

A LOOK BACK: The Past 40 Years of Woodworking

40TH
ANNIVERSARY

Popular Woodworking

FEBRUARY 2022 | #263

CIGAR HUMIDOR

Krenov Wall Cabinet

Mid-Century Nightstands





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- Motor: 1/3 HP, 120V, single-phase, 2.3A
- Swing: 8"
- Spindle taper: JT33
- Spindle travel: 2"
- Spindle speeds: 5, from 740 - 3140 RPM
- Drilling capacity: 1/2"
- Max. distance from spindle to table: 7 1/2"
- Table dimensions: 6 1/2" x 6 1/2"
- Table tilt: 45° left/right
- Table swivel around column: 360°
- Overall dimensions: 9" W x 17 1/2" D x 23 1/2" H
- Approx. shipping weight: 36 lbs.

MADE IN AN ISO 9001 FACTORY



⚠ WARNING! †

G0925 ONLY \$113⁹⁵

1 HP WALL-MOUNT DUST COLLECTOR WITH CANISTER FILTER

- Motor: 1 HP, 120V/240V (prewired 120V), 7A/3.5A
- Air suction capacity: 537 CFM
- Static pressure: 7.2"
- Filter rating: 1-micron
- Bag capacity: 1.5 cubic feet
- Intake hole size: 4"
- Impeller: 10" balanced cast aluminum radial fin
- Canister filter size (diameter x length): 15" x 16 1/8"
- Height with bag inflated: 46"
- Approx. shipping weight: 62 lbs.



MADE IN AN ISO 9001 FACTORY

⚠ WARNING! †

G0785 ONLY \$415⁰⁰

13" 2 HP BENCHTOP PLANER WITH HELICAL CUTTERHEAD

- Motor: 2 HP, 120V, single-phase, 15A
- Max. cut width: 13"
- Min. stock length: 6"
- Min. stock thickness: 1/8"
- Max. stock thickness: 6"
- Max. cut depth full width: 1/32"
- Cutterhead speed: 8500 RPM
- Feed rate: 25 FPM
- Overall dimensions: 25 1/2" W x 28" D x 19" H
- Approx. shipping weight: 82 lbs.



MADE IN AN ISO 9001 FACTORY

⚠ WARNING! †

G0940 ONLY \$925⁰⁰

\$69 SHIPPING

14" HEAVY-DUTY BENCHTOP DRILL PRESS

- Motor: 3/4 HP, 120V, single-phase, 7.5A
- Swing: 14"
- Head swivel: 360°
- Drill chuck: 3/64"-3/8"
- Drilling capacity: 3/4" steel
- Spindle taper: MT #2
- Spindle travel: 3/4"
- Spindle speeds: (12), 140 - 3050 RPM
- Table swing: 360°
- Table tilts: 90° left & right
- Footprint: 18" x 11"
- Overall dimensions: 14 1/2" W x 24" D x 38" H
- Approx. shipping weight: 148 lbs.

SP 164841 US

MADE IN AN ISO 9001 FACTORY



⚠ WARNING! †

G7943 ONLY \$545⁰⁰

\$149 SHIPPING

2 HP CANISTER DUST COLLECTOR

- Impeller Motor: 2 HP, 220V, single-phase, 9A
- Main inlet size: 6" with three 4" adapter inlets
- Airflow capacity: 1103 CFM @ 3.5" SP
- Max. static pressure: 11.95"
- Filtration rating: 1-micron
- Filter surface area: 80 sq. ft.
- Impeller: 12 3/4" radial fin
- Machine collection capacity at same time: 3
- Collection capacity: 3 1/2 gallons
- Dimensions: 39" W x 31 1/2" D x 76" H
- Approx. shipping weight: 165 lbs.

2-Year Warranty!



⚠ WARNING! †

SB1100 ONLY \$1289⁰⁰

\$179 SHIPPING

15" 3 HP HEAVY-DUTY PLANER

- Motor: 3 HP, 240V, single-phase, 14A
- Maximum stock width: 15"
- Maximum stock thickness: 6 3/8"
- Minimum stock thickness: 1/4"
- Minimum stock length: 6 3/8"
- Maximum cutting depth: 3/16"
- Cutterhead diameter: 3"
- Cutterhead type: 3-knife
- Cutterhead speed: 5000 RPM
- Feed rate: 16 & 30 FPM
- Table size: 15" x 20 1/8"
- Dust port size: 4"
- Footprint: 20" x 20 1/2"
- Overall dimensions: 32" W x 28" D x 23 1/2" H
- Approx. shipping weight: 382 lbs.

SP 177335 US



⚠ WARNING! †

G0815 ONLY \$1495⁰⁰

\$239 SHIPPING

1/2 HP BENCHTOP MORTISING MACHINE

- Motor: 1/2 HP, 110V, single-phase, 6A
- Spindle speed: 1725 RPM
- Spindle taper: JT #2
- Spindle travel: 3/4"
- Chuck size: 3/8"
- Collar size: 5/8"
- Max. stock width: 8 1/2"
- Max. stock thickness without extension block: 4 1/4"
- Max. stock thickness with extension block: 6"
- Max. mortising depth: 3"
- Max. chisel travel: 4 5/8"
- Max. distance column to chisel: 5"
- Chisel size range: 1/4"-1/2"
- Overall dimensions: 13 3/4" W x 29" D x 32" H
- Approx. shipping weight: 76 lbs.



⚠ WARNING! †

G0645 ONLY \$425⁰⁰

\$49 SHIPPING

3 HP PORTABLE CYCLONE DUST COLLECTOR

- Motor: 3 HP, 220V, single-phase, 15.9A
- Intake hole size: 8"
- Impeller: 15" aluminum
- Airflow capacity: 1941 CFM @ 2.9" SP
- Sound rating: 79 dB
- Max static pressure: 11.0"
- Filter surface area: 45 sq. ft.
- Filtration: 1-micron
- Collection size: 35-gallon drum
- Overall dimensions: 31" W x 54" D x 82" H
- Approx. shipping weight: 376 lbs.



⚠ WARNING! †

G0862 ONLY \$2195⁰⁰

MADE IN AN ISO 9001 FACTORY

\$179 SHIPPING

8" X 76" PARALLELOGRAM JOINTER WITH HELICAL CUTTERHEAD & MOBILE BASE

- Motor: 3 HP, 230V, single-phase, 12A
- Maximum width of cut: 8"
- Maximum depth of cut: 1/8"
- Maximum rabbeting depth: 1/2"
- Cutterhead diameter: 3 1/8"
- Cutterhead type: 4-row helical with 36 inserts
- Insert size & type: 15 x 15 x 2.5mm, indexable carbide
- Cutterhead speed: 5500 RPM
- Table size: 8" x 76"
- Fence size: 38" x 4 1/2"
- Approx. shipping weight: 470 lbs.

SP 175370 US



⚠ WARNING! †

G0858 ONLY \$2575⁰⁰

MADE IN AN ISO 9001 FACTORY

\$239 SHIPPING

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Happy 40th Anniversary

Celebrating 37 years
of collaboration with
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THE CLASSIC 14" BANDSAW

- Motor: 1 HP, 110V/220V (prewired 110V), single-phase, 11A/5.5A
- Max. cutting width left of blade: 13 1/2"
- Max. cutting height (resaw capacity): 6"
- Table size: 14" x 14"
- Table tilt: 15° left, 45° right
- Floor-to-table height: 43 1/8"
- Blade size: 93 1/2" (1/8" - 3/4" wide)
- Blade speed: 1500 and 3200 FPM
- Overall dimensions: 26 3/4" W x 30 1/4" D x 66 1/2" H
- Approx. shipping weight: 199 lbs.



WARNING! †
G0555 ONLY \$880⁰⁰



17" 2 HP BANDSAW

- Motor: 2 HP, 110V/220V (prewired 220V), single-phase, 19A/9.5A
- Cutting capacity/throat: 16 1/4" left of blade
- Max. cutting height: 12 1/2"
- Table size: 17" x 17" x 1 1/2" thick
- Table tilt: 10° left, 45° right
- Floor-to-table height: 37 1/2"
- Blade length: 131 1/2"
- Blade speeds: 1700 & 3500 FPM
- Overall size: 32" W x 32" D x 73" H
- Approx. shipping weight: 342 lbs.



WARNING! †
G0513 ONLY \$1645⁰⁰



10" 2 HP BENCHTOP TABLE SAWS

- Motor: 2 HP, 120V, single-phase, 15A
- Table size: 26 3/8" W x 32 1/4" D
- Arbor speed: variable, 2000-4000 RPM
- Blade tilt: Left, 45°
- Max. depth of cut: 3 1/8" @ 90°, 2 1/4" @ 45°
- Rip capacity: 28" right
- Dado capacity: 1 3/8"
- Dust port: 2 1/2"
- Overall size: 28" W x 37 1/2" D x 20 1/2" H (G0869); 41 1/2" W x 37 1/2" D x 41" H (G0870)
- Approx. shipping weight: 72 lbs. (G0869); 106 lbs. (G0870)



WARNING! †

G0869 ONLY \$505⁰⁰

WITH ROLLER STAND
G0870 ONLY \$705⁰⁰



16" X 46" WOOD LATHE WITH DRO

- Motor: 2 HP, 110V, single-phase, 14A
- Swing over bed: 16"
- Swing over tool rest: 13 1/2"
- Spindle taper: MT#2
- Spindle thread size: 1" x 8 TPI RH
- Tailstock taper: MT#2
- Spindle speeds: variable, 600 - 2400 RPM
- Headstock rotation: 0°, 60°, 90°, 120°, and 180°
- Overall dimensions: 72 1/2" W x 19" D x 48" H
- Approx. shipping weight: 354 lbs.



WARNING! †
G0462 ONLY \$1235⁰⁰



18" X 47" HEAVY-DUTY WOOD LATHE

- Motor (with inverter): 2 HP, 220V, 3-phase, 5.6A
- Swing over bed: 18"
- Swing over tool rest base (banjo): 14"
- Distance between centers: 47"
- Spindle speed: Variable, 100 - 3200 RPM
- Tailstock taper: MT#2
- Overall dimensions: 81" W x 19 1/2" D x 48 1/8" H
- Approx. shipping weight: 550 lbs.



WARNING! †
G0733 ONLY \$2475⁰⁰



6" X 48" BELT/12" DISC COMBO SANDERS

- Motor: 1 HP, 110V/220V, single-phase, 1725 RPM (G1276), 3450 RPM (G1183)
- Belt table size: 7" x 12 1/2"
- Disc table size: 7" x 16 1/2"
- Dust ports: 2 1/2" and 3"
- Base measures: 16 1/2" W x 14" D
- Belt speed: 2500 FPM (G1276), 5000 FPM (G1183)
- Approx. shipping weight: 149 lbs.



MITER GAUGE INCLUDED!



WARNING! †
3450 RPM
G1183 ONLY \$955⁰⁰
1725 RPM
G1276 ONLY \$1025⁰⁰



22" OPEN-END DRUM SANDER

- Motor: 2 HP, 230V, single-phase, 7.5A
- Feed motor: 50W, 1A
- Max. stock thickness: 5"
- Min. stock thickness: 1/4"
- Max. sanding width: 22-44"
- Min. sanding width: 2"
- Min. board length: 9"
- Sandpaper speed: 2300 FPM
- Conveyor feed rate: Variable, 0-20 FPM
- Sandpaper type: 3" width roll, plain backed
- Drum Size: 5"
- Overall dimensions: 42 1/2" W x 43 1/2" D x 61" H
- Approx. shipping weight: 341 lbs.



WARNING! †

G0920 ONLY \$2195⁰⁰



10" 5 HP SLIDING TABLE SAW

- Motor: 5 HP, 230V, single-phase, 19A
- Rip capacity: 33"
- Crosscut capacity: 63"
• Blade tilt: 0 - 45°
 - Max. depth of cut @ 90°: 3 1/8"
- Max. depth of cut @ 45°: 2 1/4"
- Floor-to-table height: 33 3/8"
- Main blade size: 10"
- Main blade arbor: 5/8"
- Scoring blade arbor: 22mm
- Max. width of dado: 1 1/8"
- Overall dimensions: 76" W x 125" D x 46" H
- Approx. shipping weight: 688 lbs.



WARNING! †
G0623X ONLY \$4940⁰⁰



6" X 108" VS OSCILLATING EDGE SANDER

- Motor: 3 HP, 220V, 3-phase, 9.5A
- Sanding belt size: 6" x 108"
- Sanding belt speed: Variable, 600-6000 FPM
- Oscillations: 1/4"
- Platen size & type: 6 3/4" x 39 3/4", graphite coated
- Sanding head tilt: 90°-180°
- Main table size: 12" x 35 1/2" x 1 1/2" thick
- Main table vertical travel: 8"
- Approx. shipping weight: 597 lbs.



WARNING! †

SB1097 ONLY \$3250⁰⁰

2-Year Warranty!



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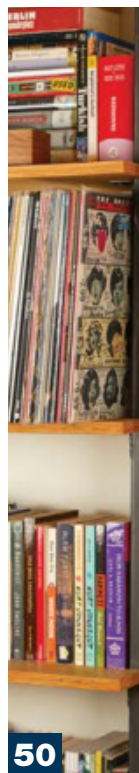
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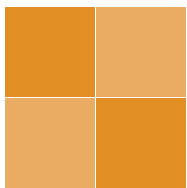


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Connect

FROM THE EDITOR

Celebrating 40 Years

By Logan Wittmer

With this issue of *Popular Woodworking*, we mark 40 years in publication. What was originally named “Pacific Woodworker”, our beloved magazine has had an interesting life. As you flip through this issue, you’ll stumble upon a look back at 40 years of woodworking. The timeline gives a little insight on the history of the magazine. Like woodworking as a whole, there has been a number of changes over the last 40 years. The ownership of *Popular Woodworking* has changed several times. Over the years, the various parent companies acquired several other well-known woodworking magazines, such as “American Woodworker”, “Woodworking”, and “Woodwork”.

But, as I often say, woodworking is woodworking. Processes may change. Fads come and go. But, the foundation of our craft stays the same—crafting with wood. The same can be said about *Popular Woodworking*. The passion behind the people of these pages has never changed. Each writer has put a little of themselves into these pages. Sure, the flavor changes slightly depending on who writes it, but the passion has been there from day one.

Speaking of day one, PW was founded by Stephen Aquilina, it was meant to “be an exchange of thoughts and ideas; to bring together manufacturers, suppliers, and shop owners for the benefit of all.” When I first read that line from Pacific Woodworker Issue 1, it really resonated with me.



Collin, Danielle, and myself are the three full-time workhorses behind the magazine. But, the real credit goes to our amazing support staff consisting of web developers, production coordinators, designers, customer service, and countless others within *Active Interest Media* that keep the day-to-day operations going, and allowing us to do what we love.

As you flip through this issue, you will come across many names. Some are the names of woodworkers sharing their projects with you. Some, are companies sharing their woodworking products with fellow woodworkers through advertisements. No matter what the case is, everyone involved in producing this magazine came together for one simple reason: the love of this craft. The people behind these pages are here because we love this craft. Our industry partners support this magazine, because they love this craft. And finally, there’s you. You are here because you love this craft.

So, on behalf of everyone that’s came before me and everyone that will come after me ... on behalf of

every industry partner we’ve had and every partner we will have. Please allow me to say thank you. Thank you for supporting us and allowing us to share in this craft that we all love. *Popular Woodworking* is here for you, the woodworker. We promise to be an exchange of thoughts and ideas; to bring together manufacturers, suppliers, shop owners, and woodworkers for the benefit of us all. From the bottom of our hearts, thank you for 40 years. Here’s to 40 more. Cheers!

ABOUT THE AUTHORS



Char Miller-King

Tech Room: Glow Forge – pg. 18

Char Miller-King is a self-taught woodworker and maker from Georgia. Her building stemmed from necessity — when she couldn't afford something, she made it. Shortly after the completion of her first project, a platform bed, she had a realization: she loved power tools. Now, almost two decades later, Char spends much of her free time teaching woodshop classes to young makers, particularly to young girls and women interested in making. You can see more of Char's work on her website, thewoodenmaven.com or on Instagram @woodenmaven.



Collin Knoff

Mid Century Nightstands – pg. 58

Collin has been fascinated with building things as long as he can remember — from LEGO sets to taking apart things around the house just so he could see how they went back together (sorry Mom!). It wasn't until he took wood shop in high school, however, that he found the best way to channel that energy, and has been a maker ever since. Collin joined the Popular Woodworking team as the Digital Editor in 2019, and is excited to be part of the bright future ahead for the next 40 years.



Kenan Orhan

Krenov Wall Cabinet – pg. 50

Kenan Orhan is an author and studio furniture-maker based out of Kansas City. After receiving his MFA in fiction while living in Boston, he moved back to Kansas City. Almost by accident, he joined the Kansas City Woodworker's Guild. Now, in his free time, he designs and makes custom and reproduction furniture out of the guild's workshop while volunteering and teaching traditional joinery classes, focusing on hand tool techniques. You can find much of Kenan's work on his Instagram: @orhanwoodwork



Willie Sandry

Mantle Clock – pg. 42

Hailing from the Pacific Northwest, Willie Sandry is a long time fan of Arts and Crafts furniture. He enjoys taking inspiration for his projects from antique furniture exhibitions as well as "old barn finds." Never one to do a job part-way, Willie has developed a vast skill set to elevate his projects. From sawing lumber and kiln drying it to finishing a chair with top-notch upholstery, Willie sees a project through from the start until finish. *YouTube: The Thoughtful Woodworker*

PHOTOS PROVIDED BY THE AUTHORS

Popular Woodworking

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WORKSHOP TIPS

Clamp Parts Together

Edge-sanding face-frame parts prior to assembly saves a lot of time. Clamping the parts together helps keep them vertical during sanding and guarantees they'll all end up the same width. As a rule of thumb, you should always clamp parts together if they are $\frac{3}{4}$ " or less thick and 2" or more wide. This technique may seem to raise a red flag for you regarding safety, but as long as the clamps are cranked on tightly and set below the top of the boards, this setup works just fine. (Of course, this is not something you should ever attempt on a wood planer because an accidental contact with the planer knives could cause disastrous results for you and your planer.) — *Randy Johnson*



PHOTO PROVIDED BY PATRICK HUNTER

Waterstone Mat

When I switched from oilstones to waterstones back in the Paleozoic era, I thought that I could say goodbye to making a big mess while sharpening. Well, not exactly. Waterstones are messy, too, when you keep their surfaces flooded with water — as you should.

I've been looking for the best method of containing the mess for years, and modern technology has finally delivered: a rubber garden paver. It's about 16" square, $\frac{3}{4}$ " thick, and made from recycled tires. Water beads up on it, and best of all, the surface is a bit rough and sticky, so stones stay put. You don't need a holder or clamps or anything — just your stones and the mat.

Similar material is used for floor underlayment for gyms, so you may be able to scrounge a mat for free, but these pavers are now available at home centers. I'll bet they'll last forever. — *Tom Caspar*



Small Parts Steamer

To steam small parts of wood, I made a plywood cover for my electric kettle with a 2½" hole drilled in the center. A piece of perforated rubber shelf liner over the hole creates a gasket around the PVC pipe, keeps the parts from falling through, and allows steam to flow into the pipe. Tie a length of string to the end of the parts you're steaming so you don't burn your fingers trying to get it out of the pipe. Also, be careful not to let the water level get too low or you'll ruin the kettle's heating element. — *Guy Bush*



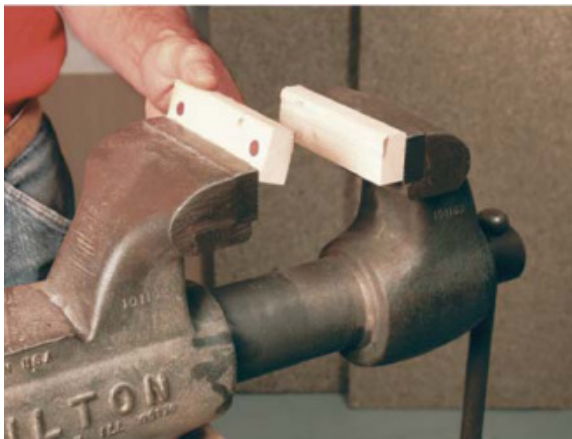
No-Stick Caps

It has been a couple of months since I last used my oil finish and when I went to use it, the cap was a bear to get off. Drips of finish around the spout had dried like glue. My neighbor suggested that next time I try putting Teflon plumbing tape (available at local home centers) around the spout before closing it up. Sure enough, a few months later when I needed more oil finish, the cap came right off. — *Ramon Moreno*



Snap-On Soft Jaws

I've been using an old metal-working vise in my shop for years. Occasionally I really do need a metal-working vise, but most often I use it to hold drawer sides up high when cutting dovetails. Unfortunately, the metal jaws can be a hazard to edge tools and they can mar the surface of the wood. I solved these problems by adding a pair of soft jaws to the vise. The jaws are just two pieces of pine with a couple of holes for recessed rare earth magnets. The soft jaws literally snap in place to provide a non-marring clamp surface for my stock plus a non-threatening surface for my edge tools. — *Tom Caspar*



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WORKSHOP TIPS

Warm the Look of Waterborne Polyurethane

Waterborne polyurethane finishes often make wood look parched (top right). Because they don't change the wood's color the way oil-based finishes do, the wood still looks raw. Tinting waterborne poly with amber-colored dye adds the warm color that's missing (bottom right).

