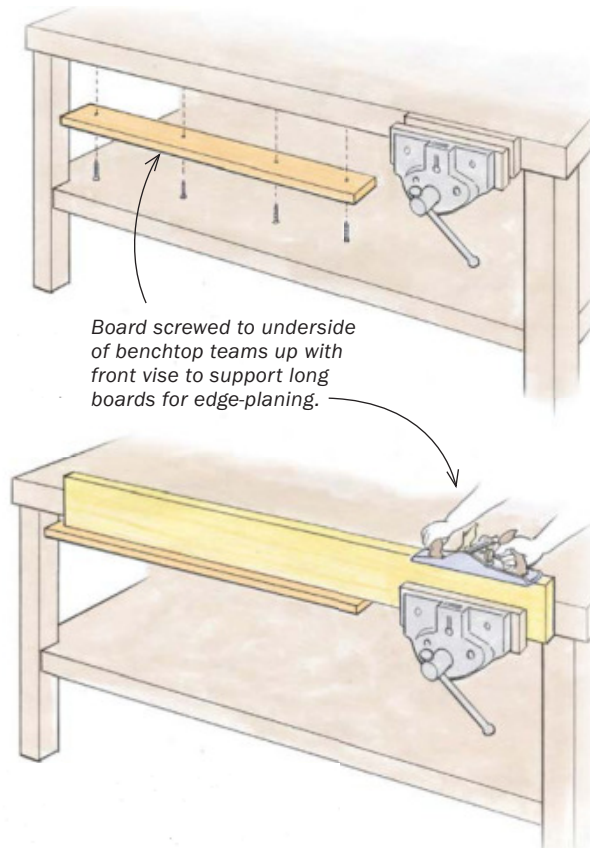


Simple, solid board jack for any workbench

My Uncle Paul, a professional carpenter, taught me many things over the years, including this elegantly simple way to create a board jack. You simply screw a board to the underside of your benchtop, making sure the end of the board is far enough from the vise to allow it to be used normally. The board supports the full length of all but the very longest boards, stabilizing them beautifully for edge-planing. But it doesn't have to stick out so far that it will get in the way during normal use of the bench.

This tip is a tribute to my woodworking hero.

—PHIL DODDRIDGE,
100 Mile House, B.C., Canada



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Roller guides keep workpieces on track

JessEm's Clear-Cut roller guides, which have been around for a decade or so, have bolts that fit into the T-tracks included on some rip fences. JessEm's brand-new Clear-Cut Flex guides are not only less expensive but also more versatile.

Made with a glass-filled polymer instead of the original aluminum, Clear-Cut Flex Stock Guides are plenty tough. More importantly, they come with adapter bolts and plates that let you mount them on a sacrificial wood fence. This lets them work with any type of rip fence. Like the originals, the Flex's T-bolts also slip into standard T-tracks.

Whether you mount the rollers on your bandsaw, table saw, or router table, their grippy tires angle toward the fence, pressing your work against it as you push the piece forward. The one-way rollers also hold the work down and prevent it from moving backward. You can push workpieces forward without fear of them wandering away from the fence or kicking back.

I especially love these rollers for joinery and molding cuts, where their steady downward pressure ensures accuracy and a smooth surface. And with 2¾ in. of vertical adjustment, they can accommodate thick workpieces.

—Asa Christiana is an editor-at-large.



JessEm Clear-Cut Flex Stock Guides
JessEm.com
Price: \$100



Great on the router table. The pivot and clamp bolts slip into standard T-tracks. Press down on the rollers as you tighten the clamp handles and they will exert continuous pressure on the work.



Safety and accuracy. The urethane tires are angled toward the fence, so the workpiece can't wander away from it. The one-way rollers also prevent workpieces from kicking backward.



Table saw too. The Flex-model rollers have accessory bolts and plates for attaching them to a sacrificial fence.

Photos this page: Asa Christiana

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Best new products at IWF

The International Woodworking Fair comes to Atlanta every two years, showcasing new tools and materials for the woodworking industry. Here are a few of the best new products we saw at the 2024 show, which was held August 6–9 at the Georgia World Congress Center.



Mirka sanding disks could change the game

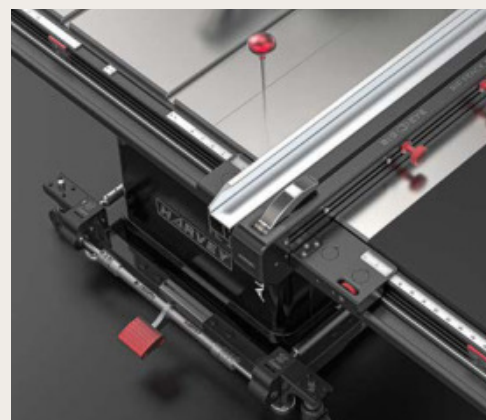
New sanding disks from Mirka feature a proprietary blend of aluminum-oxide and self-sharpening ceramic abrasive grains adhered to a tough resin in little hourglass shapes, which present multiple cutting edges to the wood. The open channels between the hourglass groupings, along with smaller and more numerous perforations in the disk, are designed to evacuate dust more efficiently, regardless of the hole pattern on your sander. Called Ultimax Ligno, the abrasive is designed specifically for sanding bare woods. The disks promise more-efficient cutting action that will allow woodworkers to start sanding milled wood at higher grits, such as 150 grit instead of 120 or lower, and produce fewer noticeable scratches, according to company reps. Ultimax Ligno disks are available at competitive prices from a variety of woodworking retailers. Go to mirka.com for more info.



Harvey mobile bases are self-leveling

Harvey's new Spider mobile bases feature self-adjusting casters and feet that keep machines level on uneven floors, and keep their work surfaces at a consistent height. The self-leveling wheels help prevent machines from tipping when moved, and a single foot pedal raises and lowers the feet easily. The M-1500 model (\$300) has two fixed and two swiveling casters.

The M-1500Pro (\$470) has four swiveling casters for maximum mobility in tight spaces. An extension base (M-1500E, \$180) attaches to the others to support the legs of extension tables or outfeed tables. Go to harveywoodworking.com to learn more.





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N Nana L. Verified Buyer



Worth the upgrade. I've been using the unit for about 3 months now and I can say that this is definitely a case of you get what you pay for. This unit is pulling more air through a 4" line than my previous system was pulling through a 6" line. I strongly recommend getting a unit with the SmartBoost, it makes a huge difference.

Jonathon S. Verified Buyer



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Best new products at IWF continued

Rockler debuts a host of handy products

Rockler's senior product director, Dan Wenning, was on hand at IWF to highlight dozens of new products that the company is rolling out this year and next. Here are three of the latest, available now at Rockler.com.

The Power Jaw Clamp (\$15) has all the power of an F-style bar clamp, but in a compact shape that won't put a long clamp bar in your way. The versatile clamp has a 2-in. capacity and a 3-in.-deep throat, as well as a large, ergonomic tightening knob. A threaded insert in the knob accepts Rockler accessories such as lights, phone (camera) holders, and hose holders, letting you clamp these wherever you need them.

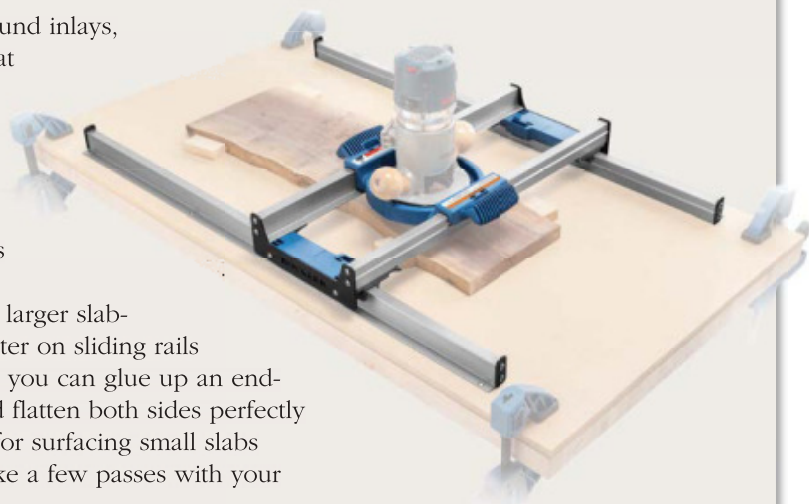
The Flush-Cutting Router Jig (\$50) does just what its name suggests, with support wings that will surround inlays, pegs, and more, and a thick, machined aluminum plate that supports any router as it slides back and forth over the work area. A 0.010-in. shim is provided, allowing you to set the bit height on the shim and leave the inlay just slightly proud of the surface. A few strokes with a block plane and/or sanding block and the job is done. The support wings pivot to allow users to work closer to edges and corners.

The Benchtop Board Flattening Jig (\$200) joins Rockler's larger slab-flattening jig and works in the same way, supporting a router on sliding rails as it makes level passes across any workpiece. This means you can glue up an end-grain cutting board, for example, lay it on your bench, and flatten both sides perfectly without needing an expensive wide-belt sander. It's great for surfacing small slabs too. After flattening the surface with a large router bit, make a few passes with your random-orbit sander to prep it for a beautiful finish.

Top-notch mortising chisels from Narex

In his 2022 review (*FWW* #300), Chris Gochmour praised Narex's new bevel-edged Richter bench chisels, finding that their cryogenically treated chrome-vanadium blades held an edge for a very long time. Narex recently introduced Richter-branded mortising chisels, designed for hand-cutting mortises (or squaring the corners of routed mortises). They feature the same excellent steel, polished flat and straight, and the same edge-holding ability. A leather washer in the handle cushions impacts from mallet blows. The mortising chisels sell for roughly \$60 each at multiple retailers, with multi-chisel sets offering a price break.

—A.C.



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Hand-tool cabinetmaking

HOW I KEEP THE PROCESS FUN, AND FAST ENOUGH

BY ISRAEL MARTIN

I build furniture in a small workshop attached to my house in northern Spain, and I try to use only hand tools in every piece I make. I really do like machines; it's just that I prefer to work without them. Over the years, I've discovered that working completely by hand requires not only a different set of skills but a different way of thinking as well. Like anyone making custom furniture, I need to consider where a piece is going to live, what its purpose will be, and of course the aesthetics of it. But because I'm providing the horsepower, there are extra dimensions to consider: How long will the build take? How complex is it? How can I make sure that I will have the same energy and enthusiasm at the end that I had at the beginning?





I prefer to include details like small side drawers or inlays that are not just visually interesting but fun to make by hand.

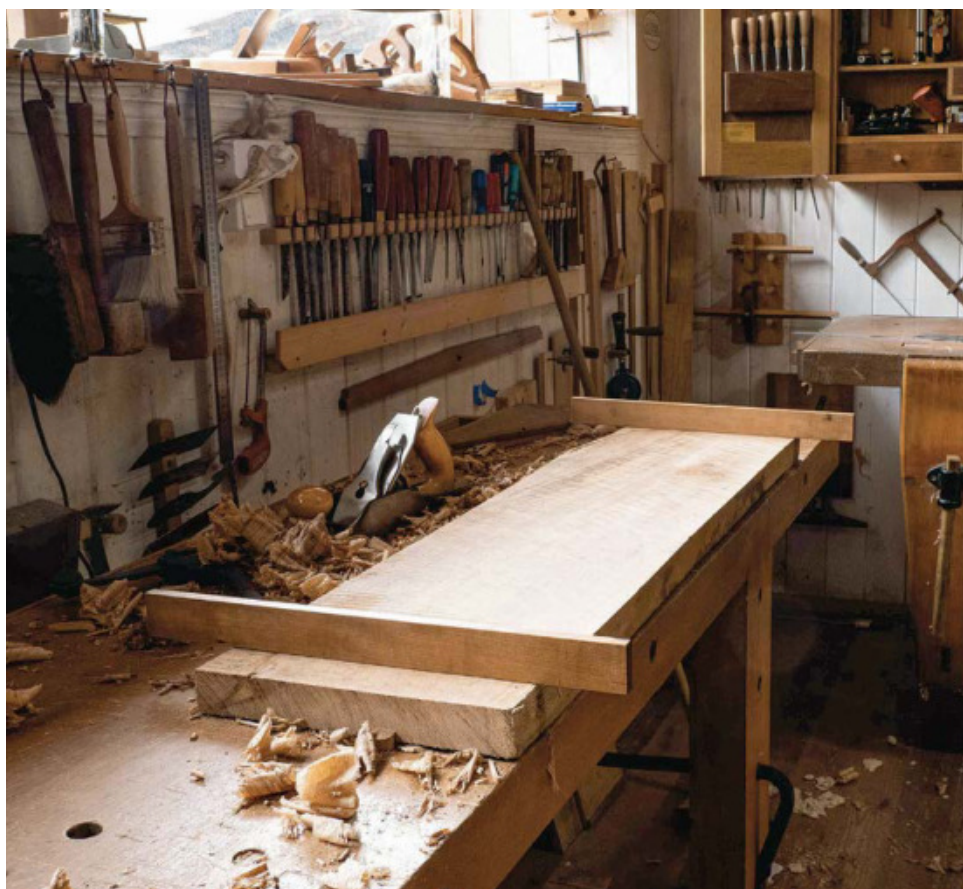


In preindustrial workshops, where furniture had to be made by hand, there were apprentices to take on the hard, repetitive jobs like jointing, planing, and ripping that today are routinely done in a snap with machines. Having apprentices enabled master craftsmen to keep focused on design, joinery, fine details, and finishing. As a maker who uses only hand tools, I have to be the apprentice as well as the master, and I plan each piece with that in mind. Knowing I'll be doing all the jobs myself, and by hand, has led me to develop a specialized approach to design.

The satisfactions of simplicity

I firmly believe that the more you enjoy building a piece, the better it will be. Because complex projects done by hand can drag on and become tedious, I simplify my designs, mostly using straight lines and square corners. If I incorporate a curve, it might be a slight bend on the top or bottom of a chest. I avoid curved panels or drawer fronts that would involve lamination and require me to hand-dimension a lot of thin elements—a complicated and taxing process. To make my pieces catch the eye, I prefer to include details like small side drawers or inlays that are not just visually interesting but fun to make by hand.

I don't draw measured plans, and I rarely build mock-ups. I rely on rough drawings and begin work on the piece with a quick sketch noting its overall height, width, and depth and the size of its doors and drawers. This gives me the leeway to change a piece as I go. It's a little like working on a sculpture. If I make a mistake, or if the wood presents unexpected problems or opportunities, I can respond by slightly changing course.



Because hand-dimensioning is difficult—and too much of it at once can get boring—I mill parts in small batches, preparing for one phase of the build at a time.

The question of structure in casework

Most of what I build is casework, and one of the first things I consider when designing a new piece is whether it should have a slab carcass or a frame-and-panel. Slab construction involves fewer parts and fewer joints, but dimensioning the pieces by hand is more exacting and therefore more time-consuming. To make for good joinery, the parts of a slab carcass must be precisely milled on both faces and all edges. A frame-and-panel structure, by contrast, is more complex, with more parts and more joints to lay out and cut. But milling the parts is faster, because only the frame parts need to be milled precisely. The panels can be flattened on one side and just smoothed on the other.

With these variables in mind, I normally pick slab carcass construction for boxes

and small case pieces. But for larger casework, such as a big chest of drawers or a hunt board, I use frame-and-panel construction, which breaks up the milling over a long build and makes the process more enjoyable.

About milling by hand

It's common for a furniture maker who uses machines to begin a piece by milling all the parts. Some parts might be left a little oversize and set aside for final milling later, but most of the dimensioning is often completed in a single session. Because dimensioning by hand is difficult—and too much of it at once can get boring—I mill parts in small batches, preparing for one phase of the build at a time. This approach also gives me the flexibility to change my design as I go. If it turns out along

the way that I have some leftover material I had milled for another job, I might be able to use it in the new piece even if its thickness, for instance, is slightly different.

I start preparing the wood with a handsaw, normally ripping with an old Disston D-8, then using a new D-8 crosscut panel saw. Next, with my jack plane I start making a reference face and a reference edge for each of the frame pieces, and then I work on the parallel faces and edges. Once I have the main frame pieces done (legs and aprons, for example), I start working on the frame joinery. And once the joinery is done, I go back and dimension the panels. I take the same approach with each part of the piece: milling the frame, cutting the frame joinery, milling the panels. Breaking the work up this way is much more enjoyable.

