
Fine Woodworking
Teach • Inspire • Connect
CELEBRATING 50 YEARS
Masterful mentors, p. 20
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•Mirror with drawers
•Copper-top lantern
•Pro finishing tips
•Curved beading

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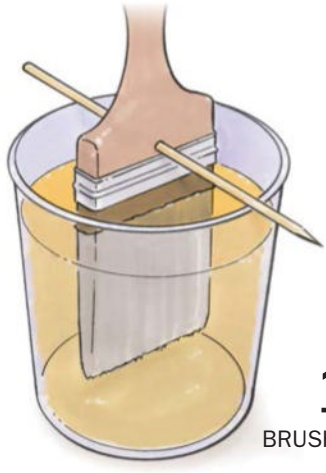
AUGUST/SEPTEMBER 2025 ■ ISSUE 318

features

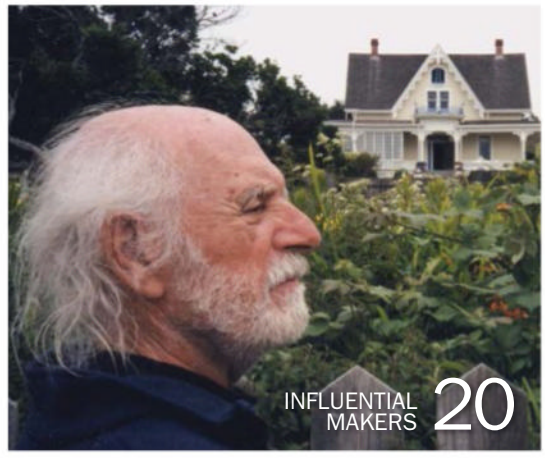
Cover photo: Anissa Kapsales

in every issue

72 CHINESE-INSPIRED CABINET



14 BRUSH CARE



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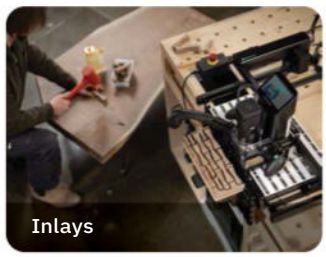

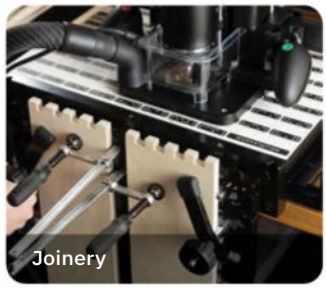

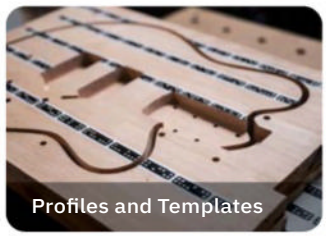

SHAPER

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VIDEO

Finishing with flair

In this segment from our eLearning course, Mike Mascelli demonstrates his tips and tricks for applying an oil-based varnish.

VIDEO

Mirrors for mockups

Bob Van Dyke found a clever way to visualize the layout of Federal-style inlays on tabletops: a pair of mirrors, held at a right angle, that helps him see into the future.

VIDEO

Jomo Tariku

Jonathan Binzen interviews Jomo Tariku, a designer and woodworker whose work is inspired by African design. Take a look into his recent solo exhibition at Wexler Gallery in Philadelphia.

Plans: Creased copper

Ellen Kaspern adds a custom copper roof to accent her twig lantern and provides a template so you can easily cut and fold your own.

VIDEO

These nails make the cut

Gary Franklin, a fifth-generation nail maker, shows off the original machines used by Tremont Nail Company since 1819. The cut nails the company makes are perfect for creating reproduction furniture of all kinds.

VIDEO WORKSHOP

Building a cabinet on stand

This intimate video series follows legendary woodworker Tim Coleman as he designs and builds a cabinet on stand—a timeless form made famous by his teacher, James Krenov. The series captures the making of a career-defining piece that embodies both tradition and innovation.

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- Create gunstock mitered legs
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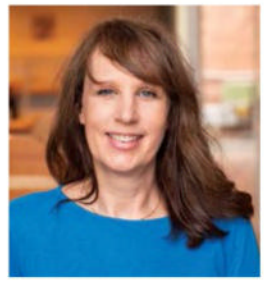
contributors

Michael Mascelli is primarily an upholsterer, but in his role as director of the Professional Refinishers Group he has been fortunate to work with many of the leading professional wood finishers, including Bob Flexner, Mitch Kohanek, Jeff Jewitt, and Don Williams. Mike has combined materials and techniques from these and other experts into his teaching and lecturing on wood finishing for many years at schools, clubs, and guilds across the country. An active member of the Society of American Period Furniture Makers, he is working on a variety of upholstery treatments for reproduction and period pieces using both traditional and modern materials. When he's not in his shop, teaching, or driving around in classic cars, Mike enjoys being grandfather to two energetic boys.



Ellen Kaspern is a custom furniture maker and a 2003 graduate of Boston's North Bennet Street School (NBSS). In addition to designing and building custom furniture, she has been teaching woodworking and furniture making for over 20 years. She gives talks and demonstrations at various organizations throughout New England and is currently a full-time faculty member in NBSS's Cabinet and Furniture Making program.

Chuck Bender, a former senior editor at *Popular Woodworking*, is founder of the Acanthus Workshop, a woodworking school in Jim Thorpe, Pa., where he offers small, personalized classes. He began woodworking at the age of 12 in his parents' basement and continued learning the craft in his vocational-technical high school. He spent a decade working with Irion Company Furnituremakers before starting his own furniture-making business and founding his school.

Rob Spiece, director of woodcraft at Berea College and the Woodworking School at Pine Croft, has been a studio furniture maker and teacher for 20 years. After moving from Pennsylvania to Kentucky, he and his family now enjoy a creekside home in Berea. About the Woodworking School at Pine Croft, Rob says, "Working and teaching out of Pine Croft has been a dream. Beyond teaching in an incredibly beautiful shop, I have the privilege of inviting the best craftspeople in the world to teach here."

We are a reader-written magazine. To learn how to propose an article, go to FineWoodworking.com/submissions.

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letters

Spotlight

50th anniversary issue

Years of learning from *Fine Woodworking*

First up, congratulations for the 50 years—and the anniversary issue! It arrived in my mailbox yesterday. I could see how behind the times I am in the trade when one of the features listed on the cover was about "CBN wheels," which I'd never even heard of.

Coincidentally, this month marks my 50th year in woodworking, after I joined the Apprenticeshop in Bath to begin my life in it—in that case, with boats. Before that, I'd been on a circuitous path for several years, which included carpentry and some finish work. But this move marked the beginning of taking rough wood and turning it into something—cutting, shaping, joining, etc.—instead of just cutting the ends off of boards and nailing stuff together.

Other than those early boat-building days, I'm very self-taught. I've learned more from *Fine Woodworking* than from any other single source, and I tell that to anyone else who's interested in learning this stuff. So thank you—and here's to another 50 years. I won't have those myself, but I have all the confidence that the magazine will!

—CHARLIE DURFEE, Woolwich, Maine

A longtime illustrator says thanks

Over the last 20 years I've been so pleased to be able to make my living as an illustrator, always aware of what a rarefied (and tenuous) life it is, and I've had the incredible good fortune to have landed repeat business with dozens of publications over that time.

To this day, however, there are none I am more proud of than *Fine Woodworking*. It was the first woodworking magazine I reached out to; I still remember cold-calling Mike Pekovich in 2006 (on an actual telephone line) and then FedEx-ing illustration samples. So much has changed since then, but what has not is that *FWW* is still head and shoulders above the competition for quality content in the field.

On this wonderful milestone of 50 years, I want to say thank you for allowing me to be part of this. I value our collaboration so highly and am so thankful to you for making me a better illustrator with your guidance and professionalism. Here's hoping we all get to do this until the next anniversary issue!

(And you'd better believe I was first in line to download John Tetreault's wood-block print. What a wonderful memento to grace my studio.)

—CHRISTOPHER MILLS, Wallingford, Pa.

From one end of the earth to the other

Congratulations, *Fine Woodworking,* on 50 outstanding years. Although 1975 was already an eventful year for me—I moved from New Zealand to Wausau, Wis., got married, and began a new career—I remember the day the first issue of *FWW* arrived.

During the magazine's early years, while I was traveling back and forth between New Zealand and the United States, I left sufficient hand tools in both countries to continue my furniture making; however, your magazines always traveled with me. Would so many of us have sustained our passion for woodworking throughout these years without your magazine? Possibly not. Every issue has and continues to be an enduring source of inspiration and knowledge.

Who knows how many beginner subscribers are still along for the journey today? I for one look forward to the next 50 years.

—GUY HARRIS, Canterbury, New Zealand

Bowl inspiration

As a longtime subscriber and wood turner, I always look forward to any articles on wood turning. Matt Monaco's article in *FWW* #313 was terrific and arrived just in time. Last fall a neighbor had to remove more than 100 ash trees on his property that had been damaged by the emerald ash borer. I took a few trees and with a chainsaw

and bandsaw roughed out about 150 bowl blanks. I rough-turned these right away, coated them with a sealer, and set them aside to dry. Since then, I've finish-turned about 100 and was starting to run out of design ideas. I've now turned a couple that were inspired by Matt's example and even added a lid to one. My example doesn't have as much tumble home as Matt's, as I was limited by the rough blank. The bowls are utilitarian and are finished with a food-grade mineral oil and beeswax mixture.

—DAVE COUMES, Franklin, Tenn.

Photo: Dave Coumes

Correction

In Tools and Materials in *FWW* #316, we wrongly identified the Rockler outfeed table we reviewed. The correct name for the product is the Rock-Steady Folding Table Saw Outfeed Kit (item #79721), which is priced at $200. Also in the department, the Woodpecker's Mortising Jig is designed to be used with track saw–style clamps, which are sold separately.

workshop tips

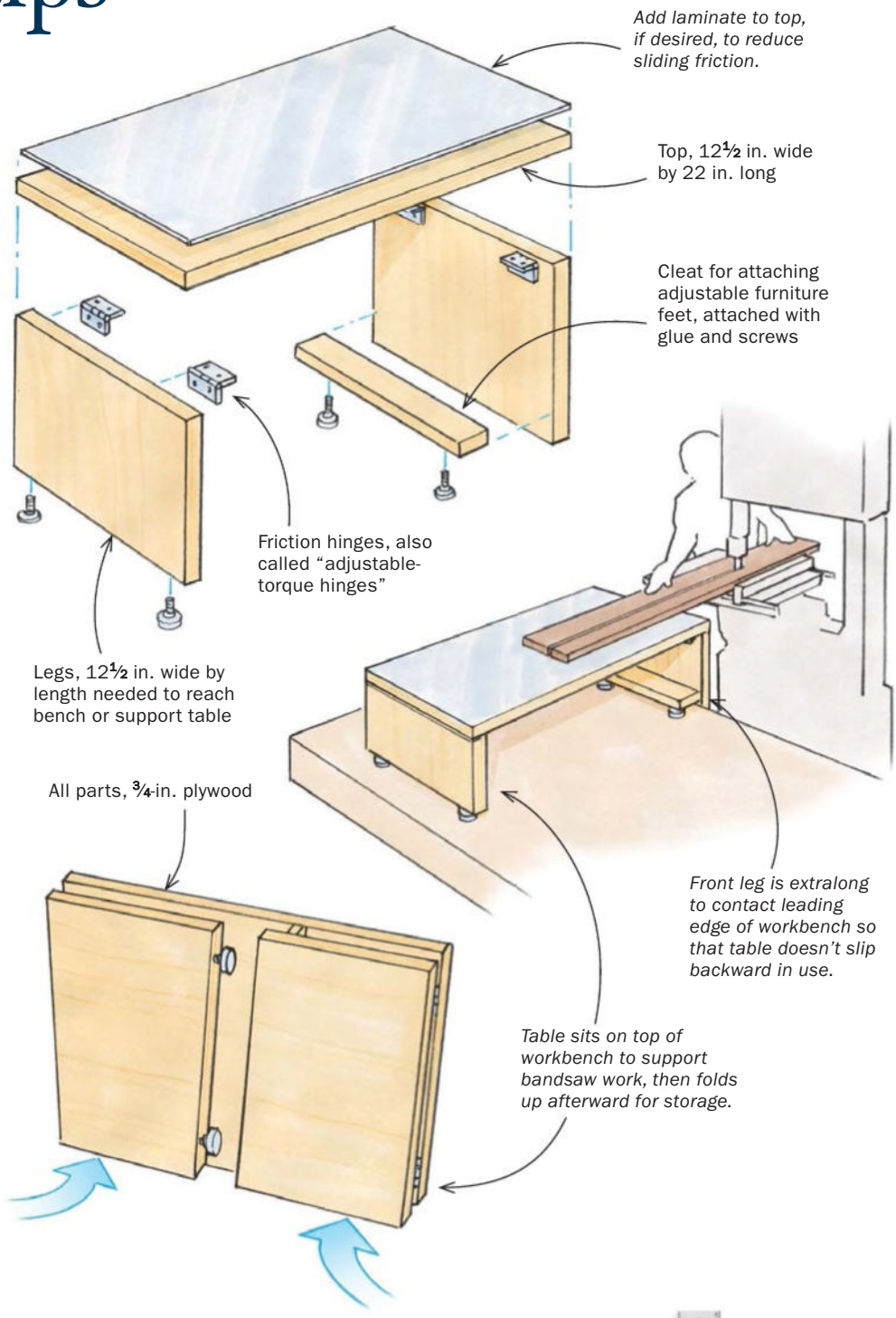
Folding table supports bandsaw outfeed

Like many *FWW* readers, I have a very small shop, and I use my workbench as the outfeed table for my table saw. I made this simple auxiliary table so I could use the workbench to support bandsaw work as well. When I'm done using it, it simply folds up and stores in a corner.

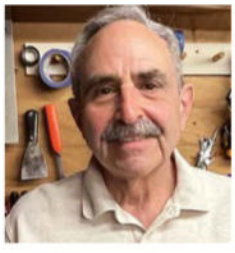
Three key features make the table work. First, the front leg extends downward to grab the leading edge of my bench, preventing the table from sliding backward when a workpiece contacts it. Second, it has inexpensive friction hinges that join the legs to the top. Called "adjustable torque hinges" on Amazon, they allow you to open and close the table easily, while preventing it from accidently closing in use. Last are the adjustable feet, which let me set the height of the table just a little bit below the bandsaw table, and to level the table as well. It's not a bad idea to glue some laminate on top to reduce sliding friction, but that's not mandatory.

You'll need to adjust the height of the legs to suit the difference between the height of your benchtop and bandsaw table (while factoring in the adjustable feet). Feel free to change the size of the top as well.

—ANTHONY MACADINO, Reading, Mass.



Best Tip



Anthony Macadino got interested in woodworking in a high-school shop class, where he made an expanding coffee table. As an adult, he took night classes to build his skills and started making furniture for his home. In 2024 he retired from his career as an electrical engineer, leaving him with a lot more time to make furniture for his wife, daughters, and new grandson.

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 JessEm Stainless Steel Precision Square three-piece set.

Drawings: Dan Thornton

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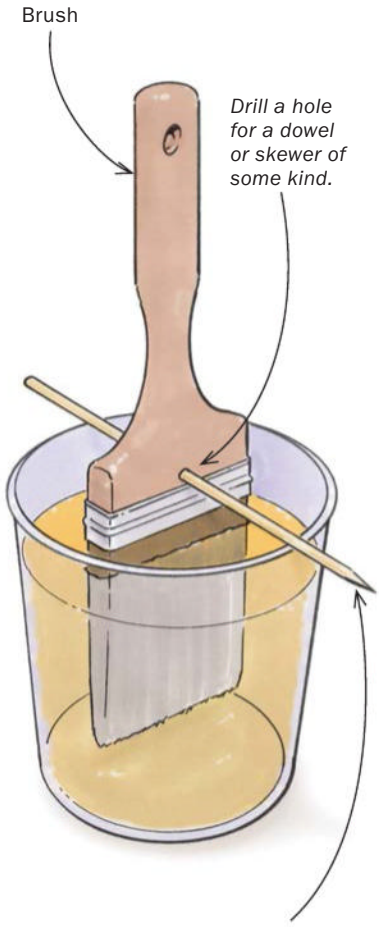
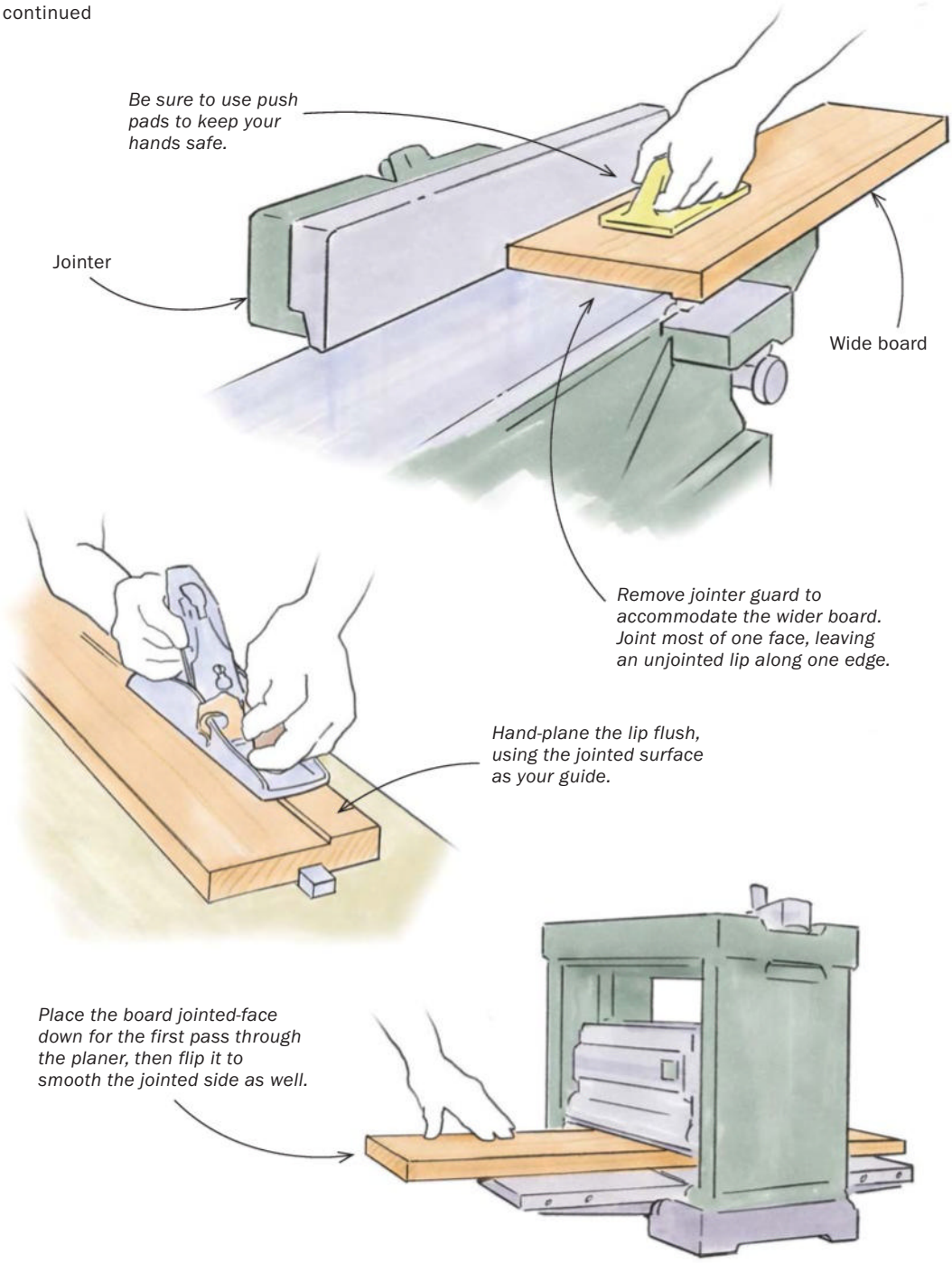
Suspend brushes in solvent to keep them wet between coats

To keep my brushes from drying out between coats—and make them easier to clean afterward—I suspend them in water or solvent (depending on which paint or finish I'm using). To do that, I drill a hole above the ferrule just large enough to fit a thin dowel or barbecue skewer. I slide the dowel or skewer through the hole and rest it on the rim of the jar or cup.

—MEGAN FITZPATRICK, Cincinnati, Ohio





Easiest way to flatten boards too wide for your jointer

A lot of good methods have been published for flattening boards that are too wide for the capacity of one's jointer. Most involve some sort of planer sled. I've taken a simpler approach lately, which is just as effective. It works on boards up to 2 in. wider than my jointer. You'll have to remove the guard on your jointer to make way for the wider board, so be sure to use push pads as always to keep your hands safe. Start by jointing as much of the width as you can, leaving a lip along one edge. Then remove the lip with hand planes. I start with a smoothing plane and sometimes finish with a jack plane. With the jointed surface as your guide, it's very easy to flatten the lip accurately, bringing it flush with the rest of the face. If it's not perfect, it soon will be when you run both sides of the board through the planer. Start with the jointed face down on the planer bed.

—JIM MURTHA, Lancaster, Ohio

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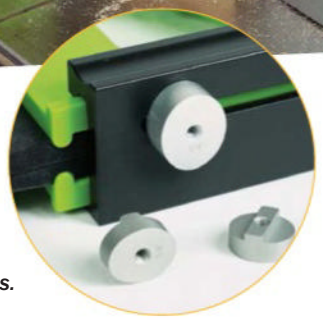

ACCESSORIES

Bandsaw helpers work on a variety of machines

MANUFACTURED BY BOW PRODUCTS and sold as a kit by Infinity Tools, these cleverly designed accessories can also be purchased individually. Although they will get most of their use on bandsaws, some of the components will also work well on table saws and router tables.

Bow's XT Xtender Fence is slotted at the back to accept a pair of T-track clamps that attach it to an existing fence. At 5 in. tall, it will support big resaw cuts, and with a beefy 1-in.-thick cross section, it's dead straight.

Hanging off the ends of this 46-in.-long auxiliary fence are two tough plastic brackets that support long boards at the beginning and end of a cut. These can be positioned anywhere along the fence and always end up level with the machine table. They are sloped at each end to allow boards to slide on and off them without a hitch.

The fence and supports (priced at $190 on their own) worked perfectly in my tests, much better than the auxiliary fence and support stands I usually set up for big resaw cuts.

The other accessory in this package is Bow's GuidePRO Resaw Featherboard ($80 on its own). The tall featherboard takes just a few seconds to set up, and it delivered the best resaw and veneer

cuts I've made on my bandsaw. You can apply any amount of pressure against the work, and the rubber fin maintains that pressure throughout the cuts.

The kit also includes an auxiliary "Anchor Bar" for use on table saws and router tables that lets the featherboard reach farther away from a miter slot. Go to infinitytools.com or bow-products.com to learn more about these innovative accessories.

—Asa Christiana, editor at large

Bow Products 5-pc. Bandsaw Resaw Master Pack
$325 (parts also available individually)
infinitytools.com

Photos: Asa Christiana

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POWER TOOLS

Compact cordless router is strong and versatile

Bosch 18V Brushless Colt Palm Router Kit with CORE18V-4Ah Advanced Power Battery and Plunge Base
$400
boschtools.com

WITHOUT A CORD TRAILING BEHIND, compact cordless routers offer excellent convenience and control. I found Bosch's new cordless Colt Palm Router to be especially solid and versatile. According to the company, the brushless motor and advanced battery design combine to give this new model the best power-to-size ratio in its class. My tests backed this up, with the router managing 104 ft. of a ¼-in.-sq. rabbet on a single charge and no sign of slowing until the very end.

I was especially taken with the versatility offered by the two bases. The fixed base is useful for standard trim-router tasks like chamfering, rabbeting, and rounding, and it adjusts well. You slide the base up and down the motor for large depth adjustments, and rotate the micro-adjustment wheel for fine ones.

The plunge base is great for inlay work and small mortising jobs, or anything else where you need to plunge the bit in and out of the work as you go. I love the extra control offered by the two handles on this base, so I would likely use it for some fixed-base tasks as well.

With a micro-adjuster on the stop rod and a pivoting turret with three separate stops, the plunge stop is as good as those on full-size plunge routers.

I have a lot of routers in my shop, but I'll be making room for this one. It's a very solid, versatile trim router for hobbyists and pros alike.

—Jeff Miller, a professional woodworker and teacher in Chicago.

***Power to spare.** The new Bosch cordless trim router cut 104 ft. of a ¼-in.-sq. rabbet on a single charge.*

***Two bases for full versatility.** The plunge base has two handles for added control, and a standard three-tiered depth-stop system.*

ACCESSORIES

Smart depth stops for drilling

YOU WON'T NEED STOP COLLARS LIKE THESE on most drill presses, which come with built-in stop systems, but they are very handy for handheld drilling, where the alternative is a tape flag that mangles easily, allowing you to drill too deep.

