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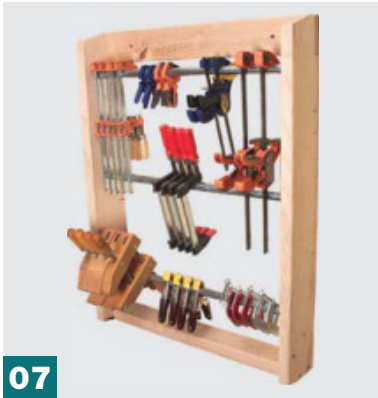
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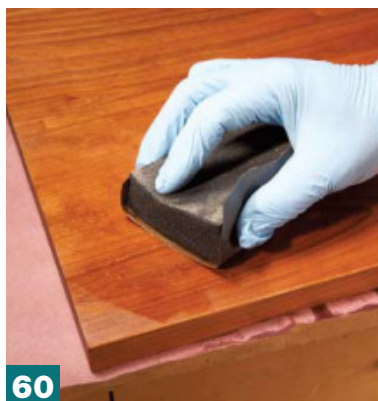
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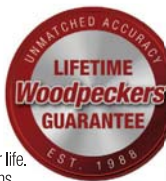
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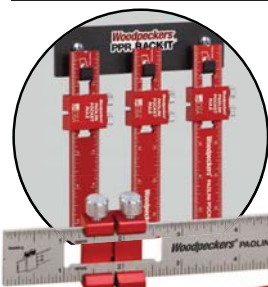
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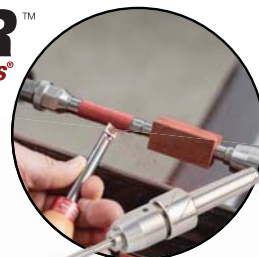


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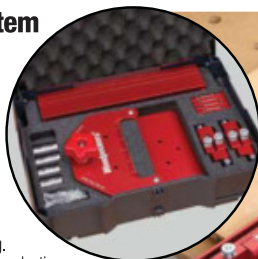
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Made for Festool® Track Saws

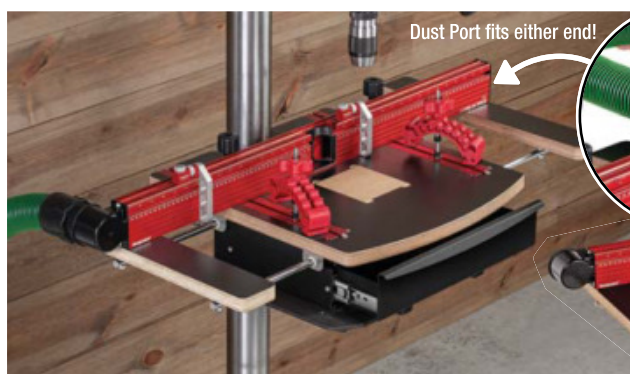
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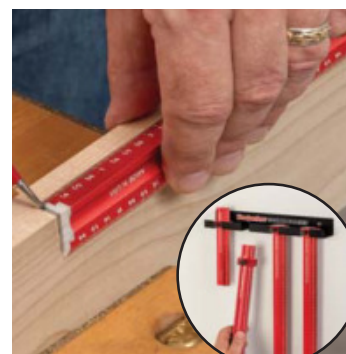
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Woodworkers Edge Rule

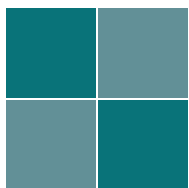
Includes wall-mountable Rack-It™.

Edge Rule Kit & 4 Stops....**\$109.99**



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Connect

■ FROM THE EDITOR

What You Have

By Andrew Zoellner

While I love designing and building new things out of wood, one of the most valuable skills I've picked up along the way is being able to take care of and repair furniture and woodwork.

Our kitchen opens up onto a small back porch. When we moved in, the door leading out to the porch was a standard home center steel insulated exterior door, installed backwards with the metal sill pointing into the kitchen.

Not only did it not fit with the house, it was just ugly. It was a reminder of good intentions (insulated and weather-sealed) gone wrong. After spending the better part of my last two years remodeling the kitchen, building cabinetry, installing floors and trim, the door really needed to go.

We found a great interior door at Better Futures MN, which helps men recently released from prison with housing, jobs (deconstruction and architectural salvage) and OSHA and forklift training. And we found our kitchen door at the Habitat For Humanity Restore.

We were on the hunt for something that matched the age and style of our house, with some glass to see out to the backyard, and ideally less than the thousands of dollars the new door we liked at the home center cost. The door we found wasn't initially what I'd envisioned, but it's what they had and it ticked all our boxes.

Woodworkers by nature tend to be a frugal lot, saving scraps of wood for the future or stopping by the side of the road to grab a tree stump. It really



The kitchen door. Made mostly of Douglas fir (I think), with a cherry-ish stain. A little trimming of the door, a shop-made jamb, some new hardware, and it fit right into the kitchen, even though it's not what we'd originally planned.

comes down to doing what you can with what you have. Over the last year, as we've dealt with lumber shortages, lockdowns, out of stock tools due to global supply issues, social and political unrest, that thinking has kept me sane. There's a lot you can do with what you have. My year of woodworking projects is testament to that.

That thinking is also what makes Better Futures MN, Habitat for Humanity, and so many other social-positive organizations keep moving forward. It's easy to get complacent, to think about just how big some problems are and wonder what good can one person do. Has Habitat for Humanity solved the affordable housing problem? No. But it has made the lives

of many individuals better with the resources it has. Has Better Futures MN found the fix for systemic racism in America's justice system? No. But it is helping those disproportionately affected by it. It's the work of these organizations and individuals that is inching the way toward a better world.

It may be easier to think if only you had the money to buy that brand-new, state of the art door, your house would be perfect. But perhaps working with what you have, what you can find and reuse, is better in the end.

WORKSHOP TIPS



Auxiliary Fence Scale

I have difficulty making accurate measurements when I install my auxiliary fence, because its plywood is a weird thickness. My solution is to create a new scale based on the plywood.

Zero the fence next to the blade and slide a thin ruler under the plastic cursor. The ruler must rest under the cursor without touching. Also, make sure the ruler is accurately scaled—inexpensive rulers may be inaccurate. Once the cursor line is aligned with the ruler's zero mark, tape the ruler in place.—*Rich Flynn*



Router Wrench Grips

I own several routers and they all have thin wrenches that are awkward to hold. To avoid frustration, I made the handles thicker by housing them in transparent plastic tubing from the hardware store. To keep the tubing in place, I wrapped the handles with athletic tape first.—*Serge Duclos*

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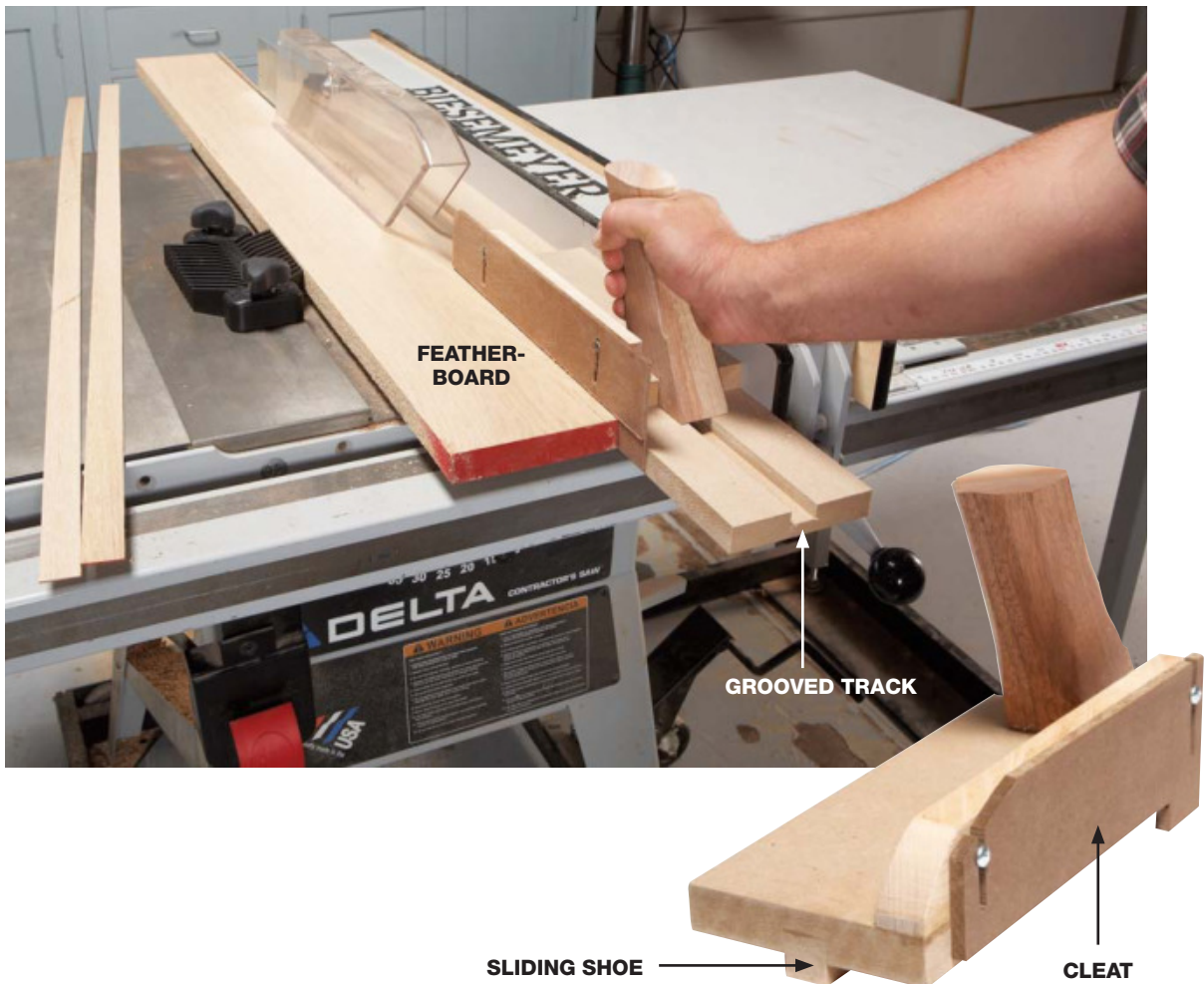
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WORKSHOP TIPS



Ripping Thin Pieces

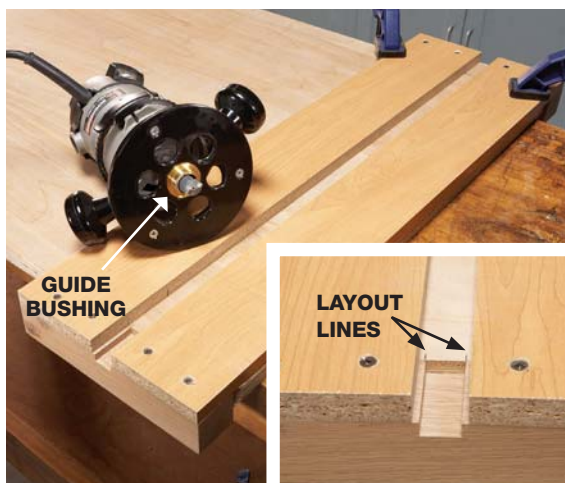
While making Shaker boxes, I built a jig to accurately rip $\frac{1}{16}$ " thick strips without getting my hands too close to the blade. In fact, I can leave the guard on the saw.

The jig has two parts. First, there's a track that mounts on the saw, next to the fence. Two rare-earth magnets recessed into the bottom of the track keep it from sliding. The track is positioned $\frac{1}{16}$ " away from the blade, or at whatever thickness of strip I want to rip.

The second part of the jig is a push block. (I call it a shoe.) It slides in a groove on the track. The shoe has a $\frac{1}{8}$ " thick sacrificial cleat that hooks over the back end of the board I'm ripping. The cleat has slots in it, so I can move it up or down to accommodate boards of difference thickness.

To cut a strip, I put a magnetic featherboard on the left side of the board I'm ripping to keep the board tight across the track. Then I feed the board into the saw by hand, just like any other rip cut.

When the end of the board is even with the track, I put the shoe on the track and push the board the rest of the way through the cut. The front edges of the shoe and cleat are rounded to allow the blade guard to ride up and over the jig. —Joe Scharle



Router Dado Jig

Straight and accurate dados are easy to make using this simple jig. It's composed of two pieces of melamine shelving, cut 4" wide, and a couple of crossbars screwed underneath. The space between the melamine pieces is 1"—exactly fitting the 1" o.d. guide bushing in my router. The router can't wobble as I cut the dado.

To prepare the jig, I precut a dado in one of the cross bars. I line up this dado with a pair of layout marks on the workpiece, clamp the jig in place, and have at it. —Robert Brosbe



Goof-Proof Center Finder

To mark the exact center of a board, I measure an equal distance from both ends and make two marks. This distance is just an approximation—it doesn't matter if it's longer or shorter than exactly half the length of the board, as long as the marks are reasonably close together. Then I just split the difference by eye. —John English



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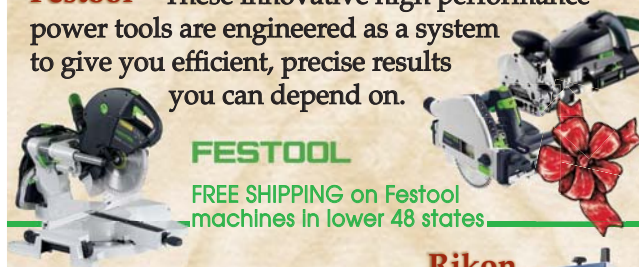


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WORKSHOP TIPS

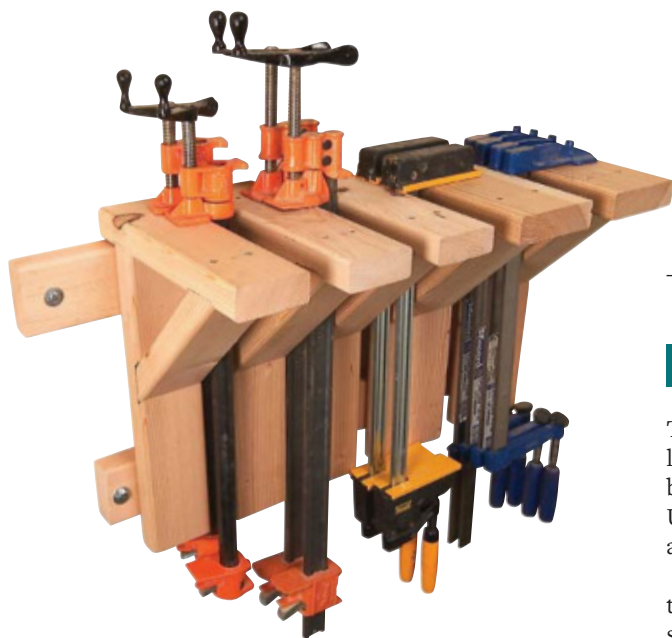
“You can't have too many clamps,” a wise cabinetmaker once said. That is certainly true, but in a small shop, you can easily run out of room to store them. On clamp is so different from another that no single rack can accommodate them all in a compact space. Most woodworkers benefit from a variety of storage solutions.

