POPULAR
Woodworking
MAGAZINE
DECEMBER 2026 | #292

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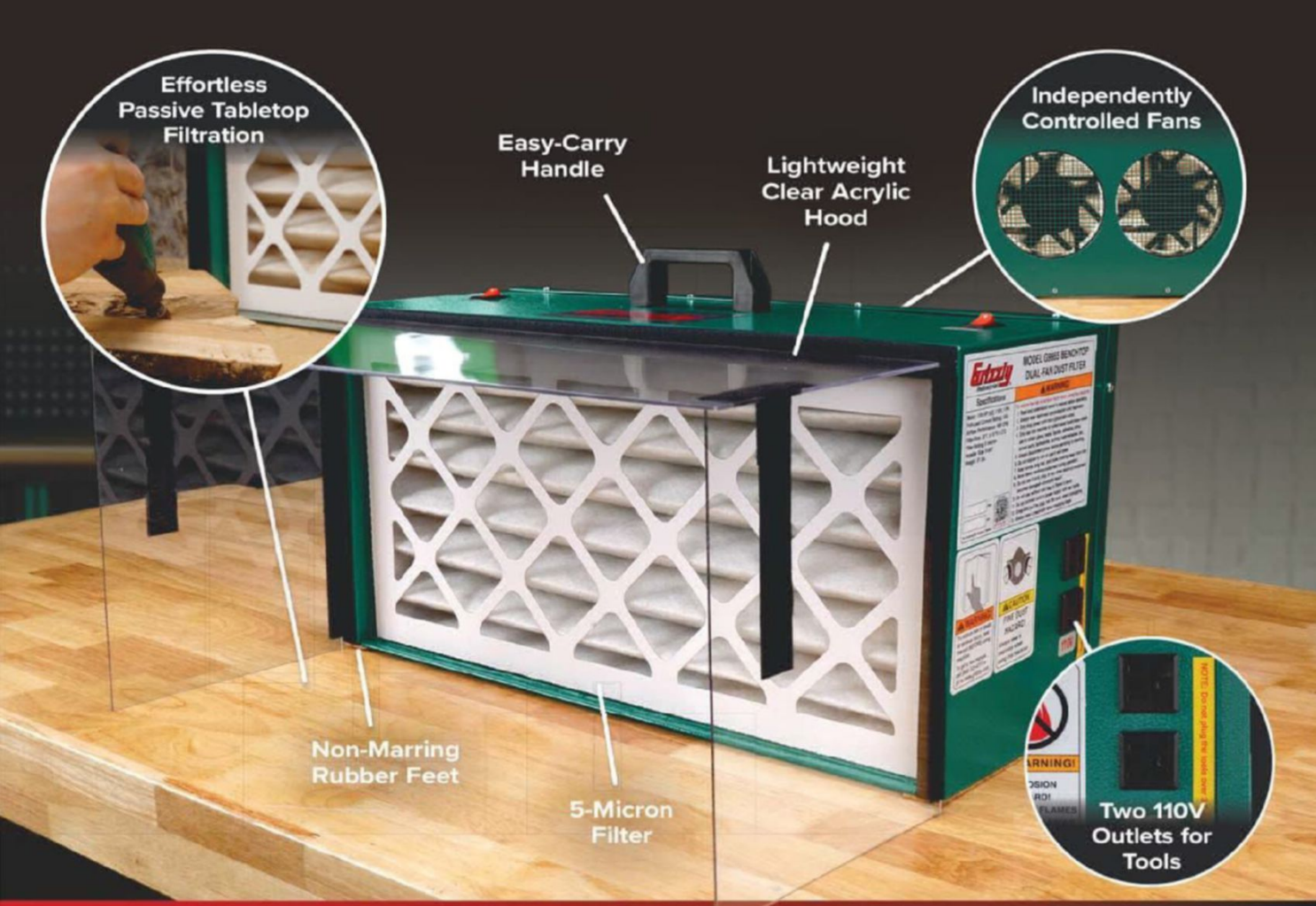

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FROM THE EDITOR

Working with Purpose

By Logan Wittmer

Looking at my everyday life, almost everyone I know, interact with, and surround myself with came into my life through woodworking, one way or another. I consider myself pretty fortunate to call many of them friends.

One of those friends was a gentleman named Howard. I met Howard several years ago in a roundabout way. Long story short, I ended up buying my Powermatic planer from him, and somewhere along the way, we became friends. Howard made his living as a farmer, and if you know farmers, you know they're handy. He had a nice, big shop filled with several sweet vintage machines and tools that we'd inevitably end up talking about every time I stopped by. He'd show me whatever project he was working on, or we'd kick around an idea or problem he was trying to solve. I always enjoyed those visits. What was supposed to be a quick stop often turned into a much longer visit than intended. Kindred spirits tend to do that.

Howard passed away earlier this year. When I attended his service—along with what seemed like half of Iowa, which says a lot about Howard as a person—I couldn't help but smile. Throughout the service, people talked about Howard's woodworking projects and his reputation as a craftsman. His family had also put together a large display of his work, and mixed in among it were several issues of this magazine. Talk about hitting close to home.

As good a craftsman as Howard was, I think his reputation for making things was surpassed only by his love of giving those things away. When I visited him just a few weeks before his passing, one of his daughters stopped by the shop looking for a gift for a coworker. That wasn't a problem. Howard had cabinets full of finished projects, ready to be given to whoever happened to need one.

In hindsight, I wish I'd done a couple of things differently. First, I wish I'd cherished those visits a little more. Second, I wish I'd taken the opportunity to give Howard a little more grief. Whenever I walked into his shop, I'd ask, "What are you up to?" Howard's usual response was something along the lines of, "Just messing around."

I've since realized that was a load of crap. Howard was always in his shop working with a purpose. He might not have known exactly where a project was headed when he started, or even who would end up with it, but eventually its purpose revealed itself. More often than not, that purpose was making something for someone else.

It's an ethos I'm trying to carry into my own work: Work with purpose. Work for yourself. But most importantly, work for others. During my last visit with Howard, he showed me the breadboard pictured above. I don't remember the whole story behind it, but someone needed a bread-cutting board that would contain the crumbs, and this was Howard's solution. I told him I liked the design enough that I ought to steal it and put it in the magazine.

I think Howard got a kick out of that. He told me he thought I could do much better, but that he'd like to see it. Later in this issue, you'll find my interpretation of Howard's breadboard. I made a few changes and put my own spin on it, as woodworkers tend to do. But for what it was worth, the effort that went into it, and especially the intention behind it, I think Howard won this round. Howard—I still have those five gallons of strawberry wine you gave me. I'm waiting for the right time to open it. Cheers, my friend.

Logan Wittmer

ABOUT THE AUTHORS

SHEA ALEXANDER: *Studio Stool – pg. 36*

Shea Alexander is a Shenandoah Valley–based furniture maker whose path blends traditional craftsmanship, global experience, and a commitment to community. Raised in a working-class family that valued excellence and neighborly care, he began apprenticing with a cabinetmaker in high school and learning woodturning from seasoned craftsmen. Shea founded Alexander Brothers in 2018 and left his career in 2021 to build furniture full-time alongside his brothers. Today, he creates custom pieces rooted in Appalachian heritage and aims to inspire others to find and pass on beauty through meaningful work.

RALPH BAGNALL: *Book Excerpt– pg. 50 & Game Table– pg. 52*

Residing in Florida with his wife, Ralph is a long-time professional woodworker, author of several woodworking books, and frequently travels around the country giving presentations on various aspects of woodworking. His most recent book, "A Beginner's Guide to CNC Machining in Wood," is available from Fox Chapel Publishing and on Amazon. Apart from his professional career in woodworking, Ralph is also the founder of the website WoodAcademy.com. Its focus is to help woodworkers build their skills through instructional plans, articles, and video.

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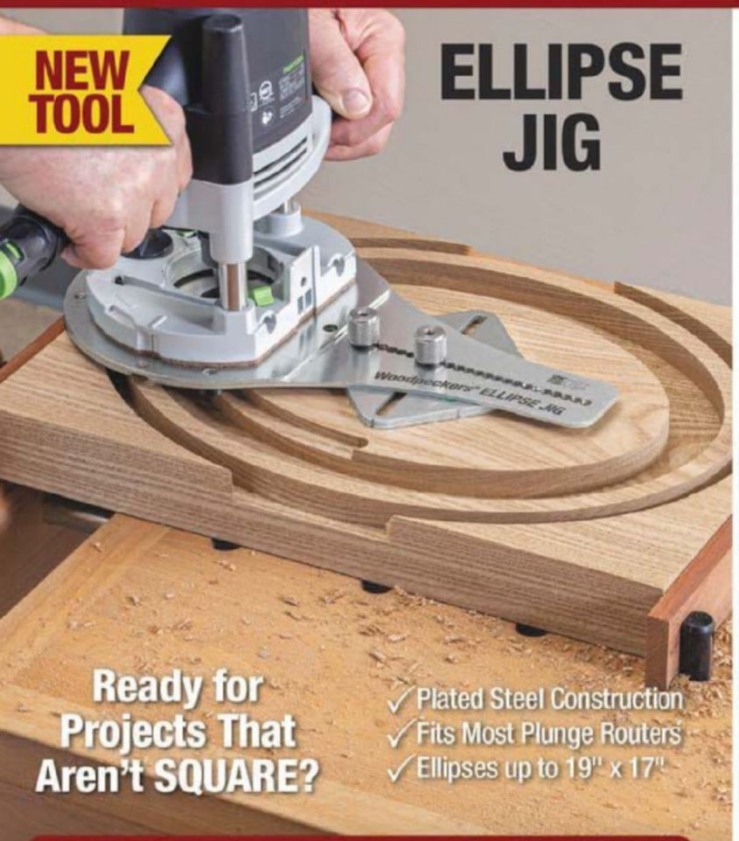

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NEW TOOLS

Woodpeckers In-Dexable Thin Rip Guide

Sometimes, a simple jig can turn a headache of a task into a straightforward one. Take the breadboard on page 24, for example. Ripping the thin strips for the cutting surface can be a delicate operation, especially when it requires positioning the rip fence close to the blade. A thin-ripping jig, like the In-Dexable Rip Guide from *Woodpeckers*, makes the job easier (and safer) by allowing you to rip your "good" pieces on the left side of the blade.

IN-DEXABLE THIN RIP GUIDE
Woodpeckers
Woodpeck.com
Price: $49.99

Woodpeckers has offered a thin-rip guide for years. I've used one of their machined versions for quite a while, and it's a lovely tool. This updated version is made from injection-molded polycarbonate and features an interlocking rack that provides positive positioning in 1/32″ increments. Once you get the setting close, dialing in the exact width is quick and easy.

To use it, simply slide your stock over until it contacts the ball bearing, then position your rip fence against the opposite edge of the workpiece. Make the cut, move the fence over, and repeat. Because the jig establishes the width of the offcut rather than the fence, you can quickly produce a pile of consistently sized thin strips without ever crowding the blade with your fence. —*Greg Kopp*

Kreg Edge Loose Tenon Joiner

If there's a tool that's been on the horizon for years, this is it. With patents on the *Festool* Domino expiring, *Kreg Tool* has introduced the first real competition the Domino has seen: the *Kreg* Edge.

EDGE LOOSE TENON JOINER
Kreg Tool
KregTool.com
Price: $499.99 ($449.99 Tool Only)

It's nearly impossible to look at the Edge without comparing it to the Domino—it's the benchmark for this type of tool. At its core, a loose-tenon joiner uses a rotating, oscillating bit to cut a mortise in the workpiece. And really, if the tool cuts accurate, repeatable mortises, everything else is secondary. After several months of using the Edge, I can confidently say it does just that. The mortises are accurate, consistent, and tight-fitting. With that established, let's look at what sets the Edge apart.

One of the most noticeable differences is the fence. The Edge has a large, wide fence with a substantial handle that gives you plenty of control over the tool. It's easy to position and hold squarely against a workpiece, something I think will be especially helpful for woodworkers new to loose-tenon joinery.

The fence height adjustment and quick stop are marked in imperial measurements, which is a welcome touch for those of us who don't want to do metric conversions in the shop. Mortise width can also be adjusted through three settings, allowing you to choose between a tight-fitting mortise and one with a little extra wiggle room for easier assembly.

Dust collection is also very good. With a hose connected, the Edge manages chips well. Without dust collection, slots in the bottom of the baseplate allow chips to fall through, so while you can use the tool without a hose, it's considerably cleaner and more accurate with one attached.

For now, the Edge is available only as a cordless tool, running on *Kreg's* Blue Ion battery platform. There have been requests for a corded version, so time will tell whether Kreg adds one to the lineup.
— *Logan Wittmer*

WORKSHOP TIPS

Set-Up Gauges Save Time

Setting the bit on a router table by trial and error requires a lot of time-con-suming futzing around. Simplify your life by making gauges for the setups you use most often. Go ahead and mill one more piece to save as a gauge every time you make door joints or moldings. Then label it and hang it on a nail nearby. Next time you need the same setup, all you have to do is grab the gauge, adjust the fence and raise the bit height to fit the gauge. A test cut is still a good idea, but you should be darn close.

NEW TOOLS

SawStop Professional Bandsaw

For twenty years now, SawStop has effectively been known for one type of product: table saws. That's about to change though. At IWF Atlanta I was able to get the very first look at the SawStop Professional Band Saw, a brand new product that seems to be just the tip of the iceberg to a new product avalanche.

I'll get to the safety tech in moment, but first I want to look at the other elements of the saw. The goal from the start was to make an excellent bandsaw that was also incredibly safe. Neither goal would be sacrificed on the way. The part that the SawStop engineers were most excited about was the integrated light in the blade guide. Positioned directly about the blade, it clearly lights the point of cut, no gooseneck to position or get in the way. It's a deceptively simple problem that actually took a lot of work. They needed to run the wiring in a way that would allow of lifetime of moving the guard up and down without hitting the blade or interfering with the blade change process. They pulled it off though.

Blade changes are another area SawStop looked at while engineering the saw. During they research process, they found that users were avoiding changing the blades due to the time and complexity involved. Instead they would use the incorrect blade for a task, or use a dull blade to avoid the hassle. So they set out to make cut the process down from 15-20 minutes to just five minutes. This was achieved with common sense (an easy to remove throat plate that extends to the front of the table) some fancy engineering work (the fence guide bar actuates a pin that keeps the table flat. Lifting it up to change the blade recesses the pin witout any tools required). The blade guides were also engineered to allow quick adjustment, saving time getting everything calibrated after the blade is swapped.

On the safety front, there are two big safety features built into the saw. First, SawStop added Sensic Active Safety tech, the now-offical name for flesh-sensing technology. In the bandsaw, just below the table, there is a cartridge that will cut and capture the blade when the system senses contact. I was able to witness a demonstration on a hot dog, and the effect is instantanious, causing effectively zero damage. The other big safety feature is an electric brake when the saw shuts off. Instead of holding a foot brake or waiting for the blade to coast to a hault, it will come to a complete stop in under two seconds (the item that looks like a foot brake in the photo is part of the moveable base).

The SawStop Professional Bandsaw will be on sale to the public in mid 2027, and pricing will be announced closer to the launch date.