As opposed to standard stop collars, which fit only one bit size, these innovative collars are engineered to fit a range of bits (⅛ to ¼ in. and ¼ to ½ in.). They clamp squarely and firmly onto every bit in their range, thanks to smoothly curved interiors that register just as well on the fluted part of the bit as they do on the smooth shank. And their lower edges didn't mar the wood in my tests.

For just $35 you get a pair of stops that will fit all bits between ⅛ in. and ½ in. dia. That seems like a bargain to me.

—A.C.

***Easy to adjust.** Each stop collar adjusts easily to fit a range of bits.*

***Smooth and solid.** The device holds squarely and firmly on any section of a bit, and the tip is nonmarring.*

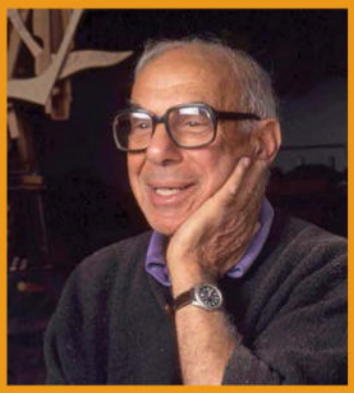
Infinity Tools Adjustable Drill Depth Stops
$35 (for the pair)
infinitytools.com

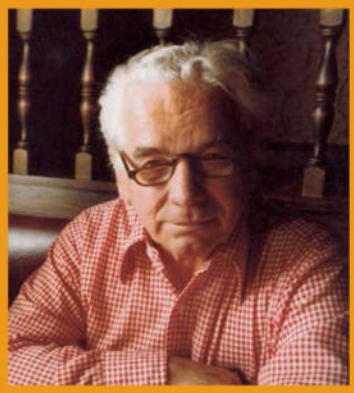
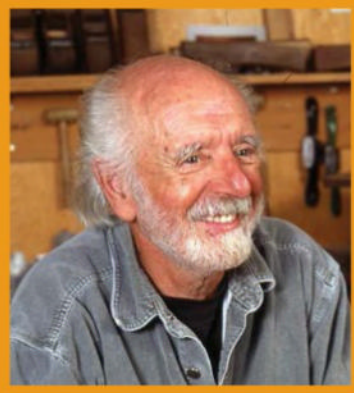
Photos, except where noted: Asa Christiana.
Router photos, bottom: Jeff Miller.

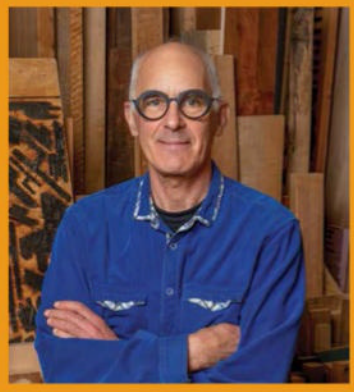
Remarkable Mentors

Masters who have inspired generations

BY JONATHAN BINZEN





The last five decades have been momentous ones for the craft of working wood. When *Fine Woodworking* was founded, in 1975, an incipient revival of the craft had been underway for some years, but its adherents were atomized. Largely isolated from each other, or at best clustered in small groups, they had limited opportunities to share their excitement, frustrations, and innovations and to learn from others.

The first half of the 20th century had seen a rapid erosion of skill and knowledge in the field. In furniture making, the shift from manual to machine production and from small shops to large factories, which began in the mid-19th century, had only accelerated, and the centuries-old store of craftsmanship and knowledge had all but evaporated, poured out on the ground like so many vessels of well-aged wine. The back-to-the-land and avoid-working-for-the-man ethos of the 1960s created a great thirst for this all-but-lost knowledge among young people wanting to pursue woodworking as a way of life. But an equal desire—and frustration—arose from others who pursued woodworking as a hobby.

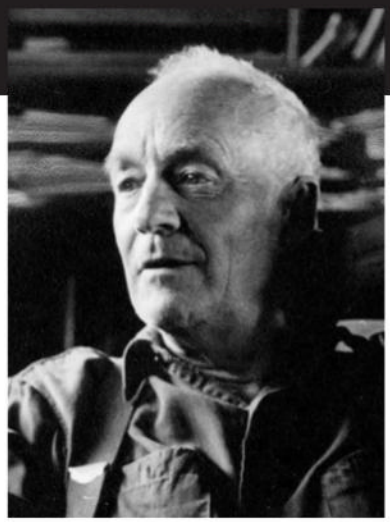
One of the latter group was Paul Roman, who, before launching *Fine Woodworking*, had worked at GE as a speechwriter and done woodworking on the side, becoming frustrated with the lack of woodworking information available. The arrival of the magazine hit like an armful of tinder on glowing coals, and its pages quickly filled with profiles of prominent makers of the past and present, articles on ancient techniques and recent innovations, and information about tools old and new. As it charted the field the magazine became a meeting place, a marketplace, and a clearinghouse for information on the craft.

In this 50th anniversary year, we on the staff want to celebrate the makers whose presence has been most prominent in our pages—either directly through their own writing or their own making, or as registered through their impact as teachers. This article examines a cluster of people whose work—as makers, teachers, writers, or all three—places them among the most powerful mentors and most pivotal forces in restoring the craft and reshaping the field.

In coming issues we will look at another set of makers—those whose designs we deem to have been among the most daring, innovative, and influential of the past 50 years. And in a third article we will discuss makers whose contributions as authors in *Fine Woodworking* have made the deepest mark.

All photos, except where noted: Jonathan Binzen. Photos facing page: Susan Sherman (top left) and Charles Uniatowski (top center), both courtesy of the Wharton Esherick Museum.

Wharton Esherick



A craftsman's aerie. *Wharton Esherick built his home and studio in Pennsylvania over a five-decade span, infusing its every detail with his creative esprit.*

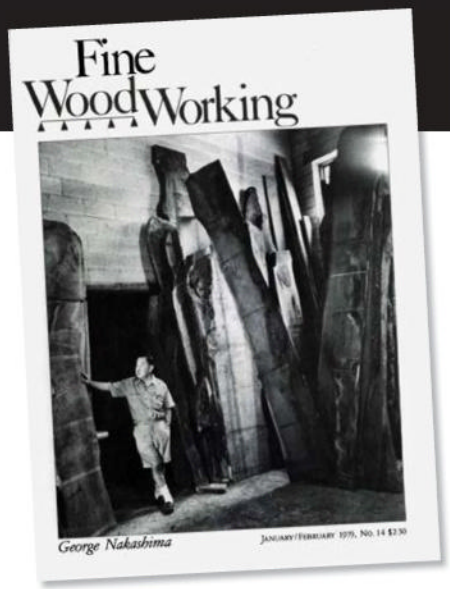
Wharton Esherick, who trained as a fine art painter in Philadelphia, began building a stone studio for himself on a wooded hilltop in suburban Paoli, Pa., in 1926. He had been frustrated as a painter, feeling he could paint like others but not like himself. When he tried carving a few frames for his artwork, however, he saw right away that they were more distinctively his own.

Esherick was steeped in the arts—his friends were prominent writers, poets, artists, architects—and he produced wonderful woodcuts and carved wooden sculptures. But his genius was perhaps best expressed in functional objects. His furniture is an amalgam of attractions. Its forms are fresh and fascinating, sometimes taking cues from the wood, as in the seats of his signature stools, and sometimes from repurposed parts, as in the chairs he made after buying a barrel of wagon wheels. Its surfaces, detailing, and materials make touching it irresistible. And in every piece its thoughtfulness about the user is unmistakable.

The best place to see his furniture is that stone studio, which became his residence and grew over the decades with the addition of living areas in a board-and-batten section and a stuccoed silo. The building has been a museum accepting small group tours since shortly after Esherick's death in 1970, and many visitors have found entering it to be a life-altering experience.

The house itself is Esherick's masterwork. In addition to containing many stunning pieces of his furniture and sculpture, the building bears the mark of its maker in every detail. From the floor of the dining area, made of scraps of wood of various species cut to organic shapes and fitted delightfully together; to the curve-fronted cabinets, lipped shelving, carved serving spoons in the kitchen; to the wooden coat pegs carved in the likeness of those who helped him build the studio, it is a holistic work of art and craft. Esherick's great accomplishment was to fuse art and craft in his furniture, to fold an artist's elan of originality into the ambit of the maker of utilitarian things. In the process, he provided a template for the life and work of a designer-maker that has had a profound impact on the field, one person at a time.

Eye, hand, heart. *Esherick's furniture is visually powerful, and its materials and contours always attract the touch, but its special power may rest in its open invitation to use.*



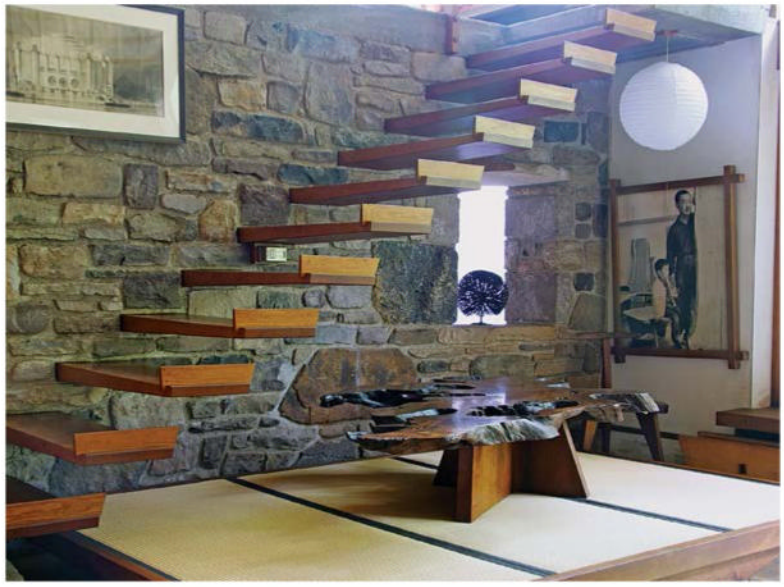
George Nakashima

George Nakashima did no teaching to speak of, yet his influence has been as pervasive as that of any American furniture maker of the 20th century. Blending aesthetic inspirations from Japanese, Danish modern, and American Shaker and Windsor traditions, he produced furniture with a commanding presence that was at once elegant, invitingly tactile, and a bit mysterious. His use of live-edge boards in fine furniture prompted a wave of such work by others that shows no sign of receding, and his pairing of raw-edged and highly figured wood with simplified geometric shapes in table and cabinet bases feels so profoundly, satisfyingly right it's hard to imagine another option.

Nakashima's aesthetic and philosophical vision is most fully expressed in his home, a collection of buildings he designed and built in New Hope, Pa., over the course of four decades. Trained at MIT in architecture, he worked in that field in the 1930s in Japan and India. During World War II, when he was interned with his family for his Japanese heritage, he met a Japanese woodworker in the internment camp and learned some rudiments of the craft. Later, when he settled in Pennsylvania, he made some furniture himself and produced designs for companies such as Knoll. Soon he began hiring craftsmen to build furniture for private commissions, and his business grew.

Nakashima's furniture business is still producing his designs and those of his daughter, Mira, who has run the company since his death in 1990.

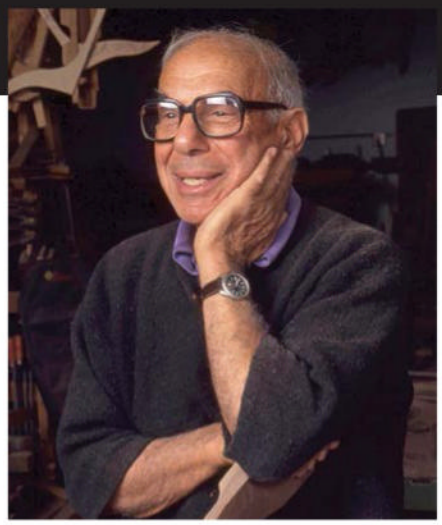
His book *The Soul of a Tree* (1984) spelled out his conviction that through his work he gave trees a new incarnation. It was the farthest thing from a how-to book, but it became essential reading for many aspiring furniture makers.



Into the trees. *Throughout his career, George Nakashima cultivated a close tie with his material. He was always on hand at the sawmill when special logs were cut, and he took customers to his lumber sheds to select specific slabs for work they were ordering. His daughter, Mira, continues the practice today.*

Cross-cultural craft. *An architect by training, Nakashima blended a modernist sensibility with inspirations from Japan, Windsors, and his favored material. The collection of buildings he designed as his residence and workspace is filled with his furniture. All these photos were taken there.*

Sam Maloof



When Sam Maloof died in 2009, at 93, he left behind an enormous stash of lumber. Even in his last years, with more wood on hand than he could ever possibly use, he kept on buying. He loved wood and loved working it. He also left behind the captivating house he had built, room by room, over the decades an hour east of Los Angeles (without ever pulling a permit, he once confided with a smile).

In 2000, when a highway came through, the house, by then on the National Register of Historic Places, was moved to a property several miles away, where it is now open as a museum and where you'll also find the workshop of Sam Maloof Woodworker, now run by Mike Johnson, who spent 30 years working directly with Sam.

Maloof learned the basics of furniture making working for the industrial designer Harold Graham; otherwise he was self-taught, and bootstrapped himself into a rarified place as the designer and maker of one of the most iconic chairs of the 20th century. The Maloof rocker, which has made its way into museums, the White House, and private homes worldwide, is catnip for aspiring chairmakers, who are drawn to its style and technical challenges.

Maloof's skill as a craftsman was best appreciated at the bandsaw, which he played like a violin as he free-handed S-curved slats, arms, and rockers, breaking every rule of standard bandsawing. "Don't do it like I do," he said. "I only do it this way because I didn't know any better."

Maloof's furniture has inspired woodworkers of all stripes. But as anyone who met him even briefly discovered, his personality might have been his most compelling trait. It combined charisma and charm with thoughtfulness, a listener's ear, a gift for friendship, and an inexhaustible appetite for engaging with others.

Onward and upward. *Like Esherick and Nakashima, Maloof spent years building his own house and filling it with furniture. And like them, he worked indefatigably, right to the end of his life. The photos on this page were all taken at his home, which included his workshop.*

The austere Maloof. *Though famous for the flowing curves of his rockers, Maloof had a more restrained side that emerged when he designed case pieces, which tended toward rectilinear simplicity.*

Tage Frid

Frid's kitchen. *In addition to plenty of furniture, Frid designed and built many kitchens and other interiors. He designed this kitchen (which was built for him by his former student Hank Gilpin) for* Fine Woodworking*'s publishers, Paul and Jan Roman. Frid provided it with barstools he designed after sitting on a split-rail fence and finding it surprisingly comfortable.*

Born in Denmark in 1915 and trained there in cabinetmaking through a traditional apprenticeship that began when he was 13, Tage Frid was recruited to teach woodworking in the United States in 1948 in a fledgling program, the School for American Craftsmen, which was then based at Alfred University in upstate New York. Arriving at the program, Frid was astonished by the lack of understanding among students and even teachers of the basics—not to mention the finer points—of working wood. He soon discovered that the skill and knowledge deficit was widespread in the U.S. Over the following 50 years Frid would do more than anyone else to remedy that situation.

He followed the School for American Craftsmen to the Rochester Institute of Technology (RIT) when it moved there in 1950, and he proceeded to infuse the fundamentals of furniture making into one student after another. In 1962 Frid left RIT for Rhode Island School of Design, where he taught for another 23 years.

Brimming with confidence and charisma, Frid had an infectious passion for his subject, an encyclopedic knowledge of it, and a jocular, needling teaching style. Together these qualities were an elixir for students, and his classes produced hundreds of full-time makers and scores of prominent woodworking teachers.

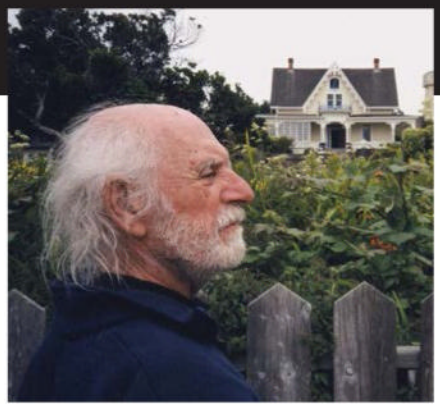
Frid's mantra was "Design around the construction," meaning that the dictates of structure and joinery should be the starting point for a piece; its style could flow from there. His own furniture embodied the maxim, but many of his students, while absorbing the fundamentals, gave aesthetics far less restrained expression while producing furniture of the highest caliber.

The legacy of Frid's teaching in person would have been enormous in any case, but in the summer of 1975, persuaded by his wife, Emma, he agreed to lend his name and talents to an entirely untested idea brought to him by a reluctant executive and hobbyist woodworker, Paul Roman: *Fine Woodworking* magazine.

Frid was the tent pole for the project. He was a contributing editor from the first issue, and his own articles were crucial, as were the contributions of his talented students. His trilogy of books on the craft, published by Taunton Press in the early 1980s and still in print, were instant classics, and they remain a vital resource.

Photos this page: *FWW* staff (top left); Susan Kahn (top right and bottom right)

James Krenov



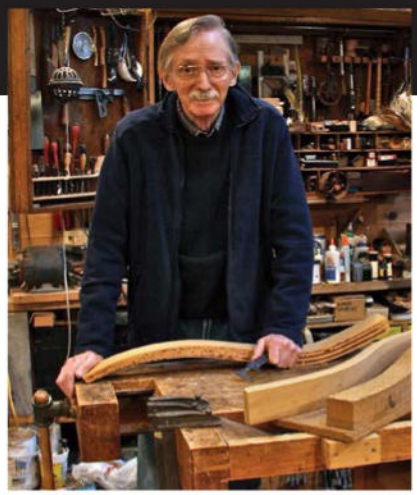
James Krenov's journey took him from Siberia, where he was born, to northern Alaska, where his parents—aristocrats who fled after the Russian Revolution—worked for the Bureau of Indian Affairs during his boyhood, to Seattle, where he spent his teens. He then went to Sweden, where he studied furniture making under Carl Malmsten and began making his characteristic cabinets in his basement. His work attracted notice in Sweden and abroad, and he was invited to teach at Rochester Institute of Technology (RIT) in 1968 and twice later. As he often did, he rubbed some people at RIT the wrong way, but others were captivated by his furniture and his ability to identify with impromptu eloquence the springs and satisfactions of creativity in a manual craft.

When Craig McArt, an American craftsman and friend, urged Krenov to write a book, he did. And in 1976, when *A Cabinetmaker's Notebook*—a contemplation of the contours of a maker's life—was published, Krenov found himself receiving hundreds of letters from people around the world who recognized themselves and their aspirations in his words. The book was an enormous success, and he followed it up with two more in the next few years, which also struck a chord with readers.

Krenov's cabinets and books would have secured him a place in the pantheon of 20th-century furniture makers. But in 1981 some devotees of his books arranged a teaching position for him in Northern California that evolved into a full-time program where students spent one or two years studying the craft with Krenov. The exceptionally high quality of the work produced by students there and the depth of Krenov's passion made the school a destination for makers from around the world, and it has produced scores of prominent furniture makers. The Krenov School, in Fort Bragg, Calif., is now led by one of Krenov's students, Laura Mays.

Fingertips. *Krenov said about opening a cabinet that it should be "a fingertip adventure," and he fitted each of his pieces with carved pulls and other details meant to inspire tender handling and close inspection. In the late 1950s (above), Krenov trained under Swedish furniture designer Carl Malmsten.*

Jere Osgood



Jere Osgood began making furniture as a young boy in his father's basement workshop in Staten Island, N.Y., having learned woodworking from his uncles and grandfather. Soon he was selling pieces to his neighbors. By the time he became a student of Tage Frid's at RIT in 1958 at age 22, Osgood had been selling pieces of his own design at craft galleries in Manhattan and had even invented some new joinery. Unimpressed, Frid told him to forget everything he knew and start over.

Osgood's affect—gentle, very soft-spoken, and extremely reserved—was the opposite of Frid's. But his steel and his self-confidence were just as strong. While absorbing much from Frid's instruction, Osgood remained true to his own vision, and over the years his furniture came to embody more and more audacious experiments with form, structure, and joinery.

In early issues of *Fine Woodworking*, Osgood wrote landmark articles on bent lamination and tapered bent lamination, techniques he perfected and used to make sinuous legs and tapered, curving case sides in a range of tables, chairs, desks, and case pieces that form one of the most impressive bodies of work of the century. Design around the construction, indeed.

Surprisingly, though possessing none of his mentor's bravado or verbal force, Osgood became one of the most influential teachers of the era. At Boston University's Program in Artisanry, he and his co-teacher, another extravagantly talented former Frid student, Alphonse Mattia, led classes that produced an astonishing array of brilliant furniture makers and teachers whose work ran the gamut from the most traditional to the most heterodox.

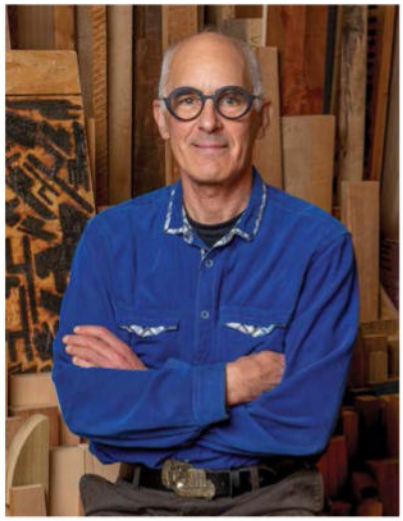
Quite a program. *At Boston University's Program in Artisanry, Osgood (lower right) and Alphonse Mattia (in profile, back right) presided over classes bursting with talent. This photo from 1976 also includes Wendy Maruyama, Michael Hurwitz, James Schriber, Tim Philbrick, and Bruce Beeken, among other standouts.*

Around the bend. *It can be a task to find a straight line in Osgood's furniture. Curves were oxygen for his designs, and he developed methods of bending and tapering curved parts that have become standard practices.*

Photos this page: courtesy of Michael Hurwitz (top right); Dean Powell (center left and bottom). Photos facing page: courtesy of Wendy Maruyama (top left); David Harrison (top right); Jim Escalante (bottom left); Bill Fritsch (bottom right). Photos p. 29: courtesy of the Center for Furniture Craftsmanship (top right); courtesy of Aled Lewis (center right); Daniel Allen (bottom left); Timothy Rousseau (bottom right).

Wendy Maruyama and Tom Loeser

When Wendy Maruyama arrived at Boston University's Program in Artisanry (PIA) in 1976, she was one of its first female students. She stood out in other ways as well. In a class full of white kids from the East Coast, she was a third-generation Japanese-American from California. Her teachers, Jere Osgood and Alphonse Mattia, both former students of Tage Frid, were virtuosos at the workbench; her earlier training at San Diego State University (SDSU), an art-school program, hadn't progressed beyond dowels and stack lamination. And Maruyama has a hearing impediment, which made it difficult to catch everything her teachers said—especially Osgood, who spoke in a soft mumble. Yet she made her way through PIA and went on to get a master's degree from Rochester Institute of Technology, Frid's old program. Maruyama's impulse was to treat furniture as a form of sculpture, but RIT "was extremely conservative," she said. "You didn't see a lot of innovation coming out of there."



Often unhappy but never undaunted, Maruyama persisted—and blossomed. "For me, furniture was always intended to be a vehicle of creative expression and experimentation." She went on to lead the furniture program at SDSU herself from 1989 to 2015, and it redressed many of the issues she had struggled against. In a field that was often exclusively male, it welcomed women. In place of brown furniture in traditional forms, it welcomed color, mixed media, and sculptural expressiveness. And it challenged students to build furniture with a message, a personal narrative. It has had a deep impact on the field, producing a long list of impressive makers and teachers who have helped bend furniture in Maruyama's direction.

Color theory. *Like Maruyama, Tom Loeser attended BU's Program in Artisanry, and he too led a landmark graduate-level furniture-making program (his at the University of Wisconsin, Madison) that encouraged students to take furniture in unexpected directions. His own inventive, playful work is distinguished by vibrant colors and emphatic textures.*

North Bennet Street School

The North Bennet Street School had been in business for over 80 years when Phil Lowe enrolled as a student in 1967. Founded in part on the principles of the sloyd system of manual arts instruction, it was housed in a quirky collection of interconnected buildings in Boston's North End. In addition to woodworking, the school embraced programs in restoration carpentry, book binding, violin making, piano tuning and repair, and locksmithing. The Cabinet and Furniture Making program, founded in the early 1950s by George Fullerton, was somewhat sleepy when Lowe arrived, but the rising interest in craftsmanship brought in other inspired students. Lowe became a teacher at NBSS in 1975 and stayed until 1985. By all accounts, his leadership—along with that of Lance Patterson and others—revitalized the program and locked in a rigorous and comprehensive curriculum.