Here are seven board concepts to stimulate your creative thinking. Each design contains one big idea tailored for a specific type of clamp. Mix and match to fit your assortment and your space. Just be sure to leave room for more!

1 Conduit Fits All the Shorties

If you have room for only one rack for your short clamps, build this one. It accommodates a wide variety of shapes — almost anything that has jaws. The rack even holds C-clamps and quick-release clamps, which usually have to be tightened to stay on a board for storage. Simply hook them over the metal conduit. Conduit is superior to using a wooden dowel rod because it is stiffer and more durable.

For most clamps, position on the conduit 2" from the wall. Strategically locate a second length of conduit to support the bars of long clamps.



2 Make Big Brackets

These sturdy 12" x 16" brackets are great for storing lots of long, heavy clamps in a narrow space. The 2x4 brackets are wide enough for pipe and bar clamps. Use 2x6s to store K-body-style and deep-throated adjustable clamps.

Dado a 45° support board into each bracket. Screw the brackets to the cleats from the back, leaving 2" spaces between the clamps' bars. Then fasten the brackets to the wall.



3 Metal Brackets Serve Double Duty

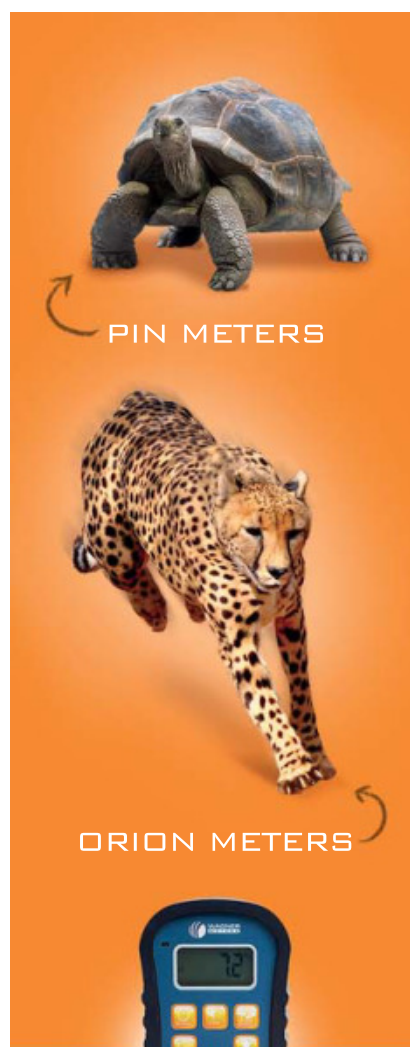
Got long clamps you want to keep handy? Use heavy-duty 12" shelf brackets. (They're great for lumber too.) This rack works well for long, heavy clamps because it stores them horizontally, making it easy to remove, use and return them. When you need one simply pick it up and lay it down on your project. You won't have to twirl or hoist them the way you would if you stored long clamps in a vertical rack.

Heavy-duty shelf brackets are available at home centers; the slotted standards come in lengths for a dedicated clamp rack.



4 Throw 'Em in a Tub

Oddball clamps won't become lost if you keep them together in a utility tub, which costs about \$3 at a discount store. Tubs are a great way to store and transport spring clamps, C-clamps and small hand screws. Lidded tubs can even be stacked.



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WORKSHOP TIPS

5 Stack 'Em Up

Hands down, this is our favorite way to store hand screws. Simply saw angled dados in one edge of a 2x4. Size the dados so the sticks for hanging the clamps fit tightly. Glue and screw the sticks to the 2x4 and fasten the 2x4 to the wall. This rack also works great for hanging loads of spring clamps.



6 Add Cleats

For regular pipe and adjustable clamps, storage does not get much easier than this. Simply fasten 2x2 cleats behind a 2x4 and fasten the cleats to the wall. The 1 1/2"-deep space provided by the cleats accommodates most clamp heads. Long clamps will wiggle their way off a single rack and fall, however. Install a second board below to keep them upright and stable. Clamps store compactly with this solution, but the more clamps you have, the more wall space you'll use.

7 Cut Notches

Without notches on a mobile cart, one bump can send your clamps flying. The boards that you notch should be wide enough to fully support the clamps' heads. The trick is to make enough so the clamp's bar is easy to insert and remove.

To make half-round notches for pipe clamps, drill holes down the middle of a wide board. Rip through the center of the holes to make two support boards, each with half-round holes.





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NEW TOOLS



No Flip Jointer/Planer

Wood-Mizer has started developing standalone woodworking machinery. This combo jointer/planer caught our eye because it does both operations with-

out flipping the jointer beds up or otherwise adjusting the machine between operations. The machine has a 9"-wide jointing capacity and 16"-wide planing capacity—impressive for the footprint. And, a dust

collection port is routed behind the machine (and also doesn't need to move during switchover).

The other interesting feature is the variable planing feed rate (available as an upgrade on the 3-phase model), from 6-39 fpm. It packs a lot of features into the compact 56" x 32" footprint, and is definitely worth exploring if you're space-challenged but want an industrial-level machine.

■ MP160 Planer/Thickener

Wood-Mizer
woodmizer.com
Price: \$4495

Unplugged Maker Kit

Battery technology comes to a few of the craftier tools in a woodworker's kit. Worx has paired a 20-volt battery/power supply with a variety of smaller handheld tools.



Yes, there's still a cable attached to these tools when you use them, but you're not tethered to an outlet.

The rotary tool is the standout of the pack, with a brushless motor and plenty of power for detailed carving, grinding and sanding. The angle grinder is also powerful enough to use for wood shaping, but the size of the wheel seemed to be too big to do detail work and too small to do the work you'd normally use an angle grinder to do.

The wood and metal crafting tool (aka a woodburner/soldering iron) heated up quickly. We used it both to initial a couple of small gifts as well as wire up the electronics in a guitar. Again, being able to use that tool without having to find an outlet was far easier than grabbing an extension cord. Making these tools "cordless" is a great step forward.

■ MakerX Ultimate Combo Kit

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Price: \$229.99

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29 Piece Titanium Drill Bit Set

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Compare to Dewalt DW1369 \$60.09

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NEW TOOLS



EKASAND Dust Extractor and Sander

Uneeda

sandpaper.com

Price: \$1500 (dust extractor)
\$499 (5" electric sander)

Deluxe Sanding and Dust Collection

You may not be familiar with Uneeda, but the company has been manufacturing and selling all kinds of abrasives for more than 50 years. After focusing almost exclusively on industrial applications, the company recently launched a line of high-end electric sanders and a dust extractor for the workshop.

Sanding regularly ranks as the least liked woodworking activity (alongside emptying dust collectors), but it's an important step in making sure your project looks and feels great. That's why we're always happy to get our hands on systems that make that process better.

Uneeda's EKASAND Series 2 Dust Extractor does exactly what it should. It includes tool-actuated hookups for both electric and pneumatic sanders. It comes fitted with a HEPA filter and has adjustable suction so you can dial in just the right amount of extraction.

Their EKASAND 5" electric random orbit sander feels great in the hand, both lightweight but plenty powerful. It's powered by a brushless 350 watt motor, with four speeds. And the sander is available in both $\frac{3}{16}$ " and $\frac{3}{32}$ " orbits.

Paired with Uneeda's versatile range of abrasives, the whole package definitely made sanding less of a chore, which at the end of the day is really what it's all about.





■ **12V Max Brushless
2-Speed Screwdriver /
Brushless 3/8" Hammer
Drill/Driver**

Bosch Power Tools
boschtools.com

Price: PS21N Kit \$100
PS130N Kit \$120

Ultra Compact Drill and Driver

In the shop, unless I'm drilling big diameter holes, 12-volt tools provide all the power I need for drilling pilot holes and countersinks and driving screws. The new ultra-compact two-speed screwdriver and 3/8" hammer drill/driver from Bosch are some of the lightest and smallest drills we've gotten our hands on.

Don't let the small size fool you, though. The drill, powered by a brushless motor, has tons of power. While you may not use the hammer drill function assembling furniture, it did come in quite handy while running some new conduit across a masonry wall for a new machine. The screwdriver was a lifesaver during a big hardware changeout on some kitchen cabinets. The 20+1 position clutch let us dial in the precise amount of torque needed to drive screws (but not strip them out). The LED lights on both, too, were well-placed for illuminating screws and pilot holes. They're available as bare tools or in kits with batteries.



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NEW TOOLS



■ **PRO-TEK Series
Lathe Chucks**
Teknatool
teknatool.com
Price: \$140-\$220

Pro-Level Lathe Chuck

Nova's new PRO-TEK line of chucks build on the company's long history with the lathe. This new series of chucks feature rust-resistant nickel plating, stronger and more versatile 50mm/2" PRO-TEK jaws with an improved dovetail and serrated profile, upgraded six-point star fasteners, and a captured pinion and ball nose hex wrench with a large grip handle. There are a few different packages available, depending on your lathe size. Plus, these chucks come with a six-year warranty.

Diamond Lapping Plate

Flat whetstones are essential to efficient sharpening. Flattening your whetstone should happen before every sharpening session. That's where a lapping plate comes in. It's a dedicated stone flattener.

The Maxi-Smart lapping plate from Maffalo is designed to efficiently and repeatably get your sharpening stones back to flat. The CNC'd stainless steel block measures 9 1/2" x 4" and is about 1/2" thick. The diamond lapping surface is the equivalent of 180 grit. The grooves milled into the plate provide a way for the slurry and air to escape, keeping the plate in contact with the stone.

■ **Maxi-Smart
Lapping Plate 2.0**
Maffalo
maffalo.com
Price: \$170

The plate comes packaged with a small aluminum straight edge to check the plate for flatness as well as a diamond breaker—a small plate of steel you use to wear in the plate and make sure an errant diamond won't gouge your whetstones.



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LiVE *the wood life*

Using T-Track

By Randy Johnson

T-track is a versatile product

that has many great uses around the shop. It can be attached to the fence of a chop saw, drill press or router table to provide a quick, secure place to attach feather boards, stops and hold-downs. It also makes a great addition to jigs and fixtures with parts that need to be adjustable or easily removed.

At first glance, all T-tracks look pretty much the same. There are, however, several subtle but important differences among brands.

Sizes and Prices

T-track is available in lengths from 1 ft. to 12 ft. and averages about \$4.50 per lineal foot. It is usually sold in 1- or 2-ft. increments, but some brands can be special ordered to a specific length. Most T-tracks are approximately $\frac{3}{4}$ " wide with a thickness of either $\frac{3}{8}$ " or $\frac{1}{2}$ ". Almost all are made of extruded aluminum. There are a few key features to look for.

Accepts Standard Hardware

T-tracks that accept standard hex head bolts and nuts as connectors are a big plus, because standard nuts and bolts are readily available at hardware stores. This means you won't get stuck in the middle of a project because you don't have the right connector. Some T-tracks require special connectors that are only available from one supplier.

Pre-drilled for Easy Mounting

We prefer T-tracks that are pre-drilled and countersunk to accept No. 6 or bigger wood screws. It's also nice to have screw holes spaced no more than 5" apart. Closely spaced holes mean more holes for

more mounting screws and less risk of pulling the T-track off the mounting surface. Also, if you need to cut the T-track shorter, you will still have a hole near the end.

If you need to add screw holes to a T-track, you can drill them yourself. It's a bit of a hassle but not difficult. Some T-tracks even come with a groove to help you center the drill bit. A groove on the bottom is best because drilling the shank hole from the top leaves a burr on the bottom that must be removed with a file.

Grooved for Glue

Glue grooves or lips on the sides of T-tracks provide a mechanical bond when gluing a T-track into

a dado. Gluing is the best way to mount a T-track in a dado when the material below the dado is too thin to hold screws.

Undrilled T-tracks have one advantage here: There are no screw holes for glue to squeeze up through. If your T-track has screw holes, just cover the holes on the bottom side with small pieces of masking tape before gluing.



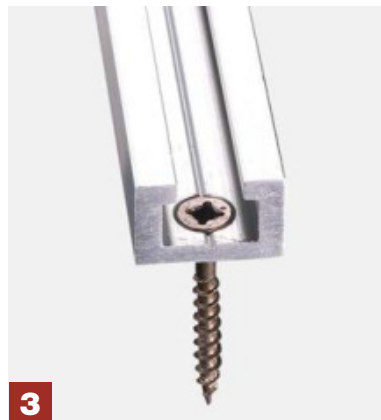
1

1 We like T-track that accepts the hex head of a standard bolt. It will save you from having to buy the special connectors that some tracks require.



2

2 Some T-tracks have a deep slot to accept a hex nut. It's a feature that will increase your connecting and fastening options.



3

3 T-tracks pre-drilled to accept No. 6 or larger screws have better holding strength than the tracks that are drilled for No. 4 screws.



4



5

4 Drill the shank hole from the bottom of the T-track with a $\frac{5}{32}$ "-dia. bit. Some T-tracks have a groove to help center the bit; it's helpful but not essential. A pencil line and center punch also work well.

5 Make the countersink for the screw head with a $\frac{9}{32}$ "-dia. drill bit. Make the countersink just deep enough so the screw head is flush with the inside of the T-track.

6 Glue grooves or lips on the sides of T-tracks help lock the T-track into the dado.

7 Hold the T-track in place with a dowel and some weight when gluing it into a dado. Epoxy is the glue of choice because it bonds to both wood and metal.

8 T-tracks that fit into miter slots make handy runners for sleds or jigs.



6

Fits in a Miter Slot

Some T-tracks will fit into miter slots on table saws, bandsaws and router tables. Some T-tracks can be used with the slot up or down, while others must be one way or the other to get a good fit.

The $\frac{3}{8}$ "-thick tracks are the best choice for use in miter slots. Thicker tracks will extend above the miter slots and you will have to cut a dado in the bottom of the jig you are making.

Specialty T-Track

Many woodworking tool and supply companies also sell a variety of special-application T-tracks. Some have multiple slots, unique shapes or even a built-in tape measure. One type is the miter-slot T-track, which is designed to accept the bar of a standard miter gauge. In addition to these specialty T-tracks, a huge selection of ready-made jigs and fixtures is available that you can add to your T-tracks.

Whether you're building a miter saw station or a simple crosscut jig, getting familiar with the uses and applications of T-track will make your life as a woodworker easier. **PW**

Randy Johnson is the former editor in chief of American Woodworker.



7



8

Power-Carved Side Table

Turn a log into a sculptural statement piece.

