

WOODWORKER'S JOURNAL

America's leading woodworking authority™

**RELAXED
ROCKER**
EASY WEEKEND BUILD



June 2024

\$7.99



7 33175 76666 1



BUILD YOUR DREAM ROUTER TABLE



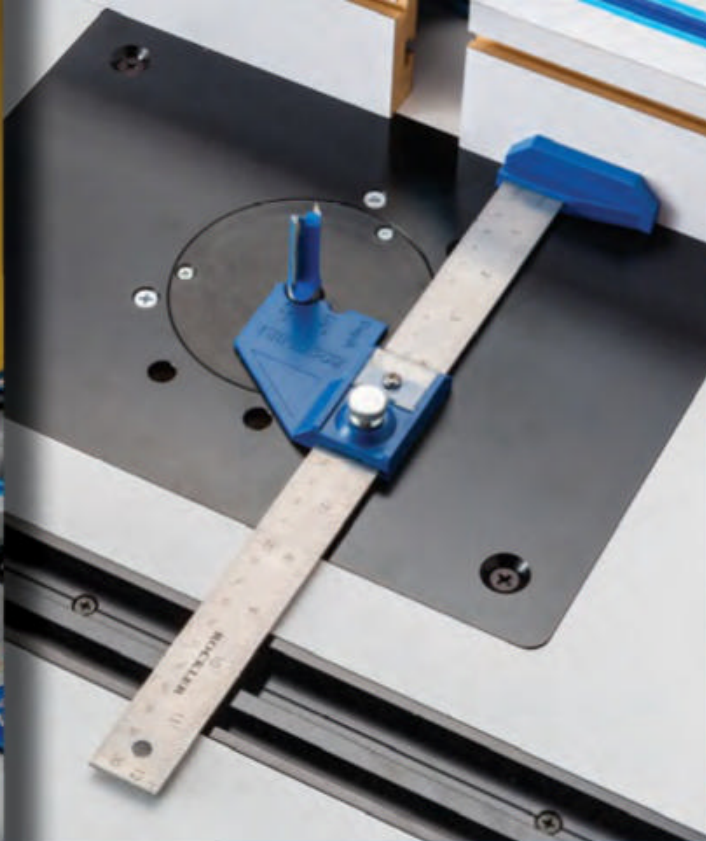
ROCKLER®

CREATE WITH CONFIDENCE

Shop online or find a store near you at [Rockler.com](https://www.rockler.com) | Call to order at 800-279-4441

FREE SHIPPING ON \$49+ ORDERS! (Code V239622)

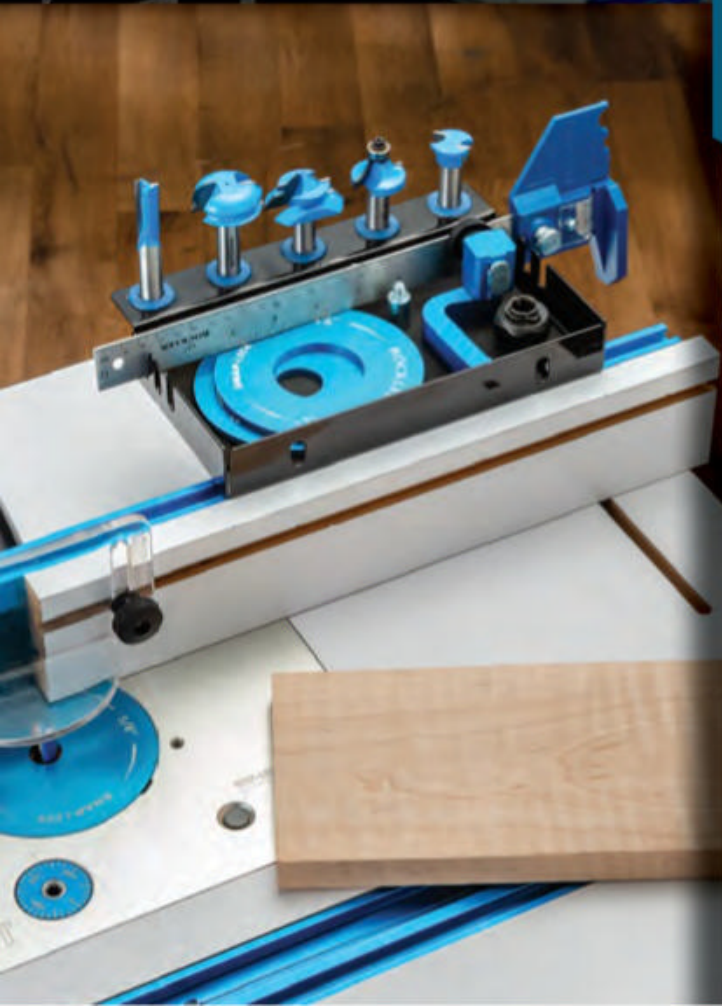
Exclusions apply - Offer expires 6/30/24



**ROCKLER'S
AWARD-WINNING
INNOVATIONS WILL
MAKE YOUR ROUTER
TABLE MORE PRECISE,
SAFER, COLLECT DUST
BETTER AND ELEVATE
YOUR WORK**



SEE OUR INNOVATIONS



WOODWORKER'S JOURNAL

CONTENTS

JUNE 2024

VOLUME 48, NUMBER 3

FEATURES



Page 20

Adirondack Rocker

By Chris Marshall

Adding rockers to a popular chair plan from 2020 makes it an even more enjoyable place to sit and relax.

Page 30

Translucent Screen Shutters

By Larry Okrend

This easy-to-build project enhances window privacy without darkening a room.



Page 26

Pedestal Stand

By Nick Brady

Our author breaks in his new Rockler benchtop lathe to turn a multipurpose accent piece.

⚠ WARNING: Drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov/wood.

MASTER YOUR TABLE SAW



Learn to confidently operate the most important tool in your workshop – the table saw – with the Mastering the Table Saw DVD from Woodworker's Journal.

Everything is covered, from fundamental cuts to advanced techniques. Expert or rookie, this DVD has something for every woodworker.



Item #57292

www.woodworkersjournal.com/wj2431
or call 800-610-0883 (code WJ2431)

**WOODWORKER'S
JOURNAL**

DEPARTMENTS



Page 8



Page 36



Page 46

8 From Our Readers

You ask about cleaning rusty tools, crosscut sled purposes and whether pleated dust hose is a good idea.

13 Our Weekly Readers

Hide glue has been around for many centuries, but do you use it?

14 Tricks of the Trade

Tips for safeguarding a scroll chuck and keeping face trim in line.

16 Shop Talk

Twin Cities Storm Trees business makes the most of discarded trees.

36 Skill Builder

Learn how to carve wood panels to look like folded linen.

40 Advanced Power Tool Techniques

While power-sanding is no picnic, make it both efficient and effective.

46 What's In Store

Powerful new mini clamp and all-in-one router bit maintenance kit.

48 Tool Preview

Laguna's versatile 14 | CX Bandsaw tackles wood or metal with ease.

50 Finishing Corner

Switch to cloth-backed sandpaper in convenient, economical rolls to help waste less and sand more.

Editor Picks: Router Bit Storage Inserts

Drilling holes in a board is one option for storing router bits by their shanks. But if the board shrinks across the grain, it can lock the bits in their holes, making them very difficult to remove. If it absorbs moisture, the shanks can rust. And it can't be mounted vertically to save space without running the risk of the bits falling out. That's why Rockler's Router Bit Storage Inserts are so helpful. They're made of a durable, non-absorbent molded polyethylene that remains flexible, yet holds the shanks securely enough for either horizontal or vertical storage. The interior of these inserts is stepped to accept either 1/4"- or 1/2"-diameter shanks.

And installing them in a board, shelf or drawer is as easy as drilling 5/8"-diameter holes and pushing them in. Their ribbed exterior keeps the inserts in place when bits are pulled out. Here's a neat, low-cost storage solution to finally get all your router bits organized and accessible.

—Chris Marshall



Rockler Router Bit Storage Inserts, 10-Pack (item 57223; \$6.99)





SUPERCCELL®

To learn more
about Ed's shop



*"My shop is 10 times cleaner now
than it used to be. The Supercell
works really well."
- Ed N.*



Touchless Filter Cleaning and Remote Included

Made in the USA  800-732-4065 • oneida-air.com

THE **BEST** PINNER TRUSTED FOR 20 YEARS JUST GOT **BETTER**

NEW **GREX P635L** 23 GAUGE PINNER

The **P635** wasn't just a tool; it was a revolution. Launched in 2004, it redefined the meaning of fine woodworking. With its unmatched level of features, precision and reliability, it quickly set itself apart as the "lexus of pinners" for the past two decades.

As we celebrate the 20th anniversary of the iconic P635, we're propelling into the future with the introduction of the enhanced **P635L**.

Get your own P635L and experience 20 years of innovation and craftsmanship with a tool that's built to last.

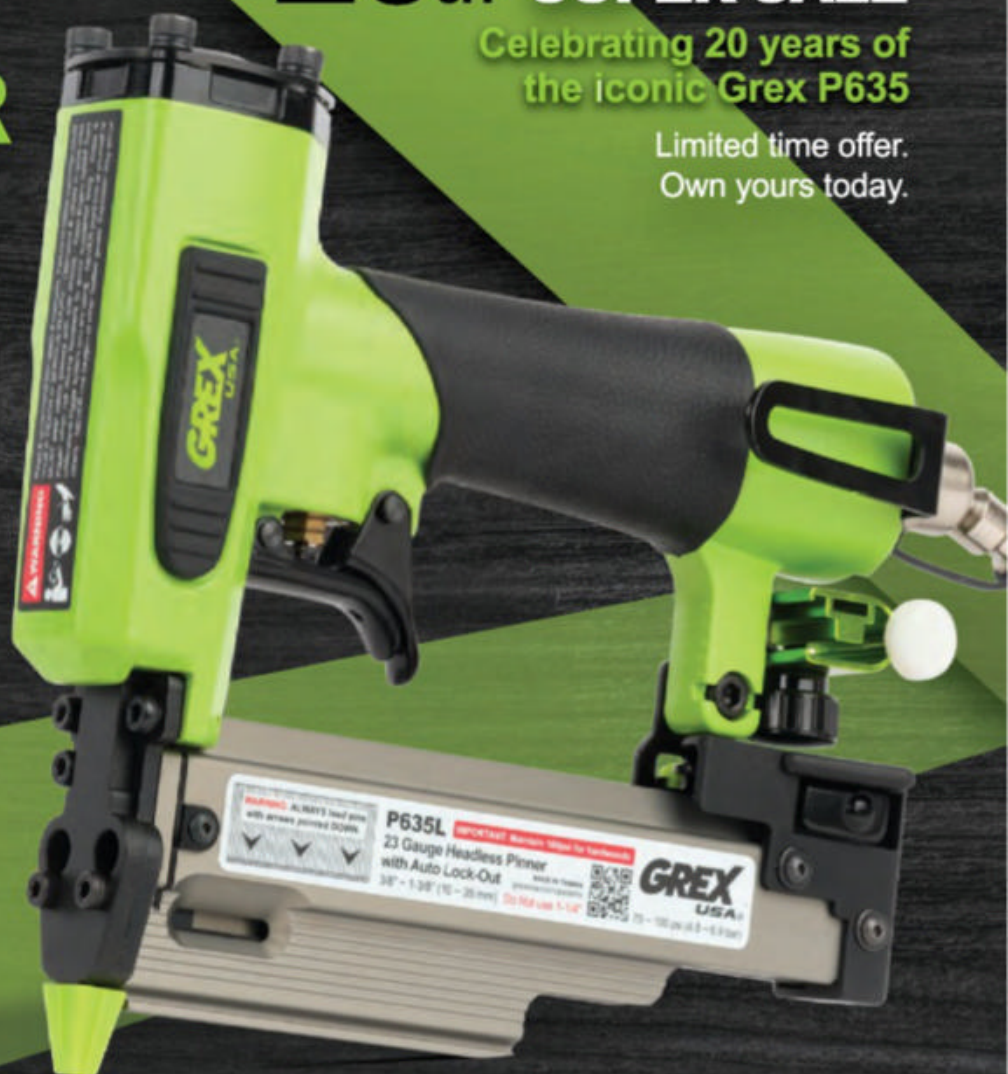
GREX USA®



20% OFF GREX P635L SUPER SALE

Celebrating 20 years of
the iconic Grex P635

Limited time offer.
Own yours today.



FIND YOUR DEALER



888-447-3926



604-534-3688

www.grexusa.com

FROM OUR READERS

Some Things Just Take (a Lot) More Time!



LESSONS LEARNED AT THE LATHE.

One day last winter, I was feeling a sense of the doldrums that come from too much gray weather and not enough shop time. A woodworking cure that usually helps me snap out of my funk is to grab one of my dried bowl blanks and turn something useful, pretty or hopefully both. I headed to the storage shed and found an enticing candidate.

Well, this particular silver maple bowl blank was gargantuan — the biggest I've ever turned, in fact, at roughly 14½" in diameter. It was quite out-of-round at first, but I wrangled it back into shape in an hour or so. The outer profile revealed itself, pleasingly, after another hour. By four hours in, the wall thickness was up to snuff. Finish-sanding was behind me and I was ready to flip it around, remount it on my Longworth chuck and finish-turn this behemoth by adding a subtle foot. So much for best-laid plans... This is when I learned that it was too big to fit the Longworth, which required creating a giant jam chuck out of plywood. Add another 45 minutes. And wouldn't you know it: even after cutting a recess to friction-fit the rim, I couldn't get the bowl to spin in a single axis. Its original tenon spun in a ghosted approximation of an orbit, and that pretty outer profile now wobbled. So much for my "A.J. Foyt" efforts to tackle this bowl in a reasonable time. I ended up spending the next 1½ hours re-turning the exterior again to get it to spin true. Then some tearout reared its ugly head and dogged me for quite a spell. In all honesty, I began to wonder if this bowl was cursed ... Would it ever make it off the lathe? My motivation was wearing thin.

Perseverance finally paid off. By dinnertime it was done, seven hours from go time. I should have started that day by reading Rick Weil's sensible essay about not measuring shop accomplishment by time spent (see page 16). Because, note to self: Sometimes, crossing the finish line shouldn't be measured by the clock.

— Chris Marshall

LETTERS

Small Server, Other Classics Always Appreciated

Thank you for my February 2024 issue. I now spend my winters in Florida, away from my Michigan home and workshop, so I anxiously await and devour each issue as I make plans for projects to begin in spring when I return home. The *Journal* is somewhat unique, and I very much appreciate your philosophy as well as the variety of short subjects not found in my other woodworking magazines. Keep it up! The



ROCKLER PRESS
THE VOICE OF THE WOODWORKING COMMUNITY

JUNE 2024
Volume 48, Number 3

ALYSSA TAUER Associate Publisher
CHRIS MARSHALL Senior Content Editor
VERN JOHNSON Art Director
DAN CARY Senior Content Strategist
COLLEEN CAREY Videographer
NICK BRADY Project Builder/Designer
MATTHEW HOCKING Internet Production Coordinator

Founder and Chairman
ANN ROCKLER JACKSON

Publisher Emeritus
ROB JOHNSTONE

Advertising Sales
ALYSSA TAUER Advertising Sales
atauer@woodworkersjournal.com

Editorial Inquiries
editor@woodworkersjournal.com

Subscription Problems/Inquiries

(800) 765-4119 or
www.woodworkersjournal.com
Write Woodworker's Journal, P.O. Box 6211,
Harlan, IA 51593-1711

Email: WWJcustserv@cdsfulfillment.com.
Include mailing label for address changes.

Book Sales and Back Issues

Call: (800) 610-0883
www.woodworkersjournal.com

Other Questions or Problems

atauer@woodworkersjournal.com

Safety First Learning how to operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary guards have been removed from equipment shown in our magazine. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturers' instructions and safety precautions.

Woodworker's Journal (ISSN: 0199-1892), is published in February, April, June, August, October and December by Rockler Press Inc., 4365 Willow Dr., Medina, MN 55340. Periodical postage paid at Medina, Minnesota and additional mailing offices. Postmaster: Send all address changes to Woodworker's Journal, P.O. Box 6211, Harlan, IA 51593-1711. Subscription Rates: One-year, \$19.95 (U.S.); \$28.95 U.S. funds (Canada and other countries). Single copy price, \$7.99. Reproduction without permission prohibited. Publications Mail Agreement Number 0861065. Canadian Publication Agreement #40009401.

©2024 Rockler Press Inc. Printed in USA.

June 2024 Woodworker's Journal

“Stickley Small Server” is already on my list to build this year for my daughter. I particularly like the classic projects that seem to lend validity, authenticity and some nostalgia to current project plans. Please continue to include additional furniture classics from the masters.

Wade W. Nitz
Via the Internet

Restoring Rusty Tools?

I’ve inherited some of my grandfather’s woodworking tools, including a tenon trimmer recently featured in the June 2023 issue’s *Stumpers* column. These are rusted and unusable but could be cleaned up and sharpened. I personally would probably never use

most of them if they were in working condition. So, do I keep them as they are or do I try to refurbish them? At the moment, I’m not really interested in selling them, but for posterity, which is the better option? Thanks for your great magazine!

Earl Slack
Maple Grove, Minnesota

WJ Responds: If the rusty character of your grandfather’s tools adds to their sentimental value for you, we suggest you leave them just as they are — particularly if you don’t plan to use them. Should you eventually decide to part with these tools, refurbishing them won’t guarantee that they’ll be worth more money to potential buyers. It all



depends on which specific models of tools you have and how rare they are. Even then, rare tools are best refurbished by tool conservators who know how best to spruce them up again for top dollar.

READER PROJECTS

Unique Plant Stand Demonstrates Tensegrity

I had been looking for an opportunity to design a project exhibiting tensegrity — the principle of using tension and compression to stabilize a structure. Well, opportunity knocked when we were gifted a plant! By golly, we need a plant stand! My plant stand gives the appearance that the top piece is defying gravity and floating above the bottom piece, when actually the top piece is hanging from the bottom piece where their “hooked” portions overlap. As you tension the three outer chains pulling the top piece downward, it also puts the hanging chain in tension and the two vertical members in compression, so the whole stand becomes stable. I used eye bolts to create the tension and then made a top trim piece to hide the eye bolts.

William Myers
Longview, Texas



Space-saving Dressing Vanity

I built this dressing vanity with full-height mirror, light, hidden shelves, storage and hanging hooks. Its modern, simple and functional design does not take up any floor space but still provides plenty of storage needed to get ready in the morning. It’s also easy to remove and pack when we decide to move someday. I designed it as four separate components that are fixed on the wall with French cleats. Overall, the vanity is 74” tall and 38” wide.

Preethi Nallalaguraja
Galloway, Ohio



Segmented Successes!

I've made both segmented bowl styles you've published in recent years [April 2021, December 2023 issues], and I've had great success. They look just like the ones in the magazine! Hide glue worked great to glue up what I call the "wheels." But when I used it to glue all the wheels together, they slid all over the place and I couldn't get them nice and centered. Probably my mistake as I really didn't need extra time for that phase of the gluing. Hide glue is a great option in the right places, and I'm glad I know about it now.

Terrence Greenwood
Via the Internet

Why Not a Miter Saw?

Why do many seem to wrestle with a crosscut sled instead of using their miter saw that's made for crosscuts up to 12" wide. What am I missing here?

Mike Bell
Moundsville, West Virginia

Chris Marshall Responds:

For cuts up to 12" wide or so, a well-tuned miter saw is ideal! But for crosscuts wider than that, especially when I'm cutting wide plywood that's also really long, I'll head to the table saw and use my crosscut sled instead. Why? Because making the same cut at the miter saw would require me to cut the plywood twice, flipping it over between cuts in order to slice all the way across the workpiece. That works fine for a rough cut but not when I want the cut edge to be precise and absolutely square to the long edges. A big crosscut sled with a good fence makes this a quick one-cut operation. It's also useful for making longer angled cuts or gang-cutting very short pieces against a stop block.

Wired in for Square

In regard to Adriaan Sachtler's question about squaring a drill press table with a calibration rod ["Calibration Rod Source?" page 10, February 2024], I use an old machinist's trick I learned from my father. All you do is take a piece of heavy-gauge wire and put two 90-degree bends in it so it looks like a stair step. Chuck one end of the wire into the drill press and bring the table up near the other end of the wire. Turn the chuck by hand to see if the tip of the wire can lightly touch the table around the full circumference of the circle it makes on the table. If it doesn't, the table needs to be adjusted for square. I keep this wire near the drill press so I can quickly check the table for squareness every so often.