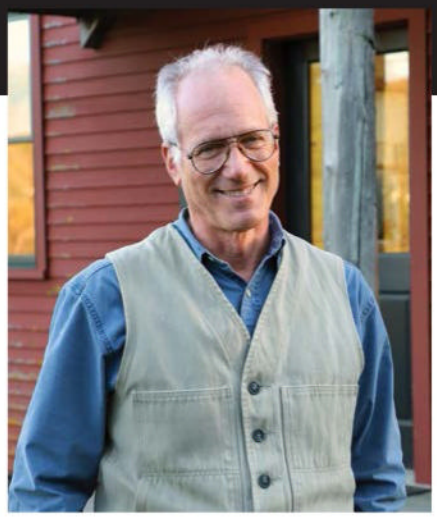
The two-year course of study taught traditional drafting and hand and machine skills, along with the joinery and structure embodied in classic American period furniture. It began turning out students whose skills were superior and whose period-influenced pieces were impeccable. A roster of outstanding teachers in the ensuing decades ensured that the school's standards stayed extremely high. If there was a caveat about NBSS, it was that there was no original design component in the curriculum, and deviating from tradition was dissuaded. But in recent years more and more makers who trained at NBSS have been producing furniture that, while hewing to high levels of craftsmanship, exhibits far more stylistic freedom and originality.

NBSS teachers and graduates have contributed mightily to *Fine Woodworking*. Phil Lowe, who ran his own school after leaving NBSS, led the way with some 30 articles. Lance Patterson anatomized a Boston bombay chest in *FWW* #45. The most recent? Ellen Kaspern's article on building a lantern on pp. 54–63 of this very issue.

Teaching tradition. *Phil Lowe (near left) and Lance Patterson (far left) were two key forces in the invigoration of the furniture program at North Bennet Street School in the 1970s. Lowe taught at NBSS for 10 years, and later 20 years at his own school, the Furniture Institute of Massachusetts. Patterson, spoken about with reverence by former students, still teaches at NBSS.*

Stellar stuff. *The level of work achieved by NBSS students and graduates is a calling card for the school. These people know how to make. The chest above is by John McCormack; the table is by William Thomas; and the cabinet is by Miguel Gomez-Ibanez, who attended and then directed the school.*

Center for Furniture Craftsmanship



If you were an aspiring furniture maker in 1995 and you found yourself in Rockport, Maine, where Mill Street meets Route 90, you would have arrived at a nice place for a walk, with some fields, some forest, and the Oyster River nearby. Visit the spot 30 years later and you find, in a companionable cluster of red buildings, one of the best places on the planet to learn the craft.

The Center for Furniture Craftsmanship (CFC), founded in 1993 by Peter Korn in a small backyard barn in nearby Rockland and launched with a handful of weeklong workshops taught by him, now offers a nine-month comprehensive course designed for the professional or aspiring professional maker; 12-week intensive courses in woodworking and turning; and a wide range of one- and two-week workshops taught by some of the world's most distinguished woodworkers.

Fine teaching is the backbone of CFC. Its teachers are highly accomplished designers and makers themselves, but even the best among them aren't hired back if they don't teach well. The pedagogical bar set at the nine-month comprehensive course is exceptionally high; it has been led for six years by Australian David Upfill-Brown, for 12 by Welshman Aled Lewis, and for four by Tim Rousseau, exceptional teachers all.

CFC also supports a program of fellowships offering free shop space to emerging makers and a residency program for established makers, who are encouraged to do work that explores new directions and techniques.

Students who are in the nine-month program can also look forward to seeing their work exhibited in CFC's Messler Gallery, which mounts half a dozen shows each year.

Coastal craft. *Nestled on a wooded property in Midcoast Maine, the Center for Furniture Craftsmanship has become a magnet for outstanding makers and teachers, and a robust community has developed around it.*

A high bar. *The experience at CFC embraces techniques from the most fundamental to the most challenging. Clockwise from right, work here by a few CFC teachers: Aled Lewis with his settle, Tim Rousseau's writing desk, David Haig's signature rocker, and Yuri Kobayashi's sculpture* Believing.

Carved Entryway Mirror

Production piece centers around easily repeatable and efficient techniques

BY ROB SPIECE

At Berea College where I work, students don't pay tuition, but they work somewhere on campus to offset the cost of their education. As the director of woodcraft, I oversee a staff of about 25 students. My crew is involved in every point of the process—from concept and design, to milling and joinery, to handwork and finishing. Sales of our work support our program.

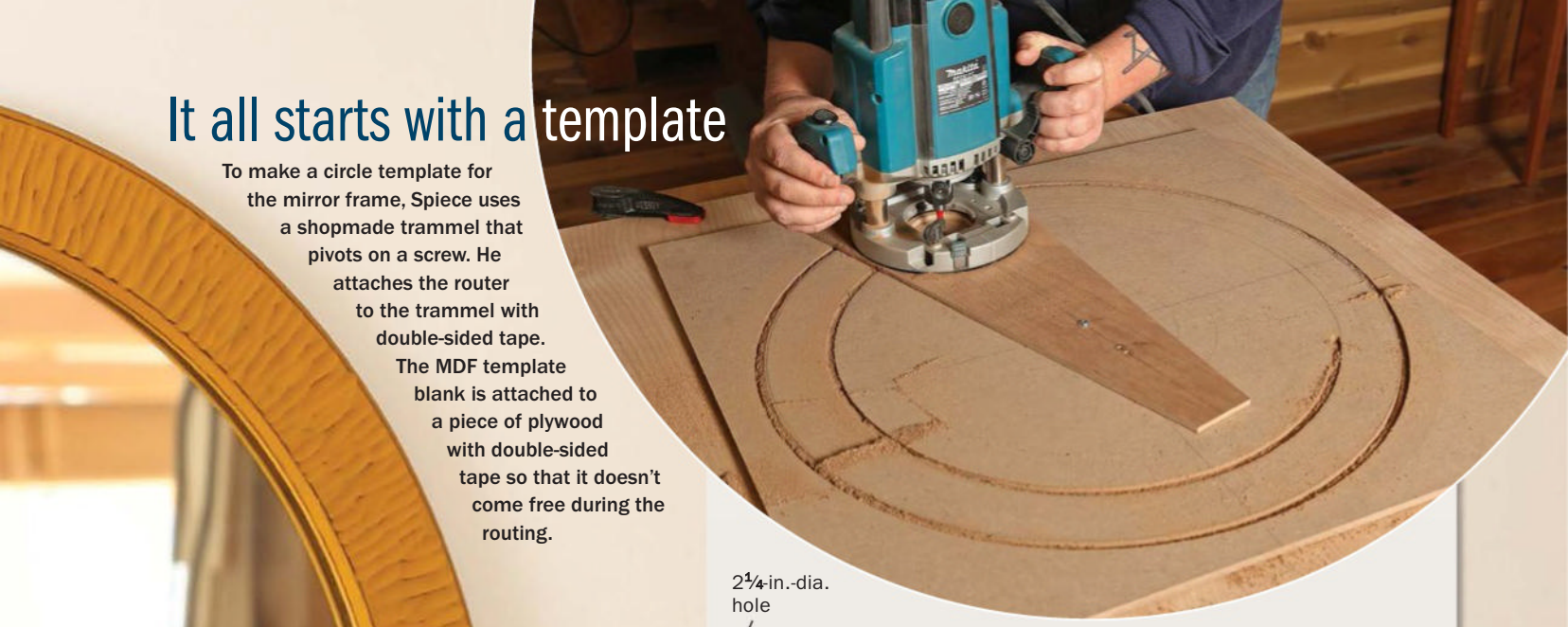
We make each piece as a production item, not just a one-off. My goal is to teach processes that build skills, teach safe practices, and create high-level craft that is unique to us.

This entryway mirror hits all of those marks and builds these skills: cutting miters for frames; making templates, fixtures, and jigs; using a handheld router to best advantage; hand-carving; making boxes, and fitting the boxes with drawers.

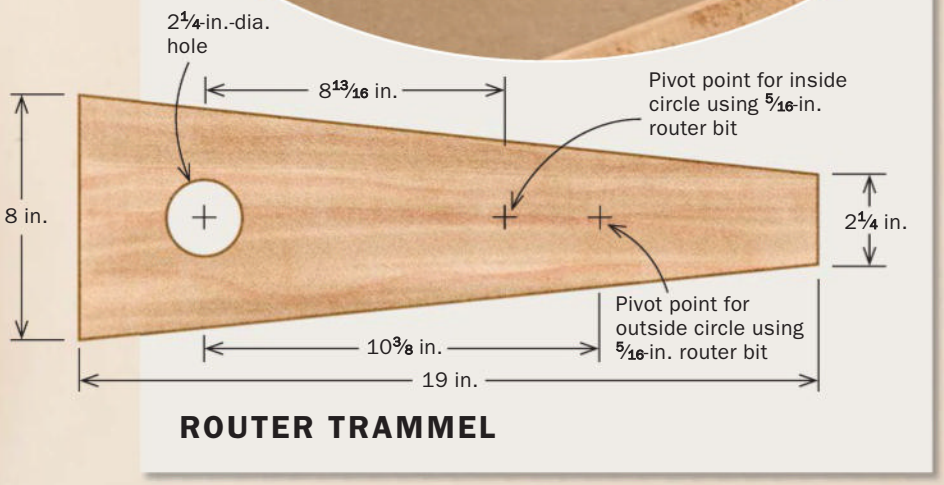
Create the master circle template

I confess that we make the circular template for the mirror frame with a laser engraver. Without that luxury, however, there are

It all starts with a template



To make a circle template for the mirror frame, Spiece uses a shopmade trammel that pivots on a screw. He attaches the router to the trammel with double-sided tape. The MDF template blank is attached to a piece of plywood with double-sided tape so that it doesn't come free during the routing.



ROUTER TRAMMEL

several ways to make the template. For this article, I used a router and trammel. Alternatively, a bandsaw followed by a spindle sander and/or a disk sander could get you there as well.

Eight frame pieces

The mirror frame is composed of eight segments that are mitered and joined with slip tenons. I mill two 40-in. lengths of stock to ¾ in. by 2¾ in., then cut the segments to length. At the table saw, I set my miter gauge to 22.5° and use a stop block to ensure the segments are of equal length. I don't do a bunch of test cuts or fuss about getting it right to the highest level, because I can correct for an imperfect fit before the last of three glue-ups.

I use Dominos at the segment joints. Because the shelf and drawers will be hanging from the mirror frame, I wouldn't skip some sort of reinforcement of these joints, which have poor end-grain glue surface. If you don't have a Domino, splines are a great alternative.

Once the segments are cut, I lay out each end for a Domino mortise. A simple work-holding jig secures the parts and lets me quickly cut the mortises and switch to the next piece.

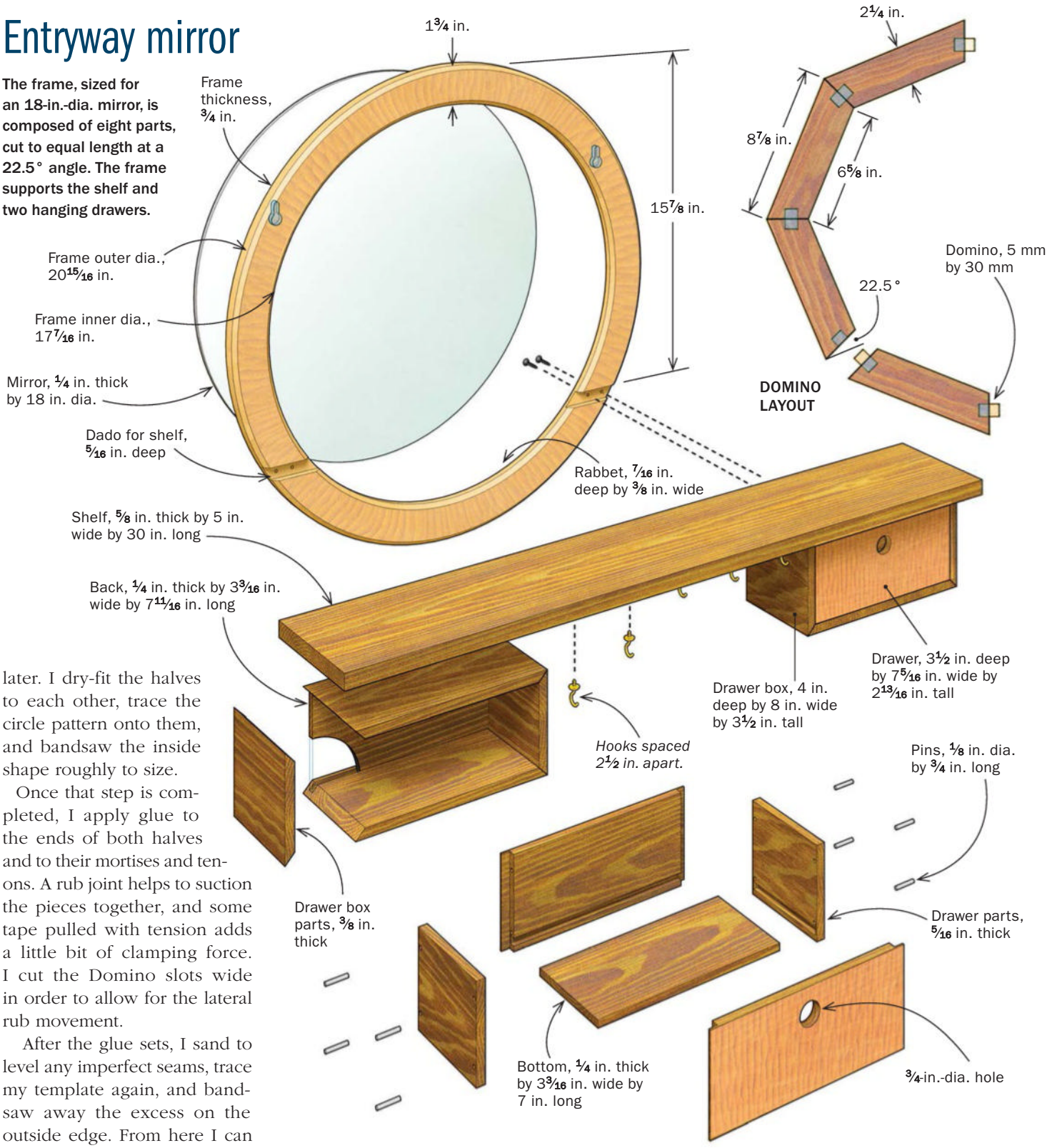
Two halves of an octagon

After the mortises are cut, I glue up two separate assemblies, each with four segments, leaving me with two semi-circular halves of the frame. Gluing up the frame in two halves is what gives me the opportunity to correct the angle if it has gone off slightly. I do this without math using a table-saw jig that cradles the half-frame sub-assembly. The jig holds each workpiece so its ends hang just over the edge of the base, and I slightly trim both ends in one pass. This creates two perfectly matched halves.

Before gluing the halves together, I have access to cut the inside shape on the bandsaw, so I'll have less material to rout away

Entryway mirror

The frame, sized for an 18-in.-dia. mirror, is composed of eight parts, cut to equal length at a 22.5° angle. The frame supports the shelf and two hanging drawers.



later. I dry-fit the halves to each other, trace the circle pattern onto them, and bandsaw the inside shape roughly to size.

Once that step is completed, I apply glue to the ends of both halves and to their mortises and tenons. A rub joint helps to suction the pieces together, and some tape pulled with tension adds a little bit of clamping force. I cut the Domino slots wide in order to allow for the lateral rub movement.

After the glue sets, I sand to level any imperfect seams, trace my template again, and bandsaw away the excess on the outside edge. From here I can move to the router and use a template to cut the frame to its final shape.

Turn an octagon into a circle

I attach the circle template to the frame with double-sided tape and rout the frame flush to it with a pattern bit and a handheld router. I do not ever do this on the router table.

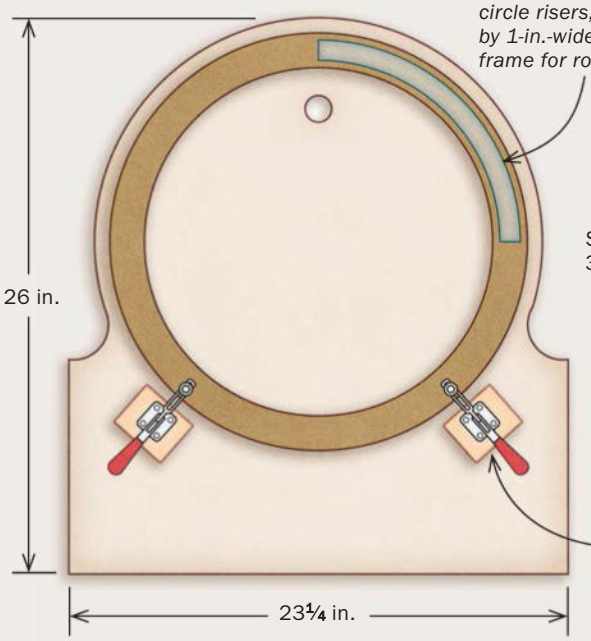
The advantage to routing this by hand vs. using a router table is that, provided you are careful, you can climb cut with a handheld router. Cutting straight pieces into a circle creates a lot of grain runout, and the climb cut helps to avoid tearout that could spoil the piece. Climb cutting is never OK on the router table, where you would be moving the workpiece over a stationary tool. Think of ripping backward on the table saw. You would never do that, right? It's a similar proposition. The workpiece can be ripped from your grip and shot off into the distance.

When routing by hand, you are moving the tool over the stationary workpiece, and you can control the depth of the cut. If

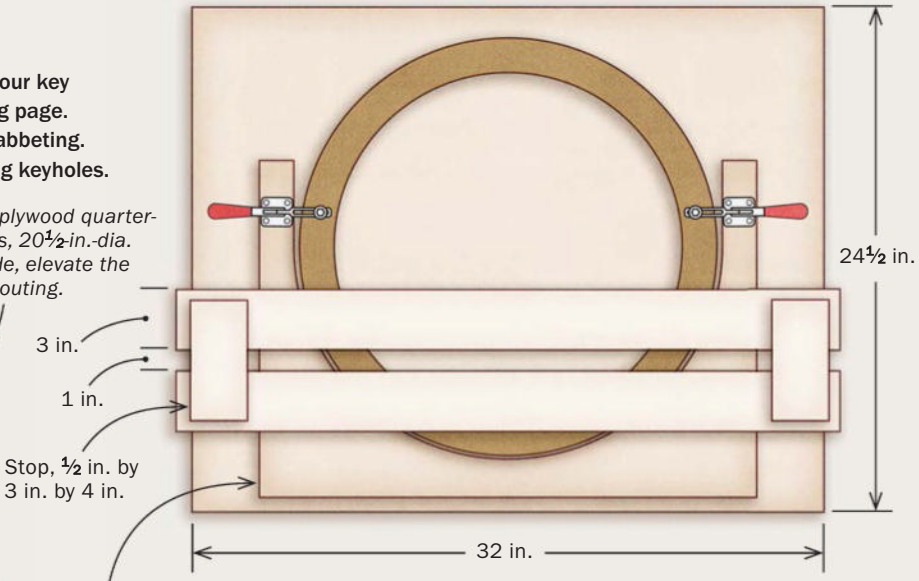
Photos: Anissa Kapsales. Drawings: John Hartman.

Jig by jig

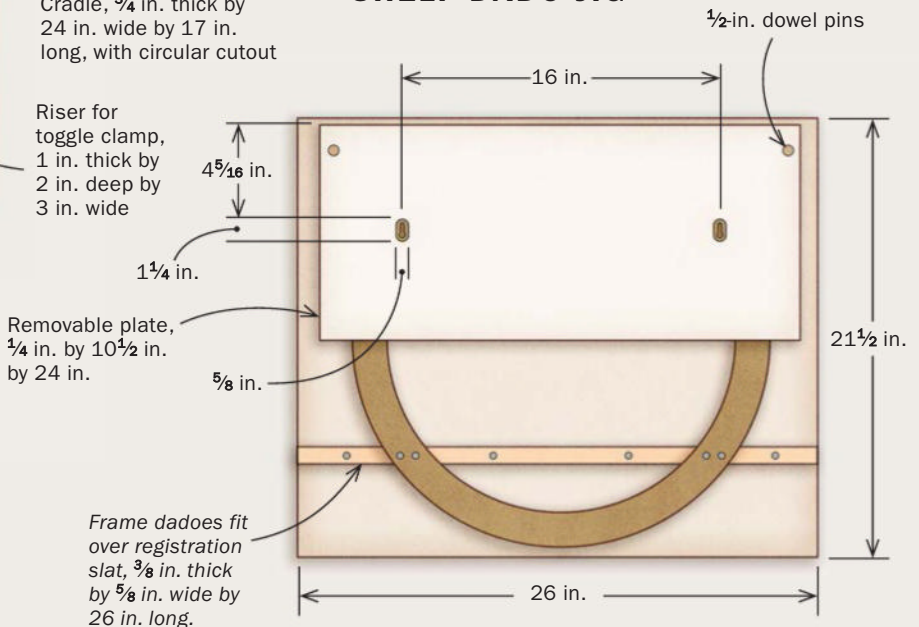
In making multiples of the mirror frame, the author uses four key production jigs: these three, and one more on the following page. The one below holds the frame for template-routing and rabbeting. The other two here guide the router for dadoing and cutting keyholes.



FRAME-HOLDING FIXTURE



SHELF DADO JIG



KEYHOLE JIG

Bit by bit

The patterns and router bits used in this project increase efficiency. At first glance, it might seem as though the array of router bits used is over the top, but each has its purpose and is worth its weight if you are making even just two of the same piece.

⅜-in. straight bit with ¾-in. guide bushing

Use this bit to dado the frame for the shelf, making two passes.

Bottom-bearing straight bit

This bit follows the circular template to cut the frame to final width.

⅜-in. keyhole bit with ⅝-in. guide bushing

With a keyhole bit you've got to plunge in, advance, then back up to the original spot to lift out.

Rabbeting bit

The frame gets rabbeted for the mirror with this bit, which has an offset of ⅜ in. from the bearing to the outside cutting edge.

3⁄32-in. roundover bit

This bit puts a slight radius on the long-grain edges of the drawer box, around the frame's outer edges, and on all edges and ends of the shelf.

45° chamfering bit

A chamfer detail on both edges of the front face of the frame helps define a space for the carved detail and leaves a nice facet.

Eight pieces become two halves

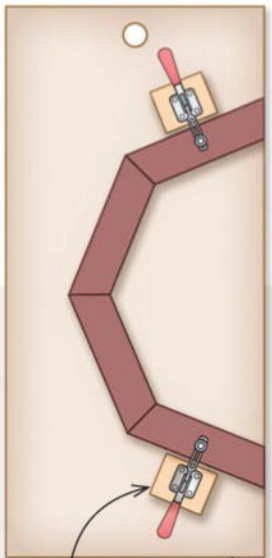
Miters first. *With the miter gauge set at a 22.5° angle, cut all eight frame pieces to length. To cut consistent lengths, the long point of the miter is registered against a stop block butted against the fence. Ultimate precision isn't too important here, as the assembly process allows for correcting minor errors later.*

The circular mirror frame is the focal point. To create it, Spiece miters eight short pieces and then glues up two groups of four.

Reinforce the miter joints. *If you are using a Domino joint (top), placement is important, as you don't want to expose a Domino when cutting the finished frame to shape. Alternatively, you could use a spline (bottom) to register the faces of the joint and add some long-grain glue surface. Splines will be visible and will become a design detail at each joint.*

No-clamp joint. *Clamping miters is always frustrating, so Spiece prefers to skip the clamps and pull the joints together with tape. Rubbing the two sides together closes them well, and a hard pull on some strong masking tape produces nicely closed joints.*

A forgiving fixture. *This fixture keeps the half octagon in place while you trim-skim the two ends. This corrects any cumulative error in the 22.5° miters. When you clamp down the workpiece, aim to split the difference on both sides so the frame comes together perfectly. Check the length of the Dominos or splines after this cut; trimming will make the mortises shallower, which could keep the joint from closing.*



TRIMMING JIG

you take too deep a cut, the router will climb into the wood and move much faster than you intended. Many have likely done this by accident, which is why the router gets a bad rap. It's important to understand the clockwise rotation of the bit and when to use it to your advantage.

To safely make a climb cut, take many light passes. I don't engage the bearing of the router bit until I've made three or four light passes. The wood should be secured to the bench with either clamps or double-sided tape. I position myself behind the router so that my physical presence is there to stop the router from making a run down the edge. Listening to and feeling the router will tell you if you are being too aggressive. An aggressive cut will have a markedly higher pitch, and you'll feel a lot more vibration.

In addition to template-routing the frame to shape, you must cut a rabbet for the mirror in the frame's back face with a rabbeting bit. Here again, the climb cut is useful to eliminate tearout. On the front face, use a 45° chamfer bit to put a bevel on the inside and outside edges of the frame.

The shelf is located in dadoes

The shelf sits in dadoes cut in the frame. I use a shopmade fixture to cradle the frame while

From octagon to circle

The next steps working toward the circle are to glue the two halves together and shape the interior and exterior edges of the frame.