Find your ideal speed for handwork

When I was learning to dimension pieces by hand, I followed David Charlesworth's method for doing super-precise work. On each part, I aimed to create a dead flat reference face, a perfectly square reference edge, and an opposite face and edges that were perfectly flat and parallel; I worked to the tightest possible tolerances. But working that way was too slow for me, and I realized that to enjoy my work I needed to find the right balance between precision and speed. If I want precision, I have to go slow; if I want to be faster (in a slow job), I have to be less precise. So now I focus my effort on achieving excellent reference faces and reference edges and give less attention to the other face and edges. I'm not too concerned about having perfectly parallel opposite faces and edges; I won't use them for joint layout, and they'll be on the outside of the piece and can be cleaned up later. With this approach I won't have everything perfect, but I'll have it done. I decrease the precision a little bit in order to make things faster. Working this way is especially well suited to frame-and-panel construction, since all the precision goes into the frame, where the joinery is, and the panel milling is less critical.



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I focus my effort on achieving excellent reference faces and reference edges and give less attention to the other face and edges.... With this approach I won't have everything perfect, but I'll have it done.

In frame-and-panel construction, I have to produce lots of mortises and tenons, and so I've developed ways of making them with that same balance of speed and precision. After marking mortises out, I drill them with the hand brace to remove as much of the waste as I can very quickly, leaving just a bit of wood at the end of every mortise. Then I slow up and finish them carefully with a chisel.

Another way I sometimes speed up the joinery process is by using sliding dovetails. In some places—for example,

when joining drawer sides and backs—sliding dovetails are faster for me to make than crisp through-dovetails, and perfectly adequate. I use Garrett Hack's sliding dovetail method for joining drawer sides with the drawer's back. Not only is it quicker to make these than through-dovetails, but they involve less chance of a fatal error or a bad joint. I make the sliding dovetail's tail on the drawer back, eyeballing the correct angle. Then I use a shopmade angle block to guide the chisel as I make



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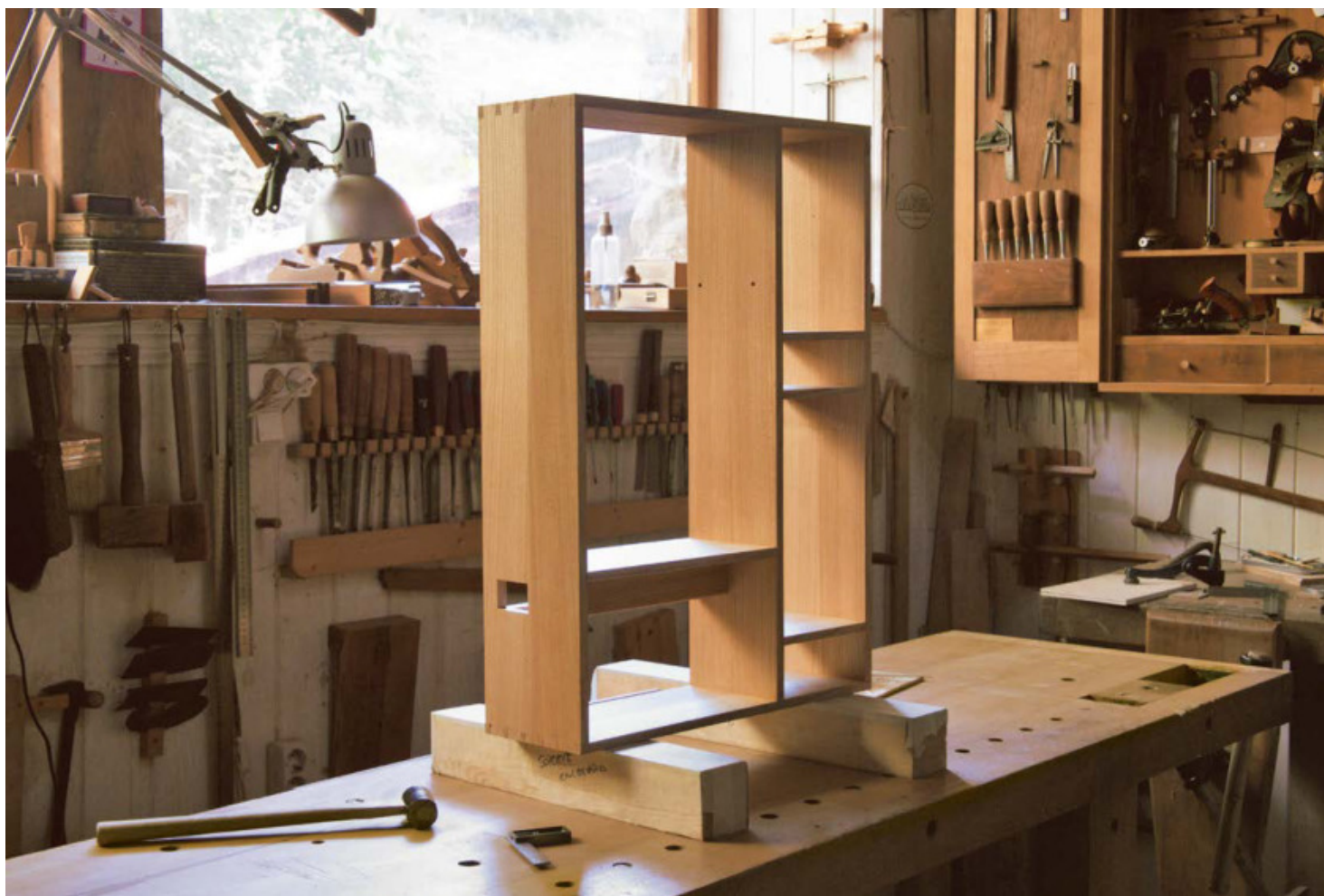
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In working by hand, I've developed a keen eye for scraps from previous projects. . . . Any leftover part that's been milled by hand is precious.

the socket for it in the drawer side. Sometimes they don't match perfectly, but the result is normally just fine.

The importance of scraps

In working by hand, I've developed a keen eye for scraps from previous projects. Because of all the labor involved in milling, any leftover part that's been milled by hand is precious. I typically use leftovers for less visible parts, such as drawer guides, kickers, runners, and drawer backs. Sometimes all the kickers in a piece are made in beech and the guides in maple. However, I try to maintain symmetry in using those offcuts. I particularly prize long, thin offcuts, because those pieces are difficult to make

by hand. Whenever I'm dimensioning a drawer side, for example, and I rip-cut a thin piece from it, I'm sure to keep it. Shorter offcuts of thin stock can make perfect backs for smaller drawers.

Sometimes (as with the box in the photo at right), I find I have enough hand-milled scrap to make a whole new piece. That's a good feeling.

Probably there are faster and better methods to work by hand, but these are some of my techniques. As I say to my students, don't simply do what I do. Try another method, and if it works for you, that's the way to do it.

Israel Martin works wood in the Cantabria region of northern Spain.





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BY GERARD FURBERSHAW



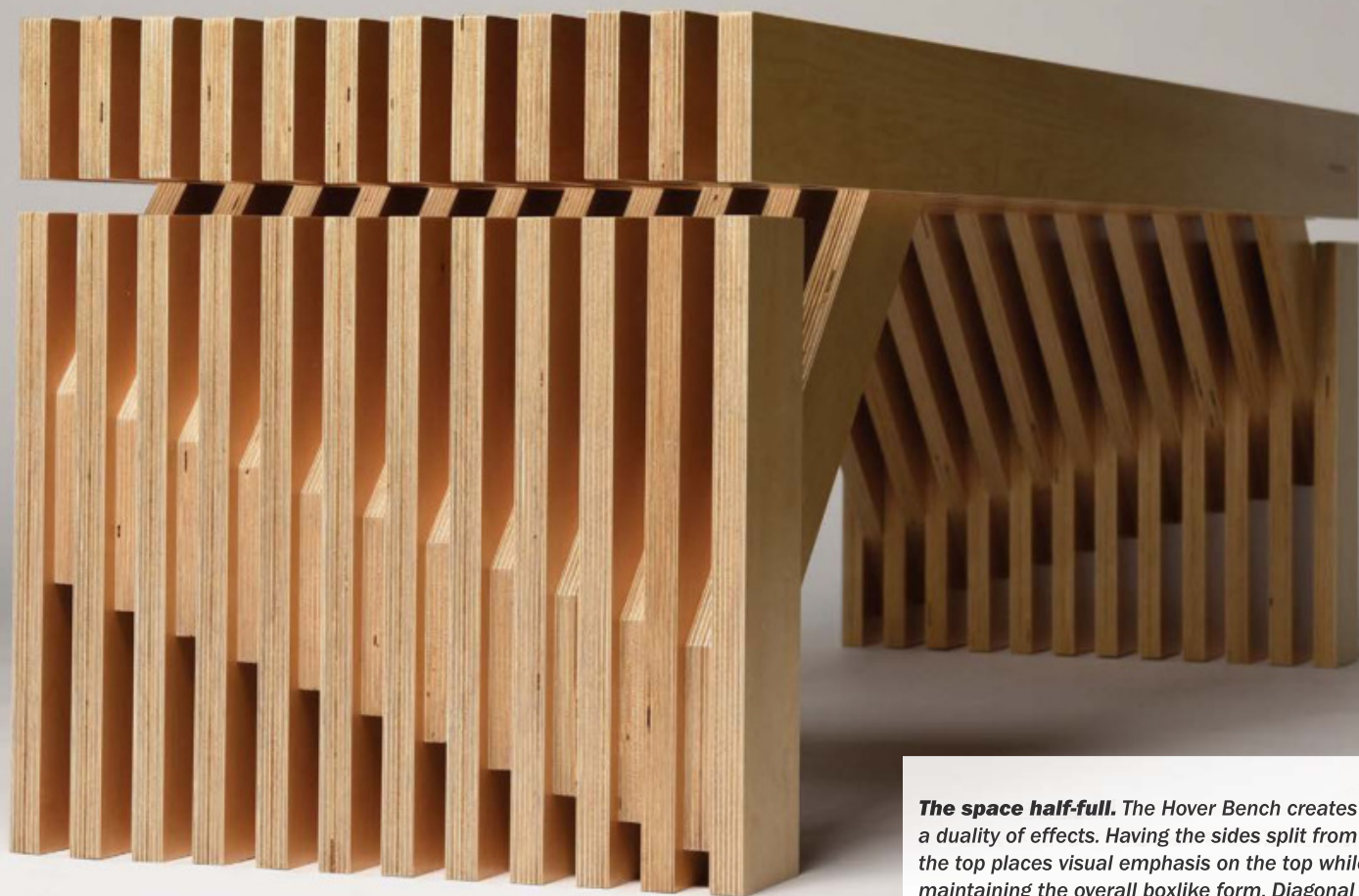
In my previous career as an industrial designer, I worked on a number of conceptual furniture projects and became captivated with the notion of furniture as art. I launched Furbershawworks to pursue work in the art furniture domain, the creation of art you can sit on. I transformed from an industrial designer who used my design skills to solve clients' business problems to an artist focused on self-expression.

The three key pillars: layering, contrast, and negative space

Initially my focus at Furbershawworks was exploring the possibilities of art furniture enabled by 3D printing. I began looking at pieces that were composed of layered plywood parts that I could make myself. I became fascinated with using positive/negative space to create forms that appeared solid visually but were in fact about half plywood and half empty space. I also liked the effect created by contrasting the plywood's face and edge grain. My go-to material has been 13-ply maple plywood, but recently I have begun making pieces from Plyboo bamboo plywood.

Industrial design skills still come in handy

Even though I now see myself as an artist, I continue to rely heavily on my industrial design skills to design and make my pieces. All of my work is created in Rhino, a computer-aided design (CAD) surface modeling software. After I'm finished creating the Rhino model, I export it into KeyShot



The space half-full. The Hover Bench creates a duality of effects. Having the sides split from the top places visual emphasis on the top while maintaining the overall boxlike form. Diagonal braces connect the sides to the top, creating the load-bearing structure. The braces progress from small to large on one side and large to small on the other.



A new material. The Hover Too Bench was Furbershaw's first bamboo plywood piece. Beyond its environmental benefits, bamboo possesses a stunning inherent beauty. Unlike normal plywood made from sheets of veneer, the $\frac{3}{4}$ -in. material he employed (which Plyboo calls "edge grain bamboo plywood") is made into 4-ft. by 8-ft. sheets by gluing together scores of bamboo strips that are 8 ft. long, $\frac{3}{4}$ in. wide, and $\frac{1}{4}$ in. thick.



The details are in the name. Furbershaw's 2323 bench is made from 75 rectangular pieces of maple plywood that interlace at the ends. The top and legs are composed of alternating short and long pieces, and the short pieces stop one plywood thickness shy of their intersecting parts, resulting in 23 square voids on each side of the bench.



Leg shape creates the overhangs. Cornici is the Italian word for cornices, wind-driven accumulations of snow that overhang the ridges of mountains. Similarly, the Cornici bench consists of squiggly legs that penetrate each end of a horizontal slab, creating symmetrical overhangs.

(a rendering software). The images generated by KeyShot enable me to visualize the piece more vividly and to make refinements. I have also used the Rhino CAD files to have laser-cut maple plywood scale models made. Using 3mm plywood at $\frac{1}{6}$ scale means that the proportions are aligned accurately with the full-scale piece's 18mm plywood. I also use the CAD files to have the full-size parts for my pieces machined using computer numerical control (CNC).

The craftsmanship of finishing

After the parts are CNC machined, I sand, apply finish, and assemble them into the final piece. This part of the process relies on old-fashioned craftsmanship, introducing an element of tender loving care.

I have been using Osmo Polyx-Oil or Osmo Polyx-Oil Raw (which keeps yellowing to a minimum) as a finish. I like Osmo because it's durable, the wood's surface can be easily refinished if it's scratched, and it's VOC free.

Its natural oil and wax coating is the crowning ingredient in my process.

The Furbershawworks legacy

Like most artists, I would like to leave a legacy. My pieces are made to last so future generations can experience them. Artists sign their paintings. I literally brand my work with the Furbershawworks name to lay the groundwork for that legacy. □

Gerard Furbershaw makes his pieces in Menlo Park, Calif. His website is furbershawworks.com.



Interlocking legs and seat. The Yin & Yang consists of legs that lock into each end of a capsule-shaped slab, creating symmetric overhangs. The joint between the legs and slabs, with its yin-and-yang feel, is another example that demonstrates the capabilities of CNC machining.



Overlapping legs and seat. The Olap Bench consists of a seating surface with ends that overlap its legs. The legs and the seat slats terminate in nesting half rounds, forming an S-shaped jointline. Furbershaw likes to take advantage of the capabilities of CNC machining to create visually interesting joints like this.



The not-so-cushy couch. Aspiring to be a cushy overstuffed couch with obligatory raised armrests, the WannaBe Couch succeeds only in mimicking its iconic form through a spartan framework.

Walnut Easy Chair with a Slung-Tile Seat

Mid-century style and hardwood scraps combine in a cool, comfortable chair

SCOTT McGLASSON



While the design for my rope-and-tile seats originated from a desire to make an enduring, comfortable, handcrafted chair, it was also about finding a use for the offcut pieces of beautiful walnut burl that were piling up from other projects. Another impetus was my affection for the wooden bead-and-rope pads that cab drivers used to cover their vinyl car seats in the 1970s. And when it came to determining the exact configuration of tiles, I thought of the running-bond pattern in which bricks are often laid, where each brick half overlaps the one beside it. I love the look of that pattern, and since using it would involve offsetting adjacent tiles, it promised a more comfortable seat.