By Katie Freeman

PROJECT #2101

Skill Level:

Intermediate

Time: 4 days

Cost: \$200



Have you ever come upon the opportunity to get some logs either due to a downed tree on your property or somewhere else within your community? A very familiar story is someone has to remove a very beloved tree and they want to have it turned into a piece of furniture. However, once they learn about the process to have the tree milled into useable lumber and the price associated with all of that, the tendency is to decide to do nothing further with the tree. There are other options, such as creating a unique piece of furniture with a log from the tree like a side table. That is just what I have done with a log cut from an ash tree that had to be felled to the emerald ash borer.

Getting Started

The process is really pretty simple, you start with working from the largest tool down to the smallest. First, you need to get the log to the right size for a side table, which will be somewhere between 18 to 22 inches long, and the best tool for the job is a chainsaw. If you are either sourcing a log right from the lot of a tree service or working with a tree service to take down your tree, you can usually have them cut the log to the length you want.

Once the log is cut there is a decision to be made; work with it green, let it air dry for a few years, or throw it in a wood kiln and dry it for a few months. Working with it green will make it easy to carve, but you are at risk of it warping as it dries and having to be reworked in the future. If you decide to dry it, whether by air or by kiln, it is best to wait until it hits 12% moisture or lower before carving, this will give you the best chance of success. A moisture meter lets you check it regularly to see when it gets to that 12% level.

Now no one finds a side table useful if it is wobbly. This leads to the next step and next couple of tools in the process; leveling both the top and bottom of the log using an angle

grinder and a belt sander. There are two different attachments or discs that I use with the angle grinder, both produce quite a bit of wood chips and saw dust.

For safety, I always work with the guard on the grinder. For PPE, I make sure I have a full-face shield, safety glasses, dust mask, and hearing protection at a minimum. To reduce the strain on my forearms from gripping the tool and the vibration of the tool, I wear fingerless work gloves. The fingerless work gloves still keep loose fabric away from a

spinning tool while also reducing strain on my muscles.

To get started with leveling the log, look for the flattest side, and place that one on the floor, use shims if needed to make sure the log does not rock around. Then measure up from the floor to the finished height you desire for the table plus $\frac{1}{2}$ to $\frac{3}{4}$ of an inch and mark around the log with chalk or a sharpie. This is the line you will be working down to.

I start with using my Manpa Tools multicutter on the angle grinder.



1



2

1 Moisture meter to check level of moisture in log.

2 Marking line to work for leveling log.

CARVING TOOLS

There are 3 tools that are really my ready and steady go to tools for power carving. The first (from the right) is my Manpa 3" multicutter with a Makita angle grinder. This thing removes material quickly with basically no kick-back and without needing to get too worried about the direction of the grain. I like to think of it as a very powerful, very fast-moving chisel. It is removing material in chips, not in dust.

Next in line (middle of picture) is an angle grinder outfitted with one of Kutzall's extreme line of carving dishes. There are different shapes and different levels of coarseness to choose from, all of them easy and safe to use. Just know, when using the carving dish, this is when it gets super dusty. It's like taking sanding and putting it on steroids to allow for you to smooth and remove material efficiently.

Last, but most certainly not least is my die grinder paired with various $\frac{1}{4}$ " shaft carving burrs. There are so many different burr shapes, sizes and levels of coarseness to choose from. No matter what texture of detail I want to add to my carving, there is a burr option out there for it. You can find the most variety of burrs through Kutzall and Saburrtooth.



Power Carving

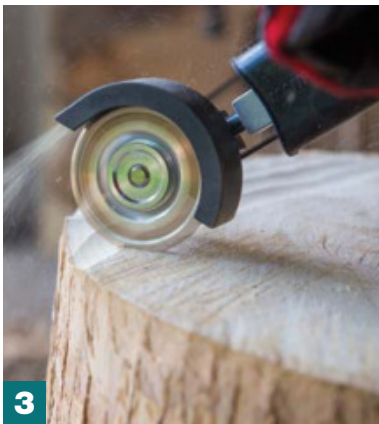
It is a full attachment with a gear, belt, and round disc with 3 cutting edges. The multicutter will remove a large amount of material the most efficiently. Once I get close to the marked line, I switch over to an angle grinder with a Kutzall carving dish on it. This will still remove a good amount of material and will get rid of the machining marks from the multicutter. Once I am within $\frac{1}{16}$ to $\frac{1}{8}$ of an inch above my line, I will then move on to using a belt sander with no finer of grit then 60 grit. I use a level to check for flatness.

Once I reach a flat and level surface, I flip the log and do the process all over again, this time marking a line at the finished dimension for the height of the table and working down to that line with the multicutter, carving dish, and belt sander. Lastly, I remove the bark from the exterior of the log. This can be done either with a chisel and mallet, or the multicutter and carving dish. Just note, using the angle grinder for this work creates a large amount of fine dust, so keep that safety gear on!

Refining a Design

With the log flat, level and bark removed, it's time to move on to roughing out the legs and overall design. This process is about two things; first, removing material to reduce the weight of the table, and second to reach your desired aesthetic. For this design, I wanted to hollow out about half of the log from the underside, leaving about a 2" wide ring all the way around and then create multiple cutaways through that ring to make my legs.

To hollow out the log, I went



3-4 First, I use a Manpa multicutter with an angle grinder, to quickly remove material for log leveling.

5 Then I grab a belt sander to reach level.

6 I grab a level to check the surface.

7 I remove bark from outside of log with Kutzall carving dish and angle grinder.



8-9 The multicutter with extension arm on an angle grinder is used to hollow out base of table.



■ CARVING SAFETY GEAR

Power carving gets messy fast. There are chips and dust flying everywhere. Plus, you have the vibration of the angle grinder that you could be holding for hours. Oh, and let's not forget the sound of the grinder. There is quite a bit of safety gear that I put on before I can get started with a carving project.

Safety glasses, dust mask, fingerless gloves and hearing protect are on no matter which carving tool I am working with. I know that a good amount of people sees work gloves as a potential risk for injury when working with power tools. I would totally agree if they are full gloves. That leaves potential for loose fabric being near a spinning tool, and that is when disaster can strike. However, I don't think that risk exists with fingerless gloves. With the amount of power carving that I do, I am constantly fighting a tennis elbow injury from gripping the grinder for so much time. The fingerless gloves help me grip the grinder, cuts down on the vibration, and I don't have the risk of the fabric near the

spinning tool. The gloves and the safety glasses are more than enough to protect my hands and eyes from flying sawdust when using the carving dishes or the carving burrs.

When it comes to using the multicutter though, I need to suit up a bit more. The multicutter shoots wood chips and shavings right back at me. Its when planning to use the multicutter

that I generally switch over to my full-face shield with built in safety goggles and welding sleeves or a long-sleeved shirt for my arms. These keep my eyes safe from flying shaving and keeps my arms safe from thousands of tiny cuts and slivers. You could also use one of those protective capes used for turning if that's more comfortable for you.



Power Carving

with my multicutter again. I started with the 4" blade, then down to the 3" blade. As I got deeper into the log, I added an extension bar in

10 I sketch out a cutaway for the legs of table with a marker.

11 I use the multicutter to remove the bulk of material for table leg cutaway.

12 A carving dish on angle grinder removes the remainder of material on large table leg cutaway.

13 Then I switch to a die grinder with a carving burr for removing the remainder of material.

order to be able to still get access safely without having to fight for position of the tool. After reaching my desired depth and getting the hollowed space as consistent as possible in width, I switched over to the carving dish to smooth out the surface and remove the tool marks of the multicutter.

Now on to sketching the cutaway portions for the legs. To do this, I just use a black sharpie and draw right on the outside of the log where I want to remove the material. The cutaways did get a bit tricky. I used the multicutter to cut along the sketched outline to remove the

material from the outside of the log all the way through to the inside hollowed space.

Though I was removing the material from the surface of the log, I was also creating a side surface. The side surface was a bit difficult to keep consistent with the multicutter and was very dependent on the size of the cutaway. After using the multicutter, I used the carving dish on the larger cutaways, and used a die grinder with a Kutzall rotary carving burr for the smaller cutaways. The carving dish and burr were used to reach the desired final design.



Adding Texture

Once the legs are done, this may be a good stopping point for moving onto sanding and finishing. Really just depends on the overall design you have in mind. I enjoy adding some sort of texture feature, which is exactly what I have done with this table. I really like to add divots as a feature, and so I again pulled out my sharpie and just freehand sketched general shapes and patterns for the divots. There are many different ways you can add texture to the outside surface of the table. You could add waves or more of a textured feathered or line look. All of this can either be done

with various shapes of carving burrs, carving dishes or different shapes of multicutter blades.

The tool to use to add the texture is dependent on the type or shape of texture you want to add. Carving the divots is a two-part process for me. The first part is to use a course grit ball carving burr with my die grinder, and I carve every divot to shape. The second part comes after I have sanded the whole table up to 180 grit. Then I take a fine grit ball carving burr with the die grinder and go back over every divot, really working to remove the tool marks from the course grit burr.

Dealing with Defects

After the first carving of the divots, and before sanding, I wanted to address the large crack in the ash wood log I was working with. Since my log has been drying for 3 years and the moisture level is below 12%, I know that the crack is pretty much stable. However, it does still cause a gap in the table top surface that I would rather not leave fully open. There are two different ways to approach this. One is with resin, and the other is with a wooden key. I have used resin on other log tables before, however, I have found that over time, with wood movement,



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14 Texture is one of my favorite flourishes. First, sketch shapes and patterns for creating this divot texture.

15-16 Then, just carve the divots with a ball burr and die grinder.



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17-18 I use keys to stabilize cracks. First, I make a template and then cut the wood key slot with a palm router.

19 Then I fit and glue in the key.

the resin can start creeping above the surface and cause the need to re-sand the top. This is a decent sized crack in the log and I just did not want to have issues due to wood movement in the future, so no resin this time. This leaves the wooden key method.

Now, if I was truly worried about the crack propagating further across the log, I would want to use some sort of bowtie or butterfly shape to keep that from happening. However, the use of a wooden key in this instance was more of a preference than a need, so I kept my wooden keys simple, going with a rectangular shape. I happened to have some scrap Birdseye maple in

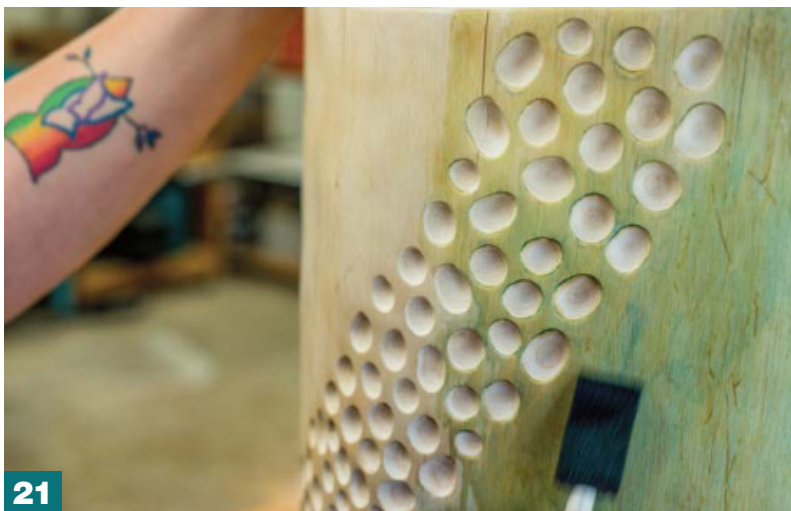
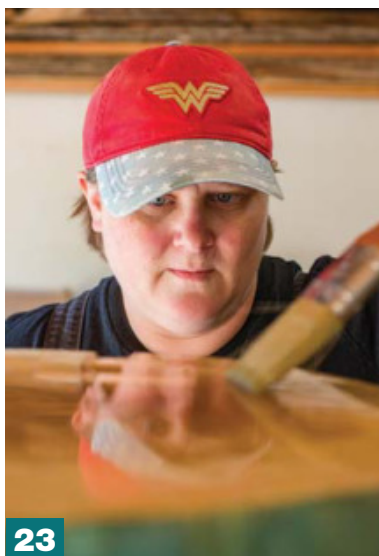
my shop that I thought would make a nice contrast with the ash, and that is what I used. To cut the slots for the key in the top of the log, I made a quick rectangular shaped jig out of some scraps and used my palm router to cut the key hole. Then I cut the maple to fit. I got the maple just slightly undersized and did end up mixing some ash wood sawdust and wood glue to do a tiny bit of filler work.

Sanding and Finishing

With the keys placed and everything dry, it's time to move on to sanding. Sanding curved surfaces can get tricky. In general, I use a few different sanding attachment

options with my power drill for anything curved and then my orbital sander and belt sander for flat surfaces like the top and bottom of the table. For the attachments for my drill I used a smaller pad that fits 2" sanding discs for the hollowed-out portion on the underside of the table and along where the leg cutaways are. Then for the outside of the table I used a larger pad that fits the standard 5" sanding discs you use with orbital sanders. I worked the whole table, besides the top, up to 220 grit. I paused at 180 grit on the outside surface to go back over the divots with the finer grit burr and then used a 220-grit flap disc across it all. For the top, I went up to 320 grit.

The last, but perhaps the most satisfying part of the whole process, is the finish. For log tables especially, I would highly recommend using some sort of an oil-based finish because it really soaks in and helps strengthen the wood fibers. I enjoy



20 Sanding up to 220 grit on outside of table. This is where the details matter.

21 I applied a teal dye to the outside of this table.

22-23 I finish with a couple coats of Danish oil.

adding a pop of color though before applying final finish. So, for this table I applied a teal dye that I made by mixing powdered Keda dye with vinegar and water. I applied the dye twice in order to get the depth of color I desired. After letting the dye fully dry, I then went with a danish oil top coat, following the directions on the can for application.

There are so many different design options for creating a log side table, really the options are endless. So, next time you find yourself with a good-sized log, before milling it up into lumber, consider turning it into a unique side table. **PW**

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Katie Freeman is a carver and furniture maker in Iowa. You can hear her every week interviewing other makers on the Maker Mom Podcast. Learn more at freemarfurnishings.com.



Turned Canisters

Hone Your Skills Making Functional Storage

By Dillon Baker



PROJECT #2102

Skill Level:

Advanced

Time: 1 day

Cost: \$50

PHOTOS BY CHRIS HENNESSEY

It's rare that I afford myself the opportunity to spend time and experiment at the lathe. Much of this could be attributed to the fact that turning (to me) has always had the perception of being a purely hobbyist pursuit that was too arcane and esoteric to be practical. And as a neophyte to the craft, it's often easy to view fine woodworking and turning as two separate things, but in fact can be classified as either synonymous or as an extension of one another. Personally, I prefer to view them as complementary—a correlational and mutually advantageous discipline.