Rough out the interior of the circle. *Dry-fit the two halves together, set the template on top of the frame, and trace both edges of the circle onto the frame. Before the glue-up, rough out the inside of the circle at the bandsaw. Remove the bulk of the waste, leaving only 1/16 in. to pattern-rout later.*

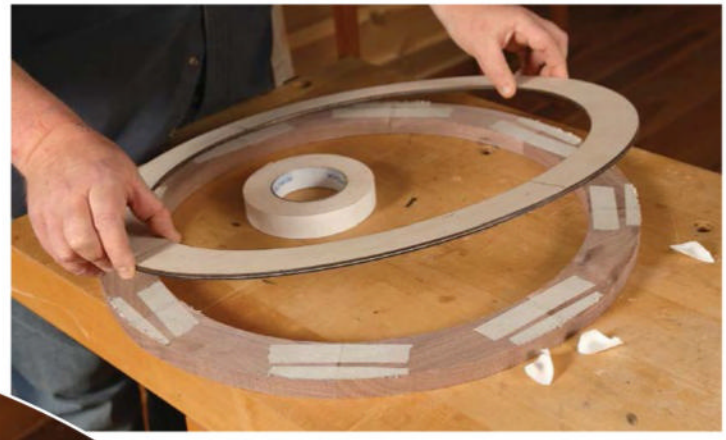
Two halves become a whole. *Use tightly stretched tape again to pull the final two joints together, taping on both faces of the frame.*

I cut the dadoes using a jig and a router fitted with a straight bit and a guide bushing.

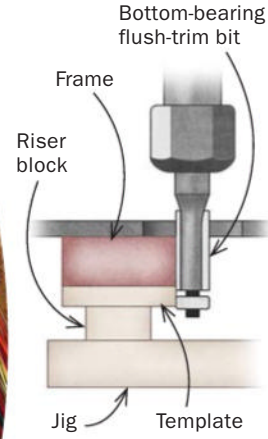
Layout lines on the fixture help orient the frame so the dadoes are cut at right angles to the frame's central vertical seam. Before putting the frame aside, I use a shopmade jig to cut keyhole slots in the back for mounting the piece to the wall.

Drawers and drawer boxes

Before making the drawers, I make the two mitered boxes that will hold them. I start by milling two 30-in.-long pieces of wood to width and thickness, one for each box. Next, before cutting those parts to length, I create a



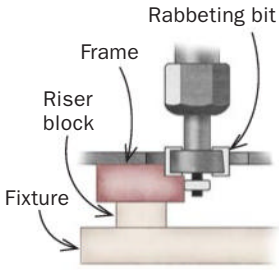
Circle-cutting jig. *After bandsawing close to the outer circle of the frame, attach the template with double-sided tape. Toggle clamps hold the frame to the fixture, so you'll have to unclamp and rotate the frame to rout all the way around. Using a bottom-bearing flush-trim bit, take shallow passes until the bearing is riding on the template. The riser block under the template lifts the workpiece to give the bearing clearance.*



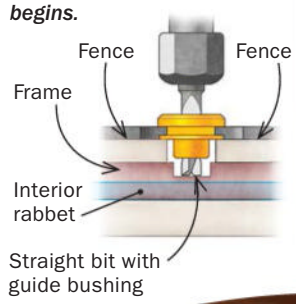
Finishing touches

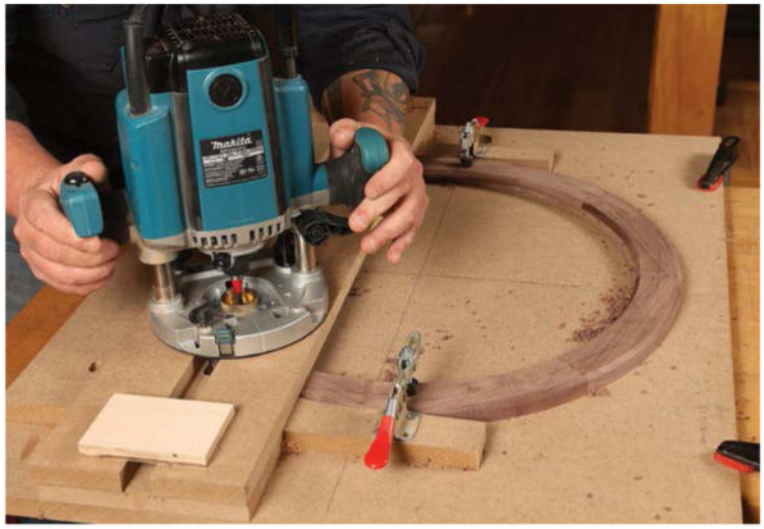
Three jigs and a router help you tend to things like the rabbet for the mirror, the dadoes in the frame that hold the shelf, and the keyhole slots to hang the piece on the wall.

Round rabbet. *Using the same circle-cutting fixture you used to rout the frame to shape, cut the rabbet for the mirror. The rabbet must accommodate ¼-in. mirror glass with some extra depth to pin it in place.*



Dado-cutting jig. *This jig cuts the dadoes across the frame to hold the shelf. Centerlines on the fixture guide you in registering the frame by its miters. The depth of the dado should meet the bottom of the rabbet so the back of the shelf ends where the mirror begins.*





groove for the back panel, ease one edge with a roundover bit in a trim router, and then sand the inside surface.

I cut the pieces to length at the table saw, and then I tilt my blade to 45° and use a miter sled with a stop to cut the miters. A toggle clamp holds the small pieces firmly to the sled so that my hands can remain clear of the blade. A simple tape glue-up brings the boxes together. Once the boxes are glued up, I measure off them for the drawer dimensions. Starting with long lengths of drawer stock, I cut a ¼-in. groove for a drawer bottom and sand the inside face. I aim for a 1/32-in. gap in the width for clearance in the drawer box and cut the length to fit in the opening. The drawers are joined with a simple rabbet, which will be pinned with dowels. I often use a single blade on the table saw and the miter gauge to nibble material away.

Carving and painting

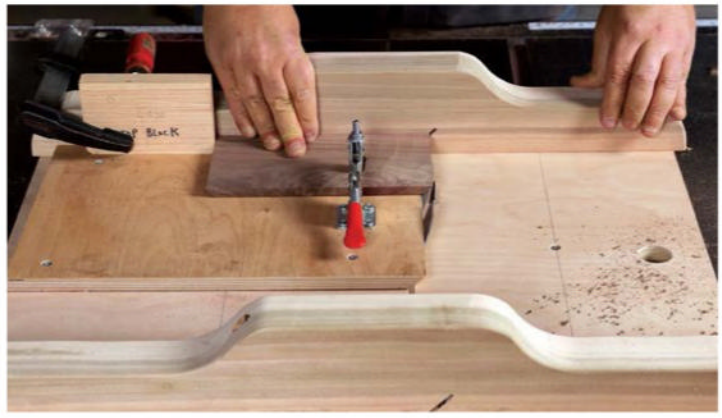
I carve the surface of the drawer fronts before gluing up the drawers so I can hold the work more

Keyhole jig. *Consisting of a fixture and a template, this jig is used to cut keyhole slots into the back side of the frame. The shelf dadoes fit over a lateral strip of wood on the fixture, orienting the frame properly. The keyhole template is registered to the fixture with dowels. Use a ⅜-in. keyhole bit and a guide bushing to plunge-cut the keyhole slots.*

Suspended drawer boxes

Two small, mitered boxes hang on the underside of the shelf and hold the drawers.

Keeping it long. *Don't cut the individual drawer-box parts to length until you've run the groove for the back, rounded the inside edge, and sanded the inside face.*



Safety-conscious jig. *A toggle clamp close to the blade lets you hold small parts safely while you cut a miter. A stop block ensures consistency, and a riser allows offcuts to fall away from the blade.*

An easy glue-up. *First, dry-fit the box with the back installed to ensure closure. If you're satisfied with the fit, apply glue to the miters, leaving the back panel to float and pulling hard on masking tape to close the joint.*

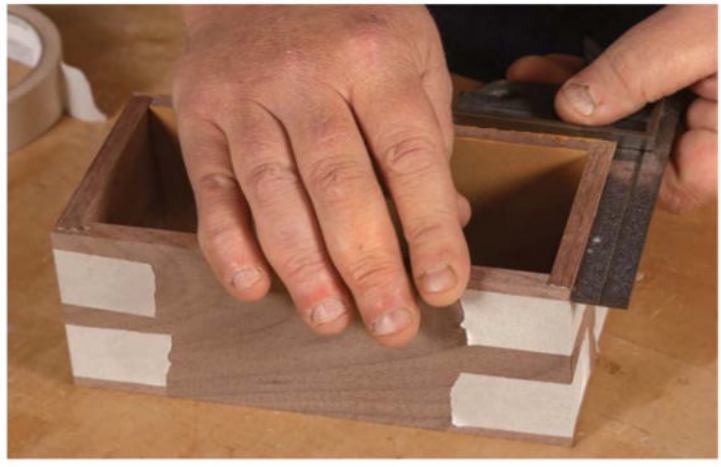
effectively. But first I drill a hole for the pull slightly above center in each drawer front and soften the edges of the hole with a roundover bit.

I do the carving with a gouge, making cross-grain scallops. Shallow cuts are enough to impart a dramatic texture. I'm careful at the ends with the rabbets, where the thickness is only about ⅛ in.

To carve the frame, I use double-stick tape or clamp the frame to the bench. Again, light cross-grain scallops add texture. I aim to carve within the lines of the two bevel cuts.

When the carving is finished, I mix up some milk paint and coat the front and back of the frame and the drawer fronts. Using a combination of 220-grit sandpaper and 0000 steel wool, I sand through the paint in order to bring out the carved texture.

The drawers are also glued up with tape. Some slight hand pressure and tension from the tape is all they need. Once the tape is on, I slide the drawers into their drawer boxes so they dry square.



Square it up. *It's very important to check for square; if the boxes aren't square, the drawers won't fit or function properly.*

Carving embellishes a simple form

Before assembly begins, carve the drawer fronts and the front of the mirror frame. Spiece uses double-sided tape to adhere the smaller workpieces to the bench and benchdogs to hold the frame.

Carve chamfer to chamfer. *Using a 0614 gouge, carve across the grain, adjusting the angle to get the cleanest cut possible. Try to achieve a random pattern that will be highlighted by the rubbed-through painted finish. Carve between the chamfers on the inside and outside of the frame, aiming to keep those lines crisp.*

When the glue dries, I lay out the position of the pins on the drawer sides, then drill holes on the drill press and glue in the dowels.

Assemble the parts

Main assembly begins with attaching the drawer boxes to the shelf. I draw layout lines on the bottom of the shelf to locate the drawer boxes. Then I apply glue to the top of a drawer box and shoot two pin nails into the front edge to secure the position. After I glue and tack both boxes in place with the pin nailer, I clamp them tightly to the shelf until the glue sets.

An integral pull and a carved drawer front. *The drawer pull is drilled with a Forstner bit, then finished with a roundover. Carve across the grain to echo the pattern of the frame. Take care with the ends, as the rabbet leaves you with a very delicate web that can be carved through easily.*

A no-fuss joint

The drawer fronts and backs are rabbeted on each end. The sides fit into these rabbets. Pinning the joint with dowels creates a strong and appealing drawer joint.

Paint the fronts, then glue up. *Paint the inside and outside faces of the drawer fronts before glue-up. After applying the glue, pull together the rabbet joints with tape. Set each drawer into its drawer box as the glue sets to ensure squareness and a good fit.*

Reinforcements. *After the glue dries, drill for ⅛-in. dowels and drive them in to add strength to the rabbet joints with a decorative touch.*

The shelf is attached to the mirror frame with four screws. I drill through the front of the dado to clear the screw threads, then countersink from the back.

Final steps and mounting

Any finish will work with this project, but I prefer a low-sheen oil finish. Here I'm using Osmo.

After the finish is cured, I set the mirror in the frame and secure it with brass escutcheon pins driven into the rabbet with framer's pliers. It's important to have enough room to drive these pins in. Because the ¼-in.-thick mirror glass is sitting in a ⅜-in. rabbet, there's ⅛ in. of space to set the pins into the edge. Walnut and cherry are both soft enough to accept these pins, but avoid areas of dense grain.

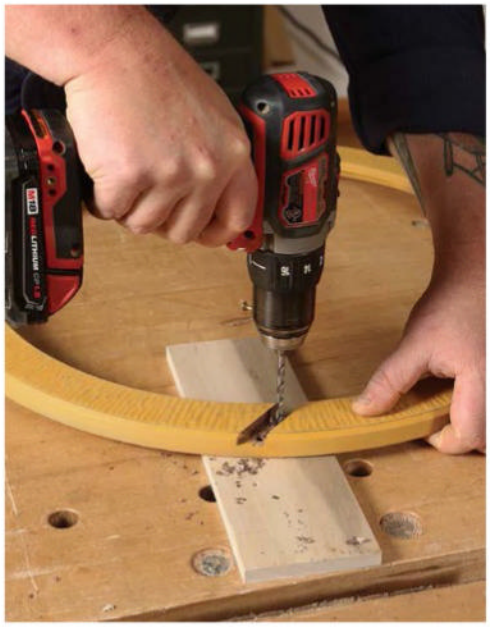
Wall mounting is simple: Mark the position of the keyhole slots, and use appropriate wall anchors and screws to mount. □

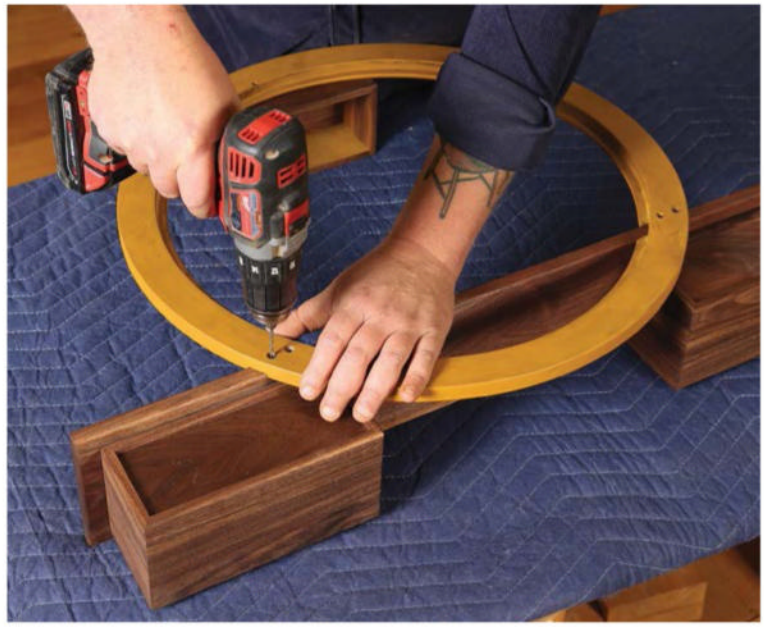
Rob Spiece, a furniture maker and teacher in Berea, Ky., is director of woodcraft at Berea College Student Craft and the Woodworking School at Pine Croft.

Putting it all together

Now that all the distinct parts have been glued, carved, and painted, it's time to gather them together into one piece.

Hang the drawer boxes. *Locate and glue the drawer boxes to the underside of the shelf. Use a pin nailer to hold their position so they don't shift during clamping.*





Add the shelf to the frame. *The shelf is attached with screws through the dadoes in the frame. Drill clearance holes through the front of the dadoes. Use those holes to countersink from the back. Then drive screws to attach the shelf to the frame.*

Insert reflection. *With the piece face down on a soft surface, set the mirror in place. Use framer's pliers and brass escutcheon pins to secure the mirror in the frame. The pliers are adjustable. A slot grabs onto a nail head, and a padded end bears on the outside of the frame. A gentle squeeze will seat the pin.*

Beading on the Curve

Techniques for bending and securing molding to curves

BY CHUCK BENDER

Joint effort. *This William and Mary highboy was built by Bob Van Dyke, director of the Connecticut Valley School of Woodworking, who sat in on a class instructed by Chuck Bender. Bender says, with great affection, "The original and all the students' drawer-front veneers were maple burl. Bob, being Bob, decided to use walnut crotch. It wasn't a bad choice—the highboy is stunning."*

They say it's the little things in life that matter most. To me, that's another way of saying life is all about the details. I look at furniture the same way—the details make all the difference. Those details can be in the form of a carefully placed chamfer or quirk, or a delicate molding that highlights the architectural nature of a piece. In William and Mary furniture, the details often take the form of a bent cockbead that follows the scrollwork cutouts of case sides and aprons. The more attention you pay to the small details throughout the process, the better your finished product will look. It's those little details that take your piece from good to great, from acceptable to masterpiece.

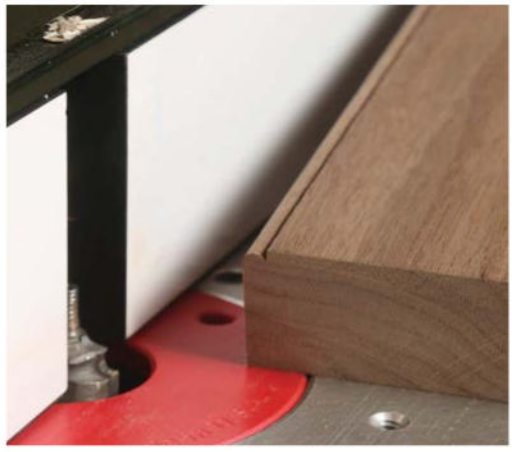
Furniture of the William and Mary period moved away from using straight-grained boards for case construction. Instead, it had a lighter, more flamboyant look. Highly figured veneers were broadly used. Because the pieces were covered in burl and crotch veneers, furniture makers soon discovered the need to protect the edges of the delicate veneer with a cockbead.

A cockbead is a small molding, approximately ⅛ in. thick, with the edge fully rounded over, forming a half-round. The half-round usually projects slightly beyond the surface of the part to which it is applied. On veneered drawer fronts, the cockbead is typically set into a rabbet. When applied to the apron or sides of a William and Mary case piece like the one shown here, the cockbead is applied directly to the cutout surface.

Photos, except where noted: Anissa Kapsales.
Photos this page: Michael Pekovich.

Getting ready

Before you can attach beading to curves, you have to prepare a few things. Obviously, first you have to make the beading, but you also must add moisture to the beading, mix your glue, and prep your nails.



At the router table. *Run the appropriate-size bead on the face of the stock. The thickness of the board should be the same as the desired width of the finished beading. Bender uses a ⅛-in. bead-cutting router bit to cut the profile.*

At the table saw. *Rip the beading material to separate it from the board, then run the board on the router table again. Repeat until you have enough beading material.*

At the bandsaw. *Rough-cut the beading stock to manageable lengths. The bandsaw is useful for this because the crosscut doesn't have to be precise, and you can stack the pieces up and cut more than one at a time.*

Soak the beading. *Add a generous amount of glycerin to warm water. The water level should be high enough to cover small bundles of beading material. With the beading stock bundled into small groups, place it in the glycerin water and add weight to keep it submerged.*

Create the molding first

Making a cockbead for a curved surface isn't much different from creating one for a straight surface. I used a router bit to form the bullnose, or half-round edge, but you could use a molding plane. If I'm only making a small section of cockbeading, I might simply use a block plane and sandpaper.

For me, the process starts with material ⅛ in. thicker than the wood to which the cockbead will be attached. If you're attaching the molding to a case side that is ⅞ in. thick, then the board for the cockbeading needs to be 1 in. thick. The board should also be at least 50% longer than the longest piece of beading needed. You need material to hold onto when making the bends. And you also need extra length in case it splits at the nail(s) during the bend. The extra length allows you to cut the bead back and reinstall rather than trashing the piece and starting over.

Once the board is milled, pass a hand plane over the edge to remove any machine marks. Typically I use my scrub plane on

Mix the hide glue. *Rather than mixing it directly in the pot, mix the glue in a small jar, then place the jar into a water-filled glue pot. The water holds the heat more evenly and saves on pot cleanup.*

Rust your nails. *Submerge the nails in a solution of muriatic acid, let them soak at least overnight to several days, and then remove them from the solution. Spreading them out on a cloth or newspaper allows them to dry and form a layer of surface rust that will give them a little more grip.*

stock I'm using for curved cockbeading because it gives the surface a texture that mimics what you find on William and Mary furniture. On period beading, you often see tearout and concave plane marks, similar to what you see on interior surfaces of furniture of the period.

I use a Whiteside #3240 ⅛-in. bead-cutting router bit set up in a router table to cut a quirk into the face of the board. Next I head to the table saw and rip off the freshly made cockbead, then hand plane the edge of the board. I repeat these steps until I have at least 30% more cockbeading stock than I think I need.

Pliability is the key to success

With the cockbeading made, it's time to make it supple so it will bend to the will of the curves. Unless you're using green wood, you need to introduce some moisture to the beading. I submerge the strips in a large bucket or container filled with warm water. I add a little glycerin to the water, approximately 2 oz. per gallon, for added flexibility. Often I tie the beading into bundles, then weigh the bundles down in the container to keep them fully submerged.

At a minimum, keep the beading submerged overnight, but try not to keep it in the water for more than a day or so at a time. The idea is to soften the fibers without creating material that has expanded greatly because of the added water. The last thing you want is abundant shrinkage after the beading has been applied to the piece of furniture. Once you can bend a piece beyond 90° by hand without fracturing or breaking, you're ready to begin.

Prepare the glue and nails

Before you install the beading to the case, get the glue and the nails ready. Typically I mix a batch of hide glue a day in advance, then get it cooking in the pot several hours ahead of installation to ensure that all the crystals fully dissolve.

Historically, rose-head nails held the beading in place while the hide glue dried. Reproduction nails are fine, but they may pull out

Drawings: John Tetreault

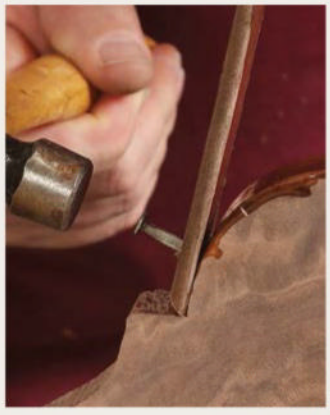
Start with a miter

The beading goes on in sections, with the pieces left long at first. The first piece should go in an inside corner, where miters meet.

A simple paring block. *A block with a 45° angle and a groove to cradle the beading, along with a clamp or holdfast to keep the beading in place, is all you need to quickly and accurately chisel the miters on the beading.*

Glue time. *Spread hot hide glue on the surface you are gluing the beading to. Add a layer of glue to the corresponding side of the beading material as well.*

The first nail. *Holding the material in place, drill a pilot hole for the starter nail. Orient the nail so the tapered side runs parallel to the long edge of the beading, and drive it into the apron.*



of the work under the stress from the bent beading material. I soak my reproduction rose-head nails in muriatic acid overnight, then spread them out on a flat surface to rust a little prior to use. The thin coating of rust gives the nail shanks a bit more bite.

Create two workstations

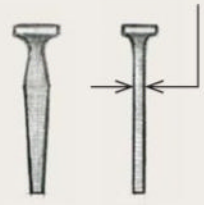
To be efficient, set up your work area with two stations. The cutting station should have the container with the beading still submerged in the water, a sharp chisel (wider is better), a paring block if you choose to use one, or a backer board if you go freehand.

The application station should have the glue pot, the piece to which you'll apply the beading, a hammer, nails, a drill with the proper bit, and a heat gun (already running and hot). I also include

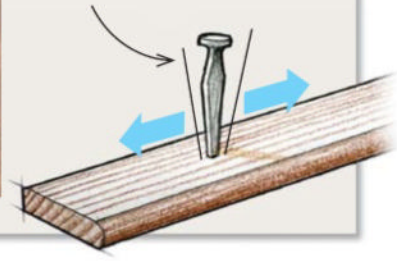
ROSE-HEAD NAILS

Rose-head cut nails are tapered in one dimension and parallel-sided in the other. Choose a pilot-hole bit that is approximately the diameter of the parallel dimension of the nail. This lets the nail pass through the beading without cracking, provided you have it oriented properly.

The pilot-hole drill bit should be about the diameter of the nail's parallel dimension.



During nailing, the tapered side of the nail should be parallel to the long edge of the beading.



Bring on the heat

At this point you should have a piece of pliable beading with one nail holding it in place on the substrate you are adhering to. That means it's time to start heating the beading and pressuring it into its curved place.

Heat and pressure. *With a heat gun, heat the beading, keeping the gun moving so you don't scorch the beading. Apply downward pressure to the beading, and heat it until it bends to the curve.*

Drill and nail. *While holding the beading firm with one hand, drill a pilot hole and drive a nail into place. Move along the length of the beading, from the fixed end to the free end, heating, drilling, and driving nails home. Put nails wherever you have gaps between the beading and the apron.*

A custom clamping block. *If you still have gaps, use the cutoffs as form-fitting cauls to clamp the beading securely. You also can trace the shape and cut a scrap to use as a custom caul.*

end or diagonal cutters for nail removal when everything just goes wrong. It is also a good idea to have a few clamps nearby.