— *Collin Knoff*

Professional Bandsaw
SawStop
SawStop.com
Price: TBA

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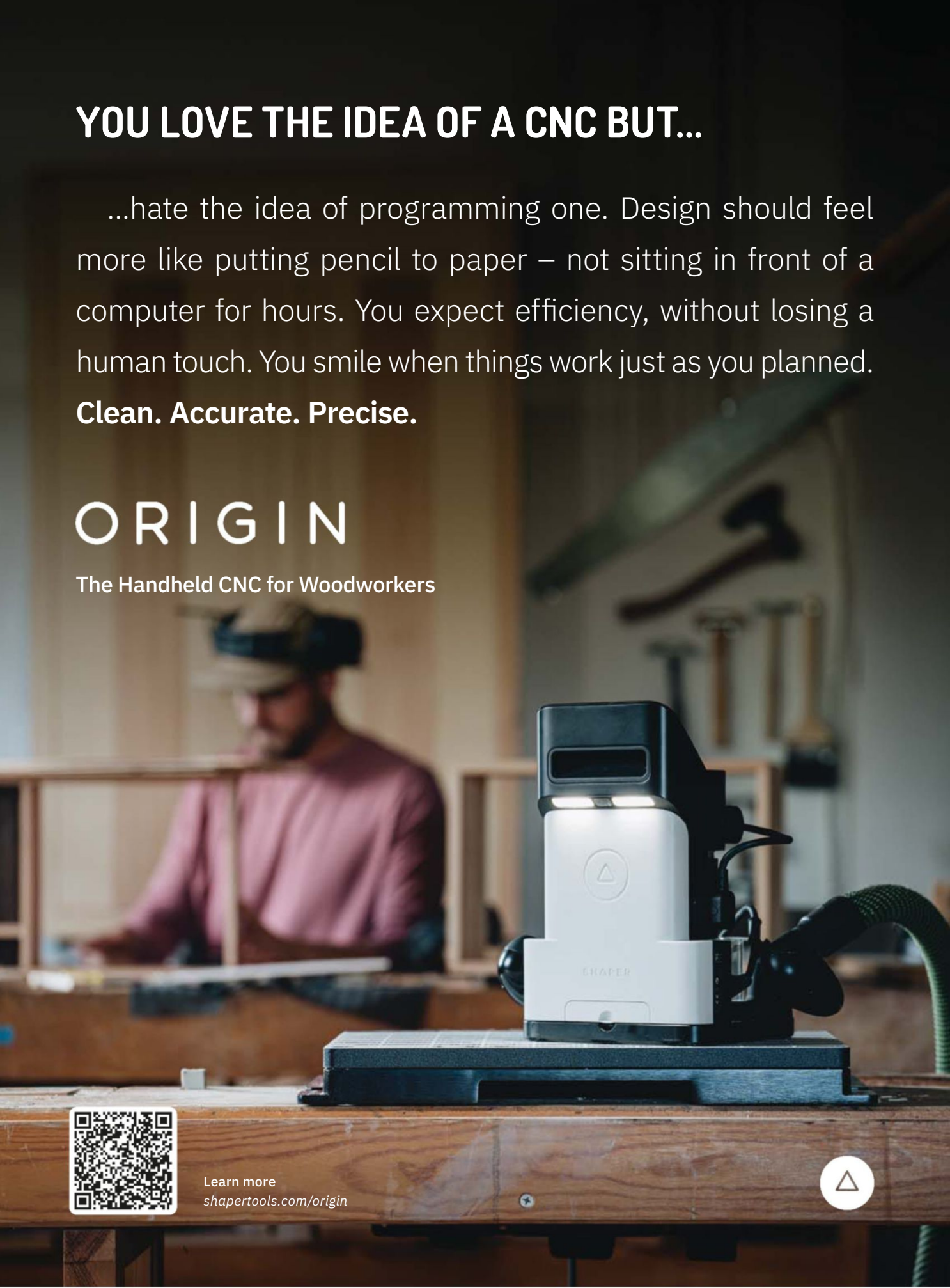

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NEW TOOLS

Nano Truer by Nano Hone

Ask a dozen woodworkers how to sharpen a tool and you'll get twenty different answers—and it's probably 50/50 whether any of them can actually produce a sharp edge. That explains the seemingly endless number of sharpening systems and companies that have come and gone over the years. One company that seems to be carving out its own niche, and building a loyal following, is *Nano Hone*.

Based in Massachusetts, *Nano Hone* specializes in sharpening equipment, from stones and plates to edge-maintenance tools. One of its products I picked up recently is the Nano Truer, shown here.

NANO TRUER
Nano Hone
NanoHone.com
Price: $48.00

The Nano Truer is an edge-maintenance tool—think of it as a modern take on a strop. Its diamond-impregnated resin surface has two sides. The Medium side is fairly aggressive, though not so much that you're reshaping an edge, while the Fine side leaves behind a polished surface.

Where I've found the Nano Truer particularly handy is for maintaining tools that can be awkward to touch up on a traditional sharpening stone. Marking knives, carving tools, and even some turning tools are all good candidates. A few quick passes are often all it takes to bring an edge back without going through a full sharpening routine. The resin surface can be used either dry or with a lubricant—*Nano Hone* recommends camellia oil. When you're finished, simply rinse the Truer, dry it, and hang close at hand for when an edge needs a touch-up. —*Logan Wittmer*

Higonokami Marking Knife

I love a product with a backstory, and this marking knife from Temple Tool Co. certainly has one. The Higonokami is a traditional Japanese folding knife that became a popular everyday carry in Japan. Its history dates to the late 1800s, when swordsmiths, facing a declining market for their craft, turned their skills toward producing more utilitarian blades.

The design itself is simple. There's no locking mechanism or backspring. Instead, it's a friction folder, with an extended tang that gives you leverage to open the blade and helps keep it open while in use.

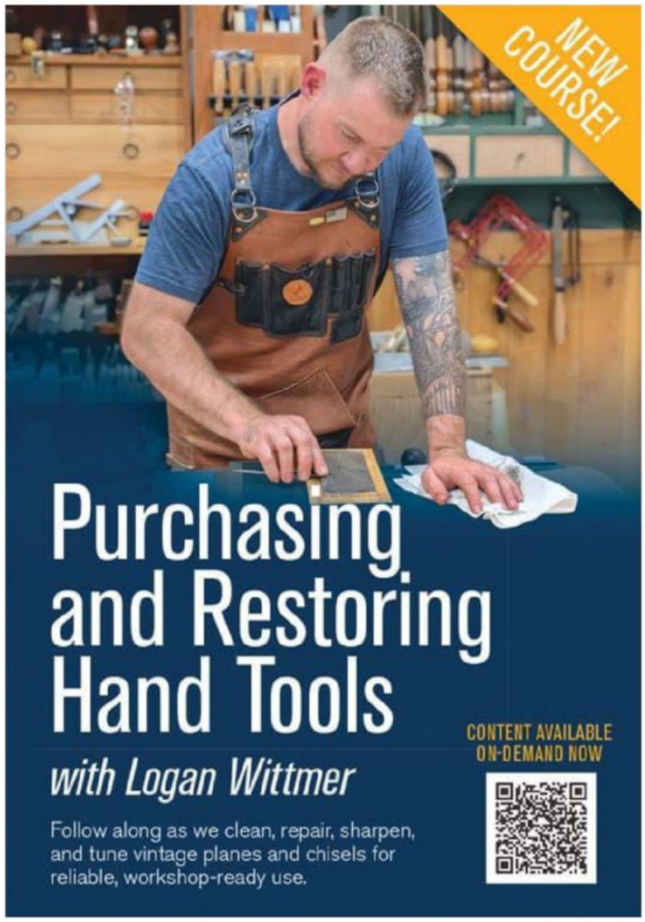
Higonokami knives can be fitted with several blade styles. This version from Temple Tool Co. features a kiridashi blade—a traditional single-bevel Japanese blade that happens to make an excellent marking knife. The flat back registers nicely against a square or straightedge, while the bevel produces a crisp, precise line.

But calling this simply a marking knife misses the point. The Higonokami is really a great all-around shop knife. Whether you're laying out joinery, opening boxes, or doing a little light carving, it's a tool that quickly earns a spot in your shop apron.

HIGONOKAMI
Temple Tool Co
TempleToolCo.com
Price: $72.50

The blade is made from Blue Paper Steel (Aogami), a high-carbon steel known for taking and holding a keen edge. Folded, the knife measures about 4″ long, with a blade around 3″ in total length. Temple Tool Co. offers the Higonokami with both a traditional utility-style blade and the kiridashi shown here.

Made in Japan, it's a simple, useful knife with history behind it—and at a reasonable price. — *Logan Wittmer*



Woodpeckers Joint Bridge

Sometimes, the handiest tool in the shop isn't one you use every day. Take these Joint Bridges from *Woodpeckers*. They're simple enough—a U-shaped block designed to bridge a joint during a panel glue-up. Place one over each end of the joint and apply a clamp across them, and they squeeze the boards into alignment as you tighten everything down. The result is a flatter glue-up and a whole lot less cleanup once the glue cures.

Sure, I've seen shop-made wooden versions of these. Heck, I've used wood blocks and cauls to accomplish the same thing. But these little plastic versions work remarkably well, and when they're stored on one of *Woodpeckers*' Bridge Rack-Its, they're always organized and ready to grab when it's time for a glue-up. The notches in the bridge keep them from getting stuck to the wet glue like wood versions.

Joint Bridges are available in packs of 12 or 24, and the Rack-It is an inexpensive $15 add-on that makes storing them especially convenient. — *Greg Kopp*

JOINT BRIDGE
Woodpeckers
Woodpeck.com
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Kreg® Dock & Go™ Trim Router Table
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DEC 11
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Grizzly G0710 1HP Wall-Hanging Dust Collector
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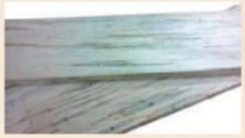

DEC 19
Grizzly G0803Z 9" Benchtop Bandsaw
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DEC 20
Blue Spruce Toolworks NEW Steel & Maple Woodworkers Infill Mallet
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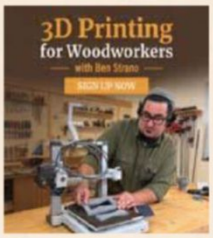

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WORKSHOP TIPS

Mobile Saw Base with Bonus Storage

My tools need to be mobile because I share my shop with two cars. This mobile tablesaw base offers portability and abundant storage. The base provides enclosed storage, including a full-extension drawer for small items. I made a hinged outfeed table and added a couple of wood blocks under the outer corners to provide a place for drilling the leg sockets. The legs are 1-in.-metal electrical conduit with leveling feet inserted in one end. When the outfeed table is folded down, I store the legs in a couple of spring clips on the side of the base. The locking casters keep everything stationary when sawing. I used MDF because it's cheaper than plywood and the extra weight seems to help the case absorb vibrations better. I found all the materials at my local home center for about $100. - Thomas Moore

Belt Sander/Grinder

Getting one tool to do the work of two is a great space saver. I've discovered that my belt sander and a 120-grit belt make an excellent substitute for a grinder. I use a Black & Decker Workmate to hold my sander, but any set-up that holds the sander firmly to a benchtop will work. Grinding produces a shower of sparks, so be sure to remove the dust bag to avoid any fire hazard. The tool rest is made from two pieces of scrap wood. Cut the bottom piece to clamp to the benchtop. The top piece is bevel-cut at whatever angle the particular tool requires. The tops are interchange-able, so I keep a 25-degree and a 30-degree handy. It's easy to make specialized tops with V-grooves for holding carving or turning gouges.
-Joseph Spilwell

Credit Card Glue Spreader

Bad credit? No credit? Take that useless card and notch the edges with pinking shears. Instant glue spreader!
-Robert Tupper

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WORKSHOP TIPS

Adjust Your Clamps

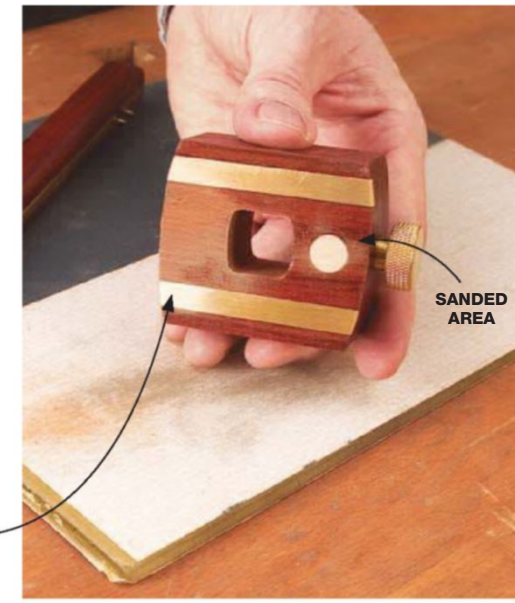
Make sure your clamps are ready before you glue. Unscrew the handles until you have a maximum amount of thread available. Sticky clamps can slow you down. Slide the sliding head on a small bar clamp or the tail stop on a pipe clamp to make sure it moves freely.

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 1/4-in. 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.



Seal Porous End Grain with Epoxy

Outdoor furniture will last longer if the legs can't wick up moisture from the ground. A thin-bodied epoxy soaks in the best. Hobby stores usually carry it in several formulations. Just pick the runniest one. It'll probably have an extended open time. If you get too exuberant and drip epoxy over the edges, clean it off with acetone before it cures.

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Fool-Proof Shop-Made Finish

This shop-made, hard wax finish is as beautiful as it is easy-to apply and make.

By Logan Wittmer

PHOTOS BY LOGAN WITTMER

Over the last decade, hard-wax oil finishes have become popular. *Rubio Monocoat, Osmo,* and *Tried & True* are a few of the popular brands. They work great, but they can also be pricey. Luckily, a hard-wax oil is a surprisingly simple finish to make in the shop, and they can work every bit as well as the off-the-shelf stuff.

At its core, a hard-wax oil consists of just a few ingredients:

- **Oil** provides deep, penetrating protection.
- **Spar urethane or varnish** adds resin for a little more protection and durability.
- **Carnauba wax and beeswax** provide surface protection, along with that smooth, silky feel.
- **Solvent** dissolves the waxes and thins the mixture to make it easy to apply.

The beautiful thing about a mixture like this is that the exact ratios aren't terribly critical. You can increase or decrease the amount of each ingredient to tailor how the finish applies, builds, and feels. I've experimented with several different blends, and the one I keep coming back to is based on a recipe published by Nick Engler from *Workshop Companion*. Nick also produced a great video that dives deep into oil-and-wax finishes—much deeper than I have room to go here. It's well worth watching.

Over the last year, this finish has become my go-to for almost everything—my workbench, turned projects, tables, you name it. It's dead simple to apply, easily repairable, and strikes a great compromise between protection, sheen, and feel. And that feel is really where a hard-wax oil shines. It leaves the wood feeling like wood rather than something encased in a layer of plastic.

One of my favorite parts is that there's essentially no downtime. Okay, technically the finish still needs to cure. But after applying and buffing it out, you can keep working on the project. If dust settles on the surface, it doesn't become permanently embedded like it might in a wet film finish. A quick buff with a rag takes care of it.

Hard Wax Oil

- .5 oz Carnauba Wax
- 2.5 oz Solvent (Mineral Spirits or Turpentine)
- 2.0 oz Beeswax
- 2.5 oz Spar Urethane or Spar Varnish
- 7.0 oz Boiled Linseed Oil

1. When mixing finish, wax, or anything with a solvent, a double boiler is necessary for safety. No open flames.

2.- 3. Add the wax and solvents, and mix them to start the wax dissolving.

The Process

Making hard-wax oil is pretty straightforward: Melt the ingredients in the recipe together, stir thoroughly, and allow the mixture to cool. However, I've picked up a few tricks that make the process much easier.

Start by getting a double boiler going. I keep a grungy old hot plate in my shop specifically for jobs like this. Put an old pan on it, add about an inch of water, and start heating it up.

While the water heats, weigh out your ingredients. I start with an empty Mason jar on my scale and tare the scale to zero. The first ingredient into the jar is the carnauba wax. I buy it in one-pound bags of flakes, which melt much easier than trying to deal with a solid brick of wax.

Next, add the solvent. Mineral spirits will work, but I prefer turpentine. Give the carnauba and solvent a quick stir to get everything mixed together, then add the beeswax. You can buy beeswax online or get it from a local beekeeper. I still have a stash left over from when I kept hives, and I find that shaving or chopping it into small pieces with a knife helps it melt considerably faster.