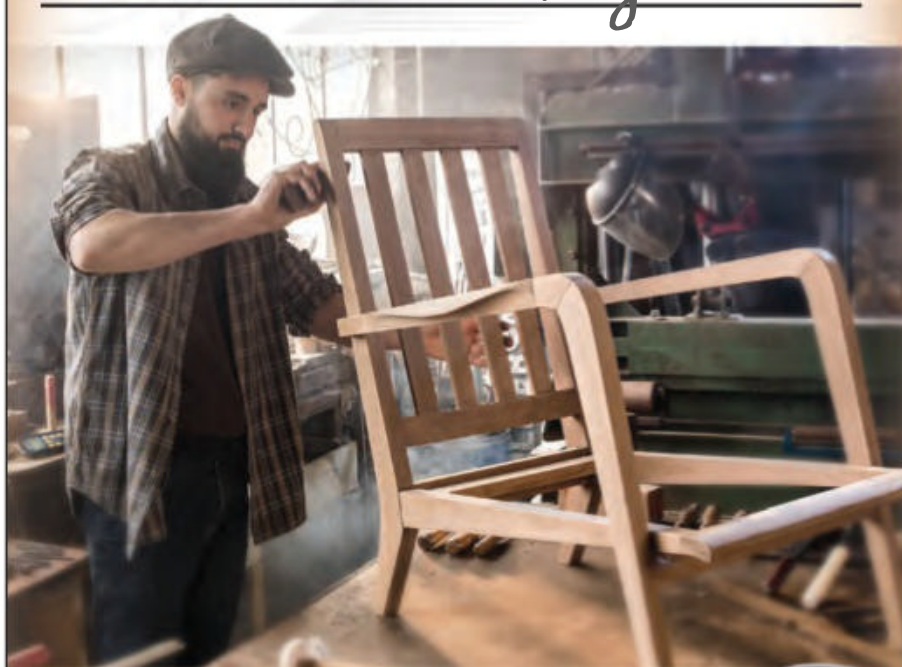
Larry Dickson
Newark, Illinois



While miter saws are excellent for many tasks, sometimes a crosscut sled is the better option. One such scenario is when sizing down long, wide sheet goods, as shown here.

I USE A WAGNER MOISTURE METER BECAUSE:

I care about my work



80% of all problems in wood projects are caused by moisture content issues. A quick and simple, non-damaging moisture meter reading can save you from angry customer calls, unnecessary repair time, and a bad reputation. Call today and learn why Wagner's industry-leading Orion meters may just be the most important tool for your shop.



(800) 505-1281 | WagnerMeters.com

WAGNER METERS

EIPI - YOUR LUMBER DRYING EXPERTS

WITH OVER 46+ YEARS OF LUMBER DRYING EXPERIENCE
CALL FOR PRE-SEASON SPECIAL PRICING

FD100 DEHUMIDIFIER

LD82 DEHUMIDIFIER

STC1 CONTROLLER

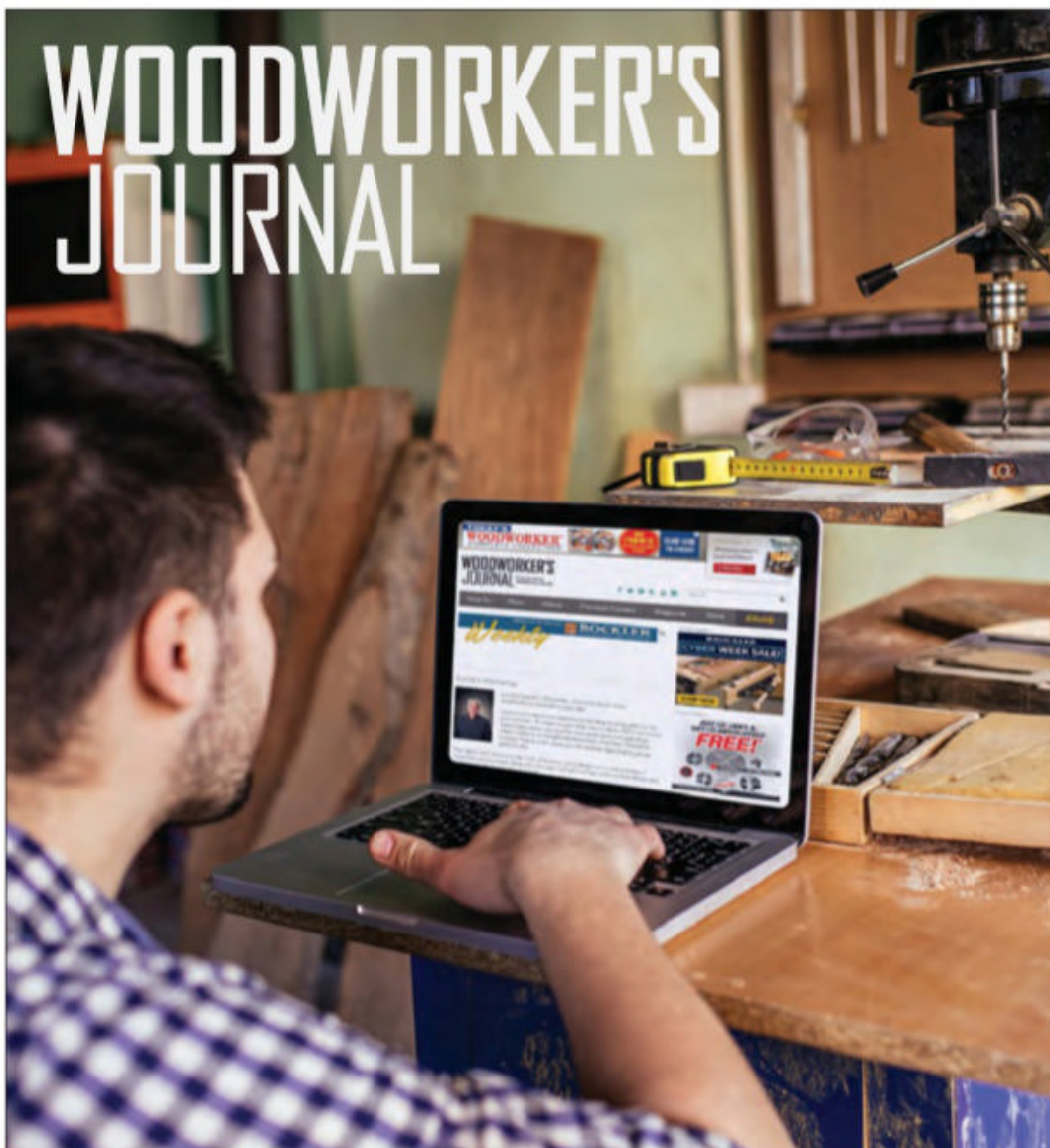
TYPICAL DRYING CAPACITIES
LD82 - 1,170 BF Softwood
FD100 - 5,400 BF Softwood

Ebac Industrial Products Inc

East Coast Office
700 Thimble Shoals Blvd, Suite 109,
Newport News, VA 23606-2575

West Coast Office
2060 Chicago Ave, Suite C7,
Riverside, CA 92507

Toll Free 1-855-873-6800 www.ebacusa.com



YOUR WEEKLY WOODWORKING FIX

The Woodworker's Journal Weekly is a free, fully digital woodworking newsletter. It was the very first online woodworking newsletter (launched over 20 years ago) and remains the most popular and widely read today.

Every week we'll send an email to your inbox full of fresh editorial content about your favorite hobby. You'll find workshop tips and tricks, woodworking articles and how-to videos — we even have a woodworking-themed crossword puzzle. Plus, every issue includes two free downloadable plans!

Check it out at the link below and sign up for your free subscription today!

WWW.WOODWORKERSJOURNAL.COM/WEEKLY/SUBSCRIBE



There's more online at
woodworkersjournal.com



Check online for more content
covering the articles below:

Adirondack Rocker
(page 20): Making templates
from gridded drawings (video)

**Translucent Screen
Shutters (page 30):**
Using a routing jig to form
lattices (video)

Carving Linenfold Panels
(page 36): Process for carving a
linenfold panel (video)

What's in Store (page 46):
Featured tools in action (videos)

Tool Preview (page 48):
Take a closer look at Laguna's
new 14/CX Bandsaw (video)

Flex Hose Limitations

Will using only ribbed flex hose in a dust collection system reduce the airflow significantly and result in poor dust collection?

Austin Davis
Via the Internet

WJ Responds: The short answer is yes, and here's the longer reason why. While pleated flexible hose is convenient for connecting a dust collector to shop machines, and it's less expensive than smooth metal ductwork, the downside is a significant loss of static pressure that reduces chip-collection efficiency. In his book, *Woodshop Dust Control: A Complete Guide to Setting Up Your Own System*, Sandor

Nagyszalanczy explains the problem this way: "Moving air is subject to friction, measured as inches of static pressure. Static-pressure loss is the energy lost as air and chips rub against the sides of the duct as they travel through it. Traveling around corners and through transitions (such as where branches merge with the main duct) creates even greater static-pressure losses ... Since the corrugated inside surface of flexible hose typically creates three times the air friction of smooth-walled pipe, it's a good idea to keep flex-hose runs short to reduce static-pressure losses in your duct system."

Shop Sharing Idea...

I have a very nice shop, 20' x 30' with 12' ceilings, radiant floor heat and a SawStop table saw. I'm barely proficient as a woodworker, but I've always wanted a decent workshop. So, when I retired, I rewarded myself. Lately, I've been toying with the idea of looking for some folks who are actual woodworkers that would like to rent some space in my shop with the ulterior motive of me learning from them. I'd be very interested in hearing what other readers have to say about this arrangement.

Tim Leach
Via the Internet



INSIGHTS

Two Expert Tips for Drill Press Users

■ On most drill presses, the depth stop rod has two knurled nuts on it that are supposed to lock together to hold the depth setting. These nuts often loosen up, allowing the drill bit to go deeper than you planned and quite probably ruining the workpiece. To prevent this, place a thick O-ring that fits loosely over the rod between the two nuts. When the nuts are tightened against the O-ring, they will stay put.

■ To properly tighten a drill chuck, use the key in all three of the keyholes. Go around once to snug up the bit, then go around a second time, tightening with the key in all three holes to fully lock the chuck.

John White

Care and Repair of Shop Machines: A Complete Guide to Setup, Troubleshooting and Maintenance
The Taunton Press; ISBN: 156158424X

OUR WEEKLY READERS

Hide Glue

Does it get used in your shop?

Recently, we asked our *Weekly* online newsletter readers if they use hide glue. Here are some of their comments.

"I use it all the time. Started using the new bottled version, and I haven't looked back. The [glue] beads are collecting dust. In damp situations, I still use PVAs or polyurethane. Cyanoacrylates have a place as well. I make and repair string instruments for fun, so the hide glue is a good fit. Over the years, I started using it more and more for other projects after it became available in the bottle form.



Bottled stuff doesn't smell that bad compared to a hot glue pot." - **Chris Jenkins**

"I have used both Titebond hide glue and Old Brown Glue. I find myself using them more and more because of the long open time and easy cleanup. I build acoustic guitars and furniture, and for most any purpose, it's as strong as any other glue that you can use. After all, it's the oldest glue known to mankind." - **Charles Brown**

"I have been using Titebond Liquid Hide Wood Glue in bottles for at least 10 years for new builds and repairs. It is considered a 'reversible' glue in that joints can be undone by getting the glue wet or soaking in water until it softens. Obviously not the right glue to use for any project subject to getting wet. Hide glue is what I use to repair older antiques (1940s and before) because it is period-correct and can be cleaned up easily with water. It also dries fairly dark and therefore does not show much on darker joints. Additionally, it can be thinned with water and

injected into joints or under loose veneer. It is not the only glue I use but one I could not live without. If I only had one woodworking glue to use for the rest of my life, it would be hide glue without a doubt."

- **Dave Smith**

"Even though I have used Titebond Original and III, I am mainly working with liquid hide glue. I use both Old Brown Glue and Titebond Liquid Hide Wood Glue. My goal is to be able to prepare my own. I am still working on learning on how to prepare it, use it and store it. To me, the benefits of hide glue are super clear, and in my humble opinion it makes all the sense in the world to use it in a hobbyist shop over PVA and other types of glues. That doesn't mean that for certain applications PVA, CA or epoxies should not be used. When it comes to the smell, I understand that many people really dislike it. I wouldn't replace my trusty cologne for it, but I don't hate it either. To me, it's just another woodshop smell."

- **Edward P. Leonard**

What's This?



Barney Heller, hailing from North Wales, Pennsylvania, found this elongated pliers in his father's tools. "The bottom [dial] twists but doesn't seem to do anything. He wasn't much of a mechanic or woodworker, so this stumped me." Can you shed some light on its purpose? Email your answers to stumpers@woodworkersjournal.com or write to "Stumpers," Woodworker's Journal, 4365 Willow Drive, Medina, MN 55340.

Update: Todd Double's Lutz-handled tool in the February issue received no guesses, so its purpose remains a mystery!

TRICKS OF THE TRADE

Ideas for Low- or No-Cost Shop Helpers



Keep Track of Dull Edges by Coloring Them

I use turning tools with carbide-insert cutters. The inserts can't be sharpened easily, but the tools with square cutters have four edges, so you can rotate to a fresh edge when needed. Still, it can be hard to tell visually which edges are dull, so I just color the used edges on top of the insert with a permanent marker. Now it's easy to keep track of how many sharp edges are still left before it's time to replace the insert.

Dean Graham
Warr Acres, Oklahoma



Save Those Pizza Savers!

Those little three-legged plastic pizza savers that prevent the pizza box from collapsing have great workshop use, too! I turn them upside down so that the small tips are up. They are perfect for painting or spray-finishing projects. They can be used as many times as you want or they can be thrown away, and I have found that each will support at least 10 lbs. They can be purchased online for less than 15 cents each in a quantity of 100. Or just save every one that comes with your pizzas.

Jim Wilson
San Marcos, Texas



Cheap Drawer Liner Has Many Shop Uses

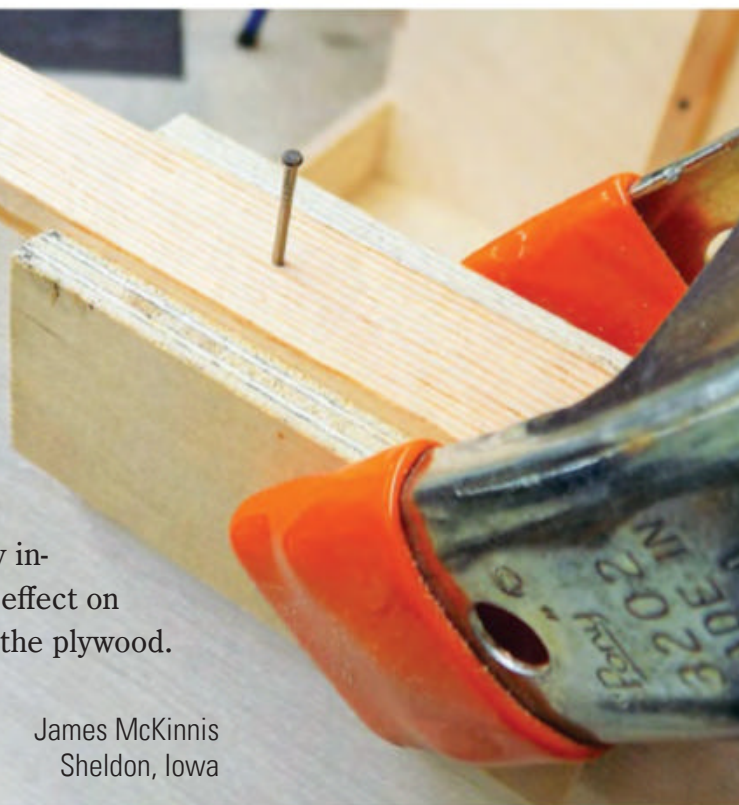
Did you know that those dollar discount stores often sell foam liner for kitchen drawers that works every bit as well as the mats we buy for sanding or routing? For just a buck or so, I use these for those purposes, but I also cut them into smaller pieces to help unscrew stuck lids on jars or to get a better grip on screwdrivers. When they tear, just toss them out and buy another one. They're so inexpensive, I won't spend full price on a sanding mat again.

Tony McQuay
Little Rock, Arkansas

Scrap Channel Makes Edging Easier to Install

When nailing wood face trim to a plywood edge, such as to hide the core material on the front of a cabinet or shelf, I sometimes find that the trim will "walk" on me either to the inside or outside of the piece I'm nailing to. My solution is to clamp a small piece of scrap wood on each side of the plywood to make a channel for the trim to fit snugly inside. Then, driving nails through it has no effect on shifting its position relative to the edge of the plywood. Problem solved!

James McKinnis
Sheldon, Iowa





PICK OF THE TRICKS

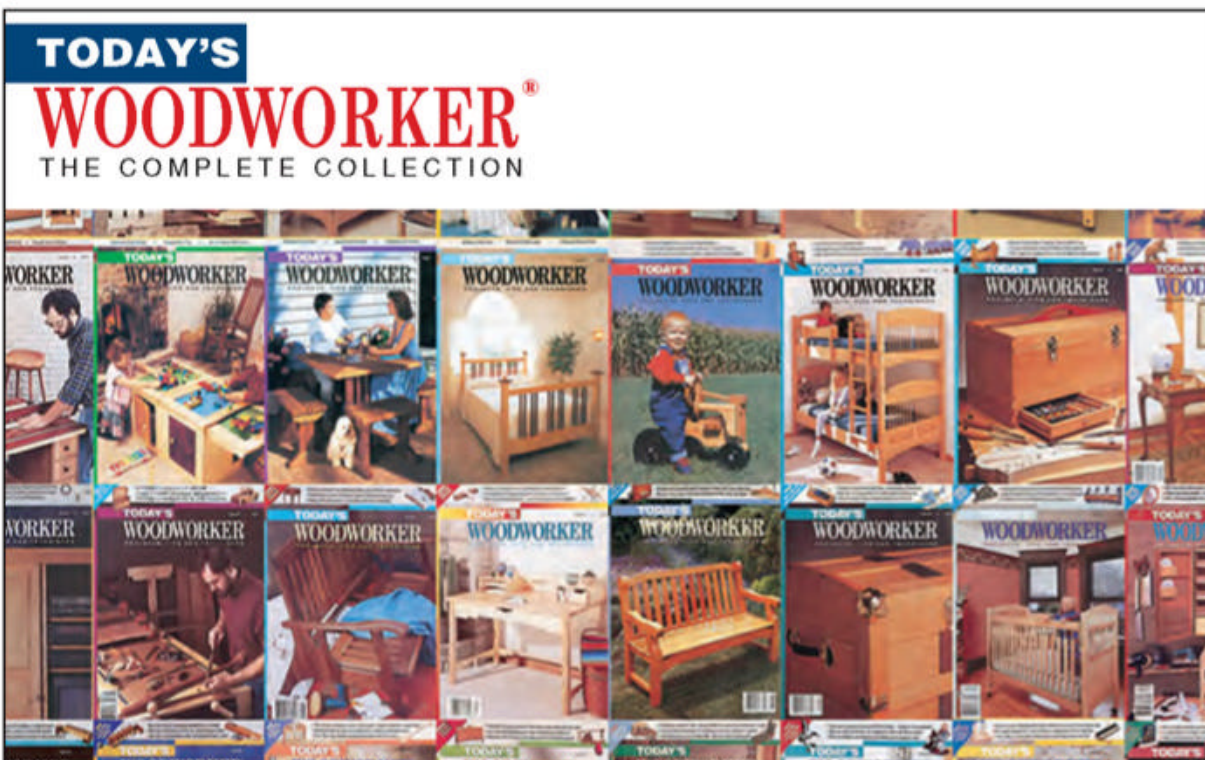
Don't Sweat Those Spinning Jaws

The jaws on my lathe's scroll chuck are dangerous when they're open wide and spinning, and they can take off a lot of skin quickly. To reduce that risk, I wrap a wrist sweatband around the jaws and secure it with a rubber band cut from a bicycle inner tube. It's much easier to see the sweatband than the bare spinning jaws, and if I get too close, my hands are warned by the soft cloth before I get hurt.

Randy Wolfe
Hoover, Alabama



In addition to our standard payment (below), Randy Wolfe of Hoover, Alabama, will also receive a Milwaukee M18 FUEL™ 16 Gauge Straight Finish Nailer for being selected as the "Pick of the Tricks" winner. We pay a one-time sum of \$150 for each trick used.