Getting curvy with it

I try to plan the application of the beading in an order that allows me to run the beading long and make final cuts after installation. Typically I start on inside corners, where miters meet. Because the beading has been softened, miters are easily cut with a chisel, either freehand or with a paring block.

Remove a piece of beading material from the water bath and cut the first miter with the chisel. Spread glue on the curved surface of the case and a little on the back (sawn) side of the beading. Hold the beading in place and drill the pilot hole about ½ in. away from the end. Nail the beading in place.

In one hand, hold the heat gun a few inches from the beading. Keep it moving, because you don't want to scorch or burn the wood. While applying a fair amount of downward pressure to the beading with the other hand, start the bend. Period pieces often have far more nails in the beading than you would think necessary, often every ½ in. or so. I tend to be a little more reserved with my nails and to place them every 1 to 2 in., depending on how well the beading maintains contact with the substrate.

Again, I tend to let the beading run long of the ends of the curved sections; if there's a flat section, or fillet, dividing two curved sections, that's usually a necessity. If both ends of a bead will be mitered, I seldom cut the piece to final length until after the glue has set. It's always easier, and more accurate, to cut the beading to final size afterward. If the end of the beading is square, definitely let it run wild and then cut it off flush after the glue has dried.

You may occasionally find it necessary to put a clamp or two in spots where gaps form. Ideally this is done during the bending process, but you can also apply clamps after the beading has set. Use a heat gun to warm the beading, which in turn will soften the glue. Add a clamp until you see a little squeeze-out, then let it set. Allow the completed beading to dry out for a few days (or even longer) before you do the final surface prep and apply finish. □

Chuck Bender is a woodworker and teacher in Jim Thorpe, Pa.

Subsequent pieces

Getting all the beading in place is a strategic juggle. It's ideal to let pieces run long until after attachment. Some pieces will get mitered before installation, and some will have to be mitered once they are glued in place. For best results, try to map out your order before you start attaching.

Next piece on deck. *With the upper section nailed in place and the glue set, repeat the process on the lower section.*

Miter in place. *Once the beading is fully nailed in place, rough-cut the miter, leaving it a bit long. Pare the miter to the final size, working from the outside (the beaded side) toward the inside of the apron in case you have any blowout.*

Miter at the bench. *Some pieces can be mitered on both ends before installing. Cut a miter on the end of a stick of beading, then hold it in place, mark the length, and miter the second end. Add a bit of hot hide glue and put the beading in place, clamping it if necessary.*

The end cut. *The final step is to cut the beading off, then pare it flush with the bottom of the apron.*

Knife Hinges Made Easy

The most elegant hinge doesn't have to be the hardest to install

BY CHRIS GOCHNOUR

FORM MEETS FUNCTION

Each knife hinge reveals only a small, elegant knuckle on the outside of the cabinet. The hinges sit above and below the door, which helps to keep them firmly in their mortises. The stability and precision of knife hinges means that you can fit doors with very fine gaps and expect them to stay that way without sagging.

ST-18 Pivot Hinge
$52 (package of two)
brusso.com

Photos, except where noted: Asa Christiana

ROUTER TEMPLATE
This template is built around the hinge itself for accurate routing. The removable fence allows for routing in both case and door.

SETUP BLOCK
Sized to match the door thickness, the setup block makes it easy to locate the hinge mortises in the case.

Revealing just a small brass knuckle to the viewer, the knife hinge is the least obtrusive type of hinge hardware for fine furniture. It's also the most durable type.

Knife hinges allow a door to open fully, whether it overlays the sides of the cabinet or is inset between them. To allow that functionality, there are two types of knife hinges: straight and offset. I'll show you here how to install the straight type, for overlay doors. For installing the offset knife hinge, which is used with inset doors, see Skills Spotlight on pp. 76–80.

Router template makes installation easy

You might be wondering, "If knife hinges are so great, why aren't they used more often?" The answer is that layout and installation can be tricky. The solution is to make a router template that is the exact size of the hinge leaves, and use it with a bearing-guided bit.

Dry-fit the case before installing the hinges—To make layout and routing easier, you'll need to have the case made and dry-fit, but not yet glued together. That way you'll know exactly where to locate the hinges. You'll use the same hinge template on the door that you use on the case, guaranteeing matching mortises. Once the mortises are cut, you can glue up the case and easily install the door and its hinges.

Leave the door a little oversize—You can make the door now too, but leave it ⅛ in. oversize in height and width to allow some room for precise fitting once the case is glued up.

Making the template

To ensure a perfect opening in the center of the template, I make it from a piece of hardwood that I cut

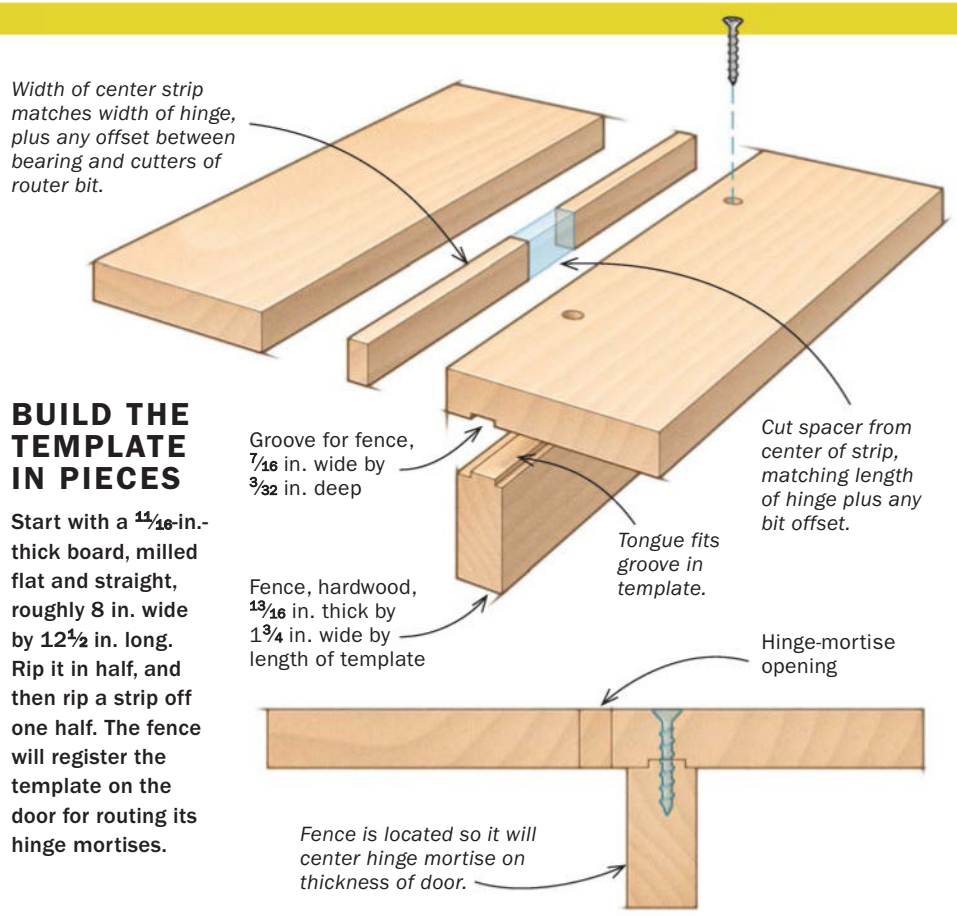
Router template delivers fast, accurate mortises. *Knife hinges can be tricky to install, and mistakes can be hard to fix. But this precise, versatile template makes it easy. The fence comes off for routing the case mortises, and goes back on for routing matching mortises in the door.*

Mortise-location trick. *Because the case top and bottom overhang the door, the fence must come off the jig for routing the hinge mortises in the case. To locate those, Gochnour mortises a setup block, sticks the hinge into the mortise with double-stick tape on top, and slides the block down into the door position, leaving the hinge in just the right spot. Then he pencils around it to guide the template location for routing.*

Make the template

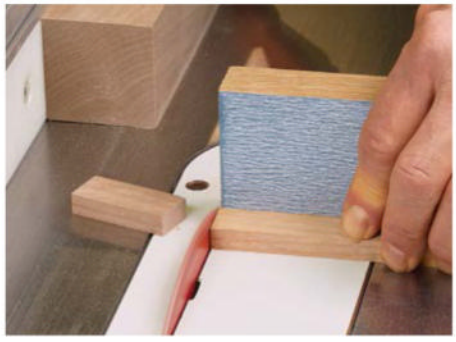
SIZING THE CENTER STRIP

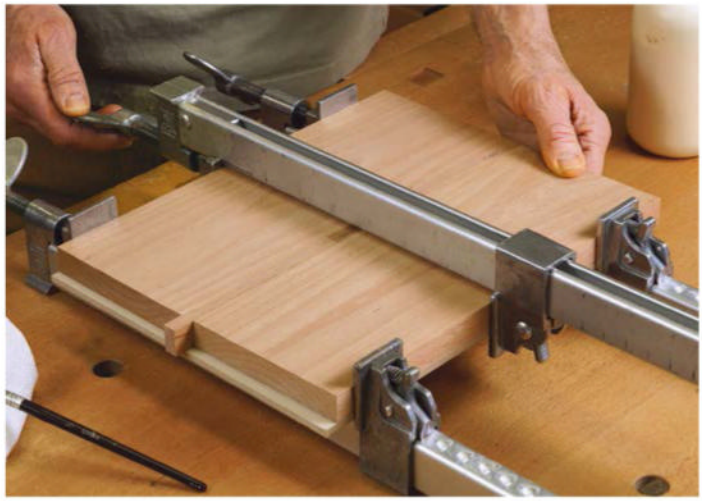
Start by measuring the width of the hinge (1), then measure the diameter of both the bit and its guide bearing (2). If there is any variation between the two, you'll need to take that into account when sizing the strip. Start by ripping the strip slightly oversize, and then adjust the table saw fence until you reach your desired width (3).



BUILD THE TEMPLATE IN PIECES

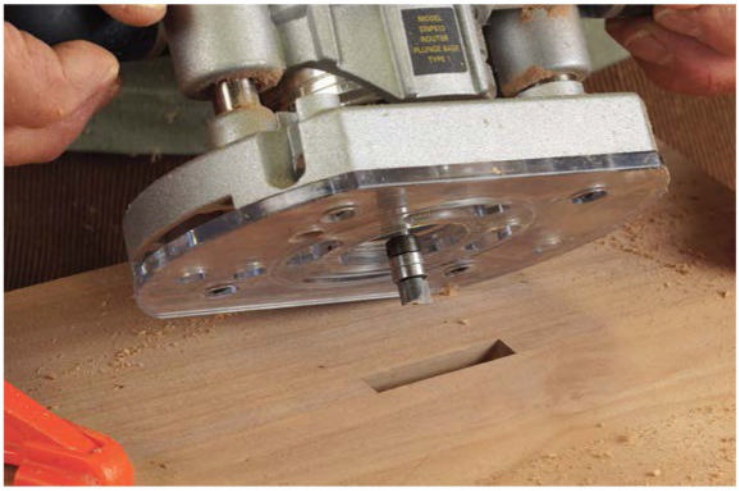
Start with a 11/16-in.-thick board, milled flat and straight, roughly 8 in. wide by 12½ in. long. Rip it in half, and then rip a strip off one half. The fence will register the template on the door for routing its hinge mortises.

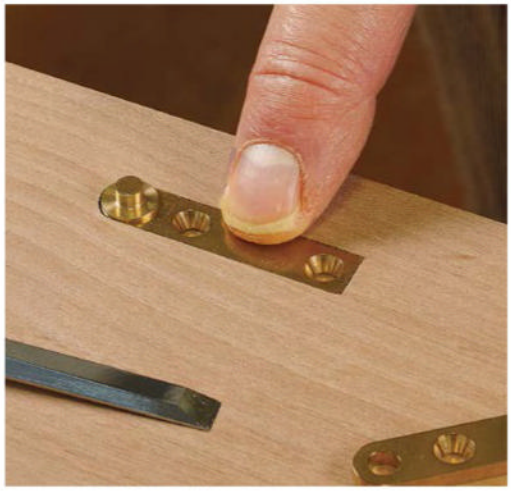




Make the spacer and glue up the template. *Cut the spacer long, and then trim it until it's the length you need. Wax the spacer's edges so it won't get glued in place. Then cut a piece of melamine a bit smaller than the assembly, and press the pieces against it as you clamp them together tightly. Knock out the spacer block after the glue has dried.*

Photo left, center: Rose Serago. Drawings: Christopher Mills.





Make a test cut. *Clamp the template to some scrap, and rout a mortise. Vacuum out the dust, and make one last pass to be sure to get a full cut. Square one end of the mortise and test the fit. The hinge should end up flush with the surface, without any significant gaps.*

into pieces and glue back together (see the drawings and photos on the opposite page). The template has a removable fence that is used when routing the door. Because the bottom and top of the case overhang the sides and door in this cabinet—a popular approach—the fence has to come off when routing the mortises in the case, and the template is aligned with pencil marks instead.

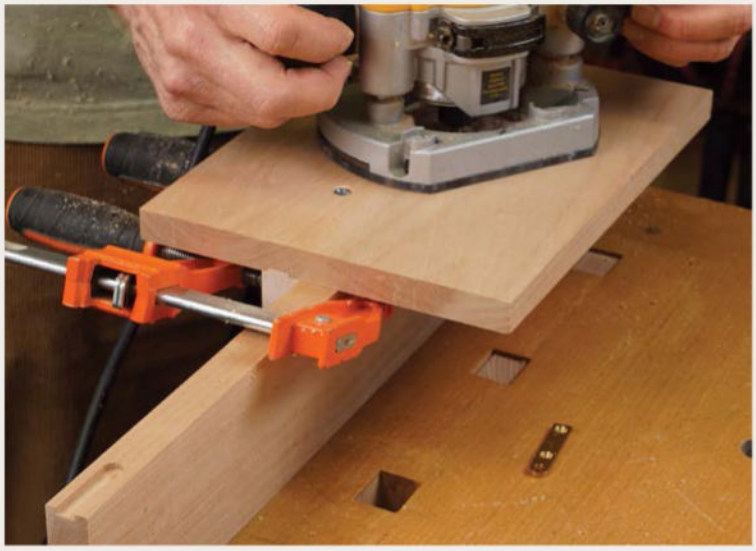
I use the template with Amana's No. 45475 ⅜-in.-dia. flush-trim bit. As with many bearing-guided bits, there is a slight offset between the bearing diameters and cutting diameters. It is just 0.007 in., but that's enough to produce an undersize mortise. So you should factor in that offset when making the template. After gluing up the template, run it through the planer to flatten both faces.

Make a test cut—Before you install its fence, clamp the template to a piece of scrap, load your pattern bit in your plunge router, and make a test cut to see if the jig cuts an accurate hinge mortise with no gaps. If there is a problem at this stage, it's easy

Add the fence. *The fence is tenoned to fit a groove in the template. Attached with screws, it can be removed and replaced accurately.*

MAKE THE SETUP BLOCK

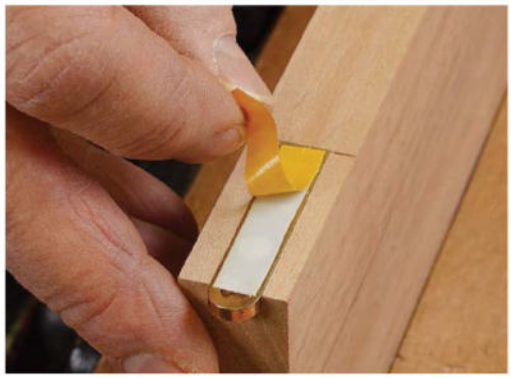
Just one layout mark needed. *Mark a line where the square end of the hinge will land—in this case, 1 9/16 in. from the edge of the door strip.*



Mortise both ends of the block. *Align the opening in the template with your layout mark, clamp the fence to the setup block, and rout a mortise. Then do the same thing at the other end of the setup block.*

Locate the hinge mortises in the case

Prep the case. *To create the right clearance behind the door (1/64 in.), Gochnour taped cardboard to the front edges of the case. To make the door flush with the hinge side of the case, he clamped on a block there.*



Tape trick. *Insert a hinge leaf into the setup block, and apply double-stick tape to it. If the hinge is a bit loose, put just a dot of tape under it as well.*

to make another template. This is also the best time to dial in the depth of the mortise and set the plunge stop on your router.

Sawdust can pile up inside the mortise as you cut it, preventing the router bearing from registering properly against the template opening. So make one pass at full depth, vacuum out the chips, and then make a second pass.

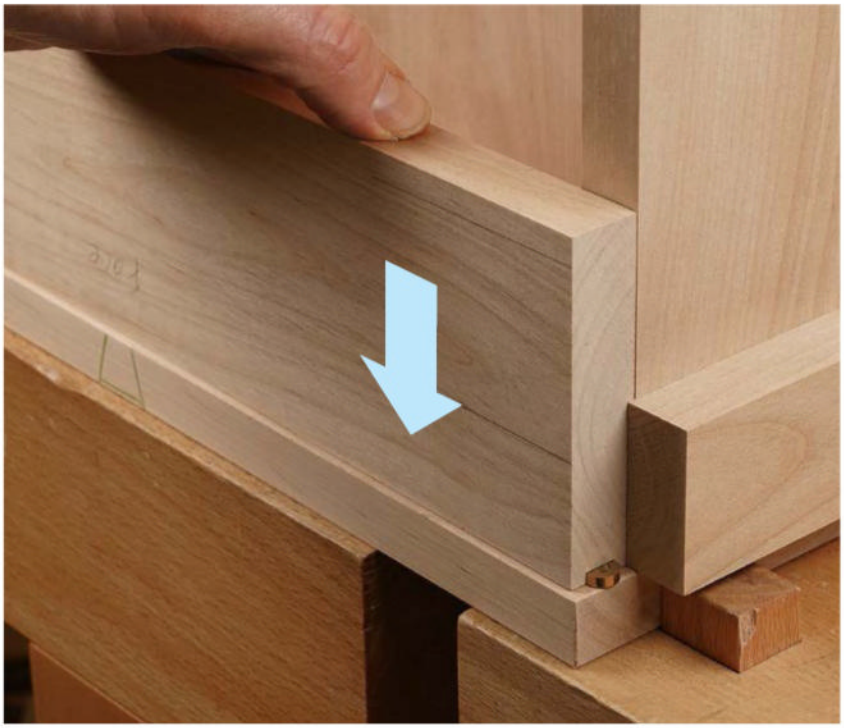
You'll need to chisel one end of the mortise square to fit the square end of the hinge leaf. Then the hinge should push in easily without any significant gaps.

Add the fence—You want the hinge to end up centered on the thickness of the door, so you need to do a bit of math to decide where the fence needs to be positioned. To align the fence and make it easy to attach and detach accurately, cut a groove in the template and a tongue on the fence to fit. Position the groove so the fence face ends up a bit too close to the hinge opening in the template, and then plane the fence until the offset is exactly right.

Mortise the case before assembly

After cutting the cabinet joinery, dry-fit the case, and lay out the hinge locations using a setup block like the one shown in the photos. The block is made from a strip of wood that's equal to the thickness of the door, with hinge mortises cut into it.

Use your routing template to cut hinge mortises in the setup block. Then use the setup block and some double-stick tape, as shown in the photos, to place a hinge leaf on the bottom of the case. Tape a shim to the front edge of the case, identical in thickness to the desired gap behind the door, and position the setup block against it to locate the hinges. Once the hinge leaf is taped in place, trace around it with a sharp pencil, and then remove it.



Presto. *Push the setup block against the case and the end block, then slide it down firmly against the case bottom (left). Lift the block and the hinge leaf will be in the right location (above).*

Mortise the case

Locate the template. *After disassembling the case, trace around the hinge with a sharp pencil and remove it. The fine pencil lines make it easy to align the template precisely. Shift the hinge opening until all four pencil lines disappear, and it will be in the perfect spot.*

Rout with confidence. *Keep the same depth setting, and rout at full depth. Vacuum out the opening and make one more pass. Square the corners with a chisel, check the fit, and use a self-centering bit to drill pilot holes. Then repeat all of these steps on the case top.*

To mark the hinge location on the top of the case, use the mortise you cut in the opposite end of the setup block. Be sure to orient the same side of the block toward the front of the case so the hinges will be set back the same amount.

Disassemble the case, and use your layout lines to align the router template on the bottom and top of the cabinet. After routing the mortises, square one end of each with a chisel, test the fit of the hinges, and drill pilot holes for the screws.

Glue up the case and fit the door to it (partially)

When you are happy with how the case leaves fit into their mortises, glue up the case. We are shooting for tight gaps around the finished door, so you want the case to be assembled as squarely as possible. With the case glued together, you can fit the door to it, at least along three edges. Ultimately you want this overlay door's sides to be flush with the outside faces of the cabinet, and you want 1/32-in. gaps between the door and the case top and bottom.

Note that the hinges have a small washer of sorts incorporated in them, which determines the gap between the bottom of the door and the case. Because this lower gap is predetermined, you want to match the gap above the door to it.

Start the fitting process at the top and bottom edge of the door, working toward that tight, even 1/32-in. gap above and below. I use a crosscut sled on the table saw to get the door close to final size, and then fine-tune it with a hand plane.

Now sit the door on its bottom edge in the case opening. Mark and then trim/plane the hinge edge until it lines up with the out-

Mortise the door

Assemble the case. *With the hinge mortises cut in the top and bottom of the case, you can finally glue it up. To make it easier to fit the door, keep the case as square as possible as you clamp it.*

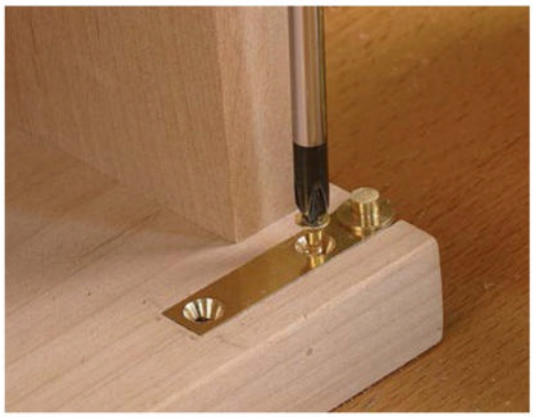
Fit the door. *Using a crosscut sled, trim the lower edge of the door so it just fits between the case top and bottom and the hinge edge aligns with the side of the case. Then with the door resting on the bottom of the case, use a 1/16-in. spacer to mark the trim line on the top edge of the door, as shown. This will give you a 1/32-in. gap at the top and bottom edge. Leave the latch side of the door a bit overlong at this point.*

Rout the mortises. *Before routing, scribe a layout mark on the door the same way you did on the setup block, and vacuum out the dust before a final pass. Do the same thing at the other end of the door, keeping the fence on the same side of the door. Then drill pilot holes.*

TIP

Blowout block. *Clamp on a backer block to prevent chipout where the bit will exit the edge of the door.*

Hang and trim the door



Install the case hinges. *Along with brass finish screws, the hinges come with steel screws for cutting threads in the wood so you don't mar the heads of the brass screws when you install them. Wax the screws to further ease the way.*

Slide the door onto its hinges. *Install the hinge leaf in the bottom of the door, and then drop the door onto the pivot pin of the lower case hinge. Now hold the upper door leaf in place on the case leaf's pivot as you tilt the door and slide the leaf into its mortise. Then drive the last two screws.*

side of the case. The door should still be a tad wide along the latch side, which you can tune up after the hinges are fully installed.

Rout the door mortises

The fence goes back on the hinge template for this step, to align it front to back on the edge of the door. That leaves just a small layout step to do—positioning the hinge correctly side to side. On the top and bottom edges of the door, knife a small mark 1$^{9}/_{16}$ in. from the end. That's where the end of the template opening goes when you clamp it to the door.

Now you can rout the mortises in the top and bottom edges, using the same depth setting on your router that you've used this whole time. Square up the mortise ends as before, check the fit and placement of the hinge leaves, and drill pilot holes.

The Brusso hinges come with one steel screw for cutting threads in the pilot holes, which makes it easier to drive the soft brass screws without deforming their heads or breaking the screws entirely. Waxing the screws before driving them also helps.

Door goes on in minutes

Begin by screwing the case parts of the hinges into their mortises. Now you should be able to tilt the door onto the bottom hinge post, push the top door hinge onto its post, and then pivot the door to push its mortise onto the upper hinge. Alternately, you can leave both door leaves unattached, place them over the posts in the case parts of the hinges, and then slide the door onto both of its hinges at once.

To screw the last door hinge leaf in place (or both door leaves), all you have to do is open the door to access the screws.