4. Pellets of beeswax is convenient, but if you have blocks, shred it with a knife or a chisel before it gets mixed in.

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5. Add the wax/solvent mixture into the double boiler to start heating.

6. Blend the spar urethane and linseed oil in a cup

7. After the wax is fully melted, slowly add the oil, stirring as you go.

8. Let it heat up for a few minutes to make sure it's fully incorporated. Stir it as it's heating.

9. The completed, cooled finish is thick and creamy — like pudding. Make sure to stir it up before using it in a project.

With both waxes and the solvent in the Mason jar, set the jar into the hot-water bath.

As the solvent and wax heat up, start weighing out the urethane and linseed oil. I measure both into a disposable cup and mix them together.

Meanwhile, keep an eye on the double boiler and periodically stir the wax mixture. The wax will turn cloudy or white as it heats and then slowly disappear into the solvent. Don't rush this part. Let the mixture stay in the double boiler until the waxes are completely melted.

Once the wax has disappeared, slowly stir in the urethane-and-oil mixture. Adding the cooler ingredients will drop the temperature, so I leave the Mason jar in the double boiler for another few minutes, stirring as everything comes back up to temperature and blends together. Once the mixture is completely uniform, remove the jar from the heat.

As the finish cools, it changes in color and consistency. What starts as a thin liquid eventually thickens into something closer to pudding. You can apply the finish warm or cold, but if it has been sitting for a while, give it a stir before use to make sure everything is evenly blended. That's really all there is to it. It's inexpensive, forgiving, easy to make, and even easier to use.

PW—*Logan Wittmer*

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Hard Wax Oil Application

A hard-wax oil application is almost impossible to screw up. First, the finish is brushed over the surface with a cheap chip brush. Then, a piece of *ScotchBrite* is used to buff the entire surface, driving the finish down into the fibers. After allowing the finish to soak in for 10-15 minutes, the entire surface is buffed (very vigorously) with a cloth. This helps melt the wax onto the surface and remove excess oil. (Some people suggest heading up the finish and surface with a head gun for deeper penetration — I haven't found it necessary). The result is a finish the has a warm color, satin luster, and still feels like a piece of wood.

A.- B. After mixing up the finish, brush it on the surface. Use a woven abrasive pad to really buff the finish into the surface, trying to drive it deep into the fibers.

C.- D. Buffing with a cloth will remove the excess finish, melt the wax onto the surface, and result in a great satin sheen and feel.

E. Excess finish can be stored out of sunlight (or in an all-metal can). A finish saver, such as *Bloxygen*, can prevent oxidation and make the mixed finish last longer.

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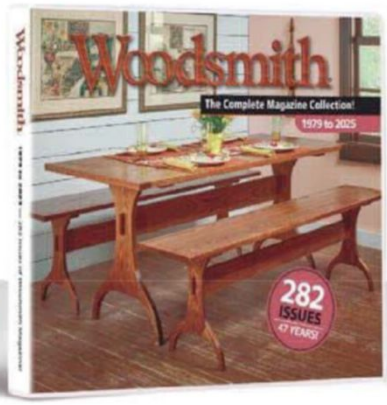

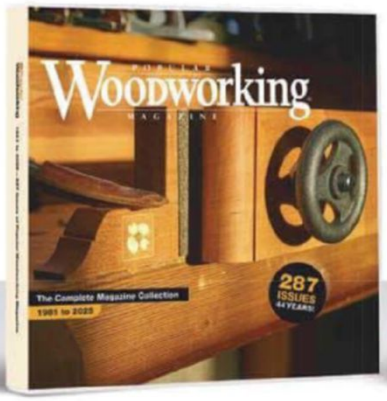

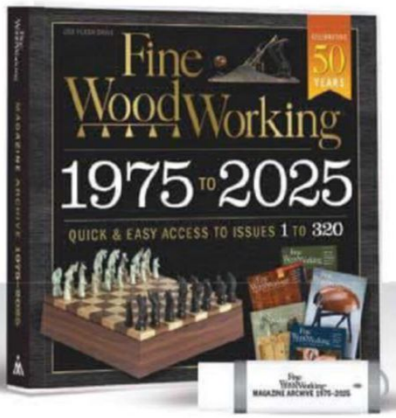

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PHOTOS BY LOGAN WITTMER

Bread Board

This bread board features a lattice work cutting surface and shop-made plywood for the crumb tray.

By Logan Wittmer

I firmly believe that, like every good super hero, every project has an origin story. As you may have read at the beginning of this magazine, I talked a little bit about my late friend Howard. The last time I had the chance to visit Howard in his shop, I noticed something sitting on his bench and I asked him about it. That project was a small bread board with a crumb tray and it intrigued me a little bit not because it was complicated or was out of the normal. What intrigued me was that this was a utilitarian item that I saw being useful. (Added to that my wife has recently decided to pick up sourdough bread making). I mentioned to Howard that at one point I would like to grab that from him and use it as the inspiration for a project for the Magazine, and he suggested that I use his as a start and make something my own. What you see here is my interpretation and my own design based on what I took from Howard and his project.

The breadboard shown here I built out of figured white oak from my friend Josh (Josh, if you're reading, thank you) and walnut. The construction techniques are similar to what Howard did but are slightly different. Let me lay the playing field quickly. The breadboard is simply a tray that has a recessed bottom to catch crumbs with a rabbet to hold a lattice work cutting surface. The lattice work surface allows the crumbs to fall through and be caught within the tray. Just because this is a small project doesn't mean that you can't practice some solid woodworking techniques and apply approaches to this project that you can to much larger ones. Lets start with the tray first.

The bottom of the tray is fairly

large, large enough that I did not want to use solid wood. Instead I opt to build the bottom out of plywood. However using this figured white oak I knew that off-the-shelf white oak just does not look the same. I decided this was a great opportunity to re-saw some veneers and make my own veneered plywood using a ⅛-inch plywood core and shop-sawn veneers. If you've never sawn veneers before, it pays off to tune up your bandsaw to get the best results possible. Check out the article we have on setting up a bandsaw for resawing on popularwoodworking.com.

For veneers like this I aim for a heavy 1⁄16". Before setting up the fence on the bandsaw, I flatten a face at the jointer and square up an edge. Then in between each pass I revisit the jointer to re-smooth out a face. That gives me one face that is completely flat and smooth, ready to be glued down, and one face that is a little rougher that can be smoothed out once the plywood is glued up. As I saw the veneers I keep them in order so that I have a recognizable grain match as I am laying them out. Once they've all been sawn, I like to clamp them between a couple of calls, just MDF in this instance, and hold them in my vise. Then I can use a hand plane to true up an edge and give me a good tight joint where the veneers meet each other.

Now the veneers can be prepped to be glued to the plywood core. I do this by laying them out in an orientation that I like and marking the faces. Now I tape the show side of the veneer. The first strip of tape goes across the veneer, holding the pieces together. I pull the tape taut so that it kind of creates a spring-like action. I tape the intersection or joint of each veneer. Flipping the sheet of taped-together veneer over, I can open up each hinge and apply a bead of yellow glue in between the veneers and then lay them flat.

Spread glue on the plywood and place it on the veneer. I align the plywood so that it follows the grain direction of the veneer so that when I trim it up it still looks like the veneers are square to the plywood core. Both sides of the veneer are glued onto the plywood and then I use painters tape just to hold everything together so stuff doesn't slide.

1. Fancy plywood starts with fancy wood. Resaw the wood of choice at the bandsaw.
2. The finished stack of veneer, in order.
3. Sandwhich the veneer between a couple of pieces of MDF and joint the edges.

Now comes the magic. I put the veneered plywood in between a couple of sheets of waxed paper and put it in a veneer press. This one is one we built on our TV show, The Wood Smith Shop, on PBS last season but you can do the same thing with a couple of sheets of MDF and a handful of clamps. You just want to make sure you get good pressure, good coverage so that the veneers adhere nicely to the plywood.

With the plywood curing we can concentrate on the tray sides. These are figured oak, as I mentioned before. After flattening them and planing them to thickness, I rip them to width at the table saw.

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4. Lay out the veneer in the pattern you want, and mark it with a pencil.

5. Use painter's tape to hold the veneer together. These first strips are stretched for a tight seam.

6. Create hinges with the tape.

7. Use your plywood core to trace with a pencil and rough the veneer down to size.

8. Open the hinges on the veneer and apply glue between the joints.

9. Now, spread glue all over the plywood core. I find a cheap chip brush works well here, you just need to keep an eye out for any rogue bristles that get stuck in the glue.

10. Apply the plywood to the veneer.

11. Wax paper keeps glue from sticking to your clamping boards.

12. Sandwich the veneer together between a couple of boards and clamps. Here, I'm using a veneer press we built last year on the Woodsmith Shop TV show.

Now I have to cut a little bit of joinery on the inside of all the parts. There's going to be a groove for the bottom and a wider rabbet where the lattice work is going to sit along the top edge. I do both of these using a ¼-inch-wide flat-top grooving blade. It works well to create the groove for the plywood as well as the rabbet by standing the edge parts on edge and running them along the fence.

Once that joinery's cut we can go ahead and tackle the mitered corners. Mitering is a finicky process and the saw has to be set up perfectly. With this in mind, I make sure that I use a high-quality (high-precision) angle gauge to set the blade at precisely 45°. This, combined with a stop block on the miter gauge or, in my case, the sliding table, ensures that the parts are cut at exactly 45° and are all the appropriate length. (Side note – You can see from the photos that this curly oak likes to burn badly. Don't judge me.)

Once the glue has cured on the veneered bottom, trim it to size and check the fit with the sides of the tray. You want the 45° miters to come together nice and tight and everything to set square. If it does, you're good to go. If it doesn't, try and re-cut the miters a little bit, or tune them up with a shooting board. The miters are glued together and clamped in place (don't forget to test fit with the bottom — which I pre-finish). I'm a big fan of these miter pinch clamps. They're sharp little spring-loaded prongs that grab into the corner and are applied using a specialty set of pliers. I bought them on line for under $20, and they're well worth it.

Once you've given the glue some time to cure, it's time to reinforce the miters. Miters are not a strong joint. The end grain soaks up glue and doesn't offer a lot of holding power. By adding splines into the corners you add a little bit of side-grain glue surface and it really helps reinforce that joint.

13. Rip the tray parts to width.

14. Each tray part needs to have a groove cut in it for the veneered plywood we made. Do this with a dado blade that matches the plywood thickness.

15. A rabbet along the top will hold the lattice panel.

16. Set the blade to 45° using an accurate gauge.

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17. Miter the ends of the ends of the tray pieces. (This white oak likes to burn. Don't judge me.)

18. Trim the plywood to final size.

19. Pre-finish the plywood so that the entire thing is covered.

20. With the finish applied, you can see why it's worth the effort to make the plywood.

21. Glue the miters.

22. Miter spring clamps are a great way to hold the joint closed.

Adding keys (the walnut splines shown in the main photo) is pretty simple. The tray is stood up on the corner at the table saw and, using a flat top grooving blade, a kerf is simply cut into each joint. I put a pair of keys here, mainly for symmetry. To hold the tray I'm using a Joinery Sled from Woodpeckers. Putting a shop-made version together for this task is simple and only takes a couple of minutes (I for one don't like single-use jigs, so a joinery sled is a bit more versatile in my shop).

The walnut keys are cut to rough size and glued into the kerf. Just make sure you get them fully seated as they do have a tendency to rock a little bit. Set that aside to dry as we work on the lattice.

The lattice work that is going to serve as the cutting surface for this breadboard is made of walnut. the entire lattice is held together simply using friction and half-lap joints. Cutting a ton of half-laps like this would be very tedious unless you plan your cuts accordingly. The first thing to do is to start with a larger blank and cut all of the laps within that.

This lattice has two layers: taller strips that are the cutting surface and lower supports that hold everything together. Let's start with the taller strips. The cutting strips are beveled on each end and have seven notches along the bottom side spaced out. To create these notches I use a data blade at the table saw and I position the blank using a stop block on my miter gauge. To make sure the notches are spaced evenly, I make one pass and then rotate the blank around and make the other cut on the opposite end. This just ensures that everything is spaced out appropriately and is going to be symmetrical at the end.

Once the notches are made in the blanks, I use a thin rip guide to rip these into ¼-inch-wide strips. There are 17 or 18 of them but I cut a handful of extra ones because if the blank is a little tight going together, they have a tendency to crack. I just keep a couple extra on hand.

The lower supports are as simple as the top ones are but with a lot more notches. These receive a ¼-inch notch to fit the top strips and those notches are spaced out every ¼ inch so you can see where I'm going with this. It's a lot of step-and-repeat, a box joint jig, and a ¼-inch grooving blade make fast work of this. You can simply step the blank down after each cut for perfectly spaced notches.

23. Once the tray is glued, stand it on its corner and cut a spline slot.

24. Glue in splines of a contrasting wood — here, I'm using walnut.

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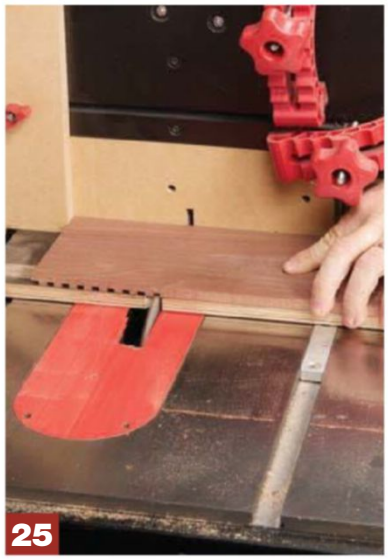
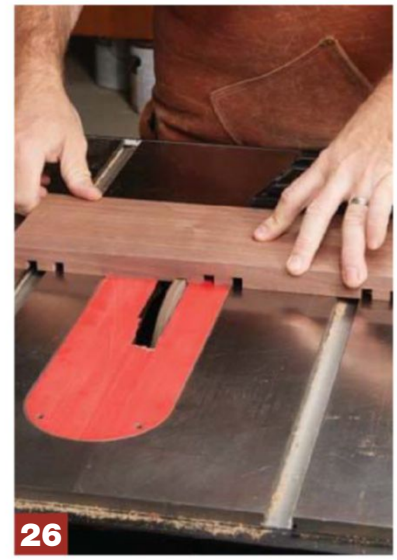
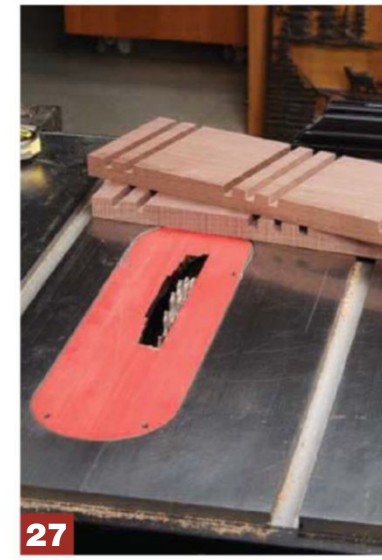






Once you have the entire blank cut, the thin rip guide is once again loaded in the saw and those seven lower support strips are ripped to size. Now it's time to assemble them. These are simply held together with friction. I make the joinery fairly snug here because I want these to go together without glue (Imagine trying to wrangle squeeze out in this lattice!). I find using a small hammer helps to tap stuff into place without damaging it.