It's easy. You can use either water- or alcohol-based dye. The dye is available as a dry powder or pre-mixed. If you choose the powder, mix it with water or alcohol following the instructions on the package. Add a teaspoon of the mixture to a quart of finish. Never add dry powder directly to the polyurethane. If you use a pre-mixed liquid concentrate, add about five drops to a quart of poly. Experiment on scrap to get the right color intensity. Just remember—you will want to apply three or four coats of waterborne poly for adequate protection, and each tinted coat will add little color, so use the dye sparingly.

Adding color this way has another big advantage—it's blotch-free. Unlike stains, which can cause blotches when they soak in, waterborne poly forms a film on top of the surface. No soak, no blotch. — *Kelly Schrenk*

CLEAR WATERBORNE POLY



TINTED WATERBORNE POLY

Using Your Noodle

While lounging at the pool one afternoon, I had an inspiration. I “borrowed” one of my kids’ floating pool noodles, cut it into sections and used the pieces as universal connectors for vacuum holes and tool dust ports.

The noodles have a 1" hole down the center, and they're flexible and compressible. They're about 6' long, so you can make lots of connectors from one noodle, which can save you a ton of money over buying plastic adapters. — *Bob Enderle*



Blunt a Nicked Edge



If your chisel gets a serious nick or ding, you'll have to grind away a lot of metal to renew the edge. The best strategy for doing this is to adjust your grinder's tool rest to 90° and blunt your tool like a screwdriver. Once you've ground past the damage, reset the tool rest at the appropriate grinding angle and have at it.

Consider this as an insurance policy. You're much less likely to overheat and draw the temper out of a blunt edge than an acute edge.

Overheating an edge is all too easy to do when you're removing a

lot of material. It's not pretty. The steel turns blue—a definite sign of trouble. The blued portion is softened, and will no longer hold an edge. You have to continue grinding past the blued area to get to good steel again.

Blunting the edge is just a different way to shape a new bevel. You'll have to take off all that metal anyway, so you may as well do it without risking any further damage—a nick is bad enough!

— *Tom Caspar*



Picture Frame Mini-Biscuits

All it takes to break the glue joint on a picture frame miter is one careless bump. Reinforce these weak joints with mini-biscuits. Special router bits to make these tiny slots come in three sizes. A bearing limits the depth-of-cut. Install the bit in your router table and clamp a mitered block to the table to guide the cut. These biscuits work well for narrow frames, too. — *Ed Krause*



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NEW TOOLS

M5 Dust Cyclone Collection

When I heard that a handful of former YETI guys had created a new dust collection system, I was intrigued. I've gone through several iterations of dust collection in my shop. I started with a hand-me-down 70 gallon dust collector before realizing it was far too large. Then, for a while I would just attach my wet/dry vac directly to whatever tool I was using. Finally, I switched to a *Dust Right Separator* that has served me well the past few years. Still, it was a bit cumbersome to roll it out and get it hooked up to my vacuum, and often I would just go without. What makes the *Mullet M5* different than those aforementioned options is that it features a nearly-seamless design and has a rigid connection to the vacuum. This idea of an all-in-one system was a very enticing one so I reached out for a sample unit..

Right off the bat I was impressed; I spent more time reading the instructions than actually setting the M5 up. The benefits of the design became immediately apparent as well. It's incredibly lightweight, and the lack of extra lids and hoses meant it was an absolute snap to move around the shop. Those perks applied when it was attached to my vacuum as well. While cleaning up after a project, I could simply drag the M5/Vac combo around



Rigid PVC connection to vac allow M5 and vac to be yanked around in unison



my shop without a second thought. No corrugated hoses or tipsy dust bins to worry about. And to top it off, emptying it was also a breeze. At \$299.99 the M5 is not the cheapest option available, but the ease of use (and the fact that I'll actually use it) means that it's a worthwhile purchase. Now if you can excuse me, I have an old dust collector to put on Craigslist. — *Collin Knoff*

M5 DUST CYCLONE COLLECTION
Mullet Tools
MulletTools.com
Price: \$229.99



R4840
Ridgid
Homedepot.com
Price: \$249

Ridgid Oscillating Sander

One of the best value tools for the home shop (in my mind) has just got an upgrade. For years, the *Ridgid EB4424* has been a staple for woodworkers. The *Ridgid* oscillating sander, sold through *Home Depot*, has gotten an update and is now sold as the R4840. The machine, like it's predecessor, combines an oscillating spindle sander with an oscillating belt for edge sanding. Some of the updates include an open metal base (it's slightly heavier than the previous version, which equates to a little less vibration), a more powerful motor, and significantly improved dust collection. It comes with four sizes of spindles, 1/2", 3/4", 1" and 1 1/2", and takes a 4" x 24" belt. The new R4840 is slowly rolling out through *Home Depot* stores in the USA (starting on the west coast), but is available online. — *Logan Wittmer*

PHOTOS BY THE AUTHORS & MANUFACTURERS

Easy Inlay Materials

I always like to support businesses owned by fellow woodworkers for various reasons. One of which is that they just tend to be good people. Second is that they know what we (other woodworkers) want. When Scott Grove was telling me about his new venture, *Easy Inlay*, I was intrigued. Scott, a master at pretty much anything woodworking, has launched a line of inlay materials, like you see below.

The various materials can be used for an assortment of projects, such as inlay work, epoxy filling, jewelry work, turning, you name it. The materials are available in a few different colors, types, and formats. The strips and sheets are adhesive backed for ease of application, and there's also small containers of crushed material in different sizes. Among the containers, you'll find items such as mother of pearl, opal, gold flake, and more. Taking a look at Scott's website, *EasyInlay.com*, you'll see various ways to use the material to accent your projects. — Logan Wittmer

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NEW TOOLS

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■ EKADIAMOND

Uneeda
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Don't get me wrong, we like sharing big new tools and products when they come out. Let's be fair, who doesn't like new tools, right? But sometimes, it's the small things that make the difference in your shop. One of those small things that we've enjoyed using is the Ekadiamond sanding sponges from Uneeda. Sure, there's other sanding sponges on the market, but the diamond pattern on these sponges seems to really clear out sawdust and keep them from clogging. Plus, the color-coded grit makes it easy to grab the sponge that you need.

The Ekadiamond sponges are available from 100-220-grit, and the sponge material on the inside is intriguing as well. It's flexible enough to conform to whatever I'm sanding (such as curved parts or moldings), but it's rigid enough that it provides enough support when you fold the sponge into a shape... most other sponges I've used are either floppy with no support, or too stiff like an eraser. These seem just right.— *Popular Woodworking Editors*

General Free Standing Air Filter

In a small shop, especially one in the basement like mine is, hanging an air cleaner becomes a bigger deal than a “buckle up, grunt, and lift.” It can easily become a headache if the ceiling is low, and the cleaner hangs down where you can run into it. When *General* announced a new free standing air cleaner that, I was intrigued.

The air cleaner, not much larger than a small waste basket, is a convenient size. While not heavy, it has a pair of wheels that allow it to be moved around and positioned near where the dust is being created. And, it moves a lot of air—up to 1550CFM on the highest speed. But, one of the better features, in my opinion, is the infrared sensor that *General* has started building into their air cleaners. In automatic mode, it uses an infrared beam to measure air quality and will actually turn the air filter on automatically once it reaches a specific threshold. The push-button digital display (shown below) has a few different readouts on it as well. It not only reads fan speed (low, medium, and high), but it also reads out air quality readings. Plus, it gives you a notification when the electrostatic filter needs replaced. The 10-1440 is available with an optional carbon and HEPA filtration layer for extra-fine filtering capabilities.— *Logan Wittmer*



■ 10-1440

General
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PHOTOS BY AUSTIN DAY



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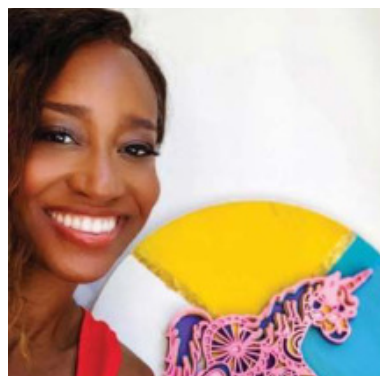
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An Quick Look at the Glowforge Plus

A glimpse at one woodworker's dive into the CNC Laser world, and how she integrates it into her shop.

By Char Miller-King



For many years, woodworkers marveled at personalization of handcrafted goods available from large companies. In the past decade, the consumer laser has exploded on the scene, allowing access to this technology at an affordable cost.

Consumer lasers are perfect for wood projects. A few of the prominent brands available are *Epilog*, *Orion*, and *Glowforge*. The laser is the perfect machine to compliment the hobbyist's arsenal. So, I bought the *Glowforge Plus*, a mid-tier machine that I initially decided on while making wood veneer business cards for my maker friends.

Laser cutters are measured by watts: the amount of power they can provide to cut through material. The higher the wattage, the less shadowing (burned area around the cut) you get. The *Glowforge Plus* is a 40 watt laser, which will

cut through most $\frac{1}{4}$ " wood in one pass.

Like most lasers, the *Glowforge* is compatible with design software such as *Autodesk 360*, *Adobe Illustrator*, and *CorelDRAW*. The files from the design software are transferred into an interface software for the specific machine. I prefer *Inkscape*, an alternative (free) open-source design software that works well with lasers and has a short learning curve. Save your designs as svgs and easily transfer them via Bluetooth, hardwire, or WiFi. It is my go-to since jpg and png files can be easily imported for engraving as it takes photos and traces them, converting it to a bitmap file so they may be engraved.

The Specs

So what makes the *Glowforge* different than other lasers? Well, for starters, the *Glowforge* began as a *Kickstarter* cam-

paign in 2015, focusing on ease of use (more on that in a minute). It raised nearly \$30 million in 30 days, has now been on the market for five years, and offers three models. The Basic machine is a Class 1 laser with 40W of power, the Plus provides faster engraver times, while the Pro contains all the previous features, a 45 watt laser tube, and a pass through slot. This slot allows the user to work with materials that are longer than the 12" x 19" bed.

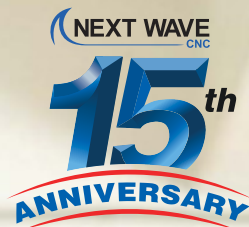
As I mentioned before, the *Glowforge* is all about user experience and ease of use. Unlike a lot of lower-end lasers, the *Glowforge* has auto focus, a camera that provides a view of the cutting area, and interior LED lights that make it easy to see what's going on. And, when used with Proofgrade material (pre-finished, high quality material from *Glowforge*), the laser reads the barcode on the material and automatically sets itself up. Another great feature is the "Trace" function that allows the *Glowforge* to scan an image (hand-drawn or otherwise) and store it to engrave on an object. Long story short: you don't need to be a computer programmer to run a *Glowforge*.

What Can You Cut & Make?

The beauty of lasers is that if you can design it, the chances are you can create it. They will engrave or cut a ton of materials ranging from wood to acrylic. Lasers will even etch metal when coated with a ceramic coating. While industrial lasers get enormous (think full sheets of plywood), the *Glowforge* fits a more manageable 12" x 19", with a maximum thickness of a half inch. One of my favorite materials is Proofgrade walnut. The deep richness and clean grain line pattern always make beau-



1 The Glowforge is a sleek and streamline laser and it's just as comfortable sitting on a desk in an office as it is on the workbench in the shop.



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2

2 Jewelry box made with the laser.



3

3 A jig for making splined joints.

tiful pieces. I recently made the dual drawer jewelry box (Photo 2 above) using this material and the *Glowforge*. The exterior of the box is made of four interlocking panels that sit nicely into a through mortise and tenon base.

In The Shop

So, you might ask yourself how the *Glowforge* (or any laser for that matter) can be integrated into your shop. As a woodworker, a laser can support your hobby (or profession) in many ways. There are countless jigs that can be quickly and easily created. For example, I made a spline jig (shown in Photo 3) for my palm routers and a circle jig for my plunge router. I recently broke the dust collection port on my old miter saw. Guess what it is going to get cut on the laser next?

Small projects such as these can be joined without hardware. The use of finger joints and tabs help to create strong bonds and joints. I use CA glue to stick my joints together, as it gives a little better grip on the laser-cut edges (plus, it dries quicker than wood glue).

And let's face it, one of the best parts about being a woodworker (or maker) is making gifts for others. Adding a laser to your tool arsenal allows you to customize any project. Engraving a name on a cutting board or creating a personalized wine box really makes it special. These effects can be done within the interface and under a half an hour. One example is the charcuterie board shown to the right.

Many laser users have developed new businesses based on the capabilities of machines like the *Glowforge*. With the versatility to engrave on almost anything, the best selling items are those that are created specifically for someone. Such items include business card holders, men's valets, and tumblers.

Considerations

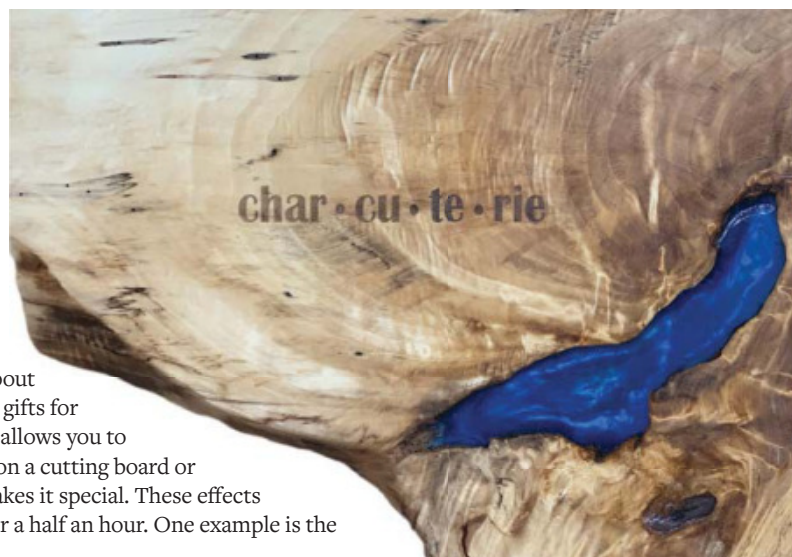
In order to get the most from them, home lasers require care and maintenance. Amongst those is using compatible materials. I mentioned before that a variety of materials are compatible with a laser. But, there's some that you shouldn't cut such as most stained and painted wood and epoxy resins, as

they can produce noxious gases that the air filter can't clean.

In addition, it's best to keep your laser in an air conditioned space. Because of the complex electronics involved, moisture isn't good for lasers and extreme temperatures can be harmful to the laser components.

Whether you choose to purchase a laser for hobby use, or as a new profit stream, the possibilities are endless. The *Glowforge* is a great, user-friendly tool that allows you to experiment and build in a whole new way. **PW**

.....
What to learn more about Char Miller-King? Check out her interview and other woodworkers at www.popularwoodworking.com/woodworking-in-america.



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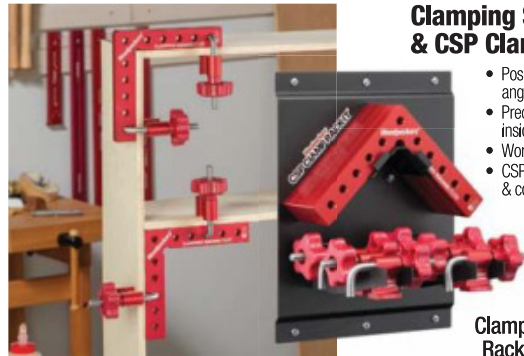
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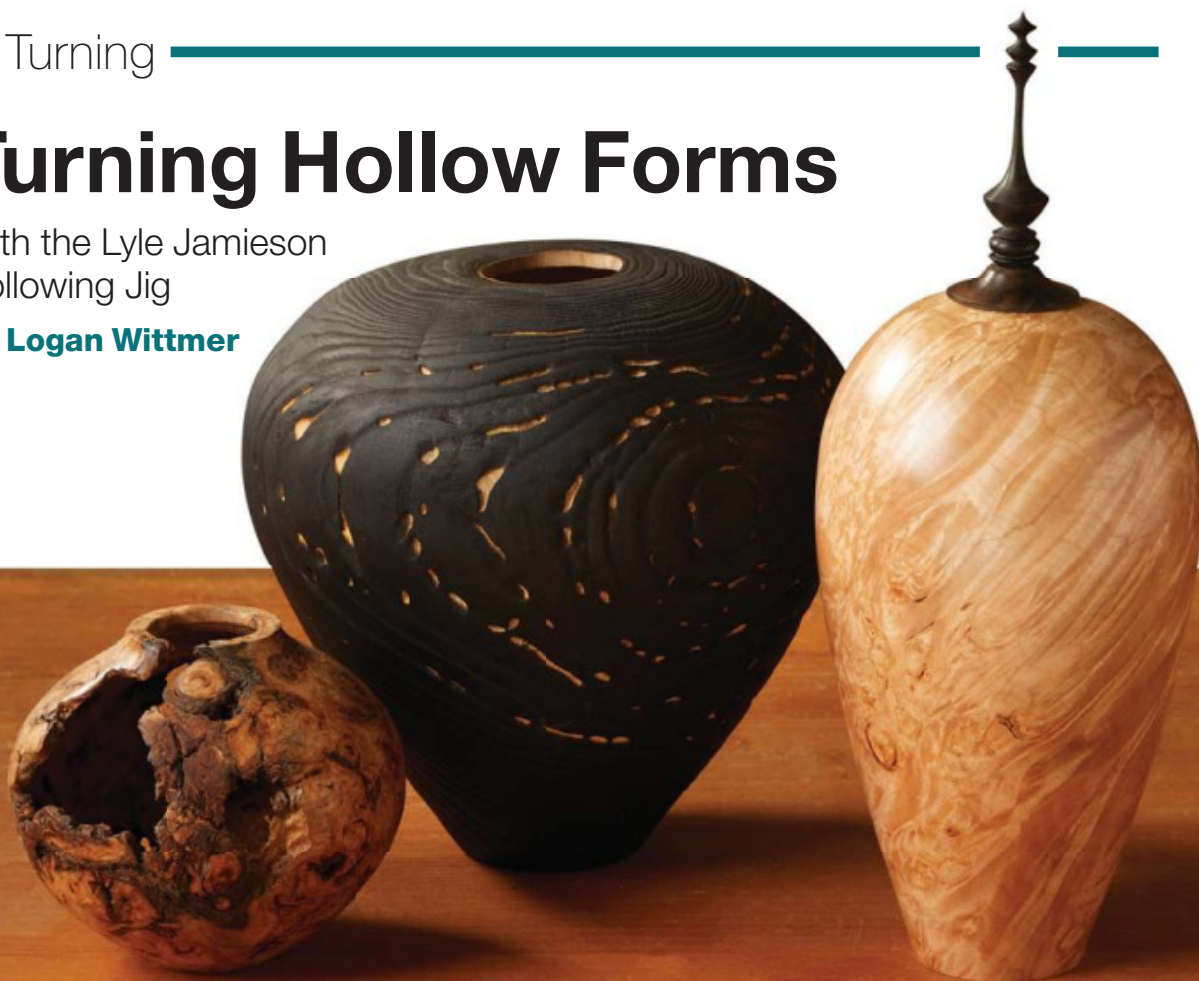
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Turning Hollow Forms

With the Lyle Jamieson
Hollowing Jig

By Logan Wittmer



When it comes to woodworking in general, I tend to be a traditionalist. Sure, there are a few new tools that I use daily, but if a task can be done with traditional tools, that's usually how I'll do it. The same can be said for turning. I am a fan of traditional cutting tools: a spindle roughing gouge, a parting tool, spindle and bowl gouges. I like the way the wood reacts to a sharp tool, and the surface that's left behind. Plus, I enjoy developing the skills needed to effectively use cutting tools. However, when it comes to hollowing vessels through a small opening, that's where I change it up.

For turning small hollow forms like the small burl piece above, I rely on my *Jimmy Clewes* mate tool. It's a great little tool that has crossed the "traditional tool" line. The one limitation with it is the

depth in which you can hollow. Usually, I try and stick with about 7" with the mega mate. So what happens if you want to hollow deeper... say a vase that is 12" or deeper? That's where I rely on a little help. That helping hand comes in the form of a hollowing jig.

Jig Basics

Hollowing jigs all share a few common traits, and share one goal: to help you create uniform hollow forms safely and easily. Hollowing deep hollow forms with handled tools (such as extra-long handled scrapers) can beat up the turner. A tool hanging several inches to a foot off the tool rest creates a tremendous amount of leverage. The goal of a hollowing jig is to let the lathe do the work without transferring the excess torque to the turner.

Most hollowing jigs rely on a captured bar with a cutter on the end, or an articulating arm that pivots off a post on the lathe bed. There's pros and cons to each, depending on who you talk to. However, that's a discussion for a different article. Here, I'm going to show how one of the most popular hollowing jigs works: the *Lyle Jamieson Hollowing System*.

Developed by turner Lyle Jamieson, Lyle's system is a captured bar system. A backrest is bolted to the lathe bed and the boring bar rests on the tool rest. A scraper tip is attached to the boring bar on the business end, and to top it off, a laser system guides your cuts.