It's this sense of interconnectedness combined with a willingness to improve, that continually drive my need to pick up a gouge and dispel my initial impressions of turning. Over time, I have found that committing to small projects (such as the ones featured in this article) become a reminder of the gratifying quality that turning possesses. Another redeeming aspect of turning is the ability to yield successful results without having a great deal of experience. Minimal tools and equipment are required, rendering this an accessible and enjoyable exercise for novice woodworkers and experts alike—so let's get started.

Scrap Bin Diving

One of the things to relish about this project is that it allows you to finally utilize those pieces of wood you refused to discard 'insert number of years ago here'. Of course, there is always the option of going out and purchasing something exotic or figured (since it's on a more economical scale), however, there is something inherently gratifying about using up old scraps of sentimentality.

For this project, I chose some leftover cherry that had interesting figure along with some spalted maple. If you have blanks large enough, great. If not, there is no shame in laminating two pieces together (from the same board) to get the

■ TURNED CANISTER: Rounded Lid



- 1** Clean up any hills or valleys left behind from the roughing gouge using a skew.
- 2** Create a tenon (approximately $\frac{3}{8}$ " wide) on the end of the blank using a parting tool.
- 3** Lay out the individual parts of the canister using a ruler, pencil and the rotation of the lathe.

desired thickness. Just make sure to be conscious of matching grain to avoid any conspicuous glue lines.

Blank Preparation

Since the piece(s) will invariably be turned down to a cylinder, there doesn't seem to be a conceivable reason to further prep your piece, short of chucking it into the lathe. Albeit, squaring up the work piece aids in finding center on each end of the blank. Move over to the band saw and create two intersecting stop cuts on one end of each blank. This will aid in allowing the spur center to seat properly to the blank. Proceed to do this on all four blanks—don't hesitate to make a couple back-up blanks for insurance.

Need for Speed

Before turning it's important to determine the safe minimum as well as maximum RPM in relation to the size of the work piece. Take the diameter and multiply it by 6,000 to 9,000. The first number (6,000) divided by the diameter of the piece will give you the minimum efficient speed. The latter number (9,000) divided by the diameter will provide you with the safe maximum speed. Considering our blanks are under 3", speeds up to 3,500 RPMs are acceptable, however are not requisite—the important thing is to start slow and to establish a level of comfort as well as familiarity with how each individual tool cuts.



4 Using the reference lines, as well as a parting tool, create a tenon that will makeup the seal between the lid and the base.

5 To ensure an accurate fit, check the diameter of the lid tenon often. A slightly proud tenon can be easily rectified, but an undersized one can be tricky.

6 Once the length of the lid is established, begin to shape the profile using a spindle gouge.

7 Finally, slow the RPMs down (250-350) and do some light sanding. If feasible, reverse the rotation of the lathe during this process.





8 Using a parting tool, create another tenon towards the top of the lid. Proceed to sever the lid from the base using handsaw.

9 Insert the base of the canister (tenon side first) into the jaws of the scroll chuck.

10 Feed the Forstner bit into the base with the lathe spinning at about 500 RPM. The bit tends to get hot so, back off when necessary to prevent scorching.

11 Chuck the lid into the jaws and refine the tenon using a skew.

12 Rotate the tool rest 90° and proceed to undercut the shoulder of the lid. This small refining measure will ensure a seamless fit.

13 Lastly, check your work and listen for the “patented burp” when the lid is removed from the base.



Start with a Cylinder

Mount the blank by placing it between the spur center (on the headstock) and the live center (located on the tailstock). Position the tool rest so that when the roughing gouge is anchored against it, the cutting edge should make contact at about the half-way point on the blank. Ride the bevel against the work piece and start making passes back and forth using the cutting edge to remove the material. Using calipers, check the blank to ensure a consistent diameter throughout. Once this is complete, heighten the tool rest and go back over the blank with a skew and clean up any grooves or valleys left behind by the roughing gouge.

Lay Out the Pieces

Begin by laying out the individual parts of the canister with a pencil and a ruler. With the parting tool in hand, create a tenon about $\frac{1}{4}$ " – $\frac{1}{2}$ " long — This will later be placed into jaws of a chuck. Continue to make another incision on the second layout line. This separation or “part off” will create the $\frac{1}{4}$ " tenon for the lid. It’s important to not only get the final diameter as close to $1\frac{1}{2}$ ", it’s as equally important to account for the kerf of the blade once the two pieces are severed.

Once the recesses are created, move onto creating the tiered detail on the lid. I used the width of the parting tool as a reference to estab-

TURNED CANISTER: Tiered Lid



14 Order does not always matter. Once the parts were laid out, I started by creating the tenon for the lid first.

15 Using the width of the parting tool as a unit of measure, make a series of plunge cuts to create the individual tiers.

16 Once again, slow the speed of the lathe and work through a progression of sandpaper grits (preferably 120-180).





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17 Bore the cavity into the base. Back the Forstner bit off periodically to aid in removing waste build up.

18 Chuck the tiered lid into the jaws (tenon side first), replace the Forstner bit with an 1/8" brad point bit and drill a 1/2" deep hole for the cap tenon.

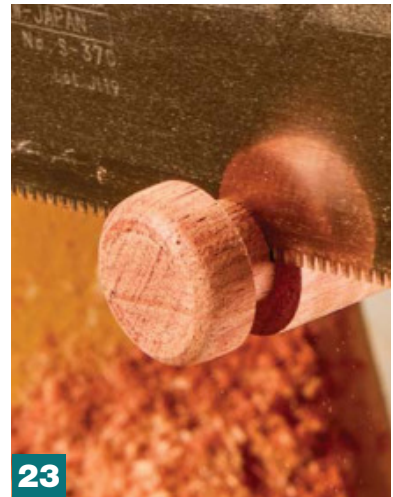
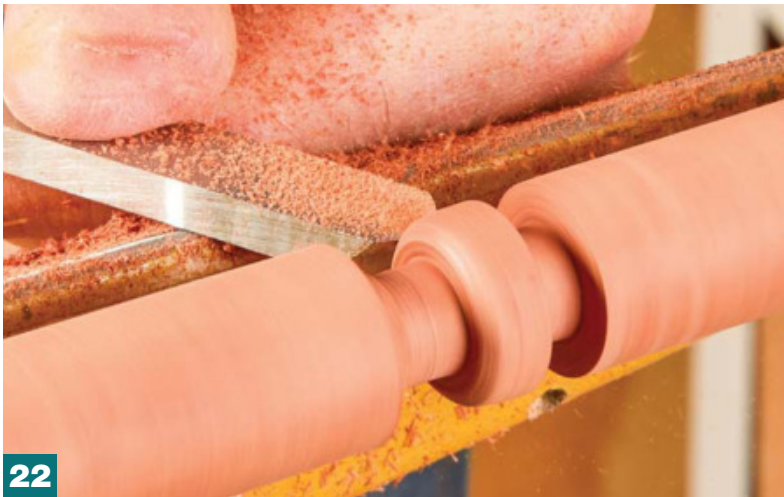
19 Rotate the lid and proceed to clean up the tenon.

20 As before, flip the tool rest and proceed to undercut the shoulder on the lid. A gap-free connection is a great way to accentuate your newly acquired skill.

21 Check the fit and revel in the inconspicuous transition between the lid and the base.

lish the length of the tiers. Continue this process by creating another "part" to institute the end of the lid. Slow the RPMs down to 250-350 and take this time to do some light sanding. Note, excessive speeds can cause dust to build up between the sandpaper and the wood, which ultimately prevents abrasion — so be conservative with the amount of pressure applied and let the sandpaper work for itself.

Now that the individual pieces are finished, disengage the lock on the drive center and release a small amount of pressure. Using a hand-saw, proceed to sever the lid (at the base of the tenon) from the body of the canister.



Boring the Cavity

Utilizing the tenon, place the base of the canister in the jaws of the chuck on the headstock. Insert the Jacob's chuck with the 1 1/2" Forstner bit into the Morse taper of the tailstock. Proceed to move the tailstock so that the Forstner bit is just a 1/4" or so from the canister base and lock it in place—keep the spindle lock disengaged as you will be using the handwheel to feed the bit into the rotating blank. Since we are using a traditional Forstner bit, apply the same RPM conversion rate as you would with a drill press (i.e. 400-500 RPM). Continue by feeding the drill bit into the blank (back it off if the bit gets hot) until you have reached the desired depth.

Fitting the Lid

Remove the base and insert the lid (top or tiered side first) into the jaws on the headstock. Using the skew, clean up the tenon to create a precise fit between the base and the lid. To further ensure a seamless transition between parts, proceed to undercut the shoulder on the lid. Just remember, a little goes a long way, (and material cannot be replaced) so skew lightly and check the fit often.

Once this is complete, flip the piece so that the tenon is chucked into the jaws. Swap out the 1 1/2" Forstner bit with an 1/8" brad point bit and proceed to drill a 1/2" deep hole in the top of the lid to accommodate for the knob.

22 Create a cap for your lid.

23 Release the tension from the tailstock and either part-off or release the cap from the blank using a handsaw.

24 With a minimum diameter capacity of 1 1/4" on my scroll chuck, I exchanged the lathe for a wooden hand-screw clamp and moved over to the drill press to create the dowel center on the cap.

25 Add a dab of epoxy to the lid as well as the cap.

26 Insert the aluminum dowel and press the cap down onto the lid—use Acetone for any remaining squeeze out.



27 Apply liberal amounts of oil to both the exterior as well as the interior of the canister. I found that the apex of a foam brush helps with getting in nooks and crannies.

28 Once dried, wipe back and excess oil that did not absorb. For added protection, apply a coat of paste wax to the exterior of the canister(s) — buff out when dry and *voila!*

the one bored on the cap. Since jaws on my scroll chuck had a minimum diameter of an $1\frac{1}{4}$ ", I moved over to drill press to create the dowel hole. Locate center with a center head/ruler and use a hand-screw clamp or machinist vise to hold the knob in place while drilling. Proceed by cutting a $\frac{3}{4}$ " long piece of $\frac{1}{8}$ " aluminum or steel rod to be used as the dowel. Add a spot of epoxy to each hole and press the knob into the cap — Clean up any squeeze out with Acetone.

Finish

You will find that there is a litany of opinions when it comes to the proper way to finish a turned canister or bowl. Since the finishing is not taking place on the lathe (as it commonly is) I went with an oil/cream combo that I had readily available. Apply the oil to the canisters and allow it to soak in overnight. If dry spots occur, reapply as needed. Wipe off any excess oil and begin to apply a liberal coat of beeswax and food grade mineral oil. Once the wax/oil combination has dried (about 15-20 minutes) proceed to buff with a rag.

With the project complete, and a newly acquired skill, perhaps it's time to start applying some of the basic techniques explained in this article towards some projects that are more involved. **PW**

Dillon Baker is Popular Woodworking's projects editor and a furniture designer-maker in Des Moines.

Tiny Knob

Given the scale of this detail, the scrap bin may be worth reinspection in terms of unearthing worthy material for the knob. I ended up finding a small chunk of Wenge along with an unaccompanied piece of Bubinga that I thought would pair well with the corresponding canister materials.

There is no new methodology here in terms of forming the knobs, with the exception of the introduction of a couple new tools. Layout the piece as you did earlier with the canisters. Form a cylinder longer

than the final length of the finished knob. Then, create a tenon (using a parting tool) approximately $\frac{3}{8}$ " in diameter by $\frac{1}{4}$ " long. Towards the top of the knob, "part" an area about $\frac{3}{4}$ " – 1" long. This extra space will allow for a spindle gouge to be used when applying a round-over profile to the head of the knob. If available, a $\frac{1}{2}$ " round-nose scraper can be used in substitution for a spindle gouge to further define as well as refine the profile.

Now it's time to drill the $\frac{1}{8}$ " diameter hole that corresponds with



■ Post & Rung Standing Desk

Two classic joints build a beautiful utility piece. **By Andrew Zoellner**

PROJECT #2103

Skill Level:

Advanced

Time: 1 week

Cost: \$200

PHOTOS BY THE AUTHOR

As we've settled into our fully working from home routine, one thing has become clear: sitting all day, without the prompts to head to a different office for a meeting, run out to lunch with a coworker, or even head outside to commute, isn't good for me (or my body). It was decided that a secondary standing desk fit the bill. I wanted something that was sturdy but lightweight, with a smooth writing surface and enough space to spread out a bit. It also needed to fit through the doorways of my old house and, most importantly, be at a height that was comfortable for me to work and stand.

The lightweight but sturdy qualifier led me down the path of post and rung designs and all of the surprisingly light but long-lasting chairs I've seen over the years. I settled on laminate for the surface of the desk,

for durability. And I had a pile of ash blanks in the shop already waiting for the right project. Let's get started.

Basic Design

The top frame is held together with bridle joints. With a leg mortised through the top and wedged, it's a very sturdy connection. The top insert is just a piece of plywood, cut to fit the frame, with a piece of laminate applied to the top.

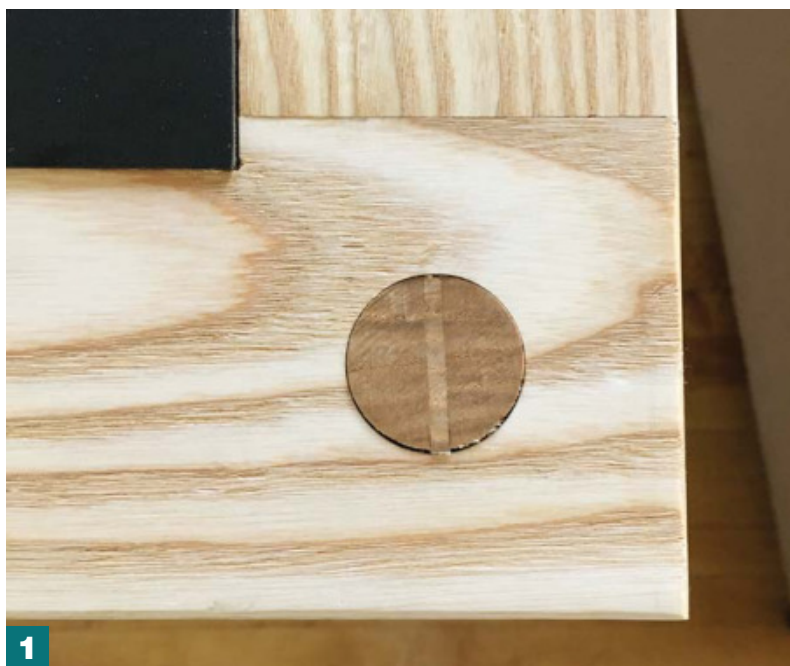
Because this is a standing desk, the legs are fairly long and maxed out the length of my lathe (I turned them at about 44" long, then cut them to final length at the end). The two side stretchers are much more manageable. The middle stretcher didn't fit on the lathe, so I rounded that one by hand, planing down the facets of a straight piece until it was more or less round. If you don't

have a lathe, or the capacity for these legs, it's a great alternative. In fact, it's easier to deal with longer pieces on a workbench than on a lathe (with flex and a steady rest).