25. The lower ribs get 1/4″ x 1/8″ deep dadoes spaced at 1/4″.

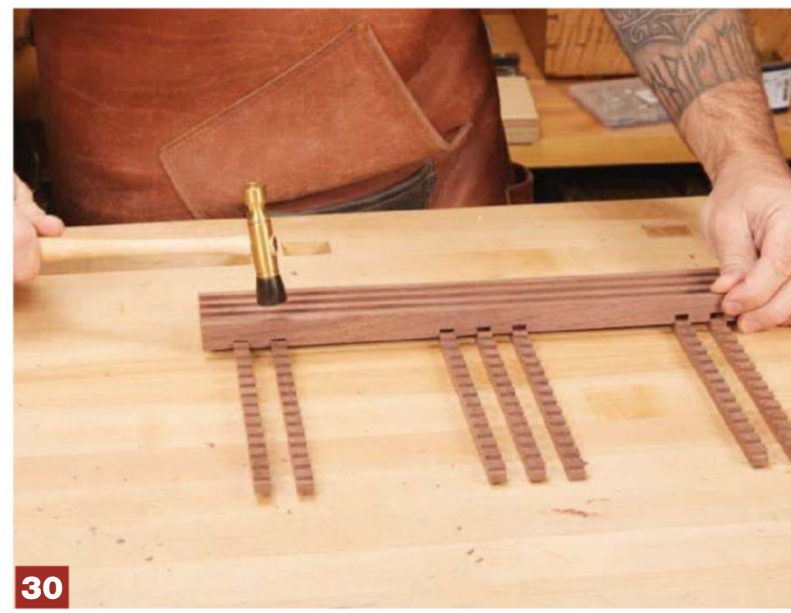
26. The top cutting strips get dadoes to receive the ribs.

27. The finished blanks for the cutting strips.

28. A thin rip guide makes cutting thin strips easy.

29. Also cut the ribs with the rip guide.

30. The lattice work can be assembled. The joints fit well enough that friction holds them in.

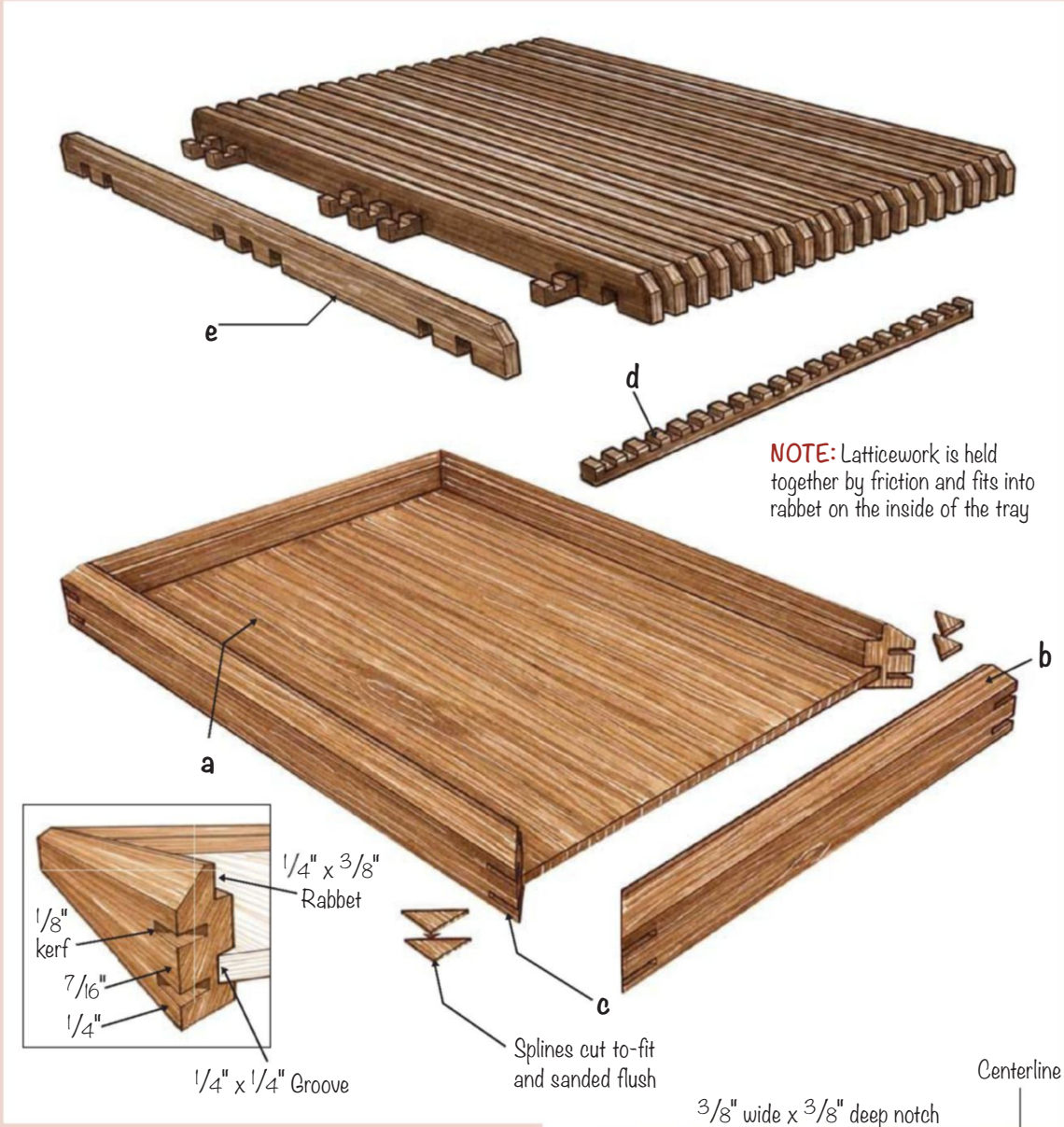


With the lattice assembled, you can cut the keys flush and sand the tray. The final task before assembly is to rout a chamfer around the top of the tray. For finish, I chose a simple shellac for the tray, and a soaking of mineral oil for the lattice. The lattice should easily drop into place within the rabbet, and can be removed to empty any crumbs that it catches. This bread board is a great little project that is useful, makes a great gift, and reminds me of my friend that was the inspiration for it. **PW** – *Logan Wittmer*

31. A quick trip around a chamfer bit relieves the top edge of the crumb tray. I also cut a shallow chamfer along the bottom edge to "lift" it off the counter.

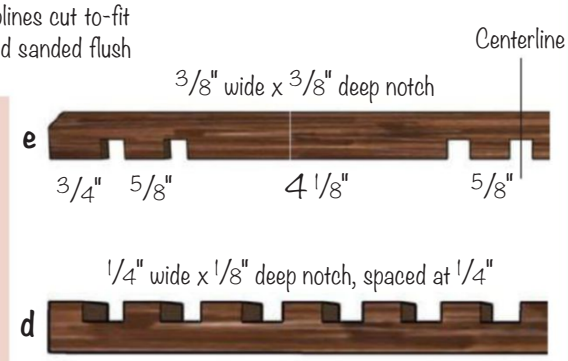
32. The cutting surface is finished with mineral oil, while the tray gets a coat of shellac.

Bread Board



Cutlist

No.	Items	Dimensions (inches) T	W	L
1	A Bottom	1/4	10	15
6	B Tray Ends	3/4	11 1/2	11
2	C Tray Sides	3/4	11 1/2	16
4	D Ribs	3/8	3/8	10
2	E Cutting Strips	1/4	3/4	15



Grizzly®

MAKERS CHALLENGE 2026

Meet our contest winners!

The Grizzly Makers Challenge invited woodworkers to share their projects and showcase personal craftsmanship and creative innovation.

1st PLACE WINNER

Trey DeWolf

Floral Table

$4,000 Grizzly gift certificate & featured article

Trey DeWolf's winning *Floral Table* features an intricate design inspired by nature and vaulted cathedral ceilings, created with traditional and hand-held woodworking tools. The project plays on the contrast of mahogany, walnut, and maple, and uses no straight lines for the ultimate challenge.

***"A detailed and complex piece made to catch the hearts of novice woodworkers and inspire creativity."* - Shabir Balolia**

RUNNER-UP

Nicole Kazmierczak

Curiosity

$2,000 Grizzly gift certificate

The unique art of intarsia comes to life in this project that highlights colors from cherry, poplar, tree of heaven, and five other wood varieties to create the fox design. No dies, stains, or paints are used on individually hand-cut and shaped pieces.

Photography by Vikrant Tunious

"This piece shows the skill of the maker in working with the natural color of materials. I appreciate the craftsmanship in fitting all the parts together so well." - Phil Huber

"The complexity of the joinery and the beauty of the patterns the intersecting curves create make this a truly stunning piece! I'd love to see the drawings and jigs that went into making this table base." **- Larissa Huff**

Superior craftsmanship shines through as Trey checks smooth grain transitions by hand.

Photography by Eric Glenn

GMC 2026 JUDGE PANEL

Shiraz Balolia
Grizzly Industrial
Founder & CEO

Shabir Balolia
Grizzly Industrial
President & COO

Logan Wittmer
Editor-in-Chief,
Popular Woodworking &
Woodsmith Shop TV Host

Phil Huber
Woodsmith Shop
TV Host

Larissa Huff
Fine Woodworking
Contributor &
Content Creator

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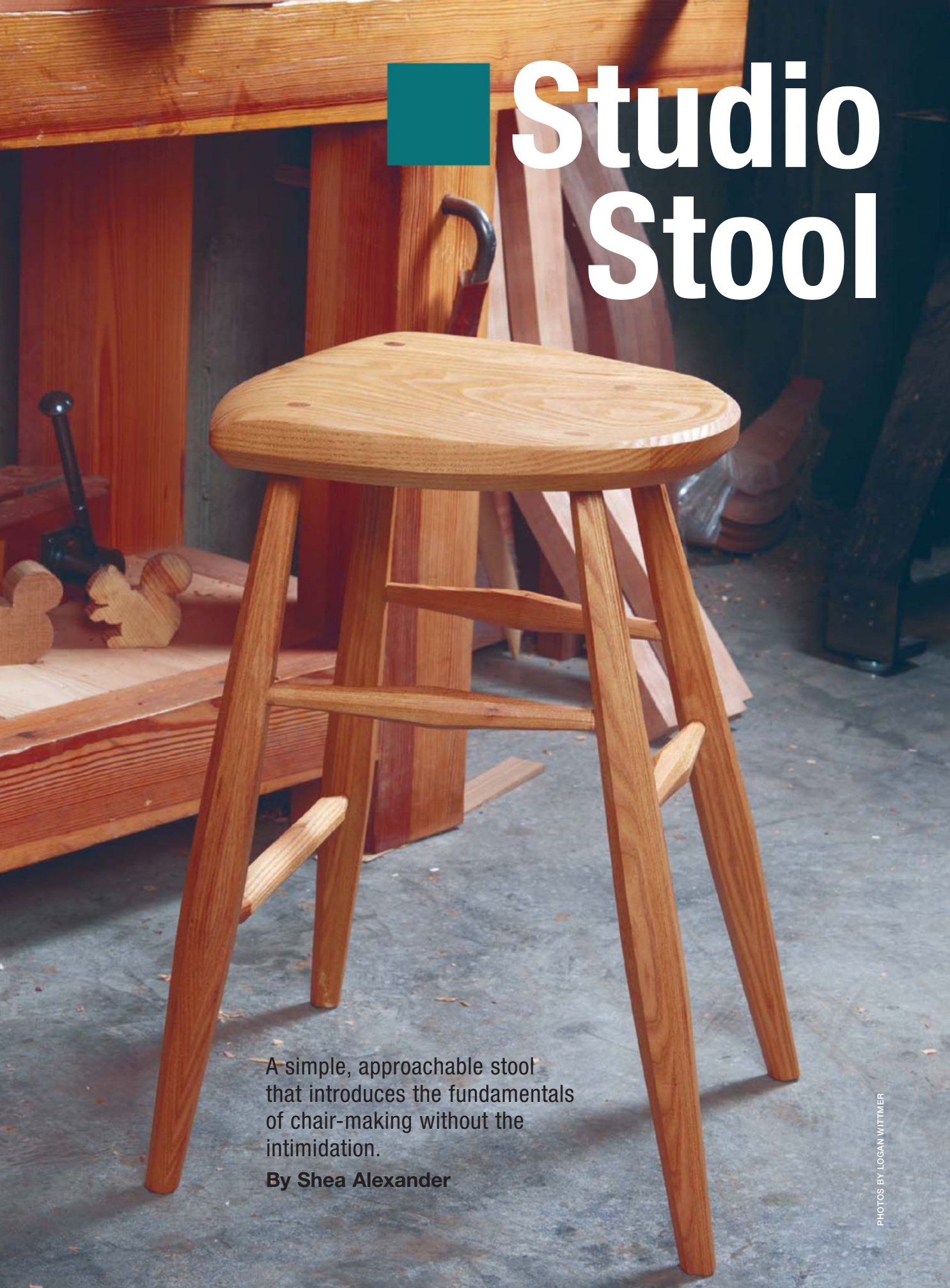


Studio Stool

A simple, approachable stool that introduces the fundamentals of chair-making without the intimidation.

By Shea Alexander

PHOTOS BY LOGAN WITTMER

My shop, like many of yours, has some Janky stools kicking around for when one is working at the bench. Whether that is a metal frame with wheels or a painted mystery wood special from the dollar store it's likely the wrong height, shape or otherwise ugly and uncomfortable. Thus, the Bench Stool, I designed it to sit at a typical woodworking bench for tasks like carving, etc., and hopefully replace some of the workshop atrocities out there. I'm a furniture maker. I can at least make my own bench stool.

If you have never built a stool or chair before this project may look intimidating and I get it, much of the woodworking world is some type of square box. But I would encourage you to not overthink it and if you feel like you need to start small you can start by building the Hearth Stool in issue #287.

Start with the Seat

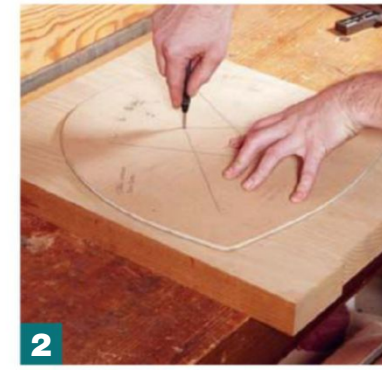
We are going to start with the seat. Ideally I look for single piece seats so the grain on the seat does not have any glue lines. However finding boards this wide isn't always possible or realistic at a typical lumberyard. If your lumberyard has live edge slabs that is a great source of single piece seats as you can cut between defects and get multiple seats from a slab. But in reality most of my chairs end up with a glued up seat.

I would not overthink species, many vernacular Windsor chairs are white pine or poplar seats which are easy to carve and keep the whole chair lighter in weight. I personally like the look of hardwood seats and typically choose a soft to medium density hardwood. Here I am using sassafras which is easy to carve and has a lovely ring porous texture. Butternut, walnut, cherry and soft maple are all great choices here.

Starting with the seat blank I first mark the bark side of the tree as the top of the stool. If I am using a glued up seat I prefer a 3pc with the middle piece of the glue up having a centered cathedral. This is the piece I reference to mark the bark side.

This is an aesthetic preference as when you carve into the growth rings from the bark side the rings make a concentric circle pattern in the seat which I find pleasing. Next flip the seat to the bottom side and using the seat template center punch your mortise locations and the sightline layout points in the middle of the seat. Then trace the outline of the seat with the template still in place.

Next layout knife or pencil lines connecting the sightline points to the mortise locations.
All of this is done on the bottom of the seat blank.



1. Pay attention to the grain direction on the seat blank. For a glue up, I center the middle planks growth rings. This yields a nice looking pattern when carving the seat.

2. Use a template to lay out the sightline marks. A center punch transfers the crucial points to the blank.

3. Use a straightedge to transfer the sightlines to the punched points. You can use a pencil, but a marking knife leaves tell-tale marks for a keen observer.

Drilling and Reaming

We are now ready to drill and ream the seat mortises. All the drilling and reaming is done from the bottom side of the seat. Notice on the template the rear legs share a drilling angle and set of sightlines and the front legs share a different drilling angle and set of sight lines. We will drill and ream the front legs as a pair and also set up and drill the rear legs as a pair. The order of this is not important as long as each pair is done together.