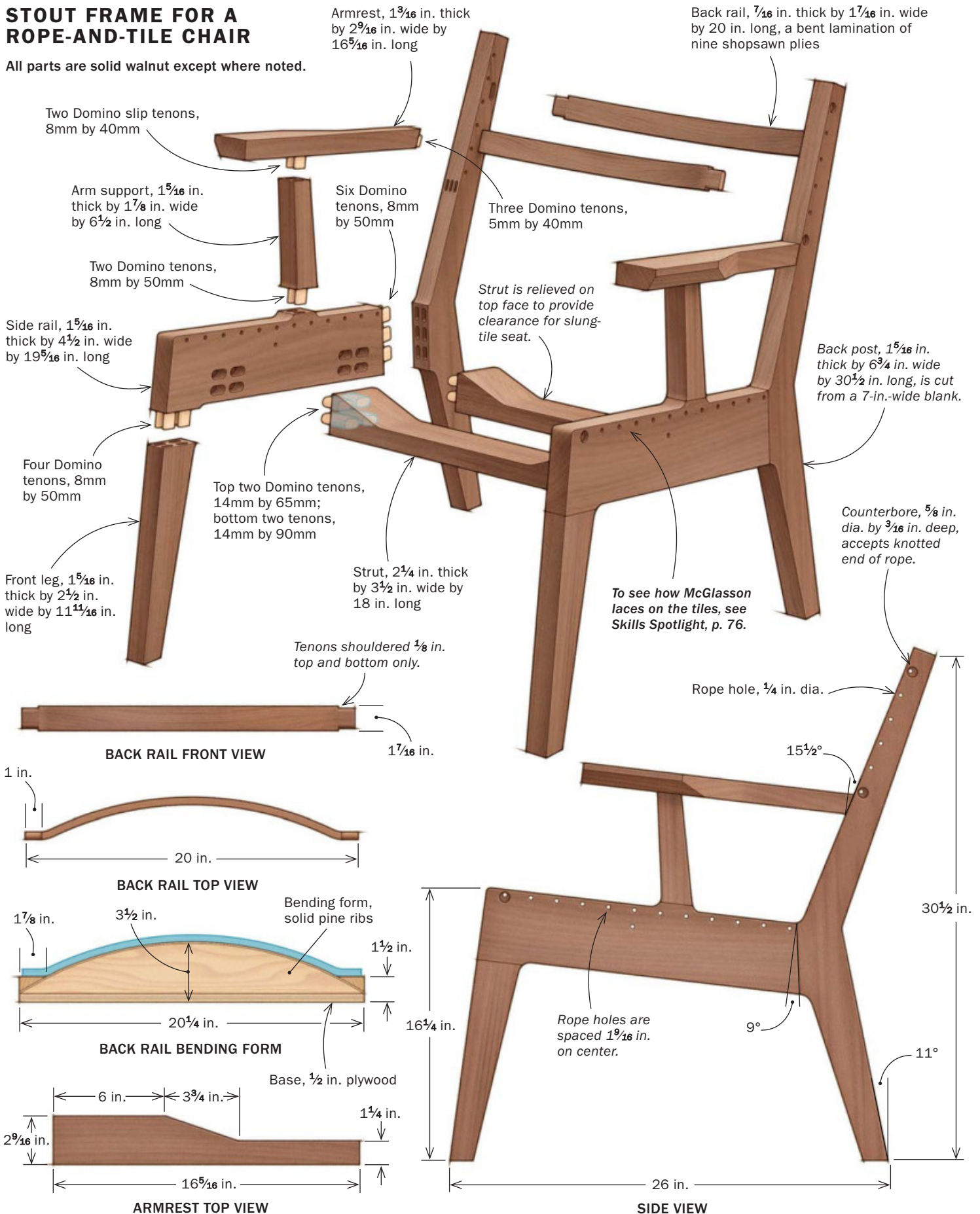


Tile series. In a range of seating pieces, the author blends mid-century modern simplicity with inviting flexible fields of walnut tiles woven on polyester rope.



STOUT FRAME FOR A ROPE-AND-TILE CHAIR

All parts are solid walnut except where noted.



MAKE THE SIDES

Two types of templates guide the build. McGlasson makes oversize MDF templates for each of the parts that comprise the chair side. He also makes a single, h-shaped template that he'll use to template-rout the chair sides to final size.

Part layout. Tracing his rough templates, which are about $\frac{1}{4}$ in. oversize, McGlasson lays out all the parts for both sides of the chair from a single 6/4 walnut plank 8 in. wide and 10 ft. long.

Rough cutting the side parts. Following the rough-template tracings, bandsaw out the side parts. The stepped portions will provide purchase for clamping and will be sawn off after the side is assembled.

My series of rope-and-tile seating pieces started with an easy chair and expanded over the years to include a chaise lounge, an ottoman, a rocking chair, and various benches. I'm attracted to simple modern forms and clean lines, and those pieces reflect that. When I built the easy chair, I referenced dimensions and angles from two iconic mid-century chairs that I own, the Eames Molded Plywood Lounge and the Hans Wegner CH-25. The style of my other rope-and-tile pieces flowed from the easy chair.

🔗 **Online Extra**

For full-size drawings of all the templates McGlasson uses, go to FineWoodworking.com/313.

Joint prep. Everything else can be roughsawn and oversize at this point, but flatten the surfaces that will receive Domino tenons. Some you can cut at the table saw; others can be smoothed at the jointer.



Place and trace. With all the side parts sawn out and their mating surfaces flattened, put them in position and trace the finished template onto them. Also, mark the joints for Dominos.



Portable mortising. McGlasson used to use a stationary mortiser when joining the side parts, but now he finds the Domino far more convenient.

The structure for all of them is similar and quite simple: Two beefy, parallel sides are connected by similarly beefy struts and rails, and the tiles are strung between the sides on high-grade polyester rope. The tiles are drilled twice through their edges and lined up with corresponding holes drilled through the chair sides.

Starting the sides

The sides are the heart and soul of these pieces, key to their structure as well as their style. In the easy chair, each side consists of

four pieces, all in the same plane: front leg, side seat rail, arm post, and rear leg/post. The four parts are joined with Dominos. On my first chairs I used mortise-and-tenon joints, but the Dominos make things far simpler. If you don't have a Domino machine, routing the mortises and making your own floating tenons will work fine. The armrests are added only after the two sides are linked by the struts and back rails.

I like to cut all the side parts from a single plank to ensure that the pieces are uniform in color and



Slow assembly. Epoxy's long open time permits you to assemble the whole side (except for the armrest, which is added later) in one go. A hand-screw clamp keeps the parts upright as you seat the front leg.



Cross clamping. With Bessey K-clamps holding the legs tight to the side rail, McGlasson adds an F-clamp—with a thick acrylic caul—at the joint to keep the parts perfectly flush.

TRIM AND DRILL THE SIDES

Tight to the line. Once the side has been glued up and sanded flat, retrace the finished template and bandsaw carefully to within $\frac{1}{16}$ in. of the lines.

Custom flushing jig. With sets of chairs to build, McGlasson made a special jig for flush-trimming the sides. A side is placed within the walls of the jig, and the finished template is attached to the top with double-stick tape. The routing is done with a top-bearing flush-trimming bit.



figure. For walnut chairs, I love boards with some curly figure. The finished thickness of the sides is $1\frac{5}{16}$ in., so I use $\frac{6}{4}$ material. A $\frac{6}{4}$ board 10 ft. long and 8 in. wide is ideal, allowing me to get all the parts while working around knots and sapwood.

Before I begin sawing up the plank, I make some templates from $\frac{1}{2}$ -in. MDF. First, I make a set of five rough templates—one for each of the four parts of the chair side plus the armrest. These rough templates are $\frac{1}{4}$ in. or so larger than the final size of the parts, and some of them include squared-off sections outside the final outlines of the parts, which will provide purchase for clamps during assembly.

bly. I cut out the rough templates at the bandsaw.

Besides the rough templates, I make one finished template, which represents the entire final shape of the side. Initially I use it as a tracing template; later it guides the router as I flush-trim the assembled side to final size. I cut it out carefully at the bandsaw and sand its edges smooth.

With the templates made, I joint and plane my plank and then lay out all the side parts on it, tracing each rough template two times. Then I bandsaw out all the parts.

Assembling and sizing the sides

The next assignment is to create flats where I'll cut mortises



Post slice. At the table saw, make a clean joinery cut at the top of the arm post; next, cut Domino mortises for the arm.

Stout struts. The pair of hefty struts below the seat that join the sides are relieved on their top face to provide clearance for the slung-tile seat.



Drilling pattern. A stick with small holes drilled along its length is clamped to the top of the side rail, providing a template as you mark for the rope holes with an awl.



for Dominos. Depending on the shape of the part, I do this at the table saw or the jointer. Then, on a large worktable, I piece together the parts for each side. I lay the finished template on top and trace it. This gives me the precise outline of the finished side, so when I remove the template I can mark for the Domino mortises.

I double up the Dominos, using six 8mm by 50mm tenons in the critical back leg joint and four in the front leg. When I've cut all the mortises, I'm ready to glue up the



Rope holes. Following the pattern of awl marks, drill holes for the rope with a 1/4-in. Forstner bit. A sacrificial piece of plywood or MDF beneath the side ensures a clean exit.

BENT BACK RAILS

Back rails are bent laminations.

Using a vacuum bag and a bending form, glue nine layers of $\frac{1}{16}$ -in.-thick shopsawn walnut to make the chair's curved back rails. Make the lamination double wide, and rip it in two when it comes out of the vacuum bag.

Cross-cutting a curve. With both its ends flat on the table saw and its length against the miter gauge, the back rail is stable as it is cut to length.



Elevated shoulder cut. A block against the bandsaw fence elevates the end of the rail, stabilizing it and presenting it to the sawblade for a 90° shoulder cut.



Quick cheek. The long edge of the rail is tight to the bandsaw's fence as the cheek is cut.

sides. Using epoxy for its long open time, I glue all four parts at once. I press the parts home by hand, then draw them all the way tight with bar clamps and F-clamps. In addition, with some small F-clamps, I apply pressure to the faces of the parts at the glue joints to keep adjacent parts perfectly flush.

When the glue has dried, I sand the sides, sending them through my wide belt sander. It does an outstanding job, but the joints are typically quite flat, and a random-orbit sander could certainly be used instead.

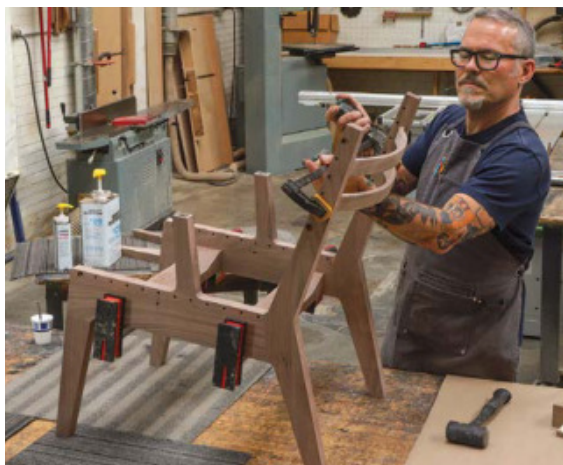
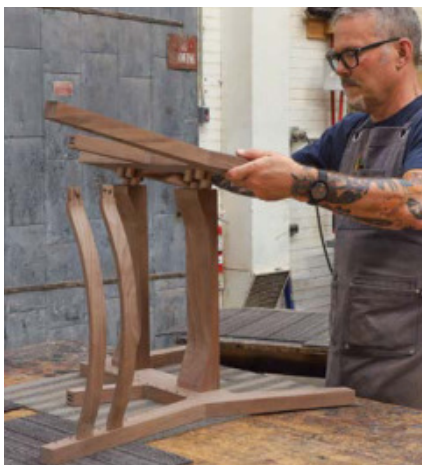
After sanding each side, I retrace the finished template on it and then trim it to within $\frac{1}{16}$ in. or so at the bandsaw. Then I cut it to final size with a router and a pattern bit with a top bearing. I built a special jig to support the router while I do the flush trimming. I put the assembled side inside the walls of the jig and use double-stick tape to adhere the finished template to the side. The walls of the jig are exactly the same height as the side plus the template.

Constructing the connectors

I make two very stout struts that connect the sides beneath the seat and two curving back rails that connect the sides up top. These struts, which I make from 10/4 stock, are $2\frac{1}{4}$ in. thick and

ASSEMBLY

Dry run. After cutting mortises in the sides for the back rails with his Domino machine, McGlasson does a dry-fit to confirm that all the joints are closing properly.



Glue-up. Using slow-setting epoxy gives you plenty of time to glue the side to the struts and back rails.

3½ in. wide. I leave them full size at the ends, where they get four large Domino tenons, but I bandsaw away nearly half the thickness across much of their length to provide room for the downward arc of the slung seat.

The back rails are far smaller, but they still do a good job of stiffening the back of the chair. I make two at a time in a bent lamination consisting of nine ¼-in.-thick strips of shopsawn walnut. After bending them over a form in the vacuum bag, I rip the pair in two. They could be cut from solid stock at the bandsaw, but I prefer the greater strength achieved in the bent lamination.

I cut mortises for the back rails with the Domino. The rails go into the mortises full thickness, but I do cut shoulders on the sides at the bandsaw. Before final assembly, I drill all the holes through the sides for the rope.

I use epoxy again for the final glue-up, and it tends to go pretty smoothly. I set the assembled chair aside for several days so the epoxy can fully cure before I turn to tying the tile seat and back.

For a full description of making and weaving the tiles, see Skills Spotlight, p. 76.

Scott McGlasson builds furniture in St. Paul, Minn.

Finishing up. After fitting and gluing on the arms and doing a final sanding to 400 grit, apply your finish.



The Best Food-Safe Finish May Be None at All

All finishes hinder wood's ability to self-clean

BY SERI ROBINSON



The market is saturated with finishes that purport to be “food-safe.” Part of what manufacturers mean is that these finishes are safe when ingested in small amounts, especially when they are fully cured. And they are right.

However, where many of the manufacturers and marketers go wrong is in promising that these finishes will head off an even bigger danger. The idea is that they will prevent harmful bacteria from getting into the wood's pores—where popular wisdom says it will keep on infecting your food forever.

As a professor of wood anatomy, I've done quite a bit of research into food-safe finishes. The results might surprise you. One thing everyone seems to have missed is that wood doesn't have a bacteria problem. Unfinished wood is naturally antimicrobial. In fact, when rinsed and dried properly between uses, it is self-cleaning.

Wood finishes only serve to undermine this amazing property of wood.

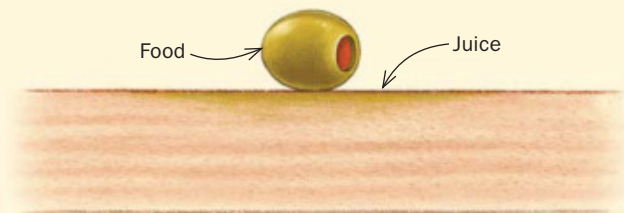
Of course, there are other reasons woodworkers finish their projects, aside from warding off bacteria. First, finishes improve the look of most species, deepening color and depth and making figure stand out. Second, by slowing the movement of water vapor in and out of the wood, finishes can help prevent cracking and warping. Finally, finishes guard against stains.

However, for food-related items specifically (as well as children's toys), these reasons fall apart. Raw spoons and cutting boards won't crack or warp if cared for properly, and they won't hold stains very long either, due to the self-cleaning process outlined below. Most importantly for human health, they won't transmit harmful bacteria back to the user.



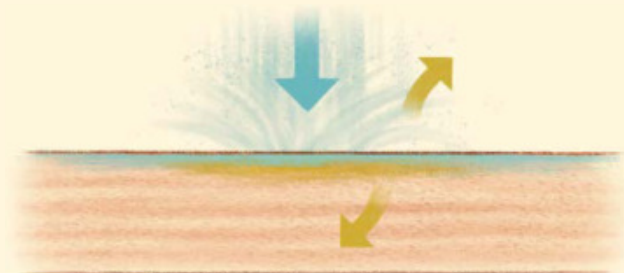
SELF-CLEANING NATURE OF WOOD

Raw wood has an inherent ability to absorb, contain, and kill bacteria. Here's how it works.



1. BOARD IS EXPOSED TO FOOD SUBSTANCES

It doesn't matter which food substance soaks into the wood—juice, blood, grease, or whatever. The process works the same way.



2. BOARD IS RINSED OFF

Cold water is fine. Part of the stain will be washed away, and the rest will soak in farther.