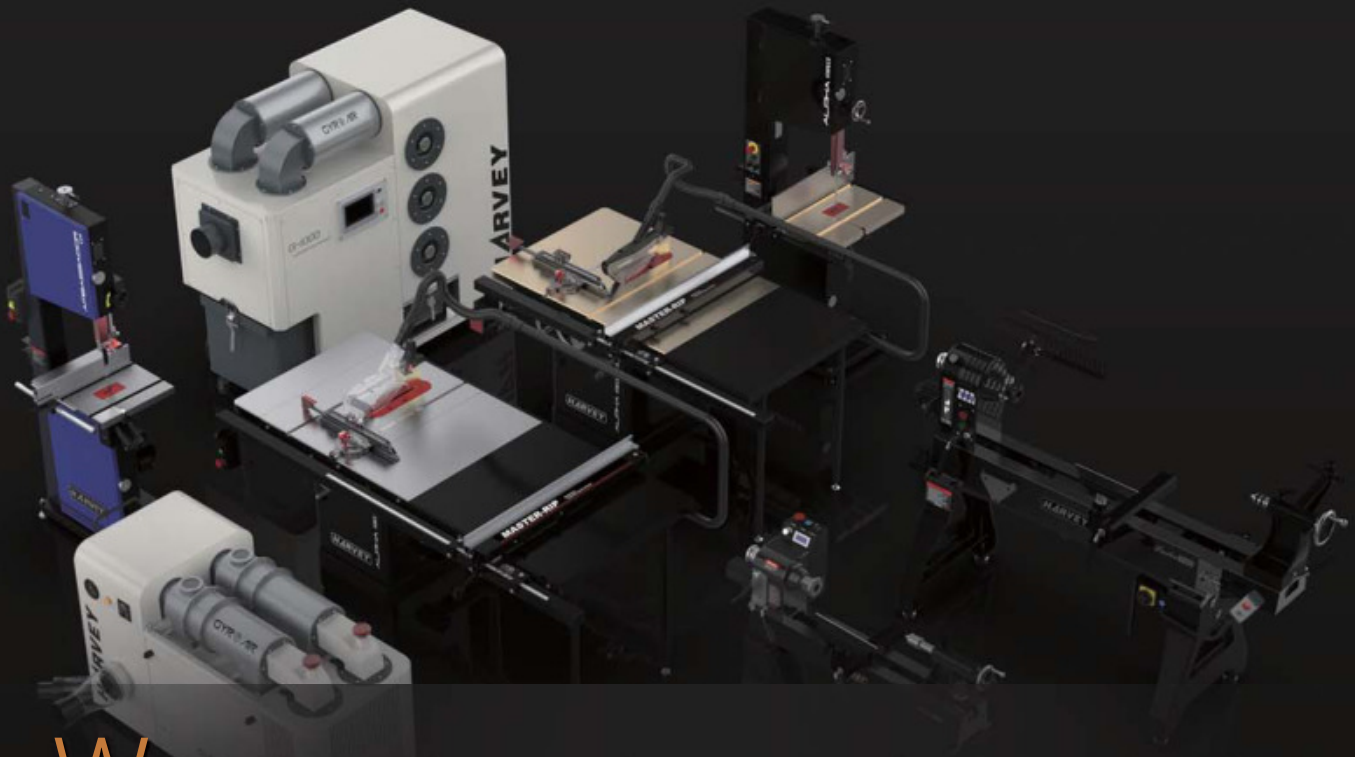
First Things First

Before attaching the hollowing jig to the lathe (you'll see it on the next page), you first need to get your

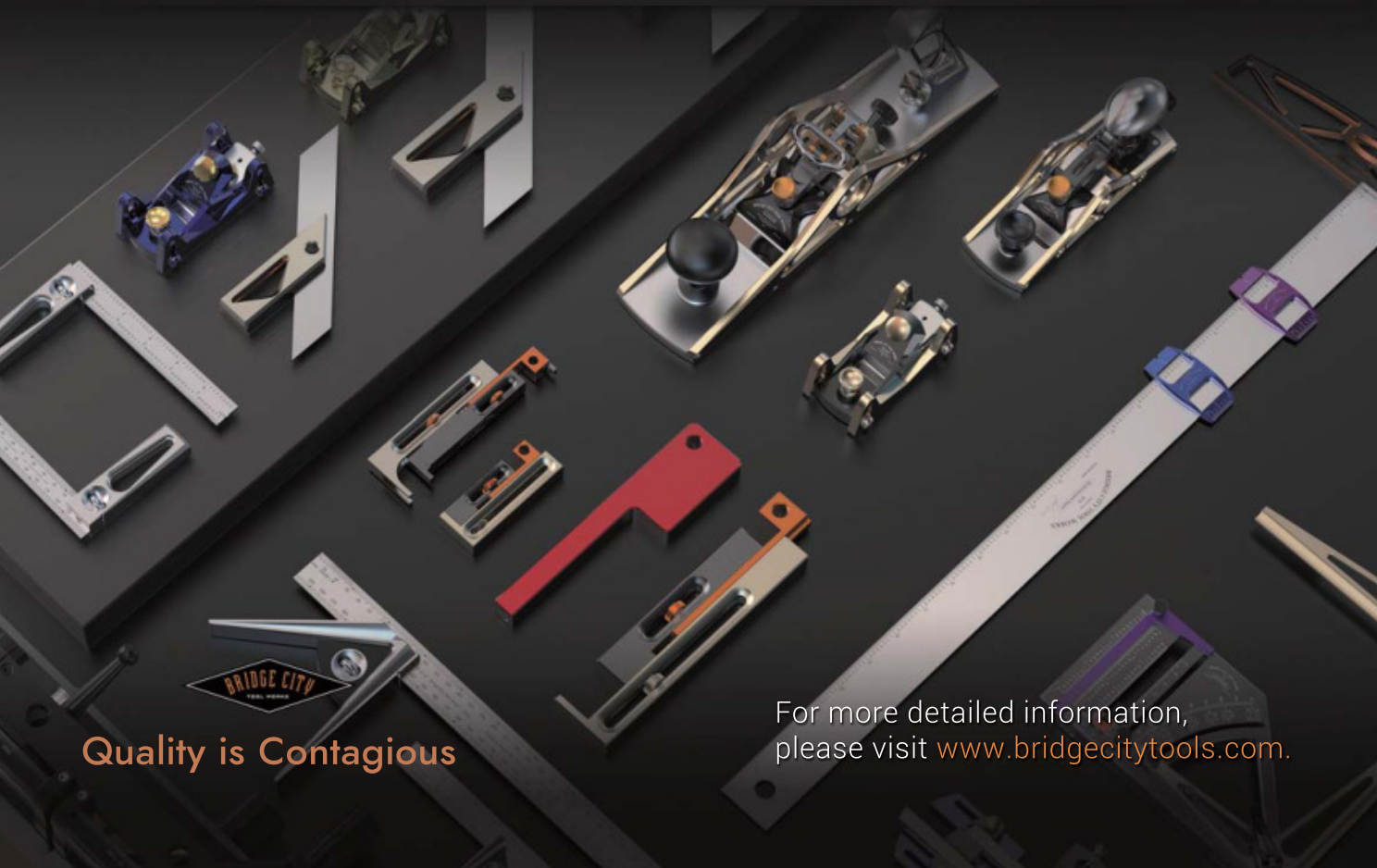
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blank to the hollowing stage. This tends to be some pretty basic spindle turning, but with a few caveats per Lyle's instructions.

The first thing to do is mount a blank. As you see in Photo 1 above, I'm turning this hollow form out of a piece of ash. I center the pith and remove any excess bulk with a chainsaw to balance the blank. Then, it's off to a spindle roughing gouge to turn the blank round. Side note: I wear safety glasses. You should always wear what you're comfortable with. I suggest a face shield.

After roughing the blank, address the ends. Per Lyle's instruction, I've

been mounting these blanks with a faceplate and screws instead of a scroll chuck. The thought is that a faceplate is a more secure connection, leading to less vibration than a scroll chuck could induce. During this entire process, vibration is the enemy, so do what you can to eliminate it. By slightly undercutting the faceplate surface, you can ensure a solid connection between the faceplate and stock... this means using a chisel to knock off any nubs from the tail stock.

When mounting the faceplate to the workpiece, use stout, long screws. Drywall screws are not stout.



1 Mount a wet (green) blank on the lathe with pith centered.

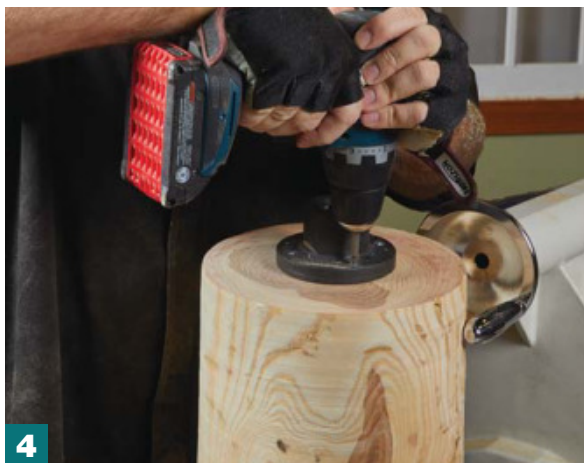
2 Rough the blank round with a spindle roughing gouge.

3 Remove the nub left on the end. Make sure the entire faceplate end is slightly hollow.

4 Mount the largest faceplate available on the blank.

I personally use #10 screws. If my faceplate had bigger holes, I'd use bigger. Also, use the largest faceplate you can. The larger the faceplate, the more stable your workpiece will be as you turn it and especially during the hollowing process. Now, it gets mounted to the headstock with the tail stock in place.

At this point, I turn the vessel to whatever shape I'm going for. Grecian urns are one of my favorite, but it's dealers choice... sometimes



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Deep Hollow Forms

taking the wood's opinion into consideration as well. While turning, keep as much bulk around the bottom of the vessel as you can. You want the stability, and overtime you will be able to visualize where the bottom of your vessel is going to be in relation to this excess bulk.

After shaping, I usually do any drastic embellishments that I'm planning, as the forms can get fragile after hollowing. In Photo 6, you'll notice the form is black. I love scorching and texturing ash, so that's what I did here. At this point, we can start the hollowing process. The hardest part of any vessel to remove is the very center. The wood's moving the slowest there, so I always start my vessels with a Forstner bit. This is when I decide the size of my opening and pick my bit to match. Use a Jacob's chuck in the tailstock and a Forstner bit extension to drill down to your final depth. If you turn with gloves on (I do sometimes—again, use your



5

brain), remove them as you hold the chuck and drill your hole.

At this point I attach the jig to the lathe. You can see this in Photo 7 below. The jig consists of the back rest, D-arm, hollowing bar (with cutter), and laser assembly. There are a few things to pay attention to as you set up the system for the first time, and Lyle's instructions run through those. However, each time you set it up on your lathe,



6

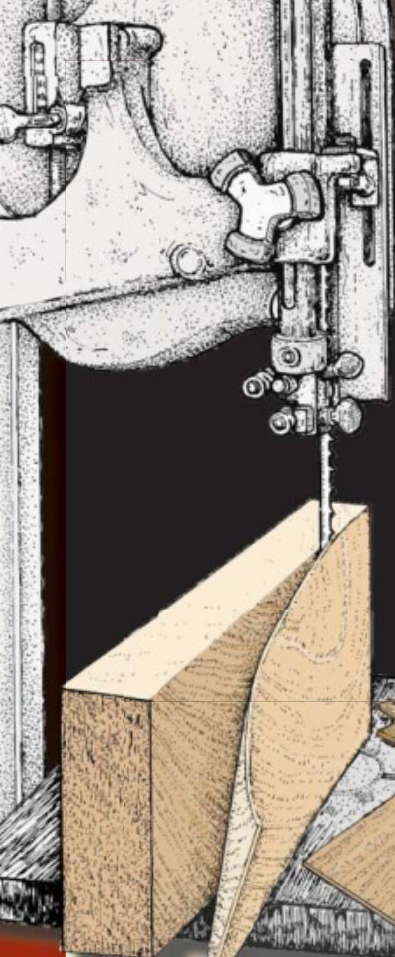
5 Push cuts allow you to form the outside shape of the hollow form. Because this is end grain, cut from big diameter to small diameter.

6 A Forstner bit with a bit extender sets the final depth of the hollow form and creates the opening.

7 The Jamieson jig (Master's package shown here) set up and ready for hollowing. A 2hp lathe is the minimum I would consider hollowing on.



7



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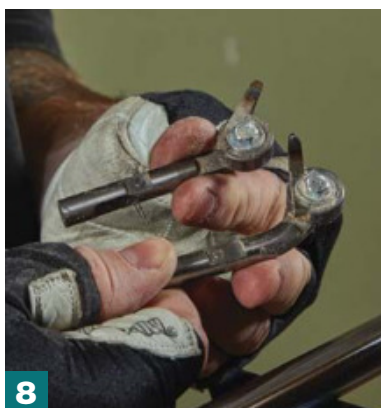
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This product delivers. Thank you so much" — Loren W.*



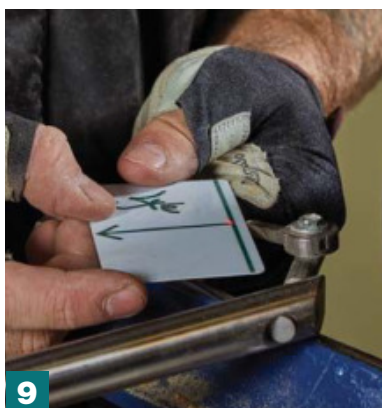
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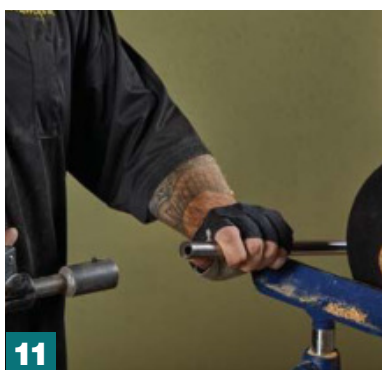
8



9



10



11

8 The system comes with two different tool holders: a straight and bent.

9 Setting the laser guide is done with the supplied card, and must be set for different areas of the vessel.

10 Use finger tip pressure only to make quick, light cuts.

11 Flipping the boring bar around allows the tool holder to be presented at a different angle.

12 The carbide cutter produces clean finish cuts.



12

you want to make sure the tool rest positions the cutter dead-center on the workpiece. Also, you'll want the entire arm assembly to be perfectly level to the bed.

The Jamieson rig has a few different angles on the bar that you can use to mount the cutters, and a straight or bent tool head for reaching a bunch of different angles. I set the tool angle to work immediately inside the opening first. The laser can be adjusted to give you the desired wall thickness, but this needs to be readjusted for the different areas of the vessel, depending on the angle of the vessel's wall. In Photo 9, I'm setting up the laser for about $\frac{1}{8}$ " wall thickness.

After dialing in the cutter location, angle, and laser position, it's time to hollow. The beautiful thing about a jig like this is the ease of use. There's very little effort in the actual hollowing. Small strokes from right to left creates a "swooshing" sound that will leave a pile of shavings inside the

vessel. These can be blown out. As you're hollowing, you'll watch the laser on top of the vessel. The thinner the wall gets, the closer the laser will get to the edge of the vessel.

After a few minutes of work around the rim, it's often time to switch up the angles. This can be done by swapping out the tool holder for the bent one (Photo 8), or by removing the boring bar and flipping it around (Photo 11). One end of the boring bar has a hole straight on the end to position the tool holder in line with the bar. The other end has an angle to hold to tool. You can see the angled end in Photo 9. The biggest things to remember is to make light cuts and to reposition the laser every time you move to a new location on the vessel. You want to be positioning the laser by referencing the line on the supplied setup card. This line should be parallel with your vessel wall.

If you start hollowing with the scraper, you'll notice that the surface left behind (at least as far

as you can feel) will be just that: a scraped surface. If you want a surface that is a little more refined and will require less cleanup, Lyle offers a small micro-crystalline carbide cup cutter. This cutter, shown in Photo 12, leaves behind a very nice surface and can be used to perform a few different cuts that will either hog off a lot of material quickly, or leave behind a nice, smooth surface. The great thing about this little cutter is that it is carbide, but the micro-crystalline structure allows it to have a sharp edge. This means it actually cuts, but has the durability of carbide. With the standard high-speed steel cutters, you'll need to give them some attention when they start to get dull.

Finishing It Out

After the initial few minutes of using the jig, you'll pretty much have it figured out. That's the beauty of a jig like this—it's easy. I think you could give a beginner a few minutes



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Popular Woodworking
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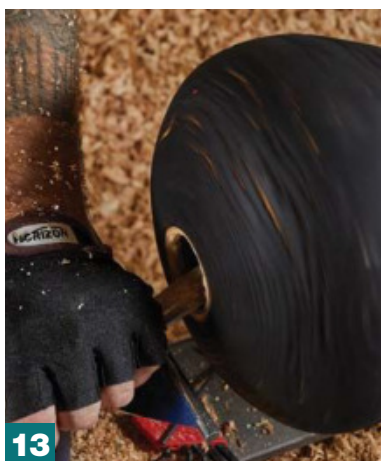


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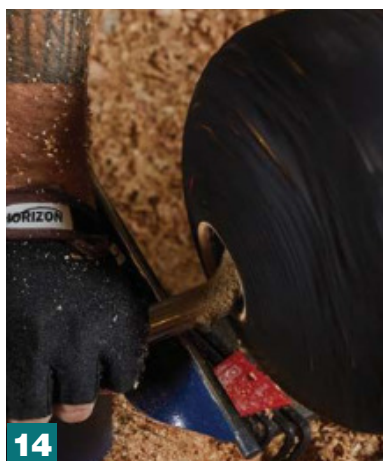


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13



14



15



16



17

13 Start with the cutter and laser at the farthest position you can reach with the cutter in this orientation.

14 As you start to cut, watch the laser as it creeps towards the edge of the form.

15 Once the laser stretches out and drops off the edge, stop cutting.

16 Tuck the shape of the vessel into the bulk of material at the base.

17 Use a parting tool to separate the hollow form from the base.

of instruction and they would be able to hollow out a vessel like this. The biggest thing to watch for is vibration. If you start to get some, stop and figure out what's causing it. In my case, it's usually trying to take too heavy of a cut. As you can see in Photos 13-15 above, the rest of the process is simply watching the laser. As it creeps to the edge of your hollow form, it will start to stretch out. As soon as it stretches and almost falls off, stop and move to the next area. This process gives an amazingly accurate wall thickness all the way through the vessel. After the hollowing is done, the only thing left to do is to finish the shaping (Photo 16) to reveal the final shape of the vessel, and part it off (Photo 17).

In short—my thoughts on Lyle's hollowing system are extremely

favorable. It's a dead-simple system that's easy to use. The biggest thing for me was trying to figure out and understand how to set the cutting head at the angle I needed to reach everywhere inside my form. As someone that spends most of their time turning bowls, I also had to train myself to cut from center out. It took a little getting used to, but the position of the cutter and the finger-tip movements of the bar made it feel pretty natural.

The kit that I have from Lyle is the “master's package”. This seems to do about everything I need for vessels up to 12"- deep or so. (People also use this for small little turnings like Christmas ornaments... it's not only for vessels). If you're wanting to go deeper, Lyle sells a jumbo bar for the standard kit (allowing up to 17") and a giant hollowing system (for vessels

up to 26" - tall!). I've also heard of people using Lyle's system to hollow out the inside of bowls. Now, I still prefer a gouge for that, but it's a perfectly viable way to do it. If you're interested in checking out Lyle's hollowing jig, you can see them on his website, lylejamieson.com. **PW** — Logan Wittmer

Lyle Jamieson Basic Hollowing System

Lyle Jamieson Woodturning LLC

LyleJamieson.com

Price: \$429



M1039

20" FLOOR DRILL PRESS

- Motor: 1½ HP, 120V/240V (prewired for 120V), single-phase, 18A/9.4A
- Drilling capacity: 1¼" mild steel
- Table tilts: 90° in both directions

⚠ WARNING! †¹

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W1837

10" 2 HP OPEN STAND HYBRID TABLE SAW

- Motor: 2 HP, 120V/240V (prewired for 120V), single-phase, 15A/7.5A
- Maximum cutting height @ 90deg: 3¼ in.
- Maximum cutting height @ 45deg: 2¼ in.
- Maximum ripping capacity - right: 30 in.
- Overall table size: 40¼ in. x 27 in.