For this article I am going to use a drill press and tilting table for both the drilling and the reaming. Set the drill press table to the drilling angle for the pair of legs you are drilling first. I personally use a digital inclinometer but a sliding bevel or protractor are also usable. Now we will drill the pilot holes for the tapered mortises using a ⅝" diameter bit. We have set the drilling angle by setting the tilt table to the angle for the pair of legs we are drilling but we also need to observe the sightline. After setting the tilt table angle, take a large square and referencing off the bottom edge of the table closest to you draw a center line on the table that intersects with the point of the drill bit. This is your table drilling sightline. Now setting the seat blank on the table align the bit tip with the mortise location of the first mortise you are drilling and then pivot the seat blank on the table so the sightline you marked on the seat blank is aligned with the sightline on the drill press table, now drill the mortise. Repeat this for the second leg in the pair you are drilling (either front or rear legs).

Now before adjusting the table you will ream the mortises for those two legs you just drilled. For this I use a powered reamer available from Shawn Murphy. Simply swap out the ⅝" drill bit for the reamer and leave the table adjustment as is. The reamer is longer than most drill bits so you may need to lower the table to fit the seat under the reamer which is fine just doublecheck that your sightline is still intersecting the center of the reamer after you do.

Before reaming I rub some pencil lead inside the ⅝" hole on the top side of the seat. Our goal is to ream the ⅝" pilot hole to a 6 degree taper with the final mortise on the top of the seat remaining ⅝".

With your drillpress set at a low speed slowly ream our the pilot hole checking periodically your

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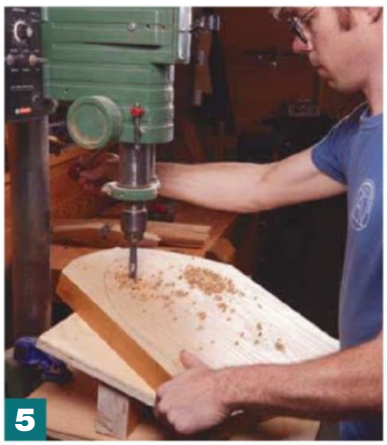

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4. I use a raised platform at the drill press to drill the holes in the sat blank for the legs. Set the angle with a digital angle gauge.

5. Drill out the holes, aligning the sightlines perfectly towards you, the operator.

6. Rub a pencil around the inside of the drilled holes. This will serve as a reference when reaming the holes — ream until the marks are gone, and you're done.

pencil mark inside the hole. Once that pencil mark is lightly reamed off you are to depth and may stop. After turning off the drill press I now lower the reamer into the mortise and set the depth stop on the drill press for the next leg to ensure the pair of legs are reamed to exactly the same depth. You will now ream the second mortise in the pair and then go back to the pilot bit and set up the table to repeat the process for the other pair.

Now all four legs are drilled and reamed to their respective drilling angle and its time to cut out the seat and carve. Now depending on your bench setup holding a seat already cut to shape while saddling (carving the dished out portion of the seat) may be difficult. If that is the case for you, wait to cut the seat to shape until after you have saddled. I use the bandsaw to cut it to shape however a jigsaw or even hand bowsaw is just fine.

7. A reamer chucked in the drill press is an easy way to ream out the seat. Once again, align the sightline towards you as the operator. You'll notice in Photo 7 that the sightline is directed towards me.

8. After reaming out the holes, you can cut the seat to shape. I do this at the bandsaw. A fairly narrow blade will make the curve easily. Stay slightly outside the lines to allow some waste to be removed during the final shaping.

Before we saddle, drill the depth holes indicated on the seat template. These holes are a depth reference in the deepest part of the seat carving to know you have carved the proper depth. If you use a bradpoint bit for these holes, set your depth stop to the very tip of the spur point. When carving you will carve until these holes are removed and not go any deeper. For a simple depth stop I drill a hole in a scrap of wood and trim it so the length of the bit that protrudes is my depth. I have a box of these scraps from years of drilling in a drawer and simply trim one to fit what I'm doing. When drilling I hold the scrap still so it does not spin out on the surface and leave a mark.

Once the depth holes are drilled go ahead and mark layout lines around the edge and bottom of the seat for the under chamfer and the front edge facet.

Now we saddle. Using a scorp, travisher or power carver shape the dish of the seat following the contour template. If you are new to seat carving and hung up on which tool is best I recommend getting a good travisher as an all around tool. Scrops and inshaves are the scrub plane of seat carving and a travisher is the jack and smoothing plane. A travisher alone may take a few extra cuts to get there but leaves the near finished surface we need before sanding or card scraping.

The front edge of the seat rolls forward and I carve this with a drawknife and smoothing plane.

Once the top side of the seat is done, put the seat in a face vise or clamped to a bench edge and cut the under chamfer using a drawknife and spokeshave.

At this stage I scrape or sand the entire seat to prep it for assembly. The underside and edge profiles I finish sand and the top I take to 100grit only as there will be a few tool marks to remove after we trim the leg wedges off after assembly.

9. A block over a drill bit makes a great way to drill depth holes as guides for saddling.

10. Mark some lay out lines around the edges of the seat.

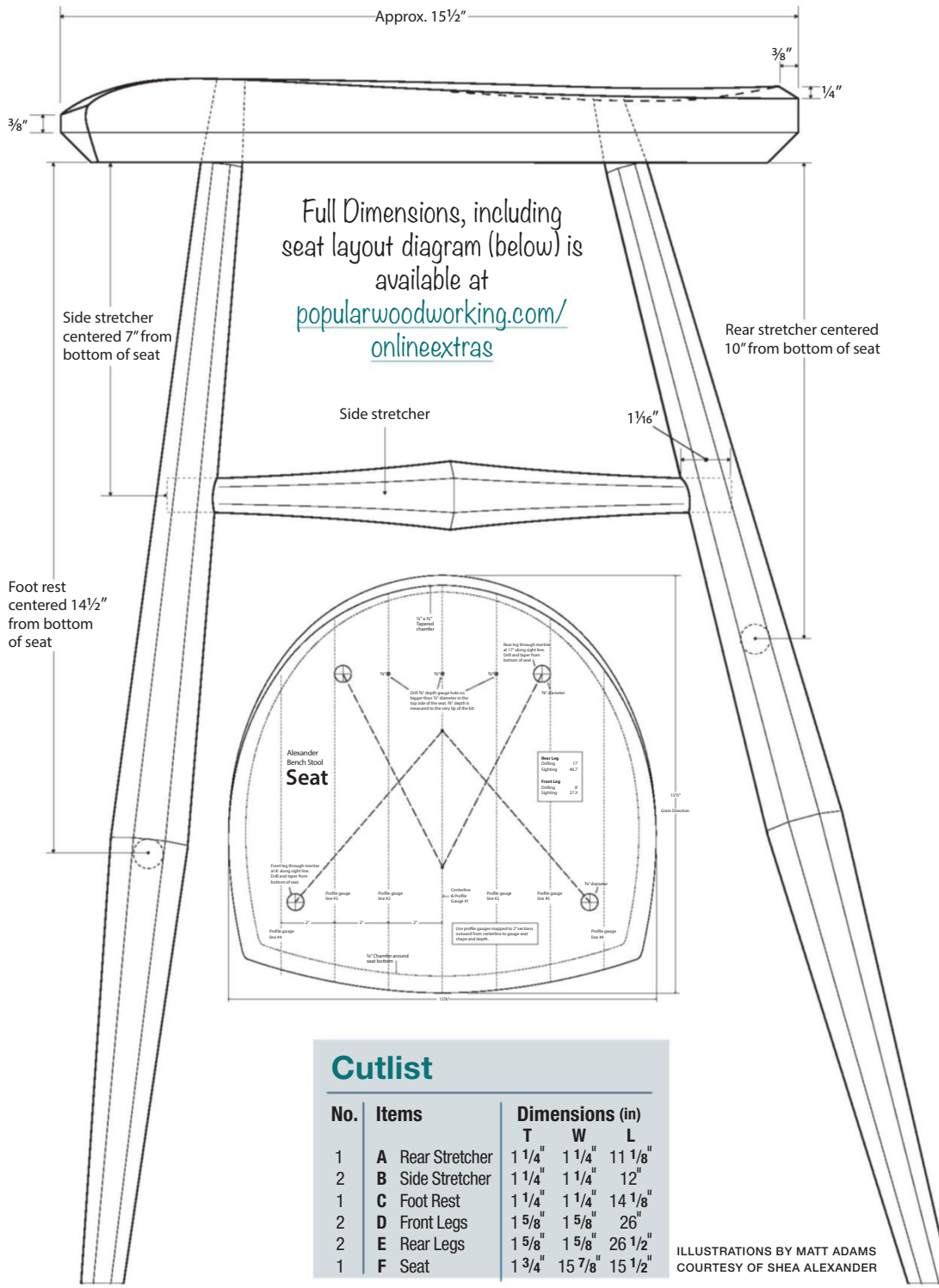
11. Start to hog away the waste in the seat pan. You can use any number of tools — a scorp and travisher are traditional, but if you want (or need) to power carve it, you may.

12. Use a hand plane to roll over the front edge of the seat, as well as to smooth out any tool marks. The lower edge of the seat is beveled with a drawknife, and can be smoothed out with a smoothing plane held at a skewed angle.

Studio Stool

Full-sized plans for the Studio Stool, as well as lumber kits are available at *alexanderbrothers.com*

Side Elevation



Cutlist

No.	Items		Dimensions (in) T	W	L
1	A	Rear Stretcher	1 1/4"	1 1/4"	11 1/8"
2	B	Side Stretcher	1 1/4"	1 1/4"	12"
1	C	Foot Rest	1 1/4"	1 1/4"	14 1/8"
2	D	Front Legs	1 5/8"	1 5/8"	26"
2	E	Rear Legs	1 5/8"	1 5/8"	26 1/2"
1	F	Seat	1 3/4"	15 7/8"	15 1/2"

ILLUSTRATIONS BY MATT ADAMS
COURTESY OF SHEA ALEXANDER

13. Lay out the largest portion of the leg stock.

14. Mark a general guide for the taper on each end.

15. Connect the lines using a long straightedge.

16. Rough out the taper at the bandsaw. Save the waste to tape back to the leg before sawing the other dimension.

17. Lay out guide lines for the octagon shape.

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Legs

Now let's set the seat aside and move on to legs. Here I am using Red Elm however any strong hardwood is suitable. Red Oak is a great choice to get started as is Ash and Hard Maple. The more critical piece with the legs and spindles is making sure you have long straight grain from one end of the leg blank to the other without any extreme run out.

After milling your leg blank to size trim them all to final length, take note that the front and rear legs are different lengths but are laid out and shaped the same. Then measure 16 ½" from the top of the legs and using a square make a mark all the way around the part like a belt. This is the center of the swell of the leg.

Next we are going to saw the leg into square tapers with the large end of each taper being the belt line. On each end mark in off the edge ⅜" and draw a line from the belt line to those marks.

Next saw off the waste leaving your line and clean up to your line with a hand plane. Now rotate the leg 90 degrees and repeat on the other faces to complete a 4 sided taper.

You should now have 4 legs trimmed to final length and shaped to a double end square taper with the fat part of the taper being 16 ½" from the top end of the legs with all faces cleaned up with a hand plane to the layout line.

Next we lay out the octagon facets. At the belt line (freshen it up if you planed it off smoothing the faces up) mark in from the edge ½" on each face and at the ends mark in from the edge 5/16" now connect these marks along the length of the leg these are your layout lines for the octagon facets.

Now we head to the shave horse or bench vise and start shaping. I personally start with a drawknife working each corner of the leg off to connect the layout lines on either side of the corner.

Notice how I am holding my drawknife at a skew angle in relationship to the leg. Skewing the tool lowers the effective angle of the cutting edge giving a smoother more controlled cut. It is the same as when using a handplane and you run at a slight skew angle to difficult grain to prevent tearout. In the same movement as I draw the knife back I am also slicing which means when I start the cut my dominant hand is closest to the leg and after I have drawn the tool towards myself my non-dominant hand is closest to the leg. It is a natural tendency for those new to using a drawknife or spokeshave to simply hold the tool perpendicular to the workpiece and pull straight back. This increases the likelihood of the cutting edge catching or chattering creating tearout. Think of it like slicing a tomato in the kitchen, if you simply push down on the knife you will smash the tomato but if you hold the knife handle a little higher and use a slicing motion you can shave off that perfect slice.

The drawknife is a roughing tool in this situation so you will want to stop when you are about a 1/16" or so off the layout lines. Then switch to a spoke shave for the final finish cuts working right up to your line. If you do not have a drawknife all of this can be done with a spoke shave. The skewing and slicing motions apply to the spokeshave the same way they do to the drawknife.

Once worked to the lines with the spokeshave your legs are shaped and ready to cut the tapered tenons on the top end of the legs. The ends will be a bit fat to fit in the tenon cutter so using the drawknive snip off some material on the end to start the taper. Not too much, just enough to get it started in the tenon cutter.

Alright, let's cut some tenons. The leg tenons are a 6 degree tapered tenon, you can purchase a tenon cutter from makers such as Elia Bizzarri and Kelly Harris or you can make your own using your reamer and an old plane iron. Drew Langsner's book, The Chairmaker's Workshop has instructions to make your own (page 32). You can also turn the tenons on the lathe.

I prefer to clamp my tenon cutter in the bench vise and twist my leg by hand, making slow movements ensuring that your leg is staying centered in the cutter. Remove often and sneak up on your fit shaving the tenon until it fits the mortise with about 1/8" protruding through the top of the seat. Take note that your front and rear legs are different lengths and mark them accordingly. Your will fit each tenon to a mortise and number them to match.

Once each leg tenon is cut and matched to a mortise, rotate the legs so the end grain on the top of the tenon is running parallel with

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18. Use a drawknife and spokeshave to create the octagon shape.

19. At the end, heavily chamfer the tenon with a drawknife.

20. Use a tenon cutter to shape the end of the legs. Cut the tenon a bit, and check the fit in the seat.

21. After cutting all of the tenons, check the fit in the seat. The tenons should all protrude approximately the same amount through the top of the seat. Rotate the legs so that the grain is running the same direction as the seat (see Photo 22).

the grain in the seat. Now tap each leg into the seat with a mallet. As you tap your will hear the sound of the mallet hitting the leg change to a dull thud, when you hear this sound change stop hitting, the leg is tight and driving more you risk splitting the seat. We will then mark a pencil line perpendicular to the grain to mark for our wedge saw kerf. These can be sawn about 1-¼" to 1-½" deep.

Once these are marked, flip the stool upside down and make marks where the legs meet the seat to indicate rotation. As we drill the stretcher rungs we will be removing and reinstalling the legs a lot and these marks ensure you put them back in the proper place.

Time for Rungs

Rung time. All the rungs and the

22. After clocking the legs, mark where a kerf will need to be cut for a wedge in the tenon.

23. Finetune each leg's fit and the orientation. After you are happy with it, mark the leg and the seat so that they're a pair.

footrest us a ⅝" diameter tenon. These are all drilled 1" deep. I recommend using a good quality brad point bit, I personally like the brad points from Lee Valley you will want one that has sharp side spurs but not a crazy long center spur. Sharp Side spurs prevent tearout and the center spur should not be so long it pokes through the leg when drilling the side stretchers. You will also need a bit-extension. The most straightforward one is to buy a ½" diameter drill rod and a ½"coupling from an industrial supply like McMaster Carr. We will drill all the stretcher mortises and then measure the exact rung lengths before cutting them to length and making the rungs. For a depth stop I again use a scrap with a hole in it, this one I glued a leather pad on so as not to dent the leg.