Item 48689

The Today's Woodworker Complete Collection CD compiles everything — from projects (over 200!) to techniques and tips — from over nine years' worth of Today's Woodworker magazine, the predecessor to Woodworker's Journal. Whether you're building for your kids, grandkids, your spouse or yourself, you'll find a project that fits your needs.

www.woodworkersjournal.com/wj2432
or call 800-610-0883 (code WJ2432 & item #48689)

FREE



The most complete catalog for woodworkers

- Featuring over 10,000 items
- Innovative jigs and tools
- Router accessories
- Rare hardwood
- Turning supplies

Get your **FREE** catalog today
at rockler.com/catalog-request or
call 1-800-279-4441 (Code 1071)

ROCKLER
CREATE WITH CONFIDENCE

SHOP TALK

Crossing the Finish Line

By Rick Weil

What's the hurry? Focus on quality rather than speed.

When I was first starting out as a turner, my goal was to turn, sand and finish a reasonably good bowl-shaped object in four hours or less. I don't know why this seemed to be a good idea, as I wasn't going to be able to earn anything close to minimum wage no matter

how quickly I turned.

I lived by the motto, "From firewood to firewood." This was helpful at first. I didn't worry about perfection as it wasn't going to happen anyway. I turned a lot of "roadkill" blanks, and when things went sideways with one of them ... well, no big

deal, it started out as firewood anyway, so into the burn pile it went. Turn and burn, man!

The one good thing that came out of this approach was a willingness to discard any piece that wasn't as good as I could make it. I sign all my work, even in the early days, and I don't want someone

someday to pick up a crap bowl and see my name on it.

Around about bowl #50, I had a bit of an epiphany. I wasn't really mastering the craft but relying on a mix of skill and luck to produce a signable piece. I realized I needed to commit to a bowl, start to finish, if I wanted to become a better turner. Once I mounted a blank on the lathe, I had to learn how to deal with whatever was thrown at me. The time it took to complete a bowl wasn't important, only the end result. It helped that I had a day job!

If the blank I cut had unbalanced grain, I dealt with it. I made a three-pin driver with two adjustable pins so that I could orient and tilt the poorly cut blank on the lathe to balance the grain. I figured out how to do interrupted cuts to true up the wobbly off-axis blank. And the next time I cut a blank, I made sure the grain was as symmetrical as it could be before it went on the lathe.

Lessons in Patience

I learned how to adjust the design of the bowl on the fly to compensate for "design opportunities" presented by bad wood and catches. I learned how to inlay splits and voids that emerged. If a bowl warped as it dried, I learned how to remount and re-turn it back into symmetry. Some bowls needed to be re-turned twice because I didn't let them fully dry, so I learned patience.





Annular marks caused by over-pressuring the heel of the gouge were a problem — and always in the inside of a bowl. I learned to grind the heel down to minimize these marks, and I learned to float rather than pressure the bevel of the gouge.

For some reason, I like to turn spalted wood. Some spalted blanks were more “mulchy” than others — turning them required liberal use of a hardening oil or even a mix of hardening oil and varnish to stabilize them before the final turning and sanding.

Torn grain happens, and sometimes you just have to resort to an “80-grit gouge” to get rid of it. I learned to sand to 120-grit, flood the bowl with tung oil (or linseed), let it harden and then sand back with 80-grit almost to bare wood. This cuts through any turning glaze, reduces, if not eliminates, torn grain and fills in pores in the wood. Then I apply a light coating of tung oil, give it a day to harden, do a final sanding with 120-, 180-, 260- and maybe 320-grit and apply the final coat of finish.

I’m still not very fast. But my percentage of signables is way up there, and I’m fast enough to at least earn minimum wage, so I’m happy.



Storm Trees Business is Cleaning Up

By Joanna Werch Takes

Minnesota woodworker's venture converts discarded trees into lumber.

Andy McLean's Storm Trees business originated with an encounter with a city forester. He'd been a garage woodworker for a few years by then and, when a storm felled a white oak tree in a park across from his house, "I'm like, 'There's a lot of lumber in there.'"

He started harvesting the tree with an electric chainsaw and, at one point, found the forester's note nailed to the log: "Call me." Turns out, he couldn't do that in a city park, but "He told me, 'You really want logs? The city has massive quantities of logs that we don't really know what to do with,'" McLean reports.

What the city had, McLean says, was "a pile of logs, the better part of the size of a



Storm Trees founder Andy McLean, left, and partner and COO Patrick Hughley, right, use a Norwood sawmill to process the logs they acquire from sources like municipalities and tree services into board lumber.

football field, and turns out that they're paying to get those turned into mulch – and it's all oak, and ash, and maple and all of this high value, high quality material. I was like, 'What if I told you I'd take all of it?' I went and bought a truck trailer, skid steer, sawmill, kiln, warehouse, quit my job and got to work on trying to divert some of this stuff from the waste stream."



The company accepts whole logs that might otherwise end up becoming mulch or presenting equipment-damaging conundrums for tree services.



Earlier this year, the Storm Trees warehouse facility held about 150 trees or logs, representing about 30,000 board feet; 14,000 in board feet had already been milled.

Backlog of Logs

The reason the city of Minnetonka in Minnesota had such a backlog of logs was due to a confluence of factors, McLean says. Trees come down due to emerald ash borer, oak wilt, storm damage; warmer winters may have some impact. Subsidy shifts to solar over biofuels changed

municipalities' markets for mulch.

Partnering with friend Patrick Hughley, McLean began acquiring wood from tree services and municipal mulch sites. They're often happy to hand over large tree trunks because, "A: they don't necessarily have the home that they used to for the

mulch and B: the big stuff is what breaks their equipment,” McLean says. Some material is dropped off at the Storm Trees warehouse, “but I’ve said that I’m like an Uber driver for logs,” he adds. “I’ll get a ping, ‘We’ve got a tree coming down, can you be here in, like, 30 minutes?’”

For all this material, Storm Trees tracks data. “We track every board foot that we produce, and then we quantify the carbon sequestration characteristics of those board feet,” McLean says. “Wood is a natural carbon sequestration vehicle. Every city, a lot of companies, all have carbon reduction plans.” They’re tracking granular data, including species – varying wood densities store different levels of carbon – and asking what people want to know.

Capturing Footprints

“Would you like to know where it goes? Would you like to know does it come out as a live edge piece? Is it an 8/4? Our end game is to be

able to capture the actual

carbon footprint of every board foot,”

McLean says. He used a live edge table destined for an IT company as an example. “I know

that this tree was taken seven miles from the place where it’s going to be used as a table. I know that I drove it here in a truck on a trailer, I know that it ran through a sawmill. All those things layered together can help us capture the carbon footprint as opposed to just the carbon sequestration.”

McLean and Hughley build simple projects, but their focus is on lumber. “It’s time-consuming to pick up and mill trees, dry wood,” Mc-

Lean says. Currently, they sell to furniture manufacturers, cabinetmakers and craftspeople, plus supply a school district’s woodshop.

Passing the Smell Test

Some contacts came from a Minnesota Woodworkers Guild Expo. “One of my bigger fears as we started this whole operation, was, ‘Is it going to pass the smell test?’” McLean says. “It’s like I’m saying, ‘I got this tree, it’s essentially been defined as somebody else’s garbage, and now you’re going to use it for your expert level project.’”

He also has conversations in the field, where people might reminisce about family sawmills. He says, “It’s actually shockingly moving when you’re sitting there running a skid steer and a sawmill and you’re covered in dirt and, all of a sudden, you’re having a deep conversation with somebody.”

Part of the appeal, Hughley says, is “[We’re] doing some good with business, and people want to see that succeed.”

The limiting factor, McLean adds, “is our ability to process and the sheer volume. If somebody opened up shop doing the exact same thing across the street, we’d be fine. There’s no shortage of desire, demand, or supply.”

For more information, please visit stormtrees.com, call 612-979-5193 or follow [@stormtreeslumber](https://www.instagram.com/stormtreeslumber) on Instagram.

A version of this article originally appeared at eplocalnews.org.



Twin Cities-based Storm Trees produces lumber from a variety of local hardwoods that include ash, cherry, walnut, white and red oak, box elder, maple, elm and honey locust.



McLean and Hughley assembled Nyle L200PRO dry kiln unit bands in a shipping container to adhere to moisture removal schedules. The heat treatment cycle sterilizes the salvaged wood.



Storm Trees tracks every board foot it produces, then quantifies the carbon sequestration characteristics of those board feet.

Adirondack Rocker



By Chris Marshall

We update this classic with a curvy twist to make it an even more enjoyable place to sit.

Four years ago, we published a “modern” version of the classic Adirondack chair. Rockler has produced a set of cardboard and MDF templates (items 61139, 62667) as well as a hardware kit (item 65175) to make the construction process even more convenient. Customers and our staff have found this chair to be very comfortable. So for 2024, we thought we’d take a good

outdoor chair one step further and add rockers to it!

A lot of prototyping has gone into these rockers to get their shape just right. And it's surprising how much more relaxing the chair is to sit in with them! They raise the seat height a few inches so it's easier to get out of, and the rocking motion feels stable and pleasant. I think you'll really enjoy the enhancement! And with the exception of adding the rockers and two blocking pieces, you'll build the exact same Adirondack chair using the original template kit.

The cut list in the template kit calls for the following six boards: two 1 x 6 x 8'; one 1 x 8 x 8'; one 2 x 4 x 8'; one 2 x 6 x 8' and one 2 x 8 x 8'. Add a second 8 ft 2 x 8 to the tally so you'll have ample material to make the two rockers.

From Cardboard to Hardboard

If you already have the chair's templates, the only new one you'll need to make from scratch is the rocker shape, and there's a gridded *Drawing* on page 24 for that purpose. I didn't build the chair for the 2020 article, so I ordered a set of the cardboard templates. I began by tracing each one onto 1/4" hardboard to create rigid versions for template-routing. I rough-cut those to shape, then sanded them carefully up to my layout lines until they matched their cardboard counterparts. You can skip this step if you buy Rockler's MDF template kit instead or if you plan to just cut out the chair parts after tracing them with the templates.

Now, create a template for the rockers. I made mine from a scrap piece of 7" x 37" plywood. Draw a grid of 1/2" squares on your template blank, then using the drawing as a reference, carefully plot and mark enough points on the workpiece grid to approximate the rocker's major top and bottom curves. I used a long scrap of 1/4"-thick x 2"-wide MDF as a flexible batten to draw these large curves. The smaller front and rear end curves of the rocker shape were easy to create by tracing around a small French curve.

Once you have the overall rocker laid



Rockler's white cardboard templates work fine for tracing part shapes directly onto the chair workpieces and then cutting them out. But the author used them to make a set of 1/4" hardboard templates instead for template-routing. This way the hardboard templates can be used over and over again.



Use the gridded Drawing on page 24 for plotting points onto a plywood scrap to create the rocker shape. Here, a flexible batten squeezed inside a long clamp creates a fair curve to connect the points. Draw the legs onto the template as well and drill 1/8" holes through their corners (inset).

out, mark the front and back leg positions on it to match our gridded drawing. Then cut out the rocker template and sand it smooth. Take your template to the drill press and drill a 1/8"-diameter hole through it at the bottom two corners of each leg, marking these positions.

Shaping the Parts

Lay out and crosscut slightly oversized blanks of project lumber for all of the parts except for the back slats, following

the *Material List* on page 24. Those three back slats will need to be cut to exact length to obtain all three from one 1 x 8 x 8' board. Then use your templates to trace, cut out and template-route the back legs, arms, arm braces, front cross brace, lower back brace and upper back brace to final shape.

When these parts are done, trace the template for the middle back brace onto the top face of its blank. Now, take either the lower or upper back brace templates



Use the chair templates to trace the part shapes onto your project workpieces and cut them out. The author rough-cut his chair parts slightly larger than the template tracings in order to prepare them for template-routing.



Here, the pilot-bearing on a long flush-trim bit follows the edge of the hardboard template to rout the chair workpiece to an exact match. Alternately, you could sand the parts to final shape instead of template-routing them.



The author cut the three beveled edges of the middle back brace by sticking it to a scrap to tip the workpiece up to a 25-degree angle. This made it possible to cut without tilting the band saw table.



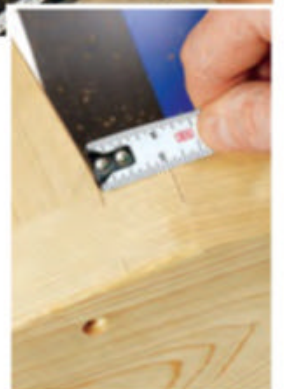
Begin assembling the chair frame by screwing the front cross brace to the back legs. Then raise this subassembly up, hold it upright with a clamped scrap and fasten the front legs to the back legs.

and compare them to what you've drawn on the middle back brace workpiece. The front angles of the upper and lower back braces (that will support the three back slats) match one another, but these angles don't match the middle back brace, right? They should; it's a mistake in the middle back brace template, and other builders have discovered this already. To fix the problem, I simply used the lower back brace template to redraw the two angled lines on my middle back brace workpiece that will support the outer two back slats. The position of the center back slat on the middle back brace template is fine where it is.

Now, cut the middle back brace to shape with a jigsaw or band saw. This part requires making three bevel cuts where the back slats will attach to match the backrest angle of the chair. While the printed note on the template specifies a 30-degree angle, I found 25 degrees to be a better overall fit. Arrange the saw or the workpiece so that the blade angles out toward the front, concave edge of the workpiece, and cut out this shape. I made these bevel cuts on the band saw by attaching my workpiece with double-sided tape to a scrap that was bevel-ripped to 25 degrees. That way, I didn't have to tilt the band saw table off of level, which would have made the bevel cuts harder to guide. Or, tilt your jigsaw's shoe to 25



Mark each back leg's top edge 1" behind where the rearmost seat slat will attach (inset). Locate the front edge of the lower back brace flush with these marks before fastening the back legs to it with pairs of #8 x 2 1/2" screws.



degrees, and make the bevel cuts this way instead.

Give all the workpieces a thorough sanding up through at least 120- or 150-grit. I then eased their sharp edges with a 1/8" roundover bit in a compact router to reduce the chances for splinters.

Building the Framework

At this point, you're ready to do some assembly! Start by attaching the front cross brace to the back legs with pairs of #8 x 2½" exterior screws. Align the top edges of the parts and drive the screws through the front cross brace into the front ends of the back legs. Drill countersunk or counterbored pilot holes first to prevent splitting the wood. I counterbored these, and all the other screw holes on this project, so I would be able to cover them with wood plugs.

Next, cut the front legs to shape from 5½"-wide stock. I made these blanks 25⅝" long to start with. Then angle-cut their ends to 10 degrees with these miter cuts parallel. That creates the 24⅝" part length noted in the *Material List*.

Go ahead and attach the front legs. To do that, lift the front cross brace up until the "feet" of the back legs are flat on your work surface. Now, position the front legs against the outside faces of the back legs so their front edges are flush with the bottom front corner of the front cross brace. Be sure the bottoms of the front legs are also flat on the work surface. Clamp the back and front legs together in this position; the bottom edge of the front cross brace should be about 9½" up from the bottom front corners of the front legs. Attach the front legs to the back legs with three #8 x 2½" screws driven through each front leg.

Next, on the top edges of both back legs, make a mark 1" back from the point where the curve for the seat begins (see inset photo, previous page). Slip the lower back brace between the back legs and align its front edge with these back leg reference marks. Its top face should be flush with the top edges of the back legs. Attach it with pairs of #8 x 2½" screws driven through the back legs and into its ends.

You're ready to attach the arm braces to the top outside faces of the front legs with pairs of #8 x 2½" screws driven through the front legs. I located the brac-



Attach the arms to the top ends of the front legs and arm braces using three screws per arm. The author created a subassembly of the middle back brace and arms first, held up with a pair of scraps.



Attach the back slats to the lower and middle back braces with #8 x 1⅝" screws. Then clamp the upper back brace in position 3¼" down from their top ends and screw the slats to it.

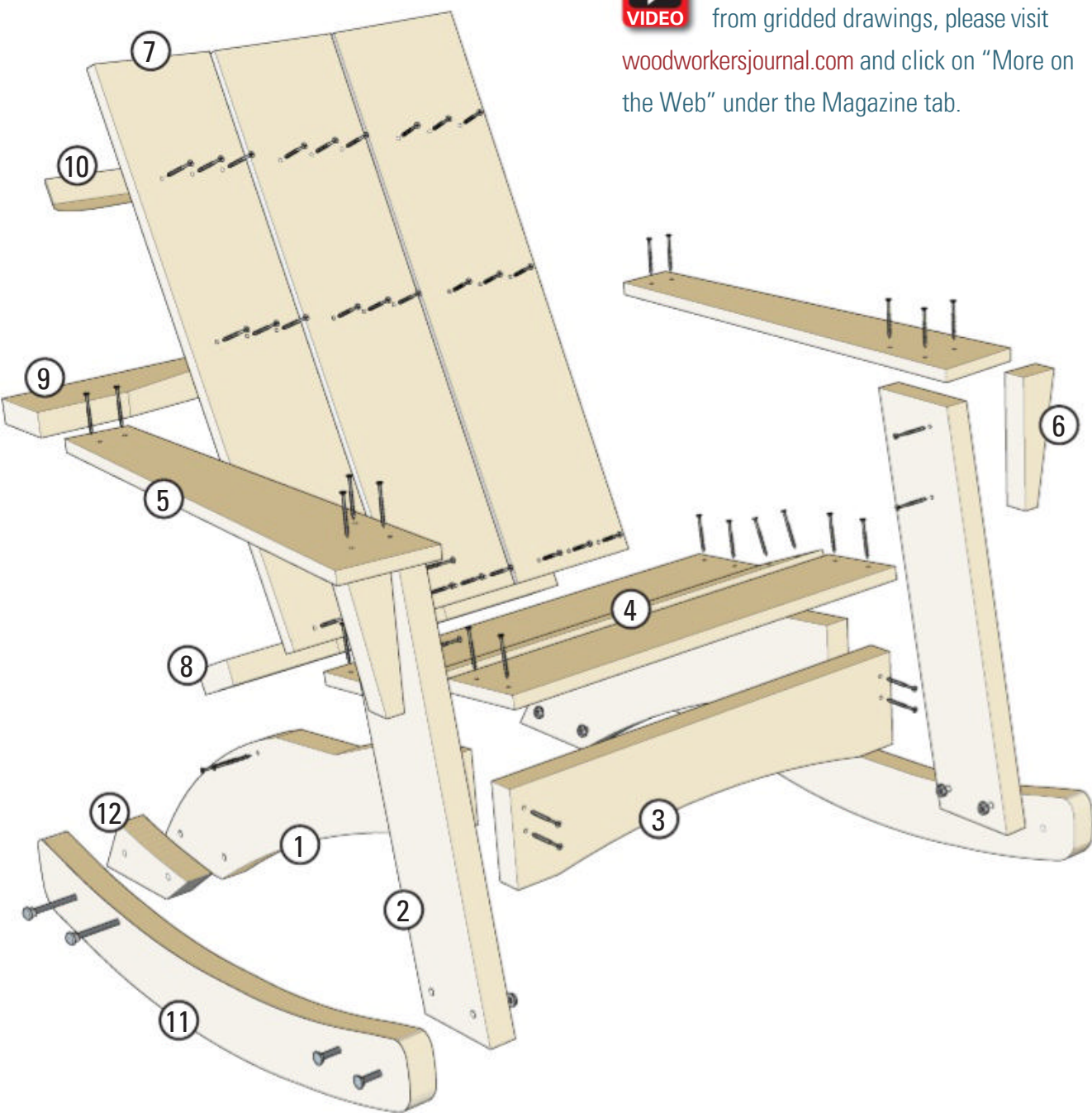


Spread the three seat slats evenly apart on the back legs, with the front slat overhanging the front cross brace by about 1/4". Fasten the slats to the legs with two #8 x 1⅝" screws per joint.



Set the back leg template into position on the rocker template and draw a line on the back leg template where the parts cross to create the leg blocking shape. Cut out two of them from scrap (inset).