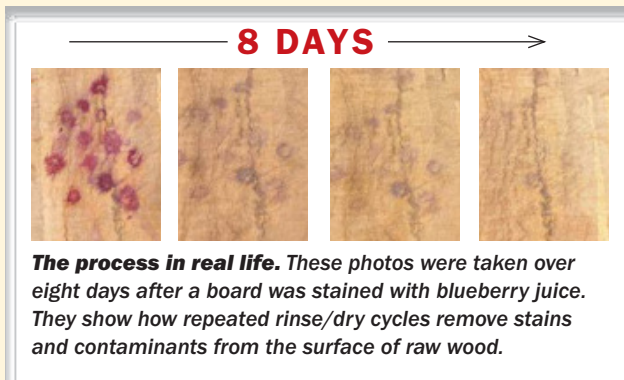
3. BOARD ABSORBS WATER AND BACTERIA

Wood wants to equalize its moisture content throughout its volume. This tendency draws exterior moisture—along with food substances and bacteria—toward the dry interior.



4. WATER EVAPORATES, LEAVING BACTERIA BEHIND

Water vapor continues to exit as the board comes to equilibrium with the humidity of its environment, leaving bacteria to die in the interior, which lacks the moisture and oxygen needed to sustain it.



I'll dive more deeply into each of these issues, but the bottom line is this: The best finish for items that will come into contact with food and/or mouths is no finish at all.

If after flipping through this article, however, you still feel driven to apply oil or wax to your next cutting board, check out the section titled "If you must finish" (p. 46).

Bacteria is the real danger

Marketers of "food-safe" finishes are right about the dangers presented by bacteria, whether it comes from meats and vegetables or the human mouth. The three most dangerous in food are salmonella, listeria, and E. coli.

Salmonella is an anaerobic (doesn't need oxygen) bacteria genus that can cause fever (including typhoid), diarrhea, vom-

Naturally beautiful.

Everything here is made from figured maple, and the maple used for the bowl is also spalted. All are nontoxic, and all look great in their unfinished state.



Good and bad woods for food contact

There's more to this story than finishing. Some woods are to be avoided for food and mouth contact altogether. For the full story, check out my article "Dangerous Chemistry: Woods to Be Wary Of" (FWW #304).

The short version is that tropical hardwoods, and strongly colored woods in general, are generally bad to use, as their color typically comes from problematic chemicals designed by nature to fight off decay. Sadly, this means that your decorative maple/bloodwood/purpleheart glue-up is better on the wall than the kitchen counter.

Common woods that are safe for food-related uses include all variations of the following: maple, birch, ash, oak, beech, poplar, aspen, and sycamore.

You'll notice that oak is on the list. Popular wisdom holds that the oaks (especially red) are unsuitable for cutting boards because they are so porous. But a very recent study shows that oaks outperform maples and beech in moving bacteria away from the surface, and red oak is just as safe as white.

—S.R.



Spalted wood is perfectly fine. If the wood has been dried, the spaling fungi will be dead and harmless. This cutting board is made from spalted maple burl.

iting, stomach pains, and even death in extreme cases. E. coli can cause cramps, bloody diarrhea, and vomiting.

Listeria is a much more serious bacteria, which can cause miscarriage, among many other problems. Listeriosis can also be fatal for folks over 65 years of age. Worse yet, listeria can survive refrigeration and freezing, making it much more pervasive than E. coli and salmonella.

Cross-contamination is a myth—Both vegetables and meat have bacteria on them—particularly E. coli—so let's kill the cross-contamination myth right away. Cutting vegetables on a separate board, for example, accomplishes nothing, as harmful bacteria from veggies is just as likely to transfer to meat—or fruit, for that matter.

That said, if the meat is to be cooked and the veggies aren't, it's probably better to cut veggies first when you are cutting both on one surface in the same session.

Raw wood has an inherent ability to self-clean

To understand why finish is the enemy on food-related woodwork, let's take a quick look at wood's anatomy and physics.

Popular wisdom says that microbes multiply in raw wood, growing and waiting until—*Whammo!*—the listeria army attacks your charcuterie party.

That's not how raw wood and bacteria interact, and there are decades of research to back this up, as well as centuries of safe contact between food and unfinished wood. Here's what is actually happening.

Wood is constantly gaining and losing moisture from the air around it. In scientific circles we refer to this as wood's *hygroscopic property*. Wood does the same when it comes in contact with any liquid, such as water from a sink or juice from an uncooked steak.

Wood also wants to bring its own moisture content into equilibrium, throughout the board. So when the surface of a relatively dry cutting board or spoon becomes wet, the wood draws that moisture toward the interior, taking bacteria with it.

So if bacteria is drawn into the wood with moisture, why won't it come back out and wreak havoc? If you give your cutting board or spoon a rinse after use and let it dry on all sides, the drying action will continue to pull bacteria deep into the wood, where it will be trapped and die. Little to none will be left on the surface, at

least not enough to transfer. This is what I mean when I say wood is antimicrobial. See “Self-cleaning nature of wood” (p. 43), to better understand this process.

Study after study has shown this to be true across many wood species, wood thicknesses, and bacteria types. So enjoy this unusual moment when the science is all in agreement!

Raw wood will manage stains too—

Go ahead and cut strawberries and blueberries on your unfinished board. Yes, there will be some immediate color left in the wood. But just like the bacteria, it will be drawn progressively inward with each wet-dry cycle. So after every wash, there will be a little less of the stain on the surface. And after seven or eight days of use, the stain will be gone from view.

Don't polish the surface too much—

Because you are not finishing the wood, you might be tempted to sand it to a high polish, which will highlight the beauty somewhat. But I've found that sanding beyond 400 grit tends to slow the absorption of liquid and moisture, hampering that self-cleaning ability.

Proper care is critical

While you should wash your cutting board between uses, don't allow the water to soak in too deeply. You just need to get the surface wet and wipe off any excess food particulates. So don't put wood items in the dishwasher or soak them in the sink.

You can use soap if you want, but studies have shown it doesn't make a difference. The same goes for hot water. Just put your board or spoon or toy under a faucet of cold water and wipe it down.

After that, the surface needs time to dry so bacteria is drawn inward from every direction. This might take 24 to 48 hours of airflow on all sides. The best way to do this is on something like a wire rack, which minimizes surface contact. If you remember, flip the wood over at the 24-hour point. Propping up the item to dry can work too, but any part in contact with the countertop can collect water and might even discolor and mold.

Do not put wood items away while they are still wet. The darkness and lack of airflow will encourage mold growth.

You could also consider putting little feet on your cutting board so it can dry directly on the counter. The downside here is that only one side of the board will be usable.



Multi-purpose cutting boards. Raw wood is self-cleaning with proper care, so you can use the same surface for prepping veggies, fruit, and meat. However, in a single session when the meat is to be cooked but the veggies are to be served raw, cut the veggies first.

You might get a touch of mold around the feet, but that's not really a concern.

Why any finish is problematic

Any finish, whether it builds a film or not, will clog the wood's vessels, rays, and fibers and impair its ability to cycle water. This is a benefit for most projects, helping wood resist stains, warping, and seasonal movement. But it's a problem for food-related items and toys, as it will keep the bacteria on the surface, where it will multiply, instead of allowing it to migrate inward and die. Even one coat of an oil finish will suppress water movement and cause bacteria to breed.

“Conditioning” is a myth—Another myth is the need to “condition” a cutting

board by periodically reapplying an oil finish. Almost all commercial cutting-board makers have a “wood conditioner” they recommend, usually a blend of waxes and oils, meant to both seal the wood and make it shine. They've convinced the public that wood should be kept moist and shiny, not dry and matte.

Wet wood molds. Dry wood is safe wood. And finishes impair the wood's ability to clean itself. Don't fall victim to marketing. Your cutting board doesn't need to be conditioned. It needs to be a flat, clean surface for cutting things. To add flair, try using figured or spalted wood.

For food-related items, get used to how wood really looks. You'll save money and have a healthier family in the process.

RINSE AND DRY ITEMS PROPERLY

Give food items a rinse after each use, and the self-cleaning action will kick into gear.

Quick rinse. Give items a rinse with cold water. Hot water and soap are not necessary.



Let them dry fully. Wipe off the excess water, and sit the items on a wire rack so they can dry fully on both sides. Flipping them over at some point is a good idea. Attaching feet to the bottom of a cutting board also works, but that means you can only use one side.

Never finish cooking spoons—It's especially important not to finish cooking spoons, regardless of how much you want the color or grain to pop. Wood spoons are subjected to the toughest aspects of the kitchen, including prolonged exposure to boiling water and highly acidic substances like hot pasta sauce.

Boiling water will get underneath a finish and cause mold to grow. In addition, with the finish impeding the movement

of moisture, tomato sauce will stain your spoon permanently.

Bread boards are an exception—Not all cutting boards will be exposed to moisture and therefore bacteria. If you have a board dedicated to bread, feel free to apply a finish to it. The same goes for a charcuterie board that will only contact hard meats and hard cheeses.

Choose one of the finishes recommended below ("If you must finish"), give the cut-

ting board an occasional rinse (letting it dry fully afterward), and you'll be fine.

Glued-up projects aren't great either

Complex patterns are very popular for cutting boards, giving folks a chance to empty their scrap bins and demonstrate their skills. Like wood finish, however, glue also fills wood cells, impairing their ability to move moisture. In a piece of furniture, that doesn't matter. But in a cutting board, those gluelines make it harder for the wood to self-clean. They can also become places for bacteria, mold, and stains to build up. Conflicting grain orientations can also lead to cracking and warping after repeated wet/dry cycles.

In the end, the best cutting board is an unfinished slab. If you want to combine woods to add style, use as few gluelines as possible.

If you must finish

To highlight the wood's grain and figure, at least initially, you may still decide to finish. The best options won't last long, but they will help your holiday gift make a good first impression.

The best finish for food-related items is a soft furniture wax, which will give the wood some initial depth and shine but wear off after a few wash-dry cycles. Stay away from waxes that are emulsified in an oil carrier, such as those sold for wood turning.

If you want the look of an oil finish, go with just one coat, and avoid raw or unrefined natural oils such as olive oil, grape-seed oil, and raw linseed oil. These can take months to cure if they cure at all, and they can become rancid.

You should also steer clear of finishes like polyurethane and shellac that form a film. These will chip and crack with use. Not only will that look bad and be difficult to repair, but differences in water movement between areas with intact and broken finish could lead to cracking, warping, and mold growth.

The worst option for food- or kid-related items is any finish that is formulated for outdoor use, as it is likely to contain dangerous chemicals.

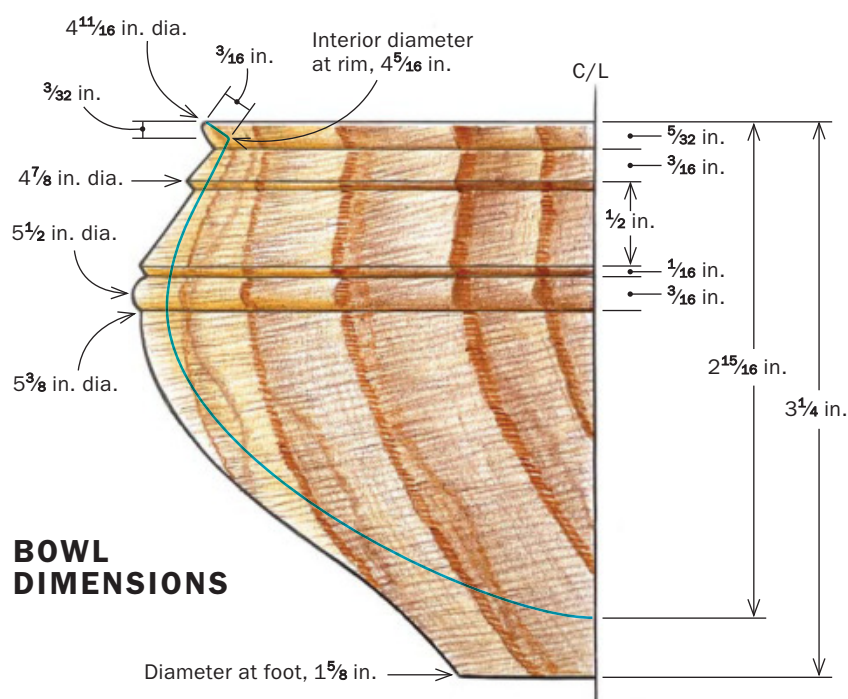
Seri Robinson, a professor of wood anatomy at Oregon State University, is the author of numerous books on turning, spalting, and wood technology.



Turning a Southwestern Bowl

A signature piece that takes cues from classic ceramics

BY MATT MONACO



I see this bowl as wooden pottery. I've made scores of iterations of it, and I think of it as my signature piece. Growing up in the American Southwest, I came to love the ceramic vessels made by indigenous potters there. And later, when I was working as an in-house production turner at ShackletonThomas Furniture and Pottery in Vermont, I was lucky enough to work in proximity to master potters. From those two sources I developed a deep appreciation for vessels with a clean, classical simplicity of shape. I also learned that fine detail, if properly handled, won't distract from an overall form but instead will provide punctuation in the flow of the piece's silhouette, helping to clarify and complete the visual statement.

Roughing down and shaping outside

I begin the bowl by bandsawing a blank, drilling a centered pilot hole in its rim face, and then mounting it on a wormscrew chuck. After truing up the exterior of the bandsawn cylinder, I true both flat faces.



TURN THE EXTERIOR

Threading the blank. After bandsawing a cylindrical blank and drilling a pilot hole into the center of the top face, mount it on a wormscrew chuck.



True up the bowl blank. Using a bowl gouge with a swept-back grind, first make truing cuts across the cylindrical exterior of the blank, then true up the two flat faces.



Sizing the foot. Before shaping the exterior of the bowl, use calipers to transfer the interior size of a four-jaw chuck to the blank. This will determine the size of the mounting tenon (which will later become the bowl's foot).



Shape the exterior. After some initial rough shaping with a swept-back bowl gouge, refine the exterior shape with a flat-ground bowl gouge.



Tapered tenon. Once you have refined the exterior curve of the bowl, shape the tenon at the foot, giving it a slight taper.



SHAPING THE RIM

Reversal. To prepare for hollowing the bowl's interior—and shaping the upper inch or so of the exterior—reverse the blank, and mount the dovetailed tenon in a four-jaw chuck.

I'll do most of the roughing and shaping of the bowl's exterior with the blank mounted on the wormscrew chuck. But before that, I set a pair of calipers to the inside span of a four-jaw chuck and transfer the measurement to the foot of the bowl blank. After roughly shaping the lower curve of the bowl, I cut a tenon to the caliper marks. I give the tenon slightly dovetailed sides, which will let me mount the bowl firmly in the four-jaw chuck when I reverse the blank to hollow the inside. (Eventually, the tenon will be reshaped and become the foot of the bowl.) Next, I get the bowl's outer curve close to where I want it. I also establish the width of the margin at the top of the bowl that will encompass the fine detail from the main bead to the rim.



The beveled band below the rim. After truing up the top face of the bowl, make an initial sweeping cove at the rim.



The bead at the base of the rim. Having smoothed the outer shape from rim to foot with a spear scraper, use a $\frac{1}{2}$ -in. shallow detail gouge to form the lower bead.



Shaping the rim bead. After turning the bead at the rim with a spindle gouge, finalize its surface with a shear scraper.



INTO THE HOLLOWING

How deep do you go? You can use a twist bit marked with tape to drill a depth hole that will guide the hollowing of the bowl.



Excavator. Begin the rough hollowing at the depth hole and move outward, using a flat-ground deep-fluted gouge. Then, as here, use a swept-back deep-fluted gouge to hollow the incurved area under the rim.

Getting the rim right. The swept-back deep-fluted gouge is Monaco's tool of choice while refining the beveled upper surface of the rim.



Finishing up inside. With the flat-ground deep-fluted gouge, take the bowl to final depth and then smooth the walls right down to the bottom.

Detail work outside and hollowing inside

To refine the rough shape of the outside of the bowl and add detail, I remove it from the wormscrew chuck, turn it around, and mount it in the four-jaw chuck. I true up the bowl's profile below the top margin and add the bead details and the beveled bands.

With those complete, I use a drill bit fitted in a long handle to enlarge and deepen the hole left by the wormscrew chuck. I wrap tape on the bit as a depth gauge and drill to within about $\frac{3}{8}$ in. of the shoulder of the tenon. This will be my rough depth guide as I hollow the bowl. I start hollowing at the center and progress outward, cutting downward roughly midway into the bowl. After excavating inside the incurving upper walls of the bowl, I continue with deeper hollowing, again beginning at the center and working outward.