I like to start with the footrest and rear stretcher. With the legs driven tight in position, aligned with their rotation marks and placed upside down on the bench use the drilling/marking jig to mark the height of the footrest (14-½") off the seat on both front legs. Now using a large rubber band stretch it around both front legs and align its height on the marks this gives you a visual reference to find and mark the center of each leg on your height marks giving you the mortise center points.

Now place the drilling jig in between the strand of rubber band running parallel with the bands and positioned as tight to one of the legs as possible. Clamp it in position to the seat.

Now we will remove the leg closest to the jig with a mallet and install the bit and bit extension into the jig using the hole in the jig designated for the footrest height to drill the first mortise.

When starting off I run my drill in reverse at a slow speed to score the face of the leg. This helps give us a clean entrance hole.

Once scored back the bit up and put the drill in forward rotation and slowly begin drilling. I drill at about ¾ speed and allow the drill to do the cutting, bracing the leg with my non-dominate hand to keep it from flexing. Watch that chips do not build up between the stop and the leg preventing full depth and once at full depth slowly back out the bit. And there we have the first mortise.

Now remove the jig, reinsert the

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24. The jig has holes drilled through it and V-notches. I mark the location of the runs with a pencil, then use the jig to guide the bit.

25. A rubber band takes the place of a rung and allows you to level it before marking the rung location.

26. Guide the bit with the jig.

27. Spinning the bit backwards helps with a clean entry hole.

28. Drill until the depth block bottoms out.

leg and repeat the rubberband alignment of the jig to drill the opposing leg to complete both footrest mortises.

This entire process can now be repeated on the set of rear legs for the rear rung using its height of 10" off the seat.

Now that both rootrest and rear rung mortises are drilled, reinstall both front legs and rear legs on their rotation alignment marks and tap them seated with a mallet. Now we will measure the final length of the footrest and rear rung.

Using 2 scrap stick about ¼"-⅜" square insert them into the mortises seated against the bottom of the mortises and pinch them together making a pencil mark across their faces to mark their position.

Now remove them and realigning the marks measure the total length. This is the total length of your footrest/rung. Do this for the footrest and rear rung and record those lengths. Now we will make dummy rungs to hold the front legs and the rear legs in position. You can use ⅝" dowels or cut tenons on the ends of a scrap. Install these dummy rungs and tap the legs seated. This keeps the front and rear panel of the undercarriage aligned while you drill the side rungs.

Now the marking and drilling of the side rung mortises can be done following the same process as the front and rear with the exception that the front and rear panels are removed and reinstalled as a unit when drilling to keep things aligned.

Make the Rungs

Now that all the rung mortises are drilled lets move on to making rungs. With all four legs fully

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29. Another view shows the jig in place, as well has the force needed to dril the hole locations.

30. After drilling one set of legs, install the other and drill the mortises.

31. After the mortises have been drilled, install the legs.

32. After drilling the mating mortises, you can use a set of gauge sticks (narrow pieces of scrap) inserted into the mortises and marked to measure the overal length of the rungs.

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seated in position, measure the length of each rung using the same method used for the dummy rungs and cut 1.25" square rung stock to those final lengths. Before shaping the footrest and rungs we will cut the tenons. There are multiple ways to achieve this, I personally like using the lathe.

I use what some people refer to as the wrench method. ⅝" of an inch is 0.625 thousandths and we want each tenon to be .625 or up to 5 thousandths over .630. We achieve this by using a wrench as a sizing gauge while turning. Here is the catch: all wrenches are 10 thousandths or more oversized so they will fit buggered up bolts. So I take a 15mm wrench and using a bastard file I file open the mouth until it measures exactly 0.625 thousandths with a caliper. Once I have that wrench turning gauge its good for all ⅝" tenons in the future. Mounting each rung between centers I turn at about 2,000 RPM. Use a 10mm beading parting tool to turn down each tenon with the wrench riding behind, as soon as the wrench slips onto the tenon stop cutting. Do this for each pass of the tool until you have 1" long tenons on each end of all the rungs.

For rung shaping we are back to the drawknife and spokeshave. The footrest is a straight octagon with then about 2" of taper on each end blending into the tenon. I start by shaving off each corner of the square stock into a straight octagon. Once that is done I mark off the 2" on each end and work down each facet to transition the octagon into the tenon. Pay close attention not to cut or damage your tenon. You may want to put a piece of blue masking tape on the tenons as a visual marker to not cut into them. The side and rear rungs taper from the center down to the tenons. I start by making a 4 sided taper with the drawknife and then moving to the spokeshave to take off the corners forming an octagonal double taper.

Assembly

Time for assembly. This is the point where you will want to

33. The tenons on the rungs are turned at the lathe.

34. Shape the rungs with a drawknife.

finish sand or scrape any surfaces smooth and ready for finish. For glue I recommend Hide glue or another glue of choice with a long open time such as FishStick Glue from Lost Art Press. This allows you plenty of time so you are not rushing. Start by laying out the legs and identifying where each rung goes. It is easy to get the front and back legs confused so you may want to dry fit the legs and make pencil marks on each rung and leg. Do not dry fit your rungs as with tight tenons its likely you will not be able to get them back out even without glue.

Lay out a blanket or pad on the bench and have a mallet or hammer handy. You will also need 4 wedges for the seat tenons, I like a few extra in case one breaks. Start by applying glue to the tenons only, When you have a very tight joint there is no way for extra glue to escape and glue applied in the mortise can be pushed to the bottom of the mortise and create hydraulic lock not allowing you to fully seat the tenon. Insert the rungs into their corresponding mortise and rotate them so that the cathedrals in the grain of the rung face up towards the seat. This gives you the best long grain to long grain contact in the glue joint. Drive each one home until you hear the dull thud sound change. I normally assemble the front and rear panels, then install the side rungs into the rear panel then the front panel onto that assembly.

Now stand the assembled undercarriage assembly up on the bench and apply glue to both the seat tenons and the seat mortises. Being a through mortise and a tapered joint there is no risk of hydraulic lock here so we apply glue to both.

Next assemble the seat and undercarriage. I settle the seat on with the stool standing up then flip it upside down and drive each leg home listening for the sound change. Then stand the stool up and drive home the wedges on the top.

Now clean up any excess glue with warm water and a toothbrush and let it dry.

35. Start assembling the legs by driving the rungs home with glue.

36. Attach all legs together with the footrest and stretchers.

37. Glue the tenons that go into the seat of the stool.

Once the glue is dried use a carving gouge to trim the tenons flush on the top of the seat and sand or scrape them smooth.

Now it's time to add the facet on the rear top corner of the seat using your spokeshave.
The last step is to level the legs.

Standing the stool on a flat bench or table use a level on the bottom side of the seat and wedge the legs until the seat reads level in both directions. Then take a pencil and scrap of wood to mark all the legs the same level off the table. Trim the legs to these marks and check for wobble. You may need to shave a touch off here or there to remove any remaining wobble.

The last thing I do is using a knife I carve a small chamfer on the bottoms of the legs. This keeps the edges of the legs from chipping as the stool is slid across the floor.

Touch up any scuffs, apply your favorite finish and you're done!

PW - *Shea Alexander*

38

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38. After the legs are installed in the seat, drive wedges.

39. Bevel the top of the tenons using a carving gouge.

40. Soften the edge of the seat using a spokeshave.

41. Mark the legs of the stool using wedges, a pencil, and spacer block. Cut to the line.

42. Slightly bevel the bottom of the legs using a knife.

43. Apply a finish, and take it for a ride.

Book Club

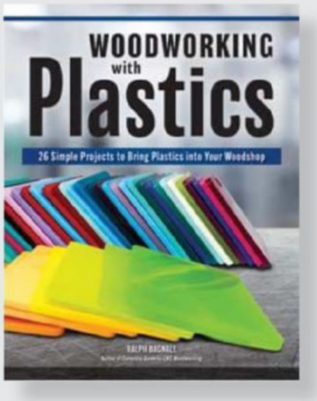
New Book

Excerpt from the author

FOX CHAPEL PUBLISHING
www.FoxChapelPublishing.com

Curious about how to incorporate plastics into high-quality woodwork? Author Ralph Bagnall brings decades of shop experience straight to the bench, offering clear advice on tool options, milling, thermoforming, gluing, and fastening. Each technique is taught through approachable, real-world projects designed for any woodshop—no expensive new tools required. Working with plastics opens up a world of durable, creative possibilities that make plastic a natural part of any woodworking routine.

Woodworking with Plactics



AUTHOR: Ralph Bagnall
PUBLISHER: *Fox Chapel Publishing*

PURCHASING INFO:
Release Date: 9-1-2026
Price: $22.99
Websites: foxchapelpublishing.com

5.1 Router Edge Guide

Polycarbonate is excellent for mechanical fastening, as it can take great strain, is shock resistant, and holds threads nearly as well as aluminum in my experience. It is the right material to use for this adjustable edge guide for my shop-built offset router base. This edge guide features two adjustable fences with rollers that allow it to be set up to follow straight or curved edges.

The parts for this edge guide were CNC cut, but in the original one I built many years ago, they were made by hand. A polycarbonate sheet with a ¼" (6mm) thickness was used in both cases. Pilot holes were drilled at the CNC where all the mechanical fasteners needed to be.

1. Drill out the pilot holes with the proper bit for the tap to be used. For the ¼-20 threads, use a #7 drill bit. For the M6 x 1 tap, use a 5mm bit. The bits here are part of the tap set and have not been reground for plastic use (see "Upgrading Drill Bits" on page 58). The flexible polycarbonate drills easily and there is little chance of breaking with these standard twist drill bits. It should be noted that while bits with a typical 118- or 153-degree tip generally work well in plastics, brad point bits are simply not suitable and should not be used in any type of plastic

2. Tap the holes with the ¼-20 (M6 x 1) tap. You can use the hand chuck that comes in the tap set, but plastics tap easily enough that you can use a driver on low speed. You do not need any sort of lubricant when tapping soft or hard plastics. As with tapping metal or wood, it is important to start the tap as close to perpendicular to the pilot hole as possible. A tap is fully capable of cutting threads at a different angle to the hole. The trick is to start straight and let the tapered tip of the tap find the center line as it advances.

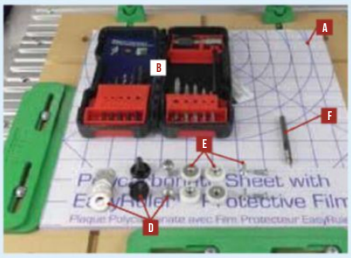
3. Countersink holes in the adjustable fences. The 10-32 (M4 x 0.75) flat head screws

that will hold the wheels need to be inside the polycarbonate so they clear the body when the fences are set up for curves. A typical woodworking countersink works fine on plastic. The one shown is for wood and features a single cutting flute. It scrapes the countersink angle into the plastic quite well without too much heat. I have used countersinks with multiple flutes designed for metal. They cut plastics just fine, but the multiple cutting teeth do generate more friction, so keep the speed low and watch the heat.

4. Attach the roller wheels to the fences. The rollers here are for shower doors. They can be bought as replacements at hardware stores and home centers. They feature a threaded bearing in the center, so they are easy to attach with the flat head screws. The nylon vise jaws from Chapter 2.3 are being used to gently hold these parts without damage as they are worked. The "tires" on the rollers are also nylon and will not mark your wood project as they guide the router.

5. This shop-built edge guide shows off some of the mechanical fastening options you have when working with plastics. Here, there are screws that hold the fences onto the body and let them pivot. Locking fluid was applied on assembly to keep them from loosening in use.

The hand knobs that hold the fences in position will be tightened and loosened with almost every use of the edge guide. My experience has shown that these threads in the polycarbonate will last for many years of use.



Supplies:

A. Polycarbonate sheet, 0.22" (6mm) thick

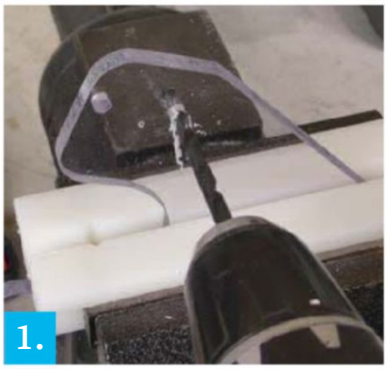
B. Drill and tap set (decimal or metric)

C. Countersink

D. ¼-20 (M6 x 1) and 10-32 (M4 x 0.75) hardware

E. Closet door roller wheels

F. ¼" (6mm) router bit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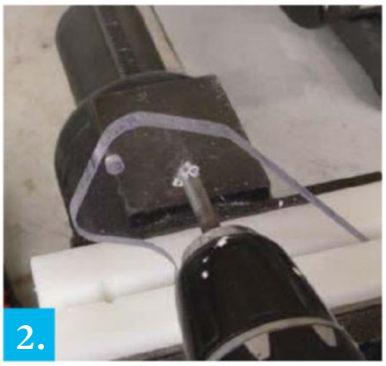
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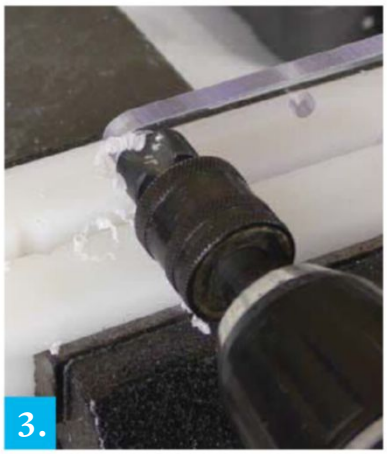
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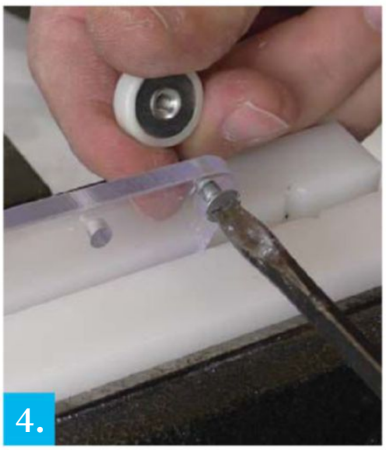
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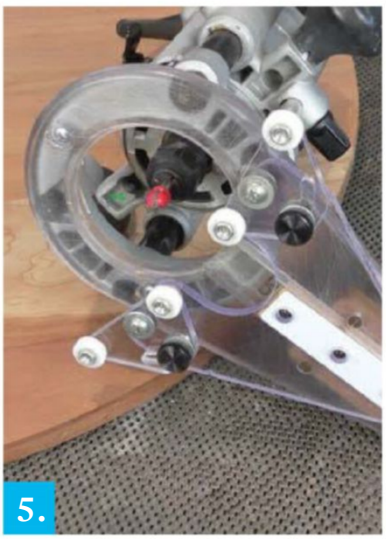
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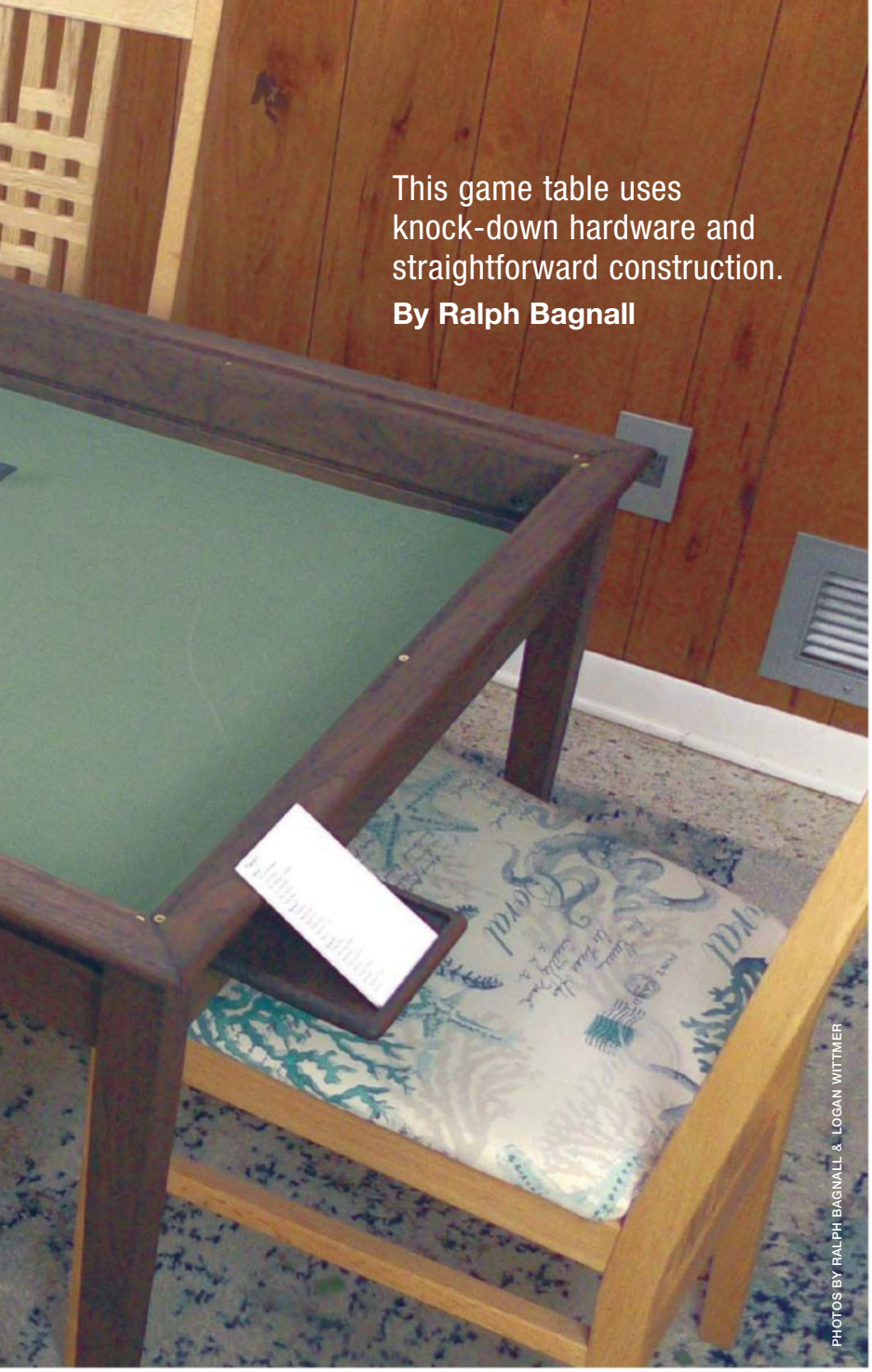
Board Game Table