Adirondack Rocker
Exploded View

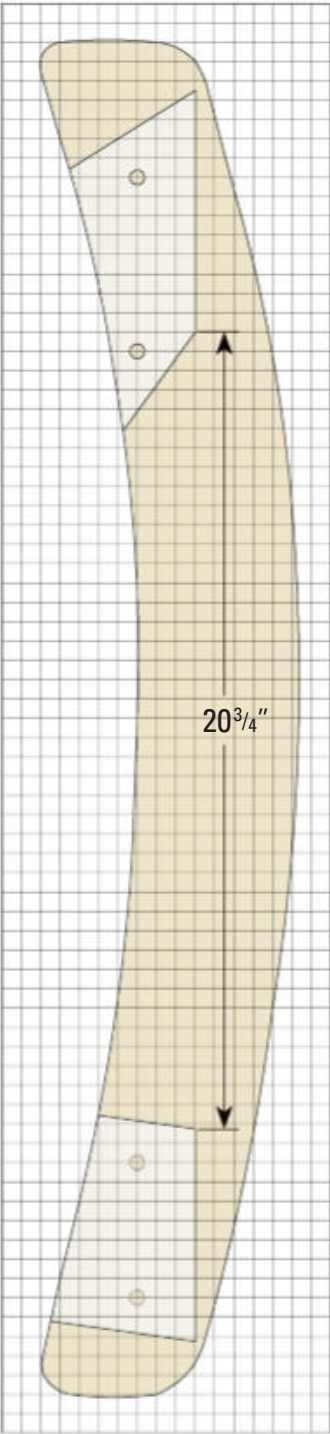


www.woodworkersjournal.com
MORE ON THE WEB



To learn how to create templates from gridded drawings, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

Rocker Template



MATERIAL LIST

	T x W x L
1 Back Legs (2)	1 1/2" x 7 1/4" x 31 1/2"
2 Front Legs (2)	1 1/2" x 5 1/2" x 24 5/8"
3 Front Cross Brace (1)	1 1/2" x 5 1/2" x 25 1/2"
4 Seat Slats (3)	3/4" x 5 1/2" x 25 1/2"
5 Arms (4)	3/4" x 5 1/2" x 28"
6 Arm Braces (2)	1 1/2" x 2 1/2" x 8"
7 Back Slats (3)	3/4" x 7 1/4" x 32"
8 Lower Back Brace (1)	1 1/2" x 3 1/2" x 22 1/2"
9 Middle Back Brace (1)	1 1/2" x 3 1/2" x 31 3/4"
10 Upper Back Brace (1)	1 1/2" x 3 1/2" x 22 1/2"
11 Rockers (2)	1 1/2" x 7" x 36"
12 Back Leg Blocking (2)	1 1/2" x 3 1/2" x 8 1/2"

es 1" back from the front edges of the legs. Then grab the middle back brace and both arms. Arrange these three parts and clamp them together so the back ends of the arms overlap the ends of the middle back brace and the back corners and edges are flush. Check that the arms are square in relation to the middle back brace; their inside edges should also be about 24 5/8" apart and parallel. Drive pairs of #8 x 1 5/8" screws into these corner joints to secure them.

Now, set this arm assembly on top of the front legs and adjust it so the front ends of the arms overhang the legs by 1 1/2". The arms should overlap the inside faces of the legs by 1/2". Drive three 2 1/2" screws down through each arm to attach it to the arm braces and front legs.

Adding Back and Seat Slats

Set the back slats into place so their bottom ends are aligned with the bottom face of the lower back brace, and space the slats about 3/8" apart. Attach the back slats to the lower and middle back braces with #8 x 1 5/8" screws. Use three evenly spaced screws per joint. Once that's done, you can clamp the upper back brace to the back faces of the back slats. Locate its top face about 3 1/4" down from the tops of the slats and attach the slats to it with #8 x 1 5/8" screws, driving three screws per slat into the brace. Go ahead and install the three seat slats, too. Arrange them so the front seat slat overhangs the front cross brace by about 1/4". Position the other two seat slats so there's consistent space between all three.

Making, Installing the Rockers

Use your rocker template to create two rockers on some 2x stock. Notice in the *Exploded View Drawing* on the facing page that installing the rockers requires adding a blocking piece between the rockers and the back legs. These account for the offset arrangement of the front and back legs. To make the blocking, set your back leg template in position atop the rocker template, and draw a line across the back leg template where it crosses the top edge of the rocker template. This lower portion of the back leg creates the blocking shape. Use the back leg template to draw two blocking shapes onto scrap 2x stock and cut them out. Then set the blocking pieces into position against the outside faces of the back legs and screw or nail them in place.

Remember those nail holes we first made in the rocker template? Now's when they'll be very useful! Set the template onto each rocker workpiece with their edges flush and use a thin casing nail inserted into the nail holes to prick the leg corner positions onto the rockers. (Keep in mind when doing this that the rockers are mirror opposites of each other; you're marking the leg positions on the *inside* face of each rocker.)

Use the nail marks to align the rockers on the legs and blocking and clamp the rockers in place. It's a good idea at this point to set the chair on the floor and test the rocking action to make sure the chair rocks evenly and well. Then attach the rockers to the legs with pairs of 5/16" carriage bolts, washers and nuts. You'll need a pair of 3½"-long bolts for each front leg/rocker connection and two 5"-long bolts for each back leg.

Finishing Up

Finish your rocker however you prefer with exterior stain or paint. Or leave it bare; it will weather to gray. I filled the screw holes with wood plugs first, to hide them. After cutting and sanding those flush, I brushed on two coats of an all-in-one primer/paint. Give the finish time to thoroughly dry. Then your "easy chair" will be all set for relaxing outdoors.

Chris Marshall is senior content editor of Woodworker's Journal.



Clamp the rocker template to each rocker workpiece with their edges flush, and tap a long, thin casing nail through each of the template's four drilled holes to mark the leg positions on the rockers.



Align the nail marks on each rocker with the corners of the legs and clamp them in place. Install the rockers with carriage bolts, washers and locknuts. Use two bolts per leg driven into pilot holes.



The cypress used for this chair looked bland, so the author topcoated it with an all-in-one exterior primer/paint in a flat sheen. Here's a chance to dress up your deck or patio with some bold color!



Pedestal Stand

By Nick Brady

New extended-bed lathe makes this attractive turned accent project a reality for our author.

We've had this old-fashioned candy machine in our family for some time, and while I have been meaning to make a nice stand for it, other projects and commitments seemed to always get in the way. But recently I acquired a Rockler VS 12-24 Variable Speed Midi Lathe (item 72333) with the accessory bed extension (item 71801), and I knew I had the perfect project for this lathe!

The candy machine fits well on the smaller top specified in the *Material List* on page 29. But you might prefer to make the larger top instead and use this Pedestal Stand to display a

big house plant or other object. Either way, let's get started making it!

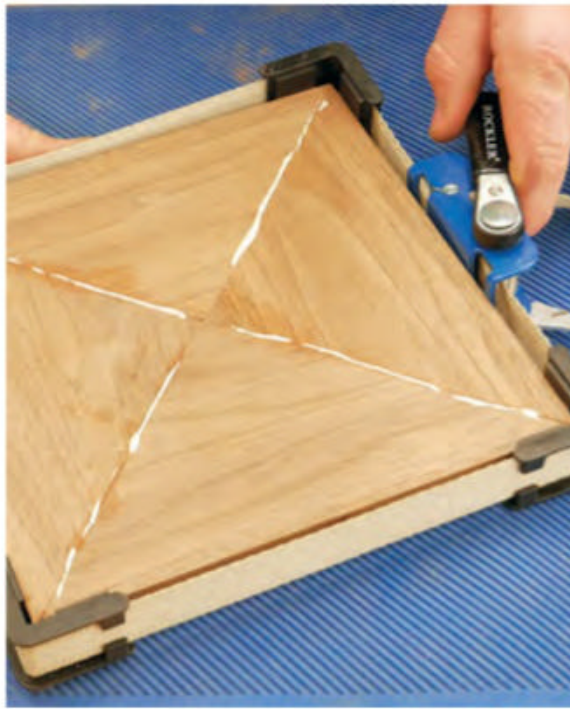
Milling and Gluing

Notice in the *Exploded View Drawing* on page 29 that while the small top is an edge-glued panel, the stand's discs, base and large top are each made up of four sections miter-cut into 45°-45°-90° triangles that are glued together into blanks to hide the end grain.

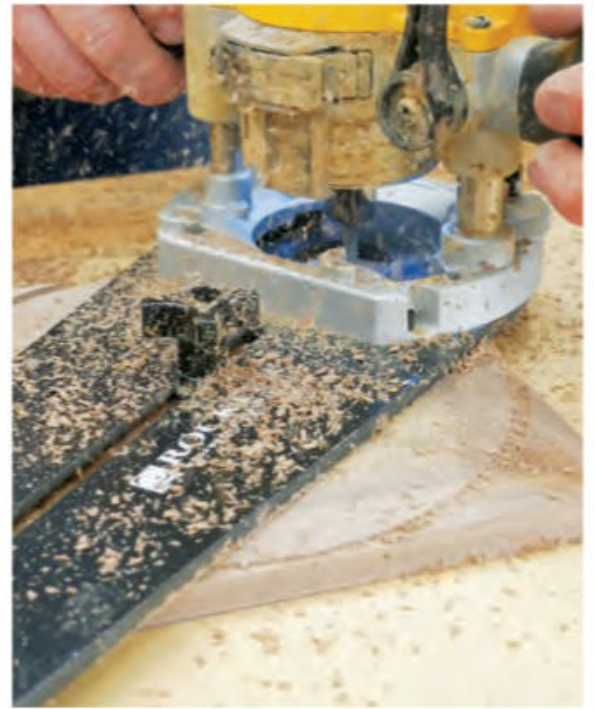
I settled on walnut for my project. At the table saw, I started by ripping enough of it and crosscutting it into sections (outlined in the *Material List*) to make each of the discs and



After ripping and crosscutting sections for the discs, base and large top (if you're making one), carefully cut each into a 45°-45°-90° triangle. The author used a miter saw for this process.



Glue four triangles together to form blanks for the required parts. A strap clamp with corner brackets is a great choice for holding all the glue joints tightly closed.



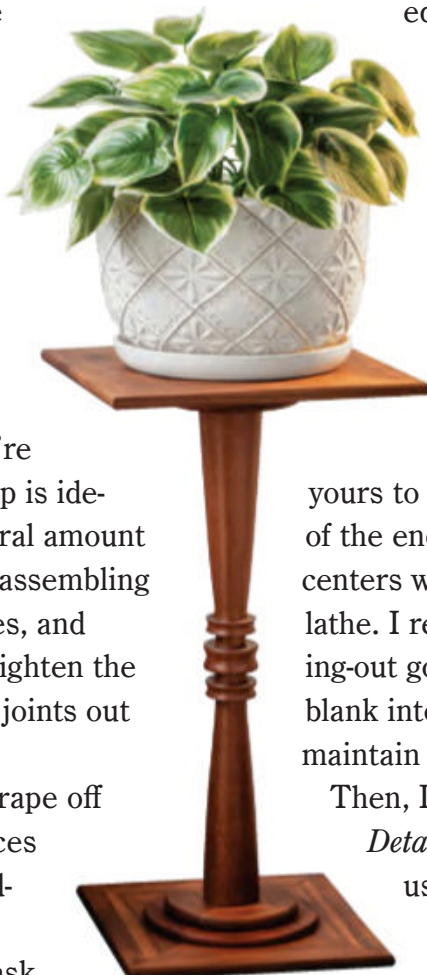
The author used a circle-cutting jig and a compact router to create perfectly round discs. Alternately, you could draw the shapes with a compass and cut them out on a band saw.

the stand's base. The two 6" discs need material ripped to 3" wide; the 7" disc needs 3½"-wide stock and the 8" disc requires 4"-wide stock. Do the same for the stand's base sections and the larger top, if that's the top you've chosen for your project.

From here, I took all the sections to my miter saw, swiveled it to exactly 45 degrees and miter-cut each section into a triangle. Keep in mind that the "top" of each triangle should be oriented at the edge of the workpiece and centered on the section's length. The tops of the triangles form a square corner. You may want to test your saw setup on scrap wood first to make sure four triangles will fit together without creating gaps.

Once all those are cut, it's time to glue together blanks for the discs and base (and large top, if you're making one). A strap clamp is ideal for this job. Apply a liberal amount of glue to all joints before assembling each group of four triangles, and make sure you don't overtighten the clamp that could push the joints out of alignment!

When the blanks dry, scrape off any glue and sand their faces flat. My random orbit sander with 80-grit sandpaper made quick work of that task.



Routing Round Discs

I used Rockler's Circle Cutting Jig for Compact Routers (item 48871) to turn my square blanks into four discs. To use this jig, first drill a 9/32" center hole to register the jig's pivot pin and then set it for each disc's radius. With a 1/4" straight bit installed and my compact router mounted on the jig, three progressively deeper passes in a clockwise direction cut through the stock. Secure each disc blank temporarily to a sacrificial board before routing it round.

Next, I eased the top and bottom edges of the discs, as well as the flat edges of the base, with a 3/8" roundover bit. Sand these parts up through the grits to 220 and apply a finish of your choice. I chose hard wax oil.

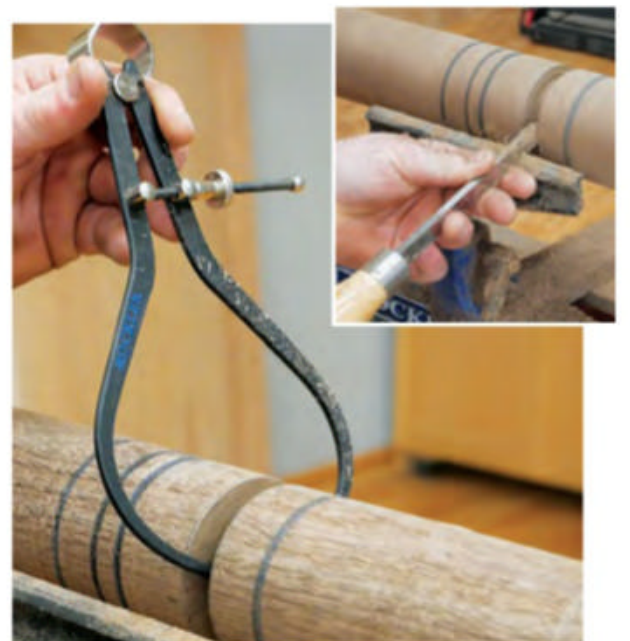
Off to the Lathe!

It's time to turn the pedestal! Start by cutting yours to length, marking the centers of the ends and dimpling those centers with an awl. Mount it on the lathe. I reached for a spindle roughing-out gouge to turn the pedestal blank into a cylinder. Take care to maintain a consistent diameter.

Then, I referenced the *Pedestal Detail Drawing* on page 29 and used a caliper and parting tool to establish final diameters at all of the key locations on



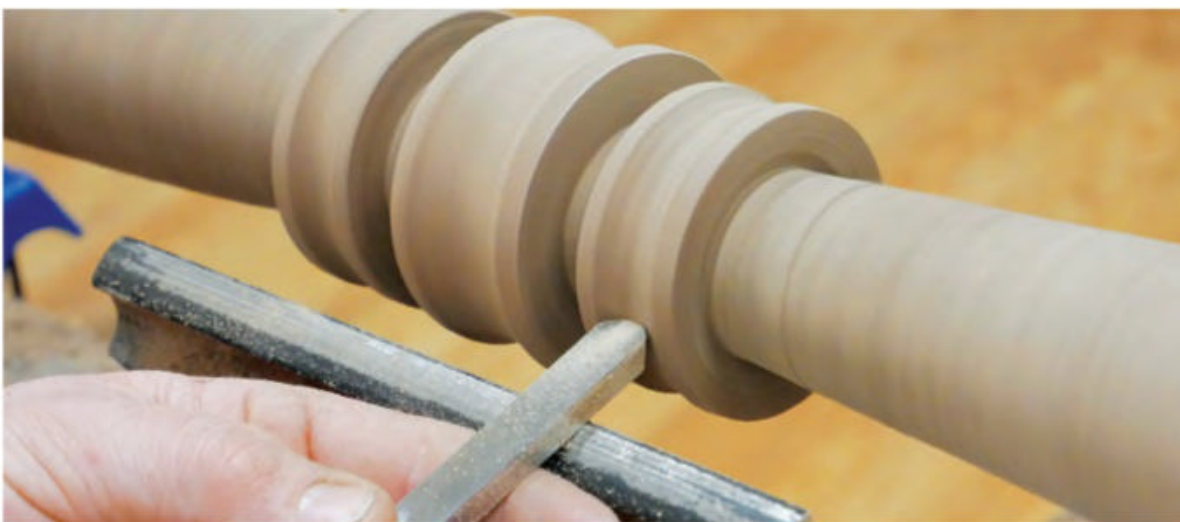
Mount a square blank for the pedestal between lathe centers and turn it into a round cylinder. A spindle roughing-out gouge, like the one shown here, is the best tool for this task.



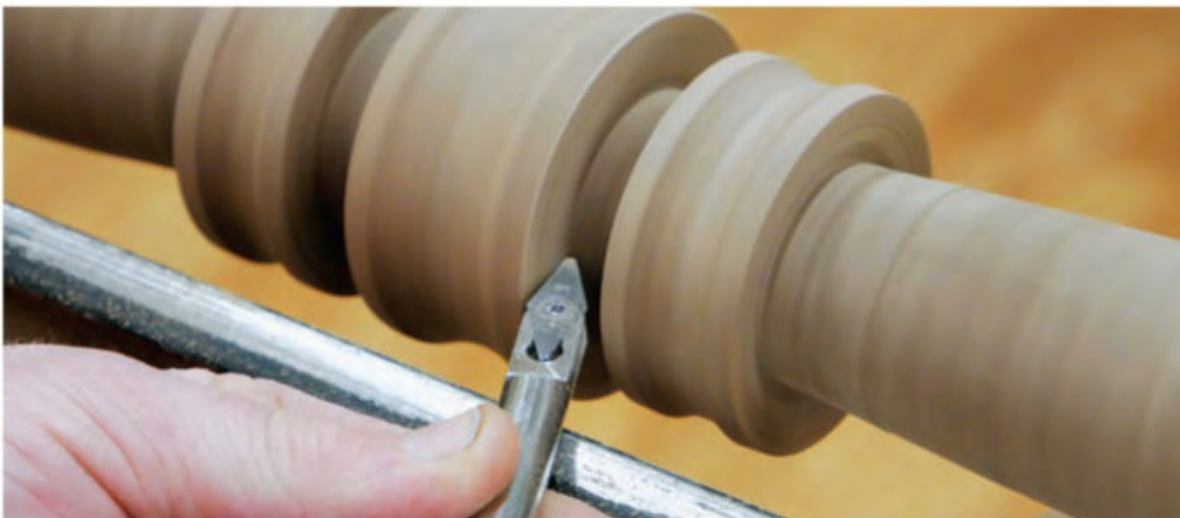
After marking off the major transitions on the pedestal with a pencil, use a parting tool to bring those areas to correct diameter (inset). Check your sizing periodically with a caliper.



Turn the long tapered areas of the pedestal to shape using a spindle roughing-out gouge or a skew chisel. Try to keep the tapers as flat as possible. A long rule (inset) will reveal any high or low spots.



Here, a spindle gouge shapes a concave recess into the center of each of the spindle's three middle rings. A round carbide-insert tool is another good option for this shaping step.



The author found a diamond-shaped carbide-insert tool helpful for working inside of the narrow areas between the rings when forming their slight top and bottom undercuts.



Hard wax oil or a shellac-based friction polish applied on the lathe are two quick finish options for this project's pedestal. Or wait until after final assembly and spray it with an aerosol finish instead.

the workpiece. From there, I used various traditional and carbide-insert lathe tools to turn the pedestal to final shape. While tapering the long top and bottom “straight” areas of the spindle, I found it helpful to reference against a long rule to identify any high or low spots that needed attention. Make these tapers as straight as you can.

The narrow center “ring” details have a slight undercut on each of their top and bottom faces. This creates the illusion that they’re floating. A diamond-shaped carbide-insert tool excelled at reaching into these tight places for me.

When the turning is done, sand the pedestal up to 220-grit and apply finish while it’s still mounted on the lathe. If you’re making the small top for this project, glue up a blank for it, cut it to final shape and sand and finish it. I rounded the corners of mine to 1¼” radii at the bandsaw.

Putting the Pieces Together

That brings us to final assembly. I attached screw-on rubber feet to the base to protect the floor and create a shadow line there. Now use two #14 x 4” lag screws to attach each stack of discs and the base to the pedestal. Be sure to first drill a pilot hole and a counterbore to recess the lag screw heads before driving the fasteners home. I grabbed several long #8 wood screws to attach the base of the candy machine and the top panel to the top disc. Once that was done, I could finally check this project off the to-do list! Now we’ve got a proper wooden stand for our family’s candy machine, and my new benchtop lathe tackled its first big turning job with flying colors!