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Factory



⚠ WARNING! †¹



W1877

13" BENCHTOP PLANER WITH SPIRAL-STYLE CUTTERHEAD

- Motor: 2 HP
- Max cutting width: 13"
- Max cutting height: 6"
- Min. stock length: 8"

⚠ WARNING! †¹



Made in an ISO
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W1685

1 ½ HP DUST COLLECTOR

W1666

2 HP DUST COLLECTOR

- Motor (W1685): 1½ HP, 110V, single phase, 3450 RPM, 16A
- Motor (W1666): 2 HP, 220V, single-phase, 3450 RPM, 12A
- Air suction capacity: 1280 CFM (W1685), 1550 CFM (W1666)
- Height with bags inflated: 78"

⚠ WARNING! †¹

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W1758

16" X 46" 2 HP VARIABLE-SPEED WOOD LATHE

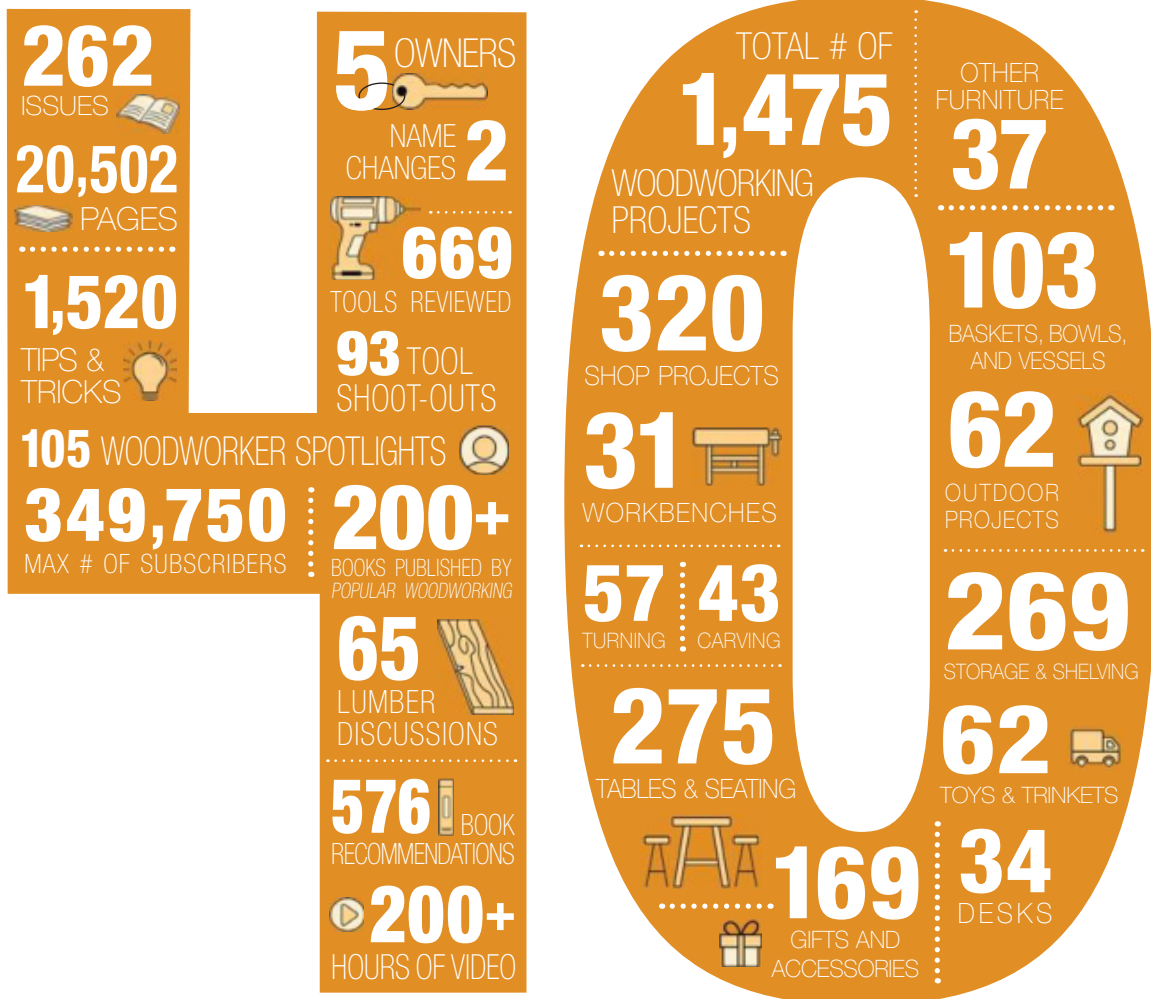
- Motor: 2 HP, 110V, single-phase, 14A
- Distance between centers: 46"
- Spindle threads: 1" x 8 TPI, right hand
- Spindle speeds: variable, 600-2400 RPM

⚠ WARNING! †¹

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Factory



Popular Woodworking



YEARS IN THE MAKING

Thinking back over the past 40 years of woodworking, there's been a lot that has happened. Publications have come and gone. Tool manufacturers have opened shop and some have shut doors. Woodworking icons have emerged, and some have left us. And *Popular Woodworking* has been there through it all. Over the next few pages, enjoy a look at some of the milestones from the past forty years, both *Popular Woodworking* and woodworking in general.



May 1981

First issue of *Pacific Woodworker*, a 16 page tabloid-style, printed in black and white

- **Editor/Publisher** — Stephen Aquilina
- Based out of Sebastopol, California
- **Focus** — woodworkers on the west coast, specifically small cabinet shop owners with a strong focus on wood carving

1985



Ryobi announces the **AP-10 Portable Bench Planer**. For years, planers were huge machines that ran off of 220V and weren't practical in most shops. The "suitcase planer" was about the size of a large suitcase making it portable and affordable for most shops.

April 1985

- Now **focused** on woodworking nationwide
- **Purpose** – to provide project ideas and technical information to all woodworkers

February 1985

Popular Woodworker helps to announce the newest woodworking magazine into the set, **The American Woodworker** (which will later merge with *PW*).

June 1984

Name changed



April 1984

Now published by **EGW Publishing Co.** and is based out of Concord, California. Jean M. David is editor during the transition then hands it to Ellen DesGupta.

February 1982

Sold to **Charles Harris** and is now based out of Santa Rosa, California.

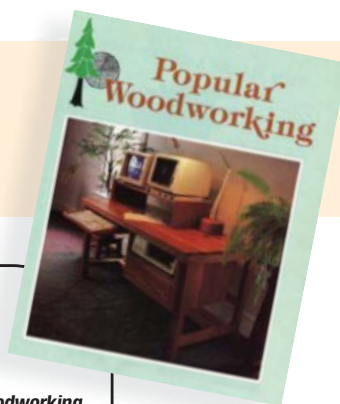
1981

The first **Lie-Nielsen handplane** was introduced by Thomas Lie-Nielsen who produced this first batch in a small shed in his backyard.



October 1985

- Name changed to **Popular Woodworking**
- **Featured Build** – Computer Desk



December 1986

David M. Camp steps into the role of editor.

April 1987

PW refreshes look and logo



1986

Tool-and-die maker, Craig Summerfield, fashions a metal jig and stepped drill bit to join cabinet frames together instead of using traditional complicated techniques and tools. **Craig's Jig** soon became the **Kreg jig** which introduced an easy, affordable, and effective joinery method.



1989

Joe Sorenson, a Nebraska boat-builder, sometimes wished he had 3 hands to hold assemblies during glue-ups so he designed the one-handed bar clamp, also called the **Quick-Bar Clamp**. He sold his invention to a manufacturer whose brands were eventually acquired by **Irwin Industrial Tools** and debuted in 1989 to a countless number of delighted woodworkers!

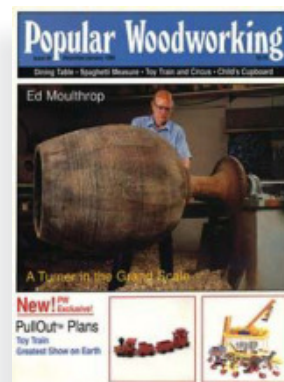


December 1989

- *PW* refreshed the cover design.
- Introduced new exclusive **PullOut™ Plans**

May 1991

- Celebrated **10 years**
- **William (Bill) H. McMaster**, long-time woodworker and author of the column "Focus on Carving" found in the past 45 issues passed away on December 21, 1990. This issue contains his last column.



1992

Dewalt introduces the **first line of portable electric power tools and accessories** that are designed specifically for residential contractors, remodelers, and professional woodworkers. Tools in this line included cordless drills, saws, screwdrivers, impact drills, and much more.



■ Rob Cook: Editor from 1992 - 1994

What do you think is one of the most iconic PW projects over the past 40 years?

Hands down, my favorite articles and projects were ones by **Ken Sadler**, a custom furniture builder and talented writer. He could sell a rocking chair for \$1,000 back in the 1970s. I got to sit in one and my back just melted into the spindles. Most of the time there was just a finished photo that came with the text, so we got to build his creations in our shop. Ken became my woodworking dad—my real dad thought a screwdriver was something with orange juice in it, not mechanical at all.

Visit popularwoodworking.com/RobCook where Rob Cook goes down memory lane of what he describes as the “most fun thing I’ve ever done for money in civilian life!”



July 1995

Time for a cover refresh

November 1994

- Sold to **F&W Media** and is now based out of Cincinnati, Ohio.
- Stephen Shanesy becomes the editor.

September 1994

PW goes online with an online forum called **CompuServe® Information Service** so they can network more easily with their readers.

October 1992

- Robert C. Cook takes the editor role
- **Featured Build** – Morris-Style Chair



September 1995

The first of several **in-shop seminars** take place with 50 *PW* readers and representatives of a woodworking company. The first was hosted by **Freud, USA** who talked about saw blade design, gave a refresher course on blade selection, and addressed shop safety.

November 1995

New interior look



March 1996

- *PW* acquires **Woodworker Magazine**
- In-shop seminars continues with **Bosch** (new plunge router and the new jigsaw blade quick change system) and **Black & Decker** (VersaPak™ cordless set and new benchtop woodworking machines).

September 1996

PW replaced a few parts, performed a general cleanup, and continued to do a fair amount of publishing, which adds up to a new look.

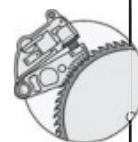
- 1 Changed the look of the logo
- 2 Made photo captions easier to read
- 3 Replaced **PullOut Plans™** with **Project File** (up to 12 projects with complete diagrams, materials list, and final photos)
- 4 Fully described projects, techniques, and tool features with patterns that use the **1 square = 1" system**
- 5 Close up photography to show, not tell, you about important steps

July 1999

Bob Flexner begins writing a column on finishing and continued to write for *Popular Woodworking* for over 20 years!

1999

SawStop launches one of the single greatest safety advancements in woodworking, a **safer tablesaw**. Steve Gass was a full-time patent attorney and part-time woodworker who invented a blade brake after his father caught his hand in a blade. The new blade brake is activated by skin contact and stops a running blade in 1/200th of a second, leaving the user with only a scratch.



November 1998

Popular Woodworking launches a **website**. Before that, woodworkers only had a few resources that they could use for immediate help with their questions. The growth of retail websites helps to drive down the price of tools and products, making it even easier for beginners to get into woodworking and veterans to expand their knowledge.

1998

The **Makita 6213D Driver Drill** becomes the first commercial power tool used in outer space by **NASA**. It was used to build the international space station.



January 1998

- Celebrates **100 issues** and where *PW* has come thus far: from issue no. 1 serving small-shop owners to issue no. 22 where it features more projects and techniques to **PullOut Plans™** in 1989 and finally to a strong emphasis on project building in 1996.
- Each issue now contains 15 projects in a wide variety of skills, which shows practical building techniques that result in quality work.



2004

The **Popular Woodworking** staff publishes **Woodworking Magazine** which had no ads and reported only the best in woodworking.

September 1999

F&W Media, parent company of **Popular Woodworking**, is sold by the Rosenthal family to an investment group.

June 2000

R.J. DeCristoforo passes away. His final column was in issue no. 115. He published over 40 books and thousands of magazine articles in **Popular Woodworking**, **Popular Science**, and **Wood** magazines. His first article appeared for **PW** appeared under the title "Cris Cuts" in 1994, which he shared his system for approaching any project (and this sort of practice advice is what he will always be known for):

"One, don't accept the dimensions on the materials list or a drawing, yours or another, as bible. Two, most projects have a main component that should... be the basis for accurately determining, or checking, the sizes of other parts before sawing. Three, design always follows function."

— R.J. DeCristoforo

October 2003

PW introduces a new department called **Woodworking Essentials**

- **Purpose:** Explore a basic subject in great depth over 7 issues.
- **Why:** Individual articles on a subject are fine, but certain subjects are so important they require a more textbook approach to be truly meaningful.
- **Benefits:** Great for novices, includes elements that fill in knowledge gaps of advanced woodworkers, and is hole-punched for a 3-ring binder creating a textbook series.
- **First subject:** The router

**WOODWORKING
ESSENTIALS**



"I'm glad someone recognizes that we're all not professional woodworkers who just "know" how to do things ... The how-tos and descriptions walk you through the process and do a good job of explaining. Thank you for sticking to the basics."

— Rafa Middleton (Park City, Montana)

October 2005

Next **Woodworking Essentials** section: *Casework Construction*

2005

Christopher Schwarz writes the first blog for **Woodworking Magazine**.

2005

Milwaukee Tools introduces the **V28™ Lithium-Ion Battery**. It gives tools twice the run-time, 50% more power than an 18-volt traditional nickel-cadmium battery, fade-free performance, and more tools the opportunity to become cordless.



October 2004

- New **Woodworking Essentials** – *Table Saws*
- New subscription program is introduced. For every subscription, \$5 is donated and split between *The American Cancer Society* and *The Nature Conservancy*.

2005

Festool launches the **Domino Joiner**, which was invented by a German engineer who wanted to combine the easy-to-use biscuit joiner's speed with the strength of a mortise-and-tenon joint.

December 2004

Featured Build – Arts & Crafts Tool Cabinet



Steven Shanesy:

Editor from 1994 - 2005

In your mind, what makes *Popular Woodworking* different than other magazines?

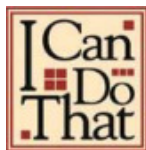
I like to say **Popular Woodworking** gives its readers real projects and real techniques that they can actually use. We lead you through projects in the most practical, straight forward way possible. When we tackle complex projects, we let you in on professional shop building techniques that simplify the process without sacrificing quality. Some call this getting the most bang for the buck. We look for great results from simple approaches. At this magazine, we're cabinetmakers who later become editors, not vice versa.

November 2005

Steven Shanesy moves to Publisher at **F&W Media** and Christopher Schwarz takes over as editor. Steve's favorite memory during his time at **Popular Woodworking** was in the beginning. The team was setting up the new shop when senior editor, David Thiel, turned to him and said: "Can you believe they're paying us to do this?"

June 2006

I Can Do That! column starts, focusing on woodworking with a limited tool selection.



February 2006

PW celebrates **25 years** with a refreshed logo



POPULAR Woodworking

■ Christopher Schwarz: Editor from 2005 - 2011

What in your mind makes PW different than other magazines?

It's amazing—shocking really—that **PW** has survived so many changes. Changes in the magazine industry, the woodworking world, who owns the magazine, and even the name of the magazine. The reason it has survived is that it has always had scrappy editors that refused to give up on it. The magazine has always been an underdog in the industry, and that position has been its advantage at times. Editors had the freedom to experiment and do things that the big corporate magazines would never do for fear of losing readers and advertisers.

What is one of the most iconic PW projects over the past 40 years?

The **Sam Maloof Table** we built for issue 100. We used drawings that Maloof published in the magazine in its earliest days. That project—which is gorgeous—sums up the magazine's West Coast roots and its Midwest ambitions.

What is the biggest change in woodworking in the past 40 years?

While it would be easy to answer this question with one word (the internet), the bigger changes have come as a result of the rise of all electric media. So, being a woodworker takes far more dedication and passion. I know very few "casual" woodworkers these days.

December 2009

Celebrated the lives of 2 woodworking legends:

Sam Maloof (1916 - 2009): Designer and builder of elegant yet simple furniture. Maloof's iconic work can be seen in several major museums and the white house.

James Krenov (1920 - 2009): Teacher, writer, and craftsman whose influence will live on through his work, teaching, and 5 books: *A Cabinetmaker's Notebook*, *The Fine Art of Cabinetmaking*, *The Impractical Cabinetmaker*, *Worker in Wood*, and *With Wakened Hands*

June 2008

Announces the 1st annual **Woodworking in America** conference hosted by **PW** held at Berea College in Berea, Kentucky, which will take place in November with a focus on hand tools.



October 2006

- PW** launches a **blog** to bring additional content including extra drawings, answers to reader's questions, and an inside look at tool reviews and future projects.
- PW** begins a new **Woodworking Essentials**: *Setting Up the Shop*

August 2007

PW gets a brand refresh.



December 2007

Featured Build – Shaker Workbench



October 2007

PW begins sending email newsletters.

November 2007

Next up for **Woodworking Essentials**: *A Better Way to Work* (all about safety)

"Thank you for the **I Can Do That!** section and the manual... I was so impressed with the no-nonsense approach for each topic that I subscribed online before the printer was even finished printing out the manual. It is a most-read and is so well written that anyone at any level who is interested in woodworking will find themselves saying, *I Can Do That, Too!*"

— DeNault Schwartz II (Fayetteville, North Carolina)

April 2010

Popular Woodworking and *Woodworking Magazine* merged combining the best of each.



October 2011

Christopher Schwarz bids farewell to *PW* to focus on his company, *Lost Art Press*, which publishes books on traditional furniture work. Stephan Shanesy stepped back into the editor role.

April 2012

Matthew Teaque takes on the editor role.

November 2013

200
ISSUES

PW celebrates the 200th issue with a special issue that focuses on a select group of woodworkers.

- **Roy Underhill** – More than 30 years of TV hasn't softened his approach to the craft
- **Wendell Castle** – Built his career on unique techniques and methods
- **Mary May** – A trip to Europe, a phone call, and an undying love of carving led her to the creation of an online school
- **Dale Benard** – A journey from carpenter to furniture maker to teacher
- **Brian Boggs** – From journeyman to elder, he defines his role as a chairmaker
- **Jameel Abraham** – Iowa-born toolmaker, woodworker, and luthier
- **Norm Abram** – America's most recognizable personality retires after 21 seasons of *The New Yankee Workshop*
- **Peter Ross** – This smith's hand-forged tools and hardware combine art and function

April 2013

Matthew steps down as editor but continues to contribute to *PW*. Megan Fitzpatrick takes over as editor, having held a previous position at *F&W*.

Megan Fitzpatrick: Editor from 2013 - 2018

What in your mind makes *Popular Woodworking* different than other magazines?

Unlike most of the other magazines, which have a corporate voice, *Popular Woodworking* has always celebrated the voices of individual writers; it sounds like a friendly conversation between author and reader, which I find encouraging and engaging.

What is one of the most iconic *PW* projects over the past 40 years?

18th-century workbench, *The Return of Roubo*, August 2010

What is the biggest change in woodworking in the past 40 years?

The hand-tool renaissance not only of users, but of high-quality makers—a movement that was at least in part fomented by Christopher Schwartz and the *PW* Staff during Chris's tenure as editor.

March 2019

F&W Media CEO Geogory Osbery announces that *F&W* has filed for bankruptcy.



June 2019

Active Interest Media acquires *Popular Woodworking* magazine, along with a handful of other brands from the *F&W Media* bankruptcy auction. *Active Interest Media* is the parent company of *Woodsmith Magazine*.

November 2019

Popular Woodworking, now based out of Des Moines, Iowa, publishes its first issue under *Active Interest Media*.

March 2020

The **Covid-19 pandemic** takes effect and the entire woodworking community starts spending more time in their shops.

April 2021

Andrew Zoellner steps down and Logan Wittmer takes his place, leaning on his years with *Woodsmith Magazine*. An effort is made to return to the roots of woodworking, highlighting both traditional techniques as well as new technology.

Focusing On: inspiring each and every reader to build, design, and try new (or traditional) techniques, and never be afraid of failure

November 2018

PW gets a whole NEW look from cover to interior and even the website.

June 2018

Andrew Zoellner takes over as editor. He previously worked with *American Woodworker* and *Family Handy Man*.

November 2017

Featured Build – Arts & Crafts Sideboard



October 2014

The American Woodworker magazine merges with *PW*.

40
YEARS

February 2022

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Craftsman Style Mantel Clock

This mantle clock is the perfect weekend project and packs in some great woodworking.

By Willie Sandry

PROJECT #2201

Skill Level:

Intermediate

Time: 2 Days

Cost: \$100



PHOTOS BY THE AUTHOR

A mantel clock is a fun thing to build because it's small in scale and won't exhaust your lumber supply. In a long weekend, you can transform a few pieces of lumber into something special that can be displayed on a mantel or shelf for years to come. This version features walnut bars set into notches in the legs, for a unique appearance that invites a second look.

I built this clock with a Leigh Frame Mortise and Tenon Jig, but the plan could easily be used for loose tenon joinery or traditional tenons at the table saw. Start by cutting all parts to size, except the two back panels. We'll wait to size those panels until the clock is assembled. Now set out to build the frame of the clock, which is like a "frame within a frame." As with most woodworking projects, sequence is important, and we'll need to cut the joinery before cutting any curves.

Since the tenons automatically fit the mortises with the joinery system, it doesn't matter which is cut first. I started with the tenons by drawing center crosshairs on the end of one workpiece. Then position the workpiece against the vertical stop and slide the "sight" in place.

Rout the tenon initially with a light clockwise pass, then finish shaping the tenon in the traditional counterclockwise direction. Complete all similar tenons before moving on to the larger tenons of the lower rail.