Even in our digitally connected world, there is still real value in people physically gathering to spend time together. My daughter and her husband regularly spend time with their friends sitting around a table playing board games. This table design features a top that comes off in sections to reveal a second surface where games can be played or puzzles built and left intact until there is time to continue without losing their daily dining table.

The basic design is not new, but this one is designed to be disassembled and shipped flat with just a Phillips screwdriver. This is an important feature for young people who tend to move a lot and the friends and family that help them move. The apron rails include slots along the outside for the small trays that slide in to hold cups and game pieces but I added the same dovetail slots on the inside for storing those trays between games.

Stock Prep

I chose walnut for this table to best match my daughter's other furni-



This game table uses knock-down hardware and straightforward construction.

By Ralph Bagnall

PHOTOS BY RALPH BAGNALL & LOGAN WITTMER

ture. You can make it out of most any hardwood. The only thick parts in this build are the legs at 1-¾" Square. The apron rails are ¾" and the top panels and trim are ⅝" thick. See the cutlist for all the parts. I start with rough stock from the lumber yard, but you can start with prepared stock ¾" thick and simply glue up the leg blanks and plane the top panel parts before gluing them. I like to start any project with the most complex parts so the design can be adapted as I build. In this table, that will be the knock-down joints between the legs and aprons.

Joinery Drill Jig

We will be using cam lock fasteners with two alignment dowels to assemble the table frame. The holes for these fasteners need to be precisely aligned. The fact that the legs and aprons are different widths makes this tricky, but a simple drill jig helps a lot. Print the drill jig template out at 1:1 scale. You can download it at http://popularwoodworking.Com/onlineextras

The template prints with a ruler so you can verify the size. Glue this to a piece of good quality ½" (12mm) plywood 2-½" (64mm) wide by 4-½" (115mm) long. I used spray adheasive for this task. Carefully drill the holes indicated on the template as straight and accurately as possible. There are eight ¼" (6.35mm) holes and one ⅜" (9.5mm) hole. The hole at the top and the two on the left get ¼" (6.35mm) dowels inserted so they stick out on both sides. These are the locating pins that position the jig for drilling matching holes between parts.

Legs

Each leg is drilled on two adjacent faces. Do this before tapering the legs. Clamp the jig in place with the three dowels tight to the leg top and side. The three holes furthest from the side pins are for drilling the leg. Use a ¼" (6.35mm) bit to drill the upper and lower dowel holes half as deep as the dowels are long.

The center ⅜" (9.5mm) hole is drilled to 9mm (23⁄64") deep to match the cam lock fasteners used here. Be sure to check the dimensions for the fasteners you will be using. With the drilling done, the undrilled sides of the legs can be tapered.

Tapering the inside two faces of the legs makes the table look lighter and more graceful, but it is not required if you prefer a more mission

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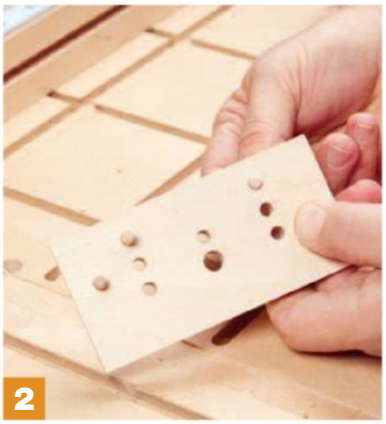

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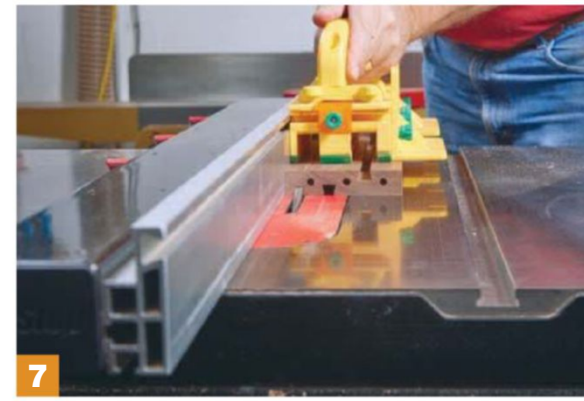
style look. These tapers start 6" (150mm) from the top and remove ¾" (19mm) at the bottom end. These can be cut at the bandsaw or using a taper jig as shown here. Once all four legs are completed the aprons can be milled next.

Aprons

The aprons are cut in two lengths but all get milled the same. Mark each apron for the top and outside faces and start drilling them to match the legs. Set the drill jig on the end with the pins again on top and outside. This time use the three holes closest to the pins and drill all three ¼" (6.35mm) holes to half of the dowel depth. Both ends of each apron get these holes.

Each apron also needs two dovetail grooves milled for the slide-in trays. These are ½" wide, 14 degree dovetails milled ⅜" (9.5mm) deep. The first step is to mill a relief groove to remove most of the waste from the dovetail path.

1. After gluing the temlate, drill the holes in the jig.
2. Insert registration dowels.
3. Position the jig onto the legs and drill the holes.
4. Taper the legs using a tapering jig.
5. Use the same template (on the opposite side) to drill the rails.



6. At the router table, rout dovetailed grooves in the rails.

7. Cut a groove for the bottom of the table.

8. Drill holes for the cam locks.

9. Bisect the hole from the end with the cam hole.

10. Install dowels and the posts into the legs.

Cut a ¼" (6.35mm) slot 5/16" (8mm) deep, 1-½" (38mm) from the bottom of the outside face of the rail. (see layout diagram) Cut the same size relief groove on the inside face of the rail 1-¼" (32mm) down from the top. These can be done on the router table or with a dado blade. These relief grooves will make for cleaner dovetails and will prevent burning the dovetail bit.

Cut the dovetail grooves along the same centerline as the relief grooves. I am using MicroJig's Dovetail bit because it has a radius in the carbide that rounds over the top edges of the groove. This reduces tear out and saves time sanding.

Using a ¼" (6.35mm) dado or bit, cut a 5/16" (8mm) deep groove ⅜" (9.5mm) up from the bottom, on the inside faces of each apron. These will accept the plywood deck sections when the table is assembled. The last part of the aprons is to drill the hole for the cam lock.

Begin by marking a line 32mm (1.26") along the centerline of the inside face of the apron. (see diagram) At the end of this line drill a 15mm (19/32") diameter hole ½" (13mm) deep. This will hold the cam lock. It is important for it to be a good fit with your cam lock hardware.

Next, use a 5/16" (8mm) drill bit to widen and extend the center hole in the end of the apron until it reaches the cam lock hole. This is for the cam lock screw that is engaged by the cam lock. Install the cam lock hardware, then assemble the legs and aprons to test the fit.

Test Fit the Joints

The cam lock fasteners shown use a nylon insert in the ⅜" (9.5mm) leg hole to hold the lock screw. Insert this, making sure it is fully seated in the leg. You may need to chamfer the edge of the hole to fit the insert flush. Mount the lock screw in the insert with a Phillips screwdriver and insert dowels into the holes above and below the screw. These dowels should not be glued so the parts can be disassembled for shipping.

Insert the cam into the 15mm hole in the apron making sure that the arrow molded in the face of the cam is pointing toward the end of the board. Align the dowels and lock screw with the holes in the apron end and fit the leg in place. Turn the cam clockwise to engage the screw head and tighten the joint. If the joint does not tighten fully, remove the lock screw from the leg and make sure the nylon insert is seated fully in the leg.

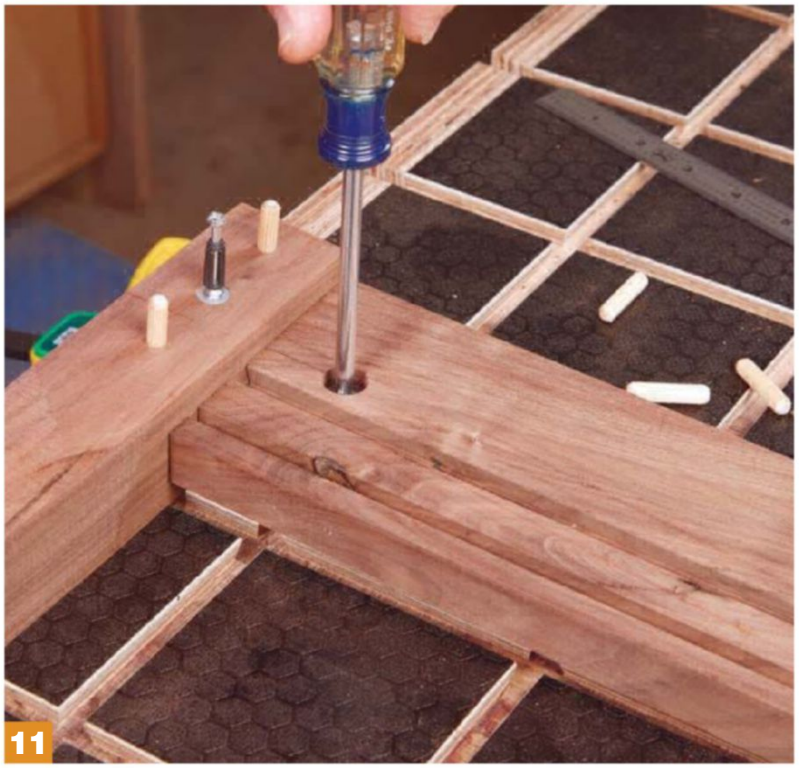
Deck Panels

Four ½" (12mm) plywood panels need to be made for the deck. The outer edges of all the panels are rabbeted to fit into the dado in the aprons, and the edges where the panels meet each other are made with a "V" notch to keep them aligned once installed. All four are the same size, and all have a ¼" (6.35mm) by ¼" (6.35mm) rabbet to fit in the aprons, but the ends are different between panels:

- Deck 1 has a rabbet on one end, and the other end is cut with the positive "V" profile.
- Decks 2 and 3 have a negative "V" cut on one end, and positive "V" on the other.
- Deck 4 has the negative "V" on one end and a rabbet on the other.

Deck 1 and 4 also need ½" (12.7mm) by ½" (12.7mm) notches on both corners of the rabbeted end to fit around the legs. These can be cut by hand or machine. Lightly sand the edges of the "V"s to remove any sharp edges.

(A spline joint can be used instead of the "V" notch, just subtract ⅛" (3.1mm) from Decks 1 and 4 and ¼" (6.35mm) from Decks 2 and 3)



11. Use a screw driver to turn the cam, locking it on the post.

12. Cut a birds mouth on the edge of the bottom panels

13. Notch the corners of the panel to fit around the legs. Use a bandsaw with a stop block to set the cut depth.

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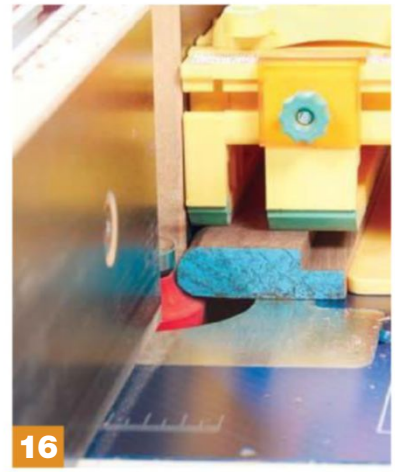
Apron Caps

The ⅝" (16mm) by 2" (50mm) cap stock needs to be prepared and rabbeted along one edge. These will be ¼" (6.35mm) deep and ½" (13mm) wide. The opposite edge is rounded over. This can be a full bullnose as shown, a simple bevel or whatever profile desired.

These caps will be mitered in the corners. The easiest way to make these miters fit is to measure and cut them in place on top of the aprons, so this is a good time to assemble the table frame with the deck panels in place.

Connect one of the end aprons to two of the legs, then attach one long apron to each leg as well. Do this with the parts upside down on the floor. Place Deck 1 between the long aprons and fit it into the short apron.

Insert Decks 2 and 3 in turn ensuring that the "V" notches are aligned. Slide deck 4 in place and assemble the other end of the apron to complete the frame. Carefully turn the table right side up. The Deck panels should hold the frame square but measure corner to corner to be sure.



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The Apron Caps can now be fitted and cut to length. Start by cutting a miter on one of the short caps. Clamp the cap in place so the miter is aligned corner to corner on one leg, the other side will be long. Clamp one of the long caps across the corner to be trimmed and mark where they meet for the second miter cut.

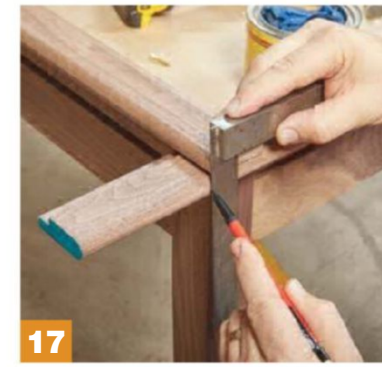
Carefully work around the frame until all four corners are mitered and fit well. The Apron Caps will be screwed in place only so they can be removed for shipping. If needed, a biscuit or spline can be added inside the miters to keep them in place.

14. Slide the deck panels in place. The panels will side in one after another. The first panel fits into the groove on 3 sides.