Nick Brady is a project designer and builder for Woodworker’s Journal.



Install rubber feet on the base, then attach the base and bottom discs to the pedestal with a 4” lag screw. Counterbore the screwhead.



Install the top two discs on the pedestal with another 4" lag screw, just as you did for the base and bottom discs.

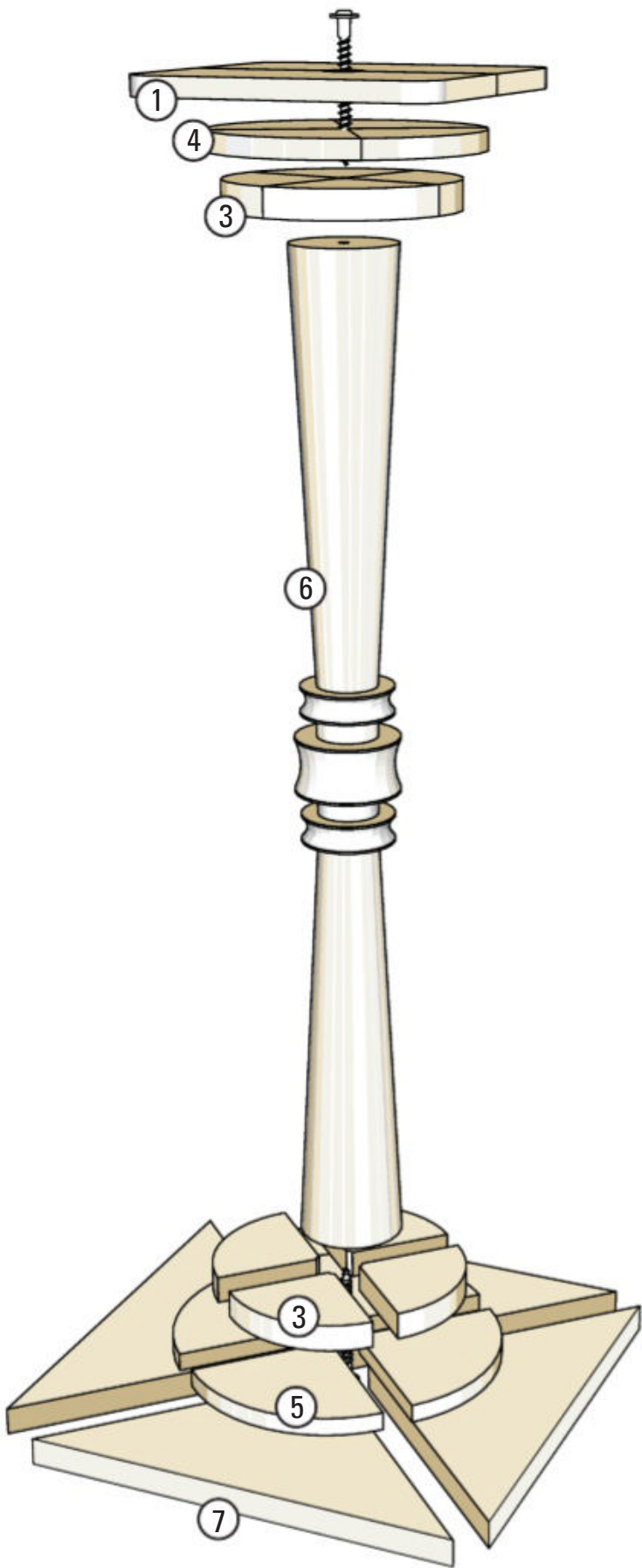


The author mounted the candy machine's metal base and top panel to the stand's top disc by driving #8 x 1" screws down through the parts.

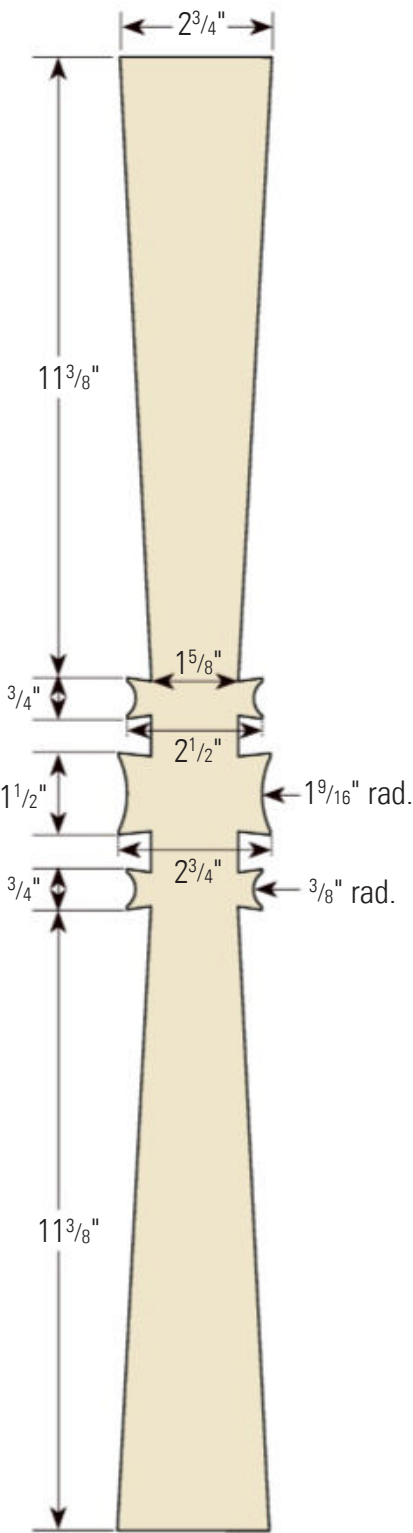


If the top surface of your pedestal stand's top will be visible, drive #8 x 1 1/2" screws through the upper discs from below to install it in order to hide the screwheads.

Exploded View



Pedestal Detail



MATERIAL LIST

	T x W x L
1 Small Top (1)	1/2" x 8" x 8"
2 Large Top, Sections (4)*	3/4" x 6 7/8" x 13 3/4"
3 Two 6"-Dia. Discs, Sections (8)	3/4" x 3" x 6"
4 7"-Dia. Disc, Sections (4)	1/2" x 3 1/2" x 7"
5 8"-Dia. Disc, Sections (4)	1/2" x 4" x 8"
6 Pedestal (1)	3" x 3" x 27"
7 Base Sections (4)	3/4" x 6" x 12"

* Not Shown in Exploded View

Translucent Screen Shutters

By Larry Okrend

These interior shutters let in light but don't compromise privacy. They're a straightforward millwork project with parts that can be produced in quantity and adjusted to fit various sizes of window casings.

Windows are meant to deliver light into your home's interior, but they can also provide an unwanted view into your home. That's why almost everyone wants and needs some form of window covering in their home (unless you live in the middle of nowhere or don't care about privacy). Although window treatments vary greatly in style and function, I think the best kind are the ones that ensure privacy while still letting in light — and ones that you can make in your shop.

This interior shutter project has a lot going for it, including excellent light transmission that doesn't compromise privacy and simple modular construction. You can use almost any wood for these shutters, but typically it's best to either match or complement your existing woodwork. I used vertical-grain pine that has a naturally attractive ribbon pattern and a medium ivory color. It's also easy to work and relatively inexpensive. A translucent shoji-style fiberglass material works well for the screen, but there are a number of other materials you can use (see final caption, page 35), such as rice paper and plastic-coated paper. Keep in mind that this is a millwork project, so it doesn't require quite the high level of workman-



ship you might devote to a furniture project. The thickness and width of the parts work for most window sizes, so you only need to adjust the length. For very large windows, you might want to scale up the size of the parts or add more lattice strips to the grid. The variations on this project are almost infinite, so you'll likely want to add your own special touches.

Measure, Mill, Join Frames

You'll need to start by measuring your window casing and checking it for square. Measure the exact opening, then subtract about a quarter inch from the sides and top/bottom to allow a little room for swing clearance and space for the hinges. (Most carpentry isn't as precise as your woodworking, so you may need to make some adjustments after you assemble the frames.) For large windows or ganged windows, consider making bifold or multiple shutters to span the area.

Because this project lends itself to mass production, it's best to mill the frame parts for all the windows you intend to cover before doing any joinery, to ensure consistency. (Read on to learn more about making the lattice strips.) A jointer and planer are almost a necessity to achieve straight, square and uniform stock. You might want to sand the parts lightly before you start the joinery.

There's a lot of flexibility when it comes to joinery. I used a Festool Domino to make floating mortise-and-tenon joints. This tool can quickly make strong, precise joints. However, a biscuit joiner is just as fast and makes acceptably strong joints. You can also attain very good results with dowels or pocket-hole screws.

Once you've glued and clamped the frames, you can sand them with 150-grit paper. Be sure to ease the edges enough so they won't splinter, but don't round them too much. If your shutters are a

matching pair like this project, mark the top edges with arrows that point to the front and inside stile edges. This will serve to keep the shutters paired and correctly oriented. Check the bare frames in the window casing to be sure they fit with some room to spare and make necessary adjustments. If the fit is too tight, trim the inside stile edges that form the closure between the shutters.

Now is as good a time as any to cut the translucent screen material. This should be done before fastening any lattice parts inside the frame because the bare frame serves as a pattern. The easiest way is to lay the frame on top of the screen material and trace around the inside with a pencil; then use a metal straightedge and a utility knife to cut the material.

Make Lattice Strips and Router Jig

If there's a fussy part of this project, it's making the lattice. The 3/8" x 3/8" lattice strips must be uniform, and the half-lap joints that form the grid must be precisely made. There are a number of ways to make the strips, but I've found that using a band saw and a planer is efficient and it



A Festool Domino is a quick way to make strong mortise-and-tenon joints for the shutter frames. Dowels, plate-joining biscuits and pocket-hole screws are good alternative joining methods.



When assembling the frames, spread glue evenly inside the mortises and on the tenons. A silicone brush works well here and can be easily cleaned because glue won't adhere to it.



Clamp the frames with even pressure applied on the center of the joints. Check for square by measuring diagonally across the frame from corner to corner with a tape measure.



Photo at left: To use a hand saw to make the 3/8"-square lattice strips, rip pieces slightly less than 1/2" wide from larger stock. (The piece shown is roughly 2" x 2".) **Photo at right:** Next, with the hand saw fence at the same setting, make the second cut. Use a planer to clean up the strips and mill them to exactly 3/8" square. You could also make the strips on a table saw, but there would be more waste, due to the wider saw blade kerf.

keeps waste and dust to a minimum.

First, rip wide pieces from 3" or 4" stock roughly 7/16" thick. Next, rip 7/16"-square strips from these pieces. Now you need to remove the saw marks and mill the strips to exactly 3/8" square. Run the strips through your planer, making four total passes: the first two on perpendicular sides of the strips to remove about 1/32" and then a third and fourth pass on the opposite sides for the final 3/8" dimension. The strips might not be perfectly square, but the deviation with pieces this small will be insignificant – try making a few practice pieces first. (If your planer won't adjust down to 3/8", you can make a subbase

out of particleboard or MDF to fit under the planer's cutterhead.) Make more pieces than you'll need because you'll unavoidably have some ruined pieces.

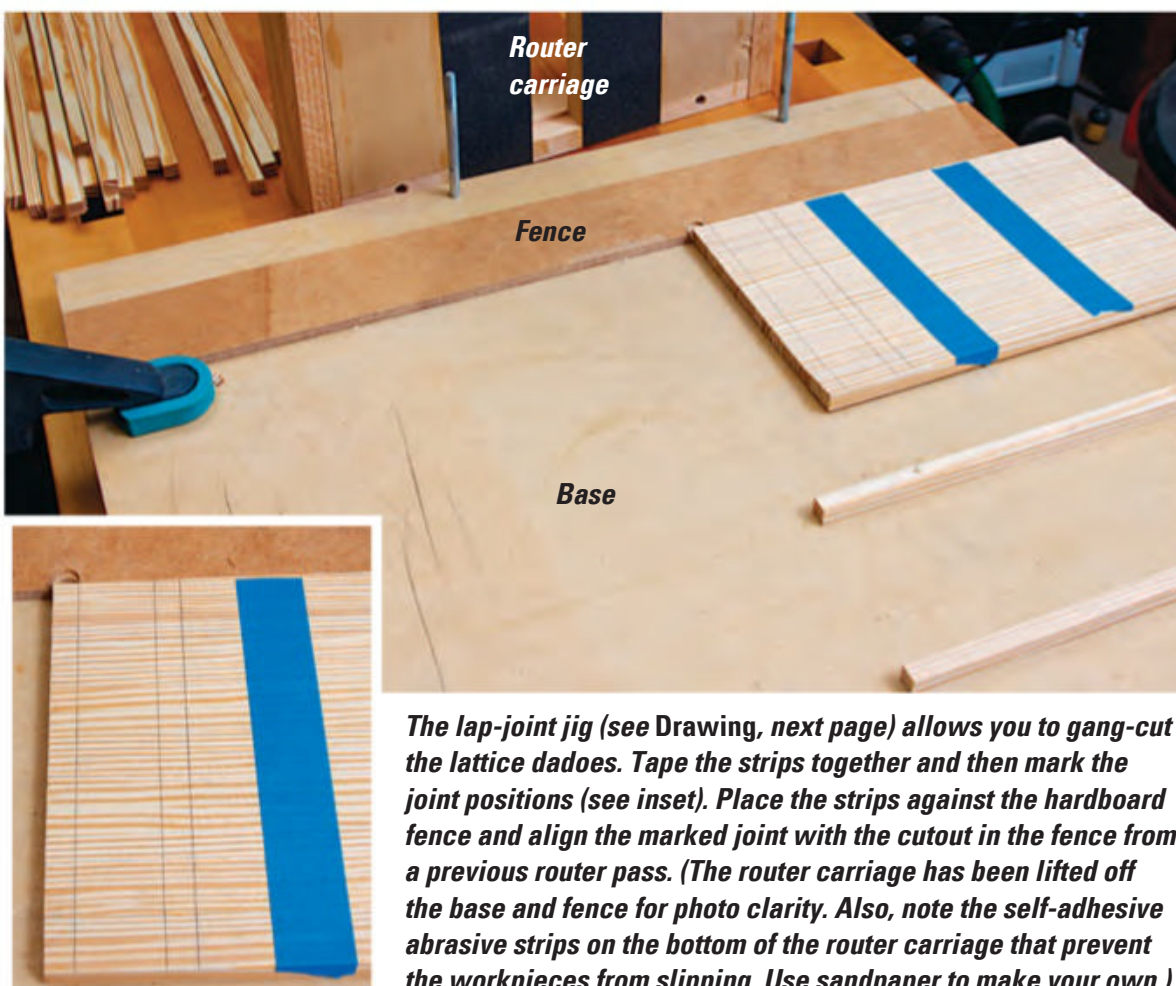
You can use a table saw to make the half-lap joints, but I think a router jig is more accurate and makes cleaner joints. The half-lap routing jig (see *Drawing*, next page) is simple and easy to make with MDF or particleboard and a few bits of hardware. There are two basic parts: the base and the router carriage. The base has a thin hardboard fence attached to it to align to workpieces so they're perpendicular to the router carriage. The router carriage is adjustable for different stock thickness with the carriage bolts

and should be made to fit your router (or at least the guide rails positioned for your router's base). Adhere sandpaper or self-adhesive abrasive strips to the carriage bottom to prevent stock from shifting. To ensure that the jig makes accurate cuts, all the parts should be square, the carriage bolt holes should align perfectly in the base and router carriage, and the fence on the base should be perpendicular to the slot in the router carriage. The fence should be the last piece you install because it's dependent on how the base and router carriage are aligned. Finally, run the router into the fence with a 3/8" bit to create an alignment mark.

Cut Half-lap Joints

There are several tips that can increase your success in cutting the half-lap joints. You should cut all the strips to the exact length before you cut the joints. Use the shutter frames to determine the fit, and you might want to make dedicated sets of strips for each frame in case there are slight dimensional differences.

Once you cut the strips, use masking tape to gang them together with the ends perfectly flush. Mark the joint locations in pencil, and then scribe the joint lines with a utility knife. This will help prevent any chipping or tearout from the router. When you place the ganged strips in the jig, be sure they're abutting the fence, that the joint lines correspond with the router alignment mark on the fence and that the carriage bolts are securely tightened. Also, place an extra piece of lattice to the outside of the ganged pieces



The lap-joint jig (see Drawing, next page) allows you to gang-cut the lattice dados. Tape the strips together and then mark the joint positions (see inset). Place the strips against the hardboard fence and align the marked joint with the cutout in the fence from a previous router pass. (The router carriage has been lifted off the base and fence for photo clarity. Also, note the self-adhesive abrasive strips on the bottom of the router carriage that prevent the workpieces from slipping. Use sandpaper to make your own.)



Use a plunge router and 3/8" straight bit to cut the dados in the lattice strips. Set the fences in the router carriage to work with your router's base. In this case, twisting the router between the fences produced the least amount of friction and the best stability and accuracy.

to help balance the height of the router carriage.

Rout the joints with a 3/8" straight bit and make the cuts in two passes while keeping the router pressed against the guide rails. Work carefully and don't force the router through the cut. Use dust collection if your router has it. It will enable you to see the start and stop of the cut much more easily.

Assemble the Lattice

You'll assemble the front lattice in the frame and the rear lattice as a standalone unit. The rear lattice acts as a retainer for the screen material and provides vi-

sual balance when the shutters are open.

Begin by marking the 1/8" setback guidelines for the front lattice inset with a combination square and pencil. Before you start, make a dry run to ensure the grid strips fit properly in the frame. The strips don't need to be glued; pin nails provide all the needed fastening. The holes made by the nails are so small they're almost invisible, and don't need to be filled. Attach the vertical lattice strips to the stiles then the horizontal ones to the rails. Now you can add the inside vertical strips with a little glue in the joints followed by the horizontal strips.



The inward facing lattice grid (the side that faces into the room) is permanently attached to the frame. Establish the grid's 1/8" setback with a combination square and pencil.

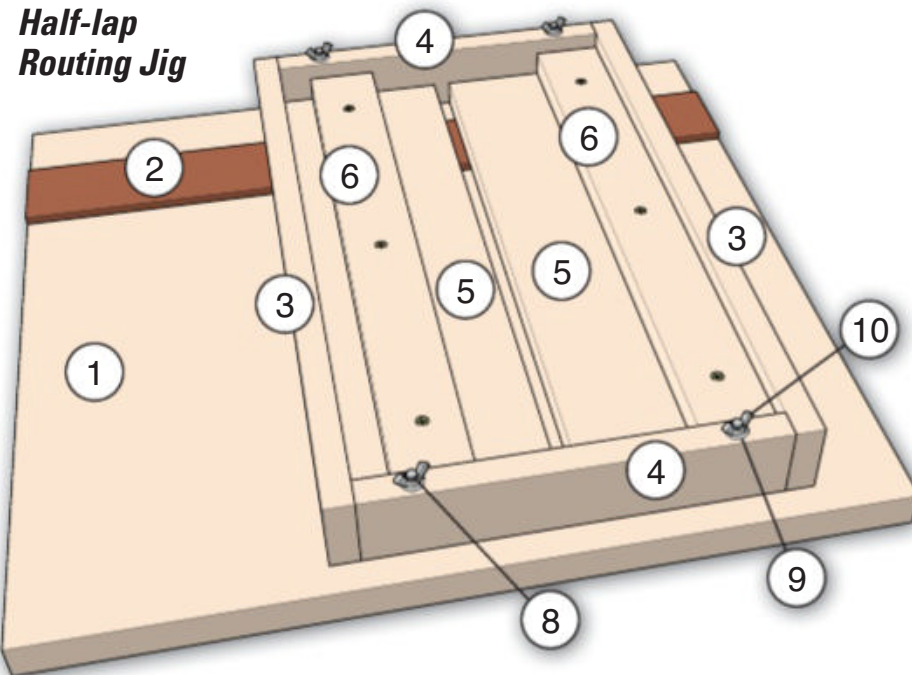


Use a pin nailer to attach the vertical perimeter strips first, then the horizontal strips. There's no need to glue the strips, and it's unnecessary to fill the pin-nail holes because they're almost invisible.



Continue the grid assembly with the inside vertical strips and, finally, the two inside horizontal strips. Glue these joints together and use small clamps if needed. Assemble the rear grids as stand-alone units; just be sure they fit into the frames easily.