Mortise & Tenon Joints

Most of the joints for this project are centered on $\frac{3}{4}$ " stock. The exception is the small stiles of the inner frame, which are only $\frac{5}{8}$ " thick workpieces. Because of this, offset

Leigh FMT Jig

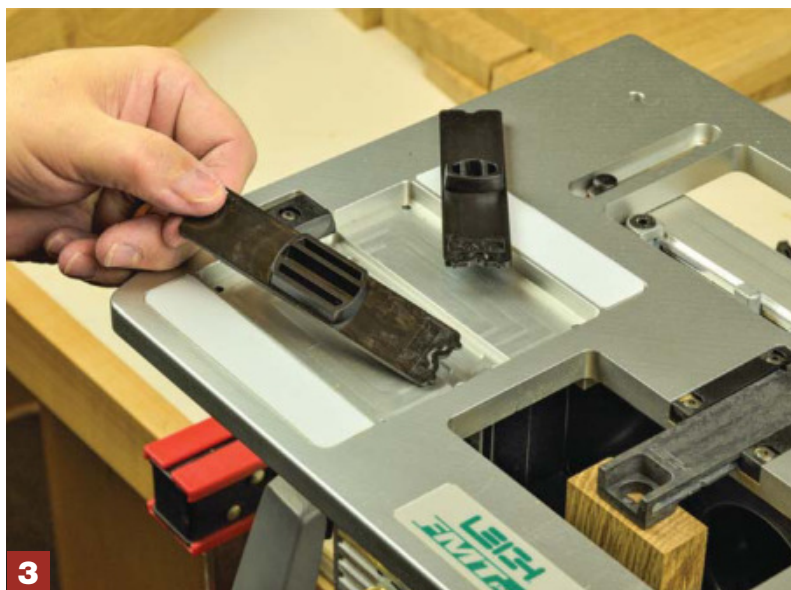
Check out a video of using the Leigh FMT jig on Willie's YouTube channel, *The Thoughtful Woodworker*.



1 It's all about the center mark. The FMT only requires simple center crosshairs to properly locate the tenon. With multiple tenons of the same size, you only have to mark the center on one workpiece. For repeated cuts, the stop will position the next workpiece, without need for reference marks.

2 Align the sight with your center marks to rout the tenon. The top surface of the jig slides in "X-Y" fashion to help you quickly align the part.

3 Guides snap into the jig to control size. You'll use a $\frac{1}{4}$ " x $\frac{1}{2}$ " guide for the small tenons, and a $\frac{1}{4}$ " x $\frac{1}{4}$ " guide for the lower rail.



mortises are required to receive these stiles. The back of the parts will be flush once assembled, and a subtle shadow line is created on the front face of the mantel clock, between the outer and inner frame.

Regardless, what method you choose, you'll batch out the tenons pretty quickly. In fact, all of the tenons for this project are $\frac{1}{4}$ " thick and centered on the thickness of

the stock. Just make sure to offset the mortises on the middle and lower rails.

With the tenons complete, move on to the mortises in the front legs. Each front leg component receives three mortises. When it comes time to rout the offset mortises in the middle and lower rails, use an auxiliary clamp to support the small workpieces.

Joinery Before Curves

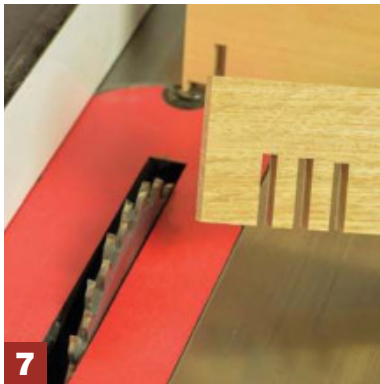
It is the usual mantra for building furniture, and this mantel clock is no different. Now that the joinery is complete, you're clear to cut the curves. Head over to the band saw and cut the graceful curves in the legs to the dimensions shown in the detailed renderings. When you're at it, cut the arched shape in the lower rail as well.



4 To rout the tenons, the FMT jig uses a sled with indexing pins that follow a guide. The sled and router are moved in a circular motion to rout the tenons, and slide left and right in a track for cutting mortises. Luckily, I had an extra plunge router base that I've dedicated to this jig. That way I'm free to use the router for other tasks and it plunks right in place when I'm ready to use the jig.

5 To mill the offset mortises in the middle and lower rails, an auxiliary clamp provides extra stability for the small workpieces. All of the mortises on this project are $\frac{1}{2}$ " deep.

6 The stop block (normally used for cutting tenons) can be turned upside down and used for an auxiliary clamp to secure small workpieces for mortising.



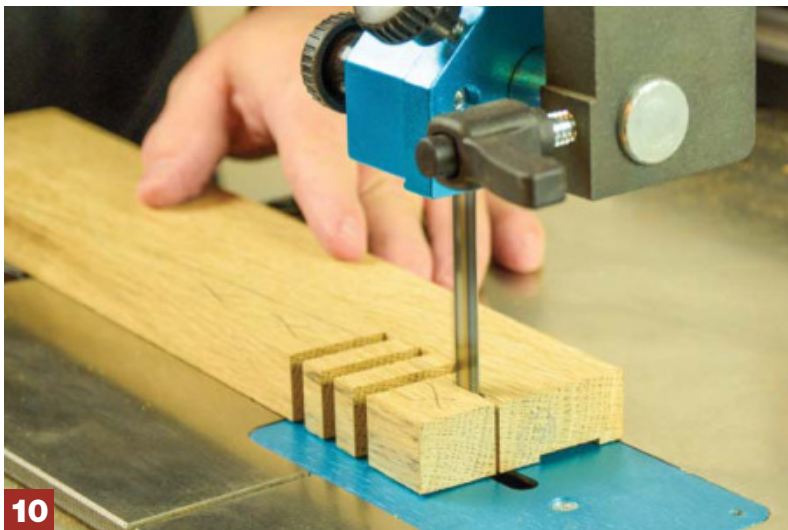
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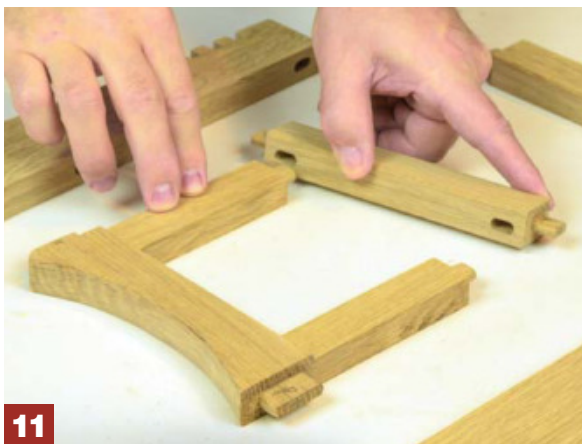
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7 With a 1/4" dado stack installed at the table saw, make the three notches atop each leg. Cut the uppermost notch 1 1/4" deep and the lower notch 1 3/16" deep. The middle notch is somewhere in between.

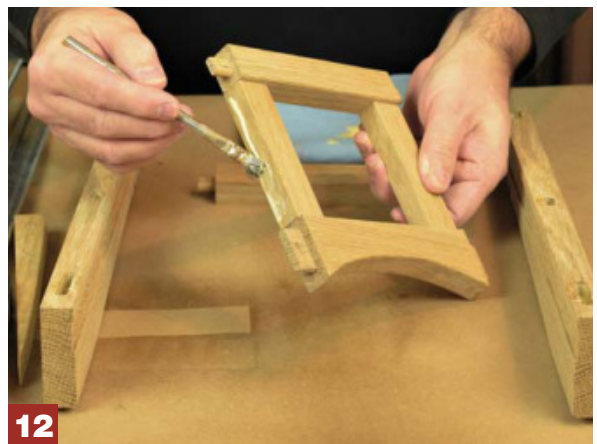
8 Switch to a 3/4" wide dado stack and mill shallow grooves to receive the sides of the clock.

9 Now bury the blade partway in a sacrificial fence and cut a rabbet on the back of the rear legs only (not shown). With the same setup, raise the blade and notch the back rail to fit in the rabbet you just made.

10 Cut the leg shape at the band-saw. Smooth them with sandpaper.



11



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Assembly & Glue-Up

Most of the structure and joinery of this project are at the front—and this ‘frame within a frame’ assembly is a good place to start test fitting. First, bring the small stiles

together with the middle and lower rails. Then add the top rail and two front legs to see how the assembly snaps together. If everything fits as it should, go ahead and begin the glue-up for this phase.

11 Glue stiles between the middle and lower rails.

12 Apply glue on the sides of each stile and add front legs.

Shallow Dados Make Assembly a Breeze

I pondered for a moment before deciding how to attach the side panels to the legs. Long grain joints would have plenty of strength, but a shallow groove would certainly help to align the parts as they go together. Since each had their advantages, why not use both methods.

Backer Board

The upper opening is rabbeted so the clock face will sit flush with the inside of the front assembly. This way, a simple plywood backer board can hold the clock in the same place and provide a backer for mounting the decorative tile. Cut the backer to fit and attach with six screws.



13



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Cut List

No.	Item	Dimensions (inches)		
		T	W	L
4	A Legs	3/4	2 1/2	13 1/8
2	B Front upper rails*	3/4	1	6 13/16
1	C Lower curved rail*	3/4	1 3/4	6 13/16
2	D Stiles*	5/8	1	5
1	E Rear rabbeted rail	3/4	1	6 13/16
2	F Sides	3/4	3 1/2	13 1/8
1	G Top panel	1/2	7 3/8	11 5/16
1	H Plywood backer board	1/4	6 7/16	11 7/8
1	I Back panel (upper)	1/2	6 13/16	6 1/8
1	J Back panel (lower)	1/2	6 13/16	6
12	K Walnut decorative bars	1/4	3/8	1

* Tenons are 1/2" long by 1/4" thick. (width varies)

13 Save your offcuts to use a cutting cauls to bring frame together.

14 Create a recess the same thickness as your clock face with a 5/16" wide bearing-guided rabbeting bit.

15 Square the corners of the rabbet. Glue the side panels between the front assembly and back legs.

16 Make sure to dry fit the rear rail to maintain proper spacing.

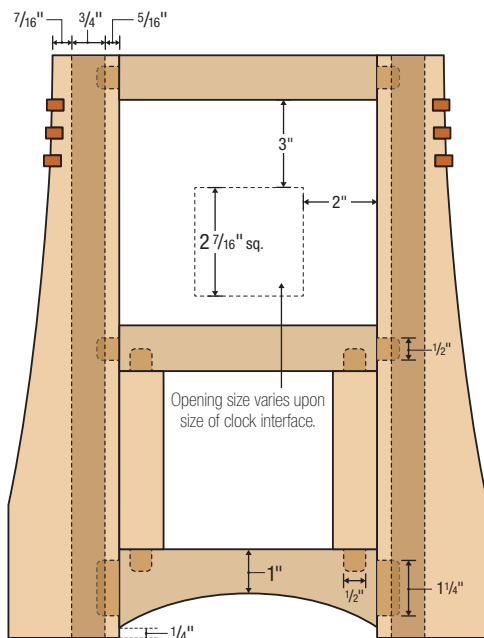


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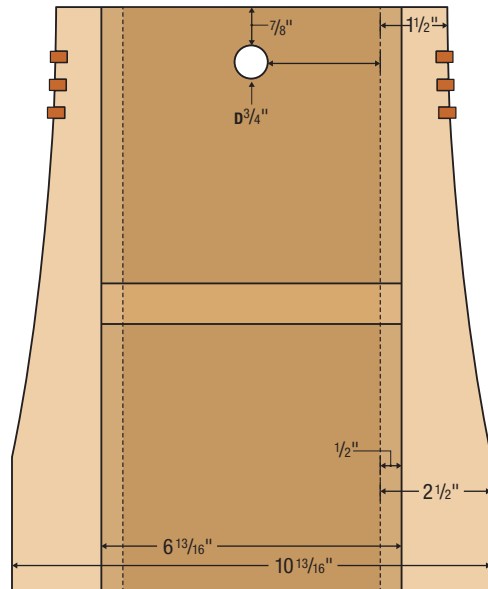


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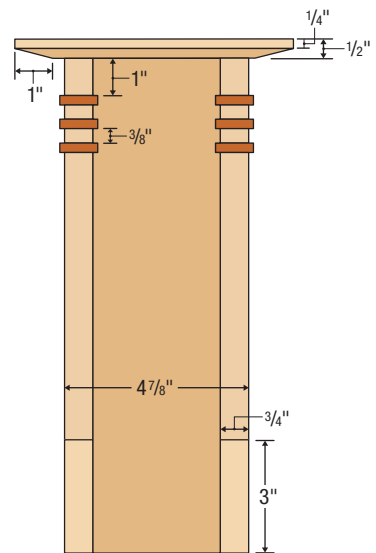
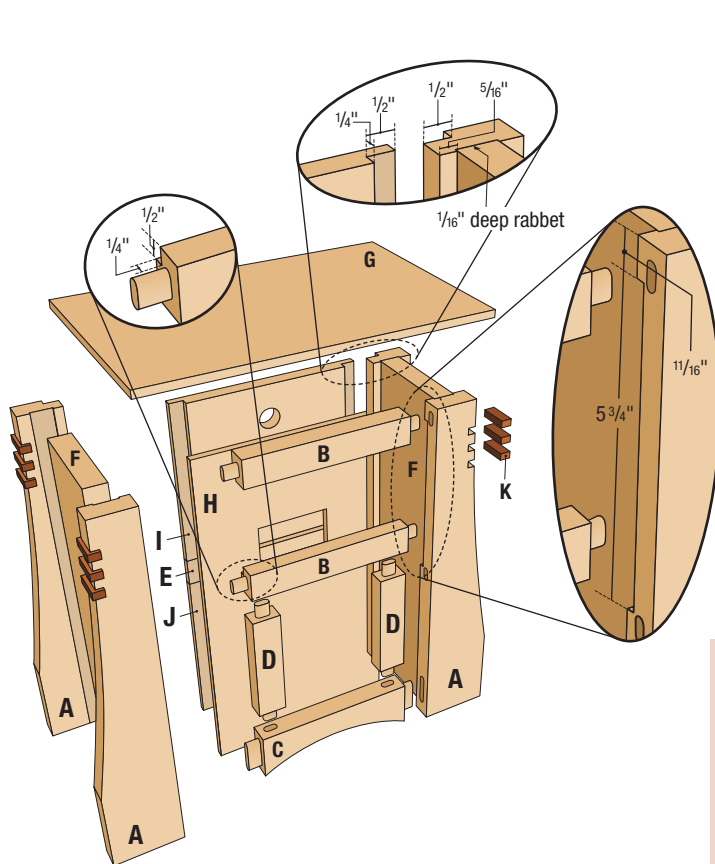
Craftsman Style Mantel Clock



FRONT VIEW



BACK VIEW



SIDE VIEW

Supplies Needed:

- **Magnetic catch**
- **Clock face** (6 5/16" x 5 5/8")
*Purchased from Schlabaugh & Sons on [Etsy.com](https://www.etsy.com)
- **4 pocket hole screws** (1" long)
*For mounting top panel
- **Motawi art tile** (4" x 4")
*Purchased from [Motawi.com](https://www.motawi.com)



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17 Fit decorative walnut bars into the three notches in each leg. Hand sand and gently round the edges before gluing them in place.

18 Top it off with a decorative tile. Once the finish is applied, set the 4" square tile on dabs of silicone adhesive. The backer board, which is just a 1/4" thick piece of plywood, holds the clock face as well as the tile in place.

19 A pair of common cabinet magnets secure the upper door to the clock frame. This gives easy access to the clock internals for maintenance. You may need to attach mounting blocks for the magnets, which can simply be glued to the side panels. The lower door is screwed in place without glue, so it can easily be removed if you ever need to replace the clock or tile.

Final Details

Once the glue has set on the main clock assembly, you can take care of a few remaining details. Glue the rear rail in position and clamp it in place. While that's drying, you'll have access to hand sand and fit walnut bars that dress up the top of the mantel clock. The walnut bars are all 1/4" thick, 3/8" thick by and 1" long. The last pieces to cut are the top panel and back covers, which are made from 1/2" thick solid stock. Cut the back panels to size and rabbet two edges to fit on the clock frame. The lower back cover is screwed in place (no glue) while the upper cover is held in place with a pair of magnetic door catches. Additionally, a finger-hole in the upper back cover makes it easy to replace the clock battery or set the time as needed.

Apply the finish of your choice and assemble the clock. Once the face is installed and the backer board in place, you can set the tile on a few dabs of silicone adhesive. Finally, the top is attached with four 1" long pocket hole screws.

PW—Willie Sandry

BRAND NEW PX|12

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Reproducing a Classic

Reproducing this Krenov Wall Cabinet is an excellent way to practice your joinery skills and dial in details to take your projects to the next level.

By Kenan Orhan



PROJECT #2202

Skill Level:

Advanced

Time: 4 Days

Cost: \$175

PHOTOS BY THE AUTHOR

Interested in building a reproduction of a wall cabinet

that you can customize to your liking, practice case construction, and develop your eye for design? James Krenov's pipe cabinet is a great option. His first iteration was made in 1968 and was constructed from oak, had adjustable shelves, and a unique door that allowed for air to circulate. In this article, I'll walk you through designing this cabinet to your liking and give you tips on how to build the iconic parts of this piece. Just remember, this cabinet is small in stature so making mistakes and changing your mind won't cost a fortune so you can adjust this piece to your heart's content.

Planning Lumber Layout

The look you want to give your cabinet starts at the lumber store. You should take your time and sift through the available stock, looking specifically for straight, tight grain or other patterns pleasing to the eye, doing your best to avoid knots, checks, and other defects.

With your wood selected and back in the shop, you don't want

to start milling your lumber and cutting pieces as they occur to you. Since I work from 8/4 stock, I try to book match a lot of my symmetrical parts, so the sides of the case are ripped from a board and then resawn to create a symmetrical grain pattern in the case. I had a board with lovely straight tight grain on one edge that I set aside for my door frame and was left with a uniform cathedral grain pattern for the sides. I would have preferred just straight grain, but often times, especially for anyone who is not operating a factory-scale cabinet-shop, you must reconcile your vision for the project with the realities of available lumber. In my case, the front of the cabinet will be what holds the eye the most so I saved the straight grain for this section, however if you are lucky enough to have a wide board of straight grain or access to quartersawn stock, you might prefer making the cabinet entirely from it. Fortunately, the top and bottom of the cabinet have faces that won't be seen as much so their grain pattern is less crucial, except of course

for their edges which will frame the door. I made sure the section of the board I had in mind for the top and bottom had edges with straight, tight grain. I mill the boards into rough dimensions, left them in the shop for a few days to allow for humidity changes, and milled them to the final dimensions.

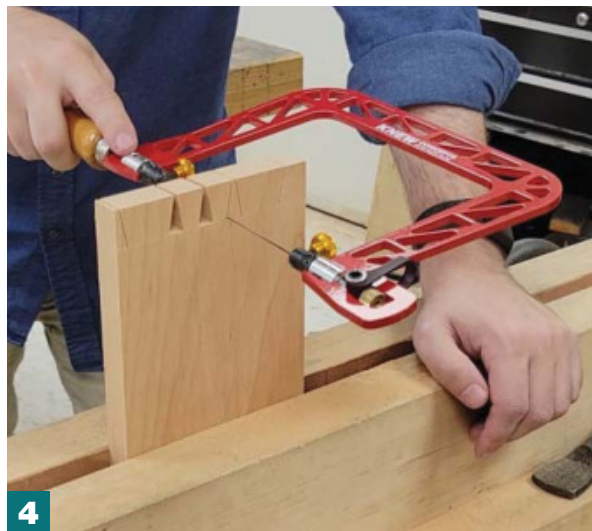
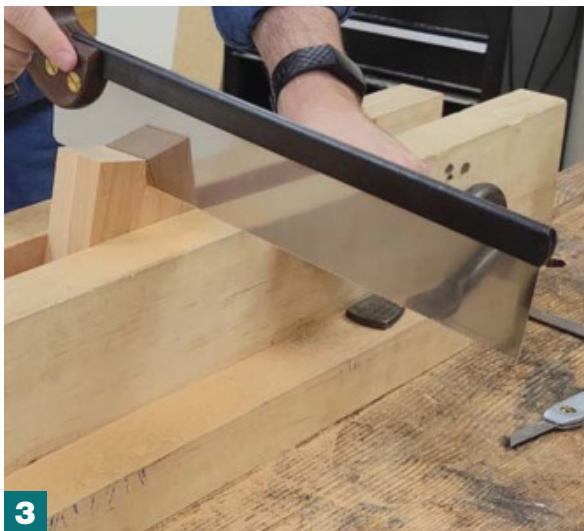
With the door parts ripped from the board and resawn, I put extra effort into planning its layout. The door frame should have straight grain to facilitate proper eye movement. But there are a few ways to orient the straight grain. For this project, the grain I had available to me allowed for a nice slightly sloped appearance. Orienting it this way, the cabinet will take on a sturdy look of a wider base slowly tapering to a finer, narrower top. Likewise, a pronounced "U" could have been achieved by switching the side boards, but I preferred the taper.

Once you have the cabinet laid out, make sure you mark all your reference faces and use carpenter's triangles to keep the boards properly oriented, this is crucial to avoid careless work.



1 The cathedral grain pattern will be book matched on either side of the cabinet for symmetry.

2 After cutting the lumber to rough dimensions, I placed the lumber in stacks with spacers for a few days to allow for the humidity change to take place before cutting to final dimensions.



Case Joinery

The case joinery is all dovetails. For the case itself, I hand-cut my through dovetails. There are a lot of great resources on making dovetails by hand, including a wonderful article in the October 2021 issue of *Popular Woodworking*, so while I won't go into detail, I have some tips for dovetailing that have helped me in my projects.