Once the interior is finish-turned, I dry-sand inside and out with 220-grit paper, and then wet-sand with food-safe oil, beginning with 220 and going up to 600. I follow that with carnauba wax and give the bowl a buffing inside and out.



On with the oil. Before removing the bowl from the four-jaw chuck, dry-sand the interior and exterior with 220-grit sandpaper, then wet-sand with mineral oil and 320- and 400-grit paper. After that, buff with carnauba wax.



FINALLY THE FOOT

Turn a jam chuck. To finalize the foot, mount the bowl on a jam chuck sized to the bowl's rim. Use calipers to measure the interior diameter of the rim, then transfer that span to the face of the scrap you're using to make the chuck. Take your time turning the flange on the jam chuck, aiming for a snug fit.

The third mounting

To complete the turning at the base of the bowl, I make a jam chuck to fit inside the rim. After mounting a circular scrap on the headstock, I scribe a circle with calipers just shy of the interior diameter of the rim. I create a flange to that diameter and about $\frac{1}{4}$ in. deep. Once the bowl is fitted snugly to the jam chuck, I slide the tailstock into place with a live center for additional support while I blend the lower curve of the bowl into the tenon.

For the last bit of turning, I slide the tailstock away and rely on the jam chuck alone to hold the bowl. Working gingerly, I sweep across the bottom of the foot to be sure it is just slightly concave, so the bowl won't wobble. Then I carefully cut the small detail beads that decorate the underside of the foot. Last, I repeat my finishing regimen.

Matt Monaco calls Kansas City, Mo., home, but he turns in shops and schools all across the country.



Transforming the foot. With the bowl mounted on the jam chuck and the tailstock snugged up for support, transform the dovetailed tenon into a foot with a slightly coved base.



Fine detail on the foot. Remove the tailstock and use light pressure with a $\frac{1}{2}$ -in. shallow detail gouge to embellish the bottom of the bowl with delicate grooves.

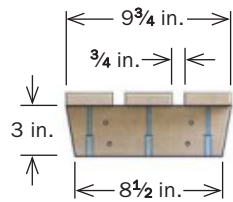
Contemporary Coat Rack

A utilitarian project made with no-fuss construction methods

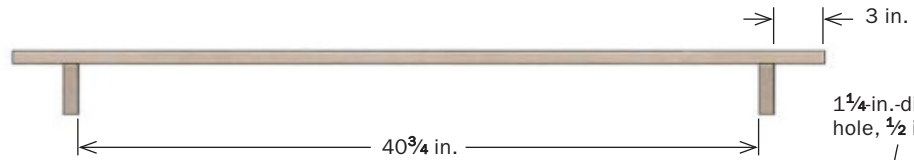
**BY CHRISTIAN
BECKSVOORT**

A few years ago, I was asked to build a simple coat rack. Nothing fancy—pine would do, since it might be painted. I suggested a Shaker pegboard. No, it needed to be movable, with places for shoes and hats. After a bit of thinking and a few sketches, I came up with X-shaped ends, a shelf below for shoes, a rod for hangers, and a shelf above that for hats. Although the original was white pine, I decided to make the one shown here out of walnut.

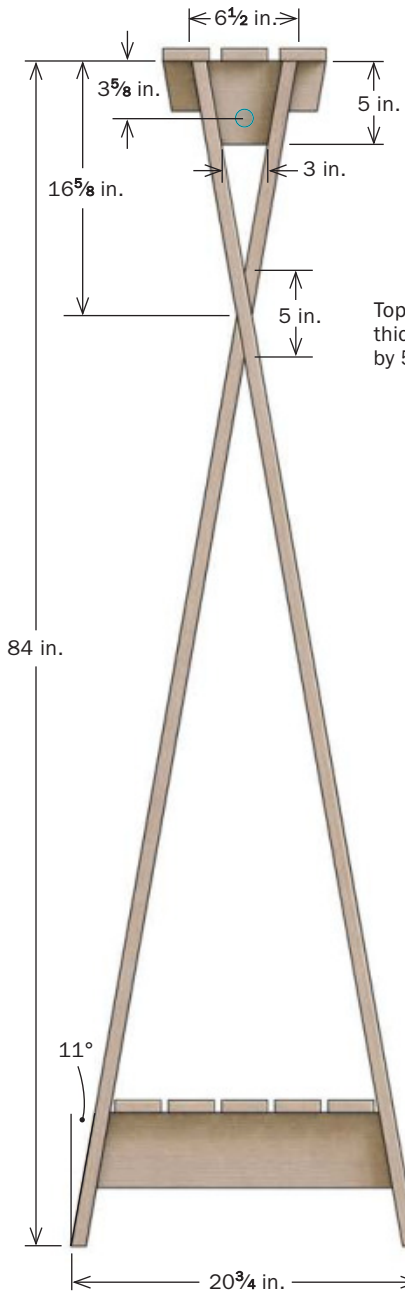




TOP SHELF SIDE VIEW



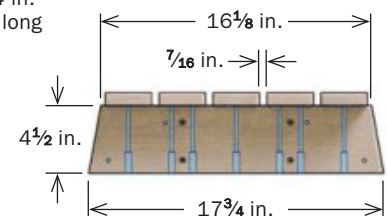
TOP SHELF FRONT VIEW



SIDE VIEW



BOTTOM SHELF FRONT VIEW



BOTTOM SHELF SIDE VIEW

Top slat, $\frac{3}{4}$ in. thick by $2\frac{3}{4}$ in. wide by 48 in. long

Top bracket, $\frac{7}{8}$ in. thick by 5 in. wide by 5 in. tall

Upright, $\frac{7}{8}$ in. thick by 3 in. wide by $72\frac{1}{2}$ in. long

Top shelf cleat, $\frac{7}{8}$ in. thick by 3 in. tall by $9\frac{3}{4}$ in. long

Closet rod, $1\frac{5}{16}$ in. dia. by $45\frac{3}{8}$ in. long

Use a knife to slightly chamfer ends to fit.

Bottom slat, $\frac{3}{4}$ in. thick by $2\frac{3}{4}$ in. wide by 48 in. long

Bottom shelf rail, $\frac{7}{8}$ in. thick by 4 in. tall by $42\frac{1}{2}$ in. long

Bottom shelf end, $\frac{7}{8}$ in. thick by 4 in. tall by $17\frac{3}{4}$ in. long

Bottom bracket, $\frac{7}{8}$ in. thick by 4 in. tall by $17\frac{3}{4}$ in. long

Crisscross applesauce

Intersecting uprights create the sides that support the closet rod and the top and bottom shelves. Becksvoort cuts the angled half-lap joinery with a handsaw and chisels.



Overlap and mark. Use your bench to clamp the long uprights into the X-position. Clamp a spacer, the width of the uprights, behind the forward upright to block it out in front of the rear upright (far left). Mark the location of the angle on each of the uprights (left).



Mark the rest of the joint. From the points where the angles on the edge reach the face of the upright, carry lines halfway across the face. Connect those two lines, then use a marking gauge to scribe that midway line where the joint ends on the face.



Angled cuts. Saw the angles down to the midway point on the face. It's much like cutting the shoulders of a dovetail.



Chop and set. After sawing the shoulders, use a chisel to chop into the scribe line, and then chip out a wedge of waste. Now you have a flat to rest the back of the chisel on. Repeat until you knock the block free from the upright.



Clean and fit. Use a chisel to clean up the joint (above). Test-fit the uprights together (left), and fine-tune the joint until you get a nice snug fit.

The design of this structure means that it has a bit of side-to-side racking. I drastically reduced that with beefier rail sizes and strategically placed screws. The rack is easy enough to move around, but it also can be disassembled into five separate pieces: two sides, the closet rod, and the top and

bottom shelves. It's the perfect piece for an entryway, mudroom, or large walk-in closet.

X-shaped ends are the focus

To lay out the angled lap joints, I stood the crosspieces on end. Using my workbench as a support, I clamped the two crosspieces together and marked

the edge of each exactly where they intersected. Then, with a small square, I extended those lines halfway across the faces of the crosspieces. I used a marking gauge to strike a line at the halfway point—the bottom of the lap joint. Although the joints can be cut at the table saw using a dado blade

and with the miter gauge set to the angle, I thought it was just as easy to make the cuts by hand with a small crosscut saw. Then I carefully removed the waste with a chisel.

Uprights and cross braces

With the joints cut, I dry-fit the uprights. From there I used a

It's all about the angles

Because the uprights are crossed, you have to cut angles on each end so they sit flush on the floor and the hat rack slats sit level on top of them.



Mark the uprights. With the crosspieces dry-fit, use a straightedge lined up on the outer corners to mark the angles on both ends.



Trim the uprights. Becksvoort stacks all four uprights and cuts the angles all at once. He keeps track of the two pairs. For each pair, he first faces the two pieces, then flips one over so each end has the angle opposite. The layout line will be visible on one upright from each pair.



Mark the brackets. With the uprights still dry-fit, place the bracket stock directly on the uprights and mark the length.



Find your angle. Use a bevel gauge to set the angle between the top of the uprights and their face.

Cut the angle on the brackets. Use a bevel gauge to set the table saw's miter gauge, and cut that angle on both ends of the top and bottom brackets.



straightedge at the top and the bottom of the uprights, lined up at the outside corners, and struck that straight line across the uprights. Cutting the crosspieces at this angle allows them to sit flat on the floor and be flat on top.

I marked the end angle for the top and bottom brackets directly from the dry-fit uprights. This is also the angle for the ends of the top shelf's cleat and the bottom shelf's

Assemble the X's

While the rack knocks down, the two sides do not.

Add holes to the top brackets. With a Forstner bit at the drill press, drill stopped holes in the top brackets to accept the closet rod.



Assemble the sides. Apply glue to the angled half-lapped joint (right) and tap the pieces in place. Then drill clearance and pilot holes and screw the top brackets in place (far right).



Plug the holes. When drilling clearance holes for the screws, also cut counterbores for plugs. Glue the plugs in place and cut them flush.



frame ends. The four brackets are centered on the upright posts, and each is held with screws. I like to plug the holes on any screws that are visible and won't be removed when disassembling the piece into its parts.

Just shelve it

The two shelves are a simple slat construction. The top shelf is made of three slats screwed into two cleats that are placed near the ends of the slats. The slats overhang the cleats, and the spacing between the cleats positions them exactly inside the uprights. They are

screwed from the inside into the upper brackets.

The bottom shelf has five slats that get screwed to a simple frame. The frame's two ends land between the lower brackets. The slats get screwed on from underneath and also get two extra screws from the top down into the rails. Those two get plugged because they are visible.

Yes, you can use mortise-and-tenon joints for the rails, and you can glue the shelf slats. However, the screws provide a great deal of stability, structure, and simplicity. That's the beauty of custom work.

Top to bottom

The top and bottom shelves are independent assemblies, with slats on a frame for the bottom and slats on two cleats for the top. Once assembled, they get screwed to the side pieces.



Predrill frame stock. The bottom shelf consists of a frame with slats screwed in place from underneath. The frame is deep, so you must drill clearance holes for the screws themselves but also deep counterbores so the screws can catch the slats above. With a brad-point bit, first drill the counterbore. Then, with a bit that finds the center where the brad point was, drill for the screw itself.



Assemble the frame and shelf. Screw the frame together. Attach the slats from under the frame, one screw at each end of each slat.



A couple screws in the center. Two of the slats land on the long parts of the frame, so Becksvoort adds a screw on each for extra security and plugs them.

I've chosen to make this a quick, no-fuss, simple project.

I finished the piece with my usual oil finish, which looks great on the walnut, but you can also use varnish, polyurethane, or paint.

Keep in mind that if the angles, widths, or lengths are changed to suit your fancy, none of the dimensions will remain the same. Also, whenever I build something, even if I have a drawing or plans, I always take my dimensions directly off the project.

Christian Becksvoort is a furniture maker in New Gloucester, Maine.

Put the parts together

At this point you have two sides, a closet rod, a top shelf, and a bottom shelf. It's time for the final assembly.



Bottom shelf first. Use the closet rod, clamped in place, to hold the sides upright (left). Then put the bottom shelf in place and screw it to the sides (above).



Top it off. While the closet rod is still clamped in place, add the top shelf and screw it to the sides.



Mechanical Drawer Slides



How to choose and use this indispensable hardware

BY MARK EDMUNDSON

Drawers are the hardest-working parts of a cabinet, carrying their loads in and out, thousands of times over.

In fine furniture, wood drawers usually ride on wood supports. In built-in cabinetry, however, which prioritizes functionality over tradition, mechanical slides—sometimes called commercial slides—are usually a better choice.

While the various wood-on-wood approaches look beautiful, they are affected by seasonal moisture changes and tend to wear over time, leading to sticky drawers and even outright failure in some cases. Most are also a serious test for your woodworking skills.

Mechanical slides, by contrast, will deliver smooth-gliding action for decades. They are made from durable steel, with their moving parts riding on ball bearings or high-density plastic wheels. They also have built-in stops and soft-close mechanisms.

Commercial drawer slides are perfect for the built-in cabinetry that goes into kitchens, bathrooms, laundry rooms, home offices, workshops, and more. But they also work well for any type of storage furniture that will get a lot of use. And they are great problem-



SLIDES WITH FULL-OVERLAY DRAWERS

Mechanical slides are used most often in built-in cabinetry. The most popular cabinet/drawer configuration is European-style cabinets (no face frame) with full-overlay drawers. But this info is easily adapted to partial-overlay and inset drawers.

Self-adhesive rubber bumpers attached to back of drawer fronts

Drawer fronts, $\frac{3}{4}$ in. thick, fully overlay cabinet edges.

For drawer cabinets installed side by side, leave ends of drawer fronts $\frac{1}{16}$ in. short of cabinet edges to create $\frac{1}{8}$ in. gaps between adjacent drawers.

Drawer boxes, $\frac{1}{2}$ -in. plywood, lipped with solid wood on upper edges, with box sides overlapping front and back of box

Cabinet, $\frac{3}{4}$ -in. plywood, edged with solid wood

Side-mount slides go in gap between drawer box and cabinet.

Three great options

The main types of commercial drawer slides haven't changed, but improvements continue. All are available with a soft-close feature, which pulls the drawer to a gentle stop, and all work very well. Slide length, load capacity, and the soft-close option factor into pricing.

Online Extra

To see each of these slides in action and learn more about how they compare, go to FineWoodworking.com/313.



BASIC BOTTOM-MOUNT SLIDES

Price: \$8 to \$15

Description: Two-part epoxy-coated slides with plastic roller wheels

Pros: Inexpensive, very easy to install, soft-close feature now available

Cons: Visible when drawer is open, three-quarter drawer extension, slightly noisier than others



SIDE-MOUNT SLIDES

Price: \$15 to \$40

Description: Three-part steel slides with ball bearings

Pros: Full-extension standard, very long models and heavy load ratings available, can be mounted in any orientation, good problem solvers

Cons: Pricier than basic bottom-mounts, visible when open, a bit trickier to install, greasy bearings can capture sawdust



UNDERMOUNT SLIDES

Price: \$25 to \$45

Description: High-tech slides offer best of all worlds. Sliding parts are installed as one piece in cabinet. Slide clicks into locking devices, mounted under drawer box.

Pros: Hidden to user and with small gap next to drawer box for a furniture look, easy to install, adjustable in all directions after installation, full-extension, soft-close

Cons: Price



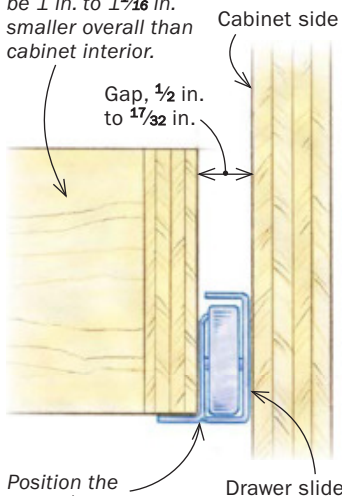
Installing basic bottom-mount slides

If you build your cabinets and drawer boxes with the right gaps between them, these slides are very easy to install.

MIND THE GAP

Bottom-mount slides require a $\frac{1}{2}$ -in. gap between the drawer box and cabinet wall. That gap can be up to $\frac{1}{32}$ in. larger on each side, but not less than $\frac{1}{2}$ in.

Drawer box must be 1 in. to $1\frac{1}{16}$ in. smaller overall than cabinet interior.