15. Install the remaining leg and stretchers using the cam-locks.

16. The apron caps have a rabbet cut around the top, inside edge. The outside edge is rounded over on both sides to create a bullnose profile.

17. Measure the length of the apron caps by putting them in place and scribing the length on the parts.



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Real brass screws add class to the right project but they are soft and prone to break when screwing them in. Properly sized pilot holes are a must and a matching steel screw can be driven into the hole first, then replaced with the brass screw. Using a hand screwdriver with the brass screws and a little past wax on the threads will help prevent breaking and all the extra hassle that will cause.

Drill countersunk pilot holes through the rabbet in the caps and into the aprons. Start about 1" (25mm) away from the miter and attach flat head screws every 18" (450mm) or so.

Top Panels

The Top Panels have waited until now so they can be made to fit the actual table opening properly. The tabletop is divided into four sections to make them easy to handle and store during games. Mill the stock needed to create the four panels to the size in the cut list. Plane all the stock to ⅝" (16mm) thick, and plan on preparing about 20% more stock than needed for trimming and waste.

Layout the boards into panels so the grain is as well matched as possible. This is the most visible part of the table, and it should look good. Mill the edges of the stock with a reversible glue joint bit to ensure the flattest possible panels. This will make it easy to sand them smooth later. These bits cut both sides of a joint from the same setup, then every other board is reversed so the joints interlock. This adds glue surface over butt joints and keeps the edges aligned when clamping.

19

MicroJig's Wave Reversible Glue Joint Bit is used here. This bit can be accurately set up using their FitFinder 1/2 Gauge, and the design only removes 5mm (just over 3/16") from each joint which saves stock on larger panels like this. Mark the top of each part, run every other board across the bit upside down, and reassemble them with glue. Sand the panels smooth once the glue is cured, then crosscut the ends and rip the panels to width.

Rabbet the edges of all the Top Panels as described below. Three of these Panels are the same, the fourth "Key" Panel is designed to be the first removed. These panels sit in the apron rabbets and support each other with:

- Rabbet Panels one, two and three with a ⅜" (9.5mm) deep by ½" wide rabbet on bottom of one long edge and both short ones. The second long edge gets a ¼" (6.35mm) deep by ½" (13mm) wide rabbet on the top.
- Mill the same ⅜" (9.5mm) deep by ½" (13mm) wide rabbet into all four bottom edges of the Key Panel.

18. Attach the apron caps using screws.

19. The FitFinder helps set up the glueline bit.

20. Rout the wave profile on the edges of the top panels.

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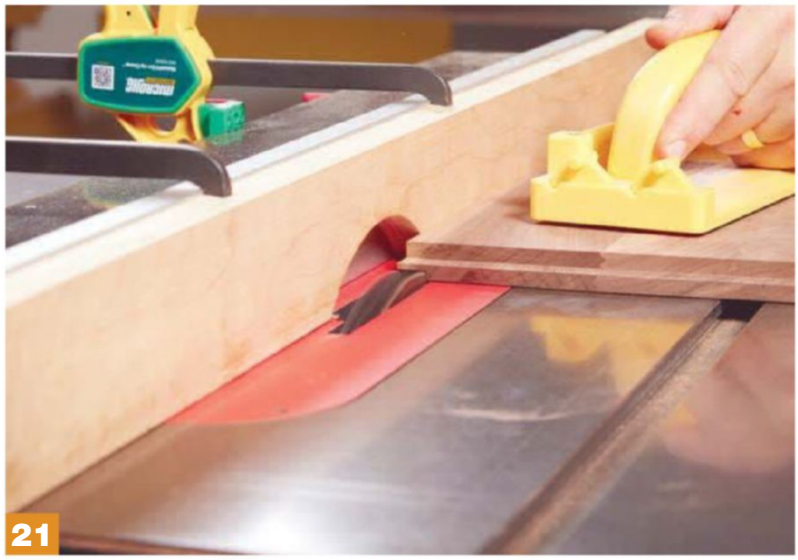


21. The top panels are rabbeted where they fit in the apron, and at the overlap.

22. Drill a stopped hole in the final panel of the top.

23. A ring pull in installed in the Forstner bit hole, offering a way to remove the top.

24. The trays start as oversized blanks, and are routed with half a dovetail.

Mark and drill the mounting holes in the Key Panel for the pull. The one shown required a 2" (50.8mm) diameter main hole and a 1-⅛" (28.5mm) diameter secondary hole. Check the specifications for whichever pull you have chosen.

Place the Top Panels into the table. They should all sit flat and flush with the Apron Caps. There should be a small gap between the top sections to expand and contract naturally without jamming. The rabbeted joints allow movement without gaps being opened to the interior.

Play Trays

One of the coolest features of this style table are the slip-in trays that hold cards, game pieces and snacks during play. They can be instantly set up and removed for game nights. These trays get a modified dovetail tenon on them to match the dovetail grooves cut in the aprons earlier.

Prep lengths of stock ½" (13mm) thick and 4" (100mm) to 6" (150mm) wide. Set up the same dovetail bit in the router table with the fence aligned to the narrowest diameter of the bit. Cut one side of the long edge to form half the tenon that will interlock with the apron groove.

Set the table saw blade to a 14-degree bevel to cut the other half of the tenon. Set the rip fence so that the thickness left behind is 5/16" (8mm). Make a test cut and check the fit in the apron. Tilt the tray stock up and slide the tenon into the groove with the dovetail facing up. Release the tray and it should rest perpendicular to the Apron.

Bevel all the stock once the fit is correct. Cut the stock to length and customize it as desired. Three designs were created for this table, one with slots to hold cards, another for drinks and a third for general use. These can be customized for different uses and games. (See examples in main photo)

Game Surface

Green felt is the traditional game table playing surface, but a dining table will have spills that may damage felt. A green EVA foam sheet was used to cover the deck of the table.

Unroll it and cut the foam to fit inside the aprons and legs. One piece is preferable to help contain any spills.

Cut the 1/8" (3mm) foam with a utility knife or scissors. Start with it larger than needed and trim carefully to fit. Mark the foam about 1/4" (6mm) extra on all sides to form a lip around the perimeter if possible and carefully make neat cuts on all edges.

Finish

Finish all the table parts with whatever product is preferred. Black Rubio Monocoat was used here. The dark oil helps even out the color difference across the panels. Mix the two parts of the oil finish as instructed and apply to all the parts following the manufacturer's instructions.

25

In Use

The fully assembled table serves well for dining. When it is time to build puzzles or play games, lift the ring pull on the Key Top Panel and lift it off along with the remaining Top Panels. The Play Trays can be distributed and slipped into the grooves on the outside of the aprons as needed. At the end of a game session, the game board and pieces can be left in place, the trays stored in the grooves provided on the inside of the aprons, and the top sections replaced. **PW** – *Ralph Bagnall*

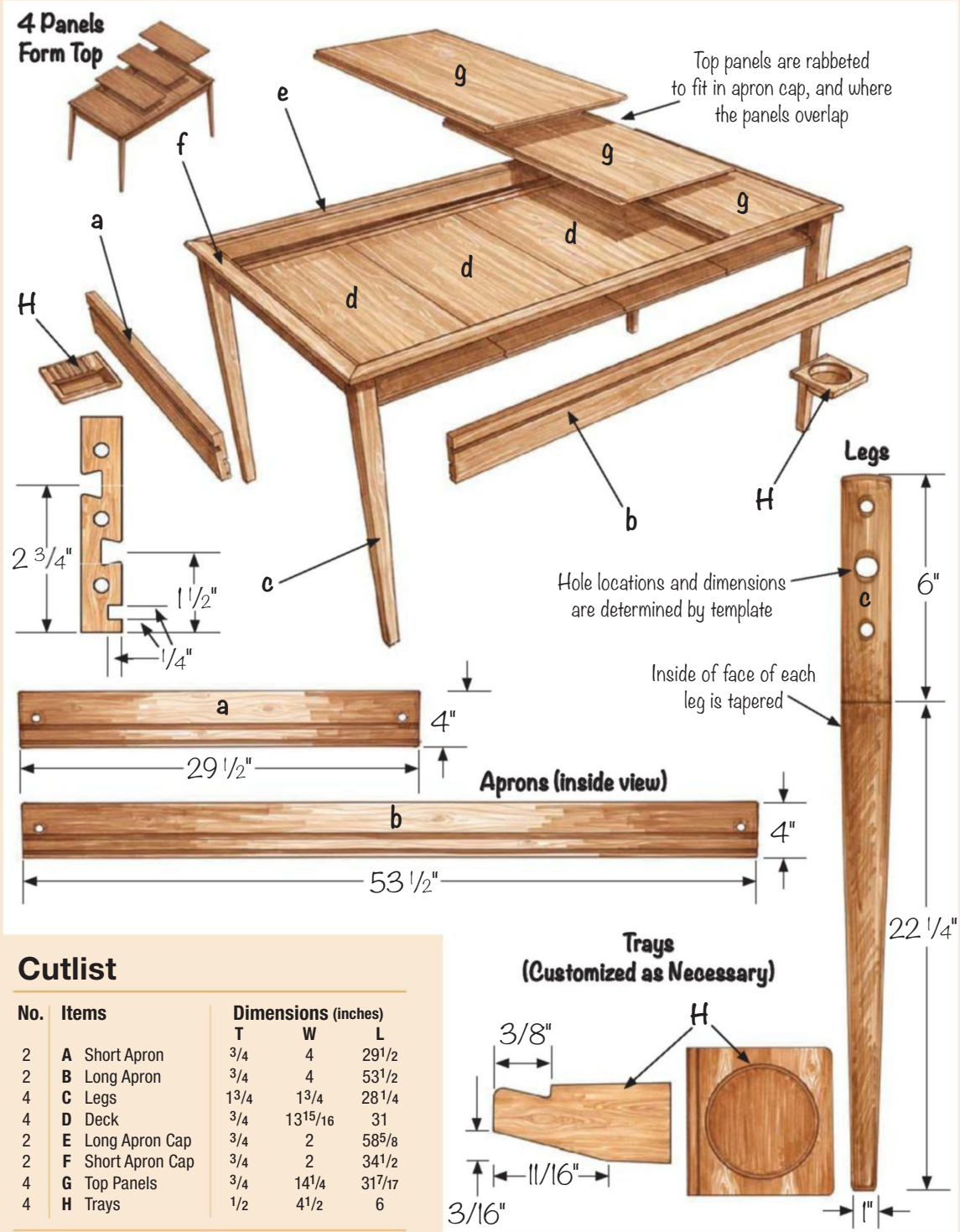
26

25. The back edge of the trays are beveled. This allows them to slip into place in the dovetail slot that goes around the perimeter. You can form what ever pattern you want on the top edge. Playing card holders, snack holders, and cup holders are all options.

26. To install the trays, you insert them into the groove, dovetailed edge facing up. As they drop down, the cam action wedges them in place, with the ability to slide left and right.

Board Game Table

NOTE: Additional dimensions and SketchUp file are available at popularwoodworking.com/onlineextras/



Cutlist

No.	Items		Dimensions (inches) T	W	L
2	A	Short Apron	3/4	4	29 1/2
2	B	Long Apron	3/4	4	53 1/2
4	C	Legs	1 3/4	1 3/4	28 1/4
4	D	Deck	3/4	13 15/16	31
2	E	Long Apron Cap	3/4	2	58 5/8
2	F	Short Apron Cap	3/4	2	34 1/2
4	G	Top Panels	3/4	14 1/4	31 7/17
4	H	Trays	1/2	4 1/2	6

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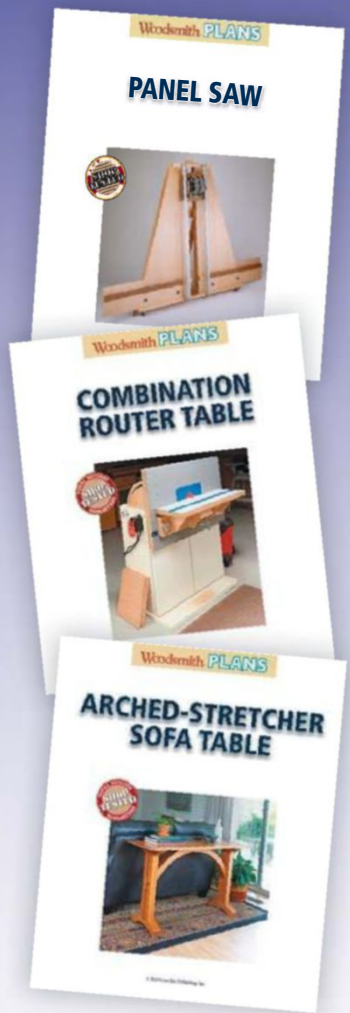

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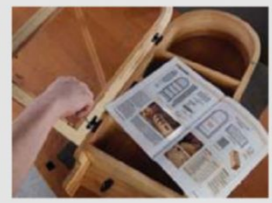
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Maple (Soft)	4/4	Select	4.85 ..... $119.00
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White Oak (Quarter Sawn)	4/4		8.95 ..... $180.00
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End Grain

IWF 2026

A recap of the 2026 International Woodworking Fair.

By PW Editors

Every other year, a good portion of the woodworking industry descends on Atlanta for the International Woodworking Fair, better known simply as IWF. And when I say "woodworking industry," I mean it in the broadest possible sense.

IWF is massive. The show fills the Georgia World Congress Center with everything from hand tools and finishing supplies to CNC machines, automated production lines and machinery that costs more than my house. As the editor of a magazine focused primarily on hobbyist woodworkers, there's admittedly a fair amount of equipment at IWF that I'll never have a practical reason to cover. I don't think many of our readers are shopping for automated panel-processing lines anytime soon.

Bridgid (Fine Woodworking), Logan, and Collin at our booth at IWF 2026. Through our sister publication, Woodshop News, we hosted a booth that offered video interviews for the Challenger Award Winners, and was the official breaking news center for the show.

But that's also what makes IWF so interesting. Wandering around the show gives you a look at where (large scale) woodworking is heading. Technology that starts in large production shops has a habit of eventually finding its way into smaller professional shops—and, eventually, our home shops. CNC is probably the most obvious example. Twenty years ago, CNC equipment was largely the domain of commercial manufacturers. Today, a benchtop CNC isn't particularly unusual in a hobbyist's garage.

That trickle-down effect was evident throughout IWF 2026. Automation continues to be a major focus, with machines becoming smarter, easier to set up and increasingly capable of handling tasks that once required a huge amount of labor. Software is becoming a bigger part of woodworking as well, from CNC design and optimization to systems incorporating artificial intelligence. At the other end of the spectrum, there were plenty of developments in areas much more immediately applicable to the small shop: dust collection, finishing, hardware, joinery and tooling. Heck, there were dozens of booths that I'm not even sure what their product was, but they were packed.

For me, however, one of the best parts of IWF isn't finding the biggest or most technologically advanced machine. It's hunting through the booths for the clever little ideas that you guys, our readers can use. This year, a few things caught my eye. Sawstop unveiled a

new bandsaw. Harvey is working on a table saw with built-in safety features and all the bells and whistles. I got to catch up with the guys at Bow Products as well as Swan Tools (be on the lookout for a few of those to be shown soon in the magazine). And, Triton tools had a booth and is re-launching their tools under new ownership. Plus there were several others like those. All positive signs.

IWF also serves as something of a family reunion for the woodworking industry. Four days of walking the show floor means running into manufacturers, tool designers, fellow woodworkers and friends from around the world. Those conversations are every bit as valuable as seeing the new equipment. They give us a chance to hear what manufacturers are working on, what problems they're trying to solve and, occasionally, get a peek at products that won't appear until months down the road.

If there was one takeaway from IWF 2026, it's that woodworking continues to change rapidly. There's more automation, more digital technology and increasingly sophisticated machinery.

PW – *Logan Wittmer*

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