Once you understand how easy it is to install straight hinges for overlay doors, you'll have no problem installing the offset version, used on inset doors (see Skills Spotlight, pp. 76–80). □

Contributing editor Chris Gochnour, who lives and teaches in Salt Lake City, has been writing for Fine Woodworking *since 1998.*

Trim the last door edge. *Working from the back of the cabinet, with the door closed, use a sharp pencil to mark where to trim the latch side of the door. Then remove the door, trim that last edge, reinstall the door one last time, and admire a job well done.*

Elegant Twig Lantern

This project is packed with details and joinery exercises

BY ELLEN KASPERN

Photos, except where noted: Anissa Kapsales

In 2017 I was invited to be part of a show with The Trustees of Reservations and the North Bennet Street School. Thirteen NBSS graduates were invited to make a piece inspired by one from The Trustees' collection. The piece I chose was a 1930s table made entirely of twigs; it came from a camp that was at the Lyman Reserve in Massachusetts. Since the table was part of a camp and the lantern is the North Bennet Street symbol, making a lantern seemed appropriate. This piece has mortise-and-tenon case construction with glass panels and an inset door. The top is made of bent copper, and the case sits on a base that has a dovetail slide for the candle.

Start the case joinery with grooves

I begin by cutting a groove in the posts and rails at the router table using a straight bit. The groove will be run on the edges of the posts and rails that will hold glass. The back posts get two grooves, as they will hold two panes, but the front posts only get one groove.

This groove will eventually become a rabbet (to hold the glass and stops). I run a groove first so there is less wood to remove when making the rabbet. By doing the groove first on the case posts, I do not have to raise the router bit as high when plunging, which I feel is a safe way to perform that operation.

Mortises on the router table, tenons on the table saw

With the exception of the front posts, the end of each post gets a mortise. (There is no rail between the bottom front posts, so they don't get mortised.) By running the grooves first, I can use the same setting on the router table to cut all the mortises in the posts. I set stops on the router table to cut the mortises so I can plunge and push to a stop.

Next, at the table saw, I cut the tenons on each end of the rails and fit each tenon to a mortise.

Convert grooves to rabbets

Once all the grooves, mortises, and tenons are cut, I convert the grooves to rabbets at the router table. This is a plunge and push to the stop cut on the router table, because I do not want to cut where the mortises are. By running the grooves first, I do not have to raise the cutter as high when I'm cutting the rabbets. This helps when plunging and pushing to a stop. To make these cuts, I use a straight bit and an auxiliary fence. Finally, I use a marking gauge and chisel to remove the rest of the rabbets by hand.

Glue the posts to the rails

A typical case has four sides; however, this case has three sides and a hinged door. I assemble the case in stages. I glue up one side, then the opposite side. Once those assemblies are dry, I attach them to each other at the back

Twigs pull double duty

Decorative twigs are functional parts of the lantern as well.

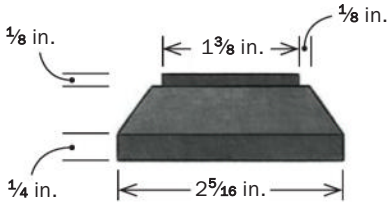
DOOR LATCH

DOOR STOP

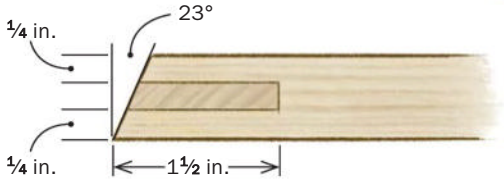
CANDLE SLIDE PULL

LANTERN

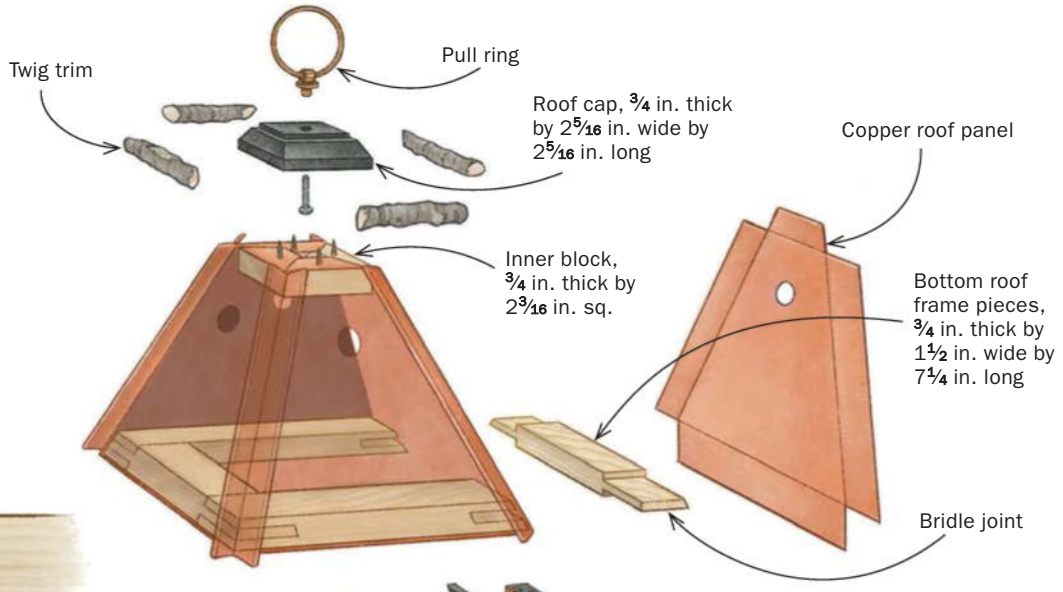
Mortise-and-tenon joinery abounds in the posts and rails of the case as well as the door. The copper roof attaches to the case via a wooden frame.

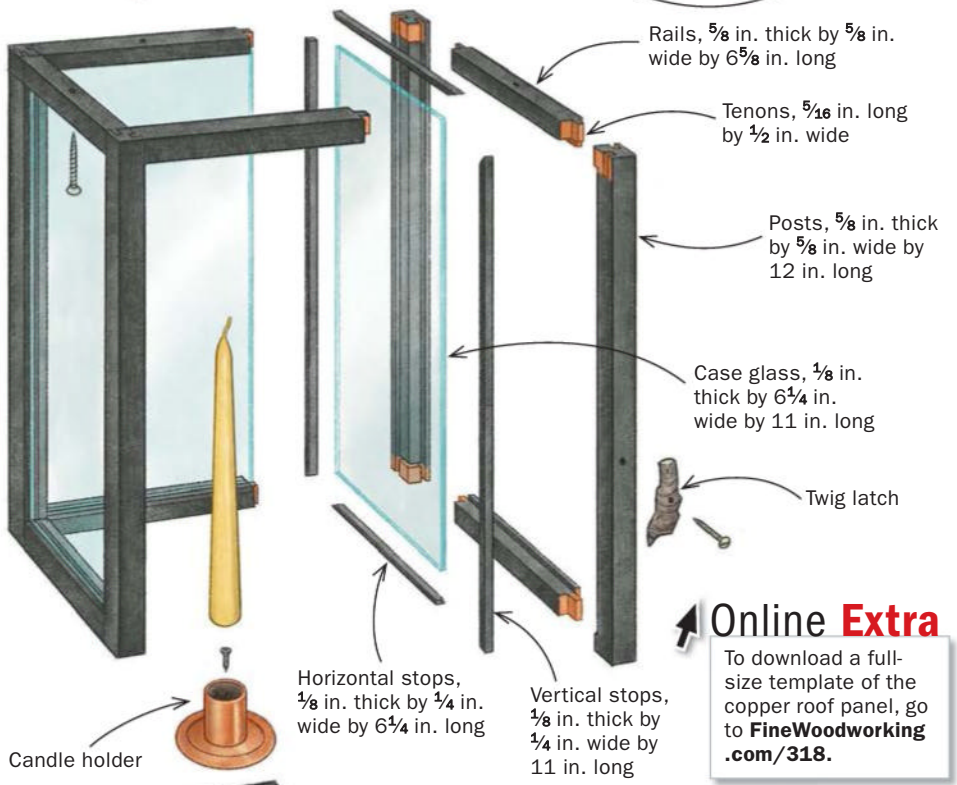


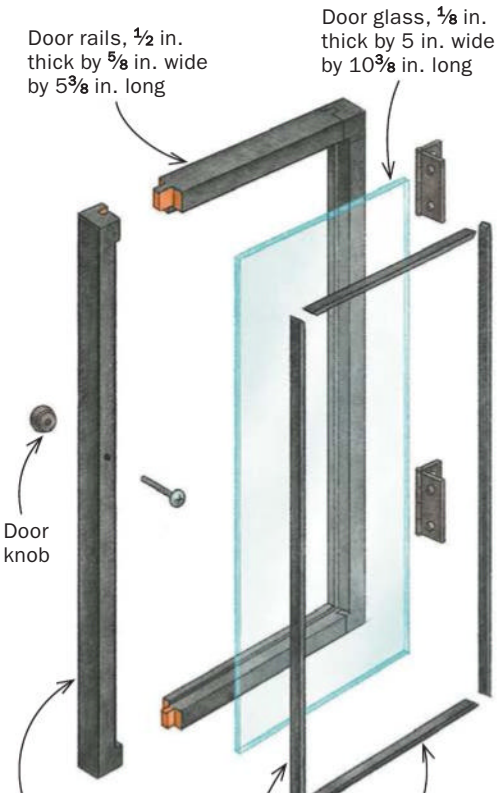
ROOF CAP DETAIL

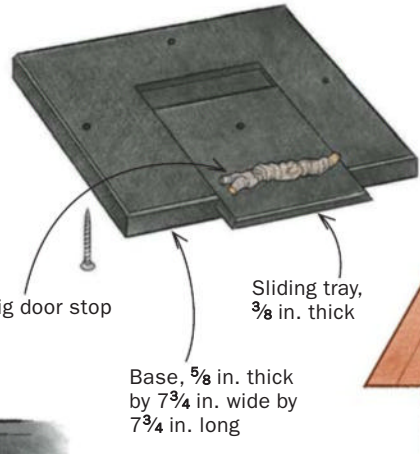


BOTTOM ROOF FRAME DETAIL

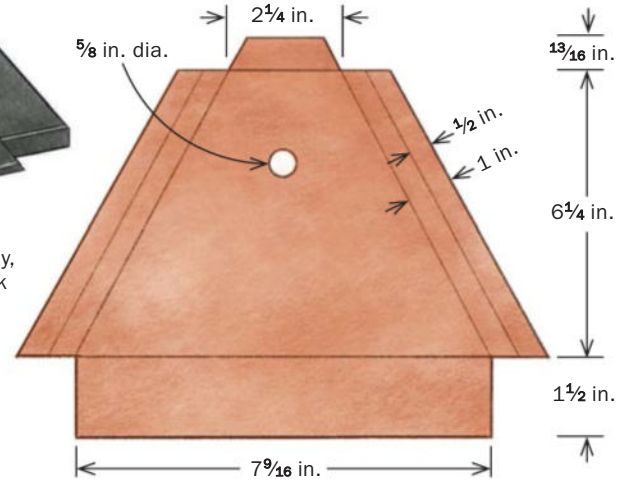








SLIDING DOVETAIL TRAY DETAIL



COPPER ROOF PANEL DETAIL

Online Extra

To download a full-size template of the copper roof panel, go to **FineWoodworking.com/318.**

Drawings: Derek Lavoie

A three-sided case

The slim design of the lantern case is simply four posts joined by seven rails. The joinery is mortise-and-tenon. Additionally, all the parts get a rabbet that holds the glass panels.

Starter grooves. *Both the posts and the rails get a through-groove at the router table.*

A groove becomes a mortise. *To cut the mortises in the ends of the posts, use the same router-fence setting but raise the blade and add a stop.*

SOURCES OF SUPPLY

COPPER TAPER HOLDER
thefloralsociety.com

PULL RING
Kaspern used an antique pull ring. Similar versions can be found on amazon.com

COPPER
basiccopper.com

BRASS HINGES
a.co/d/gOCFVID

KNOB IN MATTE OIL-RUBBED BRONZE (⅝-IN.-DIA.)
myknobs.com

BRASS-PLATED TWIST NAILS (#13 BY ⅞ IN.)
homedepot.com

by gluing a top and bottom rail to them.

At the same time, at the front, I glue a top rail between the sides and add a spacer piece at the bottom of the front section. The spacer piece makes sure the front and back are square. The spacer is milled with the rails and will have shoulders cut on each end using the same setting as the tenons.

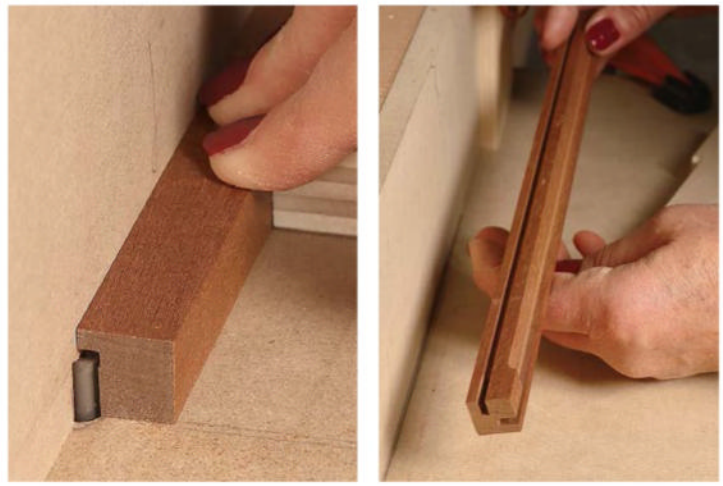
Make and assemble the door

The inset glass door has offset shoulders. At the router table again, I cut mortises in the stiles before moving to the table saw to run a rabbet on the rails and stiles. The rabbet holds the glass and wooden stops.

I run the rabbet in a spacer block at the same setting as the rabbet on the grooves and the stiles. Then I use the spacer block to do the offset shoulders on the table saw so that they turn out perfectly.

With the rabbet in the spacer, I cut the offset shoulders with a dado set on the table saw using the spacer clamped to the rip fence, first with the rabbet not engaging the rail and then flipped so the rail runs against the rabbet to create the offset. Once the joinery is cut, I glue the rail and stiles together. After that assembly dries, it's time to tackle hinging the door to the case.

I cut the hinge mortises on the door and case by hand using a marking knife, marking gauge, and chisels. I cut the mortises on the door first and set the hinges on the door. Then I place the door onto the case and transfer the placement of the hinges. Once the

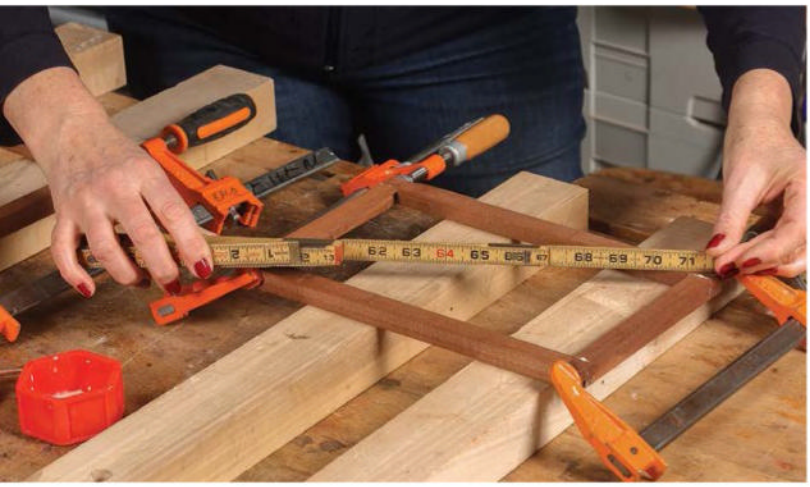


Transform grooves into rabbets. *Still at the router table with a straight bit, cut through-rabbets on the rails and stopped rabbets on the posts. You'll have to square the rabbets up with a chisel.*

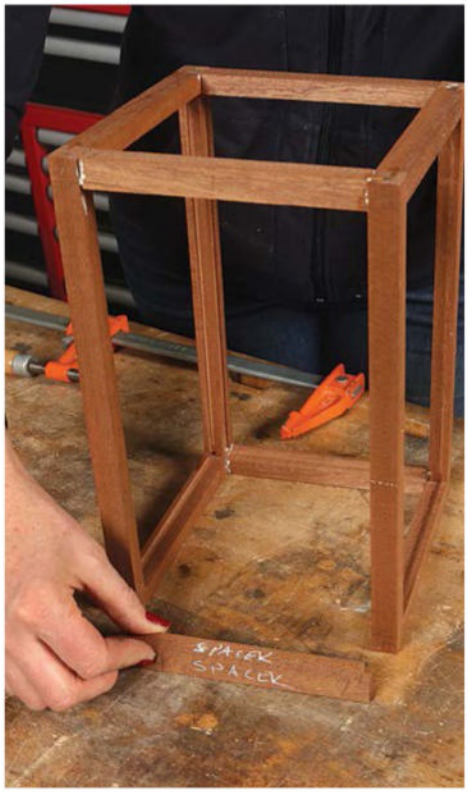
Tenon the rails. *Kaspern cuts the tenons at the table saw using a dado blade and a backer block to stabilize and register the small piece against the fence.*

Assemble the case

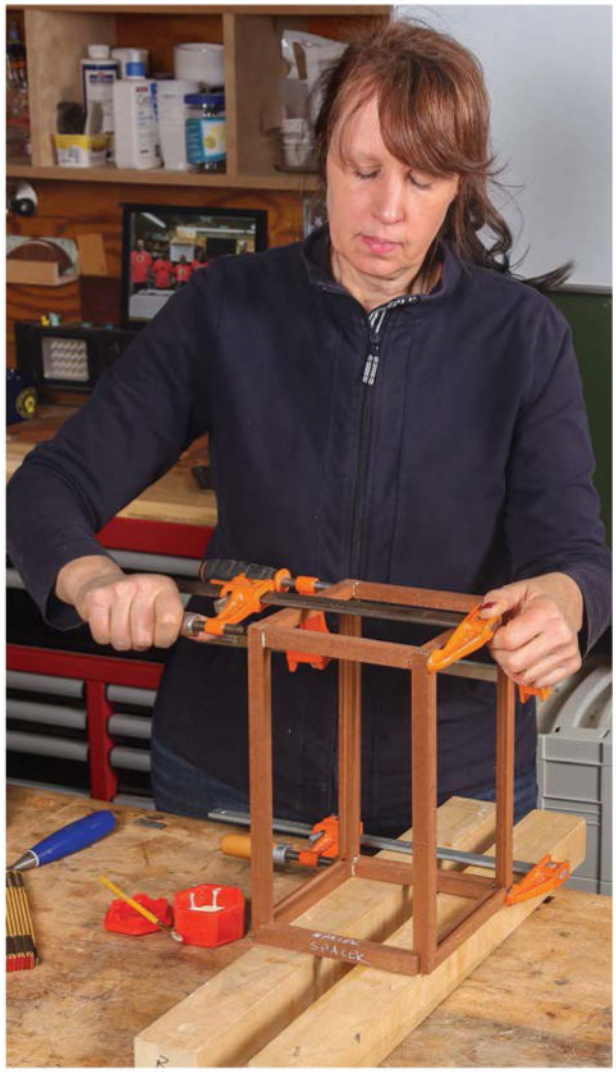
Glue up the case in two stages, beginning with the two sides and then joining the sides to each other via rails.



One side at a time. *Glue up the two sides first, measure corner to corner to make sure everything is square, and let those two assemblies dry completely before moving on.*



Side to side. *A top rail and bottom rail join the back of the two sides to each other. At the front, there is only a top rail. The U-shaped case gets secured to the base, and the door runs from the top rail to the base. During the glue-up, to make sure things stay square, Kaspern uses a temporary spacer between the sides at the bottom. The spacer has shoulders matching the tenon shoulders to keep the sides parallel while the glue is drying.*



hinges are set, I hand plane the door to have a consistent fit and reveal inside the case. This requires taking the hinges on and off the door a few times. Since the case is stained black, I blacken the hinges using Super Blue.

A base with a slider

The base of the lantern is a solid piece of wood that overhangs the case on all sides. It is attached to the case with sloppy screw slots to allow for expansion and contraction.

For easier access to the candle holder, I add a dovetailed sliding component to the bottom using a dovetail router bit and a handheld router to remove the wood. I use the same router bit in the router table to make the solid dovetail slide. Later I will attach a twig pull to the dovetail slide, which will also serve as a stop for the door.

Finish first

The case is mahogany, made from scraps from another job. It can easily be left bare, but I decide to stain it with black leather polish. I find the mahogany grain and pore structure lends itself well to being stained with black polish. The finish is General Finishes Arm-R-Seal.

A frame for the roof

For the roof, I start by making a sturdy frame for the copper to be attached to. The frame joinery is a bridle joint. The bottom of the frame will not be seen, and I bevel all four sides at the table saw to create the angle I want for the top.

I cut the joinery on the table saw using a dado set. To cut the mortises, I use a hand screw that rides on the rip fence while holding the short piece upright. A feather board keeps the piece tight against the fence. (You also could use an over-the-fence tenoning fixture.) The tenons are cut lying face down on the table saw.

The copper topper

The four copper panels get cut to shape, wrapped around the bottom of the frame, and attached with screws. I outline the template onto the copper with a knife and then cut out the shapes on the bandsaw. Copper is very soft and can be cut with a standard blade. I use a general-purpose 4–5-tpi blade, being sure to wear a respirator and to vacuum up any metal debris left behind.

After cutting the copper to the pattern, I bend the copper on a shopmade brake made of plywood and hinges. I use a knife to score the copper anywhere I will be folding. I line up the fold line on the copper with the seam in the brake, and then I clamp the copper in place and clamp the brake to the bench. I fold the brake at its hinges, which bends the copper past 90°.

After removing the copper from the brake, I put the bent edge in my vise with a piece of plywood. The plywood is slightly lower than the copper, and it helps to pinpoint the pressure on the copper when I turn the handle of my vise to bend the copper flat back on itself. Next, I put this folded edge back in the brake and bend it in the brake again. I do not put the second fold back in the vise to fold it flat.

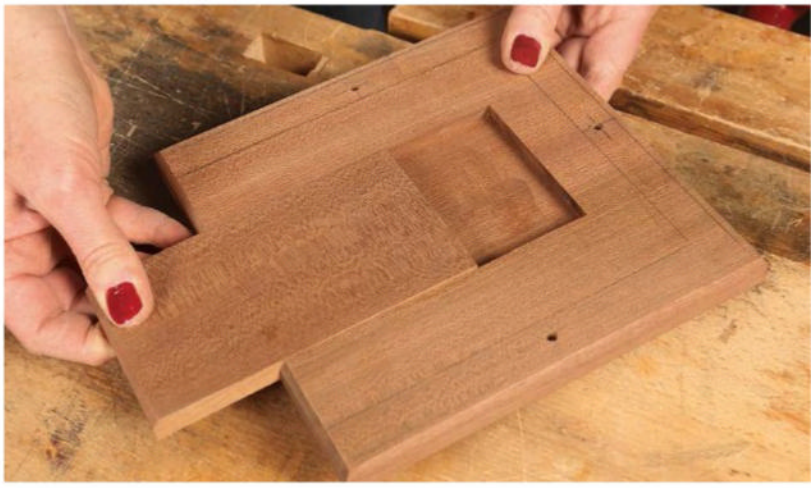
There are two tabs per panel, one at the top and one at the bottom. Because it's an easy 90° fold, I simply score the fold line on the tabs, set them in my bench vise with the score line at the top of the vise, tighten the vise, and fold the tabs.

At the drill press with a Forstner bit, I drill one hole in each copper panel to create air vents

From base to top

The case sits on a profiled base with a sliding candle tray, which provides access for placing and lighting the candle. The copper roof tabs are wrapped around a beveled frame that attaches to the top of the case.