Position the slides $\frac{1}{8}$ in. above a cabinet bottom or face-frame divider to ensure that the drawer part of the slide doesn't rub.

Make slide supports. In a three-drawer bank like this one, cut support strips for the top and middle drawer slides, and nail them together to form a right angle. This will allow the supports to stand up on their own, and you can rotate them to install slides at both levels. (The third pair of slides is mounted at the bottom of the cabinet.)



Drawer side first. The drawer part of the slide wraps around the bottom of the drawer box and is mounted flush with the box's front edge. Drill pilot holes with a self-centering (Vix style) bit (left) so the slide won't shift when you drive the screws (right).



Mark the drawer locations. Mark the cabinet $\frac{1}{8}$ in. below where you want the bottoms of the drawer boxes to end up.



Set the inset. Read the instructions to determine the proper inset for the drawer/cabinet configuration you are using.



Three screws will do it. Use a self-centering bit to drill pilot holes for the screws so the slide doesn't shift. Start with the first screw, recheck the inset, and then drill and drive two more screws.



Check your work. Use a straightedge to make sure each drawer is installed squarely, with its front face even with the cabinet or slightly inset. The slides have alternate screw holes for adjusting the slide positions.



Next one down. To install the next set of slides, rotate the supports to use the lower parts. Install these slides the way you did the upper ones, using a combo square to set the inset and a self-centering bit to drill pilot holes.



Bottom pair. These go at the bottom of the cabinet. There is a bump under their front edge, so place a $\frac{1}{8}$ -in.-thick spacer just behind it. This will keep the slide level and ensure that the drawer part won't rub on the cabinet.



One last check. Once you have installed all three drawers, make sure they are flush with each other when closed. Use the alternate attachment holes to adjust slides fore and aft if necessary.

solvers, stepping in when the usual wood-on-wood approaches won't work.

Mechanical slides are used most often with drawer boxes that have a separate drawer front applied. This is an easy way to make drawers and install them. You make the boxes using any joinery method you choose, add the slides and install the boxes in the cabinet, and then attach the drawer fronts as separate parts, perfecting the gaps all around.

While commercial slides are fairly easy to install, they require that you have specific spacing between the drawer boxes and the cabinet sides, so you'll need to nail the dimensions of the drawer boxes.

There are a number of types of mechanical slides, and a number of ways drawers can be integrated into cabinets. That can make products and their permutations pretty confusing. I'll show you how to choose the right slides for your needs, and how to install them in the most popular type of built-in cabinetry: European-style cabinets with full-overlay drawers. (For tips on mounting slides in face-frame cabinets, see pp. 68–69.)

Whichever commercial slides you choose, be sure to read the instructions carefully, as key dimensions like slide insets can vary a little.

We focus on full-overlay drawers

European-style cabinets have no face frame, and their doors and drawer fronts fully overlay the cabinet sides. All you see are the drawer fronts and doors, and the look is very clean and modern.

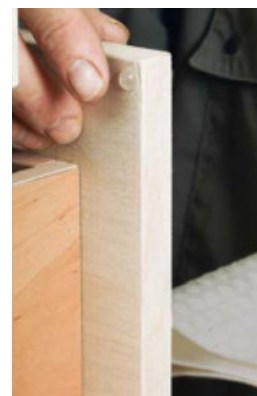
This format also makes drawer installation easier. As opposed to inset drawers, where the drawer slide acts as the drawer stop, overlay drawers stop when the drawer fronts touch the cabinet. You don't have to be as precise with the front-to-back location of the slides, because the soft-close mechanism will pull the drawer home once it's within $1\frac{1}{2}$ in. of the cabinet.



Fronts go on last. The drawer fronts can overlap the top or bottom edges of the cabinets (as well as overlaying their sides). To position them, apply double-stick tape to the drawer boxes, shim and press each front into place, and then pull out the drawers to drive screws from the inside.

Online Extra

To learn how Blum drawer-front adjusters make it easier to attach fronts in perfect position, go to FineWoodworking.com/313.



Add little bumpers. Self-adhesive rubber bumpers prevent a knocking sound when drawers close.

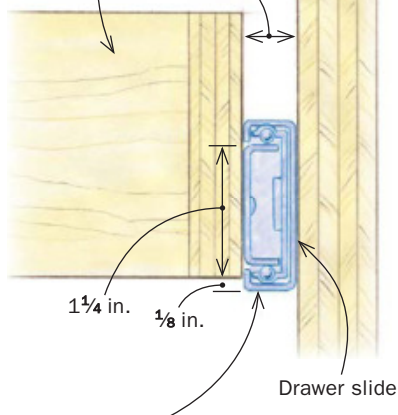
Installing side-mount slides

MIND THE GAP

Like basic bottom-mounts, these slides require a $\frac{1}{2}$ -in. gap between the drawer box and cabinet wall, and that gap cannot be less than $\frac{1}{2}$ in. It works best, however, if it is exactly $\frac{1}{32}$ in. larger on each side.

Drawer box should be $\frac{1}{16}$ in. smaller overall than cabinet interior.

Optimal gap is $\frac{17}{32}$ in.



Set the cabinet part of the slide $\frac{1}{8}$ in. below the desired position of the drawer box. When attaching the drawer part of the slide, position its top edge $1\frac{1}{4}$ in. above the bottom of the drawer box.



Pull the slides apart. Push this small lever to separate the drawer section of the slide from the other two sections.



Install the cabinet part of the slide. Again, use two-part supports to position the slides as you attach them to the cabinet.

These can be installed anywhere on the drawer, which can be disorienting. Follow the instructions below to simplify things.

Also, the gaps between overlay fronts tend to be around $\frac{1}{8}$ in., making small inaccuracies less obvious than they are in the tight gaps around inset drawers.

For all of these reasons, I'll focus on the full-overlay approach for the three main slide installations that are described here. Two other common approaches to cabinet design are worth noting, however.

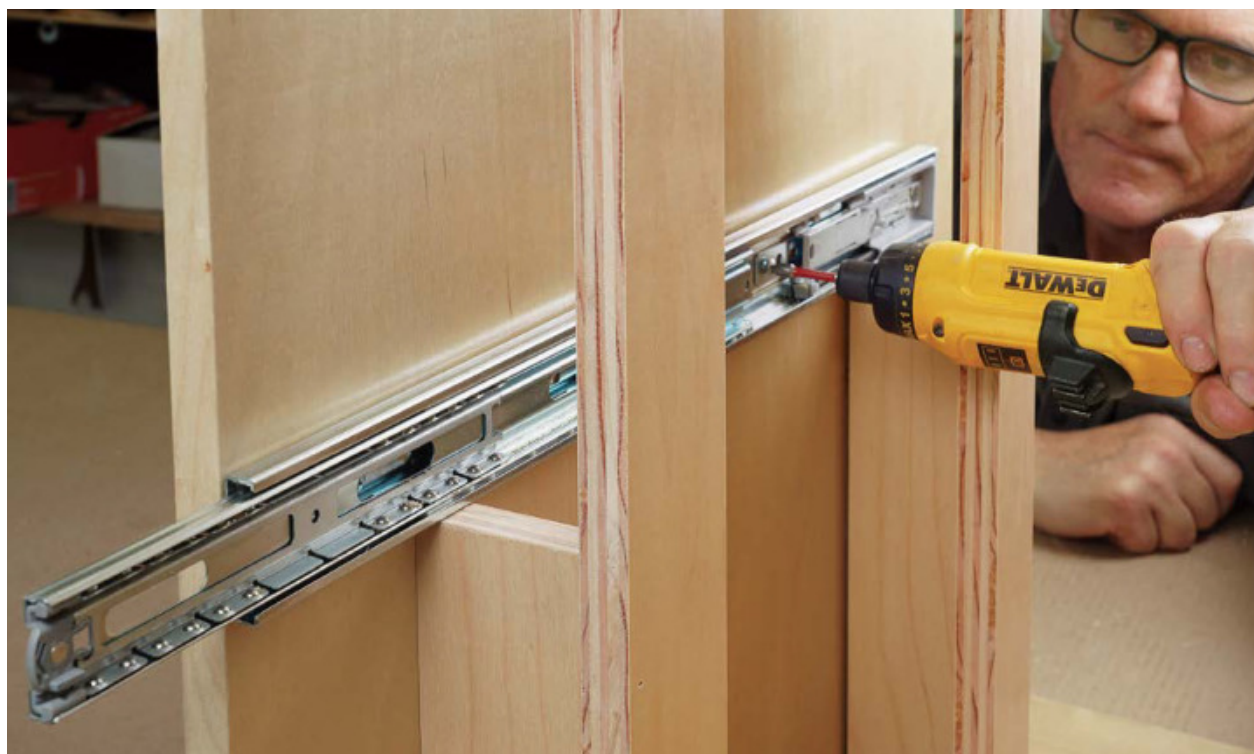
Flush-front face frames are more traditional—

For a more traditional, furniture-type look, cabinetmakers add a face frame to their cabinet boxes, combining it with flush, inset drawers. With this approach, the drawer slide acts as the drawer stop, and if the drawer doesn't end up flush, it's obvious. Therefore, the slide locations need to be more precise, front to back.

There is usually an offset between the openings in the face frame and the inside of the cabinet box, which further complicates drawer-slide installation.

The good news is that there are straightforward solutions to these challenges that work for all three types of slides.

We are ignoring a lower-end approach—There is another common face-frame drawer style called partial overlay, in which the drawers only partially overlap the face frame. This is popular in lower-end cabinetry because there are no gaps or reveals to worry about. But partial overlay has a low-cost look that most custom woodworkers avoid. So I'll avoid it as well. That said, if you choose this approach—for



Same approach as before. Use a combo square to lock in the inset from the front edge of the cabinet, and a self-centering bit to drill pilot holes before driving screws. The cabinet part of the slide has an extra section, which you'll slide fore and aft to expose the screw holes.

shop cabinets, for example—the advice in this article will be easy to apply.

Three types of slides

Mechanical drawer slides come in three basic formats, which fall into three price ranges. Each has advantages and disadvantages in terms of cost, visibility, extension, load capacity, performance, and ease of installation. That said, one type is a clear standout.

Basic bottom-mounts save you money—The most affordable slides are the white epoxy-coated slides seen in more-basic cabinetry. Unlike the other types, these only allow the drawer to open three-quarters of the way (“¾ extension”). Also, they are visible when the drawer is open and are a bit noisier than the others.

On the plus side, basic bottom-mount slides are durable, easy to install, and less than half the price of the other types. In addition, they have a solid load rating of 60 lb. to 75 lb. I used bottom-mount slides in my own kitchen cabinets, and they have been doing their job for 25 years.

These slides now offer a soft-close option, which eliminates the main drawback of past models: a hard bump when the drawer is closed. They are priced at \$8 to \$15 for an 18-in. pair.

Side-mount slides are problem-solvers—Like the bottom-mounts, side-mount slides are visible when the drawer is open, and adjustment is limited to a few slotted attachment holes. But side-mount slides have a few distinct advantages.

Unlike basic bottom-mounts, they offer full extension. Side-mount slides are unique in how far they can travel and how much weight they can support.

You can buy side-mount slides as long as 60 in. or more, with weight ratings in the hundreds or even thousands of pounds. A typical pair runs between \$30 and \$40.

In kitchens of the past, you would often see white bottom-mount slides on most of the drawers, and heavier side-mount slides on the deep drawers for pots and pans. Side-mounts are also great for shop drawers with heavy contents. In addition, they are great problem-solvers for irregular drawer shapes, because they can be mounted underneath a drawer (although they can't support quite as heavy a load in that configuration).

Undermount slides are unbeatable—A much more recent innovation than the two other types, undermount drawer slides are significantly different. Thanks to their unbeatable combination of attributes, they have come to dominate the kitchen and bath markets. You'll pay for their advantages—18-in. slides start at \$30 a pair—but these mechanical marvels are worth the cost for top-notch cabinetry.

Tucked under the drawer bottom, an undermount is the only type of mechanical drawer slide that's invisible when the drawer is open. The slide location also means that the gap between the drawer side and



Mark the drawer boxes. If you position the top edge of the drawer section of the slide 1¼ in. above the bottom edge of the drawer box, the box will end up in the right spot. Make marks at the front and back of the drawer box.



Install the drawer section. Read the instructions to determine the right inset for the front end of the slide, and use a combo square to position it correctly. Again, a self-centering bit ensures that the slide won't shift when you drive the screws.



Check your work. As before, use a straightedge to make sure that the boxes are level with each other and even with the front edge of the cabinet. There are alternate holes on the slides for attaching them in slightly different positions.

Installing undermount slides

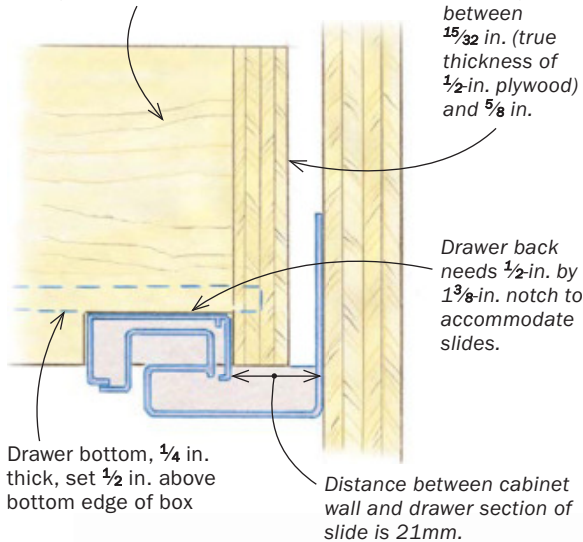
Undermount slides require additional installation steps, but they are quick and easy, and the slides can be adjusted in every direction after installation.

SIZING THE DRAWER BOX: 42MM IS THE MAGIC NUMBER

Because both sliding parts of these slides are attached to the cabinet as one unit, the gap between the drawer part of the slide and the cabinet wall is fixed: 21mm. So the goal here is to size the drawer box so the slides land in the right position under the drawer bottom: nestled snugly against the inside edges of the drawer box.

Size drawer backs and fronts 42mm (or $1\frac{5}{8}$ in.) shorter overall than the cabinet interior, and the slides will end up in the right spot under the drawer bottom.

For most slide models, the drawer sides can range between $1\frac{15}{32}$ in. (true thickness of $\frac{1}{2}$ -in. plywood) and $\frac{5}{8}$ in.



JIG IT Undermount Drilling Guide, \$38, Rockler.com

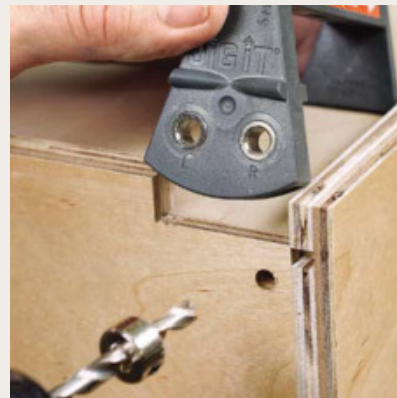


DRILL THE DRAWER

The drawer boxes need holes drilled at the front and back for attaching the locking devices and capturing the small hook at the end of each slide. The Rockler drilling guide positions the holes perfectly, though they can also be drilled without the guide.



Drill the drawer back. Use the guide to drill the two small holes needed at the back of each drawer. (The notches are cut before the drawer is assembled.)



Same guide works up front. Tilt the guide to line it up for drilling angled pilot holes in the front of the drawer box.



Same type of install supports. The two sliding parts stay together and are attached to the cabinet as one unit. Use L-shaped supports to install the upper and middle slides level with each other.



Bottom two pairs. Rotate the supports to install the middle pair of slides. The lower pair goes against the cabinet bottom.

Attach the locking devices. These tuck under the drawer bottom and are screwed to the drawer box using the pilot holes described at the bottom of the previous page.



cabinet side is ¼ in. or less, so the drawer box fills the opening for a furniture-quality look. Because of how these slides never come apart, and how they support the drawer bottom, load capacity isn't an issue for household use. Just to be safe, though, make sure your slides are rated for 90 lb. to 100 lb. Undermounts are also the smoothest and quietest of the three types, with soft-close and full-extension standard.

Undermount slides are also the easiest to install. And once installed, they let you adjust the drawers in every direction. When the cabinets themselves are being installed on-site, the cabinets and drawers tend to shift, so these adjustments can be a lifesaver.