I cut tails first so that I can gang cut them which reduces time spent and allows a longer line to saw helping to keep me square across the board. To help me keep my cuts straight, I orient my boards so that I'm cutting roughly perpendicular to the floor rather than trying to cut at an angle. Some people say this is a waste of time and that may be true, but I've found it helps me prevent drift while cutting. I also make sure to take full strokes with my saw, it's calorically efficient, and helps keep the cut smooth and straight. Lastly, I take the measurement for the cutting gauge straight off the pin board. I make sure to set it a hair wider than the board so that I can later plane the tails and pins flush to their respective surfaces.

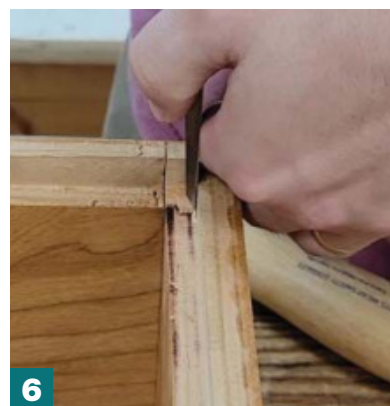
The shelves are sliding dovetails which can be done with a dovetail plane for the keys, and you can use an angled batten, saw, chisel, and

3 Taking long strokes with the handsaw helps to keep lines crisp and straight.

4 Removing waste with a fret saw can save time and makes chopping easier while reducing the risk of bruising your knifeline.

5 Sliding dovetails are beautiful and sturdy ways to install shelves.

6 When squaring the routed rabbet, take care not split the wood by chopping with the grain, only chop perpendicular to the grain, and even then be careful!



router plane to make the housing. But this time I wanted crisp uniform joints at a fraction the time, so using a dovetail bit on the router table. I first cut a $\frac{3}{8}$ " deep trench in the sides of the case and then, leaving the bit at the same height, set up to cut the dovetails out of the shelf ends. I snuck up on the fit to prevent gaps. Krenov's original cabinet had adjustable shelves which are much easier if you want to go that route. It's simply a matter of drilling symmetrical holes. I preferred the look and locking power of the sliding dovetail since it holds the cabinet sides together while the sides hold onto the top and bottom. This is going to be one sturdy cabinet.

With the case fit, I rabbeted the

back. I've laid out the tail boards to get half inch rabbets straight through, but the pin boards I will have to set up stop blocks on the router table so I don't go too far and cut or blow out the back pins in any way that will show. This can then be cleaned up and squared with a chisel after the cabinet is glued up, but don't hammer along the grain or you'll split the sides. Instead pare in small passes.

Add Hinge Mortises and Door Catch

Next, I layout and cut the hinge mortises. Use the knife hinges themselves to mark the outline. Lastly, before gluing up, are the mechanical details that make this case unique. Instead of installing a ball catch or magnets to secure the door, you can do what Krenov did, and install a shop-made spring-catch.

The catch is made to fit this mortise, I used some scrap maple I had. It's shaped into a bump or horn in the front and flat in the back. It gets a countersunk hole drilled through the back wide enough to let a screw pass without grabbing it. A pilot

hole is drilled into the mortise to accept the screw. To finish the catch, put the spring in place, cover it with the catch, and screw it secure.

We'll adjust the screw once the door is installed, but to counter-act this catch in the top of the cabinet we must install a button in the bottom. Mine hardly protrudes since my gap for the door is very thin, but this button can be installed a little oversized and then filed down once the door is on, so you guarantee a nice fit. Just make sure to pillow the tab a little to make it easier on the door. I do this with some low grit sand paper on a little block. Overall, this is a lot more work than

installing some magnets or a ball catch, but it has a very pleasing feel opening and closing the door that is very difficult to replicate with other hardware. Plus, it is a nice semi-hidden detail.

Before moving onto the doors, it's time to glue the case together, which is straight forward. First glue the case together, then add a bit of glue in the dovetail slots for the shelves. Some gentle hammer taps drive them home. If you've done a good job, it should be square right off the bat, but if not, while the glue is drying you can pull the cabinet into square before locking the clamps.



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7 To install my shop-made spring catch I start with a mortise that's 1 1/4" long, a 3/8" wide, and 1/8" deep. Then I ramp the front of the mortise (the part facing the door) until it's maybe a 1/4" deep in the front. Lastly, I drill a hole the size of a ballpoint pin spring in the front of the ramp.

8 Next, I borrow a pen's spring and cut it so that when seated in the hole it extends no more than an eighth inch past the top of the mortise.

9 The catch barely protrudes beyond the board.

10 The button similarly barely protrudes beyond the board.



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All About the Door

With the case complete I now take my door parts to the final dimensions so that they fit the cabinet properly. I don't bother measuring; instead, I use a story stick or the pieces themselves to mark the layout. The door construction is straight forward, it is simple mortise and tenon joinery, but a place that is easy to trip up is when laying out the locations of the mortises. Since, I have chosen to make my stiles slightly thicker than my rails to add a bit of dimensional variety (as was done in the original), I must make sure to follow the reference symbols in order to keep the layout precisely the way I intended.

Next, you'll want to decide the look for the door's floating stiles. You can use the same wood as the rest of the cabinet, especially if you



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11 Instead of measuring the door stiles, I put them into their place in the case and then use a knife to mark their size.

12 I like to work with hand tools, so I drill the mortise with a brace and chop it square with my chisel. Next, I cut the tenons on the ends of the rails, making them just shorter than the mortise is deep so that they don't bottom out and prevent a tight fit along the shoulder.

13 Here, I saw just on the waste side of my layout lines so that I can pare away any excess for a good fit.

14 I went with quartersawn sycamore since its warm color goes well with cherry, but its pattern adds plenty of visual contrast. I wanted a lighter wood for the details, but you can use any warmer dark wood or very black wood like wenge or ebony. Don't use walnut or similar dark woods that gray over time because eventually they will lose their warmth and no longer match with the brown-red of cherry. White oak and walnut make a good pair if you'd like to try making the cabinet in one and use the other for the contrast wood.



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15 To help accurately place the mortises in the mullions, I made a quick doweling guide out of scrap wood. It's just a trued bar glued to a flat fence with a few marks to guide where it goes for doweling. Just remember to use the fence bar upside down when drilling the corresponding holes. For example, I drill into the floating stiles with the guide face down, then the rails with it face up.

16 I use the handle of my marking knife as a spacer for the detailing strips since it was the right thickness.

17 To keep the relief union, I use business cards. Then with the top and bottoms squared, I mark a knife line along the sides of the door and plane it to the line.

have some particularly beautiful bits you could use from the board. This creates more unity, but it might not be visually different enough. Sometimes sapwood works here as a way to bridge the interior stiles. Or, like me, you might have a bit of contrast wood lying around that will give a different texture and color to the overall piece.

With the frame of the door dry fit, I prepare the layout for the floating mullions that make up the middle of the door. These are not structural joints so they don't need large tenons, in fact, you can use $\frac{1}{4}$ " dowels for the mullions if you'd like.

Lastly, I add the detail strips to the stiles. These are places to really let your creativity shine. With a wide shallow gouge, you can add some texture to them or to the floating stiles in the middle of the door. Since this is a very small strip and won't over power the piece, you can pick

a very flashy, exotic wood. Or you could play with other textures using rotary tools or hammering the sides of screws or other interesting shapes into the wood. I made these strips so their quartersawn pattern would show and felt this was enough.

To attach these strips, I drill three $\frac{3}{16}$ " holes in the decorative strips, then lay them over the stile to mark the corresponding holes to be drilled in the door stile. I do my best to keep the holes in the stile uniform in depth but it's not crucial. Next, I fit in my dowels and press the decorative strip into place to make sure all my holes and dowels are aligned. You can do through holes like me or blind ones to keep the dowels hidden. Either way, a drop of glue inside the strip holes is what will attach it to the dowels. Using a spacer that's the correct thickness, I press the strips into place until it contacts the spacer,

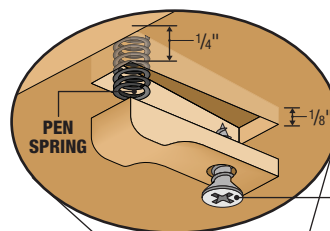
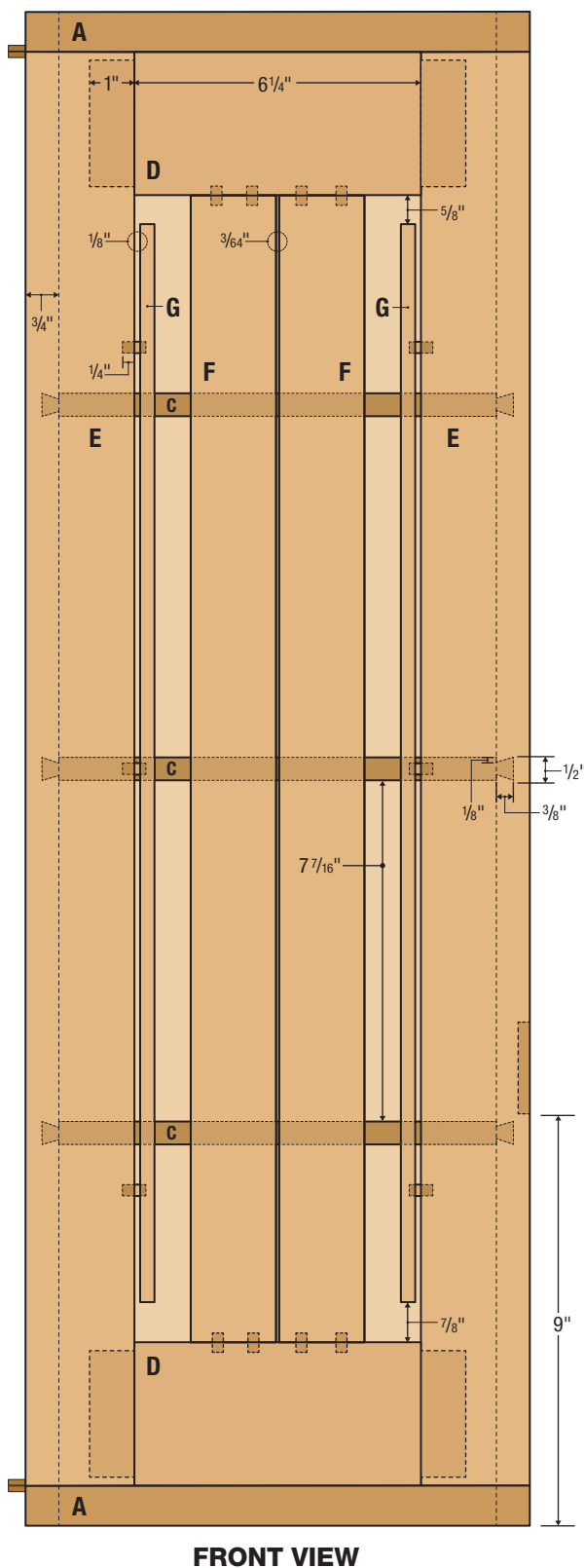


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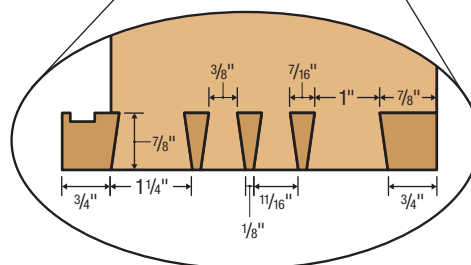
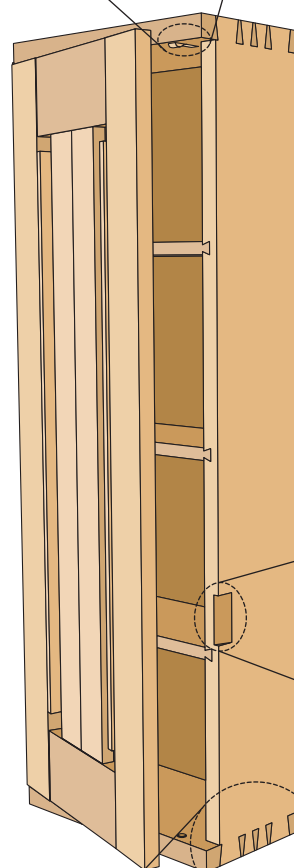
18 With the door completely fit, I transfer the hinge mortise position from the case to the top and bottom of the door, chop, and fit the hinges.

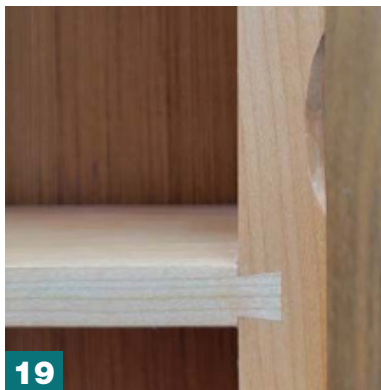
creating a uniform gap. Fortunately for me, I have a knife with a back that is exactly the size I wanted for the gap so with it slotted between the strip and the stile, I pressed the strips tight against it at each dowel.

Hanging Wall Cabinet



NOTE: Screw hole must be slightly larger than the threads so the catch is free to move vertically.





19

If you've done a through hole, make sure your dowel extends all the way through and then remove the excess with a flush-cut saw.

Once finished, glue the door and fit it to the case. Then add the mortise hinge to the door, fit the hinges, and complete a final test to make sure everything is just right.

Last and Very Important Detail

The last detail is one that's easy to overlook but it can set the tone for interaction with the cabinet. To maintain the symmetry of the look, I am not adding a pull, knob, or tab to open the door. Instead, I'll be cutting a finger relief in the cabinet side. There are a few ways you can go about this: the first is a simple curved relief carved with a gouge chisel, a small curved spoke shave, or even



20

just a knife. This is a very simple option, common for boxes, and it will work, but it felt a little undersized for the scale of the cabinet for me, so even though I made it with that first, I settled instead on the ramped, square relief which is done by sawing to the laid-out limits of the relief then chiseling away a flat ramp. You can play with the walls of this ramp or leave them square according to your preference, or you can use some other combination of chiseling and carving to create a relief that suits your eye and touch. The most important factor is that it allows for enough fingers to pull the door open and that feels comfortable to do so.

Bring the Cabinet to Life

The cabinet is finished in wax. $\frac{1}{8}$ " thick cedar panels are ship-lapped and pinned into the back rabbet.



21

19 You can easily make a semi-circle relief with a gouge or a round spoke shave.

20-21 You can saw similar to the way you would saw a half-blind dovetail, and pare the waste with a chisel at a ramp.

Lastly, a simple French cleat is affixed to the back and then its counterpart is mounted to the wall. Selecting lumber carefully and making sure any contrast woods or textures are harmonious with the case will guarantee you an attractive cabinet, but the details of this piece—like the doweled, decorative strips, and the carved finger relief—will elevate your cabinet to the next level, and you can apply these design elements to your other projects. **PW** — Kenan Orhan

Cut List

No.	Item	Dimensions (in.)			Materials
		T	W	L	
2	A Top/bottom	$\frac{7}{8}$	$5\frac{3}{4}$	11	Cherry
2	B Sides	$\frac{3}{4}$	5	33	Cherry
3	C Shelves	$\frac{1}{2}$	$47\frac{7}{8}$	$10\frac{1}{4}$	Cherry
2	D Door rails	$\frac{9}{16}$	$3\frac{1}{8}$	$8\frac{1}{4}$	Cherry
2	E Door stiles	$\frac{5}{8}$	$2\frac{3}{8}$	$31\frac{1}{4}$	Cherry
2	F Floating stiles	$\frac{1}{2}$	$17\frac{7}{8}$	25	Sycamore
2	G Detail strips	$\frac{5}{16}$	$\frac{3}{4}$	$23\frac{1}{2}$	Sycamore
14	H Mullions	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	Dowels
1	I Left back slat	$\frac{1}{8}$	5	32	Cedar
1	J Left back slat	$\frac{1}{8}$	$5\frac{1}{4}$	32	Cedar

* Door rails (D) include 1" tenons on each end.



22

22 Wax is a wonderful finish for a project that won't come in contact with much wear or liquid. It has a soft luster and the finished wood still feels like wood instead of plastic.



Mid-Century Nightstand

A simple case is elevated by a unique leg design and elegant suspension. **By Collin Knoff**

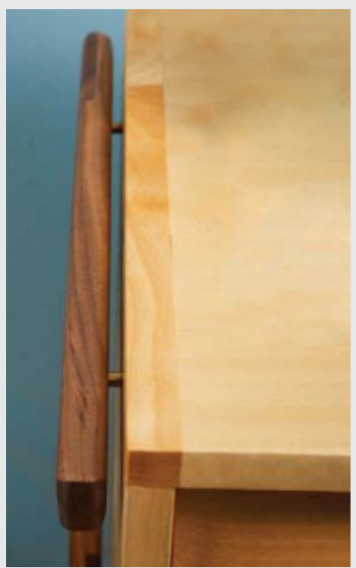
PROJECT #2203

Skill Level:

Intermediate

Time: 2 Days

Cost: \$150



PHOTOS BY LOGAN WITTMER

This was a real project of growth for me. I've written before about my woodworking journey being defined by life functionality over my desire to create interesting things. Even my first project for the magazine, the Sliding Door Stereo Cabinet from June of 2020, was driven by the need to have a better place to put my TV.

I was actually working on a design for a work desk when I stumbled upon a piece by Silvio Cavatorta, a prominent Italian designer in during the 1960s who has since seemingly vanished from the public consciousness. I quickly dismissed the design for a work desk, but used the idea of Cavatorta's suspended case furniture as a jumping-off point to design a pair of nightstands.

I was originally going to build the nightstands using only my miter and track saws in my small garage shop. However, fewer travel restrictions suddenly meant I was able to make the project at the *Popular Woodworking* shop in Des Moines instead. There, I could try out new techniques and tools (such as hand planes) and have direct help from more advanced woodworkers.

Case Assembly

With a design in mind, I started by building the case first since it was fairly straightforward. I broke down the plywood on the table saw, then drilled pocket holes for the sides and bottom. For the top, I used a technique that was common in early



1-2 Glue overly-thick hardwood birch edging onto the ends of the birch plywood panels. A pair of clamps keeps even pressure across the piece.

3 For the front-facing edges of the plywood parts, iron-on edge banding is used. Available in a roll, it's easy to cut to length with a utility knife, and it applies easily with a hot iron.

4 After the glue is dry, use a block plane to trim down the hardwood edging so that it's flush with the surface of the plywood. Sneak up on the last little bit with sandpaper, but don't round over the edge.





plywood furniture, often referred to as plywood edging. It is where a solid piece of wood would be used for the outside edges of the top piece to hide the plies on the side pieces.

There are multiple methods of how to complete the plywood edging, but I used the simplest method, glue. After the glue was dry, I used a block plane to dial in the thickness before smoothing. I veneered the remaining outside edges and assembled the case with some help from Woodpecker's Clamping Squares.

Once both cases were assembled, I went ahead and finished them with an oil-based polyurethane.

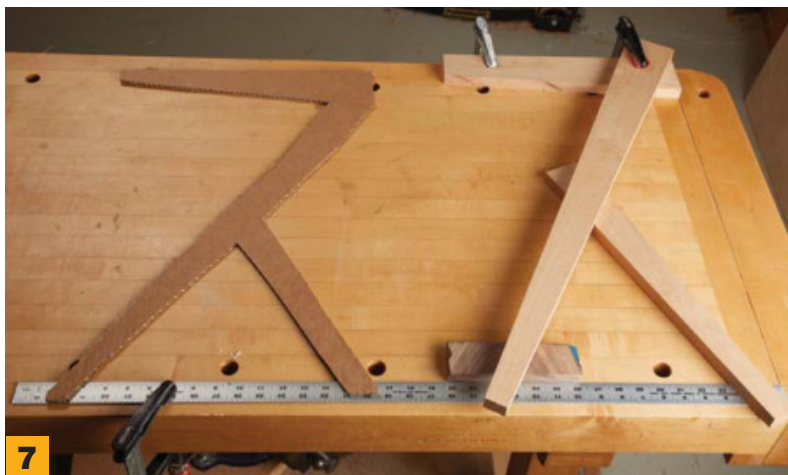
Designing the Legs

An easy way to visualize designs is to create cardboard mockups. While I had a design in mind, I wasn't quite sure how well it would actually work in three dimensions. After building a few different cardboard legs, I settled on a design that was visually appealing in relation to the case.

Using my cardboard mockup as a reference, I build a set of test legs out of some alder scrap. This helped me finalize the dimensions and became a template to help me create the final legs. Making the template also helped get me dialed in for the cut depth for the lap, the method of joinery I used to assemble my leg pieces.

5-6 The case is assembled with pocket screws. They're fast, easy to install, and last. Predrill three pocket hole locations, and use a pair of assembly squares to hold the panels while driving the screws home.