Bridle Joints

First, prepare the four pieces for the top frame (two sides, and a front and back). The bridle joints go all the way through the joint, so you can cut your pieces to width and length. I left mine a bit long and wide with the intention of trimming them down later using a track saw. That's one of the main benefits of a bridle joint — there's a lot of surface area for glue, so removing material after the fact doesn't do much in the way of weakening the joint.

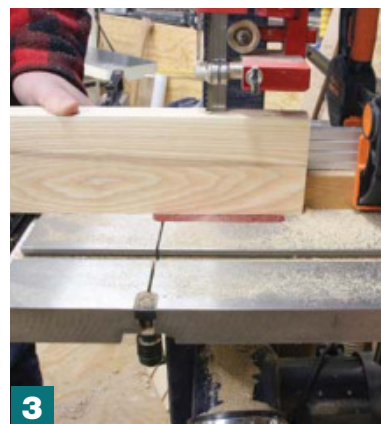
I cut these bridle joints on the bandsaw using one of my favorite shop tools: playing cards. This is a



1 The bridle joint that holds the desktop frame together is mortised and the leg is wedge in the hole to lock it all together.

2 Two stop blocks behind the fence are key to bandsaw-cut bridle joints.

3 A third stop block, clamped to the fence, sets the depth of the mortises and tenons on the bridle joints.



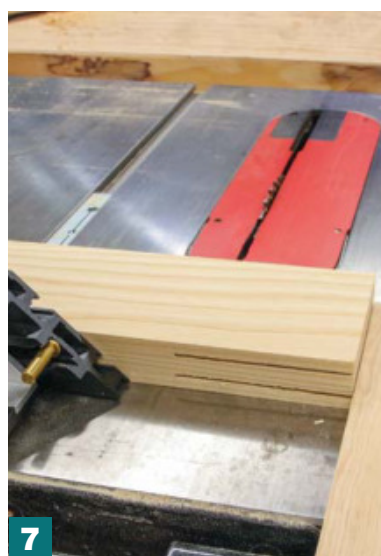


4 Use playing cards to find the width of the saw kerf.

5 Then, use those cards as shims to move the fence closer to the blade. That accounts for the blade width in the joint.

6 Cut the mortise, then clean out the waste by nibbling away on the bandsaw.

7 Then crosscut the shoulders of the tenon on the table saw.



trick I picked up from an article Brian Boggs wrote for *Fine Woodworking* a few years back, and it's the best way I've seen to cut bridle joints. There's no math or layout other than figuring out your first cut.

The simple explanation is that you use two stop blocks behind the fence once you have your first cut dialed in on the tenon. Then, you use playing cards to find the kerf of the cut, and use those cards as spacers for the mating mortise cuts. Once you hog out the waste, your joint fits snugly off the saw. Like most woodworking operations, it's worthwhile to practice this a few times until you dial in a good fit.

An ideal bridle joint has a tenon that's $\frac{1}{3}$ the thickness of the

board. In practice, I've found that as long as you're close, a little bit thicker or thinner on the tenon isn't a huge deal. With this frame, I eyeballed the first cut, leaving about a third of the thickness of the board between the blade and fence. Then, I clamped a stop block to the fence to set the depth of the cut (slightly deeper than the width of the board).

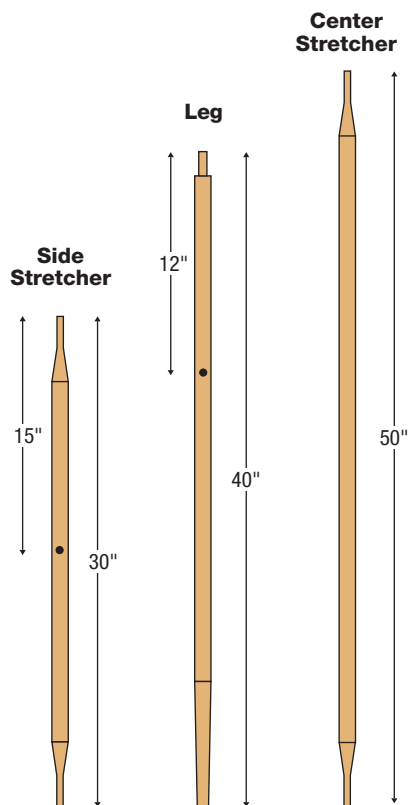
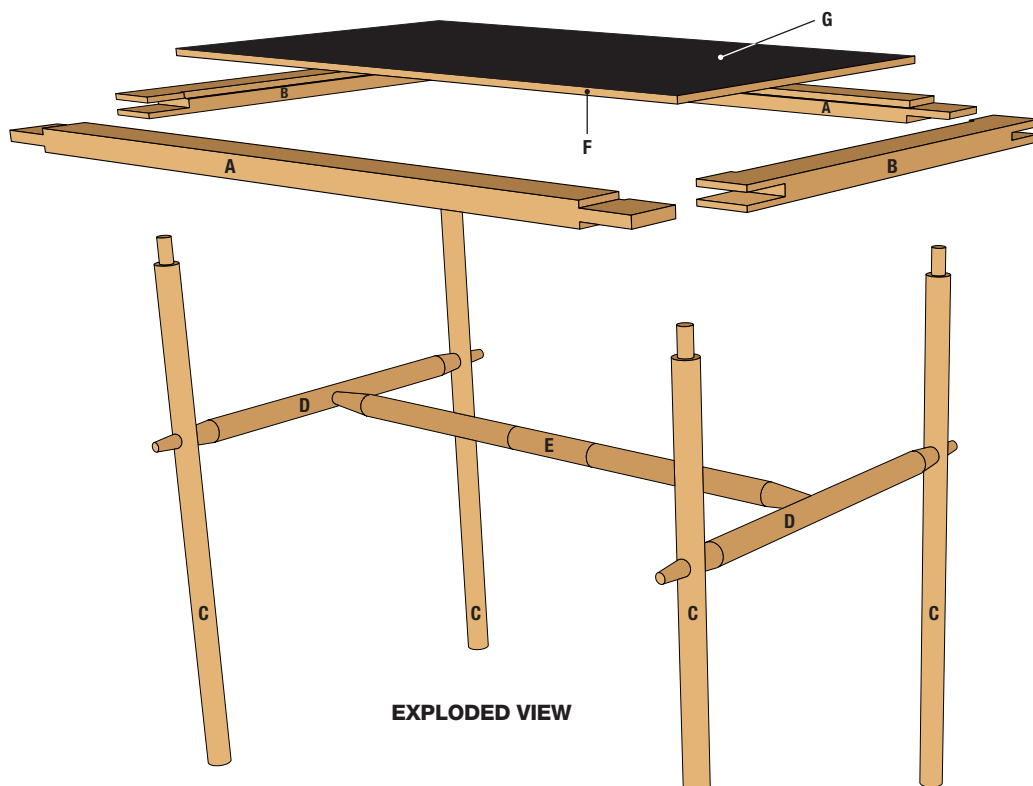
Make two cuts for each of the tenons on the longer front and back frame pieces. Once all those cuts are made, grab your stack of playing cards and insert a few into the saw kerf to figure out how much you need to move the fence for the next cuts. You're looking for a fit where the cards move in and out of the kerf without too much

pressure, but enough that they'll stay in place, too. If the cards are too loose or too tight, your joint will be too tight or too loose (they're inversely related).

Add your spacer cards behind the fence (in front of the stops). This will nudge the fence closer to the blade. Make two cuts on each end of the side pieces, similar to the tenons. Remove the fence stop blocks and spacers and cut out the rest of the waste in the mortise. I make a couple of freehand cuts on the bandsaw, staying short of mortise depth.

Then I bring the fence (with stop block still attached) back closer to the cut, and use the blade to nibble away the rest of the waste, using the stop block to keep the depth of the

Post & Rung Standing Desk



Cut List

No.	Item	Dimensions (inches)		
		T	W	L
2	A Frame front/back*	1 1/2	3 1/2	52
2	B Frame side*	1 1/2	3 1/2	32
4	C Leg**	2	2	40
2	D Side stretcher**	2	2	30
1	E Center stretcher**	2	2	50
1	F Desk Top	1/2	25 3/4	45 3/4
1	G Laminate	1/16	25 3/4	45 3/4

*Leave slightly wide and trim after assembly.

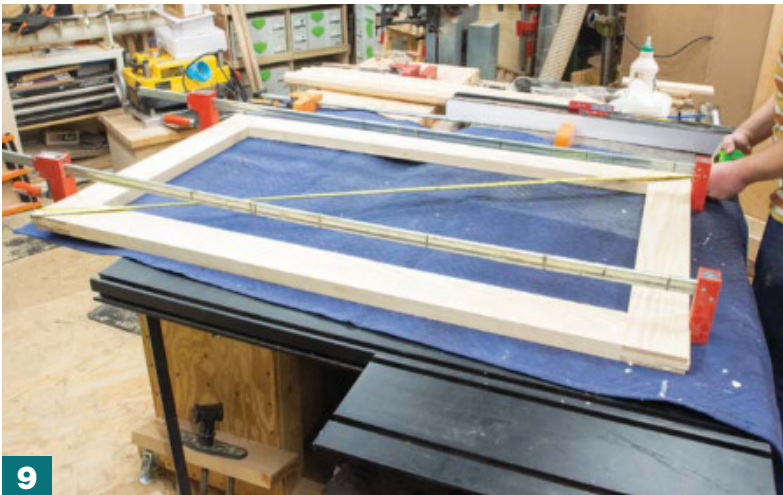
**Leave long and trim after glue up. The only critical dimensions are diameters of the tenons.



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8 The fit off the bandsaw should be pretty close, though I still used a shoulder plane and chisel to clean things up.

9 Add glue to the tenons and assemble the frame. Check for square by measuring the diagonals.

10 I had one joint that was a little loose, so I used a couple F-clamps to keep it tight while the glue cured.

11 I trimmed the outside of the frame to final width with a track saw. As a bonus, it cleans up glue squeeze out, too.

12 Finally, I added a small round-over to the top and bottom of the outside of the frame.

mortise consistent. Finally, I cross cut the waste off the tenon pieces with a miter gauge on the bandsaw.

Dry fit the joints and refine with a block plane and shoulder plane if necessary. Files and sandpaper are fine, too. Keep the shoulders of the tenon nice and square. Once you're happy with the fit, rehearse your clamping procedure. For large frames especially, making sure all of the joints go together cleaning and that you end up with a square opening inside the frame are really important. I dry clamp, measure diagonals (the measurements should be identical in a square frame), then

repeat the process with glue.

I use Titebond III here because of the longer open time. I spread a layer of glue on both sides of the tenon, then insert it into the mortise, and repeat for each corner. Clamp and check for square. If your frame isn't perfectly square, a couple of precision taps with a mallet or loosening and tightening clamps usually does the trick for me. Then, let the glue cure.

Once the frame has cured, refine the shape to your desired dimensions. I left the frame pieces about a 1/2" over-wide, and I used a track saw and track to trim them to final

width. This leaves you with clean joints on the ends. You may find some small gaps in the bridle joints. Fortunately, a small wedge, some glue and sawdust fixes those spots right up. I also added a small 1/8" roundover with my router to both the top on bottom edges.

Turned Legs

Start with 8/4 stock. I had a nice 9" — wide piece of 8/4 ash, about 4' long to work with. After squaring one edge at the jointer, rip the four leg blanks from the board. The easiest way to do this is use the board to set the width of the cut, then rip your leg pieces. You should have stock that's roughly 2" x 2". Then, I set the blade to 45° and cut the four corners off each leg, leaving me with leg with eight facets. I do the same thing to prep the stock for the stretchers.

At the lathe, rough out the leg into a cylinder. With longer pieces on the lathe, a steady rest is very helpful. Basically, it gives your workpiece a third point of contact and limits flex



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13 When possible, I cut the edges off turning stock on the table saw.

14-15 With these long legs, I rough out the center first, so I can get the steady rest in to support the leg. The steady rest keeps the leg from flexing while I'm roughing out the shape.

in the turning. I'll rough out the center of the blank, then add the steady rest, then rough out the rest of the leg. It takes a little finagling to coordinate moving the steady rest and tool rest as you move through the leg, but it's much easier than dealing with your workpiece flexing.

With the leg roughed out into a cylinder, lay out the 2"-long tenon at the top of the leg. Set your calipers to 1" and use a parting tool to turn the tenon down to 1" in diameter. I usually use the parting tool to turn the rest of the tenon, matching the same diameter as the initial cut.

The 1" tenon is the only critical dimension on the leg. I tapered the foot of the leg down to about $\frac{7}{8}$ ", keeping the bulk of the leg just shy of 2" in diameter. Repeat for the other legs, keeping in mind the critical tenon dimension, and eyeballing the rest. No one is going to be measuring your legs with a caliper to make sure they're all exactly the same. If they look good, then they are good.

Turned and Planed Stretchers

Next, get to work on the stretchers. Rough turn the blank into a cylinder, then taper it out towards the ends. These will be ending in $\frac{3}{4}$ " tenons. I like to leave these a bit long. Again, the $\frac{3}{4}$ " tenons on each end of the stretcher are the only critical dimensions. I try to leave more meat in the center of the tenon, then taper it out toward the ends.

The center stretcher is likely too long for the lathe, so you'll need to break out some hand tools. You can turn a square into a cylinder by just



16 With the leg turned into a cylinder, I mark a line for the tenon.

17-18 Use a parting tool to size the tenon, then turn the rest of it to match. I usually just use the parting tool to get the full tenon turned.



19 For the side stretchers, I still start in the middle, using a set of calipers to dial in the diameter. Then I taper toward the ends.

20 I taper the side stretcher down to an overly-long $\frac{3}{4}$ " tenon. I give myself a little wiggle room here, leaving them long, so I can cut the stretchers to length during dry fit and assembly.

21 The center stretcher was too long for the lathe, so I rough out a blank on the tablesaw then break out some hand tools.

22-23 I use my No. 5 plane to plane down the areas where the facets meet, until the blank is roughly round. Then I use an electric sander to refine the blank as I roll it over the bench.

24 I used a drawknife to roughly shape the tenons, then cleaned it up with a rasp.



continuing to plane off the pointy bits. Starting with an eight-sided blank (like the leg blanks), I use my #5 jack plane to plane down the ridges. Keep planing and rotating, and eventually, you'll have something resembling round.

You'll also need to shape $\frac{3}{4}$ " tenons on the ends of this stretcher. I opted for a drawknife and a rasp to do that work. A $\frac{3}{4}$ " tenon cutter would also be very handy here. Try to taper the ends out to $\frac{3}{4}$ "-diameter tenons, like on the side stretchers. Drilling a $\frac{3}{4}$ " hole in a scrap helps check your progress.

Mortising

In this part of the build, I relied heavily on a portable drill guide. This one from Rockler is the best I've used, though it is somewhat pricey. I have used cheaper guides in the past, and they do the same job, but you lose a little bit of rigidity and repeatability. It's way easier to bring your drill to the frame than it is to try and rig up support to do the job at the drill press.