MATERIAL LIST	
	T x W x L
1 Base (1)	3/4" x 20 3/4" x 22"
2 Fence (1)	1/4" x 2 1/2" x 22"
3 Router Carriage Frame Sides (2)	3/4" x 2" x 19 1/2"
4 Router Carriage Frame Ends (2)	3/4" x 2" x 10 1/2"
5 Router Carriage Frame Bases (2)	3/4" x 5" x 18"
6 Router Carriage Guide Rails (2)	3/4" x 2" x 18"
7 Self-adhesive Abrasive (2)	2 1/2" wide x 19"
8 Carriage Bolts (4)	4" x 1/4"-20
9 Washers (4)	3/8"
10 Wingnuts (4)	1/4"-20





The rear grid serves as a retainer for the translucent screen material and needs to be fastened to the front grid with brass screws. Bore pilot holes and countersinks for the screws in the four inter-sections inside the grid.



Next, install the brass screws in each hole to set the threads. You might want to use steel screws of the same size because they're less likely to break.

The rear lattice goes together the same way with glue in all the joints, but it's not permanently attached to the frame. You just need to check that it fits flush over the front grid and isn't too large (or small) for the frame. To fasten the front and rear grids together, you need to bore screw holes and countersinks for #4 x 5/8" brass screws through the rear grid into the four inside grid intersections. Install the screws to cut the threads before you finish and assemble the shutters.

With the grids completed, now is a good time to set the hinge positions. The shutter hinges have removable pins so they work on the left or right side. Unless your shutters are very large or heavy, stick with two hinges on each side. Three or more hinges can cause binding and complicate installation. It's important that the screw holes are perfectly centered to keep the hinges aligned. I

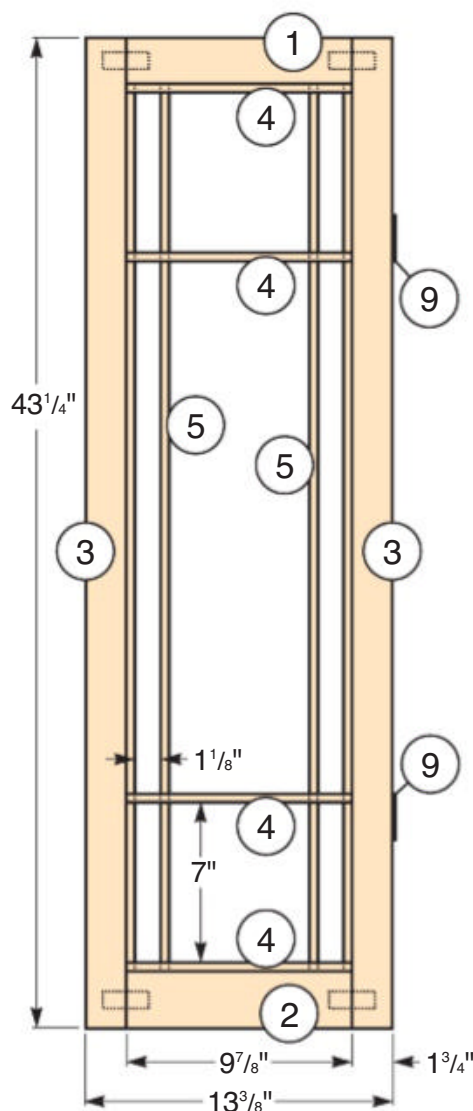
MORE ON THE WEB



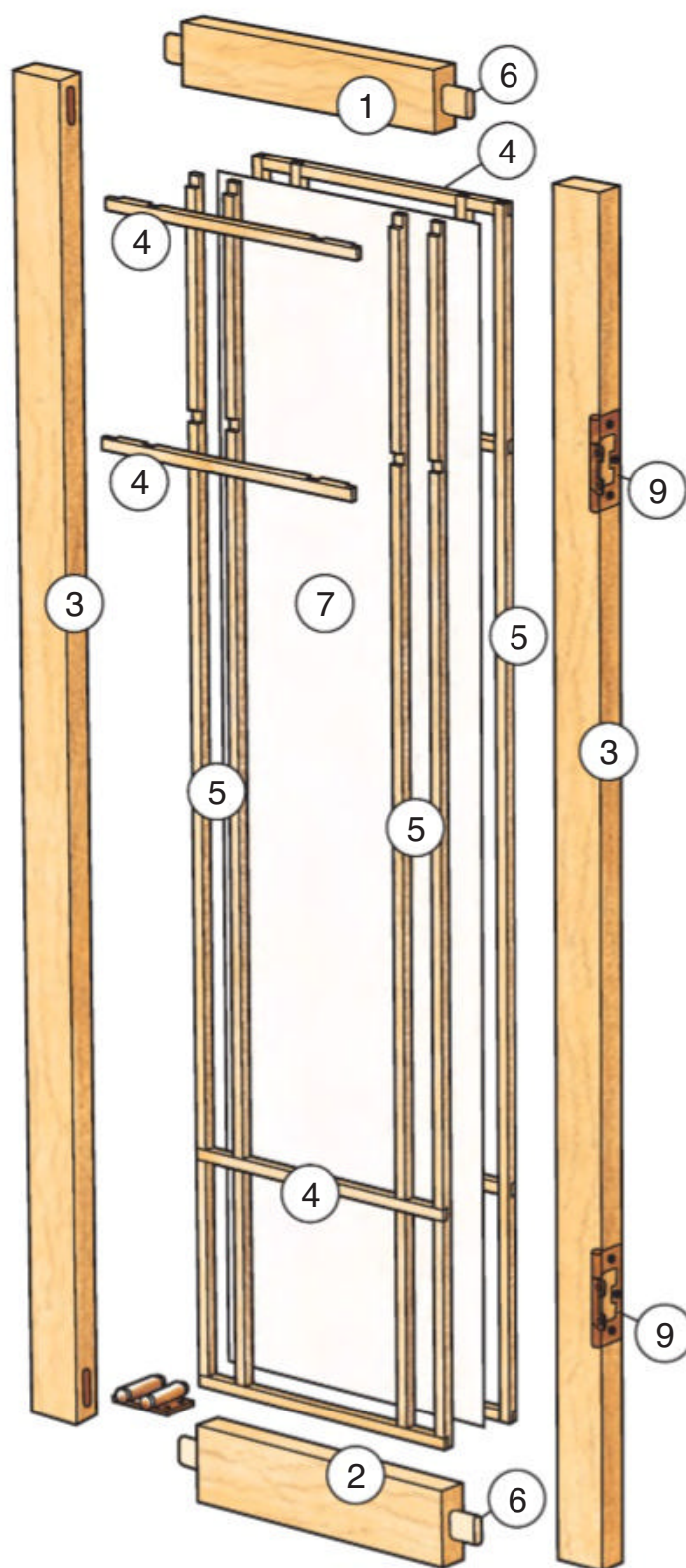
For a video on using the half-lap routing jig to form the lattices, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

Shutter Screen

(Front View)



Exploded View



MATERIAL LIST*

	T x W x L
1 Top Rails (2)	1" x 2" x 9 7/8"
2 Bottom Rails (2)	1" x 2 1/2" x 9 7/8"
3 Stiles (4)	1" x 1 3/4" x 43 1/4"
4 Horizontal Lattice Strips (16)	3/8" x 3/8" x 9 7/8"
5 Vertical Lattice Strips (16)	3/8" x 3/8" x 38 3/4"
6 Domino Tenons** (8)	8 x 50 mm
7 Translucent Screens (2)	9 7/8" x 38 3/4"
8 Brass Screws (8)	#4 x 5/8"
9 Shutter Hinges (2 pr.)	3" Non-Mortise Butt Hinges

*The length of all pieces is dependent on the window frame size.

**Dominos can be substituted with plate-joining biscuits or 3/8"-dia. dowels.



Translucent Shutters Hard-to-Find Hardware

Double Magnetic Touch Latch (1) #52391 \$3.49 ea.
3" Non-Mortise Butt Hinges (1) #47658 \$9.99 pr.
Brass Plated Screws - #4 x 5/8" (1 pk.) #68081. \$12.99 pk.
Rockler Silicone Glue Brush (1) #45624 \$5.99 ea.
Insty-Drive Self-Centering Bits (1) #69053 \$54.99 ea.

To purchase products online, visit www.woodworkersjournal.com and click on the "Store" tab. Or, call 800-610-0883 (code WJ1577).

The screen hinges don't require mortising and they have removable pins so they can be mounted on either the left or right side. Use a self-centering bit to ensure that the screw holes are perfectly centered. Remove the hinges before applying finish.

used a self-centering Insty-Drive bit for this purpose. Remove the hinges before finishing.

Finish, Assemble, Install Shutters

Sand the assemblies with 150-grit paper and be sure to ease all sharp edges. There's no need to sand too much or with a finer grit paper — the finish will hide many imperfections. Thoroughly clean off all the dust before applying finish.

Because the shutters are next to windows, they're exposed to more light and temperature variations than other woodwork in your home. A film finish will help reduce seasonal wood movement and protect the wood from wear and tear. I brushed on two coats of a clear waterborne interior finish and opted not

to stain because the natural color of the wood was appealing without alteration. For a smooth finish, sand lightly with 320-grit paper between coats to remove dust nibs.

Once the finish has cured, install the screen material. The fiberglass shoji that I used is stiff enough so that no glue, tape or staples were needed to retain it in the frame. But you might need to fasten thin paper screen to the back of the front grid if it doesn't stay put. Install the rear grid over the screen and install the brass screws; then reinstall the hinges.

Installing the shutters isn't difficult, but there are a few steps you can take to reduce any possible frustration. Use a thin spacer between the window casing and the shutter to eliminate the possibility of binding. The hinges also have a slotted hole to allow for vertical adjustment, so use only this hole until you've installed

the opposing shutter and can align the pair. If the shutters are a little twisted in the frame, you can try moving one of the hinges slightly out to compensate. And if the gap where the shutters meet isn't even, use a shim behind the hinge leaf. When the shutters seem reasonably well-aligned, install the rest of the screws. I installed a magnetic touch latch to retain the shutters. It eliminates the need for knobs to open and close the shutters to maintain a clean appearance.

If you're like me, once you've built a few of these shutters, you'll want to make more sets for other rooms in your home. They'll help keep your rooms light and airy even on the most dreary days.

Larry Okrend is the former editor of HANDY magazine.



Before finishing, check the fit of the screen material and trim if necessary. There's no need to glue or staple the material to the grid; the rear grid and screws will retain it securely.



The author bought Synskin fiberglass shoji material from tapplastics.com; you can also find paper, vinyl or fiberglass options at decorativefilm.com or Water-star Chinese rice paper at amazon.com.

Carving Linenfold Panels

By Ernie Conover

This traditional pattern is a great project for those who are interested in getting started in carving.



Linenfold panels date from 14th century Europe and were used extensively in both cathedrals and secular architecture up through the end of the 1600s. In their day, they were called *lignum undulatum*, Latin for undulating wood; historians applied the name linenfold in the 19th century. The 4' x 8' paneling of their day, they evoked the feeling of hanging draperies and tapestries used extensively by the wealthy, at a much lower price, and with little maintenance needed. Many frame-and-panel walls were made to use them – often

located on the lower half of a wall in a style we still call wainscoting or, for the enthusiastic, floor to ceiling. If travels ever take you to Akron, Ohio, be sure to visit Stan Hywet Hall, the mansion built between 1912 and 1915 by F.A. Seiberling, the founder of Goodyear (stanhywet.org). An architectural tour de force, it sports a number of lovely linenfold examples.

If you have always wanted to give carving a try, this linenfold panel is a good

beginner's project. That's because one of the reasons for the widespread popularity of *lignum undulatum* back in the day was that only mildly skilled labor was needed to do the work.

We'll make the simplest of linenfold examples, as shown in the photo at left. I use the historical method of planing the wavy form into the field with hollow and round planes. The gaps formed by the folding are simulated with grooves plowed with a plane of the same name. The grooves could easily be done with a router; however, the hollowing and rounding would take some innovative router table work. The rounding of the corners that is done with a rounding plane could be done with a shoulder plane and sanded.

Preparation

You will need one or two sets of hollow and round planes to shape the wavy form into the field of your panel. In addition to the hollow and round planes, I use a plow plane to make the 1/4" grooves, but a handheld router would do this job just as well.

Hollow and round molding planes are the most common of all categories of antique molding planes. I have been able to find them easily for about \$40 each. New hollows and rounds can be purchased from Lee Valley Tools or M. S. Bickford. It is even possible to make your own. One or two sets will do you nicely, and once you own them, you will discover a plethora of work where they are handy.

The only carving of a linenfold is at the top and bottom ends of the field after profiling. Our carving will create a *trompe l'oeil* (trick the eye), making the

For a video of the author carving a linenfold panel, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

viewer believe our wavy profile is folded cloth. You only need a few gouges to carve a linenfold. The sizes and sweeps I commonly use are listed in the chart below. Variation from end to end and side to side of the panel is highly permissible, doing more to create the illusion of folded cloth than detract from it. After all, the drapes on either side of a window are not mirror images!

Helpful Tricks

European *lignum undulatum* panels and carvings were made almost exclusively out of riven oak. That means the oak was split off a log rather than sawn to get the starting panel. Riven oak is marvelous to carve because the grain runs parallel with the surfaces of the panel, making tearout virtually nonexistent. Oak, especially white oak, also planes and carves very nicely. I have made a number of linenfold from oak and recommend this wood highly. I have also made linenfold from walnut, cherry and sassafras. The cherry

was a bit difficult to plane and carve, but the rest of the woods worked swimmingly. For this article I used curly sassafras, which planes and carves like a dream.

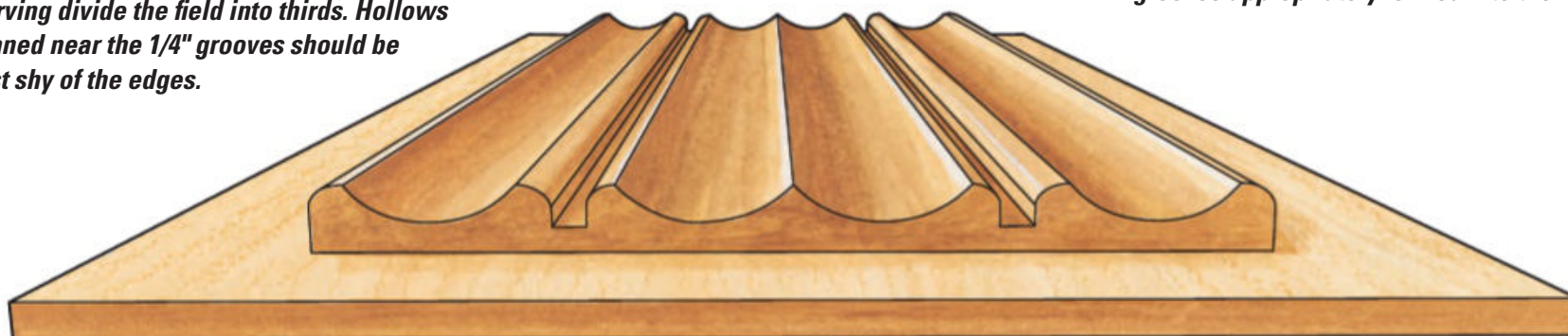
Getting Started

You'll need a blank to begin the project, starting with a 3/4" board. Now create a 1/2"-thick field that is between 1" and 1½" from all edges. This can be done with a rabbet plane; however, the easiest way is to do the job with a table saw. You should be left with a 1/4"-thick panel at the edges. (See the center photo at right.)

While I use a plow plane to make the 1/4" grooves (bottom photo at right) to simulate the folds of the cloth, a router would do the job just as well. Make these grooves about 1/4" deep, as shown in the *Drawing*, below. They should be plowed halfway between the center and the edge, thus dividing the field into thirds. Now, strike a pencil line down the exact center of the field.

Sweep: Curve of Blade	Width mm	Purpose
1	16	General carving
3	3	General carving
3	8	General carving
3	12	General carving
8	10	General carving
11	2	For final roll
15	3	Veining for hem

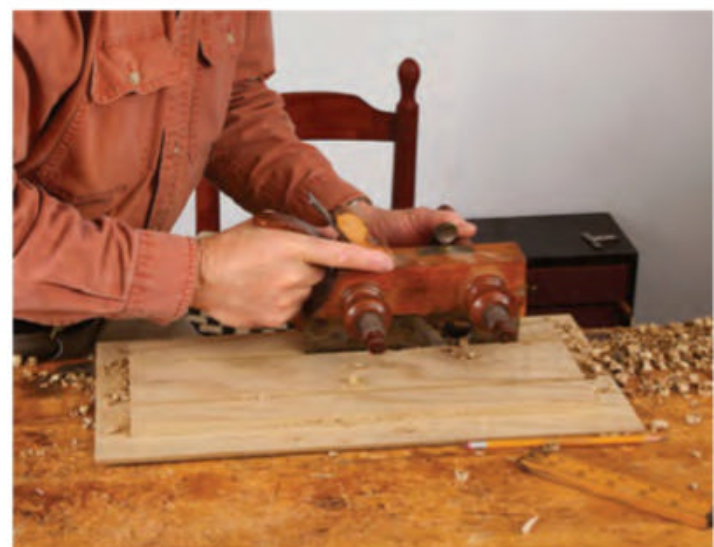
Grooves plowed into a panel for the linenfold carving divide the field into thirds. Hollows planed near the 1/4" grooves should be just shy of the edges.



Hand planes with curved irons are key to producing a linenfold panel by hand. They are easily found at yard sales and antique stores.



A raised field will become the "folded linen" area of the panel. You can raise the field on the table saw or with hand planes.



With the field raised on a 3/4"-thick panel, the author makes the flat-bottomed grooves using a plow plane. The Drawing below shows the shapes and grooves appropriately formed into the field.



1 *Clamping a scrap piece of wood to the panel helps to get the hollow plane running true with the length of the field.*



2 *Use the rounding plane to radius the outside edges of the field and either side of the grooves to make them look like rolled linen.*



3 *After the field is in the correct contour, the author uses a pencil with a soft lead to sketch in the lower and upper "folded cloth" details.*



4 *Carve the center section first, with the very center brought down to the base of the field and the edges carved to create the illusion of folded cloth.*



Here is an example of a linenfold shape the author carved on a very narrow panel that he then placed into the center of a frame-and-panel door on this classic wall cabinet.

pencil line. The outside edge of each curved groove should end just shy of the groove on each side. Now plane hollows in the edge thirds. These should be just shy of the grooves and edges. Go back to the *Drawing* at the bottom of the previous page to help keep your orientation clear here.

Switching to the rounding plane, radius the outside edges of the field and to either side of the grooves so that they look like rolled linen. Take care that the edges of this plane do not come in contact with the already planed work, or you could inadvertently cut lines that would be hard to get rid of at this point. Use just the center portion of the iron. With some light hand-sanding, you now should have the wavy wood profile evocative of folded linen.

Time to Carve

With that task done, it's time to lay out the carving. This can be done freehand with a soft lead pencil. I start the actual carving at the center section, carving the "upside-down ace of spades" up to the crease. The center needs to be carved down to the base of the field, and the sides of the spade need to be carved to create the illusion of another layer of cloth. This requires undercutting at the tip of the spade, transitioning to rounding over at the curve of the spade, then segueing back to undercutting again to give the appearance of a roll of cloth. Look to the photos above for details.

Now carve the outer thirds. Their edges are rounded, blending to an undercut in the vertical portion. Clean up this end of the carving as needed,



5 Putting a very slight chamfer (or bevel) on all of the edges enhances the illusion of a thin piece of cloth.



6 Using an 11-2 gouge like a drill at the final roll of the edge enhances the illusion. (A small twist drill will work just as well.)



7 Use dividers to lay out pinpricks at a uniform spacing and a set distance from the edge. This will mimic stitching, evoking a "hem."



8 The author uses an automatic center punch in each of the pinpricks, but with careful use, a regular center punch works just as well.

and reverse the panel to carve the other end in the same way. Some sanding to remove fuzz is fine, but do not sand very much and only with fine paper. This should look carved and not be too perfect! An important detail is to cut a very light chamfer on all the edges: this gives the illusion of a piece of cloth and not just a surface.

If you want to create the illusion of a hemmed edge, punch "stitching dimples" at a very regular interval. Dividers are the best way of laying out this detail with unerring regularity. A center punch works quite well for this, but make sure to use very light hammer blows, as overdoing it looks bad. An automatic center punch is just the ticket to control the impact each time. You can also cut lines parallel to the edge to give the idea of the fold of the hemmed

edge. If you want to go for the full monty, cut I-shaped indents between the stitching dimples and the line marking the hem. The finest Flemish linen-work often had this detail. The area was sewn much like a buttonhole and the center carefully cut out.