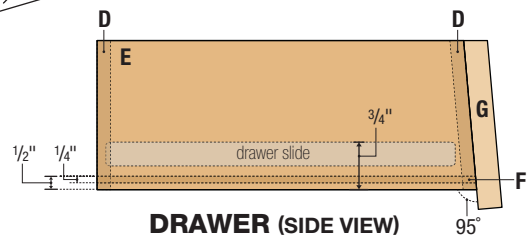
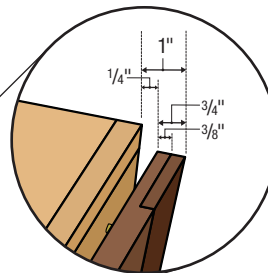
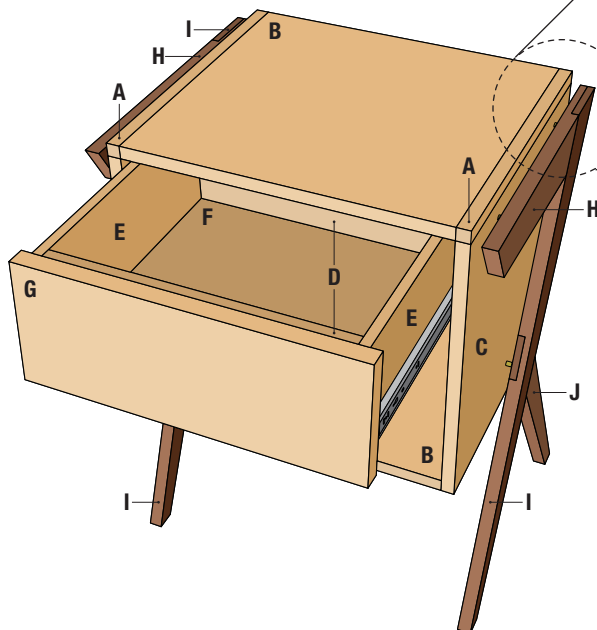
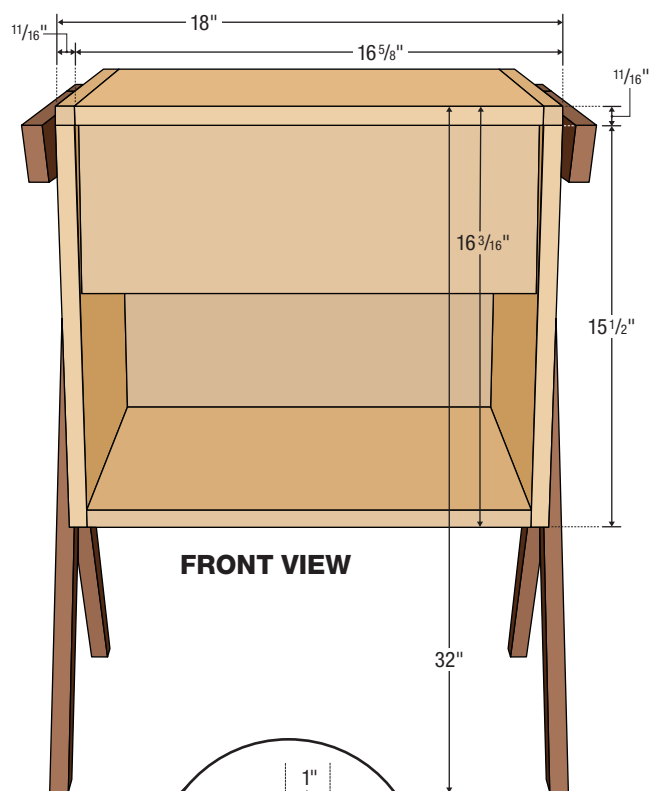
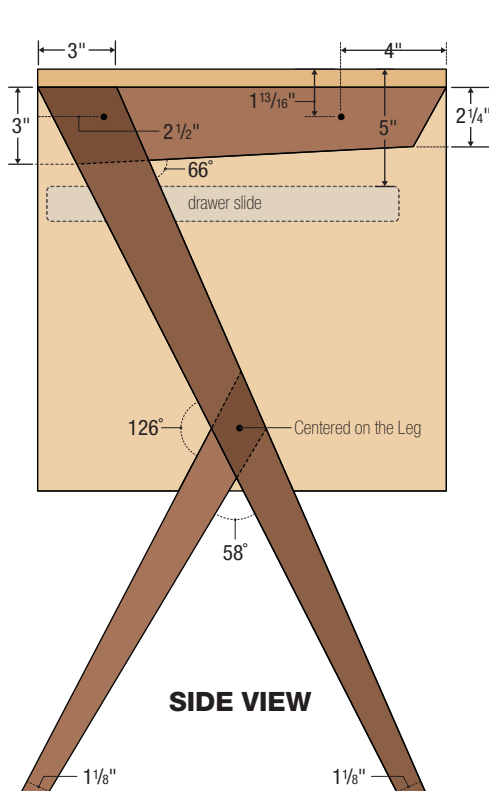
7 The evolution of the leg shape. After starting with a cardboard mock-up, cheap alder was used to layout all the parts and fine-tune the joinery setup.



Cut List

No.	Item	Dimensions (inches)			Material
		T	W	L	
2	A Case top breadboard ends	11/16	11/16	15 1/2	Birch
2	B Case top and bottom	3/4	16 5/8	15 1/2	3/4" birch plywood
2	C Case sides	3/4	15 5/16	15 1/2	3/4" birch plywood
2	D Drawer front and back	1/2	5 1/2	14 1/2	1/2" birch plywood
2	E Drawer sides	1/2	5 1/2	14	1/2" birch plywood
2	F Drawer bottom	1/4	15	13 1/2	1/4" birch plywood
1	G Drawer face	7/8	6 1/4	16 9/16	Birch
2	H Top leg	3/4	3	15 1/2	Walnut
2	I Main leg	3/4	3	30	Walnut
2	J Bottom leg	3/4	2 1/8	18	Walnut

Mid-Century Nightstand



Supplies Needed:

- ~15 feet of **birch edging**
- 12 **pocket-hole screws**, 1 1/4" long (for the case)
- 8 **pocket-hole screws**, 1" long (for the drawer)
- 1 set of 14" **standard drawer slides**
- Minimum of 9" of 1/4" **brass rod**
- **Epoxy** to attach the brass rods
- **Mini-Wax Oil-Based Polyurethane** (clear semi-gloss)

Plan Out the Leg Build

Each leg has three components: the top, the main leg, and the bottom. After rough cutting each segment of the leg, I tapered each on a table saw using a tapering jig and the angles noted on the diagrams shown on page 61. At this point I picked out my matching leg sets and divided them up so that they could be cut to exact specifications.

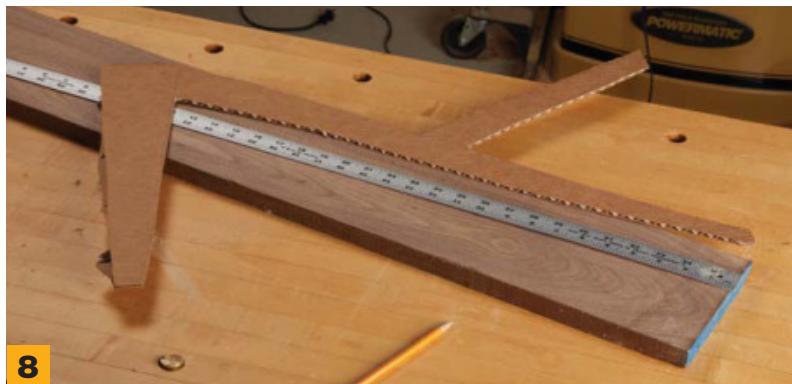
Part of what makes this design slightly more complex is that the legs feature a lap that is also tapered, meaning that I had to cut from two different angles. To ensure an accurate cut, I used my template to mark the joint on each leg component. I then used a bevel gauge to confirm the angles matched. Measure twice, cut once is very important with this step! You can cut the joints in any order you like, but I choose the following order:

- Middle joint on the main leg
- Matching joint for bottom piece
- Top joint on the main leg
- Matching joint on top piece

Let's Start Building

With my plan of action in mind, it was time to cut. With the help of a bevel gauge and my leg template set the first angle on the saw blade. I made multiple passes with the miter saw until I neared the cut about $\frac{1}{16}$ " away on the far end, then adjusted the angle of the blade and finished clearing out. This allowed me some wiggle room for cleanup and adjustment. Once the overall joint was defined, I made a few passes with the blade down and running to clean things up a bit. With the joint completed, I dry fit the joint and make any necessary adjustments before moving on to the next piece. This process was repeated until all the joints were cut. Remember to “mirror” the leg pieces on the outside so that you end up with matching, opposite sets of leg pieces.

With the rough joints cuts, I smoothed and set the final depth using a rabbet plane and a rasp.



8 Lay out the leg parts based on the plywood template. All parts are cut slightly long, and will be trimmed later.

9 Cut the taper on the legs with a taper sled at the table saw. Alternatively, you could freehand the cut on the band saw and smooth it out with a hand plane.

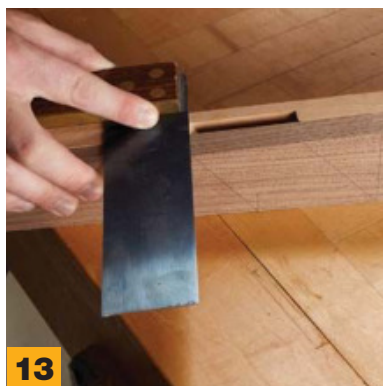
10 Four legs are cut — two for each night stand.

11 Instead of fussing about with a miter gauge and a dado blade at the table saw, the half-laps are easily cut with a miter saw.





12



13

12 Testing the angles on my alder mock-up, I used a bevel gauge to set the correct angle.

13 Transfer the layout lines from the mock up to the walnut legs.

14-15 After setting the blade angle and depth stop, it's a simple matter of making a series of kerfs to make the half lap.

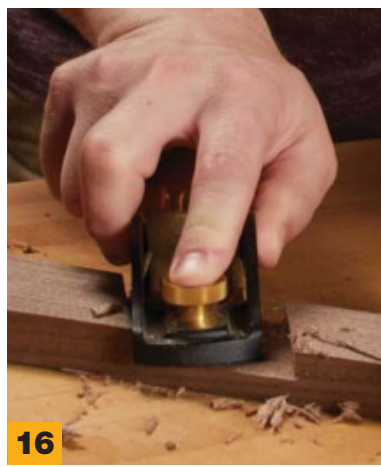
16 Clean up any blade marks with a rabbet block plane.



14



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17 After cutting one half of the joint, use the cut part to transfer the joint location to the mating part.

18 Mark both sides of the joint, and keep your cuts inside the line.

19 Keep a sharp block plane at hand — it's invaluable when fitting the half-lap joints.

The final step before glue-up is to dry fit all the legs and mark the excess on each lap joint. Trim each leg piece down, dry fit once more, then glue together.

Finish Up the Legs

Once the glue is dry, it's time to finish shaping the legs. I used a router with a 1/4" roundover bit on all edges of the legs, then used a chisel to blend the corners where the router couldn't reach. (You can also use a utility knife, a technique



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19

Mid-Century Nightstand

that Logan Wittmer calls neanderthal.) I then sanded and finished the legs using the same oil-based poly as the bases.

Attaching the Legs

The legs are attached to the case using $\frac{1}{4}$ " brass rods that I picked up from a local hardware store. First, I needed to determine the exact location of each brass rod in both the legs and the case. I chose three attachment points: the center of both leg joints and a point that is opposite and parallel from the point on the top joint. Mark these three points on each leg and use a $\frac{1}{4}$ " drill bit with depth stop to drill the $\frac{1}{2}$ "-deep holes. You'll want to drill the holes after finishing to ensure the rods fit correctly.

Once the holes have been drilled on both legs, transfer the rod location to the case using dowel spikes. Remember to take into account that the top of the leg is attached 1" down from the top of the case. Drill these holes using the same stopped drill bit.

With all the holes drilled, the last step before assembly is to prepare the brass rods. First, trim them to length using a cut-off wheel (careful, they get hot) and then lightly sand. Next, you'll want to use a solvent to remove any oils from the factory to make sure the epoxy you'll be using to attach the brass rods will adhere correctly. Before mixing the epoxy, I lightly dry-fit to confirm none of the rods would bind before final assembly. Once you've mixed the epoxy it's hard to make corrections.

After you've glued the legs to the case, give it plenty of time to cure. Just because the bottle says it's a 5-minute epoxy doesn't mean it's ready to go after that short time.

Building the Drawers

From the start, I wanted the drawers to be free from hardware, having a sloped front that invited you to grab it from the underside. The



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20 Apply glue to both sides of the joints and apply a single clamp centered on the joint. Let the glue dry for several hours.

21 A palm router is the perfect size to add a roundover to each of the legs. Where tight angles prevent the bit from cutting the full roundover, use a chisel and sandpaper to rough in the profile.

22 Drill mounting holes for the legs with a drill bit and stop collar.

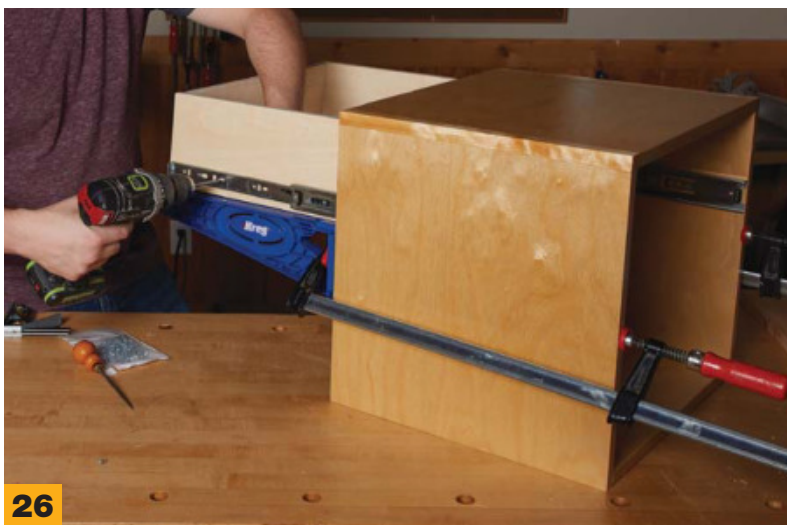
23 To locate the holes on the case, use dowel centers. When pushed firmly, these leave dimples to locate the holes.



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24 The drawers are also constructed with pocket holes. The holes are on the outside of the front and back so they're not visible on the finished drawer.

25 Mount the drawer slides inside the case. A drawer slide jig like this helps the process go smoothly.

26 The drawers get mounted to the slides. Here, I prefer to use the slotted mounting holes so I can fine-tune the drawer fit.

27 The final piece of the puzzle is installing the drawer front. This is positioned using double-sided tape, then it's screwed in place from the inside of the drawer.

drawer case is constructed from $\frac{1}{2}$ " Baltic birch plywood, with a groove cut $\frac{1}{2}$ " from the lower edge to accommodate the drawer bottom. The front side has a 5° slope, which requires a small amount of massaging of the front groove on the table saw so the bottom plywood doesn't bind. The drawers are assembled using a pocket-hole jig. Just like the case, remember to install the screws so they are out of sight.

The drawer front is a solid piece of 1" birch. The top edge is also trimmed to the same 5° slope as the drawer case, so it blends with the rest of the drawer. Since the nightstand doesn't have a face frame, the drawer front can't be attached until the drawers are installed.

Installing the Drawers

I used the very handy *Kreg KHI-SLIDE* Drawer Slide Jig to install the drawers. Alternatively, some strait scrap bits and a few clamps would work as well. First, I installed the slides to the case, then rested the drawer on the extended jig to line up them and screw them to the drawer itself.

After the drawers were installed, I used double-side tape to align and attach the drawer front. Once I was satisfied, I permanently attach it with two countersunk screws from the inside.



28



29



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31

28 Cut brass rod to length and rough it up with sandpaper. Install the rod in the case with epoxy.

29 Apply a dab of epoxy to the tips of the brass rods and mount the legs on the rods.

30 Level the nightstand with a series of shims under each foot as needed. Check the front-to-back and side-to-side lean with a bubble level. After confirming it's level, use a marking knife and a spacer block to mark trim lines on each foot.

31 After trimming each foot with a handsaw, use adhesive backed sandpaper on a flat surface to true up each foot.

Level The Nightstand

The final part of the project is leveling the nightstand. If you're particularly talented at math, you could probably calculate the exact length of the legs in advance, though there's nothing wrong with trimming at the end like this. After confirming that my workbench was absolutely level, I shimmed the legs of the nightstand until the top also measured level.

I used a marking knife to mark each leg for trimming. After cutting to final length, use sandpaper to take off the saw marks and smooth out any small imperfections. You could use a power sander to handle a leg that is slightly too long, but beware that's a slippery slope to have a nightstand resting on four little nubs.

Final Thoughts

Like any projects, there were quite a few things I learned along the way that I'll carry into future projects. For example, after completing construction, I found that the nightstand is just a little bit front heavy and threatens to tip when the drawer is fully extended. Changing the angle of the main leg slightly would solve that problem in a jiffy. Overall though, I'm very happy the design and growth it represents for me as a woodworker. **PW** – Collin Knoff



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Cigar Humidor

Careful construction allows this Spanish cedar lined box to create a perfect seal to keep your cigars fresh. **By Logan Wittmer**



PROJECT #2204

Skill Level:

Intermediate

Time: 2 Days

Cost: \$120

PHOTOS BY THE JACK COYIER & CHRIS HENNESSY

If I think about some of my fondest memories with friends, it's the "guys weekends" away in the North-woods of Minnesota. Canoe-in camping, fishing, and hanging out around the campfire. Inevitably, someone always brings a small travel humidor full of cigars.

I've always enjoyed those guys weekends, but I've also started to enjoy the occasional stogie while sitting on my deck overlooking the timber. Yes, it's an unhealthy practice. But life's too short, you know? After so many of these trips, I've started to build my own collection of cigars at home. Rocky Patels, Ashtons, and Olivas... just to name a few. So I figured it was about time to build a half-way decent humidor.

Humidor Basics

If you are a cigar aficionado, or if you have ever looked into cigar humidor construction, you know there's some specifics that need addressed. First, a humidor is a controlled environment. It's meant to hold a certain humidity to help retain freshness of cigars. Also, a good humidor will be lined (or

made from) Spanish cedar. You can read more about Spanish cedar on page 76. A point though—you cannot use western red, aromatic, or any other cedar in place of Spanish cedar. Spanish cedar, technically a mahogany, will enhance the flavor of cigars as they reside in the humidor. Other cedars... not so much. Plus, Spanish cedar has a low affinity for expansion and contraction, meaning that once you get your humidor up to the correct humidity, the cedar will have expanded very little.

Stock Prep First

For my humidor, I built the exterior from hardwood, but lined the case with Spanish cedar. You can certainly build the entire humidor out of cedar, but I wanted other properties for the exterior of the case.

Most large lumber yards will be able to order in Spanish cedar. Unfortunately, most of it will be narrow. So, the first order of business is gluing up the narrow stock into wider pieces, like you see in Photo 1. After the glue was cured, I spent a little time planing a face flat. Spanish cedar works very easily with hand tools, so

it's a great time to work on flattening with a jack plane if you're so inclined. I am, and it was a blast.

With a flat face and a straight edge, I took my stock to the band-saw and re-sawed the stock to get two thinner boards. Because I had 4/4 stock, I simply resawed it down to half-inch thick panels. After re-sawing, the best practice is to let the stock sit for a day to acclimate and let it move if it wants to.

A little bit of time at the planer and drum sander brought the final thickness down to 1/4". Because I did all of this prep-work for the stock upfront, I wanted to make sure the panels stayed as flat as possible. So, even though the Spanish cedar is about as stable as you can get, I stickered them and stacked them on the bench. You can see this in Photo 2 below. The biggest thing is to make sure that the stickers are all in line with each other, and to weight the top. Because I didn't have what I felt like was enough weight to cover the 4 foot boards, I used a clamp to put pressure down on the bench while I worked on the other parts.



1



2

1 Most Spanish cedar will come in fairly narrow stock. For shorter humidors, this is fine. For a taller humidor, edge glue boards together to create wide panels.

2 After resawing your stock, weigh it down to minimize any movement as it acclimates.



3



4



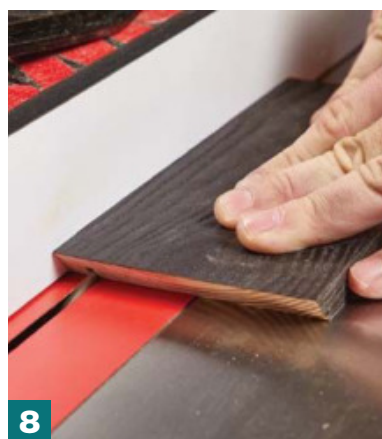
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7



8

The Case Next

Call me goofy if you like (won't be the first time, nor the worst I've been called), but I thought that building the case of the humidor out of ash was rather poetic due to its name. But, ash can be a fairly plain wood. So, as I started to think about building this humidor, I decided I wanted to do something different. For the outside of the case, I decided to heavily scorch and texture the wood.

First thing's first—clear off the bench of anything flammable (or better yet, go outside). Because scorching is extremely stressful on the wood, I started with extra-thick stock so I could plane down the back and hopefully eliminate any cupping or twisting. To scorch, I use a MAP gas torch. The goal here is to do a heavy burn. When the surface starts to crackle red and the flame flashes bright yellow (see Photo 3), you're there. Do this over the entire

3 Use a MAP gas torch to burn the surface of the ash. Look for the flame to flash yellow and the grain to crackle red.

4 Brush with the grain to remove loose carbon.

5 A coat of wax/oil mix helps rehydrate the wood and seal down most of the remaining loose carbon.

6 A digital angle gauge is one of the best ways to dial in accurate miters.

7 Cut the mitered case pieces. A table saw sled makes this task straightforward, and I enjoyed using the new Infinity cross cut sled. Watch out for a full review on this bad-boy soon.

8 A few passes across a standard blade makes a perfect groove for the humidor bottom.

board—I did enough for the case and top at the same time.