Prepare the base. *Use a dovetail bit in a handheld router to cut out the recess for the sliding tray. Center the case on the base, trace the inside and outside lines, and from the bottom, drill and countersink pilot holes. Later, you'll use these holes to attach the case to the base from underneath.*



The mating dovetailed tray. *At the router table, cut the profile in the sides of the tray with a dovetail bit. Sneak up on the fit, making sure the tray is snug but slides in and out easily.*

Bridle joints and bevels. *After you cut the bridle joinery for the roof frame, glue it together. Once it's dry, cut a bevel around the perimeter of the frame. When the copper sheets are attached to the frame, they'll slant inward at the angle of the bevel.*

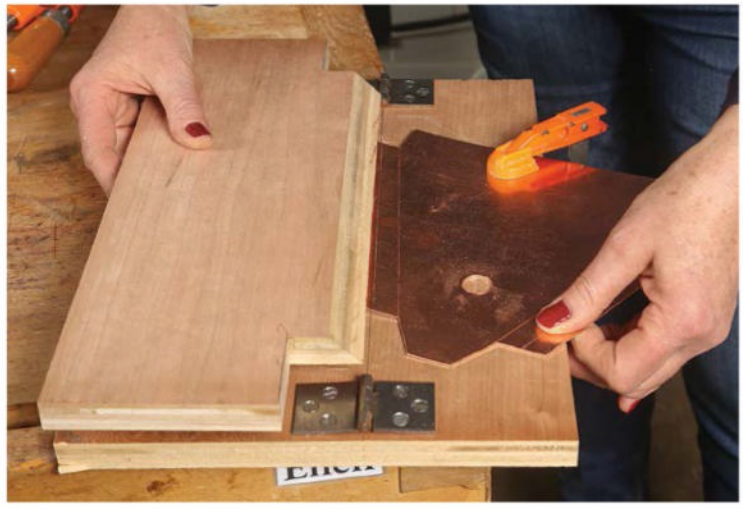
The no-weld method

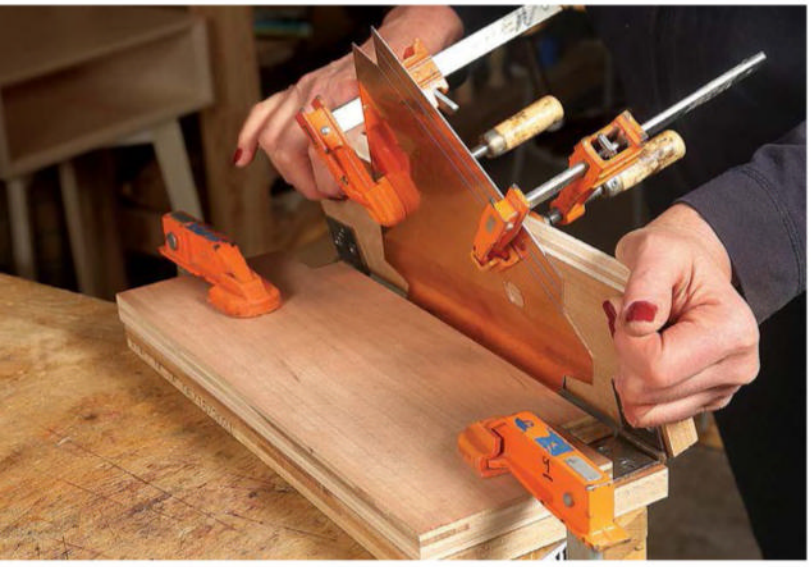
Kaspern doesn't weld. Instead, she has figured out a way to create the copper roof without welding or soldering. Her method is about leaving tabs, folding past 90°, overlapping, and securing everything in place.

Start with a template. *To create the four copper panels, use a template taped to the copper sheet and then score the perimeter of the pattern.*

Cutting copper. *Because the copper is soft, Kaspern cuts the copper shapes on the bandsaw using a general-purpose 4–5-tpi blade.*

Score and position. *Before you try to bend the copper, use a straightedge and a knife to etch the fold line. Set the copper into the brake, mating the score line with the seam in the brake. Once in place, clamp the copper to the brake.*





Clamp and fold. *Once the copper is held in position on the brake, clamp the brake to your bench and begin folding the brake to bend the copper.*

for the candle. The panels are attached to the bottom of the frame with screws. I use #4 by ¾-in. panhead screws so I don't have to countersink into the copper. The screws are driven near the edge of the copper, thus allowing the copper to still sit flush on the case.

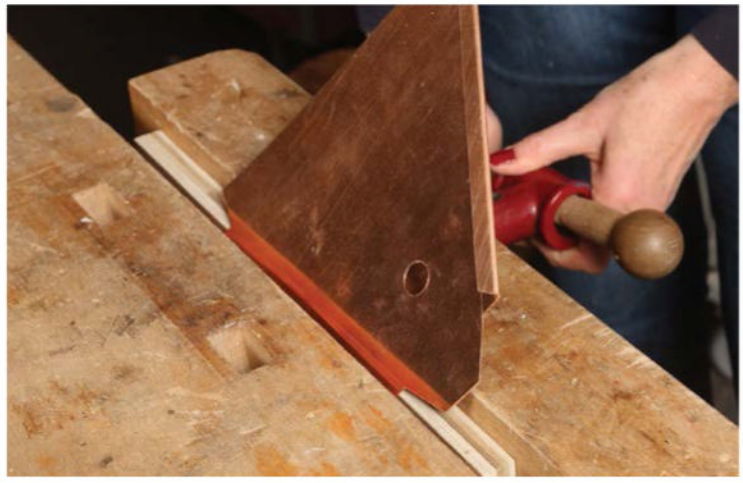
Roof pieces are gathered together

Two square wooden pieces (a decorative top block and a support block that sits inside the roof at the top) hold the copper tabs at the top of the roof together. I find the center of both pieces by marking an X. I drill holes in the decorative top piece for the metal hanging ring and nut.

With blue tape I mark the front edge of the two pieces of solid wood and the front face of the copper. This allows me to always reference the front on all pieces.

First, I line up the front of the inner block and the front of the roof and drill through the copper tabs and into the bottom inner block. I place the inner block on top of a supporting block of wood that is the same height as the copper roof. Then I place the roof on

Small photos p. 62: Ellen Kaspern



Fold it flat. *To really squeeze that fold back onto itself, move the panel to your bench vise. Position a piece of plywood in the vise, slightly lower than the copper fold, and crank the vise tight. Then back in the brake, bend that fold again. Don't fold this one flat—just bend it to 45°.*

Screw the copper panels to the frame. *After folding the top and bottom tabs to 90°, working one panel at a time, set the folded bottom tab of the copper onto the bottom of the beveled frame, then drill and screw the panels in place on the frame.*

Cinch the top. *By hand, squeeze the four panels in at the top. The four top tabs will overlap. Mark a center hole across the four tabs. Release the panels and use tin snips to cut out the center.*

top of the inner block, making sure the center of the support block is in the middle of the copper tabs. I drill through each copper tab and into the top of the inner block. I remove the inner block and continue drilling holes through it. Then I place screws through the bottom of the inner block, leaving them slightly protruding.

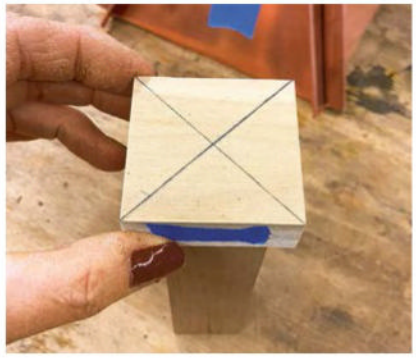
To transfer the location of the screws to the decorative top block, I put the inner block back under the tabs and have the screws protrude out of the holes in the copper. I position the decorative top over the copper tabs and press firmly into the protruding screws to leave an impression. Using those marks, I drill holes into the bottom of the decorative top. I attach the metal hanging ring into the wooden top, place the decorative top back on the copper tabs, and screw through the bottom of the inner block through the tabs and then into the bottom of the decorative wood topper.

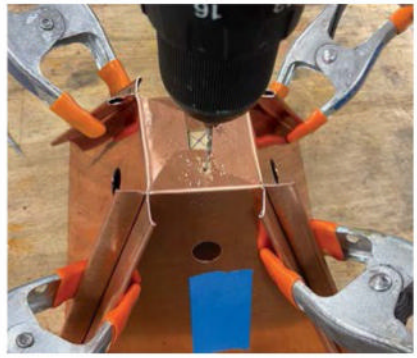
Install the glass

Once the copper top is assembled, I mark and drill the case for the three screws, one on each side and the back, that hold the roof

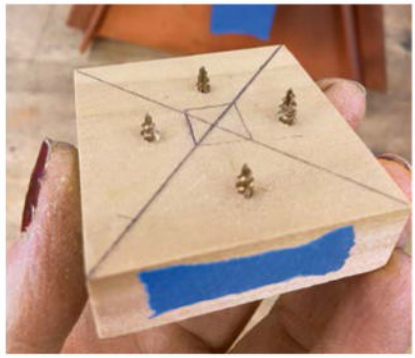
Gather and secure the top of the roof

The four copper panels are connected at the top and sandwiched between two pieces of wood. Both pieces are square; the poplar bottom piece is ⅛ in. smaller, so it fits under the tabs better.

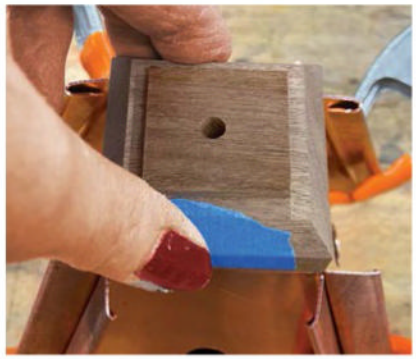


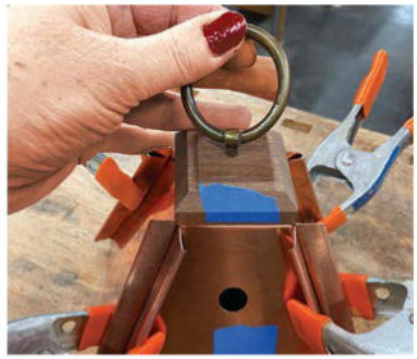


Locating. *Mark both cap pieces with blue tape on the front edges and X's to find their centers. Set the inner block on a support block, and then set the roof—also referenced with blue tape—on top. Drill one hole per tab through the copper and straight through the square block.*



Add screws. *Place screws through the bottom of the inner block until they come through the top. Using the support block underneath again, set the interior block on top and replace the copper top over it. The screws should poke through the copper.*





Transfer screw locations. *Press the top cap onto the assembly. The blue tape fronts should line up, and the protruding screws should transfer to the underside of the top. Remove the top, drill, and attach the top ring. Finally, screw the two blocks together from inside.*

Reference the case to the roof. *Drill one hole per side, through the rabbets in the top of the case. Then with the roof upside down on risers, set the case upside down on the roof and use a punch to mark the location of the holes in the case. Then drill into the roof frame.*

to the case. However, the roof isn't attached to the case until the glass is in place. I need to be able to maneuver without the roof to install all the glass.

With a countersink bit, I drill under the top rails on each side and the back of the case. The screws that attach the copper top to the case go through the top rails and get covered by the stops. I install the glass before I attach the roof, but I tack in those last two stops after the roof is screwed in place. I position the copper top upside down, with the case also upside down and centered on the roof, and then place an awl into the screw holes to mark where to drill into the copper top. I drill holes into the copper roof for the screws.

The glass is held in place with thin wooden miter strips. I miter each of those stops using a 45° sled on the table saw, and I attach the stops to the case side and door frame with a pin nailer.

When installing the glass, I start with the pane that goes into the back of the case. I set the glass in the back of the case and then put in the stops. I use ½-in. 23-gauge pins to secure the stops to the case, with three pins in the side stops and two in the top and bottom. After the back glass is

Final bits

Before you can attach the roof, you have to install the glass and add details such as the candle holder, door, and twigs.

Install the glass. *Start with the back pane of glass, setting the glass in place and adding all the stops to hold it in place. Then move on to the side panes. Install all the stops on the sides except the three at the top. You can add them once the roof is screwed to the case.*

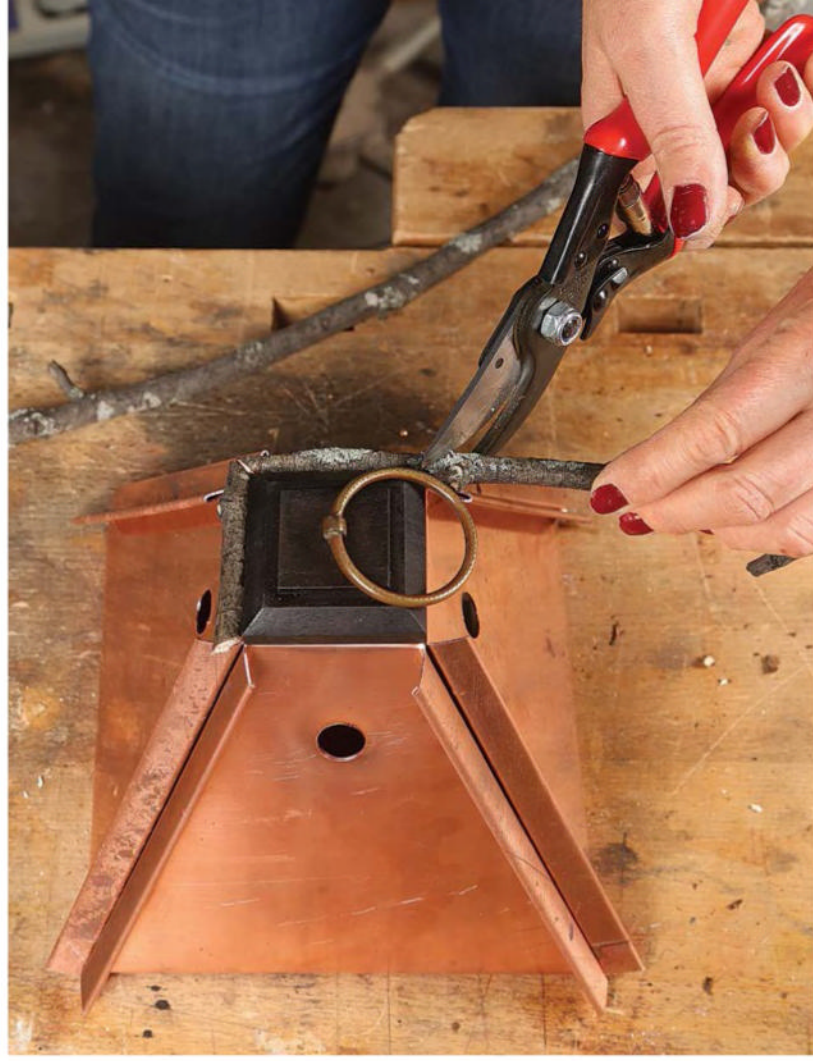
in, I install the glass on each side of the case. (My pin nailer is just small enough to fit in the case.) I install the glass in the door before my final installation of the door to the case.

The case gets a roof and some final touches

It's finally time to secure the roof to the case. After placing the copper top on the case, taking care not to scratch or break the glass, I screw the two pieces together by hand. The screws must be completely countersunk or the final three stops will not fit properly. I secure the last three stops in place.

To hold the candle, I nail a copper candle holder to the slide. My friend Nicholas Ventola made the candle holder shown here by soldering a piece of copper pipe to a piece of copper. (I could also have used a copper pipe cap for plumbing or purchased a similar copper candle holder from The Floral Society.) I also add the twig that serves as the pull for the slide as well as the door stop. Then I attach a knob to pull the door open and a twig for a door latch. □

Ellen Kaspern is a faculty member in the cabinet and furniture making program at the North Bennet Street School in Boston.



Twig detail on top. *To make the twig trim that goes around the top cap, work your way around the cap, cutting the miters by eye with pruning shears. Cut one end and mark it in place, then cut the other end and tack it in place with a pin nailer. Move to the next side until the twigs decorate the perimeter of the cap.*

Final door installation. *After you screw the roof to the case, install the door for the final time.*

Add the sliding-tray details. *Screw the candle holder to the tray. With the tray in the base, mark where the door should stop on the base. Pin-nail the twig tray pull there.*

Pro Tips for a Better Varnish Finish

The dos, the don'ts, and a few things you never thought of

BY MICHAEL MASCELLI

For several thousand years flax has been grown so that its supple fibers can be woven into linen cloth and its bitter seeds pressed into a slow-drying oil—linseed oil—that has proved perfect for mixing with "earth colors." This is traditional oil-based paint: just oil and pigment. Later on some alchemists began blending in ground-up resins (dried tree sap) like amber, frankincense, and copal to fortify the linseed oil and create the film-forming coatings we call varnish. Formulas were created for finishing everything from sailing ships to violins. In the late 1800s the coal and oil industries produced new chemicals that gave birth to synthetic resins such as aliphatic, phenolic, and eventually urethane. For the last 100 years or so, oil-based varnish has been a standard coating for most furniture and woodwork. Modern oil-based polyurethanes are a blend of several different resins mixed with the same pressed flax seed, or linseed, oil.

I have gathered tips from friends and colleagues in the conservation and restoration trades and from my own experience to help you get the best results with this easy-to-use and versatile varnish.

Mike Mascelli teaches finishing and upholstery all over the United States.

THE RIGHT BRUSH MAKES A DIFFERENCE

Oil-based varnish is best applied with a top-quality natural-bristle brush with flagged tips (bristles that are split at the tip). Alternatively, you can use less expensive chip brushes, which also have natural bristles and flagged ends but are not as uniformly made and don't hold as much varnish. Varnish is slow drying, and once applied it can be tipped off using light pressure with the very end of the brush in long strokes along the grain. This will even out the brush marks and ensure even coverage.

Photos: Anissa Kapsales

Backtracking is the solution. *First, use a random-orbit sander up to 220 grit. Then, using a sanding block, go back to 180 grit and work carefully with the grain until the swirls are gone. Hand-sand again with the block and 220 grit to remove those scratches.*

GOOD SURFACE PREP IS ESSENTIAL

Traditional guidance is to sand to 220 grit before applying varnish. This advice is based on the fact that most oil-based varnishes will fill in 220-grit scratches. That is less true of most of the waterborne varnishes, which build a thinner film with each application. If you sand to 220 grit with a random-orbit sander, it is almost impossible to get rid of the little swirly circles, especially in the harder, less porous woods like maple and cherry. It may seem counterintuitive, but the way to perfect prep is taking a step back in grit.

SNEAK PREVIEW

Alcohol reveals all. Great finishes start with careful selection of the wood and careful preparation of the surfaces to be finished. An easy way to preview your finish is to wipe the bare wood surface with a cloth dampened with denatured alcohol. This will show any sanding scratches, will reveal blotching—especially on cherry and birch—and will give a sense of how much darker the end grain will be than the flatsawn surfaces. Alcohol evaporates quickly and will not raise the grain.

SATIN, GLOSS, OR BOTH

For a high-use area like a tabletop, it is best to build several layers of finish for maximum protection. If the goal is a satin or semigloss look, one option is to build coats with a gloss varnish such as Minwax Oil Based Poly and then use a Minwax satin or semigloss for only the last coat. This will get you both the clarity and the sheen that you like.

Stirred, not shaken. *All film-forming, oil-based varnishes are naturally glossy. To make them into semi-gloss, satin, or matte, a very fine flattening powder is added, and when these products sit on a shelf, all the powder settles to the bottom of the can. It is important to stir the varnish when starting—not shake it, which introduces air bubbles—and to continue to stir so that the flattening powder is well dispersed in the final film. Remember that adding coats adds more flattener, so the sheen gets lower and lower.*

RECONSIDER USING SPAR

Spar varnish was originally formulated for the masts and spars of sailing ships and therefore had to be elastic enough to endure the expansion and contraction of the wood parts. This elasticity was achieved by using considerably more linseed oil, and perhaps other oils, to make a long-oil varnish.

Spar varnish works well for exterior doors, as it often has some UV blockers added. However, the popular home-brew oil-based wiping varnish recipe is to add even more boiled linseed oil to spar varnish, which makes for a very slow-drying, very soft, and very thin film finish. It is simple to apply and wipe off, and it gives a soft glow, but it does not offer nearly as much protection as a good-quality interior varnish.

WORK WITH GRAVITY

When finishing a complex project like a table, it is important to plan and rehearse the steps you will use for each area. Both oil-based varnish and wiping varnish tend to run or sag on vertical surfaces. Whenever possible, orient the piece so that the surface you're coating is horizontal, even if that means flipping the piece around several times and letting each section dry. Generally, legs and aprons do not need as much film finish as tabletops and can often be done first, leaving the most-seen and most-used parts to be done last.

BETWEEN COATS

Oil-based varnish dries slowly, and it is difficult to keep dust off during that time, so it helps to lightly sand between coats. Here are a few things to keep in mind.

1. Choose the least aggressive abrasive that will remove the dust and debris—usually 320 or 400 grit—with a cork or hard felt block. Sanding above 400 grit can be risky, as the surface is so smooth that the next application of finish may not adhere properly. Steel wool, even the coarse 0 type, or a maroon Scotch-Brite pad, will only round over the nubs and not actually level the surface.

2. Oil-based varnish will usually dry to the touch in eight to 12 hours but will not be fully cured for three to four weeks depending on temperature and humidity. It is possible to rub out a cured varnish film, and the test is to start with some 400-grit dry sandpaper in an obscure area and see if you get a nice dry white powder. If the sandpaper gums up, the varnish is still too soft to rub out.

3. After doing any sanding, be sure to remove the dust before applying more varnish. Premade tack cloths usually contain a sticky resin, and while they pick up the dust from bare wood, they may leave a residue that can interfere with some finishes. Instead, try using household Windex on either a clean cloth or a blue shop towel. It will get rid of the dust and leave a clean surface.

FINISHING THE FINISH

Often in the finishing process there tends to be very little finish film on the edges, and it is easy to simply rub right through to the bare wood. You can use tape to protect the edges. When rubbing out a film finish on something like a tabletop, it is a good practice to place some blue masking tape so that it covers the last ⅛ in. of the edge of a surface. When the rest of the top is rubbed out, pull the tape and gently run a bit of 0000 steel wool on the edge to harmonize the gloss.

WAX GETS THE FINAL WORD

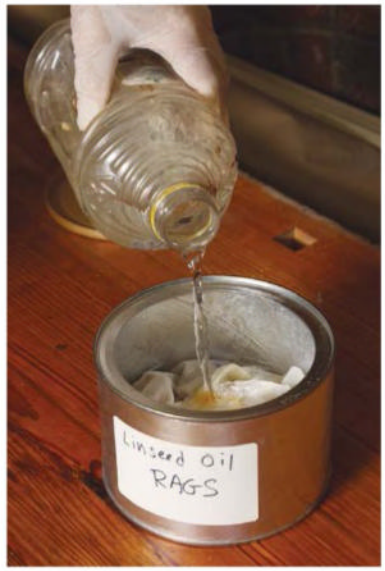
Fill and shine with wax. It is possible to build layers with gloss varnish and then gently abrade or rub the cured film with a fine abrasive (320 or 400 grit) to lower the sheen. Adding some paste wax will fill in some of the scratches and actually raise the sheen.

BRUSH CARE

With proper cleanup and care, good brushes can last a lifetime. I still regularly use my father's brushes from the 1950s. My brush cleanup is a two-step process with mineral spirits and lacquer thinner. I use the same process on my father's brushes as I do on the chip brushes I recommend my students start with so that they aren't spending $75 to $100 on a brush right away. Wear rubber gloves, work in a well-ventilated area, and clean brushes right after using them. Pour enough mineral spirits to cover the bristles in a container. Dunk and press the brush in the mineral spirits to get out as much finish as you can. Then wipe off any excess mineral spirits. Give the brush a final dip in lacquer thinner to get it squeaky clean, then brush out the lacquer thinner onto an absorbent surface or a rag.

HOW TO DITCH DIRTY RAGS

An important but often overlooked practice is how to carefully handle and dispose of any rags, especially paper towels, used with linseed-oil products. As oil-based products are drying, they give off heat and can spontaneously combust. Never throw oily rags into a pile, as that concentrates and increases the heat. The layers will dry at different rates, creating a situation where the rags can automatically ignite. Instead, dry the rags separately or use water for safety. Small rags can be dunked temporarily into a secure metal can full of water and covered with a lid. Ideally, all rags should be set apart outside to fully dry for several days, at which point they can be placed in the trash.



OXYGEN AND CONTAMINANTS ARE THE ENEMIES

It's rare that you'll go through an entire container of finish in one session. Once the container is open, there are a few steps you can take to extend the life of the unused finish. The biggest hurdle you'll face is that when you pour out finish to apply it, you create empty space in the can. To preserve the remaining varnish, you must battle the oxygen that causes it to dry. There are a few ways to do that and keep the finish free of contaminants.

Do not work out of the can. *Pour out enough for the task into a clean cup or jar, and never put any unused varnish back in the original container, as it is very likely full of dust and will contaminate the new finish.*

Displace the air in the can. *You can use a product called Bloxygen, which is simply argon gas, to displace the air in the can and form a barrier on top of the liquid varnish. Tip the lid up just enough to insert the nozzle, spray in the gas, and quickly close the lid.*

Transfer to a smaller container. *Wipe the rim of the jar with Vaseline, then place plastic over the opening before screwing on the top. You can take up space with clean glass marbles or golf balls. Collapsible bags like those from StopLossBags are another option, but they can be messy to fill.*

BE SAFE OUT THERE

All commercially sold finishes are required to post safety information in an MSDS (material safety data sheet), which can be found with a simple Google search for each product. Most finishes, even waterborne and environmentally friendly products, contain solvents that should not be inhaled or allowed to seep into your skin. Good airflow, disposable gloves, and a decent cartridge-type respirator should be part of all finishing jobs.

gallery

Inspiration for our readers, from our readers

MYRL PHELPS JR.

Danbury, N.H.

Myrl made this Chinese-inspired cabinet while a student in the nine-month program at the Center for Furniture Craftsmanship under the guidance of David Upfill-Brown. Recreated from a photograph that was less than 2 in. sq., the piece won first prize at the Guild of New Hampshire Woodworkers Exhibit.

CHERRY AND SYCAMORE, 20D X 36W X 30H

Photo: James Dugan

MILTON MIZELL

Miami Shores, Fla.