Lay out your mortise locations in each corner of the frame. Use a 1" Forstner bit to drill the mortises out (at 90°). Make sure to use a bit of backer board under the

mortise to avoid blowout as the bit exits the frame.

The side stretchers are located 12" from the shoulder of the leg tenon. Mark the location of the mortise on each leg. Then, fit the legs into the top. Measure the distance between the two legs on each end of the frame. It should be the same (or very close). That's the final length your stretchers need to be, plus about 2" of tenon on each end. With that dimension, I head back to the lathe to make the final refinements on the stretchers, then cut them to rough length on the bandsaw.



25



26



27

25 I used a portable drill guide to drill all the mortises.

26 I cut a rabbet around the inside of frame with a router, then square up the corners with a chisel.

27 Cut the plywood desk top to fit.

Add the stretchers to the dry assembly and measure the distance between them at the center point of the stretchers. That measurement, plus 2" of tenon on each side of the long middle stretcher, is the final length you need for that piece. With a $\frac{3}{4}$ " Forstner bit, drill the mortises



28



29



30

28 The laminate is cut slightly oversize. Apply a liberal amount of spray adhesive to both the laminate and plywood.

29 Once the adhesive has tacked up (follow the directions on the can), carefully place the laminate onto the plywood. I used some workbench offcuts to help hold it down while things cured.

30 Trim the laminate to size with a flush-cut bearing router bit, then ease the edges with a bit of sandpaper. Freshly-trimmed laminate is very sharp.

31 Dry assemble the base and frame. Grab your wedges and get ready for the glue-up.



31

gether. I kerf the tops of the tenons at the bandsaw to receive wedges, and during the dry fit, I just lightly wedge the tenons to keep things from falling apart during the dry fit. Ideally, you want your wedges to be driven perpendicular to the grain of the wood you're wedging the tenon into. If you veer to far off that course, there's a greater chance the wedge will actually split the whole piece, and that's bad news.

Laminate Top

The top of the desk is just a sheet of plywood with a piece of laminate

adhered to it. It sits on a $\frac{3}{8}$ " rabbet inside the frame, cut with a router. That's where we'll start.

Use a router with a $\frac{3}{8}$ " rabbeting bit and cut a rabbet on the inside edge of the frame (make sure you know which side of the frame is the top). You'll need to cut a rabbet that's the same depth as the thickness of your plywood. I'm using $\frac{1}{2}$ " plywood here, though it's actually closer to $\frac{7}{16}$ " thick. Cut the rabbet in multiple passes, using a plywood offset to check your depth. Once you've cut the rabbet to the depth of the plywood, that's deep enough.

for the side stretchers in the legs. This drill guide has V-notches built into the base to keep the legs centered (a huge plus for this kind of work). Repeat to drill the mortises in the centers of the side stretchers.

At this point, I like to do a dry fit of the legs and stretchers with the frame, to see how it's all coming to-

The laminate isn't very thick, and I want it to sit slightly proud of the frame. You could also choose to inset the panel a bit, but I was concerned about things getting caught on the edge of the frame in course of working at the desk.

The routed rabbet will have rounded corners, so you'll need to square them up with a chisel. I used a square and pencil to mark the boundary, then chiseled it bit by bit to square it up. With the rabbet completed, the next step is to cut a piece of plywood to fit. The dimensions of the rabbet were pretty square, but one corner was just a hair out. So, I cut the plywood slightly oversize, then used a block plane to refine the fit so it fit snugly in the rabbeted opening. At this point, alignment is critical, so make sure to mark which corner of the plywood fits in which corner of the frame.

The trickiest part about using laminate is dealing with a floppy, 4' x 8' sheet. It usually comes rolled up, so I like to do the unrolling in my driveway and rough cut it down to size out there. When it's more manageable, I'll dial in the size a bit closer on the table saw. Laminate is very thin, so it's likely it'll sneak under your table saw fence as you're cutting. Just clamp a piece of plywood to the fence, making sure it's firmly on the table, and that seems to fix that problem. Leave the laminate about 1" longer and wider than the plywood top—you'll trim it to fit after it's adhered.

With the laminate cut to size, use spray adhesive to attach the laminate to the plywood. Apply adhesive to both the plywood and laminate. Most spray adhesives say to let the adhesive tack up before you put the laminate on your substrate. Don't be afraid to apply a lot of adhesive—you want good coverage.

Then, lay the piece of laminate over the piece of plywood. Focus on alignment, making sure there's a bit of overhang on all four edges. Once



32 Apply glue to the leg tenons, then wedge them firmly into the mortise (applying a bit of glue to the wedge to hold it in place, too).

33 Then I wedged the side stretchers, followed by the middle stretcher.

34 Use a flush-cut saw to cut the cured tenons, then a little sanding cleans things up.



35 I marked the legs for their final height, using some scraps and a pencil to mark a line around the leg.

36 Then, I clamped the leg to my workbench and cut it to length.

37 The most rewarding part, as always, is applying finish. The end grain of the tenon contrasts with the face grain of the frame.

the laminate and plywood touch, they bond pretty quickly, so you really only get one shot at it. Go over the laminate with a laminate roller if you have one—or another item that will help apply pressure. I couldn't find my laminate roller, so I use a bit of dowel to apply pressure around the edges. Then I stacked a few pieces of workbench offcuts on top before I left for the night, to keep good, flat pressure on the piece.

After the adhesive has cured and bonded, you can trim the laminate to size with a router and a bottom-bearing pattern bit. The bearing rides along the plywood edge, and the laminate is trimmed to the exact same size. It does leave a very sharp edge, though, so be careful. Right after I'm done trimming the laminate, I use a bit of sandpaper to just ease the edges slightly. Finally, make sure the whole thing still fits in the desk top frame.

Putting it Together

This is the fun part. Grab your wedges, a mallet and glue—there are no clamps required. Start by dry-assembling all of the pieces (you can leave the laminate desk-top insert off the side). Make sure all of the mortises and tenons align and go together easily. Once you've rehearsed, it's time to make this permanent.

Start with the four legs. While everything is still dry-fitted, carefully lift the desk frame and apply some glue to the tenons. I did this two tenons at a time. Then, with the tenons firmly seated in the mortises, add a bit of glue to the end of a wedge, and hammer the wedge into the top of the tenon. You'll hear a change in the tone of the hammering once it's fully seated. Do this to the other the leg to frame tenons. Then move onto the stretchers. I didn't glue the tenons for the stretchers—just used glue on the wedges and hammered them home. I did the side stretchers first, then

the center stretcher.

Once the glue has cured, trim the tenons to finished length. I was able to trim the leg tenons pretty close to the top of the desk and flush them up with a sander. For the stretcher tenons, I cut them straight and then used a sander to blend them into the shapes of the legs.

Finally, it's time to cut the legs to length on the desk. Find a flat surface (I was just able to fit the desk on my table saw). First, figure out the ideal height for your desk. Like a workbench, it's different for each person. Most standing desks fall in the range of 40" to 44". If found 42" to be most comfortable for me (I'm 5'11"). Measure down the leg from the top of the desk, and make a mark on one leg. Use a stack of scrap wood to build a guide block for marking around the leg, and mark all four legs for cutting to length.

Cutting the legs to length is always tricky. Clamp a desk leg to the top of your bench, and use a pull saw to make the cuts (I find a pull saw works better for me on these kinds of suspended cuts). Maneuvering a big piece in a small shop is a feat unto itself. After the cut, add a small chamfer to the bottom edge of the leg (I use a sander for this, too).

Finish

Spend some time sanding the desk. I worked through the grits up to 180, spending extra time on the legs and paying close attention to the joints. Then I applied a couple coats of Briwax hard wax oil. It's become my go-to finish for furniture—decent protection from dirt and stains, but not super noxious and easy to touch-up to boot. Plus, it's a wipe-on, wait, wipe-off finish (very easy to apply). Finally, move the desk into your office and get to work! **PW**

Andrew Zoellner is the editor in chief of Popular Woodworking. He's standing as he's typing this.

The Unicorn Method

A simple sharpening technique for unbelievably sharp edges that are tough and long-lasting.

By David Weaver, Winston Chang & William Tindall

Nothing slices, chops or pares through wood like a freshly sharpened chisel, but sharp edges don't last forever. Frequent sharpening is a must, particularly for tools that are subjected to punishing tasks like chopping and aggressive paring, as in the preparation of dovetails. Ideally, we'd all like to be able to produce long-lasting, super-sharp edges quickly and easily. Now we can.

On the WoodCentral.com Hand Tools forum, several members have been developing and refining a sharpening technique that David Weaver, the originator, has since nicknamed "Unicorning," since the odds of his discovering a superior and nearly effortless technique seemed about as likely as stumbling upon a Unicorn, a mythical creature symbolic of things that are too good to be true. The name has stuck.

By selectively buffing just the very tip of a nominally sharpened blade on an abrasive-loaded buffing wheel for a few seconds, Weaver produced a tiny convex bevel that transformed the edge dramatically, making it exceedingly sharp and more resistant to failure from hard use, without changing how easily the edge penetrates the wood.

With this simple buffing step, he found that the edges of less expensive softer steel chisels can be made to stay as sharp as harder premium chisels. Plane blades and many other edge tools, including kitchen knives, can be made sharper and more durable with this technique.

How Edges Dull

All edge tools eventually lose their sharpness to the abrasive action of wood. Chisels used for chopping and



A better sharpening method? A recent discovery and collaboration on the woodcentral.com forums led to a new method of sharpening that helps chisel edges last longer. Plus, it's easy to achieve and touch up.

cross-grain paring are subjected to even greater stresses. The best chisels optimize hardness and toughness to resist chipping or deforming in hard use. Most moderately-priced chisels are tempered to yield a softer steel that is more easily sharpened. These tools will deform or fold at the tip, while the harder Japanese chisels are more prone to chipping.

Cutting Edge Geometry

Traditional cutting edges are formed by the intersection of two flat planes — the bevel and the back of the chisel or plane iron. When sharpening, the back is usually polished, and the bevel is honed on some sequence of sharpening stones of progressively finer grit. Sharpness is determined by the last and finest grit in the sequence. For



1 The crowned bevel produced by buffing only needs to be a few thousandths of an inch long to dramatically improve sharpness and toughness.



2



3

2-3 A freshly sharpened edge can quickly become unusable if it becomes deformed (left) or chipped (right) by chopping or cross-grain paring, particularly in hard or abrasive woods.

most chisels and plane irons, the primary bevel is typically around 25° to 30°, occasionally with a secondary bevel that adds a few degrees at the edge.

Excessive preliminary honing isn't necessary if you plan to Unicorn the edge; we've found that a 1000 grit stone is adequate to produce excellent results. Finer grits yield only fractionally better results. And, since the convex profile increases the

cutting angle at the tip, it reinforces the edge; so you can begin with a more acute primary bevel—as low as 20°—even on chisels made of mediocre steel. This sharper primary bevel enables noticeably better chisel penetration when chopping and paring, while the convex bevel at the tip helps resist edge damage.

Resharpening a Unicorned edge is also fast and easy. Because the convex bevel is only a few thousandths of an inch long, it takes very little time to hone it flat again and re-buff to create the Unicorned edge. Re-honing assures that the convex bevel doesn't grow over time.

Buffing the Edge

Once you've finished preliminary sharpening and honing to at least 1000 grit, it's time for the actual buffing—the “Unicorning”—of the edge.

This can be accomplished in a number of ways, and in our tests, they all produced excellent results.

The fastest buffing setup we found was a 6" diameter, medium-density cloth buffing wheel on a 3,600-rpm stationary bench grinder or buffer; but we also had success with 4" diameter wheels mounted on drill presses, powered hand drills and even a lathe. The density of the buffing wheel is important; loose

SUPPLIES LIST

BUFFING COMPOUND:

McMaster-Carr

Yellow buffing compound, 6 oz.

<https://bit.ly/3h2CuyB>

Lee Valley

Green honing compound, 6oz.

<https://bit.ly/3awHUj5>

BUFFING WHEEL:

Amazon

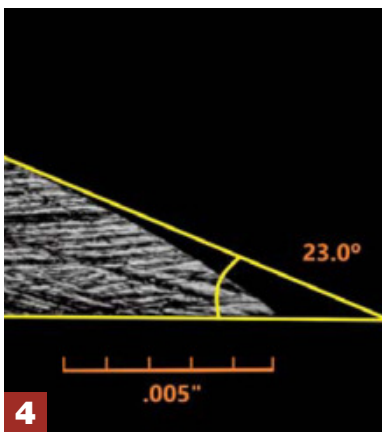
Swpeet 2 ct., 6" Polishing Buffing Wheels Kit

<https://amzn.to/2Q0zqHz>

wheels aren't stiff enough and felt wheels are too hard. The ideal wheel for optimum stiffness is at least 1/2" thick and stitched to within 1/2" to 3/4" of the circumference.

The buffing/honing compounds we used included several commonly available white, green or yellow varieties, although any alumina buffing compound under 5 microns should work well (see above).

The basic Unicorn buffing technique is to present the tip of the tool to the buffing wheel at roughly a 45° angle. As the tool edge is pushed into the wheel for several seconds, the wheel deforms around the edge.



4

4 Since the Unicorn buffing step increases the effective angle at the cutting edge, you can start the process with a lower primary bevel, making chopping and paring noticeably easier.



5

5 Whichever buffing method you use, the edge should be presented at approximately 45° to the wheel, with the rotation moving away from you.

The shape of this deformation seems ideal for establishing the desired profile at the tool tip. You will want to experiment to find the pressure and timing that works best for your particular tools and buffing gear.

As an alternative to buffing, one of our team members produced acceptable results by rocking the tip of the chisel while pulling it across a fine sharpening stone and following up with a few rocking strokes on a leather strop charged with honing compound. Whichever technique you use, if you've done it right you will see a thin, bright band of reflected light along the very tip of the chisel.

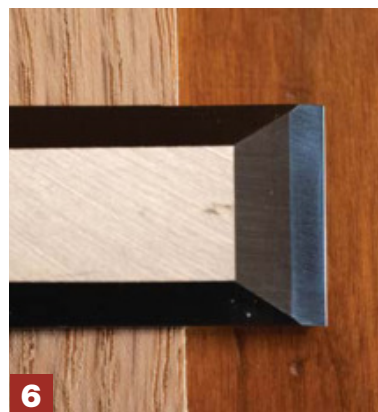
Once you've learned the Unicorn technique, you may never again return to the tedium of sharpening your edge tools on traditional stones. The difference in sharpness

is immediately noticeable and the edge life is dramatically improved by the addition of this tiny convex bevel – of all of this from a process that takes only seconds and is much easier and less expensive than sharpening with traditional stones. Not all Unicorns are too good to be true. **PW**

David Weaver is an amateur woodworker and tool marker in Pittsburgh, PA. His much more detailed article on Unicorning appears at: <https://woodcentral.com/articles>.