After the burning is done, use a wire brush (brass is best in my experience) and follow the grain to work loose any carbon. Finally while the wood is still hot, wipe on a healthy coat of *Howard's Feed-N-Wax*. The heat will melt the wax in quickly.

Now, it's a simple matter of running the backside of the stock

through the planer to final thickness, then building a mitered box. Cutting the miters is best done at the table saw. I use a digital angle gauge to set the angle on the blade (Photo 6), and then cut the miters. A good quality sled helps you get accurate cuts (here, I was testing out the *Infinity Tools Sled*). With the miters cut, cut a groove along the bottom of the workpieces for the plywood bottom.



9

9 The *Pantorouter* allows you to tilt the table to a precise 45°. Then, after clamping the workpiece in, you can use the router to quickly rout the slot in the end of each mitered piece.

10 The finished case parts ready for assembly — mortises for loose tenons and a groove to hold the plywood bottom.

11 Apply hide glue inside the mortise, insert the tenon and apply glue on the mating piece.

12 The loose tenons register all of the miters, so all that's needed during glue up is a handful of F-style clamps.

Inherently, miters are a pretty weak joint. Glue alone might hold for a while, but at some point, it's likely that an unfortunate drop will lead to a broken miter. To reinforce them, you could use a spline which is easy to cut on the table saw. Here, however, I wanted something a little more hidden. So, I used the *Pantorouter* to rout a mortise on the face of each miter. The *Pantorouter* makes this easy by tilting the table at a 45° angle then making the mortise. The mortise is sized for a small loose tenon. By making the loose tenon out of plywood, it's plenty strong for what this humidor is going to be.

After routing all of the mortises (Photo 10), the parts are ready to glue up. Some liquid hide glue makes the glue up go together smoothly. I spread glue inside the mortise, then insert the loose tenon. Then, after smearing a little glue on the tenon, you can get all the parts together. Don't forget to get the bottom of the box in place. I apply a series of clamps to the box as it's drying. Double check the squareness of the case before the glue starts to cure. Because I'm building the lid and case separately (due to the scorching process and lid sizing), you really want everything as square as possible. Fighting a lid and box that don't line up will be a headache later.



10



11



12

Building the Lid

The lid is constructed from thick, 8/4 stock. Like before, I start by scorching all the exposed surfaces. Then, it's time to miter. To cut these, I rough cut them at the miter saw and used a shooting board to fine-tune the fit.

The cross-section of the top parts are basically an "L" shape. Form this large rabbet by making two cuts on the table saw. One cut with the bottom of the lid down, the next with the bottom of the lid facing away from the rip fence. You can see how these two cuts meet in Photo 13.

The top panel of the humidor (spalted maple in my case) is captured in a groove. You could cut this at the router table, but since I was already at the table saw, two quick cuts on the inside edge of each part is all that was needed. Like the case, I decided these miters needed a little extra strength. As before, a quick trip to the *Pantorouter* to form some mortises

was just the ticket. Here, however, I didn't need to tilt the table. Instead, I set up the angled fence, like you see in the photo below. This did require two setups—one for each end of the miters.

The spalted maple panel I mentioned earlier is the final thing to knock out on the lid. This is simply a hardwood panel that's rabbeted around the edge to create a tongue. I decided I wanted this panel to be gloss, in contrast with the matte parts of the box. So, before moving to assembly, I shot it with some spray lacquer. If you've never finished spalted maple before, be prepared. It soaks up approximately seven cans of lacquer before building a finish.

At this point, I glued up the lid. You can see this below. I've found with miters that have a spline or loose tenon, two clamps can be enough, depending on how tight the tenon fits, but have a few extra on hand just in case.

Now, one thing I didn't anticipate was this—I didn't like how the lid looked when I put it on the box. You'll notice in the photo below, the top edge of the lid is square. It felt too jarring as it was. After I removed the clamps, I decided it needed a chamfer. So, I cut a 30° bevel around the entire top at the table saw. It softened the look a bit, and I felt like it fit much better.

13 Form the large rabbet on the inside of the lid parts by making two passes on the table saw.

14 Like the groove for the bottom, two passes makes the groove for the lid panel.

15 Again, the *Pantorouter* provides a straightforward way to make the mortises for loose tenons.

16 "Steer" the joints together with strategic clamping pressure.



13



14

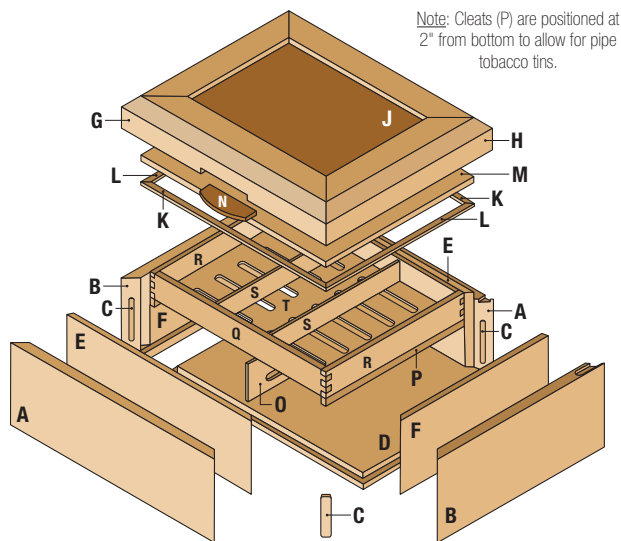
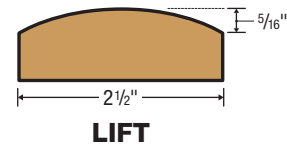
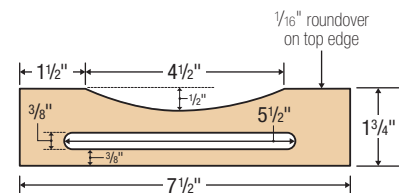
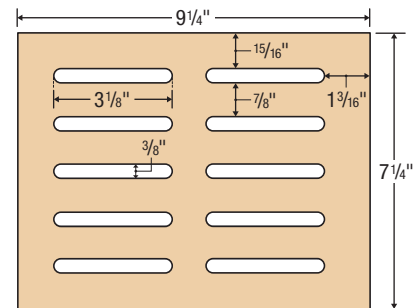
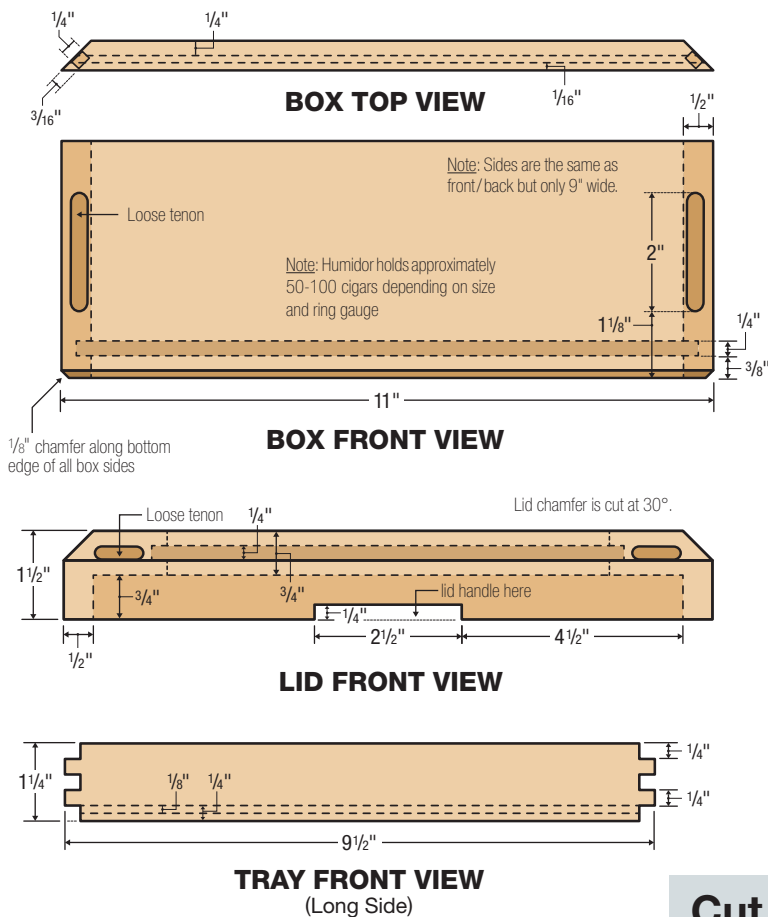


15



16

Cigar Humidor



Cut List

No.	Item	Dimensions (in.)		
		T	W	L
2	A Box - front/back *	1/2	4	11
2	B Box - sides *	1/2	4	9
4	C Box - loose tenons	1/4	3/8	2
1	D Box - bottom	1/4	8 1/2	10 1/2
2	E Liner - front/back*	1/4	3 1/2	10
2	F Liner - sides*	1/4	3 1/2	8
2	G Lid - front/back *	1 1/2	1 3/4	11
2	H Lid - sides *	1 1/2	1 3/4	9
4	I Lid - loose tenons	1/4	3/8	1
1	J Lid - top	1/2	6	8
2	K Lid liner - f/b moldings *	1/8	1/4	10
2	L Lid liner - side moldings *	1/8	1/4	8
1	M Lid liner	1/4	8	10
1	N Lift	1/4	7/8	2 1/2
1	O Divider	1/8	1 3/4	7 1/2
2	P Cleats	1/4	3/8	8
2	Q Tray - long sides	1/4	1 1/4	9 1/2
2	R Tray - short sides	1/4	1 1/4	7 1/2
2	S Tray - dividers	1/8	1	7
2	T Tray - bottom	1/4	7 1/4	9 1/4

NOTES: * Parts are mitered at 45°. Loose tenons have a 1/8" roundover to match mortises. Tray sides have a 1/8" chamfer around the top. Box and lid parts are ash, the top panel and lift are spalted maple. All liners are made of Spanish cedar.

DIGITAL HYGROMETER NEEDED:

I used the Watch Bezel Digital Hygrometer (silver) available from 1stclasshumidors.com.



17



18



19



20

Spanish Cedar Liner

At this point, you can break into your Spanish cedar. It's time to line this bad-boy. Start off by mitering the ends of the panels. Here, I cut the panels to fit, checking each one as I go. A snug, friction fit is best, as you want the finished box to be air tight. Don't forget to cut a bottom panel as well.

Before gluing in any liner parts, you'll want to rout a recess for your hinges. The hinges I used are side rail hinges from *Brusso*. They are brass but I took a bit of time to play

mad scientist and nickel plate them. I'll get a video up on *popularwoodworking.com* if you'd like to check out that process.

Now, you can go ahead and apply the liner. The large panels for the top and bottom slip into place. I glued the top panel in with a few spots of glue across the center, but the bottom just floats. When it comes to the side parts, I glued just the center portion of the liner. They can then expand and contract separate from the ash. The box liner sticks a little proud of the sides so that it forms

17 Miter the ends of the liner parts.

18 Keep the case close at hand — test fit each part and when they fit well, label where they go.

19 Set a stop block and rout the hinge pockets in both the case and the lid.

20 A central line of glue on each of the liner parts will allow them to expand and contract separate from the ash. Technically, they would expand in the same direction, but different species expand to different extents.



21



22



23



24



25



26

a good seal around the inside of the lid. Likewise, on the inside of the lid, there's a small perimeter strip of cedar that gets size so it closes tightly along the lip. A block plane and test-fitting is your friend here.

Add a Tray

On the inside of my humidor, I added a tray. Runners position it (mine's tall enough for pipe tobacco tins to fit under it) and are glued in place. For the tray, I used box joints to form the joinery, and the bottom is a panel of cedar with slots cut in it. These are easy to do at the router table—just draw a handful of layout lines and carefully set a fence. I plunged the workpiece over the running bit and routed until my stop line.

Finally, I added a small lift to the lid before installing it on the hinges. The lift is made out of the same spalted maple and is notched

21 Decide where you'd like the tray to sit and glue the cleats in place.

22 Creating the tray joinery is done with the *Rockler Router Table Box Jig Joint*

23 The groove for the bottom panel would be visible if you routed straight through. Instead, I routed a stopped groove so I didn't need to plug holes.

24 The slots in the tray bottom allow humidity to flow throughout the box.

25 With the thin tray parts, use light pressure to clamp everything. Dividers can be made for the tray and either held in slots, or friction fit so they can be moved.

26 After planing down a piece of spalted maple, I shaped it at the bandsaw and sanded it smooth.

into the lid. A little hand-sawing and chisel work create the recess for it.

Now, as any cigar connoisseur knows, you can't just shove your cigars inside the humidor. First, you need to season it. Do this by wiping the liner down with distilled water on a rag. Don't soak it, but you want to get the cedar to hold some moisture before putting in your humidifier (mine sits in the bottom, set apart from the cigars

with a small friction-fit divider). Something like *Boveda* packs work great as well if you don't want to mess around with the humidifier. I mounted a hygrometer on the inside of the lid to monitor the humidity and temperature—you're looking for 65-72% humidity at 70°. Once the humidity is leveled out where you want it, the only thing that's left to do is fill it up.

PW —Logan Wittmer

Spanish Cedar

Aromatic and rich, the wood of *Cedrela Odorata* is a joy to work with and is a staple in Central American logging operations.

By Logan Wittmer

If you've ever cracked open a cigar humidor or walked into a cigar shop, you'd probably recognize the smell. I'm not talking about cigars either. What you may identify as cigar smell is probably something else entirely — Spanish cedar. Most commonly used for cigar humidors, this beautiful wood has many other uses.

A Tropical Hardwood

While the name implies this species is native to Europe, don't let that fool you. In actuality, *C. Odorata* grows throughout tropical central and South America, and along the coasts of Africa. And if that's not enough, Spanish Cedar isn't actually a cedar either. Instead, it's technically a hardwood that's very closely related to mahogany. You can see in the box on the next page how closely the subtle grain resembles mahogany.

As the photo to the right shows, Spanish cedar is often grown in plantations, however insect outbreaks tend to plague these efforts. When insects can be managed, the cedar plantations do well due to the fact that it's a fast growing tree. The trees can add up to 1" of diameter per year, and up to 7 feet in height. The largest Spanish cedars reach nearly 135 feet. Spanish cedar is a flowering tree, most often flowering at the beginning of the rainy season. Over the next 9 to 10 months, the flower will develop into a seed pod that opens



1 A strand of Spanish cedar trees. Because of the speed that they grow, plantations tend to be a more sustainable way to harvest Spanish cedar lumber.

Photo courtesy of the Haiti Tree Project (thehaititreeproject.org)

during the following dry season, releasing numerous winged seeds.

As I mentioned earlier, Spanish cedar has become well-known for its use in cigar humidors and cigar packaging — so much so that the tree is often referred to as the “cigar box” tree. The reason that it's so popular for cigar storage is due to the oils it contains — they tend to complement and enhance the flavor of cigars during storage. In addition, *C. Odorata* has a very low expansion and contraction ratio. This makes it the perfect wood for use in high-humidity humidors.

Technical Information

The wood of a Spanish Cedar tree is considered to be fairly soft, and light weight. I've found the former to be the most noticeable. A cubic foot of Spanish cedar weighs in around 29 pounds. For reference, walnut weighs in right around 38lbs while white pine being in the 25 pound range.

From a hardness standpoint, *C.*

Odorata is only slightly harder than white pine, but less hard than walnut. For you statistic nuts, the Janka hardness is 2,670 N, versus 4,490N for Black walnut. A small asterisk here: old-growth trees (naturally grown trees that grew in the forest) tend to be much more dense than plantation grown trees. The stated densities and hardness are averages from plantation grown trees.

Even though there are many plantations growing *Cedrela Odorata*, it is listed on the *CITES Appendix III* list. In simple terms, a handful of countries have elected to monitor and self-regulate the harvesting and exporting of Spanish cedar lumber. Contrary to popular belief, this is a good thing. It keeps the species from being over-harvested and becoming endangered.

How to Work with Spanish Cedar

Now, let's step into the shop. Spanish cedar works well with almost any tooling. The grain is usually straight

PHOTOS BY JACK COYIER

For the Wood Nerds

Tree size	65 -100 ft (20-30 m) tall, 3-5 ft (1 - 1.5 m) trunk dia..	
Avg. dried weight	29 lbs/ft ³ (470 kg/m ³)	
Specific gravity	(Basic, 12% MC) 38, 0.47	
Shrinkage	Radial: 4.1% Volumetric: 10.2%	Tangential: 6.2% T/R ratio: 1.5
Janka hardness	600 lb _f (2,670 N)	
Modulus of rupture	10,260 lb _f /in ² (70.8 MPa)	
Elastic Modulus	1,323,000 lb _f /in ² (9.12 GPa)	
Crushing strength	5,860 lb _f /in ² (40.4 MPa)	

Color	Heartwood is light pinkish to reddish brown
Grain	Straight or shallowly interlocked
Texture	Medium texture and moderate natural luster

Data courtesy of The Wood Database (wood-database.com/spanish-cedar)



1 Branch with leaves
2 Tree structure
3 sectioned flower
4 dehiscent fruit
5 seed

with slightly interlocked fibers. The low density does tend to lead to a little bit of fuzziness. Sharp tools will help reduce this, but sanding can once again cause a little fuzziness to occur. To reduce the fuzziness, sanding to high grits is often needed. Planing with a sharp hand plane will lead to fluffy, wonderful smelling shavings all over the shop.

As with any wood species, allergic reactions can occur when dust is inhaled, so proper precautions are necessary. Plantation grown trees tend to be younger, and therefore narrower. Most commonly, you'll find Spanish cedar under 5" wide. Spanish cedar stains and glues well. One thing to keep an eye on when selecting stock is wind shake or cracking in the middle of a board. When possible, hand pick

Spanish cedar. If you don't have a lumberyard near you that stocks it, many online retailers will carry Spanish cedar (often down to 1/4" for lining boxes).

Aside from its popularity for humidors, Spanish cedar is also a popular choice for closet lining. (You can use Spanish cedar in place of aromatic red cedar in closets, but don't use aromatic red cedar in your humidor!) The

light weight and resemblance to mahogany makes Spanish cedar the perfect wood for boat building. When dry, it is insect resistant and weathers extremely well. *C. Odorata* is also a popular choice for musical instruments, in particular guitars. **PW** — Logan Wittmer



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Hickory - Pecan	4/4	Select	3.00	\$108.00
Mahogany (Genuine)	4/4	Select	5.10	\$122.00
Maple (Hard)	4/4	Select	3.65	\$116.00
Maple (Soft)	4/4	Select	2.60	\$ 95.00
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Oak (White)	4/4	QS	2.90	\$105.00
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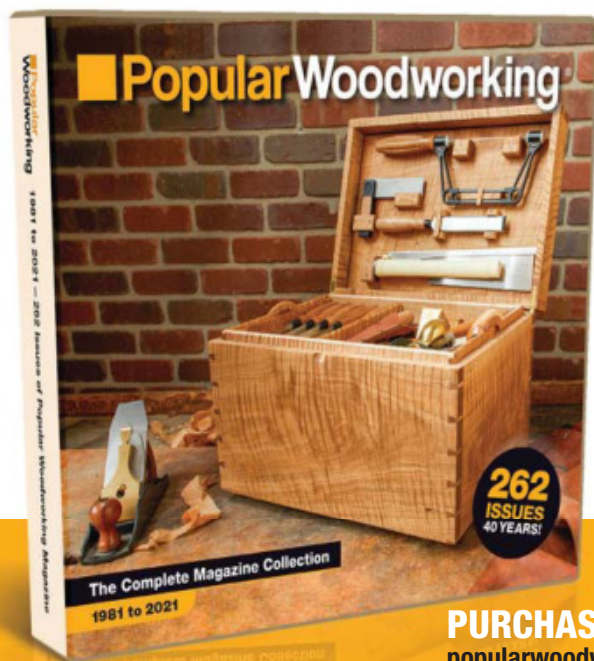
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Lumberjerks

Originally published in Issue #37. Written and illustrated by Curt Mobley

The majority of woodworking enthusiasts are both skilled and levelheaded. However, there are a few slightly warped types who continually crosscut conventional wisdom and go against the grain. Some of these knot-heads and chiselers are featured here.



Charlie Cheapwood refuses to buy the proper woodworking equipment. He claims he can't afford it. Charlie was last seen trying to rip a piece of 2" oak with a hack saw.



Delbert E. Goggle claims to be the nation's safest woodworker. He is prepared to do some hand sanding. Delbert pays a retired OSHA official big bucks to inspect his shop twice daily.



Dennis DoLittle has been working on the same cabinet for the last 18 years. Says he's almost done but the he keeps running out of sandpaper.



Dr. Sam Radial is a famous inventor and alligator rancher. He developed the first radial-leg saw and spent the last 16 years designing a dovetail jig for a belt sander.



I. M. Smartwood, super-genius know-it-all, and self-professed expert on carbide-tipped screwdrivers and faceplate turning balsa wood. Claims he would have finished his solid oak china cabinet in one day but ran out of nails.



Edward Kype, famous car dealer and woodworker, is notorious for borrowing tools which he doesn't return. Talked the kid at the lumber yard into loaning him 100 board feet of walnut.



Professor Paul Pulpwood has never built anything and doesn't own any woodworking tools. Nonetheless, he professes to have the world's largest woodworking library. Says he is particularly proud of his 22 books on veneer.

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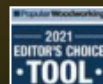


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