Blum Blumotion is my favorite undermount slide, but similar models are also available. In most cases, I recommend shopping for slides at a large wood-working-specific supplier. We got most of ours from Rockler. These suppliers sift through the mountain of options, curating those that are most useful to fine woodworkers and avoiding off-brand models that don't perform as well. They also offer additional installation guides in some cases.

If you've never given mechanical drawer slides a try, I hope you will now. Combined with 35mm cup hinges for doors, commercial slides make cabinetry functional, durable, and easy to build.

Mark Edmundson is a furniture maker and cabinetmaker in Sandpoint, Idaho.



Slide the drawers into place. The notches in the drawer back fit over the slides and guide the drawer box as you push it backward.

Rear hooks grab the box. Each of the small holes at the back of the drawer fits onto a little hook at the back of the drawer slide.



Click the slides into the locking devices. Pull the sliding sections forward to click them into the locking devices. The drawer is installed.

THREE HELPFUL ADJUSTMENTS

Undermount slides have a number of adjusters. You can use these to align the drawer boxes before installing the fronts, or to help align the fronts with each other afterward.



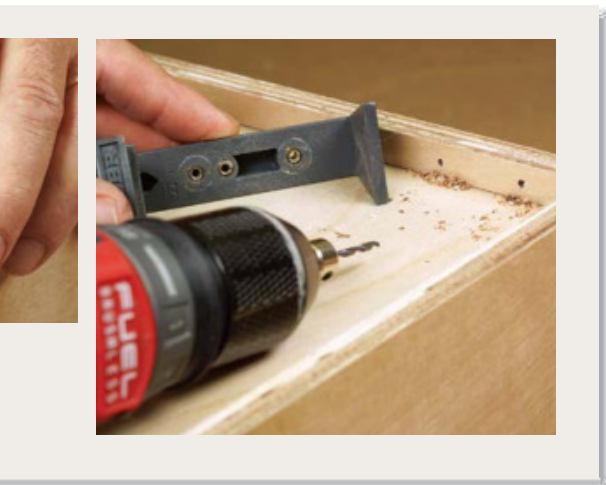
Side to side. The locking devices have rollers that shift the drawer boxes side to side.



Up and down. Small ramps at the front of the slides shift the drawer up and down.



Tilt control. Levers at the back of the slide tilt the box forward, which can help align the drawer fronts.



Installing slides in face-frame cabinets



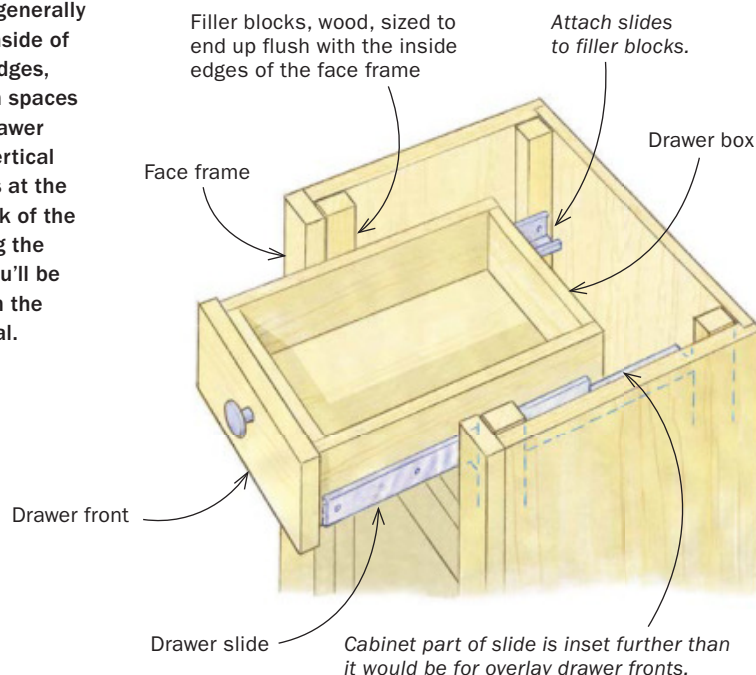
Another popular way to build cabinets is to cover the front of the boxes with a face frame. To complete the furniture look, high-end cabinetmakers often combine the face frame with flush inset drawers. The face-frame approach makes drawer installation a little more involved. Also, inset drawers look best with tight gaps around them, making small misalignments more obvious. But both challenges are easily overcome.

Add filler blocks—Face frames tend to be significantly wider than the $\frac{3}{4}$ -in.-thick cabinet sides that they are attached to, so the first challenge is overcoming the offset between the two so that you can attach the drawer slides in line with the openings. The most common solution is to attach the slides to spacer blocks inside the cabinet, which brings them in line with the opening.

Adjust the slide position—Inset drawers require you to push the drawer slides farther back than their standard location for an overlay drawer. Also, because the slides themselves (instead of the cabinet) act as the drawer stop in this case, their inset must be very precise. If it isn't, the

FACE-FRAME CABINETS WITH INSET DRAWERS

Face-frames generally overlap the inside of the cabinet edges, creating open spaces beside the drawer boxes. Add vertical wood spacers at the front and back of the cabinet, filling the offset, and you'll be able to attach the slides as usual.



FILL THE OFFSET AND CHANGE THE INSET

These photos show a piece of furniture with post-and-panel construction, but the concepts are the same as they would be for a face-frame cabinet.



Add filler strips. Mill strips to fill the offset between the inside edges of the face frame and the cabinet sides, and then screw them into place.



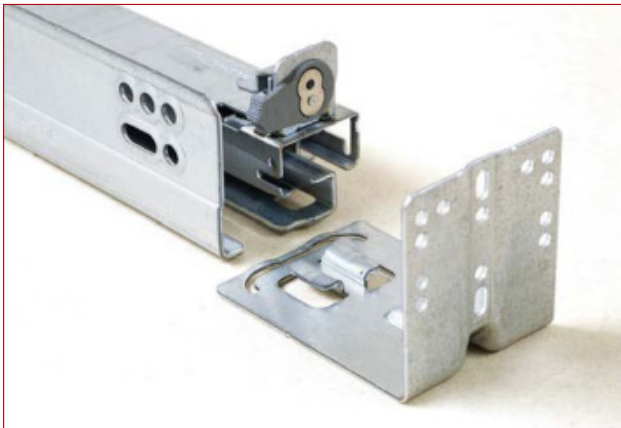
Set the inset. Attach the drawer slides to the drawer boxes, and hold the drawer front against the front of the box. Then lock your combo square at the distance between the face of the drawer front and the drawer slide.



Attach the slides. Use that combo-square setting to locate the front edge of the drawer slide. It gets attached to a post in this piece, but in a face-frame cabinet there would be another filler strip up front for attaching it.

REAR BRACKETS ARE PROBLEM-SOLVERS

In some cabinets, such as those with multiple banks of drawers and/or doors, there might not be a cabinet side nearby for attaching the back end of the slide. Here's the solution.



Simple anatomy. Made to slide onto the back end of each type of slide, these brackets let you attach the slide to the cabinet back instead of the cabinet side.



Mark the bracket location. Sit the cabinet slide on its vertical supports, push it back into the bracket, and mark the screw locations.



Attach the bracket. The bracket attaches to the cabinet back. It will work better if the back is $\frac{1}{2}$ in. thick vs. the usual $\frac{3}{4}$ in.

Front end attaches normally.

You'll need to get the cabinet depth right to use rear brackets, but they move fore and aft on the slides, giving you a decent margin of error.



drawer fronts won't end up flush with the face frame—a problem that will be obvious.

To dial in the slide inset for inset drawers, I do a test-fit on my benchtop, with both parts of the slides engaged with each other and attached to the drawer box (but not the cabinet yet). The steps vary a little between undermount slides, which stay together, and the other two types, which have drawer and cabinet halves that separate, but the method is basically the same.

The rear bracket solution—In some situations, you might not have a cabinet side nearby for attaching the back end of the drawer slide. One example is wide cabinets that are built to hold multiple banks of drawers. There are others.

In these cases, you can attach the rear end of the slide to the cabinet back by means of a specialized bracket made for each type of slide. These screw to the back and slip onto the slides, with a fair amount of travel for accommodating differences in cabinet depth.

—M.E.

gallery

Inspiration for our readers, from our readers

REX W. HANSEN

Boston, Mass.

After observing Peter Follansbee demonstrate 17th-century relief carving, Rex chose a 17th-century linen chest to determine if he was up to hand-carving the panels. His marigold and tulip-carved panels are similar to traditional carvings from 17th-century pieces.

WHITE OAK, EASTERN RED CEDAR, AND LIGNUM VITAE
17D X 42W X 27H

Photo: Lance Patterson



HUGO NAKASHIMA-BROWN

Boston, Mass.

This chair is based on a traditional Ming Chinese round-back chair. Hugo says, "It's full of complications in design and construction, especially when trying to find creative solutions to use power tools, where possible, to save on time." The whole chair could be assembled without glue. Most of the final shaping was done by hand.

CHERRY AND EBONIZED POPLAR, 17½D X 22W X 30H

DAN CHICHESTER

Falmouth, Va.

This Duncah Phyfe drop-leaf table started with Dan's love affair with bubinga, a wood that, he says, "is as hard to carve as it is beautiful." He was drawn to the design because of the reverse curve of the leg and the acanthus leaf carving.

BUBINGA, CURLY MAPLE, AND SYCAMORE, 23½D X 37½W X 29½H

Photo: Kristin Masselman



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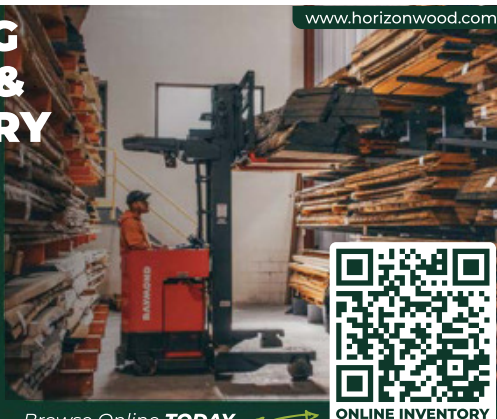
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RYAN WILSON

Kula, Hawaii

Originally from Vermont but having lived in Hawaii for the last 23 years, Ryan found himself back in Vermont attending the Vermont Woodworking School. He designed and built the “Pagoda Liquor Cabinet” as his second-semester project.

QUILTED MAPLE, WALNUT, AND EBONY
10D X 36W X 24H

Photo: Hel Hamilton



DANIEL CLAY

Knoxville, Tenn.

This turned and chip-carved bud vase is part of a continuing exploration for Daniel in several areas, both technical and aesthetic: freehand chip carving, creating color gradients with traditional milk paint, and using materials typically associated with fine art, such as pastels, to apply color to carved surfaces. The petal-swarm pattern, which he uses in a lot of his work, is carved with no layout or advanced planning.

BASSWOOD, 6 DIA. X 25 $\frac{1}{4}$ H



JIM MURTHA

Lancaster, Ohio

This dresser was a commission for a client who wanted to match an existing Shaker bed and side tables. The design is based on the plans and techniques given in Tom McLaughlin's article “Build a Shaker Chest of Drawers” (*FWW* #290). Jim tweaked the design a bit, and at the client's request he added undermount soft-close drawer slides.

CHERRY AND SOFT MAPLE, 21 $\frac{3}{8}$ D X 40W X 40H

Photo: Chris Russell



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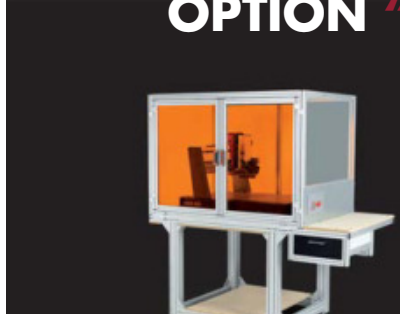


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BILL BRICKEY

Moncure, N.C.

Bill designed and built this piece as part of a casework class at the Center for Furniture Craftsmanship in Maine. The instructors, Tim Rousseau and Thomas Hucker, guided him along the way. The piece then went on display as part of a juried show in the school's Messler Gallery.

CHERRY, MACASSAR EBONY, 12D X 36W X 32H

Photo: Brian Mullins Photography



ROB KUTNER

San Francisco, Calif.

This reproduction is modeled after Ray Journigan's chair, generously documented in his 2021 *American Period Furniture* article. Rob also relied on numerous Facebook and Instagram posts and email exchanges with Ray. "This was a great challenge both in joinery and carving, and I learned a lot about sharp tools, patience, and design," Rob says. "This was definitely big-league furniture making."

MAHOGANY, 17D X 19W X 40H



RICK TOMPKINS

Naramata, B.C., Canada

This hand-carved blanket chest was inspired by the work of Michael Cullen. Rick lined the interior with aromatic cedar and finished the carved exterior with milk paint and Briwax.

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How to weave a wooden tile seat

BY SCOTT McGLASSON



The solid wood tiles on my chairs are strung on high-grade polyester rope pulled taut between the sides of the chair. I arrange the tiles in a running-bond pattern (borrowed from brickwork), which is visually attractive but also links the tiles together in an interlocking web.

The tiles are strung side to side with polyester rope. Halfway back, cut the rope and secure it to a cleat inside the chair side. Then begin stringing tiles again from the back, and meet the first tiles in the middle.



Tilemaker

The wood I use for the tiles is predominantly cutoffs, so the process of tilemaking begins at the bandsaw, where I cut scraps to rough width before milling them to thickness. Then it's on to the table saw, where I rip and crosscut the tiles to final size. Afterward, I rout all the edges with a 1/8-in.-dia. roundover bit.

To produce a running-bond pattern, you need to start every other lengthwise row of tiles with a half tile. To make this work, I produce a batch of one-and-a-half-length tiles, joining two full tiles end to end with Domino tenons and then cutting them to length.

Next, I drill rope holes through the tiles. Hole patterns are intuitive for running bond: two holes in each regular tile, drilled a quarter of the tile's length from each end. (For example, a 4-in.-long tile would have its holes 1 in. from each end.) I center the holes in the tile's 5/8-in. thickness, so I don't have to worry about which face of a tile is up when I'm stringing them.

There's a lot of drilling involved in one of these chairs! I made a fence for my drill press with a vacuum port positioned so it holds the tile tight to the fence during drilling, then sucks up chips afterward. I use a 1/4-in.-dia. bit and drill halfway through from one edge, then finish the hole from the other edge. Clean holes are imperative, but with my system it's pretty easy.



MAKING TILES

Special tiles get mortised. One-and-a-half-length tiles begin every other row in the tile field to create the running-bond pattern. To make them, join two full tiles with Domino slip tenons. Three scraps screwed to the work surface keep the tile stationary while it's being mortised.

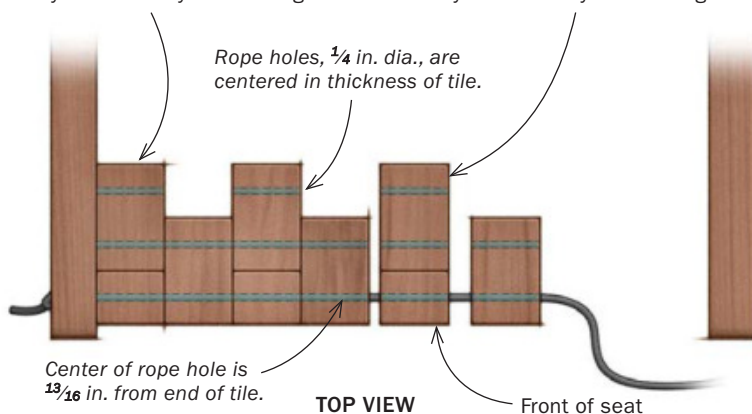


Glue two full tiles end to end. Before mortising and gluing up the paired tiles, round over their edges at the router table. Clean the squeeze-out at the glue joint with a damp rag.