Have fun with this great technique and do not be afraid to experiment! The Internet will bring a gaggle of linenfold photos as you experiment with other patterns for creating the *trompe l'oeil* of folded linen. The good news is that you do not need a needle, thread or sewing machine to be an expert tailor of linenfold.

Ernie Conover is the author of The Lathe Book, Turn a Bowl with Ernie Conover and The Frugal Woodturner.



9 The final detail is to carve a fine line a set distance from the edges with a veining chisel to simulate the fold of a hem.

ADVANCED POWER TOOL TECHNIQUES



Handheld Sanders

By A.J. Hamler

Sensible advice for choosing and using power sanders.

Everybody loves sanding! Oh, wait; I was thinking of ice cream. Sorry.

Still, the analogy isn't a bad one: If ice cream is the dessert that finishes up a good meal, sanding is the process that finishes — literally — all the combined efforts you put into a project. But, while my waistline may provide an argument against ice cream, sanding is an essential part of any project's successful completion.

Meet the Sander Family

Sanders for woodworking come in a variety of types and sizes, including benchtop and stationary floor models, but the most useful handheld sanders boil down to four options. Not all sanders are suitable for all jobs, of course, with some better at certain tasks than others (and some disastrous if not used correctly).

1. Random orbit sanders, relative newcomers to the sanding party, have pretty much taken the lead among popular choices.



The four most common handheld sanders are (clockwise from left): Random orbit sander, belt sander, quarter-sheet orbital sander, detail sander.

Sanders are designed to make a series of hundreds of thousands of scratches in a wood surface, each removing a tiny bit of stock. With single-action sanders like belt and traditional orbital sanders, those scratches are all the same orientation and are distractingly visible, especially under stain or clear finish.

But random orbit sanders (ROS) sand with two patterns – the pad oscillates in a circular motion, but also spins at varying speeds, depending on work surface, sanding speed, tool movement, etc. The result is a totally random arrangement where scratches “cancel” each other out, leaving mostly mark-free surfaces.

ROS sanders are generally lightweight, have good dust collection provided by internal impellers and use a host of available hook-and-loop sanding discs. Although ROS sanders come in several sizes, 5" models are most useful.

2. Orbital sanders were once the most common finishing sander. These plain, square-pad orbital machines offered little beyond being faster than hand-sanding.

They did the job, but their endlessly repeating orbital pattern often left swirls or “pig tails” behind.

There weren’t many options, installing sandpaper was a pain and no one had even thought of dust collection yet. These old workhorses have largely been replaced by ROS machines, but they can still earn their keep (see *sidebar*, page 45). Lots of really old ones are still around – they almost never broke – but they’re not a good choice. On the other hand, modern versions have helpful improvements. Sandpaper size is universal, with most using a quarter sheet of sandpaper. Dust collection is standard on most, as are easier-to-use sandpaper mounting clips. Premium units offer variable speed, too.

Orbital sanders are less aggressive than ROS and belt sanders – a plus for finish-sanding.

3. Belt sanders are even more old-school. These beasts of the sanding world are unsuited for finish work, and many woodworkers don’t even own one. Still, if you glue up a



Although not suited to hogging off massive amounts of wood, a random orbit sander excels at most other shop-sanding chores and leaves a swirl-free surface.



While quarter-sheet sanders have a few drawbacks, such as no hook-and-loop option for abrasives, the sandpaper is very economical. Less aggressive than other sanders, they’re also a good choice for finish sanding.

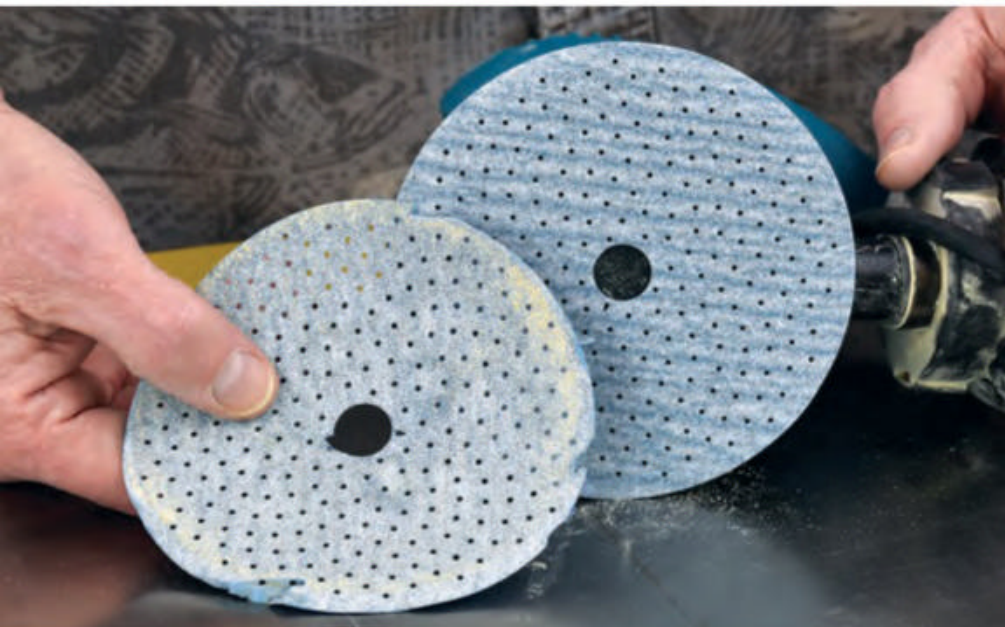


A detail sander, or an oscillating tool with sanding attachment as shown here, easily gets into the tightest corners.

ADVANCED POWER TOOL TECHNIQUES CONTINUED



There is an enormous range of types and grits of sandpaper in both sheets and discs. The most commonly used in woodshops is aluminum oxide, but ceramic-based abrasives are becoming more popular.



The author pushed this used sanding disc (left in photo) a bit too far before changing out for a fresh one. Note the tears on the edges and the thin spots where abrasive has worn off.



If a sanding disc still has plenty of abrasive but becomes clogged, a gum-type cleaning block can bring it back to life. Here, the author has cleaned just the center of a fully-clogged disc to show how well it works.

lot of panels and tabletops and don't have access to a large wide-belt, industrial-size sander, they can be worth their (considerable) weight in gold.

We'll cover more on belt sander use directly, but in short, there's no better sander for leveling panels or simply removing lots of stock quickly.

4. Detail sanders occupy a special niche. With smaller pads typically in a triangular shape, they don't remove a lot of stock. On the other hand, they can fit where few other sanders or even a sanding block can go. Corners, slots, mortises and lap joints are all fair game.

Some detail sanders offer swap-out pads in various-shaped profiles that are ideal for contour sanding on molding, coves and the like. Many woodworkers get the same job done using an oscillating multitool with a sanding pad attachment.

A Bit About Abrasives

Despite the name, sandpaper isn't made with sand. Natural minerals like flint and garnet were once mainstays but have largely been replaced with synthetic materials. Neither garnet nor flint is particularly friable, meaning that the grains don't fracture to expose fresh sharp edges as well as others. They're okay for hand-sanding but wear quickly with machine use.

The three most useful abrasives for woodworkers are aluminum oxide, silicon carbide and ceramic.

Aluminum oxide is by far the most common material. It's moderately priced, very friable and has a decent lifespan. You can't go wrong making this type your go-to for day-to-day use. It's also the

most readily available due to its popularity.

Silicon carbide is a harder, sharper material that lasts longer than aluminum oxide. It's often available in extremely high grits — I have some 2,000-grit in my shop — and it's great for wet-sanding and rubbing out finishes. It's also a bit more expensive.

Ceramic abrasive paper for woodworking is more recent. It's very hard, and although somewhat less friable than the other two types, the grains remain sharp until depleted, making it incredibly tough and aggressive. It's a bit pricey by comparison, but it easily lasts the longest of the three.

Sandpaper is either open- or closed-coat. Open-coat paper uses less grit, creating spaces between the grains that help prevent clogging or "loading." It's best for softwoods and other high-resin materials. Closed-coat is just the opposite, with the grains densely packed together. It's best for harder, low-resin woods and for hand-sanding.

Speaking of longevity, it's natural to want to use a disc or belt as long as possible. But overused sandpaper is an exercise in diminishing returns. Resin buildup, torn edges and dust holes and "bald" spots all lessen sandpaper's effectiveness, leading to poor results that, maddeningly, take longer to achieve. Check your paper often, and discard paper sooner rather than later.

That said, if paper is still fairly new but clogging, extend its life by simply cleaning it. A stiff brush — an old toothbrush or even a soft wire brush — can remove a lot of buildup, while a gum cleaning block helps with more serious clogging.

Sanding Techniques and Best Practices

Sanding is pretty intuitive, but there are both good practices and bad. Let's look at a few.

Dust collection is important everywhere in the shop but even more so with sanding, which creates extremely fine, near-invisible particles that can float for hours. Fortunately, nearly all modern sanders have some means of dust handling. An internal impeller draws dust in through openings in the sandpaper and forces it out through a port, usually into a bag or canister.

Even better is to replace the bag or canister with a direct hookup to a shop vacuum or dust-collection system. Adapters like Rockler's Dust Right FlexiPort system, shown in the photo on page 40, are extremely helpful for connecting most sander models.

For finish-sanding or polishing, high speed is great. But for most other sanding chores, constantly running sanders at their top speed can prematurely wear out abrasives, unexpectedly over-sand delicate workpieces, overheat motors, raise vibration, cause the sander to dig in and even make the tool harder to control. All quality sanders have speed controls these days. Don't neglect them.

Two other poor techniques go hand in hand. The first is the oh-so-tempting practice of tilting the sander on-edge to quickly level glue joints or joinery. Yes, it works, but the odds of a poor result are high. It's deceptively easy to sand a depression into the material. It also retards the spinning mechanism of a random orbit sander, defeating the whole purpose, and it invites swirls and scratching. Do this a lot,

and you'll also wear out the mechanics that make random orbits possible.

For the same reasons, don't force the sander down into the work. Too much pressure over stresses the motor, slows down the random orbit pattern and causes swirls and scratching. Excess heat shortens the life of sandpaper and encourages clogging. Instead, hold the sander tightly enough for control, but let the weight of your hand and the sander itself do the work.

All woodworkers know to "work through the grits" for a gradual smoothing, but it's easy to skip the important step of cleaning the workpiece between grits. No matter how efficient your dust collection is, dust always adheres to the surface along with loosened grit. The next-higher grit simply grinds this all into the surface. Always brush — or better yet, vacuum — the surface thoroughly between grits.

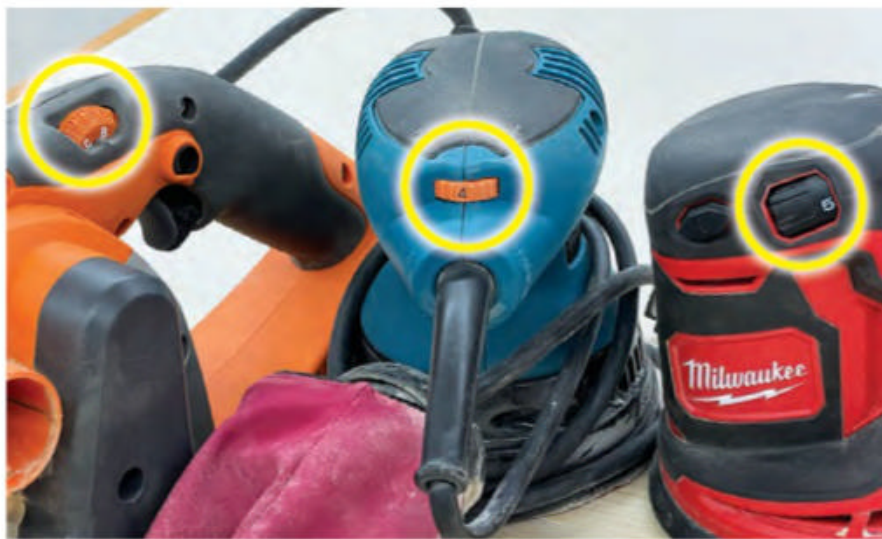
Surface Sanding

Smoothing large, flat surfaces is a sander's bread and butter. Observe all the above practices, along with a few more.

Always keep the sander moving without forcing it. This not only makes smooth-



Dust collection for sanders has advanced tremendously, but you still have to remember to empty the dust compartment! With an attached vacuum hose, no emptying is required.



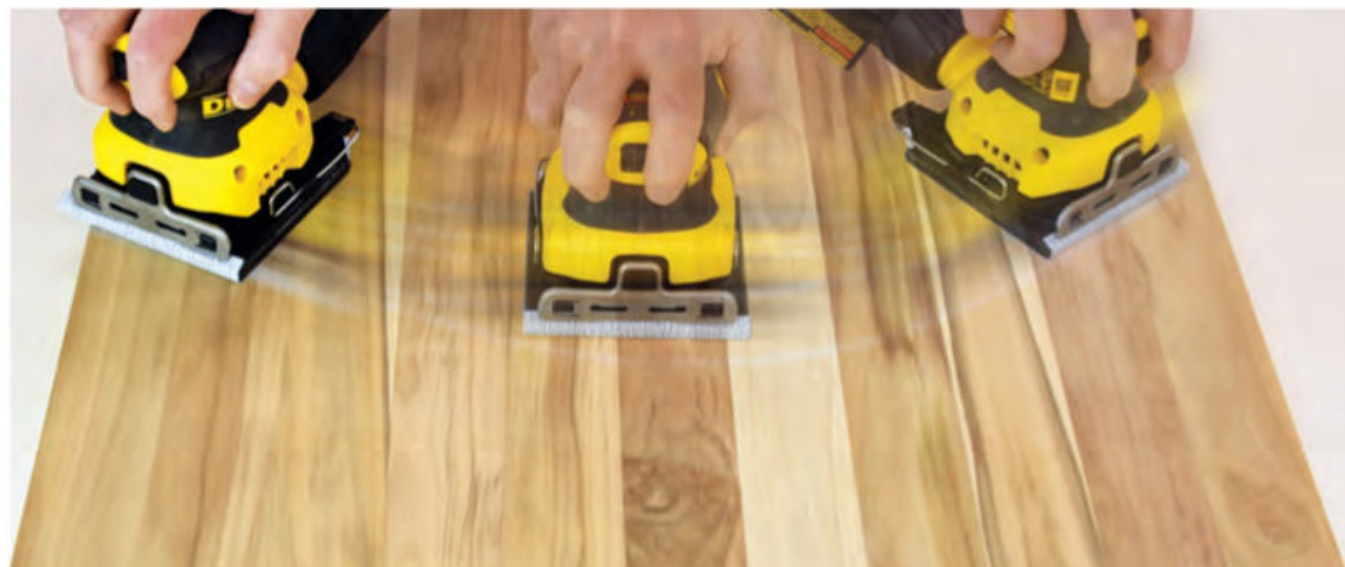
It's not always necessary to run a sander at top speed, and sometimes it's detrimental. Most quality sanders now include variable speed. Use it!



It's tempting to tilt the sander to dig in to quickly eliminate high spots. But you can inadvertently damage the workpiece or even the sander's orbital mechanism by doing so.



No matter how well a sander collects dust, there will always be some left on the workpiece, possibly mixed with loosened grit. Vacuum the surface between grits.



Regardless of which sander type you're using, always keep it moving in overlapping strokes. This will help achieve a level surface, minimize marks and swirling and generally sand far more efficiently.

ADVANCED POWER TOOL TECHNIQUES CONTINUED



Before sanding a panel, use a raking light and a long rule or straightedge to locate and mark high spots. Do this frequently during sanding until no light shows underneath.



Start belt-sanding at a diagonal to the grain to tackle the high spots first. Use a medium- or coarse-grit belt. Keep the sander moving and don't be tempted to add pressure to speed up the task.



Once the high spots are gone, switch over to sanding with the grain to remove diagonal scratch patterns when leveling the surface. You might even consider switching to a finer-grit belt, too.

ing more uniform and allows dust to be evenly collected, but it also helps prevent scratching or digging in. Done correctly, a sander should glide lightly over the work.

In terms of feed speed, here's a good rule of thumb: move a random orbit or orbital sander over the workpiece at no faster than about one foot per second.

Uneven panel surfaces and tabletop glue-ups may need special attention, and this is often where tilting the sander is tempting. Although possible to effectively level a panel with a random orbit sander, it's time-consuming and invites error. Instead, this is a good place to call in a belt sander with its large, flat pad that more easily bridges high spots.

First, locate all the high spots. Use a raking light to show where light sneaks under a reliable straightedge. High spots will be dark, with light shining on each side. Use a pencil to mark the high spots as you move the

straightedge over the surface.

Cut the speed on your belt sander way down, and sand diagonally over the high spots to remove the pencil marks. Stop frequently and recheck with your straightedge to monitor your leveling and find remaining high spots.

Once the high spots are leveled, sand with the grain to remove diagonal scratches. Again, keep the speed down and the sander moving, overlapping with each pass. The goal here is making a uniform surface, not finish sanding, so go with a light touch.

The last step is to recheck for high spots with your straightedge. Any remaining spots should be small. Hand-sanding with an extra-long sanding block works best to level these stragglers, followed by smoothing through all the grits with a finish sander.

Edge Sanding

Using a sander or even a sanding block on the narrow edge



If there are any stray high spots left, hand-sanding with an extra-long sanding block can level them quickly. Once level, sand with the grain to blend it in.



It's not easy to balance a sander on the edge of a panel. A straight piece of scrap clamped flush with the edge widens the surface area, helping to keep the edges of the panel square and flat.

of a workpiece can be tough. There's not a lot of real estate there to balance the sander properly, making it easy to inadvertently rock the sander side to side and round over crisp edges. The trick here is to make the edge temporarily wider by clamping a straight piece of stock beside the edge to use as a sanding guide. This effectively doubles or triples the edge width, creating a more stable platform for supporting the sander.

Sometimes, especially for edge sanding, a powered sander isn't the best choice. For smaller workpieces, the easier way to edge sand is using a simple trick I learned years ago. Head over to your table saw and lock down the rip

fence. Now, slip a full sheet of sandpaper underneath the fence and hold it down from one side. Place the workpiece against the other side of the fence and rub it back and forth over the paper. You'll be surprised at how quickly you'll get a square edge with perfectly crisp corners.

For profiled edges, unless you have a powered contour sander, hand-sanding is the best bet. You can wrap small pieces of sandpaper around a dowel or other round object. Or use a set of contour sanding grips, like those shown at bottom right, available from Rockler.

A.J. Hamler writes frequently for Woodworker's Journal.

Quarter-sheet Considerations

Is there still a place for quarter-sheet oscillating sanders in today's random orbit sander world?

While random orbit sanders seem to have taken over most shops, these old-school quarter-sheet sanders still have a lot to offer, especially for fine finish-sanding.

PROS:

- Economical; uses standard sandpaper
- Square pad gets into corners
- Not as aggressive as ROS; better for finishing
- Lighter weight
- Inexpensive

CONS:

- Visible scratch patterns with coarse grits
- No dust collection on older sanders
- No variable speed on inexpensive sanders
- More vibration
- No hook-and-loop; must use clip holders



Narrow workpiece edges are often difficult to sand with a machine. A low-tech solution is to sand the piece against your table saw table using the rip fence as a side support. It will keep the workpiece edge square.



Contour sanding grips, like these from Rockler, are an effective alternative to a powered contoured sander and will help keep profiles crisp.

WHAT'S IN STORE

Handy Bit Maintenance Kit, Small Chisel Plane

Contact Information

Bench Dog Tools
800-279-4441
rockler.com

Crown Tools
888-455-8665
crowntoolsusa.com

JET Tools
800-274-6848
jettools.com

Rockler
800-279-4441
rockler.com

www.woodworkersjournal.com MORE ON THE WEB

 For videos demonstrating featured tools, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

Rockler's Router Bit Maintenance Kit (item 68994; \$34.99) provides an all-in-one solution for cleaning and sharpening router bits up to 3/4" in diameter. The translucent reservoir on the base holds 10.5 oz of cleaning fluid, and it has windows so you can assess the bits inside. Its blue lid features five circular holders that are stepped to accept 1/4", 8 mm and 1/2"-shank bits and secure them for inverting into the reservoir. The flip side of the lid forms a shallow dish with rounded corners for storing bit bearings, screws and washers. An O-ring gasket on the lid prevents leaks. The kit's blue "bit grip" has three interchangeable steel collets in 1/4", 8 mm and 1/2" sizes; each fits into the grip's removable cap to hold bit shanks safely by hand or in a vise so you can perform cleaning and sharpening tasks. Beneath the kit's base stow an included folding brass wire brush for removing stuck-on pitch and a two-sided diamond hone with

JET AFS-850 Air Filtration System (Model JT1-229)



Rockler Router Bit Maintenance Kit

300- and 600-grit sides. Also supplied are 5/64", 3/32" and 1/8" hex wrenches for removing pilot-bearing screws.