Winston Chang is an amateur woodworker in Minneapolis, MN. Visit his website for more photos and details: <https://chisel-test.netlify.app/>

Bill Tindal builds modern and Period furniture in eastern Tennessee.



6

6 A properly buffed Unicorn edge is evidenced by a thin polished line at the very tip of the chisel. This chisel is sharpened to 20° and the medium gray area behind the Unicorn edge is a 23° secondary bevel.

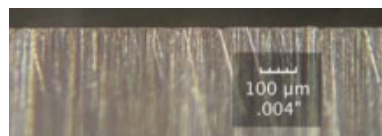
THE PROOF IS IN THE POUNDING

We could detect how much sharper a Unicorned edge is by comparing photomicrographs and subjectively evaluating paring performance and plane shavings, but how much tougher is it than a traditionally sharpened edge? We conducted some real world trials, including repeatedly chopping 1/16" slices off the end of a 3/4" thick strip of soft maple with a chisel and mallet, to simulate chopping dovetail waste.

For our tests, we chose an inexpensive Buck Bros. chisel from the big box store and a premium Lee Valley PM-V11 chisel. We tested them with both traditional and Unicorn sharpening methods. Both chisels were first sharpened to a 30° bevel using a honing guide and finished on a 12,000 grit Shapton stone. In both chisels, we found that the Unicorn edge treatment provided a remarkable improvement in edge durability. We concluded that the convex profile not only strengthens the tip but also it aids the wedging action to reduce the stress that can damage the edge, especially in hard use.

For a more detailed discussion and more photos, visit Winston Chang's website: <https://chisel-test.netlify.app/>

BUCK BROS. CHISEL: BEFORE TESTING

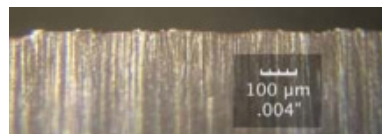


Traditional Edge. Sharpened to 12,000-grit.

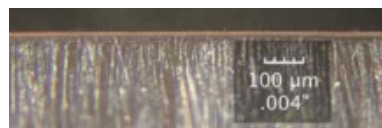


Unicorn Edge. Sharpened to 1,000 grit, buffed.

AFTER CHOPPING 20 SLICES OF MAPLE

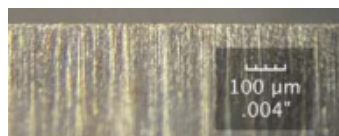


Traditional Edge. Serious edge damage

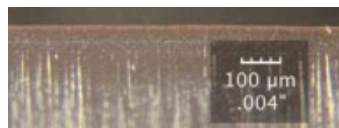


Unicorn Edge. Virtually no edge damage

VERITAS PM-V11 CHISEL: BEFORE TESTING

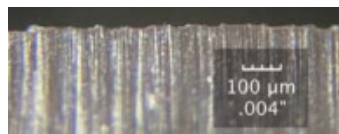


Traditional Edge. Sharpened to 12,000-grit.



Unicorn Edge. Sharpened to 1,000 grit, buffed.

AFTER CHOPPING 20 SLICES OF MAPLE



Traditional Edge. Modern edge damage



Unicorn Edge. Virtually no edge damage

Tips for Marking and Measuring

11 methods to make layout easier.

By Tom Caspar

1 Write With Chalk

Lay out “cut here” marks on rough lumber with chalk. Chalk marks are easy to read, even on the scruffiest surface. Unlike ink, pencil or crayon, chalk marks are easy to erase if you change your mind. (I often do!) Just scrub the marks with a stiff wire or bristle brush.



2 Circle Template

Setting a compass to draw small arcs or circles can be a royal pain, so I cheat and use a plastic template instead. You can generally find one at an office supply store.



3 Shop-made Straightedge

Every shop should have a long wooden straightedge. It's got a hundred and one uses, but I primarily use mine for checking jointed and sawn edges, and for guiding my router.

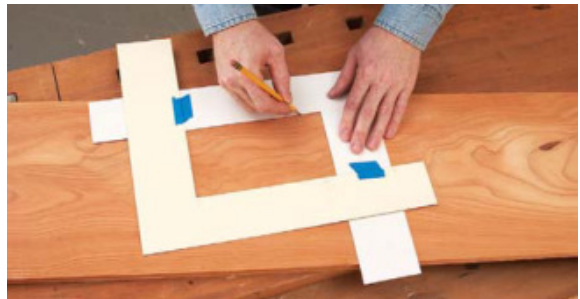
This 4' one is pretty fancy, I admit, but there are good reasons for going to the extra trouble. Most of it is pine, so it's lightweight. It's

laminated from strips, so it will stay straight for years. I added a hardwood strip to the bottom to prevent dings. The holes are hanging this beautiful tool to my wall.



4 Frame Your Wood

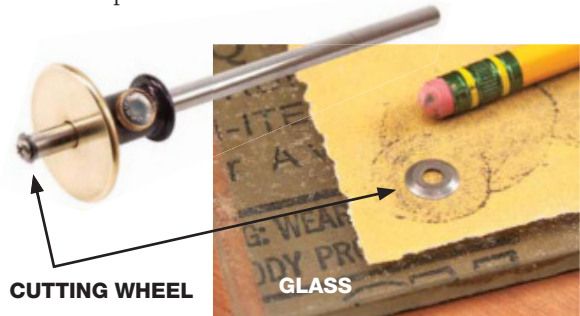
When I lay out door panels, drawer fronts or other highly visible parts, I want to see what they'll look like before I cut. I make a window from two L-shaped pieces of cardboard taped together to find the perfect grain pattern. It's easy to re-adjust for different sized pieces.



5 Make Crisper Gauge Lines

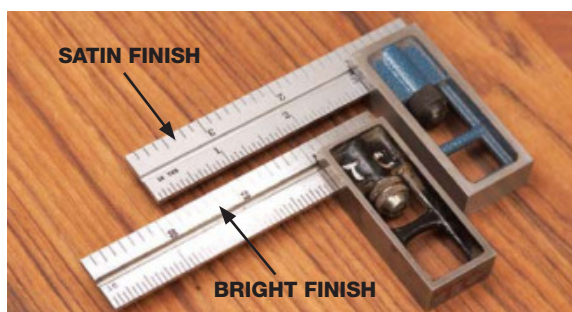
I love a wheel-type marking gauge for laying out tenons and dovetails. Its round cutting wheel must be super-sharp to make fine lines across the grain. Sharpening this tiny object looks nearly impossible, but it's really quite easy.

First, unscrew the cutter from the gauge. Place a piece of 320-grit or finer sandpaper on a flat surface, such as 1/4" thick glass. Place the cutter on the sandpaper, flat side down, and push it around in circles. This is hard to do with your finger, but it's a cinch when you use the eraser end of a pencil. Don't mess with the cutter's bevel side. Install the cutter in the gauge and make a line across the grain. It should be as crisp as one made by a razor-sharp knife or chisel.



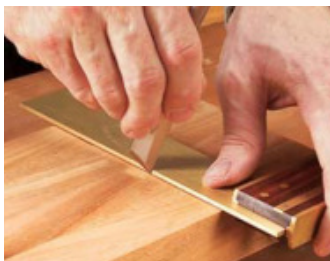
6 Satin Rules are Easier to Read

If you're thinking about buying a precision rule or square, check its luster first. Tools with a satin or matte finish are much easier to read under all light conditions, especially their teeny-tiny $\frac{1}{64}$ " divisions. Glare is a big problem with brightly-finished rules. The light must be just right to easily read them.



7 Mark With a Chisel

A sharp chisel makes an excellent marking knife because it has a single bevel. Double-beveled knives have to be held just so in order for one bevel to snug up against a square. A chisel has to be handled the right way, though. Pull the chisel towards you, with the handle leaning away. If the handle leans toward you, you'll get a ragged line.



8 Bent-Stick Arcs

Bending a thin stick is a quick way to lay out an arc. Trouble is, takes two hands to bend the stick. How are you going to draw a line around it? The answer is two thin sticks, taped together at the ends. (My sticks are $\frac{1}{8}$ " thick and $\frac{3}{4}$ " wide.) Place a spacer of any length between the sticks at their centerpoints. Now your hands are free to draw the arc. Adjust the space's length to make arcs of different curvature. Shifting the spacer off the centerpoints creates asymmetrical arcs.



9 Use a Pen on Dark Wood

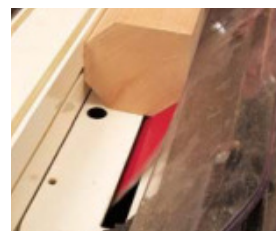
Use a blue ballpoint pen to mark dark woods, such as walnut. Its ink is far easier to read than a pencil line.

10 No-Math Saw Setup

So, you've got a big square hunk of wood that you want to turn on the lathe. You figure sawing off the corners first will save a lot of work. How do you correctly position the saw's fence?

It's simple. Unplug the saw and tilt the blade 45° . On a left-tilt saw, move the fence well to the right, away from the blade. On a right-tilt saw, remove the fence and put it on the left side of the blade.

Next, lean the blank against the blade. Move the fence to touch the blank's opposite corner (left). Plug in the saw, place the blank flat on the table and rip each corner (right).



11 Flatten Your Marking Gauge

A marking gauge is a very precise tool to lay out mortises. To work well, the tool's head must be flat. The brass wear strips on many new gauges are proud of the wood (presumably because the wood has dried and shrunk since the tool was manufactured), and should be leveled.

To do the leveling, I use a $\frac{1}{4}$ " glass lapping plate and sandpaper affixed with a spray adhesive. This gauge needs a lot of work, as you can see from the shiny high spots, so I started with 150-grit paper and continued up to 320-grit.



Anika Gandhi

DIY Furniture for Her Kids

Interview by Collin Knoff



How did you get started woodworking? Who were your mentors?

I got started with woodworking about 8 years ago when I was looking for fun toddler furniture for my 18-month-old. The online trail quickly led me down the rabbit hole of discovering that with a few tools, I could probably make them myself. Prior to that I had zero exposure to woodworking/DIY and had barely even touched a power drill. Once I built the first piece, I was hooked.

I am self-taught—learning from the generous online bloggers and YouTubers—many of whom are now friends too, by asking questions, and in general, researching and soaking up all the details and information. If I had to pick a mentor, I'd consider it to be Ana White because it was her projects and plans that helped me learn during the early years.

What do you think is your best or favorite work?

My recent favorite is the A-frame desk I built for my daughter. It was a simple design with clean lines but is quite an eye-catcher. I have to give a shoutout to my angled leg coffee table as well. It was a nice challenge figuring out all those bevels and angles but the end result is totally worth it!

What kind of work do you do the most?

Most of my work is centered around making woodworking approachable to everyone—especially beginners. I focus on simple techniques and basic tools and try to keep my projects easy to build while at the same time making sure there is an element of unexpectedness to it.

What's your best hands-on tip or woodworking technique?

I would say it is to sketch out the project properly before you get started. Paper and pen work to sketch it out but software like Sketchup is easy to learn and use. You can have all the cuts and joints mapped out, filter out all the joints that aren't possible. It

will also give you an idea about the sequence to build it in. It will save a lot of time, material, and headaches.

Any shout-outs? Recommend anyone to follow? Who inspires you?

Lately, I have been inspired by Rachel Metz (@rachel_metz). She has an amazing vision for all her projects and I love how she brings them to life. Another one of my favorites is The Awesome Orange (@theawesomeorange). Sadie always adds an absolutely amazing personality to every project! **PW**

.....
See more of Anika Gandhi's work at www.anikasdiylife.com, YouTube channel Anika's DIY Life, or on Instagram @anikasdiylife.

“Don't be afraid to make mistakes.

Start small and learn new skills with every project.
It's all about learning from mistakes and evolving.

Ask questions.

There are many generous woodworkers in the online community who are willing to help you learn and figure it out.

Ultimately it is all about patience, practice, and persistence.”

— Anika Gandhi



PHOTOS BY ANIKA GANDHI

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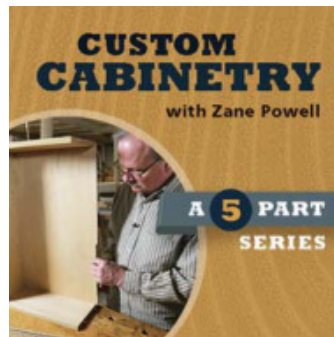


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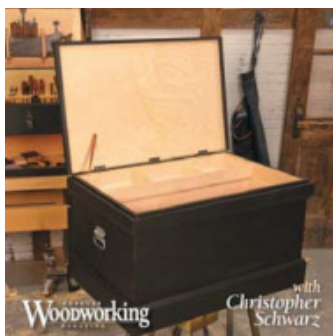
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Baboucarr Faal

Charity Builds for The Gambia

Interview by Collin Knoff

How did you get started woodworking?

As someone who studied engineering, my 9-5 isn't remotely close to working with my hands or creating. Woodworking has given me that outlet to pursue my desire to create. I truly enjoy designing and planning projects, especially things I have never attempted. Maybe it's the thrill of the unknown or the satisfaction of figuring it out.

So, when my daughter was born she needed a dresser so I decided I was going to build one. I looked around the internet to see if it is something I could tackle on my own. By that time I had already accumulated a few tools from remodeling my house so I found the confidence to build using a plan from Ana-White.com. During that time period, I also founded an organization called Together for Gambia (TFG) with a mission of tackling poverty in my birth country of Gambia. So I thought, what better way to marry the two passions of mine than to use woodworking as a means of fundrais-

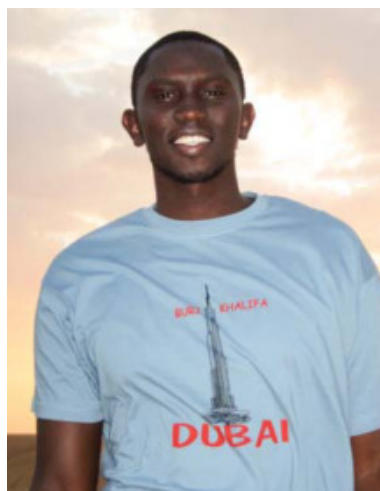
ing for TFG by donating proceeds of my builds! Charity Builds was born!

Who were your mentors?

I don't really have mentors, but I had Ana White plans to give me the confidence and understanding that much of woodworking is strategically taking big pieces and cutting them into little pieces and then putting them back together. I know I'm oversimplifying it but, it just clicked. Oh and YouTube! A lot of credit goes to the woodworking community online!

What do you think is your best or favorite work?

The most meaningful piece to date is the dresser I made for my daughter, for obvious reasons. The kids are using it to this day. I recently swapped out the old runners and it's still kicking. Another piece that I made that stands out is an epoxy and birds eye maple coffee table I donated to a charity event honoring the minister of justice of The Gambia for his awesome work regarding the genocide against the Rohingya in Myanmar.