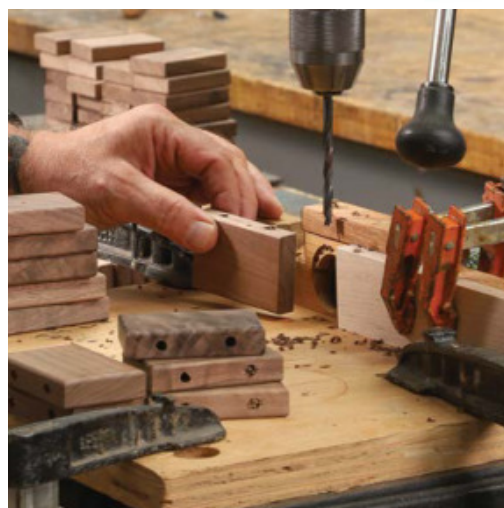
HOW RUNNING BOND BEGINS

Full-length tile, $\frac{5}{8}$ in. thick by 2 in. wide by $3\frac{1}{8}$ in. long

One-and-a-half-length tile, $\frac{5}{8}$ in. thick by 2 in. wide by $4\frac{5}{8}$ in. long



To length. At the table saw, crosscut the glued-up pairs of full tiles to make the one-and-a-half-length tiles.

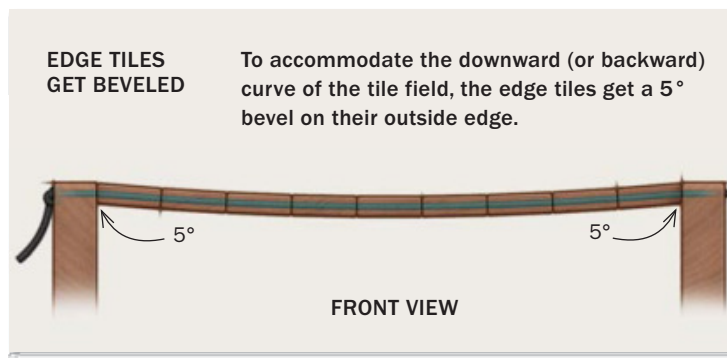


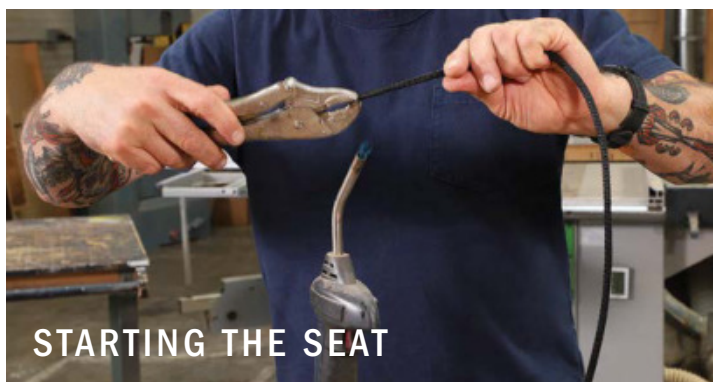
Drilling station. With a brad point bit at the drill press, drill holes through all the tiles. To avoid chipout, drill halfway through, then flip the tile to finish the hole from the opposite edge. A vacuum port in McGlasson's shop-made fence keeps the tile sucked tight during drilling, then evacuates chips when the tile is pulled away.

I run the grain of the tiles parallel to the sides of the chair, so there is some tightening and loosening across the width of the tile fields according to the seasons. I make the seats 18 in. wide—nine rows of 2-in.-wide tiles—which makes for a good, comfortable seat while keeping the total seasonal wood movement moderate. When I build a chair in the summer, I make sure the tiles are tight side to side; in the winter I like the tiles to be loose and wiggly when they are strung together. To adjust the fit, I alter the length of the struts and back rails by up to $\frac{1}{8}$ in. if need be.



Angled edges. Make the initial bevel cut at the bandsaw with the table tilted, then smooth the sawn surface with a block plane.





STARTING THE SEAT

Rigidified rope. McGlasson likes the rope to fit tight in the tile holes. To make threading the rope easier, create a firm, thin section at the leading end of the rope by torching the first few inches, pulling and twisting the rope slightly as you do so.



The running bond begins. After tying a square knot at one end and passing the rope through the first hole at the front of the seat, thread on nine tiles to make the first row, alternating full-length and one-and-a-half-length tiles.



Weaving a pleasing pattern. Before you begin the weaving, lay out all the tiles in an appealing arrangement, bevel the outside edges of the side tiles, and sand and oil the tiles one by one, carefully replacing them in the original pattern.

Preparing to weave

I always lay out the full tile fields on the worktable next to the chair frame I'll be weaving. Because they're made from scrap, the tiles typically have a good amount of contrast in color and figure, and I try to arrange them in a pleasing, random composition. Once I know which tiles will be where, I cut a 5° bevel on the outside edge of each tile that will be adjacent to a chair side. The bevel allows the seat's tile field to flex downward and the back's field to flex back. The exposed end grain of the end tiles also gets finely sanded at this point. Next, I oil all the tiles one by one, picking them up and replacing them in the composition.

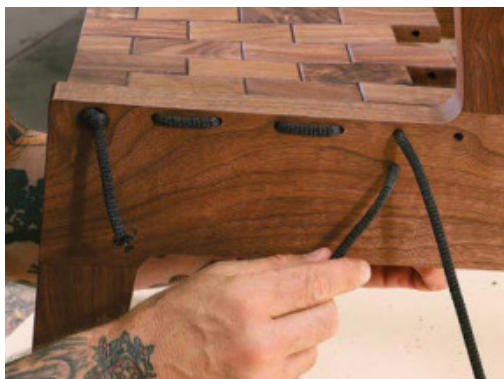
Weaving wood

Polyester rope comes in various colors, but I use black. The standard ¼-in.-dia. rope I use (which I order in 500-ft. rolls) is the best that I've found—tough and no stretch. I've tried high-tech sailing rope, such as Dyneema, but the poly beats it for chairs.

After determining the lengths of rope needed, I cut pieces for the seat and back. I carefully melt a couple inches at the leading end of the rope with a propane torch, pulling and stretching as I apply the heat. This stiffens and thins the rope, making it easier to thread through the tiles and the frame. I'm

Mid-weave tie-off.

To increase the durability of the tile field over time, weave the seat in two stages. After weaving the front half, thread the rope through the extra hole in the side toward the hidden cleat.



Cleat tightening. With the rope pulled through to the inside, cinch it tight in the rope cleat. Then cut off the excess rope and torch the end.



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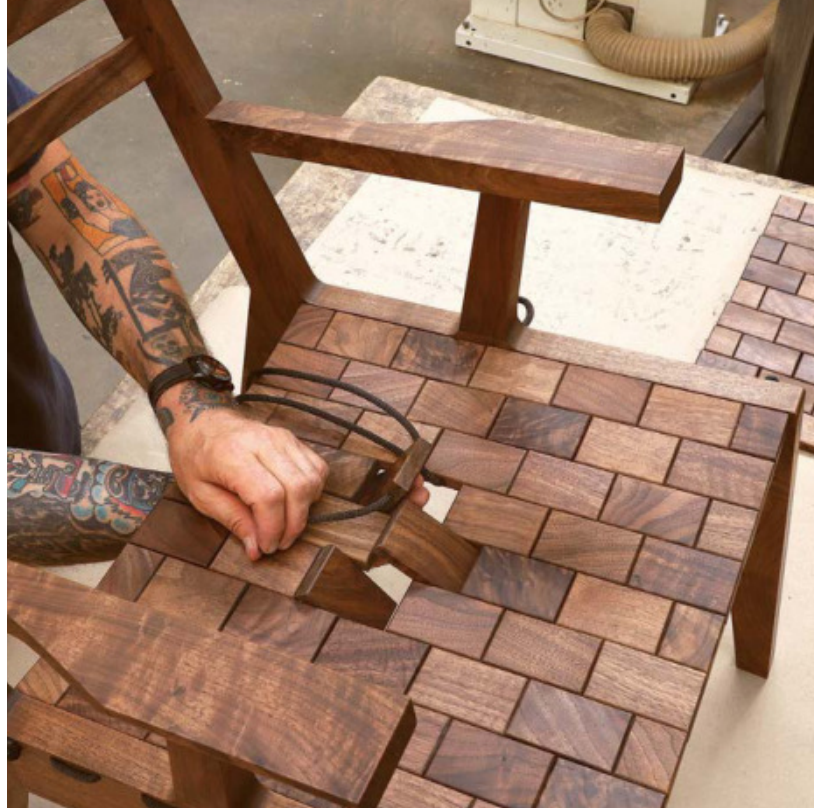


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Tilework, part 2. With the front half of the seat's tilework woven, start weaving again with a fresh piece of rope from the back. For the final pass of the rope to connect the front and back halves of the seat's tile field, tip the tiles up and down as needed, pull the rope tight and thread it back through the extra hole in the side, and secure the end to the second cleat.



careful not to melt it entirely or set it on fire. At the trailing end of the rope I tie a square knot, which will stop the rope from pulling all the way through the frame.

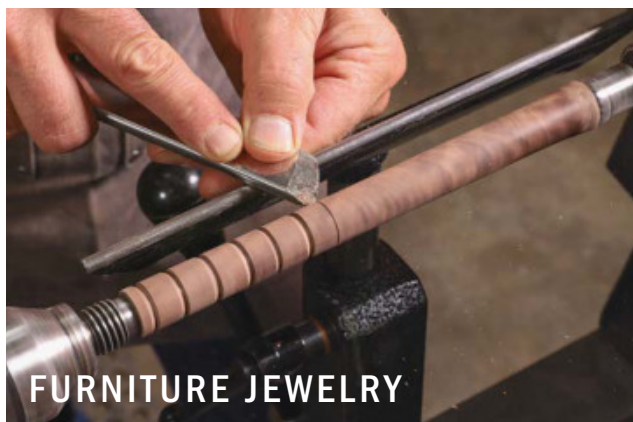
After threading the prepared end through the chair side, I start adding tiles, picking them up in the order that they are laid out. I typically start at the front of the chair seat and work my way to the middle, occasionally pulling everything taut. Once I get half the tiles laced, I thread the rope through the extra hole at the middle of the chair side and secure it to the cleat attached inside.

Then I start weaving from the back of the seat, working my way to the middle. Once all the seat tiles are strung, I tighten the rope, carefully but forcefully pulling it taut with needle-nose pliers at each hole in the chair side—think lacing an ice skate.

I finish by pulling the slack through the cleat and cinching it tight. After trimming the excess, I melt the end so it won't fray.

The back is woven in much the same manner as the seat, but with a single length of rope threaded through the whole field. Once all the back tiles are strung, I use the needle-nose pliers again to remove the slack and then tie off the rope with a square knot, pulling it as tight as I can since there isn't the benefit of a cleat on the chair back. I leave about 4 in. of rope dangling from the top knot and slide on three or four turned beads as a decorative element; then I tie another square knot to hold the beads. To complete the chair, I trim and torch the rope ends.

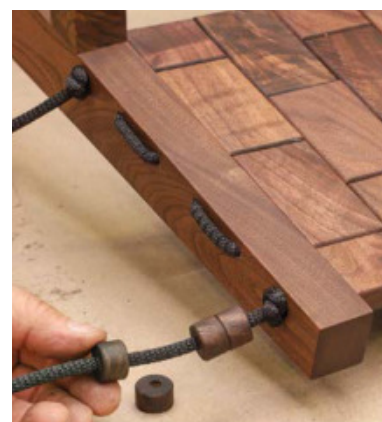
Scott McGlasson is a professional furniture maker in Minnesota.



Taking a decorative turn. To make the walnut beads that will decorate the tied-off end of the rope, start at the lathe. Turn a cylinder, then cut a series of quick V-grooves to delineate the beads. After turning, separate them at the bandsaw.



Custom clamping. To hold a bead securely while drilling through it, you can customize a hand-screw clamp: use a Forstner bit to cut a shallow hole in the jaws to fit the bead.



Thread the beads. Lace on a few beads to decorate the top knot of the chair's back. Then tie off the rope, cut it, and torch it.

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Building with bonsai

BY JOE SCANNELL



In the summer of 1971, my new bride and I were on a tight-budget honeymoon, camping beside Wolf Creek, a woodland stream in Oregon. One morning, I noticed that the tree we had slept under was covered with seedpods, like small peas. It turned out to be a black locust tree, and before we left I collected many of the seeds.

The previous year I had completed a four-year hitch in the Navy and returned to the United States from three years being home-ported in Yokusaka, Japan. While there I had become enamored with Japanese culture and in particular with bonsai, the art of cultivating miniature trees. I had learned in Japan that bonsai are not special dwarf species, just regular trees grown in small pots and trimmed to stay small.

I was eager to try growing bonsai myself, and when

we got home from our honeymoon, I planted those locust seeds in little pots on our apartment windowsill. The seeds were black with very hard shells, and as I learned in my go-to reference—*The Woody Plant Seed Manual*, published by the U.S. Forest Service—locust seeds require scarification in order to germinate. That explains locust trees' penchant for living by streams; tumbling over rocks in the water apparently produces small injuries to the seeds' hard shell casing, allowing water to penetrate. The manual suggested scraping the seeds over sandpaper to make them permeable to water. I did this, and the seeds germinated quickly.

A few years later, my wife and I bought some land and began building our home on it. A pole building in a forest, it's something of a

tree house, and building it was a time-consuming, long-term project. As a result, I no longer had the time to care for all my little potted trees, which required daily watering and other tending, so I temporarily planted them in the ground.

Years passed in a blur, and at some point I realized that my little locusts were too big to be put back into bonsai pots. So I left them in the ground next to our house, and they just kept growing—and growing.

Forty years later, my “bonsai” were approaching 50 feet in height. When one of them began leaning over dangerously, I cut it down and sawed it into lumber. I used my chainsaw to cut the trunk into manageable lengths and then to rip the logs in half. When I had pieces small enough to handle safely, I ran them through my 16-in. bandsaw, producing 9/4 planks. After a few years of air-drying, the honeymoon locust was ready to start a new life.

But what to make with it? Over the years, whenever I mentioned that I had some black locust timber, my listener would say something like, “Yeah, good for fence posts.” True, but I couldn't bring myself to use it that way. One guy wanted to

make new ribs for a vintage sailboat from my collection. That interested me, but I didn't have enough to suit his project.

So far, I have made some carving mallets and other small tools, as well as a Moxon vise. Black locust is a dense hardwood, heavy and durable, a kind of old-brass yellow in color. Working it can be described as somewhat difficult. It can be hand-planed but demands a very sharp blade. Though probably not the best choice for a kitchen table, it does make great tools.

Not many woodworkers have the opportunity to follow their wood from flowerpot to sawn planks. I consider it a great privilege to have had this chance.

Joe Scannell works wood in Novato, Calif.



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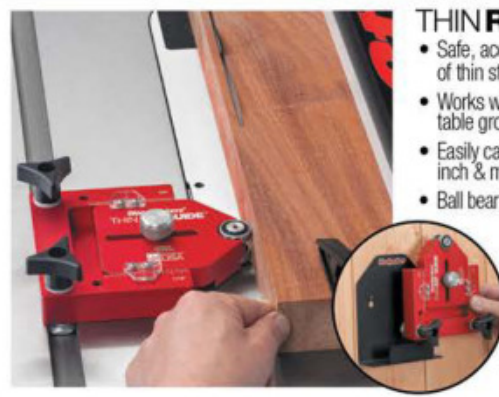
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From boyhood Marc Ricourt was fascinated by both woodwork and art. But after training and working as a carpenter for some years and then attending art school, he found himself unsure what he would do. A book by Richard Raffan taught him how to turn, and gradually his passions for art and handwork began to merge. Ricourt harvests beech and oak trees for his vessels from the hilly, forested land around the village where he lives in Burgundy, France. His pieces begin with chainsaw work, then move inside his shop, a former clog-maker's stone workshop several centuries old, which Ricourt restored. There, at the lathe, he defines the overall shape of a piece and hollows it. Next comes power carving, and then, after an eight- or nine-month wait, sanding begins—his least favorite step, though extensive

and essential—and finishing commences: bleaching, scorching, or treating with ferrous oxide, then applying multiple coats of oil or wax, each preceded by more sanding. Despite his affection for art, Ricourt is not inclined toward intellectual discourse about his work. His native language is aesthetics: he speaks shape, texture, color. He is proud of his work, but his pride stems not so much from particular pieces he has made as from having found a way of life and work that he loves. “My grandfather used to say, ‘You’ll be rich when you are satisfied with what you have.’ I think that’s a beautiful philosophy.”

—Jonathan Binzen



Vessels of Life