This **AFS-850 Air Filtration System** from **JET** is a pleated filter, freestanding ambient air cleaner that can help scrub up to 850 CFM of air in your shop. The 31.90-lb unit has a compact footprint and 15' cord length so you can locate it right where you're working next to shop machines. Its cylindrical inner filter offers MERV15 efficiency, and a sensor notifies the user when it's time for the filter to be changed. While there are six different speed options (190 to 850 CFM), the 36 1/2"-tall AFS-850 is never louder than 68 dB, thanks to impellers that have been optimized to reduce sound. With its Auto

Mode setting activated, a dust particulate sensor detects when dust in the air exceeds a safe level, and the motor ramps up. It ramps itself down again when dust reaches a safe level. The machine's top control panel with bright, clear LED display features a digital timer (1 to 16 hours), a filter life readout and a motor speed gauge. JET's AFS-850 Air Filtration System (model JT1-229) is sold by Rockler as item 77720 for \$999.99.

The cryogenically-treated M42 high-speed steel in these **Razor Edge Fingernail Bowl Gouges** from **Crown Tools** will hold a finer edge than standard M2 high-speed steel and lasts up to six times longer than ordinary carbon steels. A parabolic "fingernail" grind is pre-ground at the





Crown Tools M42 Cryogenic Razor Edge Fingernail Bowl Gouges



factory and offers excellent versatility for bowl turning. Crown offers three gouge sizes: 1/4" (Rockler item 75546; \$114.99); 3/8" (item 75484; \$129.99) and 1/2" (item 75590; \$159.99). Each has a 14"-long ash handle with a bold, black finish. The tool shanks are 11" long, and copper ferrules add a decorative detail.

The 4.56"-long **Bench Dog Small Chisel Plane** has no sole ahead of the blade, so it offers full visibility and unrestricted access to almost any project surface. Use

it for removing dried glue, trimming edge banding, paring dowel ends flush or working into access-restricted corners. This bevel-up plane is 1.73" wide and weighs just under 1 lb. Its carbon steel blade is 1/8" thick and hardened to 55-60 HRC. The plane's body and lever cap are made of cast iron, and the

handle is sapele. An included certificate of inspection will verify that the sole flatness is 0.0015-0.002" tolerance. It has a blade bevel angle of 25 degrees, and the frog/blade seat angle is 15 degrees. The Bench Dog Small Chisel Plane (Rockler item 77399) is priced at \$89.99.

Cabinet scrapers can be tiring to flex with your thumbs during use, and they sometimes develop enough heat from friction to lead to painful burns. Both of these nuisances will be eliminated if you install your 5"- to 6"-wide steel scraper (at least 2" tall) in a *Cabinet Scraper Holder* (item 69783) from **Rockler**. It's made of reinforced nylon for durability with several rubber overmolded areas for added comfort. An easy-grip knob in back deflects the scraper to whatever arch works best for the scraping task at hand, and its rounded, ergonomic side grips enable you to push with your fingers or palms – whichever is more comfortable. It sells for \$19.99.



Bench Dog Small Chisel Plane



Rockler Cabinet Scraper Holder



Laguna 14|CX Bandsaw

By WJ Staff

Broad speed range enables this saw to cut wood or metal.

While the majority of what you probably need to cut on a band saw is wood or sheet goods, wouldn't it be handy to be able to slice through metal as well? Unfortunately, woodcutting band saws spin the blade too fast for that task. But with the DAKE/Laguna 14|CX Bandsaw, ferrous metals such as steel, iron, stainless steel and more are fair game because this machine's blade speed can be set to as low as 60 surface feet per minute (SFPM).

The saw's two-step pulley system provides a mechanical high speed range for wood and low speed range for metal, which are easy to switch between by shifting the saw's poly-groove drive belt from one step to the other. Then, just twist a variable-speed control knob on the saw's column to increase or decrease the blade speed incrementally and on the fly. A digital readout below the knob reports the blade speed in real time.

Laguna provides electronic speed control by way of a pulse width modulation (PWM) system. It uses an inverter to control the output to the machine's 1 $\frac{3}{4}$ hp DC motor. PWM offers the added advantage of quickly stopping the cutting action when the saw is turned off.

Ready for Resawing

Blade momentum is crucial for demanding woodcutting operations such as resawing. And to help ensure it, Laguna outfits this saw with heavy, precision-balanced cast-iron flywheels. It offers an impressive 13" of resaw capacity and can be outfitted with 115" blades up to 3/4" wide; a 1/2" bi-metal 10/14 variable

Laguna 14|CX Bandsaw

Street Price: \$2,499

Motor: 1 $\frac{3}{4}$ hp, 110-volt

Speeds: 160-4,400 (High) / 60-1,600 (Low) SFPM

Resaw Capacity / Throat Depth: 13" / 13 $\frac{5}{8}$ "

Blade Length / Widths : 115" / 1/8"-3/4"

Blade Guides: Laguna ceramic

Weight: 258 lbs

Most consumer band saws are limited to wood-cutting due to a fixed blade speed. But sophisticated variable speed on Laguna's innovative 14|CX Bandsaw makes both metal- and wood-cutting a reality.



To watch a video overviewing the Laguna 14|CX Bandsaw, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.



Blade speed can be adjusted on the fly with the twist of a dial. Digital readout reports the speed.

TPI blade is included. In the event that a quick stop is needed, just step on a foot pedal to engage an oversized disc brake in the saw's lower flywheel housing. When the time comes to switch blades or de-tension them between uses, a quick-release lever makes the job easier.

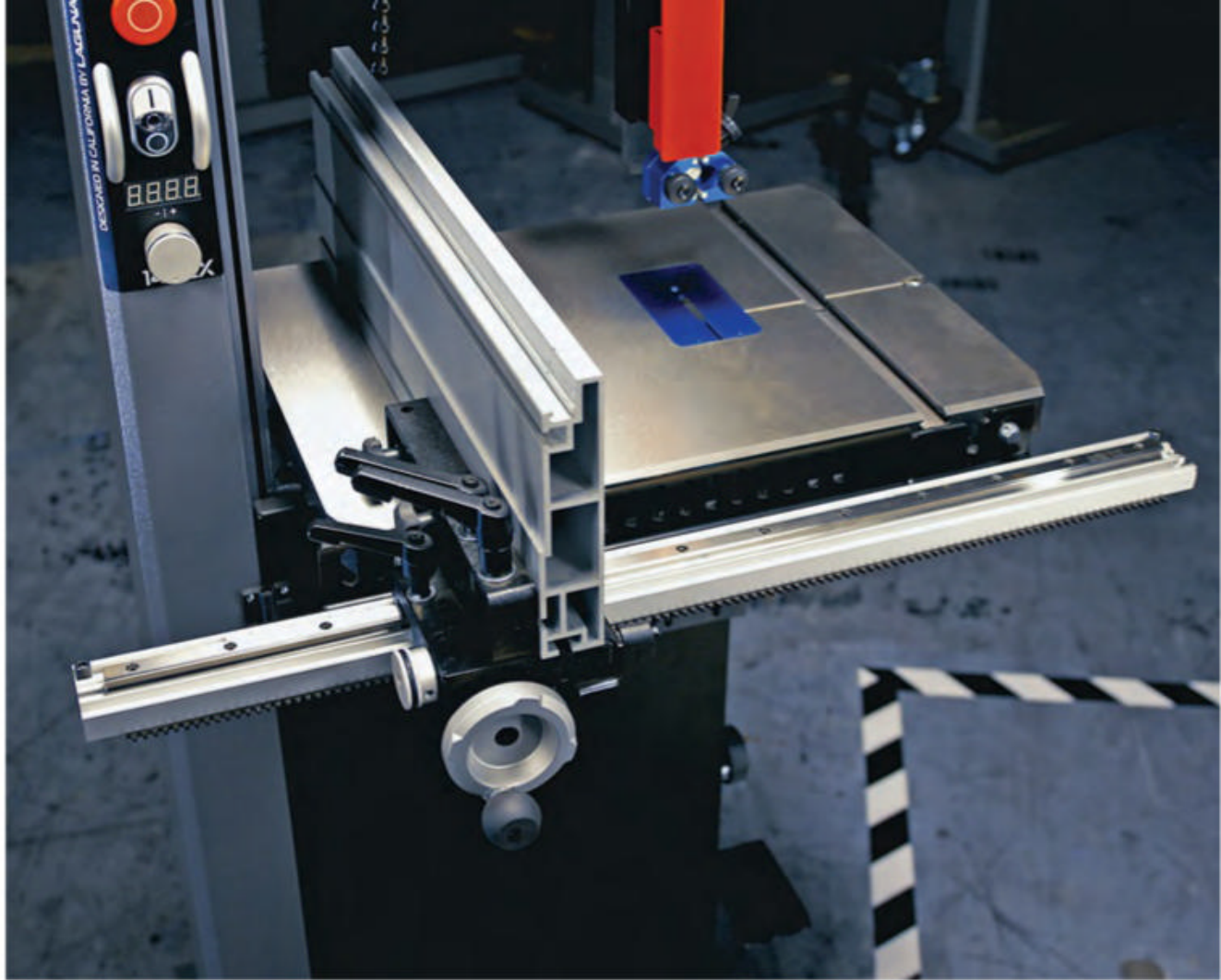
Other Noteworthy Features

For many years, Laguna has outfitted its band saws with long-wearing, cooler-operating ceramic blade guides, and you'll find them on the 14|CX. They offer a total of 10 contact points above and below the workpiece for precise blade tracking.

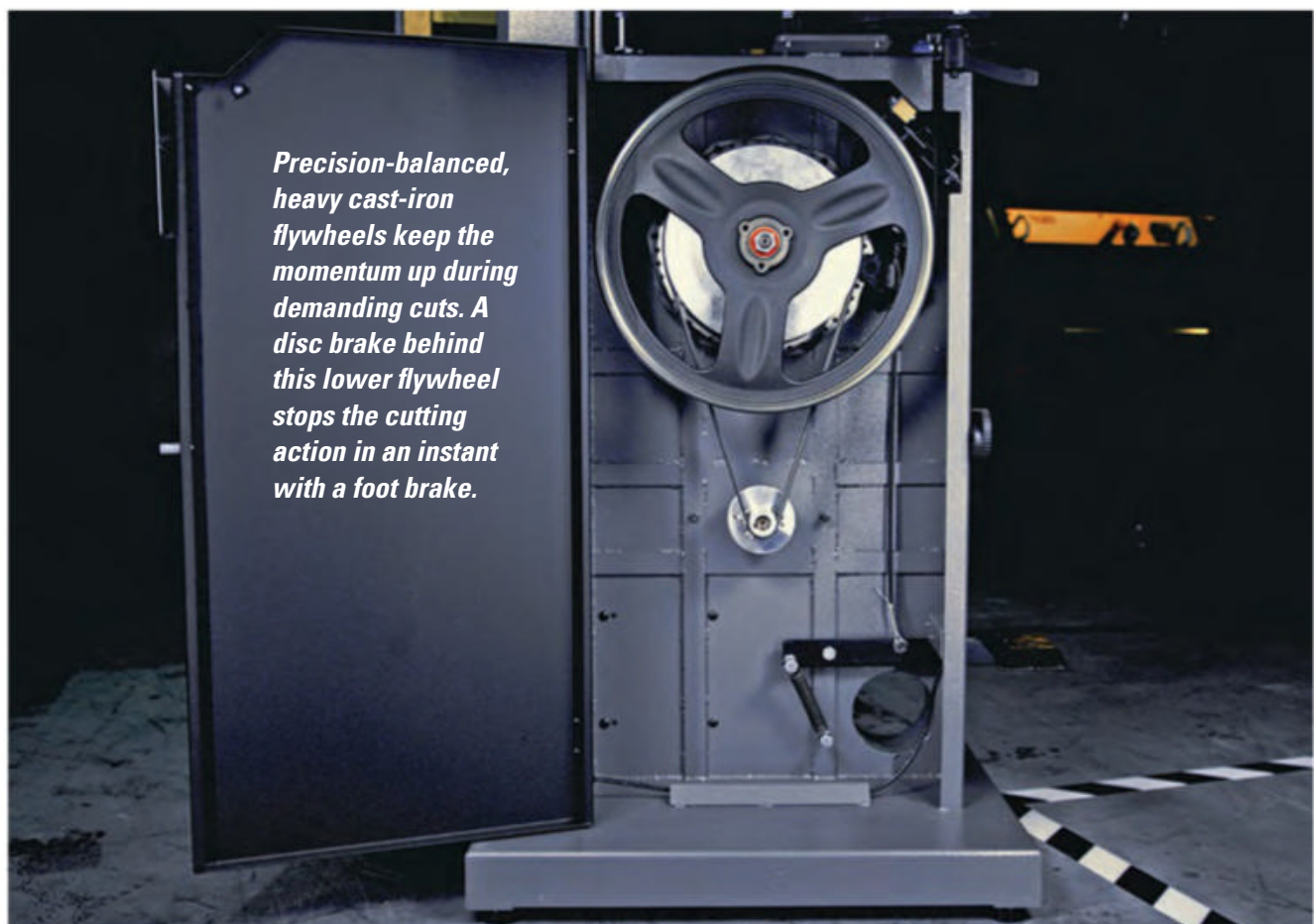
This saw has a generous 16" x 21½" cast-iron table with a conventionally sized miter slot. The table tilts 7 degrees left and 45 degrees right. It's mounted on a heavy-duty cast-iron trunnion. The rip fence is also beefy, with a 5½"-tall aluminum beam that moves on a gear-driven crank; this 18"-long fence beam can be set either to a high position for thick cuts and resawing or tipped over to a low position for cutting thin materials.

To mitigate sawdust, two 4"-diameter dust ports — one just below the table and a second near the saw's base — help to keep the machine's interior clean.

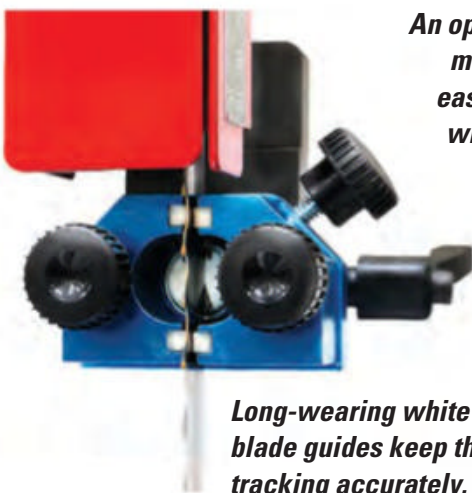
For shops with space constraints or poor lighting, Laguna offers a three-wheel mobility kit and an industrial work light as optional accessories.



A beefy extruded aluminum fence beam offers 5½" of vertical support for resawing or thick rip cuts. It can be tipped to the "low" position for thin cuts. The fence moves by way of a gear-driven crank.



Precision-balanced, heavy cast-iron flywheels keep the momentum up during demanding cuts. A disc brake behind this lower flywheel stops the cutting action in an instant with a foot brake.



Long-wearing white ceramic blade guides keep the blade tracking accurately.

An optional three-wheel mobility kit makes it easy to roll the saw to wherever it's needed or out of the way when it isn't.



FINISHING CORNER

J-Weight Cloth-Backed Sandpaper Rolls

By WJ Staff

Tough abrasives for many smoothing tasks.



While all sandpaper eventually wears out, the difference in durability between cloth- and paper-backed abrasives is only something you'll truly appreciate after using both. Cloth backing lasts much longer, particularly in high-friction applications such as sanding turned spindles and bowls.

That's why Rockler's J-Weight Cloth-backed Sandpaper Rolls will be so useful to turners. But this aluminum oxide abrasive will be equally helpful for general detail and finish-sanding, loading onto a sanding block for smoothing flat surfaces or even mounted to a piece of float glass for flattening and honing chisel blades, plane irons and plane soles.

Each 2 3/4"-wide roll has 20 linear ft of sandpaper. Tear off just the amount you need

to complete the task at hand while minimizing waste. Rockler sells individual rolls in many useful grits: 100 (item 77435), 150 (item 70444), 240 (item 79292), 320 (item 76961), 400 (item 72776) and 600 (item 71319) for \$9.99 apiece. Or, save some on the per-roll cost by buying it in a 3-pack of 20-ft rolls in 150-, 240- and 320-grits (item 76783) for \$19.99.



This J-weight cloth-backed sandpaper will outlast paper-backed options, and the 2 3/4"-wide rolls will help to minimize wasted abrasive.



The Newest Wood Care Products

BRIWAX

In A Family of Great Products!

100% PURE TUNG OIL

**The #1 Natural Way
To Enhance the Grain in Wood!**

The Perfect Finish
For Gunstocks & Knife Handles
FILTERED • NO ADDITIVES

A Hand-Rubbed Finish
Professionals Call "Money Oil!"
NO FILLERS • NO DRYERS

Nature's Best
Wood Protector:

- ✓ Water Resistant
- ✓ Insect Resistant
- ✓ Revitalizes Dry Wood

*"Tung Tree
Nut Extract
Restores Richness
& Vitality
To All Types of Wood."*



Great for All
Wood Furniture:

- ✓ Natural Matte Finish
- ✓ Non-Toxic / No VOCs
- ✓ Non-Yellowing Oil

*"Choose
PURE TUNG OIL
Instead of Blends
that can Wrinkle
& Dry Out Finishes."*

PROFESSIONAL
DIY FRIENDLY
GRADE QUALITY

BRIWAX 100% Pure Tung Oil penetrates deeply into the wood pores, bonding with it at a molecular level, strengthening and enhancing the wood. This all-natural, hand-rubbed look brings out the natural beauty of the grain and is easily refreshed with just another single coat as needed. BRIWAX Pure Tung Oil produces a natural patina that ages with the wood, preventing the dull, worn-out look that can occur with most surface-type finishes. A non-toxic, "food-safe" oil for refinishing countertops, tables, cutting boards and any wood surfaces that come in contact with food or skin.

From the Makers of

OTHER BRIWAX WOODCARE PRODUCTS:

- | | | |
|--|--|------------------------------|
| • BRIWAX ORIGINAL PASTE WAX | • SHERADALE WAX - ANTIQUE RESTORER | • SHELLAC SANDING SEALER |
| • BRIWAX SPRAY WAX | • NATURAL CREAMED BEESWAX | • TEAK OIL |
| • METAL POLISH & MULTI-SURFACE RESTORER | • MTD - JOINT BONDING AGENT | • LIMING WAX |
| • ULTRA-MAGIC MICROFIBER DETAILING CLOTH | • GUNSTOCKRX - RESTORES WOOD GUNSTOCKS & KNIFE HANDLES | • HARD WAX OIL |
| • BULK BEESWAX PELLETS | • CHAIRX - FIRST AID FOR CHAIR & TABLE LEGS | • GRAIN FILLER |
| • OIL-FREE STEEL WOOL | | • WAX FILLER STICKS |
| • WATER-BASED WOOD-DYE | | • TAMPICO BRUSHES |
| | | • EZ-SWIPES - CLEANING WIPES |

AVAILABLE ONLINE OR
Contact Your Local Retailer or Distributor!

BRIWAX.COM • 1-800-527-4929



STAND BEHIND YOUR WORK™

PERFORMANCE. INNOVATION. BREATHE EASY.



AFS-1000C REMOTE CONTROL AIR FILTRATION SYSTEM

AIR QUALITY
SENSOR

LED FILTER LIFE
NOTIFICATION

16 HOUR
TIMER

NEW

AFS-850 MOBILE AIR FILTRATION SYSTEM

AUTO MODE WHISPER QUIET LIGHTWEIGHT



**BUY A JET AFS-850 OR JET AFS-1000C
RECEIVE A \$100 ROCKLER
REWARDS CARD* FREE!**

*Redeem rewards card at your local Rockler location at register with proof of purchase.
This card can be used towards any future purchase of JET or Rockler items. Offer valid 5/1/24 through 5/13/24.