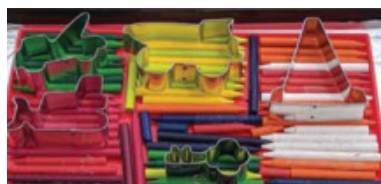


What kind of work do you do the most?

As far as my best work, it's a tossup between a Mid Century Desk and a Hallway Bench I just completed. With every day I spend in my shop, woodworking is becoming a true passion of mine, and every passing year my skills are growing and my ambitions are bigger. I find myself drawn to building modern furniture.

What's your best hands-on tip or woodworking technique?

Be inspired because the details matter! More of a design/aesthetics tip than a technique is to be a "sponge." When it comes to design and building, I've come to realize that there are a myriad of ways to achieve comparable results. There



PHOTOS BY BABOUCARR FAAL



are also many styles that are great in their own right. What I've found successful so far is being able to see different styles and implementation methods, and adapting a design or build to take a little here and a little there to get to a final product. You end up going in circles a bit but the end product will be well-composed.

Any shout-outs? Recommend anyone to follow? Who inspires you?

Wow, I think it would be wrong to name names in the woodworking community because the community has been really great to me. I will shout out the small but growing number of people of color in the woodworking space. With the current environment, it's important

we highlight the amazing strides being made, so shout out to the woodworking community.

As for inspiration, I have to go with Scott Harrison, founder of Charity Water. His journey of parlaying his skills as a former club promoter to one of the leading voices in water and sanitation around the globe is epic. Club promoter and philanthropy appear to be at opposite ends of the spectrum but he realized that there is a skill of galvanizing, a skill of marketing, and a skill of design that crosses over to a world where you rely on coaxing the support and goodness of people. (Learn more about Charity Water by visiting charitywater.org.)

This is the reason why I wanted to use my furniture to share my journey

into philanthropy. Every owner of a Charity Builds piece will know that their commissioned build contributed to creating a livelihood project for someone they will never meet thousands of miles away. **PW**

See more of Baboucarr's work at charitybuilds.com or on Instagram @charitybuilds.

TOGETHER FOR GAMBIA

This non-profit organization is focused on improving the well being and giving back to the people of The Gambia. Today, nearly half of the population in The Gambia are living below the poverty line and many more struggle to have a good meal a day. We are devoted to fighting poverty particularly food poverty because hunger demoralizes the vibrant spirits of the people of The Gambia. Every human being deserves the dignity of a decent meal each day. Our goal is to serve as a bridge to give the fortunate an opportunity to lend a hand to those who are less fortunate.

For more about TOG, visit togetherforgambia.com, on their Facebook page Together for Gambia, or on Instagram @together4gambia.

TOGETHER FOR GAMBIA

"Dare to be different and just do it!"

While you're at it, you will make mistakes because of lack of knowledge, tools, and for no reason other than the fact that we are human and even the pros screw up. What you learn during those mistakes (if you don't know, ask) will hone your skills.

Find your niche and build things you like to build

You will get to a point where trendy builds don't excite you or the crowd, so following the crowd is not the way to go to keep that passion burning. - Baboucarr Faal

Wipe-On/Rub-Off Finishing

This two-step process guarantees flawless results.

By Kevin Southwick

No brush marks, drips, runs, bubbles, hairs, dust or orange peel—and beautiful results every time. For most furniture projects, it doesn't get easier than using a wipe-on/rub-off finishing process. This two-step method eliminates all the usual problems because rubbing off all of the finish that isn't absorbed by the wood leaves no wet film in which the problems can occur. The clear and important difference between this method and all others (including wiping on and leaving a film build) is the rubbing off. No attempt is made to build a film on the surface of the wood. Rubbing off the source of all the problems is the big trick.

The wipe-on/rub-off method avoids time spent cleaning brushes and it dramatically reduces or eliminates sanding between coats. There are some limitations, though. This method can produce only a satin to semi-gloss finish and the finish itself won't be waterproof (see "One Drawback," on page 62).

Finishes suitable or formulated for wiping on and rubbing off are widely available. They offer convenience, but you can also easily concoct your own wipe-on/rub-off finish. Thinning out an oil-based brushing varnish is one way. In fact, just about any finish can be wiped on and rubbed off, as long as it doesn't dry too fast. Shellac, lacquer and most waterborne finishes fall into this fast-drying category; they get sticky before you can rub them off.

Choosing the right material(s) for your wipe-on/rub-off finish can be confusing. Tung oil and linseed oil are natural vegetable oils that have been in use for ages. Paste wax is another classic wipe-on/rub-off finish. Then there are products like gel varnish, "Danish oil" and wiping



varnish, as well as custom blends you can mix up yourself. So how do you choose the right formula?

Here are three simple considerations.

- The type of resin (or solids). The materials that remain and harden to seal the wood after the solvents evaporate are important because they have varying degrees of amber tone, working time and durability. For example, boiled linseed oil has more amber color than pure tung oil, while pure tung oil has a longer working time. Oil-based varnishes come in a variety of tones, will dry much faster and are more durable in every way than both tung oil and linseed oil.
- The thickness of the material. Thicker or more concentrated material is more effective at sealing the wood, but may be harder to apply and remove. For example, brushing varnish straight from the can is hard to rub off because it's thick and goopy. Rubbing off is much easier if the varnish is

thinned out.

- Working time and drying time. Faster drying time means less working time, so it's important to choose a material that has enough working time to allow you to get it all rubbed off before it gets sticky. You'll need a long working time if you plan to rub in the finish with wet/dry sandpaper. Products with a lot of oils have the longest working time—they require a day or longer to properly cure. Gel varnish, on the other hand, dries so fast you can apply two coats in one day.

One favorite wipe-on/rub-off finish is a combination of equal parts boiled linseed oil, 100% pure tung oil, and polyurethane varnish. This blend balances the color and drying time of the two oils and is more durable due to the addition of the polyurethane. You can thin the blend to make it easier to smear around and remove. Use a gloss poly varnish to slightly increase the sheen. Master furniture maker

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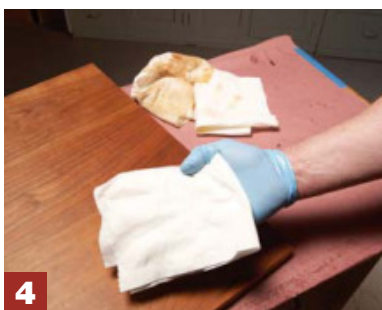
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1 Make your own high-quality wipe-on/rub-off finish by blending 100% pure tung oil, boiled linseed oil and polyurethane varnish.

2 Finish-sand to a finer grit than for a film-building finish. Wipe-on/rub-off finish shows scratches that a built-up finish hides.

3 Rub in the wet finish to create a silky-smooth surface.

4 Keep wiping until your last rag comes up clean.

■ ONE DRAWBACK — IT'S NOT WATERPROOF

It's virtually impossible to achieve a 100% waterproof seal with a wipe-on/rub-off finish alone. Fortunately, there's an easy fix: Just apply a thin coat of waterproof material on top. That's all it takes to build a consistent, durable film. In fact, if you want a waterproof coating that retains the low sheen and very "close to the wood" look of an oil finish, the wipe-on/rub-off method is an excellent and thorough way to prep the wood's surface.

After three rounds of wipe-on/rub-off finish on the entire piece, brush one coat of thinned-

out (25-50%) oil-based brushing varnish on the top or any other horizontal surface that a glass or cup might find. Don't bother to brush vertical surfaces—there is really no need to make them waterproof.

If brushing creates a dust or brush-mark problem, you don't have to wait until the next day to deal with it. Simply wash off the messed-up varnish film with paint thinner or mineral spirits and try again. Most oil-based products can be removed this way for at least an hour or more.

Sam Maloof used this type of finish extensively. He even developed his own branded version (available at www.rockler.com). To make a "Danish oil" type material, simply thin any oil-based brushing varnish 50% or more with mineral spirits or paint thinner.

Tips for applying

- When you prep the bare wood for a wipe-on/rub-off finish, sand to a higher grit than you would for a film building finish (220-400 grit vs. 150 grit). The quality of the sheen of a wipe-on/rub-off finish is determined by the smoothness or texture of the wood surface itself. The 150 grit scratches that would be filled by the layers of a film-building finish will leave the wipe-on/rub-off surface looking dull and lifeless.
- If you choose a finishing material that has enough working time you can create a surface that looks spectacular and feels super-smooth by rubbing in the first application of finish. Use a soft block and fine wet/dry sandpaper (600-1000 grit) to create a slurry that helps to seal the wood. You can feel the difference immediately by running your finger across the still-wet wood. This step needs to be done only once, unless you miss a spot. Following the application, two more

wipe-on/rub-off coats are usually enough to create a nice finish; more coats will slightly increase the sheen. Allow each coat to dry before applying another coat.

- The best way to determine if you have removed all of the finish that hasn't been absorbed by the wood is to continue rubbing with clean rags until they remain completely dry, showing no signs of excess finish. Good rags for this process are soft and absorbent; knit cotton and Scott shop towels are good choices. Note: The finish-soaked rags are likely to spontaneously combust, so dispose them immediately and properly.
- Only two problems commonly occur with wipe-on/rub-off finishes and they are both easily avoided. The first occurs when wet finish that isn't absorbed by the wood is left on the surface to create streaks, rag marks, and sticky or shiny spots. The second occurs as slower-drying oils or excess solvents bleed back out of the pores of wood and leave little rings. If they're still wet, these rings can be removed by rubbing. But if they are allowed to hardened on the surface, they must be sanded off. **PW**

Kevin Southwick is a wood-finishing specialist and furniture restorer/conservator in Minneapolis.

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That One Project

By Marci Crestani

I was about to make a desk

for my son John's bedroom and in my mind it was a beautiful thing: simple, sleek and with elegant proportions. Drawings and a cut list were completed. Walnut boards were purchased and transported to Cerritos College in Norwalk, California where I am a community-ed student on Sundays. There should have been a plan of procedure, but since I had made a vaguely similar desk two years earlier, I thought I could safely wing it. That was my first unwitting mistake.

Like you, I begin my projects with hope. Of course we expect problems along the way because that is the nature of woodworking, but at this point we're not certain what those problems will be. Yet not long after I started working on this desk, I got into a nasty feud with it that lasted all the way through its glue-up. Forget about hope. I began to loathe this desk.

As irritating as it is to admit, I made an astonishing number of stupid mistakes throughout this project. While wood-fixing is a valuable skill to learn, sometimes what is really needed is the courage to start all over again. But nope, that did not look like progress to me. I do believe my increasingly bad attitude caused me to make even more mistakes.

My aggravation was compounded by the fact that the walnut almost seemed hell-bent on thwarting me. Sometimes it behaved like a precocious exotic with inter-locking grain and other times it was as randy as cheap pine from a big-box store. Who knew that my dear old friend walnut could be so bratty?



Another setback was that I was swayed by a colleague's insistence that his way of attaching the web frames to the legs (using the hand-held drill and dowels) was much faster and as structurally sound as my way of embedding them within the legs using a router.

Now I am an infinitely better woodworker because of what others have taught me but this time I was seduced by the word "faster." Of all the tools and machines in the shop, the hand-held drill will always be the one to crush me. I am often affectionately mocked for this.

So in pursuit of speed, I threw self-knowledge to the wind, made jigs for the drill-and-dowels method, tried it and made a mess of it. Given my desire to simply be done with the desk, I had not been in an optimal mood for refining my drill skills. This led to more wood-fixing again before returning to my original strategy of using a router.

After the remaining (and inordinate) amount of time it takes to wrap up all the other never-ending

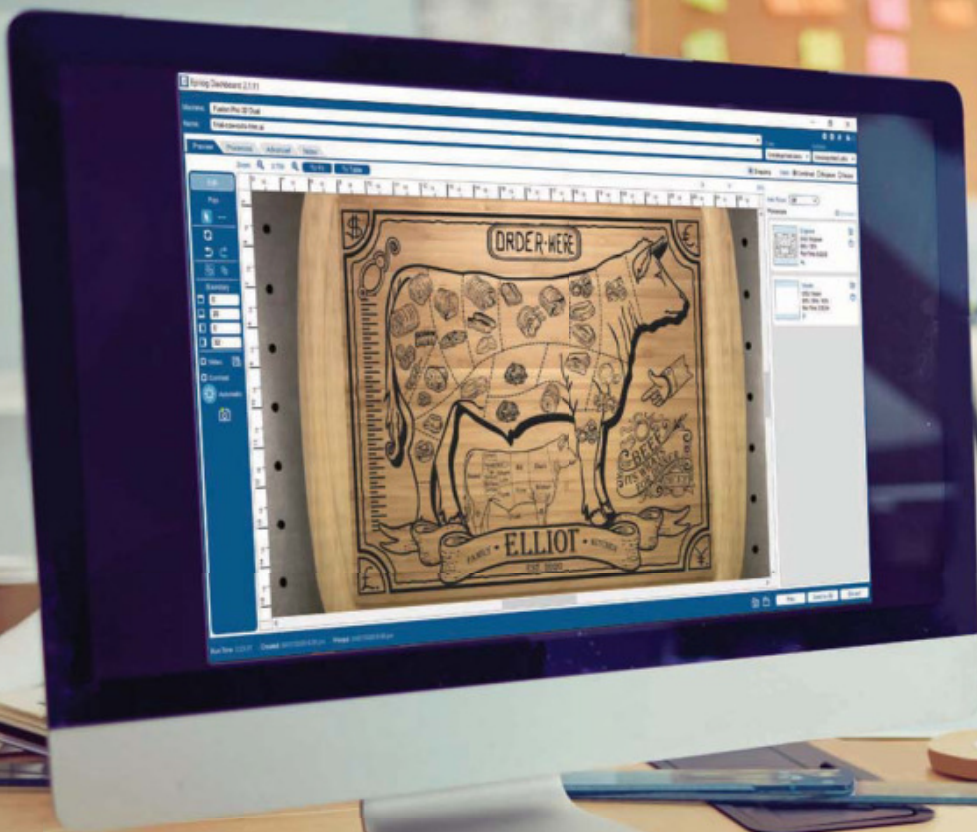
details of a project, the desk was finally moved into its spot in John's room. "I hated working on this thing," I admitted to my son Nick.

"So this is that one project for you, huh?," he said.

Ahhhh, yes. In talking to my friends, it seems in every woodworker's life there is always That One Project that you begin so optimistically but then it turns into a beast, wearing down your spirit. Instead of being invigorated by the challenges that are thrown your way, you just feel like the whole process is one long slog.

When civilians come over to my house now and admire the desk, I am smart enough not to complain about the misery I went through making it because it sounds like I am fishing for compliments. Honestly, though, even I can't see what made me so crazy. It looks great. **PW**

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*Marci Crestani is the co-author with Brian Miller of **The Art of Coloring Wood**.*



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