Milton is a graphic designer whose hobby for 25 years has been woodworking. Despite having a long-term interest in marquetry, he hadn't had time to explore it in the traditional sense. But last year he discovered Image Paint, a plug-in for Adobe Illustrator, which then led to his buying a 10W diode laser. He is now steeped in laser marquetry. This piece, *Break of Dawn*, has 1,335 pieces. Marquetry became the perfect convergence of his passions for art and woodworking.

VARIOUS NATURAL AND DYED VENEERS, ¼D X 41W X 48H

Photo: Leesa Richards

SHEA ALEXANDER

Timberville, Va.

"Carvings on furniture are most often created in the sense of the furniture as a canvas. What if instead that carving had its own agency to interact with the furniture?" Shea first started dwelling on this thought after taking photos of furniture in a field. This chair is the first test at applying the thought. Shea chose mice as a nod to the work of Robert Thompson (1876–1955), a British furniture maker whose work almost always featured a carved mouse.

WALNUT, 18D X 18W X 32H

Photo: Harleigh Cupp

MATT BEAL
Sachse, Tex.

Matt built this piece to showcase his wife's quilting work. The airy and light design frames and emphasizes the contents within. The design is a blend of Shaker and mid-century cues, with a floating case inspired by David Welter's hall table (see *FWW* #282).

WHITE OAK, 15D X 28W X 62H

Photo: Mike Roberts

JIM MURTHA
Lancaster, Ohio

This dresser is based on the plans and techniques in "Build a Shaker Chest of Drawers" by Tom McLaughlin (*FWW* #290). However, Jim changed the infrastructure to accommodate soft-close undermount drawer slides. The drawer fronts, which came from a single board, are blistered maple, a figure found in West Virginia, where hard maple gets blistered figure instead of bird's-eyes.

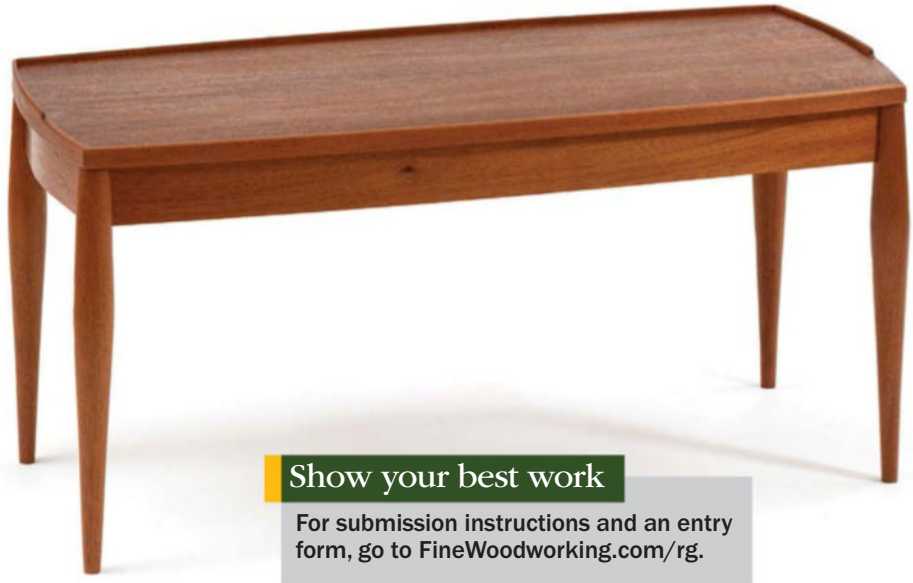
CURLY SOFT MAPLE, BLISTERED HARD MAPLE, AND WALNUT
22½D X 39¾W X 40H

KEENAN BLOUGH
Edgewood, N.M.

While a student at the Center for Furniture Craftsmanship, Keenan saw a piece that had curved aprons, torpedo legs, and a beautiful veneered top. Inspired, he started sketching table ideas with the goal of designing something small and beautiful. His instructors recognized the Art Deco influence and turned him onto the work of Émile-Jacques Ruhlmann. This piece is the result.

MAHOGANY, POMMELE, AND SAPELE VENEER
17½D X 36¼ W X 16H

Photo: Mark Juliana and Lin Elkins



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For submission instructions and an entry form, go to FineWoodworking.com/rg.

DAVID WELTER
Fort Bragg, Calif.

Wanting seats for his kitchen bar prompted David to make these pieces, which are built more like chairs than stools. The back is narrower than the front, and the front and back leg angles are different. The back crest serves as a bit of support for the user and provides a handle to move the chair. The heart shape came about by being comfortable to grab, and the grain graphics helped determine the shape of the back. Working with spindles gave David a chance to become more confident on the lathe and took away the problem of fitting shoulders.

HICKORY AND LEATHER, 15D X 17W X 31H

GEOFF McKONLY
Southampton, Mass.

Geoff built this piece during a two-week class on classic casework with Timothy Rousseau and Kendrick Anderson at the Center for Furniture Craftsmanship. The walnut was salvaged from the backs of pews from a church built around 1870 in Williamstown, Mass. By the end of the two weeks the case was about 75% complete. Geoff calls it his "Cabinet of Learning" because of the huge number of techniques compressed into a small, detailed piece.

WALNUT AND BEECH, 12D X 27W X 45H

MERLE KRUEGER
Lincoln, R.I.

Inspiration for this outdoor chair and table came from the pages of *Fine Woodworking*. Taken with the elegance of Tom McLaughlin's "Modern Adirondack Chair" in *FWW* #273, Merle decided to up the comfort ante by adding a footstool and a side table.

SAPELE, 40D X 26W X 31H

skills spotlight

Offset knife hinges for inset doors

STRAIGHTFORWARD METHODS ENSURE CLEAN RESULTS

BY CHRIS GOCHNOUR

SLEEK AND SOLID

This inset door pivots on offset knife hinges (Brusso L-37, $54), which show only a small knuckle to the viewer. Because of the strength and stability of knife hinges, you can fit a door with very fine, uniform gaps and trust it will perform for decades without binding.

In my article on pp. 46–53, I show how to install straight knife hinges, which are used with overlay doors. Here, I'll explain everything else you need to know to install the offset type of knife hinges, which are used for inset doors. There are a few extra steps involved, but the process isn't any more difficult. I'll be skipping over some of the steps described in the main article, so be sure to read that one carefully before working your way through this one.

To install these hinges, you'll need your case built and dry-fit but not glued up because you'll assemble and disassemble it during the hinge-mortising process. Have your door built as well. Make it oversize by ⅛ in. or so in width and height. If the case ends up at all out of square, you'll need extra door material for successful fitting.

Template has an L-shaped opening

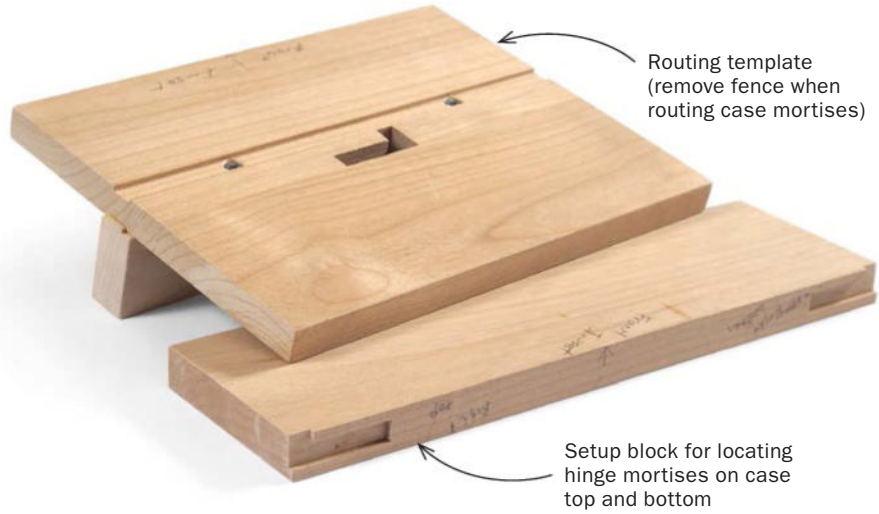
The template approach I demonstrate in the main article works just as well for these L-shaped offset hinges, though the template includes a few more parts. Also, because of the L-shaped hinge mortises, the template must be flipped over to rout mortises in both ends of the door. Because of that, it has a fence groove on both faces.

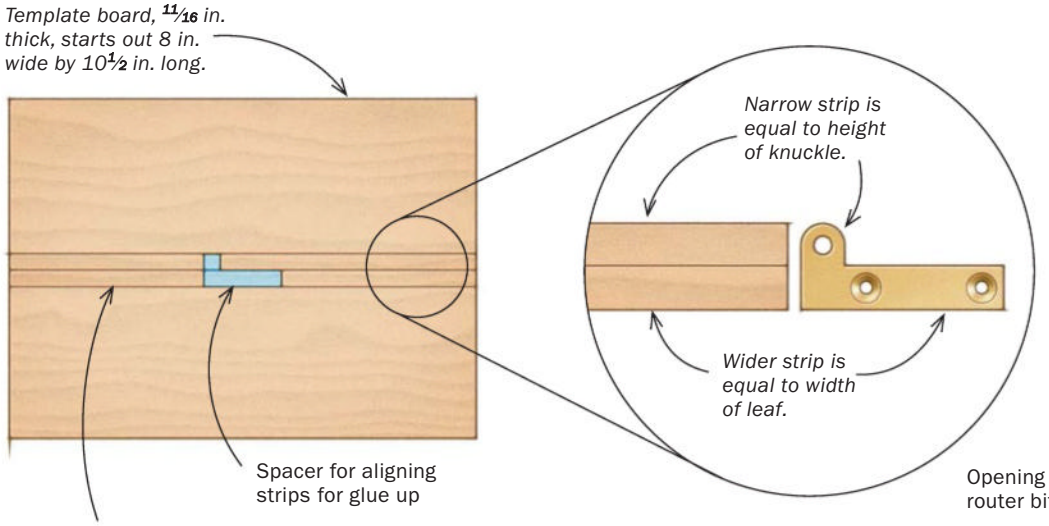
You can also use the same pattern-routing bit I used in the main article—Amana's No. 45475 ⅜-in.-dia. flush-trim bit—which has a slight offset between the bearing and cutters. This needs to be factored in when you're cutting the parts for the template. A set of dial calipers is indispensable for fine-tuning the fit.

After cutting a test mortise with the template, cut the shallow grooves for mounting the fence. Then form a tongue on the fence that fits the slot, and drill and countersink screw holes as before.

Note that the long part of the hinge might not end up centered on the door's thickness this time. What matters is that the pivot point of the hinge is centered on the front edge of the door. This will

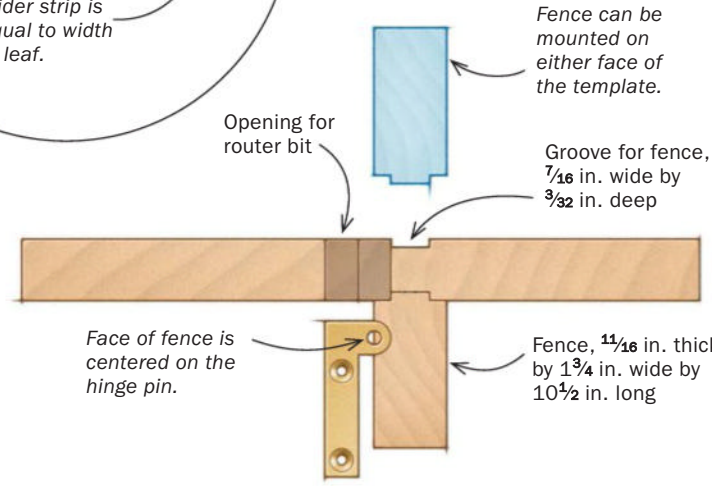
Photos: Asa Christiana. Drawings: Christopher Mills.

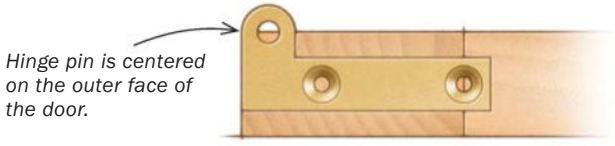




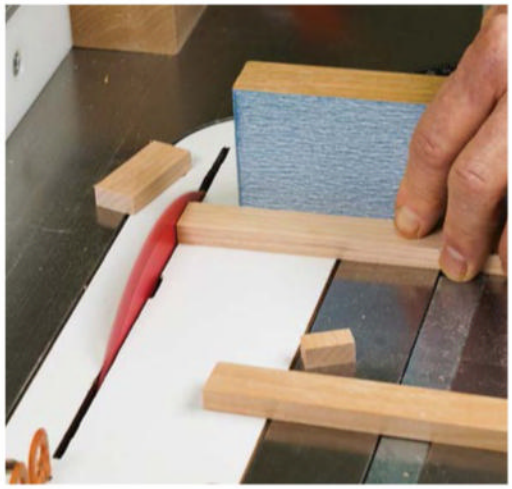
TEMPLATE FOR ACCURATE MORTISES

This template is a little more complex than the one for straight hinges. You'll be cutting two strips out of your template board, and crosscutting and aligning those to create the L-shaped opening needed here.





Rip the two strips and chop to length. *Cut your template board in half, and then rip a strip off each one. Crosscut short pieces from the strips to create the L-shaped spacer (see blue area in drawing above) that will align the strips during glue-up.*



Glue two strips together first. *To make sure the spacer parts end up aligned, glue two of the long adjacent strips together beforehand, and cut one of their ends square. That square end will keep the spacer parts aligned when you push everything together.*

USE A SETUP BLOCK TO LOCATE CASE MORTISES

Mortise the setup block. *With the setup block in a vise, clamp the template to it so the end of the L-shaped opening aligns with the end of the setup block. Rout mortises at both ends of the setup block, changing the fence to the other face of the template for the second mortise.*

Board and shim align the setup block. *Clamp a board to the front of the case to locate the front of the door (left). Leave a gap below the board for the knuckle of the hinge when it's mounted in the setup block. Tape a shim inside the case (right) to create a gap between the door and the case.*

ensure that the door functions properly without binding.

Make a setup block for case mortises

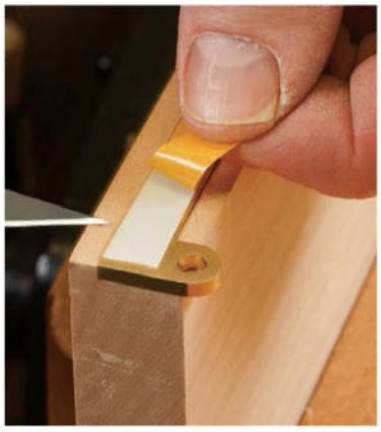
As with the straight hinges, you'll install the case parts of these hinges first. And you'll use a similar method to lay out the hinge locations.

Again, you'll need to dry-fit the case and to make a setup block the same thickness as the door. Cut hinge mortises at both ends of the block, with the template's fence referenced off the same face for each one. You'll need to switch the fence to the other face of the template to cut the second mortise.

Use the block to position one leaf of each hinge properly on the top and bottom of the case, using double-stick tape. Mark around each leaf to record its position, and you are ready to cut the case mortises. As before, the fence comes off here—to allow the template to reach the mortise locations—and you'll align it with your pencil lines the same way.

Glue up the case and fit the door

When you are happy with how the hinges fit into the case, you can glue it up. When fitting the door to the case opening, go for a 1/32-in. gap on the top, bottom, and hinge edges (but not the latch edge just yet). Start by trimming the door until it just barely fits into the opening. A crosscut sled or track saw works well here. As you trim the bottom edge, make sure the hinge side of the



Locate the hinge leaf. *Insert a hinge leaf into the setup block, and add a piece of double-stick tape to its face. Register the setup block against the alignment board and the shim, and press down firmly. When you raise the setup block, the hinge leaf will stay behind in perfect position. Mark around it with a sharp pencil.*

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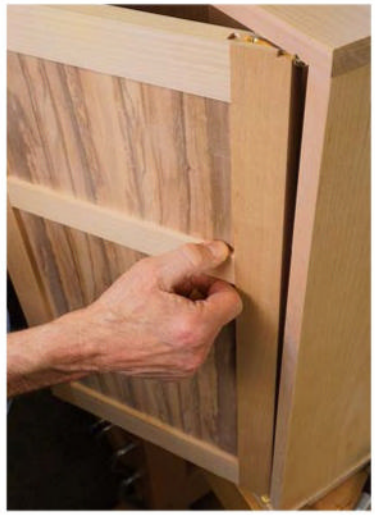
INDEX TO ADVERTISERS

MORTISE THE CASE AND DOOR

Start with the case. *Remove the fence and use the pencil lines to align the template. After routing, square the corners with a chisel, insert hinge leaves, and drill pilot holes for the hinge screws.*

Fit and mortise the door. *Trim the door 1/16 in. shorter than the height of the case opening to allow for the 1/32-in. washer in each hinge. Reattach the fence to the template and clamp it to the front face of the door, aligning the hinge opening with the door's edge.*

Hang the door. *Screw all of the hinge leaves in place, except the leaf in the top edge of the door. Drop the lower end of the door onto its pivot pin. Next, while holding the top door leaf on the pivot pin of the upper case leaf, tilt the door inward to push the top door leaf into its mortise. Then screw it in place.*



door lines up parallel with the hinge side of the case. Next, with the door sitting in the case on its bottom edge, mark the top edge, then trim it. The hinges have a built-in washer that creates a 1/32-in. gap between the door and the case, so if you trim 1/16 in. from the top edge at this point, you'll get the desired 1/32-in. gap above and below the door, once it is resting on the hinges. Leave the latch side of the door untrimmed and tight at this point.

Cut the door mortises and hang the door

You're ready to cut the hinge mortises in the door. The fence goes back on for this step—first on one face of the template, then the other. Once the hinge mortises are routed, their corners are squared, and pilot holes are drilled, you can hang the door. Then mark the latch side of the door for that same 1/32-in. gap, and plane it for a perfect fit.

I hope this and the article on pp. 46–53 encourage you to use knife hinges, which offer unmatched looks and performance. The template approach eliminates the difficulty and risk usually associated with these elegant hinges, leaving you to enjoy all of their benefits.

Contributing editor Chris Gochnour lives and teaches in Salt Lake City.

Carving a family tree

BY JOHN MAHONEY

Creating these carved oak boxes has been a surprising journey. It has been filled with family memories and has provided me with many insights about working wood.

The story starts well before I was born. My dad grew up on a tree farm in Maine helping his father harvest trees for lumber and paper—Grandpa's entire operation was done with horses. My parents settled in Utah to raise our family, but every summer during my childhood the family would make the trek back to the tree farm in the 1972 green-and-white Dodge van that my dad had converted to a homemade camper van with beds, curtains, and even a travel potty between the front seats.

Dad had caught the woodworking bug, and in the mid-1970s, he and Grandpa harvested a few trees for Dad to keep. My uncle, a log truck driver, hauled them to a sawmill to be cut into planks. Our van was always crowded on those cross-country trips, but that summer on the drive back to Utah the lumber was piled inside as well.

My dad made a few projects with the lumber, but it mostly stayed in a stack in his small basement shop. That was fine with me, since it was just the right height to be a child-size workbench where I would spend hours at a time hammering nails into scrap wood with my child-size tools.

Dad passed away when I was young, and the lumber remained largely untouched for the next 25 years. In the meantime, I graduated from college, moved to the St. Louis area, got married, and started filling my own basement shop and learning woodworking. About 10 years ago, my mother asked me to get the few planks remaining in her basement, so when I went to Utah for my niece's wedding, I brought the lumber back to St. Louis in my Toyota Tacoma—also green but nowhere near as interesting as the Dodge van.

I decided to make something with the wood that I could share with my siblings, something that would relate to the history of the tree farm. I spent several years awaiting inspiration. Then I saw the articles by Peter Follansbee in *Fine Woodworking* #287 ("Simple, Handsome 17th-Century Box" and "17th-Century Relief Carving") and found what I was looking for. I admired the elaborate carvings, and the box matched the time period of the original part of the Maine farmhouse, with its hand-hewn beams and stone foundation.

Peter's carvings were very intimidating, but I set a goal to make eight boxes: for my four siblings, my mom, my aunt, my in-laws, and myself. Prior to this I had tried my hand at a few practice carvings and had become familiar with the tools, but I was definitely not proficient with them. Along the way I learned a few things.

The eye is amazingly accurate. Peter does very little layout, relying instead on his eyes and the shape of his tools to incise a carving's layout. He makes everything look easy, and I was skeptical I could work the same way. But I discovered that using a few layout lines and reference points, visually gauging the gaps, connecting imaginary dots, and using the shape and width of the gouges, I could get very accurate results.

The eye is quite forgiving. In one of Peter's videos, he was carving along when a large chip broke off. He just brushed it away and moved on. Later he mentioned that he never glues the chips back on; if you do, it looks worse than with the chip missing. The carvings are busy enough, he says, that you probably won't notice missing chips. I expected to lose some chips, but I was still devastated when it happened. Ignoring Peter's advice, I glued some of the chips back on. Sure enough, once I applied the finish, the glued-on chips were highlighted while missing chips blended in.

It's not a race or competition. In the videos I used for reference, Peter completes the carvings in about 30 minutes. On my first two boxes, similar carvings took me over a week. I have done better with my subsequent carvings, but they still require multiple days. I've realized, though, that the duration doesn't matter, because I am learning, and having fun, and I'm pleased with the end result.

I still have more to learn, and four more boxes to complete. After that, who knows where the journey will take me?

John Mahoney is a software engineer in Godfrey, Ill. When not working or working wood, he can be found shredding trails on his mountain bike.

Photos: courtesy of John Mahoney

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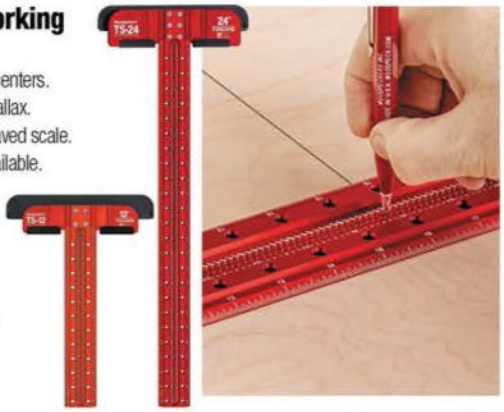

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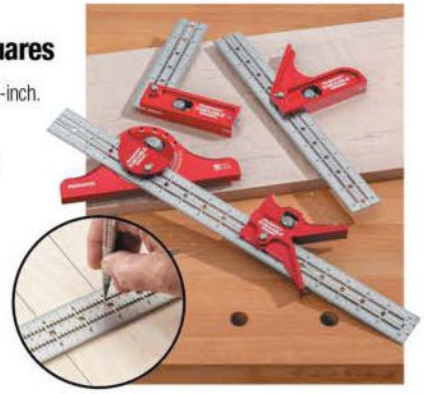

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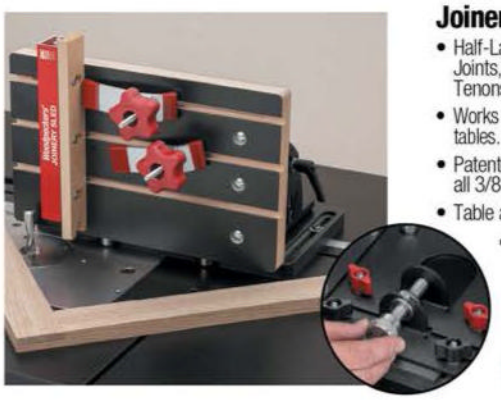

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Leaves of Hope

Sometimes a door is just a door. But at a certain medical clinic in Wisconsin where researchers are seeking remedies for PTSD and severe depression, there's a 7-ft.-high, 12-ft.-wide sliding door between the kitchen and dining room that features a marquetry mural by Spider Johnson and Cindy Goldman. The mural was designed specifically for the space and specifically for the purpose of offering solace and hope to people recovering from deep trauma—a door out of the dark. Johnson, who lives in Mason, Tex., first twigged to marquetry in 1979 when he saw some work by Silas Kopf in *FWW* #16, and he's been pursuing the craft ever since. Twelve years ago, Johnson took on as an apprentice fellow Texan Cindy Goldman. The former advertising creative director learned so quickly and so well that in a year or so she became his partner in marquetry. For many years Johnson cut his marquetry with a scrollsaw, but in 2000 he bought a laser cutter with a 4-ft.-sq. bed, and he's never looked back. The cutting is easier with a laser, but on a project like this, with the marquetry composition applied across four 3-ft. by 7-ft. panels that needed to match up perfectly when they were joined and installed on-site, there was plenty else for Johnson and Goldman to attend to. Veneers include madrone burl for the ground; walnut burl for the roots; goncolo alves for the trunk; red gum, pau ferro, and satinwood for the leaves; dyed veneer for the wind; and composite veneer for the sky.

—Jonathan Binzen

Photos: courtesy of Spider Johnson and Cindy Goldman